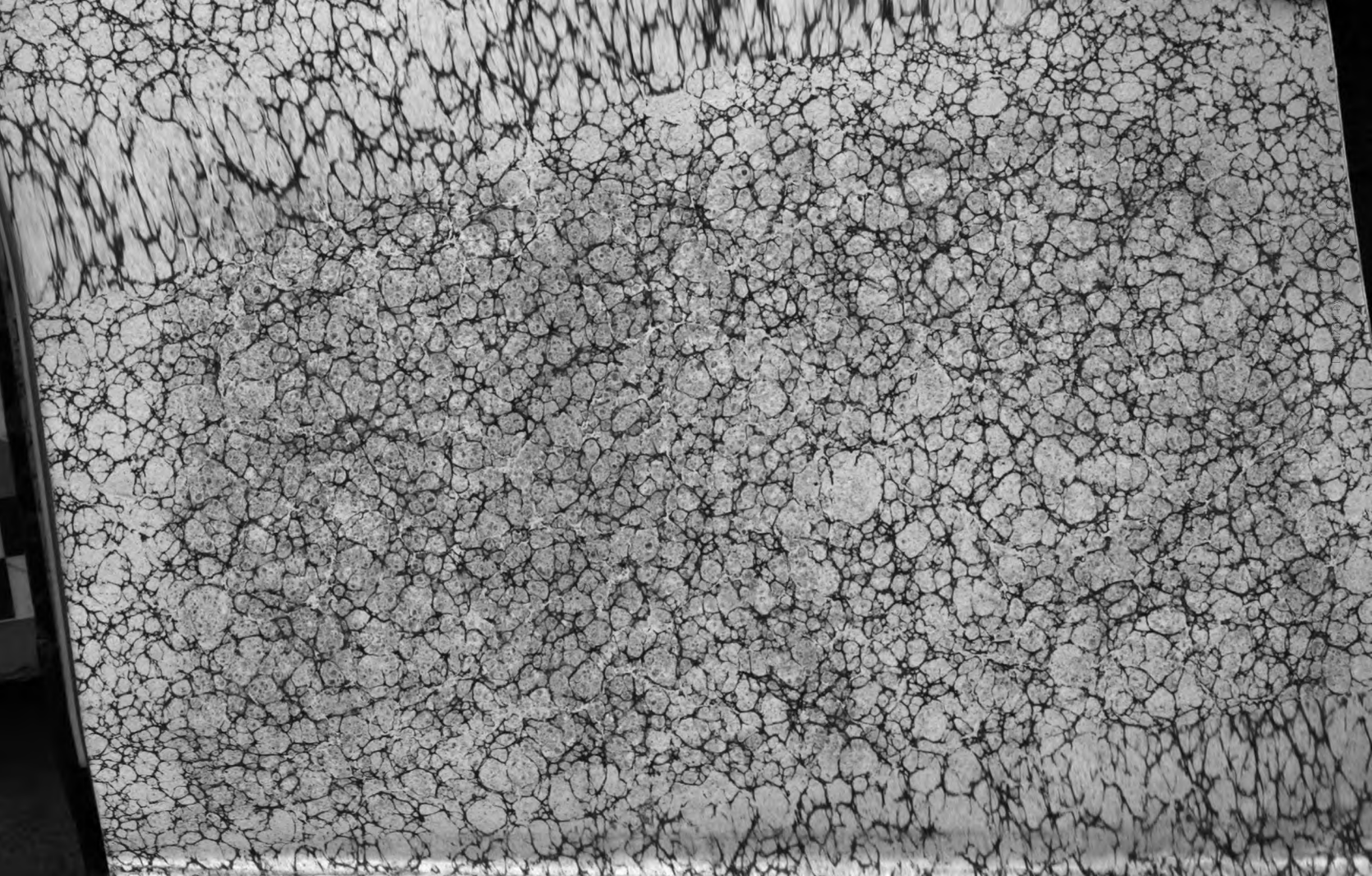


THE

NAUTICAL MAGAZINE.

THE

NAUTICAL MAGAZINE

AND

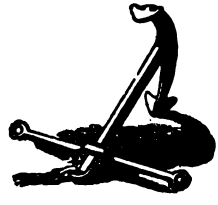
Naval Chronicle.

FOR 1856.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.



London:

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

AND

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

LONDON:

WALTER SPIERS, PRINTER, GREAT PRESCOT STREET.

CONTENTS OF VOLUME FOR 1856.

ENLARGED SERIES.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

JANUARY, 1856.

Manby's Mortar Afloat.—*Remarks and Experiments on the Use of Manby's Mortars on board Ship with Cones of Wood as Projectiles and Auxiliaries to the Iron Shot, by Captain K. B. Martin, Harbour-Master, Royal Harbour, Ramsgate.*

The Register of Wrecks in your December number is indeed an appalling one, and may well enlist all our sympathies and stimulate us to every exertion which may tend to preserve life when property is thus sacrificed; for, alas! there is an increasing recklessness in the loading of every class of vessels now, which might well induce a mariner of the olden time to doubt if they were ever intended to reach their destination.

It is now nearly forty years since Captain Manby commenced his experiments (which many of us witnessed on the Norfolk coast) and since which many valuable lives have been saved by the employment of his mortars and apparatus, as used from the shore, to convey a line or lines to a stranded vessel; but we hear of few, or, indeed, no attempts to render this valuable auxiliary useful on shipboard, or from the ship to the shore. I have been induced by the examples which have recently come before me to institute a series of experiments with Manby's mortar, which may perhaps be the means of introducing them more generally into vessels of sufficient tonnage to carry them, as they occupy very little space upon deck.

And first with regard to steam towing vessels, many of which upon the Thames are very noble vessels of their class. Imagine an emi-

grant ship on shore upon one of the dangerous shoals, where the steamer could not approach her but could throw a line over her. The advantage of so doing every seaman may estimate without any further detail. Our steamer in several instances has taken an enormous risk at the Goodwin Sand, when, in conjunction with the lifeboat, they have gone off to distressed vessels, and by my request she is now equipped with a Manby's mortar and apparatus.

Now as to the result of my experiments. I was forcibly impressed with the fact that if a projectile could be thrown upon the tide which would float upon the surface in lieu of plunging into the deep, that in many instances it would stream down to the ship by being thrown close athwart her bows, when it was more difficult to cast a throw-line over her with an iron shot; and this would be especially the case where the whole body was submerged and only the spars and rigging of the wreck, with the crew clinging to them, above water. I therefore determined to try the effect of cones of wood of different densities, and the best of which I find to be the gnarled or knotty elm; which resists the concussion without splitting, and which my turner furnishes at 1s. 6d. each, of five and a half inches diameter and nine inches in length, these being the dimensions of the largest iron projectile fitted to the bore of the mortar. Through the centre of the wooden cone, laterally, an augur hole admits an inch rope, which may be passed through with dispatch, knotted at the inner end, and cut to any length as a strop, to which the throw-line is to be attached; and if a thimble is fitted to the end of the strop a small line may be rove and thrown double at short range if necessary. The small cost of wooden cones would be an inducement to have a set of them always ready, and differing as to the mode of appliance.

Now in this proposition it must be remembered that although I have thrown a wooden cone sixty yards against a fresh gale, with six ounces of powder, at the usual angle of 45°, yet the position of a ship on a lee shore would always give the projectile an impetus in lieu of a resisting medium; and I have thrown the same 4lb. cone of elm before the wind (which accelerated its flight) eighty fathoms or one hundred and sixty yards! Now if the iron shot from a ship fell short of the shore it is lost to sight and expended! Not so the wooden cone! every sea rolling in bears it upon its crest and, if the distance is not very great, will soon cast it upon the beach; for it must not be forgotten that the line attached to it formed an arc of a circle, the curve of which in a straitened surface upon the water will give a great increase of slack or stray line.

Such, I consider, is the value of cones of wood as auxiliaries to the iron shot, but not to supersede them! The most frequent cause of failure of the iron shot is the parting of the strop or thong of hide close to the mortar. Now the bore through the wooden cone can be made to receive a larger strop if necessary, but I have found an inch rope thus far sufficient to the strain which it is subject to when quitting the mortar.

I cannot find that either rope or hide can be depended on with more

than six ounces of fine powder (which they have sent me from Woolwich with the mortars), and which threw the iron shot 107 fathoms or 214 yards. Now, independent of every other consideration, the progress of a cone of wood towards the shore would be easier seen and avoided than a 24lb iron shot, and attended with less injury to anything which it might strike. As a matter of course, there should be a generally understood signal from any vessel in possession of such projectiles or about to use them, and every well-appointed ship should certainly have them. I should also believe that a clever pyrotechnist might furnish a blue or crimson fire which could be attached to a wooden cone to show its progress and where it fell, during a dark night. The rocket is certainly superior to the mortar in this respect; but how very few seamen would handle rockets judiciously, and if not they are sharp-edged tools to the uninitiated, and not to be played with! It is probable that a small cell in the cone of wood might be filled with composition similar to the port fire which water would not extinguish, or with phospor, which water would ignite. This, however is a secondary consideration.

Let us now take a more extended view of their utility on board ship, in addition to their acknowledged value to stranded vessels. A fine well-found ship or steamer falls in with a poor fellow at sea in a deplorable condition. We know, as seamen, that a ship disabled for only a few hours in a heavy sea may roll her masts away, when if any steerage way could be kept on her they might be saved and her canvas rebent to the yards and again successfully spread to the gale. Here, then, her preserver might range up to windward of her in perfect safety, and deliver from the mortar a wooden cone and line with comparatively little risk, and with such assistance take her in tow. Again, you are at anchor in a roadstead and tideway. You have sent your boat on shore for provisions and water. She is coming off deep loaded. The breeze and sea has increased and is increasing; and, in spite of all their efforts, the wind and tide has swept them past aud to leeward of the ship, and there they are, nearly within hail, tug! tug! tug! at their oars, when two ounces of powder in Manby's mortar and a floatsome wooden cone, would convey to them a line, by which you may haul them up and alongside. A boat's crew in this situation can often, with great labour at their oars, just hold their own and no more. Minutes then may become hours, and hours bring distress or casualty, which instant help might at once prevent. Such was the situation of the Admiral's barge in the Downs anchorage in 1854, and our steamer took hold of her and towed her up alongside that noble ship the *Austerlitz*, and received the thanks of the French Admiral.

I am convinced that many valuable lives would have been saved if Manby's mortars had been more generally in use on shipboard, as line after line might be thrown from a ship on to a coast where the mortar had no existence, or could not be brought to bear in time,—and would have to send its projectile, if so brought, against a furious gale. On the contrary, the ship, stored with lines and other resources, and aided

by the wind, could not miss throwing a line on shore, and bears with her to the scene of peril, whenever or wherever it may be, the means of self-preservation. And thus may it be said of the anxious veteran officer who has so recently gone to his rest that "he being dead yet speaketh!"

Cautions and Instructions in the Use of Manby's Mortars.

1.—Be sure and sponge dry the chamber of your mortar.

2.—Remember it must never be primed from a powder horn, as there is always considerable space in the chamber and the mortar would be over-charged. Quill tubes are always to be used with this ordnance, and a supply of them may be kept in a small tin box without hazard.

3.—Copper measures for the powder are furnished with the mortar marked ounces, in the proportion of two, four, eight, to determine the range and distance, but I have not yet succeeded in using the eight ounces without breaking either thong or line. I have therefore adopted the proportion two, four, six.

4.—The double frame and basket on which the line is coiled ready for service is an excellent arrangement for the shore. In the upper frame the teeth are fixed, and by lifting it off the line is ready. Now, this being rather a lumbering thing on deck, I have adopted a single frame, in which the teeth ship and unship like the thowels of a boat and put into a canvas bag until wanted again,—thus getting rid of the encumbrance when more or less confusion generally exists on deck. I have also introduced thowels to ship and unship in the vessel's gunwale, and by such means more lines than one can be kept ready faked for service in time of need. A little ingenuity may improve on any of these plans.

5.—Be sure you extend the strop or lanyard attached to the shot as far as circumstances will permit in front of, and in a line with the intended direction of the projectile, as it relieves the snatch on the gear at the instant of discharge.

6.—The powder is not used in cartridge but loose in the chamber of the mortar. A very convenient method is to have the charges in small paper bags marked two, four, six. Tear the paper and place the fracture under the vent, and the effect of the quill tube is certain.

7.—Have your port fire tied on to a four foot staff, that you may stand well clear of the throw-line. In my steamer we use salamanders, the bulb of which, in those vessels, can always be kept red-hot in the furnace grate.

[The first station in our volume for the year has been assigned to the foregoing important design of our much esteemed friend Captain Martin, known to many of the readers of our Journal, and known but to be respected and his friendship desired. In common with them, we deplore the inroads of those "ills which life is heir to" incident to age, but which deprive him not of that consolation afforded by the calm retrospect of a life abounding with deeds of good for his fellow men, among which is that described in the foregoing paper.—Ed.]

NEW CALEDONIA.—*By Captain Tardy de Montraver, Commanding H.I.M.S. "Constantine." Translated from the Annales Maritimes et Coloniales.*

Limits of New Caledonia. General Aspect.

New Caledonia, or, strictly speaking, the island to which Cook gave this name, lies in the direction of S.E.b.E. and N.W.b.W., between the parallels of 22° 30′ and 20° 10′ S., and the meridians of 164° 32′ to that of 151° 46′ E. of the meridian of Paris. Its outline on the map represents with tolerable accuracy the regular form of a caterpillar. It is sixty-six leagues in length, with an average breadth of ten. The surface therefore covers about 650 square leagues, and independent of its annexations of adjacent isles, of which I shall hereafter speak, contains a more extensive territory than that of our inland territories united.

The S.W. point, named the Prince of Wales Promontory, is separated from the mainland by a broad and deep strait, which M. Ensign de Vaisseau Senez, assisted by M. l'Aspirant Laregnère, carefully explored, and to which we have given the name of *Constantine*, leaving to the island which it separates from the mainland the name of *Ouin*, by which it is known to the natives.

A chain of islands, scattered as it were by chance, and united by sand or coral banks, extends for upwards of thirty miles south of Ouin, when they reach an island of middling height, about ten miles in diameter, visited by Cook, named by him Pine Island, and called Konieh by the natives. Its centre is marked by a conical ring, with a wide base, visible forty miles distant, and is situated in lat. 22° 40′ S., and long. 165° 1′ E.

On this island, the advanced guard of the lands to the south of New Caledonia, rests an immense reef, which, after having projected one of its more dangerous points for twenty miles into the S.W., embraces with its two arms, one to the East, the other to the West, the whole of New Caledonia, and terminates only in the N.W. at forty miles distance from the northern extremity of the island. Penetrable at a few points only, it contains in its almost unbroken girdle the isles which connect Pine Island to Ouin, the mainland, the numerous isles which border the latter, or lastly to the group of islands which stretch out N.W. of New Caledonia to the parallel of 18° 15′.

This reef, the largest perhaps known, approaches or recedes from the land according to the caprices of its madrepore formation. It is intersected at various distances by deep and narrow channels, the divergences of which, within the outer chain, form a labyrinth of winding passages, through which, guided by the eye and experience, ships gain the harbours of the coast, and small vessels can make the entire circuit of the island within the outward reef.

To this collection, which primarily constituted New Caledonia, geographers have added the group of the Loyalty Isles, composed of a

chain of islands lying parallel to New Caledonia, and separated from it by a channel ten leagues broad. The three principal of these islands are all that are inhabited of them, and present no interest now, beyond that which arises from their annexation to New Caledonia and their relations with it.

A confusion exists in reference to their name, which ought to be cleared away by adopting the appellation known to the natives. Thus, the most northerly island, which has been called Halgan by d'Urville, and Britannia by the English, should take the name of Uvéa, which was given it by the original inhabitants in remembrance of the island of that name now called Wallis, which is peopled by the aborigines. The middle island, called Chabrol by d'Urville, and known to the natives by the name of Lefu, already adopted by the English, should bear the same name on our maps; and the southern island, named Britannia by d'Urville, should be called Méré, as in the language of the original inhabitants. We might leave the name of Beaupré to the group of three small islands situated to the north of Uvea, and for which the natives have no name. The group of Loyalty thus defined extends from S.E.b.E. to N.W.b.W., between the parallels of 21° 37′ and 20° 27′ S., and between the meridians of 165° 52′ and 163° 58′. It presents nothing striking; the islands are little elevated, level, and without any indentations sufficiently deep to afford a harbour at any point throughout their extent.

New Caledonia presents this remarkable feature, that along its entire length it has two parallel chains of mountains, separated from each other by a central valley, cut at long distances only from each other by secondary platforms, abutments of the principal chains. We must conclude that the waters of the interior find their outlet towards the sea at the North and South of the island by considerable rivers. We already know this to be the case in regard to the northern part, where we have discovered the River Diahot, formed no doubt by the union of the waters which come down from the two chains in the central valley to the North of Kanala. It is probable that we shall find in the South of the island an analogous issue for the waters of the interior, to the East, I think, of the Strait of Constantine.

The eastern chain, less elevated than the western, is more uniform, and presents few culminating points of the height of 700 metres (ϛϛϛ feet), which may be considered as the medium height of its loftiest ridges. The height, however, appears much greater, for being shut in between the sea and the central valley, its slopes towards the sea are extremely rapid, and give the appearance of greater altitude.

Such is the aspect of the island seen from the open sea, that it presents a pretty regular outline. and one is far from expecting the irregular details that are observable on approaching it. Few countries, in short, present in a more decided manner all the characteristics of successive and different formations. Thus, whilst the mountains of the interior present all those of the primitive earths, the low lands, the islands, and peninsulas, which border the coast, offer at every step irrefragable proofs of a recent formation by upheaval. These observ-

ations are especially applicable to the western coast, which seems to have been almost alone subjected to these convulsions of nature, and all the advanced portions of which have evidently been submerged at no distant epoch.

I regret that I was unable to make these remarks otherwise than in a general manner, or to devote myself to this interesting question, for I have no doubt that an experienced geologist would find in New Caledonia a vast field to explore, and valuable observations to record.

Arrival of the "Constantine" at Pine Island.

I have stated elsewhere the reasons which induced me to begin in the South my operations on New Caledonia, and to found there our first establishment, even had the local difficulties been greater. It was these motives that led me to make sail for Pine Island. after having doubled the group of the Loyalty. On the morning of the 5th of January, the land was visible at a great distance in the West, an even ground, little elevated, crowned towards its centre with a peak, which soon led us to recognise the Isle of Pines. Unprovided with charts and nautical information concerning it, I thought it prudent to trust to the memory and eye of a man on board, who had already been to Pine Island; and it was well that I did so, for he conducted us to the anchorage of which we were in search with the confidence and success of a pilot who had served his time to his occupation.

Near us, to the South, was a small low island, covered with mangroves, and reaching the chain of reefs which we lay alongside of, after having rounded them to the South. About two miles distant in the West, a chain of islands, equally low, which sheltered us, and displayed a rich crown of lofty pines, of the species peculiar to New Caledonia, and which differs from those of Europe as much as from those of Norfolk. In the North we had the conical summit of Pine Island, and from N.N.W. to W.N.W. the lands on which it rests losing themselves, without any sensible declivity in the horizon, and presenting to the eye a thick curtain of those same pines, the pointed heads of which trace on the sky the monotonous profile of the island.

This anchorage possessed nothing attractive; it was four miles distant from the land, and the communications must be difficult and even dangerous for canoes; I had therefore no intention for a single instant of remaining there beyond the time strictly necessary for my procuring from the missionaries some information of Port St. Vincent, where I had resolved to form our southern establishment, and also of the state of things in New Caledonia. M. Coudein, Ensigne de Vaisseau, who had been shipwrecked in the *Seine*, had known the missionaries, and was besides acquainted with some words of the native tongue, was immediately sent ashore, and returned in the evening, with the most unexpected and surprising intelligence. He had at the same time learnt that missions were established at Poeupo and at Balade; that Mgr. d'Amata was no more; that Admiral Despointes had recently paid a hasty visit to Pine Island; that the taking possession was already concluded, and a post established at Balade, where that

general officer was still to be met with. This news being confirmed the next day by M. Goujon, one of the missionaries who remained on the island, and the particulars which he kindly gave me of the state of things, determined me not to remain in this anchorage but for the time necessary to solve a question left undecided, and induced me to give up the project of repairing to Port St. Vincent, that I might reach Balade as soon as possible, where I still hoped to meet Admiral Despointes.

Detained on board from the consequences of a recent accident, I most sincerely regretted my being unable to visit the mission on the Isle of Pines; a model establishment, where the Fathers have contrived to bring together everything calculated to render life, if not agreeable, at least easy; and at the same time they have practised, as in a model farm, all the improvements of useful and ornamental husbandry: thus preparing, beyond all question, the means for the approaching colonization.

It would be impossible to imagine a more healthy and suitable spot than that which the Fathers have chosen for the elevation of their modest dwelling. A delightful valley, shaded by every kind of tree which the island supplies; a small comfortable house, neat and simple; a garden, enriched with all local and exotic productions which have been naturalized there by the care of the missionaries—such as the vine, the mulberry, the olive, and others which are yet only in a state of experiment; and, in the midst of all this, a winding brook bearing freshness and fertility wherever it flows, after lending the force of its current to a mechanical saw mill, due to the intelligent activity of P. Chapuis, a man equally industrious and well-informed, and devoted to the labour of the mission; cows, oxen, and sheep wandering here and there; numerous hives of bees concealed beneath the shade of trees; flowers planted in every place to remind each one of his absent country;—all things, in short, breathe quietude and happiness in this little retreat, unknown to the antipodes.

At a short distance from the mission two sandal-wood Captains from Sydney, wearied with their adventurous life, or allured by the advantages of the situation, have founded an establishment no less interesting than that of our missionaries.

If I deeply regretted being unable to rest there for some days after so rough a passage as we had just accomplished, I lamented still more deeply that I could not turn to advantage my stay at Pine Island by studying for myself a spot which I believe is called to play an important part in the future of New Caledonia. However, I now console myself with the thought that the observations which I might have made in person would have added very little to that knowledge which has been communicated to me by the Fathers of the mission and by the officers whom I have on several occasions sent thither. It is from their narrative that I am about to say a few words on this interesting point, and respecting which Cook's account is still truthful and complete.

In the present day, as in times past, Pine Island is remarkable for

the great number of its trees of that species. They are seen in abundance on the principal island, and cover a portion of the low islands which enclose the anchorage of Alewène, on the western coast. I do not think they would prove advantageous for ship-building, for they are extremely knotty, heavy, and brittle; but they are perfectly well suited for ordinary timber work, and by their property of hardening in the air they present all the appearances of a lengthened durability. We find also in the interior of the island, but in smaller numbers, some hard woods suitable for ship-building; but they are sufficiently scarce to render great reservation necessary in the felling of the timber. This precaution should be observed equally in regard of the pines, which ere long will be exhausted if there be no order to arrest the blind destruction which is already in operation, and will continue on a larger scale as soon as an important establishment is created. A clearance being made of the more wooded parts of the island, which present collectedly only the smaller portion of its surface, the elevated parts are covered with rich pasturage which our finest meadows could not be compared with. A thick grass, nearly a metre (three feet) in height and soft when it is young, has taken possession of the whole soil, and would be sufficient to feed, throughout the year, innumerable flocks.

It is evident at first sight that Pine Island is exclusively reserved for the felling of timber and the raising of cattle. Its extent is large enough to serve as a field of trial for the most important cultivations in agriculture, or for the enterprises of industry and for the trade of wools; both of which are destined to make the fortune of New Caledonia, in concurrence with Australia, in supplying the great markets of Europe with provisions. The extent and fertility of its pasturage will forcibly demand the attention of the first colonists, and will be to them a guarantee for complete and rapid success. Situated at the extremity of the New Caledonia group, it commands it on both sides, whilst it is at the same time the point nearest within reach of Australia, which will yet be, for a long time to come, the market for supplying provisions to our colony.

As for the climate, I doubt if there exists on the globe a spot more happily endowed than that of which we are speaking. A sentinel unknown in the midst of the ocean, this island receives in every season fresh breezes from the sea, sometimes from the S.E., sometimes from the S.W., according as the general winds prevail over the trade winds from the coast of New Holland, or as the latter predominate over the former. If this circumstance of situation renders its landings dangerous (by always maintaining there a strong swell of the sea) and its anchorages bad, on the other hand it keeps up continually, both on the coast and inland, a coolness which allows one to forget, even in the middle of the day, that one is under the tropic. The temperature seldom exceeds 85° Fahrenheit during the day, and is always cool during the night in summer and often cold in winter, when the S.W. winds generally blow. Here, more than in any other part of New Caledonia, the seasons differ sensibly, through the variations of tem-

perature more than through drought and rains, as in most tropical countries. We also observe here, as much as in Sydney, the influence of the seasons on vegetation and production, and one may obtain, in nearly the same degree, the productions of Europe and those of the tropics; at the same time this island being more favoured in that respect than any other corresponding point of New Holland.

It would be difficult to suppose that any epidemic or endemic disease could exist under a climate like this and in such physical conditions. Therefore none are observable, and I am convinced that Europeans, intent on labour could not go anywhere and find a more healthy climate. Diseases of the skin (hydroceles), which are often met with among the natives, being the consequence of their uncleanliness and of their manner of living, and not of the climate, would very seldom extend to Europeans accustomed by habit to a regular mode of living.

The entire island does not count more than eleven or twelve hundred inhabitants, scattered over different parts of the coast. Some are fixed at Gadji, the principal village, situated in the N.W. of the island, where the chief of the tribe resides. Others inhabit some small villages, such as that of Moupé, on the N.E. coast, hamlets of a day, composed of a few huts or *carhets*, forsaken as soon as built; and, finally, the greater number incessantly wandering from one village to another, from the missionary to the English establishment, from Gadji to the mainland, living from day to day on the little which the law of hospitality—a law sacred among savages—grants them.

It is but a few years back that this tribe knew no other existence than the savage life now led by the neighbouring tribes. Accustomed to complete nudity, notwithstanding the relative rigour of the climate, they felt not the need of protecting themselves from the cold and the rain by any other means than fire and the bark of the niabouli. Wild roots, fishing, and some little cultivation satisfied their wants. War was the only occupation of the men, and the most absolute indolence filled up the existence of the women. In short, the manners and habits of the tribe now under discussion were a few years back the same as those of the tribes I have since visited on the mainland, and of whom I shall presently speak more particularly.

But it is now no longer the case, since the frequent visits of Europeans have given them new wants and the desire of possessing, they have become more industrious. Some have embarked in European vessels to satisfy these wants, have lived with their crews and visited other archipelagoes, where they perceived their superiority to the original inhabitants who had not yet been improved by the intercourse of the Europeans. Many have followed this first example and visited Sydney. All have brought back from their voyages vices and desires which savage life can no longer satisfy. Some speculators have undertaken to satisfy these new vices, and must have coaxed the chief in order that they might work to their content the indigenous population. Then came out missionaries and vainly exercised their angelic patience and all the energy and will they possessed to repress the evil. Having to struggle against the vicious instincts of the natives, they were

forced to seek to obtain the support of the chief and endear themselves to him, until he was completely given up to them by baptism.

They are indebted to the mildness of his dispositition for their security to the present day from hostile influences; but peace is all they have been able to obtain in their mission, and this peace rests solely on the favour of the chief, which they may be deprived of from one moment to another.

Simple as he may be, the latter has not remained insensible to the steps of Europeans, who have vied with each other in labouring to give him a lofty idea of his power; and his subjects more than he must have valued themselves more highly than they had formerly done. The natives soon became insolent towards the whites, who seem to be in fear of them. Impudent, thieves, extortionate, and quarrelsome, drunkenness with all its disorders easily took root in the population, and it may now be said that every offence or crime committed in the south of New Caledonia has one or several natives of Pine island for its author. The chief, powerless to repress these disorders, suffers them to go on, though he laments over them, for he seems to be a better man and more well-disposed than any of his subjects.

(To be continued.)

The Atlantic Ocean Considered with Reference to the Wants of the Seaman.

(Continued from vol. xxiv., p. 666.)

Having considered the winds of the coasts of Africa and Europe, we shall proceed to follow the Atlantic shores of the eastern coast of America, passing along that coast from North to South, adding by the way a few words respecting the winds on the coast of Greenland.

Greenland.—Greenland cannot boast a periodic wind. From May to July the weather is fine, the wind changeable, but most frequently very strong from S.S.W. Even until September the winds are variable, but rain is by no means frequent. Storms seldom occur and when they do are of short duration. The most violent squalls come from South. The coldest winds are from N.E., and this may form the sum total of our remarks on Greenland.

Arctic Region in North America.—In the following table we have resumed the observations on winds collected by Captain Parry in his voyage to the arctic regions to discover a passage from the Atlantic to the Pacific Ocean. These observations are doubly interesting since they are continued without interruption from July, 1819, to September, 1820; consequently showing the prevailing winds of these frozen regions during more than a year. This table is only a summary of those published in Captain Parry's voyage, who from September, 1819, till August 1820, remained between the parallels of 74° and 75° North latitude.

Month.	N.	NNW	N W.	WNW	W.	WSW	S.W.	SSW.	S.	S.S.E	S.E.	ESE.	E.	ENE	N.E.	NNE	Calm	Var.	General Remarks.
1819																			
July	3	5½	3	...	4½	...	2½	...	1	2½	3	...	2	...	...	1½	2½	...	E. and S., fresh, with rain; the other breezes light; much mist and fog; snow with N. wind.
Aug.	4	...	5	...	1½	...	6	...	2	½	1½	..	4	...	2½	1½	1	1½	Strong E. winds and fog; N., moderate, cloudy; S.W., rain; N.N.W., fresh, cloudy, misty.
Sept.	7	4	4	...	3½	...	5½	...	...	...	...	...	...	...	1½	4½	...	...	Strong W. in gusts; N.N.E., fresh, misty; snow with strong N. wind; other breezes moderate.
Oct.	10½	7½	1	...	5½	...	3	...	...	1	...	...	1	...	1	...	...	½	Strong N., weather clear, fine; N.W.. fr, cloudy; W., fr., snow, fog; S.W., st., misty; E., st., snow.
Nov.	16	6	1	...	1½	...	1½	...	...	1	...	...	...	...	...	...	1	2	N., moderate, fine, snow, hurricanes; S.W., fine; other breezes light or moderate.
Dec.	5½	3	5	...	2	1	½	...	3½	...	1	3½	5	...	...	...	...	1	E., fresh, weather cloudy; mist and fog with S.
Ja. '20	11½	7½	½	...	4½	...	...	...	...	1	1½	1	2½	...	...	1	½	...	S.S.E., st., fine weather; N. & N.N.W., st. or fr., fine; much fog during this month.
Feb.	9	9	...	...	3	...	...	...	1	...	1	...	1	...	...	...	2	3	N.N.W., strong; N., fresh, much fog.
March	17½	4	2½	...	2	...	...	..	1	½	...	1	...	...	...	...	...	2	N., fr., weather clear, some snow; S., clear; W., fr.
April	9½	4	3	...	...	...	...	...	...	½	1	2	2½	...	...	1½	1	5	N.N.W., fr.; N., light, snow, fine; E., fr., snow.
May	11	3	5	½	...	...	...	...	4	½	...	1	1	...	1	...	3	1	N. & N.N.W., strong, alternative clear and cloudy weather; squalls from N.W.
June	7	2½	2	...	4	...	...	2½	2	1	3½	...	1½	...	...	...	...	5	N., str., fine, cloudy, rain, fog, snow for two days.
Total	111½	56	32	½	32	1	19	2½	14½	8½	12½	8½	19½	...	6	10	11	21	
July	9	1	1	3	1½	...	1½	1	4	2	1	...	...	...	...	3	...	3	N., fr., cloudy; S., fr., rain; S.S.W., st., freq. fog.
Aug.	1½	1	3	3	8½	3	...	1	...	...	...	2	1½	1	...	...	1½	5	W.N.W., N.N W., E.S.E., fr, snow, fog, often cldy.
Sept.	1	2½	4½	1	1½	2	1	...	4	1	5	...	1	...	2½	1½	...	...	S.W., strong, seven days snow, mist, fog; varying breezes fresh and often in gusts.
Total	11½	4½	8½	7	11½	5	2½	2	8	3	6	2	2½	1	2½	4½	1½	8	

The figures indicate the number of days during which the wind has blown from the quarter indicated in the first horizontal column.

Summary of observations made on board the *Hecla* during an interval of twelve months, in which period the vessel was in the latitudes of 74° and 75° N.

Months.	Thermometer.			Barometer.			Remarks.
	Maxim.	Min.	Mean	Max.	Min.	Mean.	
1819	°	°	°				
Sept.	+37	— 1	+22·54	30·42	29·36	29·90	The thermom. when placed on
Oct.	+17·5	—28	— 3·46	30·32	29·10	29·81	shore or on the ice at a distance
Nov.	+ 6	—47	—20·60	30·32	29·63	29·94	from the ship invariably stood
Dec.	+ 6	—43	—21·79	30·75	29·10	29·86	from 3° to 4° or 5°, and even on
1820							some occasions 7°, lower than
Jan.	— 2	—47	—30·09	30·77	29·59	30·07	that on board. The mean tem-
Feb.	—17	—50	—32·19	30·15	29·32	29·76	perature for the year may there-
March	+ 6	—40	—18·10	30·26	29·00	29·80	fore be fairly considered as —2.
April	+32	—32	— 8·37	30·86	29·40	29·97	The lowest temperature regis-
May	+47	— 4	+16·60	30·48	29·25	30·10	tered on the ice was —55°; it
June	+51	+28	+36·24	30·13	29·50	29·82	did not rise above —54° for
July	+60	+32	+42·41	31·01	29·13	29·66	seventeen hours on the 14th
Aug.	+45	+22	+32·68	30.03	29·46	29·73	and 15th of February, 1820.

The two preceding tables conclude the observations on the Arctic region of North America, and, in order to render them as complete as possible, we further give the table of observations also made by Captain Parry in his third voyage to discover the North-West passage. These observations embrace a period of sixteen months—from June, 1824, to September, 1825.

Observations made at Port Bowen in lat. 73° 49′ N. and long. 87° 25′ W.

Months.	N.	N.E	E.	S.E.	S.	S.W	W.	NW	Var.	Clms	Remarks on the Weather.
1824-5											
June	½	2	11	1	8½	3		2	2		Much fog & rain; fine with E. wind.
July	9½	5	½	5	2½	1½	1½	5½			Wind variable and weak; foggy.
Aug.	3½	1½	3	7	3½	2½	1½	7	1½		Remarkable for rain and snow.
Sept.	1½	1½	4½	9		2	9	1½		1	Breezes fresh and gusty.
Oct.	4	2½	10½	6½	1		½	5	1		Fresh E. breezes; snow and fog.
Nov.	2		8½	8		2½	1½	5½	2		Wind by gusts; clear with N.W.w.
Dec.	4	1	15	4½		1	1½	2	2		Fine with E.w.; clear, a little snow.
Jan.	3	2½	18	1½				3	3		Very fine month; few storms.
Feb.	3	2	18½				1	2½		1	Ditto.
March		½	18			2	2	7½	1		Fine; some storms.
April	2½		18	2			4	2½	1		Fine; a few storms; a little snow during five days.
May	3	3	9½	1	3	1	2	7½	1		Strong breezes from S.E.; dull weather, squalls, snow.
June	1½	1	12½	2½	2	4½	2½	3½			Stormy; wind variable; misty.
July	4	1		5	2½	3	12	4			Weather generally cloudy.
Aug.	9	8½	1		1½	2½	1½	7			Cloudy, mist, rain, light breezes.
Sept.	1½	3	3½	1	5½	3	4½	8			Cloudy, rain, fog, light breezes.

This may conclude the Arctic observations with the remark that in the Arctic region the winds are variable and irregular; while they are generally moderate in all seasons of the year.

Hudson Bay.—In Hudson Bay it is observed that from October to May the prevailing winds are from North to N.W., and from June to October from S.E. to East. The northerly winds are very strong, and in spring and autumn squally tempestuous weather is most common.

Canada.—According to some writers, we find in Canada winds blowing regularly from North during five winter months. According to others, N.E. and S.W. winds prevail alternately; the former at the end of autumn and during winter, the latter during the remainder of the year. From December to April, the weather is generally serene. The occasional N.W. winds which blow at this period are colder than those from N.E., and are common while the ice lasts. They are only met at sea in these regions about the month of March. They increase in June, and afterwards gradually diminish. The folfowing table contains a summary of the winds observed during the year 1834 in Lower Canada.

Months.	Winds.	Remarks on the Weather.
January	W.N.W.	Weather generally fine.
February	W. & E.N.E.	Much snow.
March	W. & E.	Snow and rain.
April	Variable.	Generally fine.
May	Ditto.	Ditto.
June	Ditto.	Ditto.
July	Ditto.	Ditto.
August	Ditto.	Ditto.
September	Ditto.	Rain, and cloudy weather.
October	E.N.E.	Snow and rain.
November	S.S.E.	Snow.
December	W.N.W.	Variable.

Newfoundland.—On the East and South coast of the island of Newfoundland the winds most generally found are from South, from May till October. They are, however, very changeable, and generally moderate during this period. Nevertheless, there are occasional squalls from S.E., with rain and fog; which latter is especially prevalent in July and August. The N.W. winds which occasionally blow are dry and cold, and generally attended with a clear sky. In October these winds become violent. S.W. winds are also found here, but very variable in force, at all times of the year.

Nova Scotia.—The following is a summary of observations of the winds at Halifax on the East coast of Nova Scotia.

Months.	Winds.	Remarks on the Weather.
January	N., S., & W.	Clear, rain, snow.
February	N.W. & var.	Clear, rain, cloudy.
March	N.W. & S.W.	Ditto.
April	West.	Ditto.
May	N. & W.	Clear and rain at intervals.
June	W., N., & N.W.	Ditto.
July	W., N., & S., v.	Clear and misty.
August	W. & S., var.	Clear, cloudy rain, mist.
September	N.W. & S., var.	Ditto.
October	S.W, N, & N.W.	Clear.
November	W. & S.W.	Clear, rain, mist.
December	N.W. & N.E.	Clear and rain.

New Brunswick.—In New Brunswick the following observations have been made at Fredericton, the capital of this colony, by Sir James MacGregor.

Months.	East.	South	West.	North	Var.	Fine.	Rain.	Mist.	Snow.
January	4		7	6	14	24	2	1	4
February	2	4	4	2	16	23	1		4
March	23	2	5		1	22	2	2	5
April	12	4	11		3	22	7		1
May	20	1	7		3	18	8	5	
June	19	1	10			15	6	9	
July	20		7	2	2	18	3	10	
August	17		9	4	1	23	3	5	
September	17		10	2	1	17	5	8	
October	14		8		9	22	7	2	
November	11	5		14		15	8	3	4
December			9	14	8	26		2	3
Total	159	17	87	44	58	245	52	47	21

East Coast of North America.—On the East coast of North America the winds are neither constant nor uniform. The limits of the trade wind extend more northerly on this coast than on the opposite one of Africa, and reach the parallel of the Bermudas, and sometimes even as far as 32° North latitude. The wind becomes more easterly as it nears the coast. In this part of America, which comprises the United States, the most frequent winds are from N.W. to S.E. In winter they are generally from N.W., and are most frequently dry. The winds from East, E.S.E., aud S.E., produce rain, and the latter often very severe.

Cape Hatteras is celebrated for the constant bad weather it enjoys during the greatest part of the year.

On this coast, says Franklin, hurricanes from N.E. are found: they first visit the S.W. part of the United States, in Georgia, and from thence extend successively over the country in their progress to the North, sometimes reaching Newfoundland. These violent winds last sometimes for two or three days, accompanied by rain and dense clouds.

Gulf of Mexico.—In the interior of the Gulf of Mexico the trade winds are generally found, but only near the coast in proportion as the local winds found there diminish their force.

The Northers.—From May to September, in the Gulf of Mexico, during June, July, and August, is the season of the Northers: these winds are extremely violent, and sometimes accompanied with rain. The most violent are called *Hueso Colorados;* the more moderate, *Chocolateros*; and they are found as far as the Bahama Channel. The Northers of the Gulf of Mexico are announced by a great rising of the sea, in the Bay of Campeachy by considerable humidity in the atmosphere, and by a dark cloud, seen in the N.W. in the morning and evening, keeping 9° or 10° above the horizon, for two or three days sometimes, before the Norther arrives; lightning in N.W. and N.E., and gossamer floating in the air, called *fils de la vierge*, and hanging in the rigging; all these, as well as the phosphorescence of the sea, are indications of the approaching Norther. The wind commences first with a light air from South,—and then makes the round of the compass by West, and when it arrives at N.N.W., blows with all its violence. These breezes, which are very dangerous in the Gulf of Mexico, generally last two or three days. When the wind is N.W., if the black cloud, above mentioned, begins to disappear, the gale will last but a short while, and the wind, which is then much less, hauls to the East, and if it becomes N.E. the weather moderates. These breezes are often attended with much rain, and heavy cloudy weather, and they necessarily produce a very heavy sea.

Dry Season.—The winds from North, called Northers by the Mexicans, prevail in the Gulf of Mexico from the middle of March till September, which is the dry season. These winds in September and October are stronger than at other times, and if they are not found at this period, the trade winds are interrupted by storms and rain. In November they are quite settled, with considerable strength, and continue during December, January, and February. In March and even April, when they blow they are light, and are then stronger at daybreak than in the preceding months; they also *veer to the N.W.*

Damp Season, or Season of the Trade Winds.—The damp season on the coast of the Gulf of Mexico, prevails from March to September. From the end of March and during April the trade winds from E.S.E. interrupted from time to time by North winds, are sometimes attended with a clear sky, at other times with a sky overcast; they veer towards S.E., and last all night. From July to October,

the period when the North winds prevail, violent storms, accompanied by thunder, lightning, and heavy rains, are frequently experienced. Those from East are the most severe, but of the least duration.*

Hurricane Season.—The period of hurricanes in the Gulf of Mexico, like the Antilles, is principally from August to October;† and the rainy season, called the winter in these regions, like the opposite on the coast of Africa, commences when the sun reaches the zenith of the place, passing to the North; and terminates when it again reaches the zenith of the same place, passing to the South.

After these general considerations, we will now proceed to make the tour of the Gulf of Mexico, and to point out the winds peculiar to some localities, and the periods at which they blow on the coast.

Bahama Channel.—In the Bahama Channel we meet the trade wind from N.E. in winter, intercepted by North winds, and in summer by calms. In winter, that is to say, from November to April, we find winds changing from East to South, and from South to West. In December and January there are frequently North winds, changing to N.W., blowing violently for seven or eight consecutive days.

In summer, from May to September, the winds which prevail in the Bahama Channel, are from S.E. to S.W. by the South. During March and April southerly winds are frequent.

East Coast of Florida.—From the parallel of 28° North latitude to the Florida Cays, the trade wind blows till noon, and shortly after this hour is replaced by the sea breeze. This takes place regularly during summer: in winter, principally from November to March, the winds blow from South to West, and bring a heavy sea. (Derrotero.)

West Coast of Florida.—On the West coast of Florida, even as far as 28° North latitude, the alternate land and sea breezes are found.

Pensacola.—At Pensacola, chiefly from April to July, in the morning there are winds from North to East, and from East to South, followed in the afternoon by the wind from S.W. These S.W. winds (from sea) are termed *Virazones;* they blow in gusts in August, September, and October, a period when gusts of wind from South, and hurricanes, are also experienced. From November to March northerly winds prevail; they begin at S.E. and South, with much rain; then veer to S.W. and West, at which point they remain some time, blowing very strong till they shift to N.W. and North; the weather then becomes fine.

Coast from the Mississipi to the Bay of San Bernardo.—From the mouth of the Mississipi to the Bay of San Bernardo, land breezes are found at daybreak from April to August. A short time after daybreak the wind veers to East and S.E., and blows from S.W. in the afternoon. In July, August, and September, squalls are frequent,

* Bernardo de Orta: *Derrotero de las Antillas.*

† We do not allude now to the hurricanes of the Atlantic Ocean. In the Indian Ocean we have collected all the facts relative to these terrible phenomena, and pointed out the laws observed by authors in their progress. We shall turn to these in our general considerations of the Indian Ocean.

with rain; there are, besides, southerly winds, changing from South to S.W. in gusts, which last several successive days. The worst months for navigating this coast, are those of August, September, October, and November, because the winds are severe, and blow dead on shore, without permitting a vessel to carry as much sail as will take her out to sea. In February, March, and April, there is much fog at the entrance of the Mississipi. From December to March there are frequently strong northerly winds; and if these winds veer to East or South of East, the weather becomes dark, cloudy, or foggy.

Coast from the Bay of San Bernardo to Tampico.—Between the Bay of San Bernardo and Tampico winds from S.E. continue from April till August; during the other months of the year strong winds from East and E.S.E. are found on that coast, lasting two or three days, before blowing from North.

During the fine season, the land breezes prevail regularly from eleven or twelve at night to nine or ten in the morning.

Coast from Tampico to Vera Cruz.—On the coast from Tampico to Vera Cruz, from April to July, the winds during the day blow from East, changing to E.S.E.; during the night they veer to South and S.W.; that is to say, they blow off the land. If the land breeze, on the contrary, shifts to N.W., accompanied by a little rain, the next day the winds generally come from North of N.N.E. or N.E., especially in August and September. The land winds are termed *Vientos de cabeza*, (head winds,) or *Vendavales*. These winds are generally light: they do not reach further than twenty or thirty leagues from the coast, and at this distance they blow from East or E.S.E.

Vera Cruz.—At Vera Cruz the winter season commences towards the middle of May, and terminates towards the end of July. Then there are frequent interruptions in the trade winds, much fog, and stormy weather. From the end of July to the middle of October, the period when northerly winds prevail, the storms are very heavy.

The most violent winds come from East, they, however, do not last long. Northerly winds prevail from the middle of October till March. The wind from this quarter generally falls at sunset, blowing strongest from nine o'clock in the morning till three in the afternoon. This is not the case if the wind only gets up in the afternoon or evening, in which case it continues to blow during the night, gradually increasing in force. At night, and after midnight, the wind changes, and shifts to N.W., blowing from the land. In this case if towards morning it veers to S.W. the North wind will not last, and the sea breeze will follow at the usual time, about nine or ten in the morning; but if this does not take place towards sunrise, or at latest at the beginning of tide, the North wind will again blow with as much force as on the preceding day; it is then called the North tide wind. The North winds often terminate by shifting to East, a guarantee of fine weather. If in the afternoon they veer to N.E., the sky will be cloudy the next morning; when the land breeze has come from South to West during the night, a sea breeze may be expected in the evening.

The weather then continues fine during five or six days; the longest period of fair weather with northerly winds. In the case of the winds backing from N.E. to N.N.E. and North, the weather is uncertain.* These considerations of the winds are important as affecting the approaches to the coast of Vera Cruz.

Coast of Yucatan from Vera Cruz to the Point of Arenas.—On the coast of Yucatan, from Vera Cruz to Arenas, we find, during the dry season, alternate land and sea breezes. The sea breeze from North, the land breeze from South, from seven or eight o'clock in the evening till eight or nine in the morning. The dry season lasts from September till April or May. The rainy season follows, and continues till September; it is announced by tornados and violent storms, which become more frequent in May and June. The great rains fall in July and August, being then continuous and very heavy. In this season there are sometimes strong winds from E.S.E., lasting three or four days.

The winds from North to N.E. begin in October; they are very strong in December and January, and gradually fail towards March; in general they are fresh and dry, and stronger than common breezes.

Coast from Point Arenas to Cape Catoche.—On that part of the coast comprised between Point Arenas and Cape Catoche, the seasons are nearly the same as the foregoing, only the general winds are from N.E., interrupted by strong North winds. In April tornados occur from N.E. to S.E. This squally weather lasts till September, during which sea breezes are found from N.N.W. to N.W. These breezes rise at eleven o'clock in the morning, and during the night veer to East and E.S.E., and afterwards to S.E.; these last may therefore be regarded as land breezes.

It has been observed that the stronger the winds blow from N.N.W. to N.W.-the more violent are the tornados which interrupt them.

On this part of the coast it has also been remarked that the rainy season is shorter than the neighbouring coast westward.

We now for a moment quit the coast of Cape Catoche, the southern boundary of the Gulf of Mexico, in order to consider the winds in some of the Antilles.

Antilles.—The N.E. trade wind prevails particularly over that portion of sea called the Carribbean Sea. When approaching the shores of these isles, however, disturbances are found in these winds that shall be now pointed out.

On the shores of the Great Antilles, Cuba, Jamaica, St. Domingo, and Porto Rico, the sea breeze blows regularly during the day, and the land breeze during the night. The land breezes are fresher than those observed near the coast, and are favourable for making passages from West to East in this sea.

In the Lesser Antilles land breezes are not met with, or at least

* Bernardo de Orta: *Derrotero de las Antillas.*

they are found at so short a distance from the shore as to be useless in navigation.

In these islands two seasons are observed,—the dry and the rainy. Their periods vary in the different islands; but it may be stated generally, that the first lasts from October to June, and the second from June to October. During the dry season the N.E. trade wind blows regularly and fresh, with a clear sky. From June to October, during the winter season, tornados and severe hurricanes are experienced, between the 15th of July and the 15th of October. In the Antilles the hurricanes blow from the West.

[This a necessary consequence of the focus of the hurricane passing to the northward of them, as it usually does.—ED.]

Hurricanes rarely penetrate into the Gulf of Mexico; some, however have crossed the gulf, and continued onward beyond Vera Cruz. Amongst others, those of the 18th of August, 1810, and June 23rd, 1831.

We quote the following statement of the course of the hurricane in the Atlantic from a little pocket treatise on Hurricanes, of our own. "In the Atlantic Ocean, it is shown by Redfield, that their average place of commencement is in the latitude of 15° N., and longitude 55° W., or about N.E. from the island of Trinidad. From thence they pursue a W.N.W. course, until arriving near the coast of Florida they follow the course of the Gulf Stream to the N.E., sweeping past the coast of the United States, and continuing far beyond the eastern limits of Newfoundland. Some, originating South of those, have maintained their western course beyond the Gulf of Mexico; and others, again, North of them, have assumed their N.E. course, passing between the Bermuda and the American coast. But the North Atlantic hurricane mostly commences N.E. of Trinidad, within the parallels of 10° and 20° N. and between 50° and 60° West longitude."*

Calms and Storms.—Under the wind off the high land which forms the greater part of the Antilles, calm is experienced interrupted by violent and very dangerous squalls, coming down from the declivities of the mountains; and it is only at two or three leagues off at sea that the regular breeze is again found. These tricks of the wind announce their approach by a shrill whistling, and sometimes by an agitation of the surface of the sea. They must not be trusted in sailing with the wind from the islands, and great care is necessary in looking to the sails. Vessels have been dismasted by these breezes, and many have been capsized even at the entrance of the bay where they had intended to anchor.

During winter strong tide rips are found in most of the bays of the Antilles, generally after calms or after light airs.

Cuba.—At Cuba the rainy season is from June to September, and the N.E. trade wind blows over the whole island from March to Octo-

* *Storm Compass; or Seaman's Hurricane Companion, by A. B. Becher, Commander, R.N.*, p. 5. Potter, Poultry.

ber. During the other months it takes frequently a northerly direction, changing to N.W.; it is then sometimes very strong. In the fine season, the sea breeze is regular on the North coast; it commences towards eleven o'clock or at noon, and towards evening gives place to the land breeze. It is found, however, that the trade wind prevails on this coast of the island, and that winds from South to East frequently prevail in the morning, and shift from E.N.E. to N.E. towards evening. At Havana the sea breeze generally sets in about ten o'clock in the morning.

On the South coast there are alternate land and sea breezes, the land wind commencing shortly after sunset.

(To be continued.)

The Life of Galileo.

[The history of Galileo is very well known and yet a condensed account of the life of this extraordinary man, fresh from the accomplished mind of Sir David Brewster, related with all the advantages possessed by this talented philosopher of a full knowledge of the acquisitions made to astronomical science in these advanced days, may not be unacceptable to the readers of the *Nautical* The following is from his *Life of Newton;* the appearance of which work was noted in our last number.—Ed.]

While his two predecessors were laying deeply and surely the foundations of physical astronomy, Galileo was preparing himself for extending widely the limits of the solar system, and exploring the structure of the bodies that compose it.

He was born at Pisa on the 15th February, 1564, and was descended from the noble family of Bonajuti. Although he exhibited an early passion for geometry, and had studied without a master the writings of Euclid and Archimedes, yet even after he was called to the mathematical chair at Pisa, in the twenty-fifth year of his age, he was more distinguished for his hostility to the Aristotelian philosophy than for his progress in original inquiry. In 1592 he was promoted to the same chair in the university by his talents, and diffusing around him a taste for science. With the exception of some minor contrivances, Galileo had made no discovery till he had entered his forty-fifth year, *an age at which Newton had completed all his discoveries.*

In 1609, the memorable year in which Kepler published his *New Astronomy,* Galileo paid that visit to Venice during which he heard of the telescope of Lippershey. The idea of so extraordinary an instrument at once filled his mind; and when he learned from Paris that it had an existence, he resolved instantly to realize it. The simple idea, indeed, was the invention, and Galileo's knowledge of optics was

sufficient to satisfy him that a convex lens at one end of a tube, with a concave one at the other, would bring objects nearer to his eye. The lenses were placed in the tube; the astronomer looked into the concave lens and saw the objects before it "pretty large and pretty near him."

This little toy, which magnified only *three* times lineally and *nine* times superficially, he carried iu triumph to Venice; where the chief magistrate obtained it in barter for the life-possession of his professorship and 180 florins as an increase of salary. The excitement produced on this occasion at Venice was of the most extraordinary kind; and on a subsequent occasion when Sirturi had made one of the instruments, the populace followed him with eager curiosity, and at last took possession of the tube till they had each witnessed its wondrous effects.

Galileo lost no time in availing himself of his new power. He made another telescope, which magnified about eight or nine times; and, sparing neither labour nor expense, he finally constructed an instrument so excellent as "to show things almost a thousand times larger (in surface), and above thirty times nearer to the eye."

There is, perhaps, no invention in science so extraordinary in its nature and so boundless in its influence as that of the telescope. To the uneducated man the power of bringing distant objects near to the eye must seem almost miraculous; and to the philosopher even, who comprehends the principles upon which it acts, it must ever appear one of the most elegant applications of science. To have been the first astronomer in whose hands such a power was placed was a preference to which Galileo owed much of his reputation.

Before the telescope was directed to the heavens it was impossible to distinguish a planet from a star. Even with his first instrument Galileo saw that Jupiter had a round appearance like the sun and moon; but on the 7th of January, 1610, when he used a telescope of superior power, he saw two little bright stars very near him, two to the right and one to the left of his disc. Though ranged in a line parallel to the ecliptic, he regarded them as ordinary stars; but having, on the 8th of January, accidentally directed his telescope to Jupiter, he was surprised to see the three stars to the west of the planet, and nearer one another than before,—a proof that they had a motion of their own. This fact did not excite his notice; and it was only after observing various changes in their relative position, and discovering a fourth on the 13th of January, that he was enabled to announce the discovery of the four satellites of Jupiter.

In continuing his observations with the telescope, Galileo discovered that Venus had the same crescent phases as the waxing and the waning moon;—that the sun has spots on his surface, which proved that he revolved round his axis;—that Saturn was not round, but had handles attached to his disc;—that the surface of the moon was covered with mountains and valleys, and that part of the margin of her disc occasionally appeared and disappeared;—that the milky-way consisted of numerous stars, which the unassisted eye was able to perceive;—

and that the apparent size of the stars arose from irradiation, or a spurious light, in consequence of which they were not magnified by the telescope.

These various discoveries furnished new arguments in support of the hypothesis of Copernicus; and we may now consider it as established by incontrovertible evidence, which ignorance or fanaticism only could resist, that the sun is placed in the centre of the system, in the focus of the elliptical or in the centre of the circular orbits of the planets, and that by some power, yet to be discovered, he guides them in their course, while the Earth and Jupiter exercise a similar influence over the satellites which accompany them.

But it is not merely from his astronomical discoveries, brilliant as they are, that Galileo claims a high place in the history of Newton's discoveries. His profound researches in mechanical science,—his determination of the law of acceleration in falling bodies, and his researches respecting the resistance and cohesion of solid bodies, the motion of projectiles, and the centre of gravity of solids, have ranked him among the most distinguished of our mechanical philosophers. The great step, however, which he made in mechanics was his discovery of the general laws of motion uniformly accelerated, which may be regarded as the basis of the theory of universal gravitation.

The current of Galileo's life had hitherto flowed in a smooth and undisturbed channel. His discoveries had placed him at the head of the great men of the age; and, with an income above his wants, he possessed both the means and the leisure for prosecuting his studies. Anxious, however, to propagate the great truths which he discovered, and by force of reason to make proselytes of his enemies, he involved himself in disputes which tried his temper and disturbed his peace. When argument failed to convince his opponents, he wielded against them the powerful weapons of ridicule and sarcasm; and he has thus marshalled against himself and his opinions the Aristotelian professors, the temporizing Jesuits, the political churchmen, and that timid section of the community who tremble at innovations, whether it be in religion or in science. The party of Galileo, who abetted him in his crusade against error, though weak in number, were strong in position and in zeal. His numerous pupils, occupying the principal chairs in the Italian universities, formed a devoted band who cherished his doctrines and idolized his genius. The enemies of religion followed the intellectual banner, and many princes and nobles who had smarted under ecclesiastical jurisdiction were willing to see it shorn of its power.

While these two parties were standing on the defensive, Galileo hoisted the first signal for war. In a letter to his friend and pupil Abbé Castelli, he proved that the scriptures were not intended to teach us science and philosophy, and that the expressions in the Bible were as irreconcileable with the Ptolemaic as with the Copernican system. In reply to this letter, Caccini, a Dominican friar, attacked Galileo from the pulpit; and so violent was his language that Maraffi, the General of the Dominican, expressed his regret that he should be im-

plicated "in the brutal conduct of thirty or forty thousand monks." Encouraged by this apology, Galileo launched another pamphlet, addressed to the Grand Duchess of Tuscany, in which he supports his views by quotations from the Fathers and by the conduct of the Roman Pontiff himself, (Paul 3rd,) in accepting the dedication of Copernicus' work. It was in vain to meet such arguments with any other weapon than that of civil power. It was decreed necessary either to crush the heresy or retire from the contest; and the church party determined to appeal to the Inquisition.

Various circumstances concurred to excite the suspicions of Galileo, and about the end of 1615, he set off for Rome; where he was lodged in the palace of the Tuscan ambassador. While Galileo was enjoying the hospitality of his friend, Caccini was preparing the evidence of his heresy; and in due time he was charged with maintaining the motion of the earth and the stability of the sun,—with teaching and publishing this heretical doctrine and with attempting to reconcile it to Scripture.

On the 25th February, 1615, the Inquisition assembled to take those charges into consideration; and, having no doubt of their truth, they desired that Galileo should be enjoined by Cardinal Bellarmine to renounce the obnoxious doctrines and to pledge himself that he would neither teach, publish, nor defend them in future. In the event of his refusing to obey this injunction, it was decreed that he should be thrown into prison. Galileo acquiesced in the sentence, and on the following day he renounced before the Cardinal his heretical opinions, abandoning the opinion of the earth's motion and pledging himself neither to defend nor teach it either in his writings or his conversations.

Although Galileo had made a narrow escape from the grsap of the Inquisition, he left Rome in 1616 with a suppressed hostility against the church, and his resolution to propagate the heresy seems to have been coeval with the vow by which he renounced it. Although he affected to bow to the decisions of theology, he never scrupled, either in his writings or his conversation, to denounce them with the severest invective.

The Lyncean academy, ever hostile to the church, encouraged him in this unwise procedure; and it was, doubtless, at their instigation that he took the daring step which brought him a second time to the bar of the Inquisition. Forgetting the pledges under which he lay,—the personal kindness of the Pope,—and the pecuniary obligations which he owed him,—he resolved to compose a work in which the Copernican system should be indirectly demonstrated. This work, entitled *The System of the World of Galileo, Galilée, &c.*, was completed in 1630, but was not published till 1632, owing to the difficulty of obtaining a licence to print it. It was dedicated to the Grand Duke of Tuscany; and, while the decree of the Inquisition was referred to in insulting and ironical language, the Ptolemaic system, the doctrine of the church, was assailed by arguments which admitted of no reply.

The Copernican doctrines, thus maintained, were eagerly received and widely disseminated, and the Church of Rome felt the shock thus given to its intellectual supremacy. Pope Urban 8th, though attached to Galileo, and friendly to science, was driven into a position from which he could not recede. The guardian of its faith, he mounted the ramparts of the church to defend the weakest of its bastions, and, with the artillery of the Inquisition, he silenced the batteries of its assailants. The Pope brought the obnoxious work under the eye of the Inquisition; and Galileo, advanced in years and infirm in health, was summoned before its stern tribunal.

He arrived in Rome the 14th of February, 1633; and soon after his arrival he was kindly visited by Cardinal Barberino, the Pope's nephew, and other friends of the church; who, though they felt the necessity of its interference, were anxious that it should be done with the least injury to Galileo and to science.

Early in April, when his examination in person took place, he was provided with apartments in the house of the Fiscal of the Inquisition; and to make this nominal confinement as agreeable as possible his table was provided by the Tuscan Ambassador, and his servant was allowed to sleep in an adjoining apartment. Even with these indulgences, however, Galileo could not brook the degradation under which he lay. A return of his complaint ruffled his temper and made him impatient for his release; and the Cardinal Barberino, having been made acquainted with his feelings, liberated the philosopher on his own responsibility, and on the 30th of April, after ten days' confinement, restored him to the hospitable roof of the Tuscan Ambassador.

It has been stated on authority which is considered unquestionable that during his personal examination Galileo was put to the torture, and that confessions were thus extorted which he had been unwilling to make. He acknowledged that the obnoxious dialogues were written by himself;—that he had obtained a licence to print them without informing the functionary who gave it;—and that he had been prohibited from publishing such opinions;—and, in order to excuse himself, he said that he had forgotten the injunction under which he lay not to teach in any manner the Copernican doctrines. After duly considering the confessions and excuses of their prisoner, the Inquisition appointed the 22nd of June as the day on which their sentence was to be pronounced.

In obedience to the summons, Galileo repaired to the Holy Office on the morning of the 21st. Clothed in a penitential dress, he was conducted on the 22nd to the convent of Minerva, where the Inquisition was assembled, and where an elaborate sentence was pronounced, which will ever be memorable in the history of science. Invoking the name of our Saviour and of the Holy Virgin, Galileo is declared to be a heretic in consequence of believing that the sun was the centre of the earth's orbit and did not move from east to west, and defending the opinion that the earth moved and was not the centre of the world. He is therefore charged with having incurred all the censures and

penalties enacted against such offences; but from all these he is to be absolved provided that with a sincere heart and faith unfeigned he abjures and curses the heresies he has maintained, as well as every other heresy against the catholic church. In order to prevent the recurrence of such crimes, it was also decreed that his work should be prohibited by a formal edict,—that he should be imprisoned during the pleasure of the Inquisition,—and that during the next three years he should recite weekly the seven penitential psalms. This sentence was subscribed by seven Cardinals, and on the same day Galileo signed the abjuration with the sentence imposed.

Clothed in the sackcloth of a repentant criminal, Galileo, at the age of seventy, fell upon his knees before the assembled Cardinals, and, laying his right hand on the Holy Evangelists, he invoked the divine assistance in abjuring and detesting and vowing never again to teach the doctrine of the earth's motion and the sun's stability. He pledged himself never again to propagate such heresies either in his conversation or in his writings, and he vowed that he would observe all the penances that had been inflicted upon him. What a mortifying picture does this scene present to us of moral infirmity and intellectual weakness! If we brand with infamy the unholy zeal of the inquisitorial conclave, what must we think when we behold the venerable sage, whose gray hairs were entwined with the chaplet of eternity, quailing under the fear of man and sacrificing the convictions of his conscience and the deductions of his reason, at the altar of a base superstition? Had Galileo added the courage of the martyr to the wisdom of the sage—had he carried the glance of his eye round the circle of his judges, and with uplifted hands called upon the living God to witness the truth and immutability of his opinions, he might have disarmed the bigotry of his enemies, and science would have achieved a memorable triumph.

The sentence of abjuration was publicly read at several universities. At Florence it was promulgated in the church of Santa Croce, and the friends and disciples of Galileo were summoned to the ceremonial, in order to witness the degradation of their master. But, though the church was thus anxious to maintain its authority, Galileo was personally treated with consideration, and even kindness. After remaining only four days in the dungeons of the Inquisition, he was, at the request of the Tuscan Ambassador, allowed to reside with him in his palace; and when his health began to suffer he was permitted to leave Rome and reside with his friend Piccolomilè, Archbishop of Sienna; under whose hospitable roof he completed his investigations respecting the resistance of solids. At the end of six months he was allowed to return to Florence, and before the close of the year he re-entered his house at Arcetri, where he spent the remainder of his days.

Although still a prisoner, Galileo had the happiness of being with his family and living under his own roof; but, like the other "spots of azure in his cloudy sky," it was ordained to be of short duration. It was now that he was justly characterized by the poet as "the starry Galileo with his woes." His favourite daughter, Maria, who, along

with her sister, had joined the convent of St. Matthew, near Arcetri, hastened to the filial duties which she had so long been prevented from discharging. She assumed the task of reciting weekly the seven penitential psalms which formed part of her father's sentence; but she had scarcely commenced her domestic toils when she was seized with a dangerous illness, which in a few weeks proved fatal. Galileo was laid prostrate by this heavy and unexpected blow. He was inconsolable for the loss of his daughter, and disease in various forms shook the frail tenement which philosophy had abandoned. Time, however, the only anodyne of sorrow, produced its usual effects, and Galileo felt himself able to travel to Florence for medical advice. The Pope refused him permission, and he remained at Arcetri from 1634 to 1638, preparing for the press his *Dialogues on Motion* and corresponding with the Dutch Government on his proposal to find the longitude by the eclipses of Jupiter's satellites.

Galileo, whose eyes had been gradually failing him since 1636, was struck with total blindness in 1638. "The noblest eye," as his friend Father Castelli expressed it, "was darkened,—an eye so privileged and gifted with such rare powers, that it may truly be said to have seen more than the eyes of all that are gone, and have opened the eyes of all that are to come." To the want of sight was soon added the want of hearing, and in consequence of the mental labour to which he had been subjected, "his head," as he himself said, "became too busy for his body," and hypochondriacal attacks, want of sleep, acute rheumatism, and palpitation of the heart broke down his constitution. His last illness, after two months' continuance, terminated fatally on the 8th of January, 1642, when he was in the seventy-eighth year of his age.

THE MASSACRE AT HANGO.

The following is the report, drawn up by Lieut. Geneste, of the circumstances attending the attack on the boat of H.M.S. *Cossack*, at Hango Head:—

London, Nov. 29th.

Sir,—In compliance with the order of the 22nd inst., received from you, directing me to transmit to you, for the information of the Lords Commissioners of the Admiralty, a full and detailed account of the circumstances attending the landing from the boat of H.M.S. *Cossack* at Hango Head, and of the attack made upon her by the Russian soldiers, I have the honour to state that on Tuesday the 5th of June last, when lying off Hango Head, in H.M.S. *Cossack*, I received orders from Capt. Fanshawe to proceed on shore in the cutter of that ship, with a flag of truce, to land five Finnish captains, Russian

subjects, and to communicate with the Russian officer or officers at that place, to inform him for what purpose I had come on shore, and also to acquaint him that we had received orders to take or destroy all the small Russian coasting vessels or boats found passing and repassing along the coast.

Capt. Fanshawe also informed me that he had given permission to the stewards to go in the boat, and that if the Russian officer whom I should meet on shore had no objection, and the inhabitants were willing to sell any eggs or poultry to them, I was to permit them to purchase these articles, but I was on no account to permit their being with me to interfere in any way with the performance of the duty on which I was sent; nor, if the things which they wished to purchase were not immediately at hand, were we to wait for them, nor on any account to permit them to detain the boat.

Having received my orders, I found the cutter at the gangway manned with the ordinary harbour boat's crew, of boys and young hands, she having another fighting boat's crew of older and stronger men, who were always sent in her when going away from the ship for warlike purposes, but who were not employed in this instance; the Finnish prisoners with their baggage being in the boat, as also the three stewards; Mr. Sullivan, midshipman of the boat; and Dr. Easton, who had obtained leave to come with the boat for the pleasure of the pull and for his own amusement.

The muskets belonging to the boat were in her, as is customary whenever a boat is sent away from the ship in war time in an enemy's waters. The boat's magazine was also in the boat, containing its usual complement: that is, only cartridges for the muskets, two small blue lights for signals, one small rocket for the same purpose, and one slow match. The muskets were in the bottom of the boat, under the baggage belonging to the prisoners; the crew had not their cartouche boxes on, they being attached to the muskets, and with them in the bottom of the boat.

As soon as we had left the ship the coxswain of the boat asked me if he should serve out the ammunition to the men, and if the muskets should be loaded, as is the usual custom on going away from the ship in war time? I replied, "Certainly not; that as we were going with a flag of truce we should not require them." In consequence of this order the magazine was not unlocked, and no ammunition was given out nor any musket loaded.

When a little distance from the ship, and at least a mile and a half from the shore, I ordered the flag of truce to be hoisted in the bow of the boat, it being the most conspicuous place, and it remained there during the whole time of our approach to the shore, equally visible as the boat herself.

The flag was of white bunting, attached to the end of a boarding-pike. As the boat approached the shore, I examined most attentively with my glasses the beach and neighbouring coast and rocks, to see if I could discern the presence of any Russian force; but nothing whatever could be observed to indicate there being any troops in the

neighbourhood. I was not, therefore, surprised that the flag of truce was not answered, as we had no reason to suppose that we should find any soldiers there.

The flag of truce not being answered in any way, and no signal of any kind being made, I of course concluded that there could not be any Russian troops in the neighbourhood, and therefore proceeded slowly to the shore, to fulfil my mission, the flag of truce being still kept in the most conspicuous position.

On arriving at the jetty, no person being visible except two women standing at the door of one of the houses, and one peasant who ran across between the two houses, I landed the Russian prisoners and their baggage, and, giving particular orders to Mr. Sullivan not to let any of the boat's crew leave the boat, proceeded to accomplish the remaining part of my mission, by communicating with the Russian lieutenant at the telegraph station, to acquaint him with the reason of my coming on shore close to his station, and to tell him our orders to put a stop to the coasting trade, as I have before mentioned.

The telegraph station was on the hill, immediately above where we landed on the jetty; the road to it ran round the bottom of the hill, in so doing approaching the houses on the beach, and being under three minutes' walk from the boat. The Russian prisoners accompanied me, in order to be delivered to the officer, as did also Dr. Easton. I also permitted the three stewards to follow me, but ordered them particularly to keep close to me, not to communicate with the inhabitants, nor attempt to purchase anything, even if offered, until I had given them permission, after having in the first place obtained the sanction of the Russian officer.

The stewards were dressed in plain clothes, as were the Russian prisoners, and they could in no way be distinguished from them. I beg to state that the stewards being with me did not in the least influence my proceedings; that I should have advanced to communicate with the officer at the telegraph station equally whether they had been with me or not; the consideration as to whether they should obtain a few eggs and poultry not being of the smallest moment. My intention was, on finishing my official communication with the Russian officer, to ask him if he had any objection to their obtaining anything that was for sale on the spot; and, if he had consented, I should have permitted them to do so, but should not have allowed them to go away from the station or detain the boat.

On moving from the boat I gave the flag of truce to Lorton, the midshipmen's steward, who carried it beside me, high and conspicuous in the air.

Being thus in the act of carrying out my obvious and imperative duty, and *bona fide* proceeding to find the nearest military authority, with whom the duty required me to communicate, under the full protection of the flag of truce, my astonishment may be imagined, when, before we had proceeded forty or fifty paces from the boat, a heavy fire was suddenly opened upon our small and utterly defenceless party, from all sides, by Russian soldiers, who, having hitherto lain carefully

and treacherously concealed, now first gave notice of their presence, as, after a murderous volley, they leaped from behind the rocks and advanced on us, uttering the most furious cries, and firing rapidly as they came.

Of our small party who were on the pier, several fell at the first fire; Lundstrum, one of the Finnish captains, called out in Russian to stop their firing, but was immediately shot down with a bullet through his head; three of the other Russian prisoners also fell wounded; and one, with Dr. Easton, leaped into the water and got under shelter of the pier.

The captain's and gunroom stewards were both killed. The midshipmen's steward, who carried the flag of truce, was shot down with a ball in the hip by the first fire. I immediately took the flag of truce from him, and holding it up in the air, and pointing to it, called out in French and English, and did all I could to prevent them firing on the boat.

Of the party who had landed I was the only one left standing in less than half a minute after the fire opened. For a moment the soldiers seemed puzzled and partially stopped their firing, but immediately afterwards resumed it harder than ever, advancing upon us with frightful yells.

Of the poor fellows in the boat many fell at the first fire, killed or wounded. One jumped immediately into the water and got under the jetty, by which means he escaped being hit. The others, seeing the numbers of the soldiers and the impossibility of resistance, not having even a loaded weapon or the powder to load one with, also jumped into the water and hung on the off side of the boat, keeping as far down in the water as possible for protection. But even there they were not safe, as though not a blow had been struck nor a shot fired on our part, and not a man was now visible in the boat, the Russian soldiers continued in the most barbarous manner to fire through and through the boat, until she was completely riddled, killing and wounding several of the poor fellows who were in the water on the off side.

In the meantime, on shore, the soldiers rushed down, and, not having succeeded in killing me with their balls, rushed at me with the bayonet; resistance from their numbers was, of course, useless, twenty being close round me, and many more behind; and at this moment, when their weapons were within a few feet of my breast, the Russian officer ran up almost breathless, and just got between me and his infuriated soldiers in time to keep them back and to save my life. I immediately showed him the flag of truce and spoke to him in French and English; he replied in French, and with a good accent, "*Je ne parle pas Francais.*" By his directions I was instantly seized by the soldiers, who at once deprived me of my sword and glasses, and took the boarding-pike with the flag of truce attached to it out of my hand. They then commenced pulling me off to the houses. I, of course, endeavouring to remain, trying to make the officer interfere to stop his men firing, who still in the most cold blooded manner continued to load and fire through the boat, in which, however, no person was visible, as the

killed and wounded men were in the bottom of the boat. They did not cease firing for some time, and then went down and got into the boat, and took prisoners the poor fellows who were on the other side of her, only two of whom had not been hit, and these two had their clothes pierced with balls. They then took the weapons which were in the bottom of the boat, and which they could not possibly have seen before they got into the boat, as also the magazine; and with these, and dragging their prisoners, wounded and unwounded, along with them, came up from the boat to the houses. Mr. Sullivan had also a most extraordinary escape; he was on the jetty, close by the boat, when the firing commenced, and moved up towards the end of it afterwards. He was not hit, although the balls ploughed up the earth all round him, and was taken prisoner almost at the same moment as myself.

I do not attribute our escape to any orders or wish on the part of the Russians to spare the officers' lives and make them prisoners, as the balls struck all round us, and they fired at us repeatedly when running in, some of the shots being fired within a few yards of us; and I should certainly have been bayonetted in a few seconds, had not the officer arrived at the moment he did.

Under the circumstances in which we were attacked, and from the nature of the ground, it was impossible to estimate with any degree of accuracy the number of the Russian soldiers engaged, but I should consider that at the lowest estimation there were from 150 to 200, besides the Cossacks, who appeared after the firing was over. It was also difficult to judge of the exact time that the firing continued, but I should say that from first to last it could not have been less than from seven to eight minutes, which, although the aim of the Russian soldiers was very bad, fully accounts for the extraordinary manner in which the boat was riddled, as was afterwards proved when the boat was recovered by H.M.S. *Cossack;* the four dead bodies found in her were each pierced with not less than five balls; and one poor fellow, who had been hit in two places in the leg, and had tied his handkerchief round it, (evidently when lying wounded in the bottom of the boat,) was afterwards struck by three balls in the body, and so killed.

As I was being dragged by the soldiers towards the houses, I encountered an elderly officer in the uniform of the Russian navy, whom I now saw for the first time, and who, I have since heard, was the lieutenant of the telegraph station. I immediately addressed him in French and English; he returned me no answer, but shook his fist, in which he carried a cane, in my face in the most insulting manner, although I was held by eight or ten soldiers.

Addressing the men who held me, he made them run me up towards the houses, he himself running beside us, while one of the Cossacks, who had now appeared on the scene, urged me forward by repeated blows of his lance on the back as he followed on his horse. On our arrival at the houses we found two small Russian carts ready at the door of the largest; the officer in the naval uniform gave directions for us to be bound, which was immediately done, by tying our arms

behind our backs with a piece of small rope, the officer himself superintending and assisting with his own hands to draw the cords tighter.

Mr. Sullivan and myself were then thrown on our backs in one of the carts, being also tied to the cart itself, and driven off at a rapid pace towards Eckness, with a Cossack escort. The men, after being bound in the same manner, and then tied together two and two, were hurried off on foot in the same direction, urged forward by blows of the Cossack lances behind, the slightly wounded and few that were unhurt being compelled to support and drag their more severely wounded comrades with them. During the time that we were being bound, the military officer was also present, but the older officer, in the naval uniform, evidently directed all the proceedings.

The soldiers who perpetrated this most barbarous outrage were not irregular troops or militia, but belonged to one of the best Russian regiments, the Grenadiers of Frederick William of Prussia, as they are called, the King of Prussia being their colonel. These troops had only come down from Eckness to Hango the same morning, and had only been a few hours at Hango when the affair occurred. After our men had proceeded some way on the road to Eckness, the Russians perceiving that it was impossible for the wounded men to march so far in their suffering state, (the distance being from twenty to twenty-five English miles,) procured carts, in which they were tied, and conveyed after Mr. Sullivan and myself to that place.

To return to those who had in the first place taken refuge under the jetty; they consisted of Dr. Easton, one Finnish captain, and one sailor from the boat, and Lorton, the midshipmen's steward, who (after being shot down by my side while carrying the flag of truce) had contrived to creep under the pier. These were not discovered by the Russian soldiers at that time, and remained in their concealment for more than two hours, considering us all killed, and fearing to come out until the departure of the Russian soldiers. Finding, at length, that the Russian soldiers had left the place, they came out. Dr. Easton wishing to dress Lorton's wound, as it was serious, before going off to the ship, they entered one of the Russian houses for that purpose; but, unfortunately, while they were so engaged, some Russian soldiers returned, and surrounding the house, took them all prisoners, and, placing them all in carts, conveyed them also to Eckness.

Most unaccountably, the soldiers still allowed the boat to remain in the same position, with, as they imagined, five dead bodies in her; but, happily, one man, John Brown, although severely wounded in two places, was not dead, and succeeded during the night in getting off from the shore, and was discovered by the *Cossack* next morning, as mentioned in Capt. Fanshawe's report.

When Mr. Sullivan and myself arrived within two miles of Eckness we found a Russian regiment encamped outside of the town. The officers of this regiment immediately cut the cords with which we had been bound, but not before they had left marks on our arms which were not effaced for more than three weeks; they also expressed much indignation at our being bound in so unnecessary and barbarous a manner.

We waited at this place until the arrival of General Mollar, the commanding officer of the district, who was expected the same afternoon. On his arrival I immediately told him the state of the case, and requested him to send at once a boat with a flag of truce to H.M.S. *Cossack*, to communicate with Capt. Fanshawe, and inform him of what had happened. He replied that it was not in his power to do so without permission from General de Berg, but that if I wrote a letter to Capt. Fanshawe he had no doubt General de Berg would forward it immediately from Helsingfors. General Mollar remained until the arrival of the men who were prisoners, and then we all proceeded with him to Eckness. In crossing the river to that place I perceived, placed in the same boat with myself, the arms which had been taken out of the cutter, as also the boarding-pike on which we had carried the flag of truce, but from which the flag was now removed.

On arriving at Eckness, the wounded men were placed in the hospital, and the unwounded in a house in the town, with a guard over them.

Mr. Sullivan and myself accompanied General Mollar to his house, where he inquired at greater length into the case. He appeared very much annoyed with the conduct of the Russian officers at Hango, and I have also reason to believe that he placed the young military officer under arrest the same evening, under which he was kept until General Mollar received orders from the higher authorities to release him.

Dr. Easton and the others who had been with him arrived at Eckness the same evening about ten o'clock.

Dr. Easton was allowed to see the wounded the next day, but was not permitted to remain with them, as he desired, being removed to Helsingfors two days afterwards.

Mr. Sullivan and myself were removed to Helsingfors on the second day after our arrival at Eckness. I immediately sent my letter for Capt. Fanshawe to General de Berg, and was informed it would be sent by the first opportunity, although it was not forwarded for nearly two months afterwards.

Mr. Sullivan, Dr. Easton, and myself were kept in close confinement to our rooms, with sentries at the doors, for five weeks after our capture. After that time we were treated more leniently and kindly.

As we were all separated, I could hear nothing of the fate of those who remained of my unfortunate boat's crew, until, on my arrival at Odessa, I found the unwounded men ready to go off in the same boat to H.M.S. *Spiteful*. They said, that after the first day they had been treated with moderate kindness.

Of the fate of the poor wounded fellows I have not as yet been able to hear anything. The names of those who fell in this unfortunate affair being already known to their lordships, it is unnecessary to repeat them in this place; suffice it to say, that in this murderous attack one Russian prisoner was killed, three were badly wounded, and one escaped by leaping under the jetty; of the total of seventeen English present, five were killed, five were severely wounded, three

escaped by being under the pier, and only four others remained unhurt; of these four, Mr. Sullivan and myself were taken prisoners on shore, and the other two were protected by keeping as much as possible out of sight, nearly covered by the water on the off side of the boat.

It only remains for me to hope that their lordships, in taking into consideration all the circumstances connected with this melancholy day, will perceive that no precaution was omitted on our part which is necessary and proper to be used on such occasions:—

1. That the flag of truce was clearly and distinctly exhibited at a long distance from the shore, and remained conspicuous during the whole time.

2. That the flag of truce being in no way answered, or any signal of any kind being made, and no signs of an armed force being visible, we had every reason to suppose that there was no armed force on the spot, and in these circumstances we acted in strict accordance with the laws of war in advancing to the shore.

3. That on reaching the shore, no Russian officer or authority being ready to meet us, but we knowing well that there was a lieutenant of the navy in the telegraph station immediately above us, I was perfectly authorised in advancing under the full protection of the flag of truce to communicate with him (he being the nearest naval or military authority), and so carrying out my imperative duty, and fulfill my mission, having, of course, taken all proper and necessary precautions that no communications should be held with the inhabitants without his sanction.

All our proceedings being thus in strict accordance with the laws of war, I hope it will plainly be seen that not the smallest pretext was afforded by us to the Russian officers and soldiers for their treacherous and premeditated ambush, and murderous and cowardly assault on a small unarmed party, defenceless, and incapable of defence, and under the full and legitimate protection of the flag whose sanctity has always been acknowledged in civilized warfare.

I have, &c.,

LOUIS GENESTE.

To the Secretary of the Admiralty.

Lieut. Geneste has forwarded to the Admiralty a report of the circumstances attending the attack on the boat of H.M.S. *Cossack*, at Hango Head. The report of the English lieutenant fully confirms the views we have previously expressed on the subject. Whatever may have been the irregularity, as to matters of form and etiquette, which the Commander of the *Cossack* was led into, the conduct of the Russians was, in every respect, dastardly and base. Lieut. Geneste, in the cutter of the *Cossack*, with its crew of four boys, the Finnish prisoners, three stewards, a midshipman, the surgeon, and himself, were permitted to approach the shore, and to land. Having done so, the Russians could easily have surrounded them, and, without firing a

shot, have taken them prisoners; instead of which, however, the men were enticed into an ambuscade, and a sudden fire was opened upon the small and defenceless band by about 200 Russian soldiers, who, after discharging their volley, leaped from behind the rocks, and rushed upon their victims. With what result is already too well known. The "Massacre of Hango," as detailed by Lieut. Geneste, must be recorded in history as a proof that even the brutalities of Sinope can be exceeded; and that it is possible, in the nineteenth century, to make war still more terrible and inhuman than it has hitherto been in the darkest periods of the darkest age.—*Shipping Gazette.* And that too by Russians.—ED. *N. M.*

CAPTAIN SIR EDWARD BELCHER'S VIEWS ON THE PROBABLE POSITION OF SIR JOHN FRANKLIN'S PARTY.

Dr. Rae, in his journey with the intent of completing the survey of the West coast of Boothia, met with some natives in Pelly Bay, from one of whom he learned that a party of white men had perished for want of food some distance to the westward, and not far beyond a large river containing many falls and rapids. The record of Dr. Rae runs:—

"In the spring of 1850 a party of white men, amounting to about forty, were seen by some Esquimaux killing seals near the north shore of King William Land (1), travelling southward over the ice and dragging a boat with them (2). None of the party could speak the Esquimaux language intelligibly, but by signs the natives understood that their vessels had been crushed by the ice, and that they were going (3) to where they expected to find deer to shoot. From the appearance of the men—all of whom, except one officer, looked thin (4)—they were supposed to be getting short of provisions, and they purchased a small seal from the natives.

"At a later date the same season, but previous to the breaking up of the ice, the bodies of some thirty persons were discovered on the continent and five on an island near it, about a long day's journey to the north-west of a large stream, which Dr. Rae considers to be no other than Back's Great Fish River. Some of the bodies had been buried, some were in a tent or tents, others under the boat, which had been turned over to form a shelter, and several lay about in different directions (5). Of those found on the island, one was supposed to have been an officer, as he had a telescope strapped over his shoulders and his double-barrelled gun lay underneath him.

"From the mutilated state of many of the corpses and the contents of the kettles (6), it is evident that our wretched countrymen had been driven to the last resource—cannibalism—as a means of prolonging existence.

"The ammunition had not failed, as it was turned out by the na-

tives; and a quantity of ball and shot was found below high water mark (7), having probably been left on the ice close to the beach.

"There must have been a number of watches, compasses, telescopes, guns, (several double-barrelled,) &c., (8); all of which appear to have been broken up, as he saw pieces of these different articles with the Esquimaux, and, together with some silver spoons and forks, purchased as many as he could get.

"None of the Esquimaux with whom he conversed had seen the white people (9), nor had they been at the place where the bodies were found, but had their information from those who had been there, and who had seen the party when travelling."

Until I had copied the above, I did not comprehend how much I had to object to. But Dr. Rae will not, I am sure, be offended at my dissecting, not his statement, but the evidence on which it has been founded, and which now forcibly brings to my mind my opinion, furnished to their Lordships on his arrival, and my views as to what was the course taken by the parties after their undoubted wreck. I shall, therefore, take my queries in number commencing with

No. 1.—King William Land will be found on the chart near the latitude 69° N., longitude 96° W.; therefore the party might have travelled through the neck termed Bellot Strait, and their vessels might have been crushed anywhere on the limit of Sir James Ross's southern search. This would agree with my original views—that they were seen in 1849 by the natives as reported.

No. 2.—None of the party, to my comprehension, spoke Esquimaux; therefore I infer that Sir J. Franklin and Mr. Oamer, who served in the *Blossom*, were not of the party; and yet

No. 3 argues, to my impression, a great power of communicating ideas,—"they were going to shoot where they expected to find deer."

No. 4.—The officer who was not *thin* would not, I think, sufficiently represent Sir J. Franklin—his peculiar features and forehead would have been remarked. Famine will reduce aged men more rapidly than powerful young men. But why should not all the individuals be thin if so short of provision at the date in question?

No. 5.—The account of the bodies found does not satisfy my mind. It is not in the nature of that race to permit any persons to pass untracked until they reach an adverse tribe. They would and did most assuredly follow them; or why, by mere chance, as it is intended to convey, did they so soon afterwards, and after so short travel, learn their fate?

"Some had been buried, some were in tents, others under the boat, several lay about in different directions." This was not late in the season but *before the ice broke up*. But it is clear that they were perfectly cognizant of more *after the ice broke up*, for they intimate that the shot and ball deposited on the ice had, when the ice thawed, sunk below high water mark!

On the island, one, supposed to be an officer, had his telescope strapped over his shoulder and his fowling-piece beneath him. This must have been from positive vision, not from information.

No. 6.—From the mutilated state of the bodies and the contents of the kettles, a fearful resort is intimated. In this I cannot rationally coincide. If such had been the deliberate act of starving men no vestiges would have been found in the kettles. As to fuel to cook, we have no evidence, but the boat was there. And it may be some consolation to the friends of officers, until we hear from the present searching party, to know that by this account he was not one of the victims.

Can all this refer to one hundred miles of coast-line? No. 4 makes the island *near to the mainland.*

No. 7.—A careful consideration of this portion satisfies me that the informants possessed a very intimate knowledge of every matter connected with this one party. They are too circumstantial as to the seasons, tides, and effects to have learned their story from narration. No! they were intimately conversant and connected with the fatal termination of the career of the entire crews, who were wrecked not far from the spot where he then stood. And it is reasonable to suppose that they wished him to seek in a contrary direction to where the catastrophe occurred for a previously fleeced remnant which could tell no tales!

No. 8.—"There must have been a number of watches, compasses, telescopes, guns, &c." Now we derive from the informants that only forty—one being an officer, who did not drag,—were seen; that these forty are found dead in the Great Fish River (clearly they were tracked thither); and that *one telescope* and *one gun* were noticed. But our nerves are not a little disturbed at this one party having in their possession *all the valuables of the two crews!*

Now, taking into consideration my own experience, the companion of my men for nearly forty years, and coupled with the knowledge of my late Arctic service, I confidently ask, Could such a number of watches, guns, or telescopes remain perfect much beyond one season? and would they be found amongst any forty men, one only being declared an officer? But look to the list annexed. No less than eleven watches are traced, and parts of surgical instruments.

No. 9.—Now the informants declare that they had never seen the white men, nor had they been at the place where the bodies were found. And (10) that they only saw the party when travelling!

Here follows the list of articles.

No man can for an instant imagine that the statements so very distinctly given by Dr. Rae are other than the result of his opinion, founded on his most anxious and untiring efforts to arrive at the truth. But I can clearly imagine that his anxiety to render the questions of his interpreter pertinent has led him to afford the wily Esquimaux a view of his purpose; and they, fearing punishment, have endeavoured to misdirect him from the true position where the disaster occurred. Where the collective treasure of those two vessels was found, there these same Esquimaux had been. But where the forty bodies may be discovered is, I fear, remote from the *proper* place for search. The

fear of detection may, possibly, thwart our endeavours, but some written evidence, I trust, may yet clear up the mystery.

Something more than bare opinion will be required for so far interfering with the convictions of Dr. Rae. But I have for quite as long a series of years been conversant with great detail of preparation for every kind of service. I know the difficulties of ice-travel, and I am now more conversant with the disposition and ability of men, under our latest improvements, to drag *useless weights*. I know the probable difficulties of ice disasters, and when I clearly perceive method, cool calculation, and the preservation of such valuables, I am impressed with the conviction that adequate provision for very extended travel was provided, and that before they became reduced every ounce of lumber would have been cast away. Nor in such an estimate, believing in the powers of the men engaged, am I prepared to concede that the scene of disaster can be more distant than two hundred miles from the position where the bodies are said to be.

With this distance, or three degrees of latitude (70° to 73°) in the compasses, they will be found within that radius, to my conviction within Prince Regent Inlet, and such an opinion was hazarded before I left this country. But with the radius of three degrees, 72° to 75°, equidistant from Cape Riley—from the spot where the bodies are said to be—and Igloolik, where I imagine one division has gone, will intersect the spot where I have imagined the disaster occurred.

In a letter of the 27th of October, and another of the 9th of November, I suggested the following:—

"That Sir J. Franklin met with disaster to the eastward of the meridian of Beechey Island, and that the traces found at Cape Riley were those of one division of the distressed crews.

That I never doubted the truth of the reports of the Esquimaux of Pond Bay, in 1849, that two ships were seen on the eastern side of Prince Regent Inlet, and that those two vessels were the *Erebus* and *Terror*. At that period I myself examined the Master of the vessel which brought the report.

That the tribes which then visited Pond Bay find their way by inland navigation through Cockburn Island, we now have almost indisputable evidence by the robbery of the depôt at Navy Board Inlet; and their crossing to Port Dundas, on the north side of Lancaster Strait, is particularly suspicious.

If the *Erebus* and *Terror* were blown out of Beechey Island Bay (as the only mode of clearing the ice), they might have got within the current and been driven down Prince Regent Inlet, and on the eastern side. And being wrecked well down this inlet, they would divide into three parties: one for Beechey Island, one for Pond Bay, and the last, headed, probably, by Sir J. Franklin, for the Hudson Bay posts. I reserve the small number for Sir John, because his experience would teach him the impossibility of subsisting any large number of men, even if they reached a post safely.

The sails cut up, leaving the bolt-ropes at Cape Riley, are, to my

mind, having been twice wrecked, undeniable proofs of the substitution of canvas for shoes; and the rake as clearly indicates its employment in collecting edible seaweed *(dulse)*, which abounds there, and which I freely used at Port Refuge in August, 1853. These ideas are long since recorded.

Of the eastern party, I firmly believe that some may have reached Igloolik, where Sir Edward Parry wintered, and have attempted to reach Pond Bay by the spring following.

But here a difficulty meets me which is somewhat suspicious. The Pond Bay tribe do not seem to have communicated with our whalers from the date of that eventful period, 1849; and yet evidence of a *late* visit was proved by my visit in September last, when I found remains of recent blubber!

In one of the old huts I found a skull, a European knife and tinned spoon, enveloped in seal and bird skin dresses; and it is rather a strange coincidence that the fitting of the knife to Esquimaux use is similar to one brought home by Dr. Rae.

It is still my firm conviction that the most reliable search would be from Captain Penny's position in Northumberland Inlet (Kemesok). From whence a communication might be effected with the several tribes, and more satisfactory evidence discovered."

Such was my communication; nor was this merely the result of Dr. Rae's report, as this narrative, unaltered from its original tenour, will evince. Had the squadron been released in 1853, four distinct positions would have been occupied between Navy Board Inlet and Kemesok, and the eastern questions satisfactorily determined.

Return of the American Arctic Expedition.

As soon as the vessels came to anchor off the Battery, Dr. Kane hurried ashore, and proceeded at once to the Astor House, where he was warmly welcomed by a host of friends and acquaintances. Every one crowded to see him, and for a few moments he was so completely surrounded and beset by eager inquirers, that it was with the greatest difficulty he could make his escape. When he at last succeeded in gaining the street, he, in company with a friend, got into a carriage and drove up to the residence of Mr. Henry Grinnell, in Bond Street. His arrival had been expected by Mr. Grinnell, who received him with such a welcome as only comes from the very depths of the heart.

"I have no Advance with me," said Dr. Kane, alluding to the loss of his vessel, which he was obliged to abandon in the ice.

"Never mind that," replied Mr. Grinnell, "so long as you are safe that is all we care about. Come into the parlour," he added, "and let us hear the whole story."

And Dr. Kane proceeded at once to relate the story of his second

voyage to the Arctic regions, the perils and dangers to which he was exposed, his wonderful adventures, and still more wonderful escapes. We give it as nearly in his own words as possible, stating, however, at his request, that his official account will be published as early as practicable, and that any errors or inaccuracies will be corrected in it. He was obliged, he said, to abandon the *Advance* in lat. 78° 45′, after having penetrated as far as 82° 30′, which was further than any other navigator had gone, with the exception of Capt. Parry, who reached the latitude of 83° 15′. While here he saw the Polynya or open sea, stretching away off to the North further than the eye could reach. This point he had reached after travelling eighty or ninety miles over the ice in sledges; but as an immense zone of it intervened between him and his vessel, it was impossible for him to prosecute his investigation further northward. For two winters the *Advance* was completely hemmed in; and as it became evident to him, from the condition of his men, that they could not survive another winter, he determined to leave her, and make the best of his way to the nearest settlement. He discovered about eighty new capes and twenty bays, and found land up as far as he was able to penetrate. The extreme northern boundary of this he named Grinnell Land, in honour of Mr. Henry Grinnell. The hardships they endured were of a fearful character, and at one time six out of their party of nineteen were so low that it was thought they could not survive. Of these, three died, and the rest were saved, after the most unremitting care and attention. One of these was Mr. Alstone, the carpenter, who died, while crossing over the ice, of lockjaw, superinduced by the intense cold. The other two were frost-bitten. The lockjaw, Dr. Kane said, was very prevalent.

The party, after making their way over thirteen hundred miles of ice, arrived at Leively or Godhaven, and had taken passage in a Danish brig, named the *Maria*, when the *Release* made her appearance. Their joy at meeting their countrymen here, can better be imagined than described.

They lost no time, it is almost needless to state, in taking their departure, and after a favourable voyage arrived within sight of our shores, where they were hailed by the steam ship *Union* about sixty miles East of Sandy Hook.

The expedition succeeded in crossing Melville Bay and reaching the headlands of Smith Sound as early as the 6th of August, 1853. Finding the ice to the North completely impenetrable, they were forced to attempt a temporary passage along the coast, where the rapid tides, running at the rate of four knots an hour, with a rise and fall of sixteen feet, had worn a temporary opening. Previous to taking this step, which involved great responsibility, and which was, in fact, equivalent to sacrificing the vessel, a Francis metallic boat, with a canoe of provisions, was concealed as a means of retreat.

The penetration of the pack ice was attended by many obstacles. The vessel grounded with every tide, and but for her extreme strength would not have been able to sustain the shocks of the ice. She was twice on her beam ends, and once on fire from the upsetting of the

stoves. Some idea of this navigation may be formed from the fact of her losing her jibboom, best bower anchor, and bulwarks, besides about 600 fathoms of warping line. They were cheered, however, by a small daily progress; and by the 10th of September, 1853, had succeeded in gaining the northern face of Greenland, at a point never reached before. Here the young ice froze around the vessel, and compelled them to seek a winter asylum.

The winter gave them a degree of cold much below any of previous registration on record. Whiskey froze in November, and for four months in the year mercury was solid daily. The mean animal temperature was five degrees below zero, summer and winter included. This, without a doubt, was the greatest cold ever experienced by man, as the seat of their winter quarters was nearest the pole.

The scurvy was readily controlled, but the most novel feature of the winter was a tetanus, or lockjaw, which defied all treatment. It carried away fifty-seven of their best sledge dogs, and was altogether a frightful scourge.

The operation of search commenced as early as March. The first parties, under the personal charge of Dr. Kane, crossing the ice at temperatures of minus 57 below zero. The loss of their dogs obliged them, as an only alternative, to adopt this early travel. Many of the party were frost-bitten, and underwent amputation of the toes. It was by means of these efforts that the expedition succeeded in bringing back their important results. The parties were in the field as late as the 10th of July, only ceasing from labour when the winter darkness made it impossible to travel.

Geographical Results.

Greenland has been followed and surveyed by Dr. Kane towards the Atlantic, with a coast line fronting due North, until a stupendous glacier absolutely checked their progress. This mass of ice rose in a lofty precipice, 500 feet high, abutting into the sea. It undoubtedly is the only barrier between Greenland and the Atlantic, it is an effectual barrier to all future explorations.

1. This glacier, in spite of the difficulty of falling bergs, was followed out to sea by means of sledges, the party rafting themselves across open water spaces on masses of ice. In this way they succeeded in travelling eighty miles along its base, and traced it into a new northern land. This glacier is, we believe, the largest ever discovered by any previous navigator.

2. This new land thus cemented to Greenland by protruding ice, was named Washington. The large bay which intervenes between it and Greenland bears, we believe, the name of Mr. Peabody, of Baltimore, one of the projectors of the expedition. This icy connection of the old and new worlds seems to us a feature of peculiar interest.

3. The range of the sledge journeys may be understood from the fact that the entire circuit of Smith Sound has been effected, and its shores completely charted.

4. But the real discovery of the expedition is the open Polar Sea. The channel leading to these waters was entirely free from ice, and the mysterious feature was rendered more remarkable by the existence of a belt of solid ice, extending one hundred and twenty-five miles to the southward. This sea verifies the views of Dr. Kane, as expressed to the Geographical Society, before his departure. The lashing of the surf against this frozen beach of ice, was impressive beyond description. Several gentlemen with whom we have conversed, speak of this as one of the most remarkable sights which they observed during the expedition. An area of three thousand square miles has been seen entirely free from ice, and was named after the Hon. J. P. Kennedy, late Secretary of the Navy, under whose auspices the expedition was undertaken.

The land to the North and West of this channel has been charted as high as 82° 30′. This is the nearest land to the Pole yet known. It bears the name of Mr. Henry Grinnel, the founder of the enterprise.

The Winter of 1854–5.

The extreme severity of the previous season made it evident that the brig could not be liberated before the winter set in. She was fast impounded in the centre of a large field of ice. The provisions, although abundant, were not calculated to resist scurvy, and the fuel, owing to the emergency of the previous winter, was deficient in quantity. Under these circumstances, Dr. Kane, with a party of volunteers, on an attempt to reach the mouth of Lancaster Sound, in hopes of meeting the English expedition and thus giving relief to his associates, passed in an open boat over the track of Baffin's travel, riding out a heavy gale. They found an uninterrupted barrier of ice, extending in one great horseshoe from Jones to Murchison Sound, and were forced after various escapes to return to the brig.

During the winter which ensued they adopted the habits of the Esquimaux, living upon raw walrus meat, and surrounding themselves by walls of moss. In spite of these precautions the scurvy advanced with steady progress, but by the aid of a single team of dogs Dr. Kane succeeded in effecting a communication with a settlement of Esquimaux seventy miles to the southward, and by organising a hunt relieved the party. At one time every man of the expedition, except Dr. Kane and Mr. Bonsel, was confined to his bank with scurvy; but by a providential interposition the party escaped without a death.

Escape to the South.

The great belt of ice made it clear that no relief expeditions from the South could reach the party in time to prevent the imprisonment of a third winter, which, with their deficiencies of fuel, would have proved most disastrous, if not fatal. Under these circumstances, Dr. Kane wisely determined to abandon his brig, and attempt to escape to the South by a combination of boats and sledges. In accordance with

this view they left the brig on the 17th of May, the temperature at that time being five degrees below zero. They crossed a belt of ice eighty-one miles in diameter, dragging the boats behind them, and carrying four of their sick comrades by means of a dog sledge. After an actual travel of 361 miles, they reached Cape Alexander and embarked in open water. Their guns supplied them with animal food, no provisions being carried in the boat, excepting breadstuffs and tallow.

From Cape Alexander they travelled to the southward, sometimes over ice, sometimes through water, shooting duck and seal, and collecting enough eggs to keep the party in good condition. At Cape York they burned up their spare boats and sledges for fuel and left the coast, striking out into the open sea of Melville Bay, steering for the North Danish settlements of Greenland. Here they were providentially landed on the 6th of August, in vigorous health, after their travel of 1,300 miles, and eighty-one days of constant exposure. From Upernivik, the largest of these settlements, they took passage in a Danish trading vessel for England.

By great good fortune they touched at Disco, where they were met by Capt. Harstein's expedition. This searching expedition having found the ice of Smith Sound still unbroken, but having communicated with the Esquimaux, had heard of the departure of Dr. Kane, and retraced their steps.

The expedition has to mourn the loss of three of its comrades, two of whom perished by lockjaw, and one from abscess following a frozen extremity. They may be said to have fallen in the direct discharge of their duty. Their names are acting carpenter Christian Ohlsen, Jefferson Baker and Peter Shubert, volunteers.

Arrival of the "Rattlesnake."

The last of the Arctic Discovery ships, under the command of Captain Trollope, has just arrived, and is paying off at Plymouth.

It will be remembered that she sailed from England with supplies for the *Plover*, Capt. Maguire, and passed a winter in the ice at Port Clarence, during which time Capt. Trollope made an extended sledge journey to the southward.

It is not a little gratifying to reflect that all who have been employed on the several Arctic searching expeditions have escaped the perils necessarily attending the service, and that only one life has been lost by accident,—that of the lamented Bellot.

Destruction of Russian Stores in the Sea of Azof.

H.M. steam-sloop *Vesuvius*, off Gheisk, Nov. 7th.

Sir,—After dark, on the evening of the 3rd inst., the squadron under my command was assembled and anchored in sixteen feet water off Gheisk-Liman, and I made arrangements for the morrow to operate against the extensive collection of corn, forage, and fuel belonging to the enemy, stacked along its shores, so as to distract the attention of the large force which, from previous observation, I knew to be in the neighbourhood.

Under Lieutenant Ross of the *Weser*, I placed the *Curlew*, in the temporary charge of Lieut. Miall, and the *Ardent*, in charge of Mr. Tilly, Second-Master, each vessel having sufficient men left in her to weigh an anchor or fight a gun, and man a few boats, giving orders to Lieut. Ross to close in on the northern side of Gheisk, and to be prepared to co-operate with me inside the Liman.

The *Vesuvius* I left in the offing, denuded of every available person; and embarking officers and men, as in the annexed list, from the *Vesuvius*, the *Curlew*, the *Weser*, and the *Ardent*, with their boats, we left at daylight, towed by H.M. gunboats—the *Recruit*, Lieut. G. Day; the *Boxer*, Lieut. S. P. Townsend; the *Cracker*, Lieut. J. H. Marryat; the *Clinker*, Lieut. J. S. Hudson.

By 6.30 a.m. the flotilla was off Vodina, three miles north of Glofira. Here long tiers of corn stacks and much fuel was stored along the coast, with a Cossack guard for its protection. I immediately detached Commander Kennedy with the boats, covering him with the gun-vessels, and in a short time all was in flames, and the party cleverly re-embarked at the moment that a large body of Cossacks rode up from Lazalnite.

The town of Glofira became the next point of attack; it was greatly changed in appearance since visited by Captain Rowley Lambert in July last. Corn stacks, for some miles in extent, might now be seen along its southern and eastern face, placed close to the water's edge ready for transport, and between the rows of houses tier on tier were to be seen.

An intrenchment had been cut along the edge of the cliff commanding the spit; large bodies of dismounted cavalry were seen lining it, and armed men showed in the rear of every house.

To endeavour to flank the defences, as well as destroy the corn stacks stored on a high hill east of Glofira, I despatched Commander Kennedy, with the boats of H.M.S. *Curlew*, a paddle-box boat and cutter of the *Vesuvius*, the whole towed by the *Clinker*, Lieut. Hudson, with orders to turn the spit end and then attack in that direction, after giving a certain time to allow the enemy's attention to be divided by the other attack. The gunboats *Recruit*, *Grinder*, *Boxer*, and *Cracker* opening fire on the entrenchments with Shrapnell shell, and on the corn ricks with carcases.

As the enemy could only be dislodged from the extreme west, and the carcases did not answer well, and moreover endangered the whole town, I despatched Lieuts. Day and Campion, with the small force of marines available, a howitzer boat and two rocket boats, to aid more effectually in carrying out my object.

Lieut. Campion, with Mr. Verey, Gunner, charging at the head of the marines, supported by Lieut. Day and the seamen, all being under a sharp fire of musketry, succeeded in driving the enemy, with considerable loss, out of their trench work, and captured a small brass piece, and then steadily forced them back, with loss, from store to store, until the whole of the vast quantity of corn, stacked ready for thrashing and transport, was in flames.

The gallant manner in which Lieut. Campion led the marines deserves to be brought under your notice.

Seeing the enemy collecting a number of men, ready to charge our men if they advanced beyond a ravine on the east face of the town, I recalled my force, and had the satisfaction of seeing all embarked, with only one man wounded.

The vessels off Gheisk were now seen to be engaged, Lieut. Ross, of the *Weser*, having placed them in capital positions; and, as the enemy moved down large bodies of troops, especially cavalry, to resist his landing, and opened fire on him, he, very unwillingly, had to fire on the town to dislodge them.

The proceedings of Lieut. Ross were ably executed, and he fully succeeded in keeping in check a heavy body of cavalry, which might have much incommoded the small force under Commander Kennedy, who, by the most strenuous exertions, had reached his position, and finding the cliff too steep to scale in the face of a large number of troops, who were firing on him from its crest, he very judiciously executed the duty I had entrusted to him with the gun and the carcass rockets of the ship's boats, setting every store in flames, except one large Government building considerably in the rear.

Commander Kennedy speaks in the highest terms of his party, for the shallowness of the water obliged the crews of the boats to be rowing and wading through the water from noon until midnight, the season too being now very cold.

Throughout the night the stores were burning fiercely, a sheet of flames extending fully two miles, but the town of Glofira, except where the troops had used the houses against us, remained untouched.

At an early hour on the 6th of November we weighed and proceeded into the Liman, steering towards Gheisk; the valuable services of Mr. George Perry, Acting Master of the *Vesuvius*, and Mr. Parker, Second Master of the *Recruit*, came here into play; and at an early period I had the satisfaction of seeing all the gunboats anchored just in their own draught of water, within long gunshot of the east extreme of Gheisk and the neighbouring steppe, along the edge of which, for four miles, corn and hay were stacked in quantities far beyond what I had conceived to be possible, and at the base of the steppe, as well as that part of the spit commanded by the town, timber yards, fish stores, boats, &c., in numbers were accumulated.

To attack upon as many points as possible was, I thought, the only way to foil the troops that had now had thirty-six hours to prepare for us. The gunboats *Grinder*, *Boxer*, *Cracker*, and *Clinker* were left to cover the landing party. To Lieut. Ross, of the *Weser*, I signalled to prepare to land, and divided the force in the Liman into three bodies; the left, under Lieuts. Day and Townsend, consisted of boats and men of *Recruit* and *Boxer*; the centre I intrusted to Commander Kennedy, having under him Lieuts. Hamilton, Campion, Marryat, and Mayne, with all the boats of the *Curlew*, *Ardent*, *Grinder*, and *Cracker*, and port rockets and gunboats of the *Vesuvius*, in charge of the officers named in the margin [Mr. Armstrong, Mate; Mr. Scott, Gunner; Mr. Verey, Gunner]; the right division, under Lieut. Chetham Strode and Lieut. Hudson, consisted of the starboard gunboats of the *Vesuvius*, and those of the *Clinker*, together with some marines, Mr. R. Farquharson, Midshipman, in charge of the latter. Lieut. Ross, on the west side of Gheisk Spit, had the boats and small-arm men of the *Weser*, with a small force from the *Curlew* and the *Ardent*, under Lieut. Miall and Mr. Tilly, Second Master, in readiness to co-operate.

The different parties pulled in and effected a landing at appointed places, fully a mile apart; the Russian troops, within light breastworks, attempted

to prevent them, but failed, and in a few moments a screen of flames and smoke rolling from our men towards the enemy prevented the latter seeing where or how to manœuvre in order to cut off any of our small detachments.

On the right and centre the enemy mustered strongest, and at one time, observing a column of some 1,500 Cossacks moving rapidly off to the left, I directed Commander Kennedy, who by that time had connected his fires with those of Lieut. Day, to re-embark all but the marines, and with them to proceed to his right, and I reinforced him with the marines of the *Recruit* and the *Weser*, under Lieut. Campion. This answered perfectly; the enemy arrived too late to save anything on the left, while our men steadily worked towards the right division, under Lieuts. Strode and Ross, who, in spite of a heavy but badly directed fire from the houses on the heights, steadily held their ground and effectually destroyed a great accumulation of materials for boat and ship-building, fish stores, cavalry camp gear, and granaries.

When everything but the town of Gheisk was destroyed I ordered the embarkation to take place, and detached some boats to cover Lieut. Ross, between whom and his boat the enemy were throwing a body of men, who, by their uniform, I believed to be regular infantry.

By two p.m. everything was finished, and all the parties safely re-embarked on board their respective gunboats, the casualties amounting to only six men wounded in all, one of them dangerously, and another severely.

Nothing further being left within our reach in Gheisk-Liman, except the store of corn which escaped the previous day at Glofira, I therefore ordered Commander Kennedy, with the moiety of the boats, to return to their respective ships, and remained with the *Recruit*, *Ardent*, *Boxer*, and *Cracker's* boats to finish what had escaped east of Glofira.

On the 6th the weather, which had favoured us most providentially, changed, fogs and strong breezes came on; but directly I was able the rocket boats and carcases were again employed upon Glofira until the fires extinguished yesterday were relighted, and another extensive accumulation of corn in flames; I then weighed and returned to the *Vesuvius*, reaching her the same afternoon.

I despair of being able to convey to you any idea of the extraordinary quantity of corn, rye, hay, wood, and other supplies so necessary for the existence of Russian armies both in the Caucasus and the Crimea, which it has been our good fortune to destroy.

That these vast stores should have been collected here, so close to the sea, while we were still in the neighbourhood is only to be accounted for by their supposing that they could not be reached by us, and, judging by the position the squadron under the late Captain Edmund Lyons took up in May last, the Russians had established a camp and fortified their town only to meet a similar attack.

During these proceedings we never had more than 200 men engaged; the enemy had, from the concurrent testimony of Lieuts. Ross and Strode, and from my own observation, from 3,000 to 4,000 men in Gheisk alone.

Where every officer exerted himself to the utmost and did all and more than I expected of them, it would be invidious for me to mention one more than another; it was their coolness, zeal, and example that rendered steady many of the younger men who for the first time were under fire, and but for their general intelligence and zeal the enemy would have easily frustrated our operations.

The zeal, good conduct, and gallantry of the men were deserving of every praise.

Commander Kennedy, my second in command, gave me the most valuable co-operation, and from him, as well as the reports of the other officers, I feel

justified in placing before you the names of the following warrant officers and men who, under fire, behaved remarkably well, viz.:—Mr. Richard Verey, Acting Gunner of H.M.S. *Ardent;* Thomas Kerr, Gunner, Royal Marine Artillery, H.M.S. *Vesuvius;* Peter Hanlan, A.B., H.M.S. *Curlew;* David Barry, A.B., H.M.S. *Cracker.*

The enclosed plan, illustrative of our operations, by Mr. George Perry, Acting Master of the *Vesuvius*, will, I trust be of use, and I beg you will allow me to call your attention to the unvarying zeal of that officer.

I have, &c.,

SHERARD OSBORN,
Captain and senior officer in the Sea of Azof.

Rear-Admiral Sir E. Lyons, Bart., G.C.B.

United Service Gazette.

THE USE OF THE LEAD.

Liverpool, Wednesday.

The following important letter has been received by the Secretary of the Liverpool Underwriters' Association, (Thomas Court, Esq.,) from the Board of Trade, in reply to a communication from the former body, regarding the necessity of forcing upon shipmasters the frequent use of the lead under every circumstance.

Office of Committee of Privy Council for Trade,
Marine Department, November 20th, 1855.

Sir,—I am directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of your letter of the 9th inst., relative to the neglect of shipmasters to use the lead, and stating that the Liverpool Underwriters' Association are of opinion that an important advantage would be gained were the board to issue a notice to masters of vessels that such neglect would be considered as misconduct.

In reply, I am to request you to inform the Underwriters' Association that my lords have directed their serious attention to the many cases of shipwreck which have recently been investigated under the provisions of the Merchant Shipping Act, 1854, in most of which, as they conceive, the casualty might have been avoided had the simple and obvious precaution of taking soundings been adopted.

My lords are impressed with the belief that from a desire to avoid trouble and delay, or for other reasons, the proper use of the lead, even in thick or foggy weather, or when upon a dangerous coast, has become so habitually neglected in many branches of the merchant service, that masters appear no longer to look upon it as a necessary part of their duty.

My lords gladly take this opportunity of expressing their decided opinion that such conduct cannot be justified by any custom or practice however prevalent, and the fact that this neglect has become common, affords, in their lordships' opinion, the strongest reason for taking every possible means to check it, and they believe that there would be great public benefit and little individual hardship in visiting with the severest penalties persons who are found guilty of a fault so fatal in its consequences.

My lords have no doubt, from the terms of your letter, that the Underwriters' Association will concur with them in the views they take, and they are glad to have this opportunity of expressing these views, and of intimating

in as public a manner as possible, their intention to use all the means with which the law has entrusted them to enforce the proper use of the lead on board merchant vessels.

I have, &c.,

F. H. FARMER.

The Secretary of the Underwriters' Association, Liverpool.

The following we were unable to find room for in our last number.

LOSS OF THE LOCHMABEN CASTLE.

The following letter has been forwarded from the Marine Department of the Committee of Privy Council for Trade:—

Office of Committee of Privy Council for Trade,
Marine Department, 6th Nov. 1855.

Sir,—I am directed by the Lords of the Committee of Privy Council for Trade to inform you that my lords have had under their consideration the report on the investigation lately held into the loss and abandonment of the *Lochmaben Castle*, of which you were the master.

In that report it is stated that the *Lochmaben Castle* was lost by the default of the master in omitting to take soundings, but the Court having been of opinion that this omission was an error of judgment on the part of the master, my lords have not felt themselves justified in cancelling your certificate, which they direct me herewith to return to you.

I am at the same time to point out to you that, in the opinion of their lordships, you committed a serious error in not using the lead; thereby endangering the lives of upwards of 600 human beings, and losing a fine ship with a valuable cargo; and my lords trust that you will see the necessity of acting more carefully in future, should the command of another ship be placed in your hands.

I am, &c.,

JAMES BOOTH.

To Mr. James Turner, late Master of the *Lochmaben Castle*.

THE RECENT TREATY WITH SWEDEN AND NORWAY.

His Majesty the King of Sweden and Norway engages himself moreover not to cede to Russia any right of pasturage, or fishing ground, or of any other nature whatsoever, as well for the said territories as for the coast of Sweden and Norway, and to reject any claim *(pretension)* Russia might raise to establish the existence of any of the above named rights.

Art. 2. In case Russia should make any proposition to his Majesty the King of Sweden and Norway, or any demand with a view to obtain either the cession or exchange of any portion whatever of territory belonging to the Crowns of Sweden and Norway, be it the permission to occupy certain points of the said territory, or the cession of fishing or pasturage rights, or of any other, on those same territories, or on the coast of Sweden and Norway, his Majesty the King of Sweden and Norway engages himself to communicate immediately such proposition to his Majesty the Emperor of the French and her Majesty the Queen of England; and their said Majesties take on their part the engagement to provide his Majesty the King of Sweden and Norway with sufficient naval and military forces to co-operate with a view to resist the claims or aggressions of Russia.

The nature, the importance, and the destination of the forces in question shall, the case occurring, be decided by a common agreement between the three Powers.

It is impossible to estimate too highly the advantages to be derived from this very satisfactory arrangement, which effectually limits the aggressive propensities of Russia. She is, in fact, thereby virtually checkmated, and must either abandon a very important portion of the traditional policy handed down by Peter and by Catherine, or be prepared to meet the combined forces of England, France, and Sweden.

NAUTICAL NOTICES.

COAST OF CALIFORNIA—*Dangers.*

21, Portland Street, Stepney, Nov. 26th.

Sir,—I beg to hand you the following particulars of an extensive shoal, between Mazatlan and the Gulph of California, on the West Coast of Mexico :—

About four o'clock on the morning of the 8th of July, 1854, stretching down on starboard tack from La Paz Bay to Mazatlan, with the wind from the South to S. b. E., very light. The chief officer informed me he heard very distant thunder, but different to the sound of thunder in general. In about half an hour he came again and said he thought he heard breakers to the northward; this I thought impossible, except caused by some strong current. I ordered him to take a cast of the lead, (which is always on deck when near any land,) he did so, and found only seven fathoms, where upwards of 30 fathoms are laid down; keeping the lead going, and daylight coming on, kept our reach to the E.S.E., until it gradually shoaled to 4½ fathoms, when seeing the shoal about a third of a mile from us, tacked ship to W. S. W. Being very light airs, a sea smooth, got the boat out and towed off, gradually deepening our water to 6 fathoms, about two-thirds of a mile off the shoal, which is entirely composed of hills of sand, the largest about two to three feet above the water. We could now see the huts on shore; and having a Spaniard on board from the shore who knew the whole of the coast, we were certain of our position. At this time Altata Point bore about N.E. by compass, distant from three to four leagues.

The shoal at the south-east end appeared to run in towards Altata Point, and to the northward about N.W.b.N. The Spaniard informed me that the shoal extends from Altata, lat. 24° 50′ N., long. 108° 6′ W. to Macapule Point or river, lat. 25° 27′ N., long. 109° 2′ W., a distance of twenty leagues; he stated there was a narrow channel close in shore for coasters, also that some of our men of war had been in the channel taking in specie. If *this be true*, they ought to have reported this extensive and dangerous shoal.

And I was informed by the master of a coasting vessel that a rock under water lies off Cerralbo Island. (Lat. 24° 30′ N., long. 108° 6′ W.) N.W. six miles.

And also by another party that a ledge of rocks lies off Cape Corrientes. (Lat. 20° 26′ N., long. 105° 38° W.) eight to twelve miles off the Cape, bearing about E.N.E. from them, the channel within the rocks is quite clear.

I remain, &c.

S. RICHMOND.

P.S.—Allow me to say that I think the government ought not to allow the chart department out of their hands. I have had several occasions to correct the late Mr. Norie's charts

Earthquake at Sea.

Off Dover.

Sir,—I struck with the *Chrysolite* this passage in 0° 56′ S., 22° 38′ 30″ W., drawing sixteen and a half feet, four days from Ascension, by mean of three good chronometers, sights for altitudes taken within four minutes after striking, and lat. from a moderately good mer. altitude. To look at Maury's chart of deep sea soundings in this neighbourhood, who would think of dangers. This must either be part of the French frigate *La Pacifique* reef in lat. 0° 42′ S., long. 22° 47′ W., or of Crown Reef, lat. 0° 57′ S., long. 23° 19.′ I rather think the latter. There can be no doubt this is the top of a sub-marine mountain, with all due deference to the American officers and their sounding.

On my passage out I passed round the south end of Angour on the 6th of April, at about two miles' distance, saw breakers and a few black rocks show occasionally for three quarters of a mile of the south point, also a reef distinctly seen for a good half mile farther. In fact, I just gave the reef a safe berth; had a note from Capt. Eastway, who had, with his crew, been on the island sixteen months, and a letter enclosed for his owner in Canton, to be taken off the island, with the portion of cargo and stores saved, his vessel having been in a hurricane, and afterwards sunk with him in Corror Harbour.

On the 14th of July, 1855, passed to leeward of the island Mereire. There is a reef stretches from both ends of this isle a considerable distance, say over a mile, and a rock a good mile off, its N. N. E. side shewing in the hollow of the sea as a round black lump, say about the size of a whale.

I remain &c.,

A. M'Clellan.

[The following appears to be a similar report of earthquake in the same locality.—Ed.]

Capt. Hutchinson informed me that in lat. 0° 25′ S., long. 20° 9′ W. (Greenwich), his ship struck twice, but after a few moments of alarm she went clear. There was no change in the colour of the water, nor any breakers visible. The ship was drawing eleven feet of water. Capt. Hutchinson was of opinion that it was the Silhoveth rock, which is marked in the English charts, and upon which a French ship touched in 1775. Capt. Bosquet passed subsequently within ten miles of the spot, but did not observe anything usual. —*Shipping Gazette*. 18th Sept. (French ship *Aigle*)

United States.

The Superintendent of the American Coast Survey, A. D. Bache, Esq., has reported the following:—

Entrance to New York Harbour.—In the vicinity of the Narrows, entrance to New York Harbour, a shoal spot existing in the main ship channel has been found. The position of it is 2067 yards S. 30° E. (true) from the light-house on Staten Island. It lies north and south, and its length in that direction is 503 yards. The breadth from east to west is 164 yards. Soundings eighteen feet at low water. This shoal is composed of sand and shells, or more strictly is a shell bank, and I recommend placing a buoy on it.

It may be proper to state, that some of the pilots claim to have known of the existence of the shoal, though I have not found any who could give the ranges for it. The steamer *Baltic* struck on it a few months since, and it was reported that she had struck upon a wreck, from which I infer that there was no certain knowledge of its existence.

SHOAL OFF NANTUCKET.—The true bearing of the shoal from Nantucket Light Boat is very nearly south, and its distance a mile and two fifths. The least depth of water eleven feet; its length north and south nearly three-quarters of a mile, and its breadth from fifty yards to a quarter of a mile, the greatest breadth being at the southern extremity.

AUSTRALIA.—NAVIGATION OF GEORGE'S BAY.—The *Mimosa* steamer returned from the east coast at noon on the 10th instant, with a full cargo, and an average number of passengers. The following account of the *Mimosa's* trip up George Bay has been furnished by Capt. M'Lachlan:—In consequence of it being low tide when the *Mimosa* reached George Bay, she was anchored outside; the channel was then surveyed, and two black buoys were laid down at the outer edge of the bar, in ten feet at low water, and with twelve feet between the two. A red buoy is about to be laid down at the edge of the inner tide rip, on the port hand going in; another at the north end of the Sandspit; a third one on a small cluster of rocks in the Mimosa Channel, with five feet at low water; and a black buoy immediately opposite, with plenty of room between, in ten feet. There are two channels, one to the northward of the above rock, but the turn is too sharp for a long vessel. A black perch buoy is to be placed in the next bend, to the N.E. of the barracks. Charles Peters, Esq., of Falmouth, has kindly volunteered to stake out the river for the steamer, from the last named buoy up to Jason's Gates. By selecting a suitable time for entering the bay, say at the top of high water, and using caution, there is no difficulty whatever in entering; once in, the channel is apparent from the mast-head. On a large smooth boulder in mid-channel there is not less than ten feet at dead low water, and which, when once passed, there is 5 fathoms, and in some places 7 fathoms, right up to the gates, where a small line fore and aft will hold a vessel at any time, with deep water close to land a plank ashore. Indeed when inside the bar there is as open and as fine a sheet of deep water as any in the colony. Every facility was afforded by the settlers in the district, and great gratitude and pleasure was manifested on the success of the undertaking. The land in this neighbourhood is, we are informed, peculiarly adapted to agricultural purposes; and, in anticipation of the steamer visiting this hitherto secluded spot, there have been upwards of one hundred tons of potatoes planted this season. In entering, take the bar right between the two buoys, and head up to the Elephant Rock; when within one hundred yards of it, leave it about one hundred yards on the starboard hand, and keep about that distance off the shore until within one hundred yards of the black buoy on the cluster of rocks, then edge more on to the spit, and proceed round the edge of the starboard mud flat up to the barracks, then cross over to Humbug Point, and the stakes and flats will then clearly point out the channel for a distance of ten miles right up to the gates.—*Colonial Times.*

DESTRUCTION OF A PIRATICAL FLEET AT SHEI-POO BY THE "BITTERN."—The *Bittern*, in company with the *Paoushun*, has had a severe encounter with pirates at Chapoo (? Shei-poo.) The following is an extract from a letter dated Woosung, 24th September:—

"The *Lady Mary Wood* has arrived. She brings us three men severely wounded from her Majesty's brig *Bittern*, in charge of the surgeon. The

Bittern had an engagement in Chapoo with twenty-three heavily armed, west coast junks, all of which she destroyed, and killed about 1,200 men. She had nineteen men wounded, and Mr. Turner, her master, was killed on board the *Paoushun*. The junks having received information from Apak of the intention to attack them, had all their guns pointed at the narrow pass by which the brig entered, and had been practising some days to get the range. They had also boats laden with cotton and ashes lashed alongside their junks to stop the shot."

GALLANT AFFAIR WITH PIRATES.—By letters received from the *Racehorse*, Commander E. K. Barnard, we find that she has again been successfully engaged against the Chinese pirates, and re-captured an English vessel from them. While the *Racehorse* was working up the coast between Amoy and Foochow, on the evening of the 25th of June, a fleet of junks were discovered under the land. They were followed during the night, and at daylight they were seen at anchor three or four miles to windward.

Finding escape hopeless, the pirate crew began jumping overboard, a cutter was lowered down without heaving to, and soon captured her. She mounted six guns, and had a crew of fifty men, twenty-eight of whom were shot and drowned, and twenty-two made prisoners. The masts and gear being much wounded and cut up, she was burnt.

During the afternoon the ship anchored, and the boats were sent in chase; they engaged six of them, doing much mischief to their crews, who kept up a heavy fire with round, grape, and slugs, throwing stink pots and spears whenever they got a chance. A large junk was driven on the rocks and burnt, and a third was captured. Fifty-four prisoners were taken.

The *Racehorse* towed the lorcha to Amoy, and again started in quest of the pirates. At daylight on the morning of the 4th of July, she observed two junks standing out of the same bay where they had been before found; they tacked, got out their sweeps, and stood back; but the outside one being to leeward, she was cut off. At the same time a large fleet of junks was discovered at anchor in a small bay out of the reach of the ship, and their crews, numbering at least 2,000 men, swarming like ants on the beach. Five of the largest got under way, and worked to windward up the bay. The *Racehorse* anchored and sent all the boats in chase of the large junk to leeward, which opened a brisk fire from their guns. The gig pulled a head of the other boats and made a dash alongside; in an instant she was in a perfect blaze, and hid by dense smoke; an explosion followed, and the gig was seen without her crew. The pirates had thrown a shower of stink pots into her, which communicated with the magazine. The crew were all picked up by the cutter, seven out of the nine being dangerously wounded, and the chase was continued. The pirates commenced a grand rejoicing, not having seen the pinnace, which now dropped under their stern and fired through her, obliging her to bear up for the rocks, they then fired canister right into the pirate crew, while the cutters landed to cut off their retreat among the rocks; twenty-six were killed on the decks, from ten to fifteen were drowned in attempting to land, and about fifteen escaped to fall into the hands of the villagers. This junk was also burnt by the boats, which were upwards of four miles from the ship; while close to windward of her there were thirty-four heavily armed junks. One marine and a seaman have died since from injuries sustained by the blowing up of the gig.

NOTICE OF EARTHQUAKE WAVES. BY PROFESSOR A. D. BACHE.—On the 23rd of December, 1854, at 9 A.M., an earthquake occurred at Simoda, on the Island of Niphon, Japan, that resulted in the wreck of the Russian frigate *Diana*. The harbour was first emptied of water, then came in an enormous wave which again receded. (It appeared from the Rev. Mr. Jones that the whole character of the harbour of Simoda, previously surveyed by the *Powhatan*, has been changed by the earthquake.) A report from the Bonin Islands is not sufficiently exact to use for our main purpose, but points to Simoda as the centre of disturbance. (Simoda, according to the Rev. Mr. Jones, is volcanic; Bonin appears not to be.) Now the Coast Survey has three self-acting tide-guages at Astoria, on Columbia river, San Francisco and San Diego. They record the rise of the tide on a cylinder turned by a clock. The apparatus is protected more or less from the oscillations that wind-waves would cause, which only cause a trembling of the index or stylus. The guage at Astoria was but slightly affected by the earthquake wave, owing to the bar on the river and the distance it had to ascend. At San Francisco, 4,800 miles from Simoda, the wave arrived twelve hours sixteen minutes after the beginning of the earthquake. A series of seven waves, each about half an hour in duration, or thirty-five minutes, each series successively smaller, and separated by a quiet time of an hour from the preceding, was recorded at San Francisco. At San Diego the wave had traversed 5,200 miles in twelve hours thirty-eight minutes, and produced likewise a series of seven waves, each nearly corresponding to those at San Francisco, but the second series stronger than the first and third. In height they were less, the highest at San Francisco being 0·7 of a foot, at San Diego 0·6. The waves at San Diego could not have come from San Francisco, as they would have arrived much later. The velocity with which a wave travels depends on the depth of the ocean. The second and third series were but repetitions of the first wave that had reached the same points, travelling through shallower water. The calculations based on these data give for the Pacific Ocean a depth of from 14,000 to 18,000 feet. It is remarkable how the estimates of the ocean's depth have grown less. La Place assumed it at ten miles, Whewell at 3·5, while this estimate brings it down to about two miles.

THE DISCOVERY SHIP RESOLUTE FOUND IN THE ICE.—On Saturday last, the barque *Alibi*, of this port, Capt. Stewart, belonging to the Aberdeen Arctic Company, returned here from Davis' Straits (as previously reported in the *Shipping and Mercantile Gazette*). She sailed from this on the 10th August, and arrived out in lat. 63° 52′, long. 64° 49′ on the 1st October. The weather was then very adverse, boisterous gales prevailing from the northward, accompanied by frost and snow showers, and from the close packed state of the ice the vessel was prevented reaching her destination, viz., the fishing ground in Cumberland Sound, whither she had been preceded by Capt. Penny, with the *Lady Franklin* and *Sophia*. Matters continued in this state for nineteen days, without appearance of change, when she again set sail for this country, having seen no British whale ships. On the 17th ult., two days previous to leaving the country, midway between Cape Mercy and Cape Elizabeth, spoke the discovery ship *Resolute*, which vessel was abandoned at Melville Island in 1858 by Captains Sir E. Belcher and Kellett, and was now in the possession of Capt. Buddington, of the American whaler *George Henry*, of New London (U.S) The *Resolute* was boarded by Capt. Buddington and ten of his crew on the 17th September last, off Cape Mercy, distant thirty-five or forty miles, and was found in good condition, with about four feet water in her hold. Capt. Buddington's intentions when Capt. Stewart left were to winter with his

prize at Whale Fish Island. The *Resolute* must have drifted in the pack from Melville Island through Barrow Straits, Lancaster Sound, and Baffin Bay, to where she was picked up, a distance of about 25° or 30°. Capt. Stewart received from Capt. Buddington Capt. Kellett's epaulett·s, left on board the *Resolute*, to forward on his return home.—*Aberdeen Journal.*

The Fleets in the Pacific.

The *New York Herald* has the following letter from a correspondent, in Japan, dated Hokodadi, June 27th:—

I have just time before the departure of the vessel which sails hence for the United States this evening, to give you a hasty sketch of affairs as they exist in these waters. The British steam frigates *Encounter*, and *Styx*, with the *Tartar* in tow, entered this harbour at twelve, noon, to-day; the first from Petropaulovski, and the two latter from Castre, in the Gulf of Tartary. In order that you may easily comprehend and readily appreciate affairs, I would state that the Russians, immediately after their victory at Petropaulovski last fall, went vigorously to work forming new batteries and fortifying the harbour for another attack this spring. On the 17th of March orders were received by the Governor, "from Petersburg," to evacuate the place. The guns were dug out of the snow, and transported over the ice to the ships. A channel was sawed through the ice for the egress of the vessels, and on the 16th of April most of the inhabitants embarked, when the frigate *Aurora*, a corvette the *Dwina*. (armed transport,) a ship, a barque, and a brig, put to sea.

On the 1st inst. the steamer *Barracouta* arrived in this port from the Gulf of Tartary, with the intelligence that they had found the Russian fleet in the Bay of Castre. The steamer ran close in, when her crew gave three cheers, and fired a gun, which was answered with three times three, and a shell fired into the air from the frigate *Aurora*. Two frigates belonging to the East India squadron were left to blockade the port during the absence of the steamer, which came down to communicate the glad tidings to the remainder of the fleet. The *Barracouta* communicated with the *Saracen*, (surveying ship,) then in port, and immediately left the harbour. A few days subsequently the British steamers *Styx* and *Tartar*, and the frigates *Winchester* (flag ship), *Spartan*, *Constantine*, and *Sybil*, came into the straits, communicated with the *Saracen*, and left without coming to anchor.

To-day, by the arrival of the *Tartar* from Castre, we learn that on the arrival of the fleet off that port, a lively scene was presented. Preparations were made for decisive action, and the greatest enthusiasm prevailed throughout the fleet. Both officers and men were determined to remove the dark stain which the bright escutcheon of ther navy received by the inglorious affair of Petropaulovski last year. They had the cub caged, and all were sanguine about their success. The order of attack was arranged, when a steamer was sent close in to reconnoitre: and their disappointment may be better imagined than described when they found the double-headed eagle had flown, and neither ships nor Russians could be found. The Allies, however, captured a daguerrotype likeness, a quantity of small stores, and part of a lady's wardrobe, which had been left by the Russians in their hurried departure, as they availed themselves of a thick fog to slip out, and completely fogged the Allies.

By the *Encounter*, from Petropaulovski, we learn that the Pacific squadron appeared off that port on or about the 20th ult., and found the place deserted; there was, however, one vessel in port, the *Ajax*, belonging to the Russian

Company, which was fired by her crew and deserted. She was boarded by the enemy, but too late to extinguish the fire. The town was set on fire when the fleet came out.

The French steam frigate *Colbert* was lost a few weeks since at Nangasaki. When getting under way she struck on a reef in the harbour, which so badly injured her that in a few hours she filled and settled on the reef, where she will probably be abandoned.

The English surveying ship *Saracen* has been here some time. Her presence, and the circumstances connected with her movements here at this particular period, would indicate a most liberal construction of her *carte blanche* orders for making scientific researches. It is admitted by her officers that she is stationed here for the purpose of communicating with and facilitating the operations of the fleet in the North. The arrival and sudden departure of several vessels within a few days corroborates their statement. Yesterday the *Saracen* put to sea, and left an officer and three men in port. Does she not violate the principle of neutrality to be observed by surveying ships, which, "through the courtesy of nations," secures them against capture by an enemy.

Letters from Okasaki, in the island of Japan, dated the 19th of September last, have been received in Paris, and state that two French frigates belonging to the naval expedition sent to the coast of Kamschatka, took possession on the 3rd of that month, in the name of the allied powers, of the island of Urup, the centre of the Russian trade in the Kuriles Archipelago, and captured there a Russian cutter, laden with a rich cargo of furs. The Russian name of the island has been changed to that of "Alliance."

The French frigate *Sibylle*, of fifty guns, was allowed to enter Okasaki without any opposition, and was received in the most hospitable manner by the local authorities. A Japanese temple was placed at the disposal of the French Captain for the accommodation of his sick, and two of the seamen having died were interred with all the ceremonies of the Catholic Church, in presence of a prying, but evidently well-disposed multitude. Some of the chiefs daily visited the *Sibylle*, and readily accepted invitations to breakfast or dine at the table of her Captain M. de Maisonneuve.

Capture of Russians in the Sea of Okhotsk.—We are favoured by the Secretary of the Peninsular and Oriental Company with the following extract of a letter from the company's agent at Hong Kong, received from Calcutta yesterday, and bearing date four days later than those brought by the last China advices:—

"The Bremen brig *Greta* arrived in this harbour yesterday, in charge of Lieut. Gibson, R.N. She was taken a prize by her Majesty's steamer *Barracouta* on the 1st of August, in the Sea of Okhotsk, under American colours, and having on board 277 Russian sailors, part of the crew of the Russian frigate *Diana*, which was wrecked some months ago on the coast of Japan."

According to other accounts from Hong Kong of the 19th of September, her Majesty's ship *Rattler* returned from Cochin China on the 16th, with Mr. Wade, whose mission had been unsuccessful.

The Russian fleet was supposed to be to the north of the River Amoor.

The *Friend of China*, in an extra edition dated Tuesday, September 18th, has the following:—

"The Bremen brig *Greta* arrived on the 18th, in charge of Lieut. Gibson, of her Majesty's steam-ship *Barracouta*. The *Greta* was found in the Okhotsk Sea, about seven weeks ago, with 280 Russians of the wrecked *Diana's* crew, including a prince of the blood. The prisoners were distributed as follows.—*Barracouta*, 80; *Pique*, 100; *Spartan*, 100."—*Shipping Gazette*.

New Regulations for the Entry of Cadets into the Fleet.

The Admiralty has issued the following, as the prescribed course of studies for a young gentleman to become proficient in, ere he can be considered eligible for admission into her Majesty's service as a Naval Cadet:—

The candidate is to be ready to appear at the Royal Naval College, at Portsmouth, for examination, on the ———. He will have to produce on that day a certificate of birth, that he is above fourteen and under fifteen years of age. He will be examined in the following subjects:—

1. Writing English correctly from dictation.
2. Arithmetic, including vulgar and decimal fractions.
3. The first book of Enclid.
4. Algebra, including simple equations.
5. General knowledge of geography; of the principal countries, islands, rivers, &c., of the globe.
6. A competent acquaintance with the Latin or French, or some other modern language.

If he passes a satisfactory examination in the above subjects he will be entered as a Naval Cadet, and then placed for six weeks or two months in one of the instruction ships at Portsmouth or Devonport, previous to joining a seagoing ship.

New and Corrected Charts, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

England, Dartmouth Harbour, Captain Sheringham, R.N., 1853	-	2	6
Norway and Lapland, Index Chart	-	4	0
North Polar Chart, 1855	-	3	0
East Indies, Singapore Strait, 3 sheets, Lieutenants Collinson and Moresby, I.N., Lieutenant Dittloff Tjassens, Dutch Navy, and I. T. Thomson. Esq., Government Surveyor, 1822 to 1854 - each	2	0	
,, ,, Batan Islands, Sir E. Belcher, R.N., C.B., 1845	-	1	0
Lighthouses, North and West Coasts of France, Spain, and Portugal, corrected to January, 1856	-	1	0
,, East Indies, corrected to January, 1856	-	0	6
,, Mediterranean, Black Sea, and Sea of Azof, corrected to January, 1856	-	1	0
Graphic Method of Correcting the Deviations of a Ship's Compass, Archibald Smith, Esq., M.A.	-	0	6

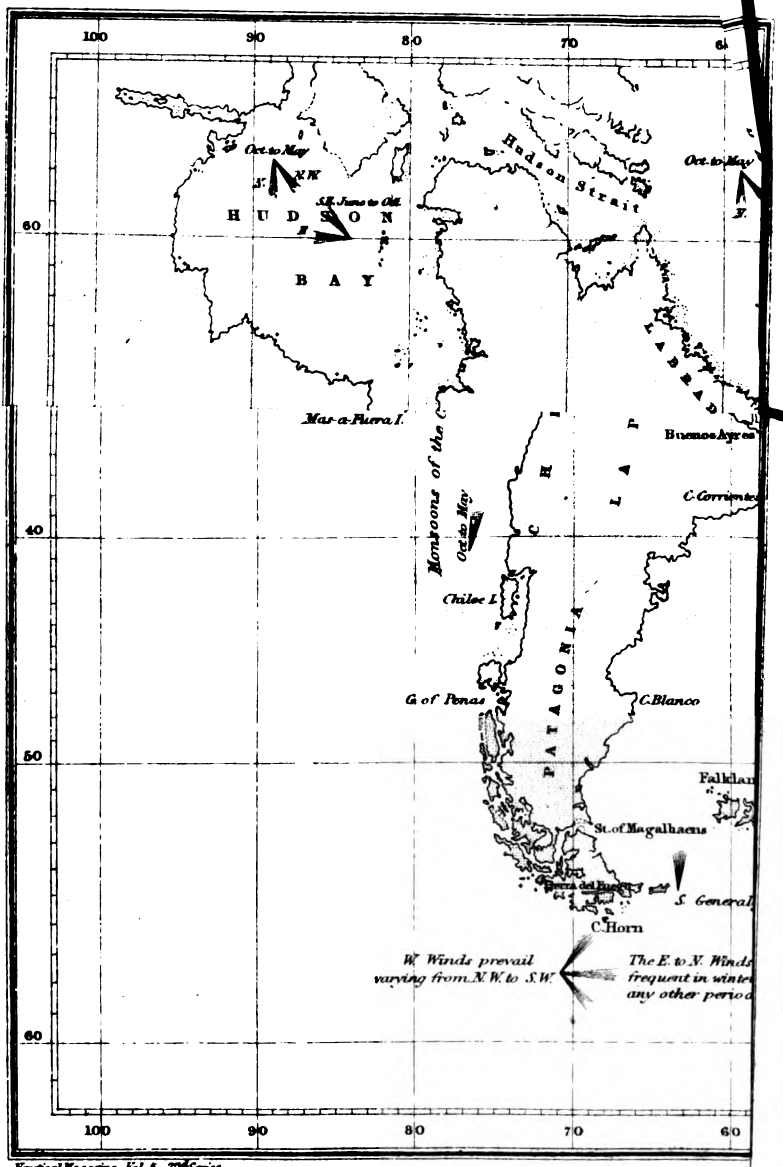
Edward Dunsterville, Commander, R.N.

Hydrographic Office, Admiralty, December 20th, 1855.

TO CORRESPONDENTS.

Our thanks to Captain Richardson for his letter.

CHAR'F



Nautical Magazine, Vol. 5, 2nd Series.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

FEBRUARY, 1856.

Rathlin Sound, and General Directions for the North Channel, Ireland,—*By Mr. R. Hoskyn, R.N.*

Sir,—The increasing traffic through the North channel of the Irish Sea may render some notice on the navigation of Rathlin Sound and its vicinity, with its rapid tides, acceptable to some of your readers.

Yours, &c.,

R. Hoskyn,

Admiralty Surveyor N.E. Coast of Ireland.

To the Editor of the *Nautical Magazine.*

Fair Head, where the North coast of Ireland may be said to commence, is a remarkably bold headland, of 640 feet elevation. For about 300 feet from its summit it forms a perpendicular cliff; the remainder is a very abrupt slope to the water's edge. It is steep to and clear of danger. Seven miles and a half N.W.$\frac{1}{4}$W. from it is an elevated rocky island called Sheep Island. Between them, and at the distance of three miles West of the head, lies Ballycastle Bay and Pier. And four miles and a half N.W.b.W.$\frac{1}{4}$W. from the Head is the dangerous rock called Carrickvaan.

Ballycastle Bay affords very indifferent anchorage, and only with offshore winds. The bottom is everywhere rock; it is quite exposed to the N.W. swell.. The best anchorage is with the glass house chimney S.W.$\frac{1}{2}$W., from two to four cables off shore, in five to ten fathoms, rocky bottom. The landing place, near the coast-guard watch-house, requires to be approached with caution. It is impracticable at low water, and dangerous at any time when the swell is up. The port is now choked with sand, while the scattered stones of the ruined pier present a formidable danger to a boat seeking shelter.

At Ballycastle it is high water on full and change at 6h. 24m. Springs range 2ft. 10in.; neaps, 1ft. 6in.

Easterly or S.E. winds make the smoothest water in Ballycastle Bay. With westerly winds there is generally a heavy ground swell, which prevails along the whole shore to the westward of Fair Head; it is always greatest with the east going tide. In moderate weather the commencement of this stream is made sensible by the sudden appearance of this swell, resuming again a comparative state of quiet when the west going stream makes. The shore is also subject to a heavy surf, which often "gets up," as it is termed, without any apparent cause.

At the distance of one third of a mile E.b.N. from the white cliffs of Kenbane Head (the nearest shore) lies the Carrickvaan Rock, a small but dangerous rock on which the sea breaks heavily in almost all weathers. Its rocky pinnacles show themselves on the last quarter ebb; it then shelves off to the N.W., having but five fathoms at 130 yards distant. At the same distance to the north and east of it there are twenty fathoms; between it and the Head the bottom is foul. A reef extends from the Head one-third the distance to the rock, with 2¾ to five fathoms on it; between it and the rock are ten to eighteen fathoms. The passage within the rock should never be taken but on an emergency.

The tide from the south end of Rathlin Island sets directly on the rock. Both streams rushing past it with great force create an eddy under its lee which sucks a boat back on it, and renders great caution necessary in approaching it, particularly to a vessel becalmed in its vicinity. Benbane Head opening of Sheep Island N.W.b.W.½W. leads nearly a mile to the northward of it. When the Glass-house chimney at Ballycastle opens you are to the eastward of it.

Rathlin Island lies opposite to Ballycastle Bay, its S.E., or Rue Point being two miles and a quarter N.b.W.½W. from the middle of Fair Head. From Rue Point it extends in a N.E. direction two miles and three quarters to Altacarry Head, its N.E. point, where the Irish Lighthouse Board have vainly endeavoured, *for nearly eight years*, to produce a lighthouse! What the difficulties have been, where all the materials for building, including labour, are found on the spot, it is vain to conjecture; but in the unfinished tower, with its attendant staff of officials, the uninitiated only behold a monument of apathetic indifference and selfishness, occasioning many an anxious hour to the seaman who navigates that "dark hole," as they term it.

The table lands on the N.W. portion of the island have an elevation of 450 feet, and are bounded by precipitous cliffs of black trap, under which the white limestone is occasionally seen in remarkable contrast.

The south-eastern section is lower and slopes away to the Rue, a low rocky point which is bold to the southward and westward, but on the east side it is skirted by a rocky shoal extending to a distance of two cables from the shore. The west side of the Rue, and round by Church Bay to the Bull Point, at the west end of the island, is quite free from danger.

Some detached rocks lie off the Bull and along the north shore; but none of them are more than a cable's distance off, and the sea breaks heavily on them all.

Off Altacarry Head a rocky bank extends two thirds of a mile to the northward; where from thirty fathoms it deepens to ninety in a distance of two cables further. The tide, in its passage across it, forms a race known as McDonald Race. To the westward of this the shore is very steep to, with one hundred fathoms at two cables' distance, in some parts.

On the S.W. side of the island a deep bay is formed, called Church Bay, the shores of which are nearly at right angles. It is a good summer anchorage, affording excellent shelter with the wind anywhere to the eastward. The depth of water is moderate; the holding ground good, being, for the most part, stiff clay under a thin coating of sand. A small vessel may anchor in six fathoms with the church tower on with the east end of the school house N.E.$\frac{3}{4}$N., and with the store near the beach on with the police barrack E.S.E.$\frac{1}{4}$E., at two cables' distance from the rocks; or at the distance of three quarters of a mile from the head of the bay in eight fathoms and a half, with the store on the same bearing, the rocks shutting in bearing south, and the white cliff to the westward, shutting in with Black Head, bearing N.W.$\frac{3}{4}$N.; or at any convenient distance from the shore, having room to get underway when the wind comes to the westward, for the bay is quite exposed to these winds and to the heavy ground swell that accompanies them. It would, therefore, be advisable to quit on their first appearance, bearing in mind that the tide, which is hardly sensible at the anchorage, sets, further out in the bay, for nine or ten hours towards the Rue; and during the first quarter of the ebb only towards the Bull. There is a good landing place in the corner of the bay, near the proprietor's house, where water may be procured from springs.

The channel between Rathlin Island and the main, called Rathlin Sound, is deep and clear of danger, with the exception of the Carrickvaan Rock. Between the Rue Point and Fair Head there are forty fathoms in mid-channel; three quarters of a mile to the N.E. of Carrickvaan Rock there are sixty-seven fathoms, decreasing again to forty fathoms to the westward. Throughout the tidal channel the bottom is rock or coarse ground.

To the N.W. of Rue Point there is an extensive bank of coarse sand with from fifteen to twenty-five fathoms over it. It is separated from the south shore of the island by a gulley, in which there is a hole with sixty fathoms between three and four cables to the S.E. of Black Head. The southern edge of this bank is marked by a ripple occasioned by the meeting of the ebb stream with the eddy from the Bull.

Both to the eastward and westward of the island there are rocky patches of twenty-three to twenty-seven fathoms, with deep water around them. Their position will be best understood by a reference to the chart, and is generally indicated by a rippling over them.

The feature of the greatest importance to the navigator of Rathlin Sound is the set and velocity of the tidal stream. Attaining a high rate on the springs, it is subject to great variations in both force and direction. As a general rule, the ebb does not turn with the main stream to the northward of the island, but is controlled by the eddies which form along the shore.

In Ballycastle Bay, and along the shore to the westward as far as Sheep Island, it makes to the westward three hours before high water at Liverpool. In the middle of the channel the eddy from Tor Point makes through the Sound to the westward about an hour and a half before high water at Liverpool. In the first quarter of its western course it sets round the Rue into Church Bay, and out by the Bull to the N.W.; but at the second quarter, when the stream in the North Channel has turned to the westward and it begins to go strong through the sound in the same direction, an eddy begins in Church Bay, setting from the Bull Point towards the Rue and meeting the true stream about a mile to the westward of the latter, where the bottom is very uneven. A great overfall is occasioned, called Slough-na-more, which must be carefully avoided by boats and small vessels. At the second quarter, the ebb at this spot attains a rate of four knots on neaps, and five and a half on springs, suddenly decreasing on the third quarter to 1·5 knots on neaps and 2·5 on springs, while Slough-na-more becomes quiet. It would appear that the eddy from the Bull and out of Church Bay had forced the main stream into a more southerly course; which, confined now to very narrow limits, sets from the Rue direct on Carrickvaan Rock at the rate of three knots on neaps and five and a quarter on springs. Its course is marked by a series of overfalls, which, with an opposing wind, create a very nasty sea. From Carrickvaan Rock the ebb sets in a N.W. direction towards the Bull, and there meets the stream from the back of the island setting to the S.W., while on the south side of the Bull the eddy is going strong to the S.E.

The flood or eastern stream commences along the south shore of the sound three hours before high water at Liverpool, and while the stream in the Sound is going strong to the westward. Carrickvaan Rock is at the junction of these opposing streams. The stream in the middle of the Sound does not appear to go to the eastward until it is low water at Liverpool and is not preceded by any slack. In the eastern part of the Sound it went round against the sun, setting, at low water, South 2·5 knots; while in the western part it went round with the sun, setting North, at low water, at the rate of 1·7 knots. In the first quarter of its eastern course it attained three knots on neaps, decreasing to one knot on the second quarter, and then increasing again to 2·5 knots, veering in direction between south and S.E. On springs it attains a velocity of 6·3.

It is, therefore, necessary for the mariner to exercise great vigilance, in calms or light winds, to keep his vessel clear of the Carrickvaan on one hand and of the overfalls and eddies near the island on the other.

With the flood stream there is an eddy to the eastward of the is-

land, extending two miles and a half in that direction and setting back on the island. The ebb stream divides at the Doon Point, one part going round the Rue to the southward and westward, the other along the land to the northward. For the first hour of its course it runs to the westward close along the North shore, when it is succeeded by an eddy to the eastward. The flood tide sweeps along the north shore with great force. After the first quarter of the ebb there is a strong eddy under Fair Head.

A vessel coming from the southward by keeping within half a mile of the shore will get the tide in her favour two hours earlier than by keeping in the offing, and if bound through Rathlin Sound may carry eight hours tide with her.

From the westward, with light winds and ebb tide, steer for the Bull, as the stream will then be slack in its vicinity. By not opening Castle Head to the northward you will avoid the strength of it, and on passing the Bull may get down into Church Bay, assisted by the eddy; which, however, does not set into the bay but across it towards the Rue, where it sets, at the rate of four knots, to the southward, close along the shore, rendering Church Bay difficult of access, excepting with a commanding breeze.

Vessels bound to the southward and meeting the ebb tide at Fair Head sometimes heave to in Ballycastle Bay: while doing so, much vigilance is required to guard against being set towards the Carrickvaan Rock.

The large space N.W. of Rathlin has never been surveyed and is almost a blank upon our charts. Fourteen miles north of the west end of Rathlin Island a rocky bank, named the South Bank, has recently been discovered. It has some spots with fifteen and sixteen fathoms, increasing on the next cast to forty and fifty. On a minute examination less water may probably be found there. It is exactly in the fair way of shipping bound through the North Channel. The tide, in its passage over it, creates a very heavy sea, which always indicates its position.

To the westward of this the few soundings obtained indicate a prevailing moderate depth of water over a bottom of coarse ground.

From the vicinity of Ennistrahull a narrow ridge of coarse sand extends to the eastward as far as the meridian of the Skerries, with from ten to fifteen fathoms less water over it than is to be found to the northward or southward. An abundance of the finest turbot and cod taken on the shores of Ireland are found on this bank, but the small open boats in use on this coast can only venture out on it in the finest weather; hence the fishery is not worked, for they seldom go more than four or five miles from the land: larger boats, with more capital and enterprise, are required for its development.

An accurate survey of this large region would probably reveal some new trawling grounds; while to the homeward bound, in a channel where the land is so frequently obscured by fogs and thick weather, a minute acquaintance with the bottom would be of the greatest importance, and often enable them to ascertain their position when no other means are available.

The Atlantic Ocean Considered with Reference to the Wants of the Seaman.

(Continued from p. 21.)

Bahama Isles.—The following observations of one year were made at Nassau, in the Isle of Providence:—

Months.	Winds.	Remarks on the Weather.
January	S., N.E., N.N.E.	Strong breezes and cloudy.
February	N.E., S.E., N.E.	Moderate and variable.
March	N.E., S.E., N.E., N.	Clear, but breezy.
April	E., N.E., S.E., N.W.	Clear, a little rain.
May	Variable.	Moderate, showery.
June	Ditto.	Clear and dry.
July	S.E., E., S., N.E.	Light and clear.
August	N.E., E., N.W., S.	Squalls with rain.
September	Ditto.	Clear, rain, and fog.
October	E., N.E., N.W.	Light, rain, and squalls.
November	S., S.W., W., N.W.	Moderate and squally.
December	S., S.W., N.W.	Variable, light, clear.

Jamaica.—In the Island of Jamaica the alternate land and sea breezes are well established during the fine season; the former extend four leagues from the coast and they cease towards four o'clock in the morning. The following are observations made on the winds of this island:—

Months.	Winds.	Remarks on the Weather.
January	N. & S.E.	Fine, small rain; strong winds from N.
February	Ditto.	Fine and dry; strong sea breezes.
March	Ditto.	Ditto.
April	Ditto.	Very dry; breezes moderate.
May	Ditto.	Fine; some showers.
June	Ditto.	Generally fine; heavy rain.
July	Ditto.	Much rain; fine by intervals.
August	S.S.W.	Some heavy rains.
September	S.S.W. & S.E.	Fine mornings, rain in the afternoon.
October	Ditto.	Heavy rains by intervals, generally fine.
November	Ditto.	Ditto.
December	Ditto.	A little rain, generally fine.

On all the coast of this island alternate land and sea breezes are found, and their direction varies according to that of the coasts. The sea breeze commences about eight or nine a.m., increases till noon, sometimes till four p.m., and afterwards diminishes, to give place to the land breeze which ceases towards four or six o'clock in the morning.

Porto-Rico.—At Porto-Rico rain falls from June to August. The trade winds blow from N.E. The sea breeze commences at eight in the morning and lasts till four in the afternoon, when it is followed by the land breeze.

St. Domingo.—The winds in the island of Hayti or St. Domingo vary on the different parts of its shores. The winter season lasts from the end of April till November. During this season gusts of wind and storms are frequent. At this season strong winds from S.E. are found in the Bay of Gonaives and in the channel of St. Mark. In November, December, January, and February Northerly winds, changing to N.W., blow violently, principally on the North coast of the island. On the South coast, in June, July, and August, there are frequent storms, with the wind, from South, blowing violently. On the shores of this island, the land wind, which is generally very light when it does blow, is not to be depended on.

Lesser Antilles.—The following observations made at Trinidad and Dominica will give a general idea of the winds met with in the Lesser Antilles. The first table is for the Isle of Trinidad:—

Months.	Winds.	Remarks on the Weather.
January	E., E.N.E., E.S.E.	Cloudy, rain.
February	E. & E.N.E.	Cloudy, heavy dew.
March	Ditto.	Fine, dry.
April	E.N.E.	Fresh breezes.
May	S.E. & E.N.E.	Strong winds, thunder.
June	E.N.E. & E.S.E.	Rainy, breezes.
July	E.N.E.	Tempests, rain, and storms.
August	E.S.E.	Heavy gusts of wind, rain and storms.
September	Ditto.	Heavy rain, storms.
October	Ditto.	Strong breezes.
November	E. & E.N.E.	Fine and warm occasionally.
December	Ditto.	Cold.

The following table is for the Island of Dominica:—

Months.	Winds.	Remarks on the Weather.
January	E.N.E. & N.	Cloudy.
February	E.N.E. & S.E.	Cold
March	N.E. to S.E.	Fine, sometimes cloudy.
April	E.N.E., S.E., S.	Fine, moderate breezes.
May	N.E. to S.E. & E.	Calm, weather clear.
June	S.E., E. to N.E.	Calm, fog and rain.
July	Ditto.	Calm, nights cold.
August	S.E. & N.E.	Calm, nights cold, storms and gusts.
September	S. & S.E.	Generally fine, rain at intervals.
October	N.E. to S.E.	Cloudy and fine alternately.
November	Ditto.	Fine and dry.
December	Ditto.	Fine, dry, and cold.

Let us now return to the coast of Cape Catoche, and follow it to the South.

East Coast of Yucatan, Vera Paz, Honduras, and Mosquitos.—On the Eastern coast of Yucatan, that of Vera Paz, Honduras, and Mosquito, which form the Western coast of the Carribbean Sea, the N.E. trade wind prevails in February, March, April, and May, but is sometimes interrupted (principally during the two first months) by Northerly winds. In June, July, and August the winds on these coasts vary from East to West by the South, attended by gusts and calms. In October, November, December, and January the winds are from South to North, changing by the West, with gusts from W.S.W. to W.N.W., shifting to the North.

On the coast between Cape Gracias a Dios and Cape La Vela the winds are very changeable. From March to November they blow from N.E. to East; they are, however, often interrupted by tornados in May, June, and July. Between the months of October and March, pasticularly in December and January, the wind occasionally comes from West; they are not strong, but sometimes last during seven or eight days, and are then followed by the N.E. winds.

When the Westerly wind is violent on this coast and lasts for some days, the trade wind from East nevertheless is blowing out at sea as at other times. It is met with at a distance of eight or ten leagues from Cape la Vela at the same time that the Westerly winds are blowing on the Coast near this cape.

Porto Bello.—At Porto Bello, and between this point and Carthagena, the wind is N.E. from the 15th of November till the 15th of May. At the end of May it veers to S.W. and W.S.W. and reaches as far as lat. 12° N. These winds from S.W. and W.S.W., which are sometimes very violent, bring rain. At twenty leagues seaward from Porto Bello the wind blows from South in the interior of the

gulf, veering to N.E.; the south winds generally extend eight or nine leagues from the coast. The winds from S.W. and W.S.W. are termed *vendavales*.

Cartagena.—At Cartagena during the fine season, from the middle of December till the end of April, the wind is generally from N.E. From May till November, the winter season, rainy and stormy weather prevails. During the fine season the winds come from N.E. and become settled towards the 15th of November. In the rainy season the winds come from S.W. to W.S.W., extending as far as lat. 12° N.; beyond which the winds take a N.E. direction. In November and December there are strong breezes, with much rain. During the winter season tornados frequent the coast.

Coasts of Caracas and Cumana.—The trade winds take their usual course on the coast of Caracas and Cumana as far as Cape La Vela; but from this cape to the point of St. Blaize their direction varies from N.E. to N.N.E. During the months of March, April, May, and June they are more regular, blowing with great violence from E.N.E. These strong breezes extend from the middle of the channel to within two or three leagues of the land and diminish in force as they near it. On these two coasts, and even as far as the Gulf of Nicaragua, the rainy westerly winds to which we have already alluded, called vendavales, are found from July to December, and sometimes till January.

Coast of Guiana.—On the coast of Guiana the trade winds only are found. From January to March they blow between N.N.E. and E.N.E. In April, May, and June there are variable winds and calms. Afterwards the trade veers to E.S.E. and S.E., blowing from S.E. principally between June and December. The dry season is from January to June, and the rainy season is attended by continual storms and tempests.

The following table contains the observations on the winds and weather at Demerara:—

Months.	Winds.	Remarks on the Weather.
January	E.	Cold, fresh breezes.
February	N.E.	Thick clouds with tempests, stormy.
March	E.N.E.	Clouds, very heavy showers.
April	E.	Heat, no rain.
May	N.E.	Thick clouds, frequent lightning, rain.
June	S. & variable.	Hot, and rain at intervals.
July	E. & S.	Hot and very heavy.
August	S.	Hot, rain at intervals.
September	S. & E.	Heat, thunder and lightning.
October	Variable.	Light breezes, showers.
November	N. & E.	Ditto.
December	N.N.E.	Heavy rain, breezes cold.

On the coasts of French Guiana the winter season begins in November and ends in July; the dry season lasts from July to November. Winds from E.N.E. blow during the first period; those from E.S.E. during the second. The rainy season is from December to February and sometimes till March, it even begins sometimes sooner—about the 15th November. In March and April there is an interval of three weeks or a month during which time the rains cease. This period in French Guiana is termed the March summer. The rain begins again towards the middle of April, and terminates in the middle of July. The interval between the falls of rain is called the *poussiaière*. From November to March the winds are from N.N.E. to N.E.; during March and April they change from East to South; from May to June they return to N.E., calms then are rare and there is no land wind. It is observed at Guiana that the dry winds are from East to South.

North Coast of Brazil.—On the North coast of Brazil, as far as Cape St. Roque, the trade winds blow from N.E. to S.E. by the East. From July to December those from S.E. to East prevail; from December to July those from N.E. to East. The month of June is the time when these periodical winds change, and which is the cause of the calms found near the land in that month, sometimes interrupted by squalls and wind and always accompanied by rain. The heaviest squalls are when the wind is from East to N.E. At a short distance from this coast a land wind is often found during the night and morning, varying from S.S.E. to South, and ceasing towards 8h. or 9h. a.m.

East Coast of Brazil.—On the East coast of Brazil the winds are periodical. From September to March they blow between E.N.E. and N.E.; from March to September they blow between S.S.E. and E.S.E. These winds do not extend more than forty or fifty leagues out to sea. Beyond this limit the trade wind is found; which generally blows between S.E. and East. On this limit, however, changeable winds are met, blowing from S.S.W. to S.E., with rain and storms. On the North part of this coast rain is frequent, as well as variable winds, in March and September,—the times when the change of periodical winds takes place,—and is accompanied by heavy squally weather.

Bahia de Todos os Santos.—At Bahia the winds blow from E.N.E. from September till April. From April till August they blow violently from South, changing from S.E. to S.S.W. In April they begin shifting to South and S.S.W. They are in their greatest force during May, June, July, and August, and in these months blow from S.E., varying to South and S.S.W. The seasons change in April and September. The wet season at Bahia begins in April, the same as on the coast of Brazil. The fine weather returns in September.

Rio Janeiro.—At Rio Janeiro the sea breeze, which blows from East, begins at 11h. a.m., and reaches the roadstead and town towards 2h. or 3h. p.m., although the latter is only three leagues from the shore. The sea breeze lasts till sunset. The land breeze commences

towards evening and lasts till morning, its duration and force depending on the season of the year.

Paraguay.—On the coast of Paraguay the sea breeze sets in at 9h. or 10h. a.m. and lasts till sunset.

River la Plata.—We extract the following observations on the winds of the River Plata, and the neighbouring parts, from M. Chiron du Brossay, Captain of a frigate which was some time in the river:—

"The winds in the River Plata and at the mouth of it follow the course of the seasons, but the form of its shores and their proximity exercise so great an influence on their force and direction that they are rarely the same as in the interior of the river. Thus sometimes on the two opposite banks, a violent wind is blowing at Buenos Ayres which is not felt on the shore immediately opposite.

"Almost all the pilots attribute great influence to the phases of the moon, and agree that it is difficult to foretell the weather correctly, the changes of the almosphere being so sudden as to defy all their predictions. Storms gather and come down so rapidly that it is necessary to be always on guard against them. Instances of violent storms, called *pamperos*, are cited as coming suddenly when the weather was fine and clear, and announced only by a whirlwind: these, however, come only with a N.W. or Westerly wind.

"In this country the wind from S.W. is termed *pampero*. It is generally introduced by thick black clouds which appear to roll hurriedly over each other; at other times by a large dark arch which invades the whole sky from West to East. The horizon quickly clears towards the S.W., and it is then that the pampero bursts forth with indescribable impetuosity. It is frequently accompanied by thunder, lightning, and rain; the coldness of the temperature is quite uncomfortable. The sky soon, however, becomes clear and the weather fine, and continues so during the rest of the pampero.

"When the wind ceases it almost always veers to South and S.E. Before the *pampero* bursts forth the barometer is very low; the mercury begins rising towards the end of the squalls, when the wind shifts to South.

"In the River Plata, and also at sea in the same parallel, the winds are very changeable: during the fine season, from September to March, the prevailing wind out at sea is from N.E.; the horizon is charged with vapour, and the sky filled with clouds of indefinite forms. On nearing the river the wind veers to East, sometimes to S.E., very fresh, with rain and cloudy weather.

"In the interior of the river, during this season, the wind from S.E. blows regularly in the afternoon; at night it falls and shifts to North: this wind is called a *Virazon;* when it falls, and the wind from North to N.W. continues, a storm from S.W. *(pampero)* may be expected, more or less violent according to the *virazon.* We repeat, that great precautions are necessary against these storms; they may prove fatal to those who are not prepared to meet them.

"About the times of full and change of the moon, strong breezes are found from S.E., with rain; sometimes also the wind blows

from North, not so strong as that from S.E., and the temperature is higher.

"The pilots say, that the S.E. wind blows when the moon has South declination, and the North wind when she has North declination. In these cases the North wind generally shifts to N.E. in dry weather; if accompanied by rain or heavy dew it veers to N.W. It often becomes violent, blows in squalls from this direction, and ends by shifting to S.W., blowing strongly; with this wind the sea rises suddenly, and subsides as soon as it ceases.

"From March to September the general winds at the entrance of the Plata are from West to S.W. Ascending the river they are more frequently northward instead of southward of West.

"The winter season is preferable to that of summer in the roadstead of Buenos Ayres; for the wind being generally from S.W. to N.W. the sea is smooth and communication facilitated.

"In the months of July, August, and September there is frequently a thick fog from the mouth of the river to the shore of Ortiz: further up this is not so frequent.

"The inhabitants of la Plata attribute these prejudicial influences to the North wind: it is in fact very hot, and while it blows the air is charged with electricity: thus the wind from this quarter almost always terminates in a storm, during which it shifts to S.W. and restores the equilibrium.

"Sometimes the *pamperos* extend out to sea, and pass the latitude of the island of St. Catherine.

"When it is clear they last longer than when the clouds are charged.

"What has been said respecting the winds of la Plata at sea, at its mouth, and in the interior, is what takes place in a general way; but it must not occasion surprise in experiencing the contrary, for the wind is so variable that neither its duration nor direction can be depended on with certainty: frequently during consecutive years at the same seasons the winds are widely different."

East Coast of Patagonia.—Ships leaving the Atlantic and bound for any port in the Pacific, will derive advantage from keeping at least a hundred miles from the East coast of Patagonia, as much to avoid the heavy sea caused by the westerly breezes, which predominate in the East, and are stronger according to the distance from shore, as to profit by the inconstancy of the wind when in the West quarter. Near the coast, from April to September, when the declination of the sun is North, the winds blow more from W.N.W. and N.N.W., than from any other quarter. Winds from East are very rare, but when they do take place, as they blow obliquely to the coast, there is no danger in keeping in shore. During the opposite season, when the sun has South declination, the winds blow principally from the southward of West, and sometimes very strong; but as the coast is to windward the sea falls directly the breeze ceases. Although during this season the winds are such as to delay the progress of a vessel, yet as they are rarely steady, and often vary six or eight points backwards

or forwards in a few hours, advantage may be taken of this circumstance by keeping near the shore.

Terra del Fuego.—Fogs are very rare on the coast of Terra del Fuego; but dark and rainy weather, accompanied by violent winds, is generally experienced there. The sun appears but seldom, and even in fine weather the sky is dull and cloudy, and the atmosphere very seldom clear.

Different winds succeed each other at short intervals and last several days; sometimes the weather is fine for the space of a fortnight; but this happens very rarely.

The equinoctial months are the worst of the whole year about Terra del Fuego and Cape Horn. The winds are then strong, but may not always be expected on the exact day of the equinox.

The months of August, September, October, and November, are also generally worse than the others. During these months westerly winds prevail, as well as snow, rain, and intense cold. December, January, and February, are the hottest months. The days are then long, and the weather sometimes fine. But in these months westerly winds prevail, sometimes very strong and accompanied by much rain; thus, even the summer, in these latitudes, only possesses the advantage of longer days and a less rigorous temperature.

March is subject to storms, and is perhaps the worst month in the year, on account of the sudden squalls which then take place. It is, however, not so rainy as the summer months.

In April, May, and June, fine weather is general, and although the days shorten at this time, the weather resembles that of summer more than at any other period of the year. Bad weather is nevertheless found during these months; but the easterly winds, which are frequent, bring with them some fine days.

Passage from the Atlantic to the Pacific.—June and July are much alike, only in July the easterly winds are more frequent. The shortness of the days and the extreme cold render these months very unpleasant, although they are perhaps the most favourable for sailing from the Atlantic to the Pacific Ocean, because the wind so frequently blows from East.

On the contrary, the summer months, namely, December and January, are the best for passing from the Pacific to the Atlantic Ocean, though this passage is so short and easy that it may be attempted at all times.

In these regions thunder and lightning are little known. Violent storms are announced by heavy clouds coming from South and S.W.; they are accompanied sometimes by snow and hail of large dimensions, which render them still more formidable.

We shall now offer some important remarks concerning the limits of the winds.

Westerly winds prevail during a great part of the year in these regions, and those of Cape Horn. The easterly winds only blow during the winter months now and then: they are however violent during this season, and are very rare during summer.

The easterly winds are always moderate, and accompanied by fine weather, when they begin blowing they gradually increase. The weather then changes, and the breeze perhaps becomes somewhat fresher: they often attain such a force as to require three reefs in the topsails; then they gradually fall or shift to another quarter.

The North winds commence by blowing moderately, only the weather is more gloomy and cloudy than with an easterly wind; and a little rain generally falls. In proportion as the wind freshens, it veers westward, and increases in force, blowing between North and N.W. The sky then is very cloudy and dark, and rain falls abundantly. From N.W. it blows hard, and when its force is expended, (which it is in about twelve or fifteen hours,) or even while it blows hard from this quarter, the breeze suddenly shifts to S.W., and blows more violently than before. The wind disperses the clouds, and in a few hours the weather is perfectly clear; nevertheless at times the squalls are very severe. The wind continues several days in the S.W. quarter, generally blowing very fresh; then it moderates a little, and, after two or three days, the weather becomes fine.

The North winds generally blow during summer, and it is a fact established from observation that the shifting of the wind from North to South takes place by the West during this season,—one which would little deserve its name were not the days longer and the atmosphere warmer. The winds and rain are much more violent during the long than during the short days.

It should not be forgotten that bad weather never comes suddenly from East and that a S.W. or South wind never shifts quickly to North. On the contrary, winds from South and S.W. come on suddenly and with violence.

South winds and storms from S.W. are preceded and announced by thick masses of large white clouds rising in these parts, the borders of which are clearly defined and which appear round and solid.

The North winds are preceded and accompanied by very low clouds, the sky is overcast, and some clouds appear above the rest. The sun can scarcely penetrate them and it assumes a reddish aspect.

Some hours, and even a whole day before a North or N.W. wind the altitude of the sun cannot be taken, although it is visible, because the mist of the atmosphere prevents its disc from being distinctly visible.

Sometimes, but rarely, with a slight breeze, varying from N.N.W. to N.N.E. there are a few days of fine weather; South breezes and rain most generally succeed.

The most common weather in the regions mentioned above is a cloudy sky with a fresh breeze, varying from N.W. to S.W.

We shall conclude these remarks on the winds of the Atlantic Ocean by referring to those of the Falkland Isles.

Falkland Isles.—It would be difficult to find a region more exposed to storms in summer and winter than the Falkland Islands.

The winds there are very variable, rarely falling while the sun is above the horizon, and sometimes very violent, even in summer. A

day of calm is an extraordinary fact at the Falkland Isles. Generally, it blows less during the night than during the day; but, both by day and night, at all times of the year, they are exposed to sudden and violent storms and gusts of wind, though they do not, usually, last more than a few hours.

The prevalent wind is westerly. It generally begins from N.W., shifting to S.W. by West; and when the N.W. wind is attended by rain it quickly passes to S.W. and blows with strength from that quarter.

The North winds produce cloudy weather, and when they are light are accompanied by thick fog. It is also observed that they usually blow about the times of the moon's quartering. The winds from N.E. and North produce very gloomy weather, with much rain. They are sometimes strong and veer to N.N.W., but most frequently to West. The S.E. winds also cause rain. They are rather frequent and blow strong, and in proportion as they strengthen they veer to the Southward.

During winter the principal winds are from N.W.; and in summer from S.W.

Although sometimes fogs attend the wind from East and North, they do not often last for a day.

The gusts of wind as well as squalls which come from the South, from S.W. and S.E., are more violent and sudden than those from any other direction. The East winds are rarely high and they last only a short time. They generally produce fair weather and may be expected more during April, May, June, and July than at any other time of the year. Intervals of fine weather are very scarce in the course of the year when the wind is varying between E.S.E. and E.N.E.

Thunder and lightning are very rare, and with the latter we may expect Easterly winds. If lightning appears in the S.E., and the barometer is low, a heavy breeze of wind from that quarter may be expected.

These breezes from S.E. and South last longer than those from West, at least generally, and they cause a heavy surf on the South coasts of these islands. In winter the wind is generally less violent than in summer, and during the former season the weather, though colder, is drier and better established.

All important changes are foretold by the barometer, provided the changes of the mercury are understood by those who consult it, and frequent observation is made.

Such are the general observations on the different parts of the basin of the Atlantic. We shall next proceed to consider the currents of this sea.

(To be continued.)

NEW CALEDONIA.—*By Captain Tardy de Montraver, Commanding H.I.M.S. "Constantine." Translated from the Annales Maritimes et Coloniales.*

(Continued from page 11.)

Arrival of the "Constantine" at Balade.

On leaving Pine Island the course of the *Constantine* was directed for the haven of Balade, keeping, though at a respectful distance, along the eastern reef, some of the points of which project thirteen and fifteen miles to seaward. The profile of the mountains was unfolded to our view above the horizon, showing no variety nor any depression which indicated a port. Some parts only, more forward than the neighbouring coast, distinguished the most striking promontories by an almost imperceptible change of tint. Thus we followed the coast within sight of the reefs, with our charts in our hand, without recognizing any thing, and without having any idea of the valuable and interesting details we were subsequently to find there. Without any doubt, we thus passed by the ports and anchorages of Kanala, Yengen, and Piepo without being able to recognize them. One point, however, struck us,—Cape Colnett, near which three cascades imprint their silver stream on the side of the mountain. As the reef nears the shore at the landing of this cape we were able to see pretty closely the very rich vegetation, the magnificent forests, which, notwithstanding the rapidity of the falls, adorn the neighbouring mountains from their foot to their most lofty summits.

Quitting Cape Colnett in the morning, we continued to follow the reef without distinguishing anything remarkable previously to our perceiving two masts of a ship projected on the land, and by their side a white spot, appearing, in the distance, to come out of the horizon. The two ships were the *Pronay* and the *Phoque*, the white spot was the blockhouse. An hour afterwards we ran in to the cutting of the reef which serves as an entrance to the haven of Balade, and shortly afterwards we dropped anchor by the side of the two vessels. In a few seconds we became acquainted with the position of affairs; we knew all that had passed and received confirmation of what I had learnt in Pine Island, and I found that Admiral Despointes had left for Tahiti.

The harbour of Balade, the name of which must have been borrowed by Cook from some houses which have long ago disappeared, is a very bad anchorage on the N.E. coast of the island. It is entirely open to the winds from the East to the N.W., and is scarcely sheltered in ordinary weather from the open sea by the external reefs, which are four or five miles from the coast; so, on the approach of the bad season, ships are obliged to quit it.

Proceeding from this spot the mountains become lower towards the North, and gradually disappear to make room for grounds of a middle

height; which themselves terminate at the N.E. extremity of the island by jutting points of alluvial soils covered with mangroves.

The great western chain terminates in the same manner in the north-western extremity of the island. It is between these two extreme points that the central valley opens to the sea, and there discharges the waters of the interior by the wide mouth of the river Diahot.

In front of the anchorage of Balade the shore recedes a little towards the peak crowned by the blockhouse. Two streams descending from the mountains, one on the right and the other on the left of this peak, are lost in the sands of the low flat sea shore, after having traversed the low and sandy country which divides the sea from the foot of the mountains. These two currents of water, now neglected, would not fail to be made useful for the advantage of the settlements and the ships in harbour.

The tribe of Pouma, of which nearly the centre is occupied by the little territory of Balade, extends about eight miles eastward, as far as the tribe of Mouhélébé or Pouepo; to nearly the same distance north-westward, as far as the tribe of Arama; and is finally limited on the interior side by the western slope of the oriental chain and the Diahot, which separates it from the tribes of Bonde and Arama. This territory may be considered as divided into two districts, that of Baiao on the East and Tiary on the West.

The former, richer and more populous, contains the villages of Baiao, Buclate, Mahamate, and Ouenhanc, and the other those of Tiary and Koko.

The village of Baiao, the residence of the chief of the tribe, Philippo Boéone, consists of thirty small houses scattered along the river of the same name, the waters of which, falling from the mountains, pursue their course through a valley which seems to be the line of division between the fertile lands of the southern part and the dry and sterile lands on the north-east side of the island.

The situation of the village is such as to leave nothing to be wished for in respect to the richness of the soil. Cocoa-nut trees and bananas abound there and unite with the shade which the other trees afford to every house. The river, broad enough already at the village, supplies it with the refreshment of its waters and with the crustaceous and shell-fish needful for the food of the population.

It is in this same valley, a little higher up than Baiao, that the mission is established. Isolated at first, the modest dwelling of the Fathers is now surrounded with an increasing village, every house in which shelters a Christian family.

This commencement of society, so contrary to the tastes and habits of the Caledonians, who always seek a lonely and sheltered spot for their dwelling and keep concealed from all eyes a portion of their interior life, I look upon as an important victory achieved by Christian civilization over savage life. Great perseverance was required on the part of the excellent Father Montrouzier, to whom this flock is confided, in order to break through this habit of isolation; and yet among

his most faithful people certain practices prevail which he has not been able to destroy, and which time alone will obliterate. Under the name and protection of St. Mary, this little Christian community extends itself in two parallel lines of native houses with conical roofs to the very foot of the church; whence there is a command of view over the plain through which the river flows slow and winding. In front of the elevated platform on which this modest chapel is built, and beyond the plain, the horizon of the sea is seen, indicated by the frothy line of the external coral reefs. At the foot is the village of Baiao and that of St. Mary, the garden and the park animated by the flock belonging to the missionary establishment. On the left the torrent which, fifty paces further on, becomes a river, and the beautiful meadow of the missionaries. On the right, the lands which separate Baiao from the neighbouring tribe,—rich lands susceptible of the highest cultivation.

It is evident from the agreeableness and diversity of this situation, and still more from the kind reception that one meets with there from the Fathers, that the missionary establishment is the favourite resort of those who desire relief from the weariness of the gloomy block-house of Balade. The enjoyment of this retreat is still more enhanced from the road conducting to it being sheltered here and there from the scorching heat of a vertical sun reflected from the sandy plain,—sheltered only at distant intervals by the stinted shade of the gloomy niaboulis. Happily, about midway the sand disappears, the plain itself changes its aspect, and the path leads through some plantations of the villages of Buelate and Bilounie, leaving that of Mahamate on the left. Some houses and a few bunches of cocoa-nut trees suffice to cheer this spot of ground and make one forget the burning sands by which it is approached. From thence to the brink of an inviting torrent, affording an occasional natural basin, hollowed by chance, offering at once to allay thirst and afford fresh vigour from a bath, a vast plain is spread out, covered with rich pastures and with high grasses, undulating beneath the western sea breezes of refreshing coolness.

From Baiao to Pouepo the country is more fertile, but uninhabited. At every step in this desert, traces are seen of former cultivation, blackened remains of habitations which have been destroyed in the sanguinary wars carried on by these two tribes in times gone by. About half way between we find the ruins of a wall, which served as a boundary line and very weak bulwark, sometimes for one, sometimes for the other, according to the chances of war, the varied success of a surprise attempted by the one on the other.

The people of Pouepo point out with pride, not far from this wall, the place where they gained their last victory over Pouma, who lost there several chiefs and a large number of their most valiant warriors. Without giving full credence to the doubtful accounts of these great wars, which, after all, terminated in a single day, when both parties took to flight, each his own way, it must be acknowledged from the traces of devastation scattered here and there, that the forsaken terri-

tory of which we are speaking was some years back the field of battle on which the quarrels of two hostile tribes were determined.

The village of Ouenbane, situated West of the blockhouse, at the opening of a valley more agreeable than the country which surrounds it, is, next to Baiao, the most important of the tribe. It is to this centre, or rather to its chief Tiangoun, that the other villages attach themselves in order to oppose Philippo and also our occupation, a secret but determined opposition. It is at Ouenbane that little conspiracies are got up, that robberies are planned, and that sailors give way to dissolute habits.

To the West of Ouenbane the good lands become more rare and as far as the river Ameutt no more cultivation or dwellings are found. This river, unfortunately with shallow entrance, flows through a valley; the slopes of which present several kinds of wood which could be turned to account in the foundation of an establishment. We observed there, especially, *tamano* and *iron trees* in greater quantity than in any other part of the territory of Pouma.

Beyond the river Ameutt is the village of Tiary, the territory of which limits the tribe on the side of that of Arama. This latter extends along the left bank of the Diabot, having the village of Koko in front; which also makes part of the tribe of Pouma, without, however, the chief of this latter having any real right of sovereignty over the chief of Koko. The territory of this last village, which is fifteen miles from the sea, as well as the whole valley watered by the Diabot, is, we are assured, exceedingly fertile. It is, nevertheless, thinly inhabited from its proximity to the tribes of Bonde and Arama, with whom that of Pouma has frequent quarrels; which commonly terminate by the devastation of their frontiers on both sides.

We have just said that the tribe of Pouma is bounded on the northwest by that of Arama. The latter indeed occupies the extreme point of the island, with some small unimportant tribes which are by turns victims of Bonde, Kouma, Arama, or of the inhabitants of the neighbouring isles.

The population of Arama is said to be more numerous than that of Pouma, but the people are less intelligent and warlike, arising, no doubt, from having had less intercourse with Europeans. To this same reason we must also attribute the relative inferiority of the people of Bondé to those of Pouma—their enemies; for from the day in which the former shall come in contact with us and shall have had in their possession fire-arms, as the latter, I have no doubt that equilibrium will be quickly established between the two tribes. That of Bonde enjoys the immense advantage of having an intelligent and skilful man for its chief, whilst that of Philippo has a man possessing only subtlety, a quality that will henceforth be useless to him.

The tribes of Pouma and Arama used to live on friendly terms with our establishment, both feeling the need of union with us against Bonde; but now, whether jealous of the advantages that the people of Pouma derive from our presence or whether from mistrust of us, those of Arama have reconciled themselves to their enemies of Bonde,

and, impelled by their new allies, they invaded the territory of Tiary; whence they were driven back with loss, and to their shame, by the Christians of Pouma. These hostile manifestations are directed as much towards us as to the people of Pouma, and will cease from the day on which the lightest punishment is inflicted on the aggressors. It is the certainty of an easy suppression which has kept me back from correcting these turbulent tribes, not wishing to compromise the future of the colonization by an untimely and perhaps useless rigour.

The isles strewed within the great reef, which extends 120 miles N.W. of New Caledonia, are inhabited by a population still more savage than the neighbouring tribes; of which they are the most implacable enemies. It is not uncommon to see an expedition of these islanders attack unawares the territory of Arama, lay waste all that they meet with on their route, and retire, carrying with them the bodies of the dead and their prisoners, who are destined for their cannibal feasts.

These islands are generally designated by the name of the most considerable, called Néněma, and situated at the N.W. point. It is on this one that that horrid tragedy took place in which twelve men of the sloop *Alcmène* were massacred and devoured by these hideous natives. The severe chastisement that has been inflicted on the population could not efface the horror it has inspired, and I acknowledge that I was forced to appeal seriously to my reason in order to resist a sentiment of hatred and revenge with which the sight of a considerable number of these miserable wretches inspired me in a visit they made to Balade during the stay of the *Constantine*. Whether in prejudice or whether in reality, they were more ugly, more repulsive in expression than other savages. They seemed to me to have a duller countenance, the eye completely blood-shotten, features more marked and more brutal, and more ferocious in their general appearance than any that I have seen throughout the ocean. I presume they observed the impression that the sight of them made on me, and well understood the few severe words that I addressed to them by the medium of an interpreter, for on the next day they left Balade, where they have not again appeared.

I have spoken sufficiently in detail elsewhere of the general character of the population of New Caledonia to make it needless that I should add another word to render it better known. The gradations which are observable from one tribe to another are referable to the greater or lesser frequency, and to the nature of their relations with foreigners. Thus the inhabitants of the Isle of Pines and those of the tribe of Pouma, having had more frequent and earlier acquaintance, are less savage, have a more lively and better developed countenance, are less mistrustful, are, in short, more easy of intercourse than any other population of the sea shore. Between the first and the second a notable difference is visible. Thus we have seen that the people of the Isle of Pines are haughty, thievish, impudent, drunken,—I will almost add more vicious than the most savage on the whole earth. Those of Pouma, equally factious, intelligent, vicious, so far as the

non-Christian portion, are more easy of intercourse with us, and are besides exempt from drunkenness.

This difference arises from the former having obtained their early European education under the sole direction of crews formed of whatever was most foul and abandoned among the outcasts of Sydney. The pupils necessarily imbibed something from their teachers, were it only the taste for strong liquors, which is now almost general. At Balade the first education was far otherwise. Most of the crews placed in contact with its population, belonging to vessels of war, were disciplined men, and could not set an example of disorder and of all kinds of vices. Again, our missionaries strove to remove from them all incitement to evil, and have succeeded in shielding them, if not from fresh vices, at least from drunkenness, a vice still unknown throughout the North.

Far from me be the aim to represent the people of Pine Island absolutely as incorrigible demons, and those of Balade as beings arrived at perfection; but from another quarter I fear that the latter, subject to influences as they will be, may lose on one side what they gain on another.

In comparing the northern territory of New Caledonia with the other points visited by the *Constantine*, I cannot help observing a marked inferiority in the former, whatever be the design of our occupation, and the mode of colonization that will be followed:—thus, timber for ship-building and carpentry are scarce in the North, the lands suited for cultivation are only met with in valleys closely confined and without extent, the declivities of which are so rapid that labour there would be extremely difficult. In reference to produce, the valley of Diabol alone seems to me to unite the elements of an important agricultural cultivation, and it is also placed in unfavourable circumstances as regards its communications with the sea. The famous anchorage at the mouth of the river is in reality very small, difficult of access, and only sheltered from the open sea by a line of reefs, a kind of defence which experience has shown us to be perfectly inefficient during the winter season. Notwithstanding this unfavourable condition for cultivation on a large scale, the superior fertility of this beautiful valley should secure it the attention of small capitalists, the true labourers, who found and civilize durable colonies.

Besides the fact that the N.E. of New Caledonia possesses not a single port that is tenable during the winter season, we must observe, also, that hurricanes are much more frequent and more violent the more we recede from the tropic. Thus, in the Isle of Pines and on the neighbouring coast, they are seldom felt; we are even assured never with their whirling and destructive character: at Kanala they are sometimes felt, but seldom with great violence; whilst further North they occur nearly every year, and with a violence of which I had no idea until I had experienced it during the stay of the *Constantine* in the anchorage of Pouepo. The temperature being sensibly higher, at the same time the land being less fertile in the North than in the South, labour would be much more burdensome to Europeans

at Balade than in any other locality. One may likewise add, the climate is less favourable, less healthy, in the North than in the South of the island.

As for the safety of navigation and facility of intercourse of New Caledonia, a glance at the chart is sufficient to explain the superiority of the South over the North. We may conclude, from what has been said of the extremity of New Caledonia, that the future reserves for it only a character of small importance in the projected colonizatian.

Tribe of Mouhélébé (Poucpo).

The tribe of Mouhélébé, that we have sometimes designated under the name of Pouepo, the principal centre of the population is, as we saw it, the next to that of Pouma, which seems to bound it on the N.W. Limited towards the interior by the tribes of Bondé and Tamaloum, it is separated from Yengen towards the S.E. by the small tribe of Diaoué, which belongs sometimes to one sometimes to the other of its two neighbours, according to the chances of war, which the latter have made from time immemorial.

The territory of Mouhélébé is extensive, and presents quite a different aspect from the lands situated more northerly. Its valleys descend from broad and fertile mountains, the slopes are less rapid, and the chain of the interior, separated from the coast by lowlands of great fertility, reach the plain by a gradual succession of green and cultivated platforms, which indicate a rich and numerous population. It seems, in short, that the nature of the country entirely changes as soon as one leaves the territory of Pouma; then only one begins to look on New Caledonia with more confidence for its future colonization. One is nevertheless disposed to doubt as to the destiny of this tribe, in considering that its harbour affords no other shelter than that of an exterior line of reefs, a barrier that experience has demonstrated to be insufficient.

It is true that a refuge might be found in an outer basin, formed by a low headland, which the coast projects on the N.E., and an inner reef reaching to the coast, and directing itself towards that headland. But the opening which gives a passage between these two obstacles is very narrow. The inner basin is of itself small in extent, and even admitting that a vessel might be sheltered there in ordinary weather, I doubt if this double enclosure of rocks below water would be sufficient to defend it against the violence of hurricanes.

I have spoken sufficiently at length elsewhere of the tribe of Mouhelebe to return to it now for another purpose than that of examining its appropriation to any system of colonization. By the fertility of its soil it seems destined to take an important part in the colonization of the eastern part of New Caledonia. At the same time that free labour would be established on the banks of the river which enriches the territory of Pouma, an establishment for timber might explore the magnificent forests which cover the mountains and adorn the elevated plains. Vast fields, now partially devoted to the support of the natives, might still receive a crowd of labourers, who would find a cer-

tain source of wealth in an easy and abundant production of all the riches of the tropics. The cotton tree, the clove, the coffee, the mulberry, and the olive, would vie with each other in the rich and varied soil of the lower grounds and the valleys; the sugar cane, the cocoanut, cultivated on a large scale for its oil, would find there soil favourable to extensive culture, to which the waters of the river, skilfully distributed, would carry vigour and fruitfulness.

I have mentioned in a former work the great and inexhaustible riches of this territory in timber for ship-building. I will not return to the long list of the different species which we found there; but I am led to make known afresh the utility of the speedy construction at this place of an establishment for the felling and preparing of timber. The population, more numerous, more mixed, than that of the northern tribes, seems to me more apt than they to take advantage of the benefits of a change. The general physiognomy of the inhabitants is intelligent, and gives plainer evidence of the mixture of indigenous and polynesian blood, a mixture which is the result of the immigration to their part of the island of a colony of inhabitants from Uvea or Wallis, which establishment their tradition dates back to a remote period. This blending of the two races is as remarkably developed by the clearer colour of the skin of the natives, as by the superiority of their forms; and it has certainly had a corresponding influence on the disposition and the manners of the inhabitants of Pouepo.

We find them, in fact, more open in their conduct and manner than the people of Pouma. They are, at the same time, more independent and more jealous of their liberty; but, likewise, more under the principle of submission to the authority of their chief. This trait of character makes me think that by continuing to direct the present effective chief, Hippolyte, in the true mode of advancement, it will be easy to lead the whole tribe. By his all powerful authority the entire population will, I am convinced, be organized for labour; an immense advantage, which would not be obtained in the tribe of Pouma, whose chief has neither the confidence nor the esteem of the inhabitants. As for the defence of the anchorage against an external attack, the coast has more favourable conditions than that of Balade. A battery placed on the N.E. point of the inner harbour would protect this as well as the outer one.

Yengen.

Yengen, with its two beautiful valleys and its two rivers which flow into its inner harbour, would be found placed in the same condition as Pouepo in respect of colonization; the same soil, the same productions, the same timber to work; a like population, formed out of the same elements and having similar manners and dispositions, are characteristics common to these two tribes, whose union into a single settlement might, I believe, be effected without much difficulty, notwithstanding the native enmity which divides them. Perhaps even this enmity, skilfully worked and conducted, might become a useful and powerful means. We must not forget that the will of the Chief

of a tribe has so much the more power over the people as he has known how to make himself feared, esteemed, and respected by real superiority. Let us remember the portraiture drawn elsewhere of the Chief Hippolyte, of Pouepo, and of the Chief of Yengen, Buarate, and the parallel will establish the conclusion that we shall best obtain by themselves the union of the tribes.

The inner harbour of Yengen, which cannot be looked on as secure during the winter season, has, however, greatly the advantage over the exposed anchorages of Balade and Pouepo. And if it were possible, as I believe it is, to open the bar which now obstructs the river in the South, we should have within this bar a perfectly sheltered harbour, capable of containing a great number of ships of large tonnage. Nothing would be easier than to defend this new harbour by the establishment of a battery on Kalégone Promontory, which would at the same time protect the present inner anchorage.

(To be continued.)

NOTES ON THE NAVIGATION OF THE DARDANELLES, BOSPHORUS, AND BLACK SEA.—*By Mr. W. T. Mainprise, Master, (late,) of H.M.S. "Britannia."*

[Bearings Magnetic unless otherwise expressed.]

Dardanelles.

The best anchorage for a large ship or squadron is under Nagara Point, in from 17 to 10 fathoms water, or less. The shore lying North and South, may be approached to within a cable's length. Anchor no further to the southward than one mile from Nagara Point, or you will be in very deep water; nor nearer Nagara Point than two cables. The shoal off Nagara Point is not so extensive as is generally represented; from one and a half to two cables is its full extent. Capt. Spratt gives us a clearing mark, Boyala Fort N. 8° W., true, or N.b.W. ½ W. by compass.

About four or five miles eastward of Nagara Point anchorage is indicated on the chart. A large ship should approach this with caution, as there are only three fathoms water at a distance of seven or eight cables from the shore just South of a remarkable white streak extending from the top of a cliff on the North shore to the water's edge, and a hummock with mills on it at Maitos, just shut in by Cape Abydos. Between this and Gallipoli are several low projecting points on either shore, which make the passage of the Dardanelles dangerous in a dark night.

Anchored off Gallipoli in 17½ fathoms, excellent holding ground, with Gallipoli Point E.N.E., about four cables. This point is bold to three quarters of a cable, or less.

Neither Gallipoli Light nor the Asiatic Light is at present to be depended on, especially the latter. From Gallipoli Roads it could scarcely be discerned.*

Bosphorus.

The anchorage under Seraglio Point is very good, Fanar Lighthouse E.N.E., Seven Towers W.b N., 15 or 16 fathoms, mud. The marks for clearing the shoal off Point San Stephano (Sea of Marmora) and the small shoal off Seraglio Point, are (to the N.E.) the trees on Mount Boulghourlu (a few scattered trees) in line with the N.W. tower of Kavak; Serai Barracks (a large conspicuous white building just southward of Skutari). At anchor with the above bearings you will be just within this line, out of the down stream, and clear of the track of vessels.

In the present crowded state of the Golden Horn, many vessels anchor off Skutari; and as I have seen them there to the end of December, I conclude it must be a tolerably safe anchorage. The destruction of property from vessels fouling each other for want of a directing hand to place them, is very great.* In all parts of the Bosphorus you frequently see vessels at anchor, notwithstanding the great depth of water; yet few ever go on shore. I believe the worst winds are from the southward, when there is at times a strong current of three or four knots running up, and a strong and variable eddy in most of the places generally used as anchorages; especially at Beikos, where we experienced one of these southerly gales and the ships were in danger of snapping their cables or fouling each other from breaking their shear.

Shoals and Rocks.

The two rocks off Kouron Cheshmeh are built on, and vessels make fast their hawsers and cables to them. This is also the case with the rock in Behek Bay. The shoal off Kiobashi Point frequently brings vessels up; as also the Oumour and Selvi Banks, commonly called the English Shoals. Five buoys might be advantageously laid down in this part of the Bosphorus, namely:—one on the shoal off Point Kiobashi; one on the shoal in Beikos Bay, off the ruins of the old minaret; and three on the Oumour and Selvi Banks.

Marks for avoiding these banks on the West side.—Sultan's new palace in line with the trees on Selvi Bournou; minaret in Sariyeri on with a small tree by itself on the top of the high land; Tower (or Pernder Mill, near a single tree on the top of the hill,) on with the West end of the battery, half a mile southward of Roumili Kavak; high square tower on Kavak Point open of Point Majar Kalessi. Taking up each of these marks in succession,† you will round these

* We trust these remarks will not prove ineffectual in remedying the defects.—Ed.

† They would have been more easily found by a stranger had the compass bearing (nearly) of each been given, as they always should be.—Ed.

banks close to. There is a good passage inside these banks, which is frequently used by the tugs when towing vessels into the Black Sea. The South angle of the red barracks on the North shore just a little open of the point southward of it, or the flag tower of the battery open of Oumour Point; which latter point may be passed at half a cable's distance.

The reef of rocks off Roumili Kavak just shows itself, and the Majar Bank may be cleared by keeping the small battery North of Therapia open of Majar Kalessi Point.

The best anchorages in the northern part of the Bosphorus are those of Buyuk-dire, that within the Oumour and Selvi Banks opposite, and that of Beikos. That off Yeni Kivi is on coarse ground, consequently bad for holding.

From the Black Sea, the Bosphorus has a very blind entrance, which in thick weather is most bewildering and often very dangerous to sailing vessels. The *Directory* gives you some marks by which to distinguish it, all of which are good, namely, Mount Meltepeh, a single peaked mountain, seen over thirty miles, which, bearing S.b.E., leads direct to the entrance; the Two Brothers, two peaks a few miles eastward of Meltepeh, also seen about thirty miles; on a nearer approach will be seen Giants Mountain and a deal of wood, also a white cliff. All these are on the Asiatic side.

On the European shore the coast is lower and more regular. To the westward of the Bosphorus are some low red cliffs; between which and Roumili lighthouse are some red patches of ground; and on the hill overlooking the lighthouse is a single tree and round tower, the latter being the western object of the two. On one occasion we saw one of the lights at a distance of twenty-eight miles, from an elevation of thirty-seven feet.

The Turkish lights were not generally to be depended on, but since the beginning of the present war more attention has been given to those of the Bosphorus.

There is generally a current running across the entrance of the Bosphorus to the eastward, but not so strong as is supposed. I doubt that it exceeds half a mile an hour. Leaving the Bosphorus with a southerly wind, and bound to the eastward, we experienced a current in our favour of a mile an hour; and from what I can learn this is usually the case, either in calm weather or southerly winds.

Bay of Kavarna.

Kavarna is a large bay, formed by Capes Kaliakra and Gogof, with regular soundings and good anchorage throughout. The usual and safest anchorage for a fleet is off Baljik. We anchored here in what we thought a good berth for a large ship in winter, in eight fathoms and a half (mud), centre of the town N. 16° E., about a mile; Cape Kaliakri S. 78° E.; Cape Gorgof S. 41° W. Though open to S.E. and South winds, I believe this anchorage to be perfectly safe at all seasons. Any supply of fresh water can be obtained from a stream

that turns some mills about half a mile westward of the town. There are other smaller streams further to the S.W. also running into the sea; but in summer, with one exception, these are very small.

The anchorage of Baljik is far preferable to that of Varna; in which bay is a deal of sea with winds from N.E. to S.E. About four miles northward of Cape Gorgof, and at five or six cables from the shore, are two rocky patches nearly awash and about a quarter of a mile apart,—they break in any sea. Captain Spratt, I think, has clearing marks for this shoal.

Coast between Eupatoria and Cape Aia (Crimea).

Eupatoria Point is very low and should be carefully approached, the soundings shoaling quickly from seven fathoms to sixteen or eighteen feet. Lazaretto Point is also low, but better seen, from the buildings on it. Report also gives a shoal to this point, extending to the S.E. about three cables.

The anchorage in Eupatoria Roads is quite open to southerly winds, which send in much sea. During the storm of the 14th November, when the wind was blowing right in, the ships at times were riding nearly broadside to the wind and sea, such was the strength of the offset. The holding ground is excellent; five fathoms and a quarter. Lazaretto flag-staff W.¼N.; outer extreme W.S.W.; mosque N.N.W.½W.; eight cables and a half from the shore. Six fathoms and three quarters; mosque N. 20° W., about a mile and a half. I should prefer a berth about midway between these two; that is, with the mosque N. 20° W., about a mile and a quarter. Last year there were vessels in these roads throughout the winter and none were lost. After November southerly winds are rare, and with all other winds you are safe.

From Eupatoria the coast continues low for about thirteen miles, and may be approached by the lead to five fathoms, at about eight cables' distance; then follow some low red cliffs and further to the southward stands a guard house. At about a mile and a half or two miles from the coast is a shoal of sixteen feet, discovered by the French screw corvette *Primanguet*, who gave the following bearings for it:—North point of a hill or cliff N. 6° E.; white house to the right and on that hill N. 87° E. In chart 2233, Black Sea, sheet 4, I have marked this shoal in lat. 44° 58′ 50″ N., long. 33° 33′ 30″ E. [Inserted in chart.—Ed.]

The coast still continues low, with low red cliffs and beach, as far South as the Alma; whence it becomes higher with steep perpendicular cliffs and table land.

The mouth of the Bulganak river is marked by a guard-house on the North side of a deep gully in the cliffs;—these cliffs being red and a little higher than those on either side. The soundings off the Alma, in the direction of N.W., are regular, with a bottom of mud under a surface of loose gravel and shells.

From Cape Loukoul to the Katcha the coast is one steep perpendicular cliff with a table top, and at a large half mile off, with very ir-

regular soundings over a rocky bottom. It should not be approached within three quarters of a mile, especially to the westward and N.W. of Cape Loukoul. One of the transports grounded off this cape a large half mile, in two fathoms and a half, rock.

Off the Katcha we anchored in twelve fathoms, mud, (excellent holding ground,) with the mouth of the river (not easily seen but near the centre of the beach) S. 86° E., about a mile: Cape Loukoul, shut in by the land to the southward of it, N. 11° W.; Cape Khersonese lighthouse S. 41° W. Between this and the river the soundings are perfectly regular, shoaling one fathom every cable's length, and having four fathoms and a half at two cables from the beach. With Cape Loukoul just showing open of the land southward of it, sixteen fathoms and a half.

Between the Katcha and Balbec Rivers the land presents much the same appearance as that to the northward, except that the cliffs are more sloping, the approach to the beach cleaner, and the soundings more regular. The Balbek has about three fourths of a mile of beach to the southward of it, when the coast again rises to steep cliffs as far South as the semaphore.

The Russian plan gives you a very good idea of the Bays of Kamiesh and Kazatch; the first of the two being by far the best, both as to size and safety. The latter is much cut up by the rocky shoal extending North three cables from a point in the centre of the bay; under less than eight fathoms the holding ground is bad.

These bays have given shelter to many vessels during the southerly gales we have had, and which have always moderated after veering round to W.b.N. How far they may be safe with winds northward of this point (W.b.N.) I cannot say. This year southerly winds have been very prevalent, much more so than has been known for many years. In other parts of the Black Sea and Mediterranean a southerly gale usually ends by shifting to the N.W.; but on this coast we have not found it shift to the northward of W.b.N.

During the nine months of my observation in the Black Sea (March to December), there was but very little lightning or thunder,—perhaps it may have been observed six or seven times.

Cape Khersonese is a long, low, shelving point. On its extremity stands a lighthouse. Off it extends a shoal, about five hundred yards, which is cleared on its S.W. side by keeping Cape Feolante open to the right of the land westward of it.

Cape Feolante is a high bluff, with a sharp conical rock rising from the water on its S.E. side. A reef extends off it nearly a cable and a half. The monastery of St. George and its grounds stand a little down the cliff to the eastward of it. Between this and Port Balaklava is another steep, high, perpendicular point. The entrance to Balaklava is not easily distinguished. Its only guide is an old Genoese tower standing on the East point of its entrance. On either side the shore is high and rocky.

Cape Aia is also a steep perpendicular bluff, quite overlooking the sea. It is higher than Cape Feolante and shows over the land inshore

of it. With it bearing S.S.E. it will lead direct to the entrance of Sevastopol.

Variation of Compass, Black Sea.

Date Observed.	Lat. N.	Long. E.	Ship's Head.	Variation by Standard Compass.	Deviation.	Reduced Variation.
1854.	° ′	° ′		° ′	° ′	° ′
Mar. 24	41 23	29 10	North.	7 4 W.	0 0	7 4 W.
April 17	43 30	28 45	N.E.¼N.	5 39 W.	1 40 E.	7 19 W.
,, 19	44 50	30 30	North.	6 34 W.	0 0	6 34 W.
,, 27	45 6	33 00	S.E.b.E.	4 56 W.	0 55 E.	5 51 W.
,, 28	44 45	33 00	S.S.W.	6 18 W.	0 15 W.	6 3 W.
May 1	44 34	32 55	N.W.b.W.	6 57 W.	1 30 W.	5 27 W.
,, 19	43 50	29 45	S.W.b.W.	7 37 W.	1 00 W.	6 37 W.
July 24	44 43	30 40	E.b.N.	5 30 W.	1 40 E.	7 10 W.
,, 25	44 40	32 10	E.b.N.¼N.	4 30 W.	1 55 E.	6 25 W.
Sept. 11	45 36	31 40	S.E.	5 41 W.	0 25 E.	6 6 W.

[No ship proceeding to the Krimea should go without Captain Spratt's beautiful chart of the Krimea coast from Cape Aia to Cape Lookoul, which gives the navigation on a liberal scale and some highly interesting and useful views of nearly the whole coast, particularly that about the entrance of Sebastopol and Balaclava,—all of which are highly creditable to that officer.—ED.]

CRUIZE OF H.M.S. DÆDALUS IN THE PACIFIC OCEAN.

At 1h. p.m. May 25th, 1851, discharged pilot, and at sunset bore up for the West end of Woahoo, Diamond Point bearing N.E. six miles. At midnight the North end of the island bore N.b.E.½E.; and by noon of the next day we were northward of all the group, with a steady trade from N.E.b.E.; which carried us to lat. 27° N., and long. 162° W. We now lost the N.E. trade. After a short interval of calms, had moderate variable winds, ranging from West to N.N.W. and N.N.E. and again back to N.W., with smooth water. The temperature decreased to 60° in lat. 30° N., so that we were glad to put on blue clothing. These winds continued to 35° N. and long. 172° W.; these were succeeded by N.N.E. and E.N.E. breezes, with overcast, foggy, and occasional squally weather, accompanied by a short heavy sea from the same quarter, until the 12th June, in lat. 51° 30′ N., and on the meridian of 171° W. At this time Amoukhta, one of the Aleutian Group, bore N. 1° 14′ E., true 57′. The wind freshening to a gale from East and the weather so hazy as to preclude the possi-

bility of ascertaining the ship's position by observation, together with a falling barometer and heavy N.E. sea, wore, and stood to the S.S.E.

On the following day, June 13th, the wind having shifted to S.E. and the sun at intervals appearing through the haze, enabling us to ascertain the ship's position pretty correctly, bore up at 10h. 15m. a.m. for the channel formed by the Islands of Amoukhta on the East and Sequam to the S.W. At noon, the former, by observation, bore N. 41° E. (true) sixty-seven miles. Tried for soundings at 4h. p.m., but could find no bottom with fifty fathoms line.

In running through the channel we saw numerous birds of various species, and passed several patches of floating kelp, likewise strong tide ripples; but could not perceive the slightest appearance of land, a dense white haze hanging to windward of the islands. Temperature at this time 36°, being 36° less than the mean at the Sandwich Islands.

Up to this date the direction and velocity of the current was observed as follows:—Between Woahoo and 24° N. we found no material change in the daily reckoning. Between 24° and 28° N. the current ran S. 57° W. to N. 17° W., true, sixteen miles per day. From lat. 28° to 30° N., S. 23° E., fifteen miles in twenty-four hours; and from thence to lat. 39° N. its mean direction was S. 56° W. thirteen miles per day, with moderate West and northerly winds. Between lat. 39° and 42° N. it decreased to six miles per day N. 30° E.; and from the latter position to Amoukhta the state of the weather was such that no opportunity offered of determining its direction and force.

The greatest daily range of the thermometer, in the shade, between Honolulu and lat. 31° N. was 8°; between 31° and 41° N., 6°; and from lat. 41° to Amoukhta, 3°; and it decreased at the mean rate of 11° of temperature for each 10° of latitude.

The mercury in the barometer between Honolulu and 47° N. stood between 30·27 in. and 30·42 in., the latter with N.W. and N.E. winds; the lowest observed being 29·50 in., blowing a fresh easterly gale, when near the Aleutian Islands.

During this period of the passage we saw but very few objects of any consequence, excepting a few whales, in 39° N., and several streams of medusæ; and in lat. 46° entered a dense fog, which accompanied us to, and North of the Aleutian Islands.

The Last Expedition in Search of Sir John Franklin.

[The reader is aware that this last expedition, although promptly executed by the Hudson Bay Company, is really that of H.M. Goverument, planned by the Admiralty, with the assistance of Sir George

Back and Dr. Rae, and who better qualified than these two gentlemen could be found, to assist with their counsel and advice. They were summoned to give it one afternoon, and orders went the next from her Majesty's Government, through the Hudson Bay Company, to Sir George Simpson in Canada, to carry their plan into execution, and to hasten as much as possible the necessary preparations for the descent by canoes of the River Back, first discovered by Sir George as long ago as when he went to ascertain the fate of Sir John Ross, who had gone out in the *Victory* to make the North-West passage. Thus with the road pointed out to the party, which Sir George had already explored and laid down on the map, there was nothing to prevent them from making the rapid journey which they did to the mouth of the river, which Sir George had pioneered and described for them with his small party in a single canoe. How well he succeeded in surmounting every difficulty, and how graphically he described the country through which he passed, both with pen and pencil, his description of "The Arctic Land Expedition," published afterwards, bears ample testimony, and the world has long since acknowledged in admiration of his successful enterprise, that, as Mr. Anderson has truly said, it would be superfluous to add anything to it.]

The following is a copy of the letter from Chief Factor James Anderson to Sir George Simpson, Governor-in-Chief of Rupert Land, dated Fort Resolution, Sept. 17th, 1855, describing his proceedings:

Fort Resolution, Sept. 17th, 1855.

Sir,—I beg to state for your information that the expedition you were pleased to intrust to my command returned here last night.

After having descended Back's Great Fish River, and explored the mainland and islands as far as Maconochie Island, undoubted traces of the missing party were found at Montreal Island; but I regret to say that neither the remains of our unfortunate countrymen, nor any persons, were discovered. My previous despatches would have informed you that I arrived at Fort Resolution late on the 20th of June. The three canoes built under the superintendence of Messrs, Stewart and Ross, were all ready; they were of an excellent model, the woodwork very strong; but the bark, though the best that could be procured at so short a notice, was very inferior. They were, of course, very heavy, their ladings amounting to twenty-four pieces of 90 lb. each, and consisting principally of provisions, with a good supply of ironworks, &c., for the Esquimaux, ammunition, nets, Halkett boat, and the luggage of the party. Double sets of poles, paddles, and lines were also provided. Fifteen men and an Indian guide to Sussex Lake composed the crews; but I found we were too weakly manned, and added three Yellow-knife Indians, who wished to go to their lands. The only thing wanting was an Esquimaux interpreter.

Late on the evening of the 22nd of June the expedition made a move to an island about a mile from the Fort. Heavy gales from the N.E. detained us between there and Rocky Point, where the traverse is taken until the 27th; these, however, cleared our road of ice. On

the 28th we encamped at the upper end of Tal-thel-leh Strait; we then fell in with the ice, it was about two feet thick. We were employed till the morning of the 2nd of July in making our way through it, by cutting, pushing the pieces apart, and making portages over the points of land. Young ice formed every night, and the further we advanced the sounder it got. The canoes too unavoidably received some injury.

At that date we had reached the place called "the Mountain" in Back's map, and mentioned in his narrative as being a route to the barren grounds, but only practicable for small Indian canoes. The guide engaged by Mr. Stewart was unacquainted with this route; he proposed taking us by a river falling into Great Slave Lake on its eastern shore, nearly opposite to Fort Reliance. By means of this river, some lakes, and ten portages, he intended to round the head of Great Slave Lake, and fall eventually at the Beaver Lodge in Artillery Lake.

Hoar-frost River, which Sir George Back ascended with difficulty in a half-sized light canoe in the autumn, would have been at this season impracticable. To get through the ice to either of these rivers would have occupied a long time, and then Artillery, Clinton, Colden, and Aylmer Lakes were still before us; it was clear that if some other route were not adopted, the expedition must fail. Here was our only chance. One of the Indians had passed by this route as far as the river falling into the upper end of Aylmer Lake; he gave a disheartening description of the difficulties to be surmounted, and the high range of mountains before me was anything but encouraging. I, however, determined on making the attempt, as the route was so much shorter, and we might also expect to have a long stretch of open water on Lake Aylmer at the mouth of the river.

Immediately after breakfast the portage was begun, and, though four trips were made before we encamped, the canoes and ladings were carried over three and a half miles of mountains and across a small lake. At 10.30 p.m. our fine fellows were descending a steep mountain with the canoes, singing "La Vialette." The next day's work was something similar: the third was a little better, after which the mountains subsided to gentle hills, and the lakes were larger, some of them from twenty to forty miles in length. In short, after passing through twenty-four lakes and twenty-five portages, we reached the river falling into Lake Aylmer (which I have called Outram River, after a gallant relative) late on the 7th of July. Two easy rapids and about twelve miles of river brought us to Lake Aylmer.

I had now to trust to my own guidance. As I had anticipated, we found the lake at its mouth free from ice, and had fine paddling for about thirty miles. When we fell in with the ice, the whole lake appeared solid and unbroken: the ice was about three feet thick and perfectly sound.

The North side of the lake which we followed is indented with deep bays, separated from each other by narrow necks of land; round these and close to the shore we had to work our way by cutting, poling, and

numerous portages across points, with occasional pieces of open water at the bottom of the bays. There were also some crevices through which we passed at a great risk of being nipped; we had several hair-breadth escapes; indeed, one of the canoes was once only saved by pushing poles under her bottom and allowing her to be lifted on the ice. We finally arrived, with our canoes much injured, at Sandhill Bay on the 11th of July.

We had now the advantage of Sir G. Back's map and narrative; the former, the one attached to his book, was on far too small a scale for our purpose, but the latter was of great service.

It is needless for me to describe the descent of this dangerous river after the minute and correct description of our gallant predecessor. Notwithstanding the exquisite skill of our Iroquois Boutes, the canoes were repeatedly broken and much strained in the whirlpools and eddies. The river to the small lake falling into Musk Ox Lake was nearly dry, and the portage work was most severe.

On the 13th of July Musk Ox Rapid was reached; here we found a few Yellow-knife Indians.

Our four Indians and one man were left here; the latter, with one of the Indians, was to return to Great Slave Lake to join Mr. Lockhart, and the expedition now consisted of the following persons:—

James Anderson, first command; J. G. Stewart, second command; B. Assiniyunton, Ignace Montour, and Joseph Anarize, Iroquois boutes; Thomas Misteagun and Paulette Papanakies, Muskegon steersmen; John Fidler, half breed, steersman; Henry Fidler, Edward Kipling, George Daniel, and Donald M'Leod, half breed, midmen; Jerry Johnston, Muskegon midman; Joseph Boucher, Canadian midman; Murdo M'Lelltn, Highlander midman; and William Reid, Orkneyman midman.

On the 15th, the worst canoe, which was completely worn out, was left, and we now proceeded with heavier ladings, but better crews. On the 20th, the first Esquimaux were seen at the mouth of and below Mackinley River. There were five lodges, and we visited two of them. We here found the want of an interpreter. We had two of Dr. Rae's men, who understood a few words and phrases, and with the aid of signs, they made us understand that they came down Mackinley River. They were not much alarmed, and we soon got excellent friends.

They had evidently seen whites, or had communication with others of their countrymen (most probably those who resort to Churchhill) who had intercourse with them, as they possessed a few of our daggers, beads, files, and tin kettles; and one old man brought down some wolf skins to barter. They were clothed entirely in deer and musk-ox skins. Their canoes were made of deer parchment, and not a piece of seal skin was seen among them.

Another party was seen at the rapid between Lakes Pelly and Garry. The men appeared to be all absent, and the women and children fled on seeing us. Some small presents were left in the lodges to show our kindly intentions.

In Lake Garry we had to work through about fifteen miles of ice; but, although ice was observed in some of the other lakes, we met with no further obstruction from this cause.

On the 30th, at the rapids below Lake Franklin, three Esquimaux lodges were seen on the opposite shore, and shortly after an elderly man crossed to us. After the portage was made we crossed over, and immediately perceived various articles belonging to a boat, such as tent-poles and kayack paddles made out of ash oars, pieces of mahogany, elm, oak, and pine; also copper and sheet-iron boilers, tin soup tureens, pieces of instruments, a letter nip with the date 1843, a broken handsaw, chisels, &c. Only one man was left at the lodges, but the women, who were very intelligent, made us understand, by words and signs, that these articles came from a boat, and the white men belonging to it had died of starvation.

We, of course, showing them books and written papers, endeavoured to ascertain if they possessed any papers, offering to give them plenty of the goods we had with us for them; but, though they evidently understood us, they said they had none. They did not scruple to show us all their hidden treasures. Besides the man, there were three women and eight children. The remainder of the party, two men and three lads, were seen towards evening.

Point Beaufort was reached on the 31st. We were detained there the next day till half-past two p.m. by a S.W. gale. We then took the traverse to Montreal Island. To seaward the ice appeared perfectly firm and unbroken.

When about three miles from the island, a large stream of ice was observed coming at a great rate before the wind and tide out of Elliott Bay and the other deep bays to the westward. Every sinew was strained to reach the land; but we were soon surrounded by ice, and for some time were in most imminent danger. The ice was from six to seven feet thick, perfectly sound, and drifting at the rate of five or six miles an hour. In fifteen minutes after we had passed, the whole channel to Point Beaufort was choked with ice. Had we not succeeded in crossing on this day, we should have been detained on the eastern shore till the 10th.

We had thus arrived at the first spot indicated by our instructions on precisely the same day as our gallant predecessor, Sir G. Back.

The next two days were devoted by the entire party to the examination of the island, and the small islands in its vicinity. On a high ridge of rocks at the S.E. point of the island, a number of Esquimaux caches were found, and, besides seal oil, various articles were found belonging to a boat or ship; such as chain hooks, chisels, blacksmith's shovel and cold chisel, tin oval boiler, a bar of unwrought iron about three feet long, one and a half inch broad, and a quarter of an inch thick; small pieces of rope, bunting, and a number of sticks strung together, on one of which was cut "Mr. Stanley" (surgeon of the *Erebus*). A little lower down was a large quantity of chips, shavings, and ends of plank of pine, elm, ash, oak, and mahogany, evidently sawn by unskilful hands; every chip was turned over, and on one of

them was found the word "Terror" carved. It was evident that this was the spot where the boat was cut up by the Esquimaux. Not even a scrap of paper could be discovered, and though rewards were offered, and the most minute search made over the whole island, not a vestige of the remains of our unfortunate countrymen could be discovered.

On the 5th we succeeded in crossing over to the western mainland, opposite to Montreal Island, and the whole party was employed in making a most minute search as far as the point of Elliott Bay, and also to the northward. As the whole inlett was full of ice which had not yet moved, but was split into immense fields by the rising and falling of the tide, we could only proceed close in shore at high tide, when by pushing small blocks apart, finding pieces of open water at the bottom of the bays, and navigating through channels of water on the ice, we reached Point Pechel Lake on the 6th.

The whole coast between Montreal Island and Point Pechel was searched by a land party, always accompanied by Mr. Stewart or myself. Many very old Esquimaux encampments were seen, but not a trace of the party.

By this time our canoes had received so much damage, and were so weak and leaky, that it was evident the safety of the party would be hazarded were they subjected to more rough usage. The ice, too, here was forced on the shore, and there was no prospect of our being able to get through it; I therefore determined to complete the search of the peninsula on foot.

Early on the 7th the party, with the exception of two of the Iroquois, who were left to repair the canoes, started in light marching trim, taking the Halkett boat with us. Five men followed all the sinuosities of the coast, while the others were spread at equal distances inland, Mr. Stewart and myself taking the middle space. Shortly after leaving the encampment a river was forded; this must be a large stream at a high stage of water. It was called Lemesieurier River, after a relative of Mr. Stewart. No fuel was found in our encampments, and in two hours we left all signs of vegetation behind. The remainder of the peninsula is composed of high sand-hills, intersected by deep valleys, evidently overflowed at spring tides and during gales.

We encamped late opposite Maconochie Island, and the only vestige of the missing party found was a small piece of cod-line, and a strip of striped cotton about two inches long and an inch broad. These were found at Point Ogle, in an Esquimaux encampment of perhaps three or four years of age.

Next morning a piece of open water enabled us to launch the Halkett boat, and explore Maconochie Island; but nothing was found. It was impossible to cross over to Point Richardson, as I wished, the ice driving through the strait between it and Maconochie Island at a fearful rate. About three o'clock in the afternoon we began to retrace our steps through a tremendous storm of wind and rain. The last of the party did not reach the encampment till past ten o'clock at night, and, as there was no fuel, we were obliged to creep under our blankets thoroughly wet, and with no other supper than a piece of cold and rather ancient pemmican. It was now evident that all that could be

done with our means had been accomplished, and that, with our frail craft, any delay in returning would compromise the safety of the whole party.

It may be thought strange that the remains of so large a party could not be discovered. It is my opinion that a party in a starving condition would have chosen a low spot, where there they could haul their boat up and have had some shelter; and that, if they perished there, their bones have been long since covered by sand or gravel forced up by the ice. Any books or papers left open would be destroyed by the perpetual winds and rain in this quarter in a very short space of time; for instance, a large book, *Raper's Navigation*, was left open on a cloak at Montreal Island; it was blown open, and the leaves were pattered about in such a way that had it not been instantly closed it would have been torn in pieces.

No party could winter on this coast. In the first place there is not enough fuel; and, secondly, no deer pass. About one hundred deer, mostly bucks, were seen on Adelaide Peninsula on our way to Point Ogle, but not one on our way back. Their tracks were all seen going to the South. On the eastern coast only five deer were seen. It would also be a matter of immense difficulty to get supplies down Fish River for even a small party.

On the 10th of August a shift of wind enabled us to cross over to Point Beaufort without injury, and a gale brought us to Point Backhouse at half past ten p.m.

The Esquimaux were still at the rapids of Lake Franklin. Another attempt was made to see if they possessed papers of any description; the contents of our trading cases were offered for any. They showed us all their caches, but nothing of interest was discovered.

The fishery of fresh water herring and trout appeared to be over, as those we saw hanging to dry on our way down were all stowed away securely in caches, and the party were on the eve of departure to hunt deer.

Handsome presents were made to them, for which we got boots for most of our men. The Upper Esquimaux were also seen and treated in a similar manner.

The weather during the whole trip up was dreadful, blowing continually with rain, snow, and hail, and it froze sharply below and above Lake Beechey. Our canoes also were very frail and leaky. There was still less water in the upper part of the river than on our way down. From the lake above Musk Ox Lake to Lake Aylmer was almost one continuous portage. That Lake was reached early on the 31st of August.

Our progress through the lakes was much retarded by strong head-winds and fogs. Some time was also lost in finding the very narrow and hidden outlets of Lake Aylmer and Clinton Colden; at the latter I was disappointed in not finding Indians.

Early on the 9th we reached a bay at the end of Artillery Lake, on the East shore, near the head of Aheldessy. It was impossible to descend that river, and we were employed the remainder of the day in discovering an Indian road to Great Slave Lake through a series

of small lakes and a small river. After passing through eight small lakes, and making as many portages, we reached the river, and soon after got sight of Slave Lake. A portage of five miles was made with the pieces; the canoes were partly brought down by water. Mr. Stewart and I reached old Fort Reliance, where the new establishment was also erected, about three p.m. of the 11th, and the canoes arrived at ten the next morning.

As there was no prospect of discovering anything more from this quarter, I conceived that I was not justified in incurring further expense or risk, and, according to your instructions, determined on sending out the people this fall.

Mr. Lockhart had left the day previous to my arrival with two small boats, which, with their ladings, were to have been put *en cache* at Sussex Lake, in the event of the expedition having been continued another season. I sent off two men immediately to recall him. Mr. Stewart remained to pack up everything at the fort, while I left on the 12th at two p.m. to stop the boat coming from Resolution with supplies.

No privation was sustained by the party for want of provisions. We brought three pemmican back. Sir George Back saw immense numbers of deer and musk oxen on his way down. We only saw a few scattered deer with their fawns, the bucks having all passed to the North, and a few herds of musk-oxen. On our way down no time was lost in hunting these, as we got as many Canada geese as we wished by running them down; as they were moulting, and were all ganders. On our way up many tracks were seen going South, but no deer until we arrived at M'Dougall Lake, and then only a few does. At the head of the river, and in Lake Aylmer and Clinton Colden, they were pretty numerous, and among them many bucks in fine condition. The following is our game list:—289 geese, 25 deer, one musk-ox.

The conduct of the men was beyond all praise; they sustained hardships and risks, of no ordinary description, not only with cheerfulness, but with gaiety, The weather on the voyage up was very severe. Not a day passed without rain, sleet, and hail falling between Point Backhouse and Musk Ox Lake, after which he had occasional fine days. None of the party were provided with waterproof clothes or bags; the canoes also were very leaky. Still not a murmur was heard, though their groans at night evinced that they suffered from pains in their limbs.

Trusting that my proceedings will be approved by her Majesty's Government and the Hon. Company,

I have, &c.

JAMES ANDERSON, C.F.

Commanding Arctic Searching Expedition.

To Sir George Simpson, Governor-in-Chief, Rupert Land.

Sept. 21st.

P.S. Messrs. Stewart and Lockhart, with the remainder of the party, arrived here on the 20th inst., and will leave to-morrow morning. They will, I trust, reach Isle a la Crosse by open water.

The Auxiliary Screw Steam Clipper "Royal Charter."

The desire to render the communication between England and Australia more expeditious and certain has induced Messrs. Gibbs, Bright, and Co., of Liverpool—the representatives of the Australian Navigation Company—to construct a large iron clipper-ship, fitted with auxiliary steam power, to be available when calms and other causes render the use of sails less effective. It is well known that up to the present time sailing vessels—that is, of the clipper build—have proved to be more rapid in their communication with Australia than those propelled chiefly by steam, which fact has no doubt suggested to the spirited Managers of the Company to which we have referred, that the application of steam-power, as a subordinate or auxiliary agent, to the best construction of sailing vessels, is the most likely to effect an object which has become of paramount importance—namely, the rapid and regular communication with the Antipodes. It is impossible to exaggerate the rapidly growing requirements, in this respect, of our Australian Colonies. But if we look back for a comparatively few years on the commercial and social necessities which have led to the progressive improvement of communication between this country and the United States, some idea might be formed of the vast importance of placing Australia within the shortest possible distance, as to time, from the mother country.

The new iron ship called the *Royal Charter*, recently launched on the Dee, and built by Mr. Patterson, of Bristol, has been especially constructed on the principle to which we have referred; and, judging from a trial trip of two days, there can be no question of the complete success of the experiment thus practically put to the test by Messrs. Gibbs, Bright, and Co.

The *Royal Charter* is a magnificent vessel, of large dimensions, her registered burthen being 2,785 tons. The length of the ship over all is 350 feet; beam, 41ft. 6in.; depth of hold, 26ft. 6in.; and length of poop, 108ft. There are twenty-two state cabins, 10ft. by 6ft. 4in., each with double berths. Her 'tween decks, 300ft. long and 8ft. 4in. high, are fitted to carry five hundred and ninety passengers, although, according to the government measurement, she could take six hundred and fifty. Her horse-power is nominally 200. She has trunk engines, with direct action, manufactured according to the last patent, and on a similar principle to those of the *Himalaya*, by Messrs. Penn and Co., of London. She possesses six water-tight compartments, with an immense box kelson running the entire length of the ship with capacity for 5,500 gallons of water, if used as a tank. The saloon, in which the berths are arranged on each side, is calculated for forty-six first-class passengers. The ladies' boudoir is at the stern, and is an elegant apartment, fitted with every convenience. There are two bath rooms for after-saloon use. The dining-saloon, 75ft. long and 14ft. wide, is lighted by two large skylights, and divided from the

state-room by a bulkhead, with sliding windows, fitted with plate glass—ornamented with beautiful designs.

We have been thus particular in describing the fittings and interior arrangements of the *Royal Charter*, because many of them are new and worthy of notice; nor are the accommodations on deck less deserving of commendation. The various offices are replete with convenience—especially the galley, which, as was well remarked by a gentleman on board, is more worthy the name of an "excellent kitchen"—so elaborate and complete are all its requirements. Among these offices on deck is one of the bath-rooms, which is of large dimensions, and intended entirely for the use of the intermediate passengers. The poop-deck affords a fine promenade, being, as we have said, upwards of 100 feet long; beneath which is the spacious and elegant saloon. Some idea may be formed of the length of this apartment when it is stated that, in addressing the company on the occasion of the trial trip, it was scarcely possible for the Chairman, with Stentor voice, to make himself heard at the other end of the saloon.

The state-cabins, which are spacious and well furnished, are divided from the saloon by a handsomely glazed screen or partition, about three feet from the cabin doors, thus affording a convenient and airy passage on each side of the saloon, leading to the various cabins. The 'tween decks are lofty and well ventilated, and the arrangement of the berths for the second and third-class passengers appears to combine, with an ingenious economy of space, ample accommodation and substantial comforts. There are numerous passages dividing the various "blocks" of cabins—if we may so term them—which, besides being convenient as leading to the different parts of the deck, form excellent channels of ventilation, and are thus conducive to health in that part of the ship in which it is not always made a matter of special consideration.

With regard to the working properties of the *Royal Charter*, the auxiliary steam-power, which is similar to that on board of the line-of-battle ships *Duke of Wellington*, *Royal Albert*, &c., consists, as we have said, of a pair of trunk engines, direct acting, of 200-horse-power, nominal. The diameter of each cylinder is 50 inches, effective diameter 45 inches, diameter of truck 21 inches, and length of stroke 27 inches. The engine-room and boilers are placed abaft the main-mast, in such a position as to keep the vessel in trim. The pitch of the screw is 13 feet, and its diameter 14 feet. The bunkers hold 450 tons of coal, which is calculated to be considerably more than will be consumed on her voyage to Australia. The screw shaft is 130 feet in length, and is carried to the stern through an alley, along the top of which is placed a perforated pipe, which permits water continually to drop, and prevent heating. The shaft can be disconnected in a minute and a half, and the screw lifted out of the water in ten minutes—although, in the experiments of effecting these objects on the trial trip, a little more time was incurred, by trifling delays incidental to first attempts. The performance of the engines, which, from the state of the weather at the time of trial, was the only propelling power

that could be made available—thus giving a practical example of its advantages—exceeded the expectations of the builders and other practical and scientific men who were on board.

She steamed out of the River Mersey a little before noon. On getting over the bar the engines were put on full speed, and she went steadily through the water at the rate of nine knots an hour, on a pressure of 13½lbs., the engines making 75 revolutions a minute. It was intended to proceed the same day under canvas alone, but owing to a heavy fog and calm it was not practicable; she therefore lay quietly off the Bell Buoy during the night.

Morning brought with it a clear sky, and a light breeze springing up, she steamed out in a north-westwardly direction, which course she continued for about a couple of hours, making a speed of about ten knots an hour. No time was lost in hoisting the screw and making sail. And here we may state that the *Royal Charter*, independent of her steam-power, is a full-rigged ship, and is the first English vessel which has adopted the American plan of double topsails on each mast.* This rig gives the ship a formidable appearance, by having on each mast five yards. The difference between this and the ordinary rig consists in the lower topsail yard being secured to the cap of the topmast by a truss, and, in the absence of slings, the yard is supported in the centre from below by a crane, stepped upon the heel of the topmast. Thus, the lower topsail is the size of a close-reefed topsail of the old rig, and sets entirely by the sheets. The upper topsail, which is managed in the ordinary manner, has its foot laced to the top of the yard below, so that no wind can escape between the two topsails. By this arrangement the ship can be reduced to close-reefed topsails at any time, by lowering the upper ones.

In order to convey an idea of the immense spread of canvas at command, we may state that the length of mainmast from the deck is 75 feet; mast-head 20 feet; maintopmast 64 feet 6 inches; maintopgallantmast 32 feet; mainroyal, 24 feet. The length of the mainyard is 101 feet; lower topsailyard, 92 feet; upper topsailyard 85 feet; topgallant yard 64 feet 6 inches; and royalyard, 50 feet. The fore and mizen masts and yards are proportionately heavy. The total amount of her canvas exceeds 15,000 yards.

Notwithstanding the stiffness of new ropes, coupled with the fact that she was on this occasion nearly close hauled, with a very light breeze, she made Puffin Island at the rate of ten knots an hour. She was then tacked, coming round like a top, thus answering her helm admirably. She came up from the N.N.E. at the rate of from thirteen and a half to fourteen knots an hour; and there can be little doubt that, under a stiff breeze and favourable circumstances, she will accomplish seventeen or eighteen. Altogether the trial trip was of the most satisfactory character, and the *Royal Charter* gives every promise of being the class of vessel to secure a rapid and regular communication with Australia. She is commanded by Captain Boyce,

* Described in our volume for 1854.—ED.

late of the *Eagle*, which has made some of the most successful runs to Melbourne.

We have already said that the merit of the present undertaking is due to Messrs. Gibbs, Bright, and Co., the Liverpool Agents; and it is also due to these gentlemen to state that, through their courtesy, there were from eighty to one hundred practical and scientific men brought together on board, from London, Bristol, and other places, as well as Liverpool, to witness this experiment; and who sat down to a sumptuous *déjeûner* in the saloon, when a variety of appropriate speeches were delivered, justly complimentary of the builder, Mr. Patterson; of Captain Martin, on whom the principal duties devolved of outfit, rigging, and otherwise preparing the ship for sea; of the Engineers, Messrs. Penn and Co.; and of the Agents, Messrs. Gibbs, Bright, and Co.

The *Royal Charter* proceeds on her voyage early this year, and is, as we have before stated, one of the fleet of the Liverpool and Australian Navigation Company, of whom Messrs. Seymour, Peacock, and Co. are the London Agents.

Among the passengers by the *Royal Charter* will, it is believed, be Dr. Scoresby, who is going out for the purpose of testing in her case the alterations of the compasses, if any, from the magnetic influence through the local attractions of the material of which she is built; and it is worthy of notice that, with the view of better accomplishing this object, a second compass is fixed in the maintop, where copper bolts and fastenings have been used instead of iron, so as to prevent, if possible, the least chance of local attraction. With this the compass on deck can from time to time be compared, and if necessary corrected. It is confidently believed that the *Royal Charter* will make the outward voyage in less than sixty days.—*Shipping and Mercantile Gazette.*

The *Royal Charter* sailed from Liverpool about the 15th of January.

EARTHQUAKE IN JAPAN.

The following is a translation of some notes taken by a Russian officer descriptive of the effects of an earthquake which was felt at Simoda, during which the Russian frigate *Diana* was wrecked and lost. These men were captured while trying to make their way to the river Amoor.

Extract from the letter of an officer of H.M.S. ——, dated

Nangasaki, Japan, Sept. 29th, 1855.

On the 23rd of December, 1854, the Russian frigate *Diana*, lying in the Bay of Simoda, island of Niphon, experienced the shock of an earthquake, which eventually caused her total destruction. At 8.30 a.m. on the above day, being desirous of shifting their berth, they sent a boat to lay out a small anchor on the bow, and at 9.30 another anchor was laid out on the quarter. At 9.45 she was observed to shake very much for about a minute. At first they imagined her to be

aground, but on sounding eight fathoms water were found round her. The day was beautifully fine and clear, the sky without a cloud, and the water perfectly calm. Nothing more was thought of the matter, and the duties of the ship were proceeded with.

At 10h. a.m. a large wave was noticed rolling into the bay, and the water on the beach very rapidly rising immersed the village of Simoda; it appeared to them on board the frigate as if the village was sinking. A large Japanese junk was driven on shore with violence, but the frigate held to her anchors. The cutter and captain's gig, which had been undergoing repairs on shore, were seen drifting out to sea, and a bout was sent to pick them up, but about five minutes afterwards the water (now very muddy) was observed rushing out of the bay.

The guns were now secured, lower deck ports closed, and hatches battened down, the boats recalled, and a large boat (pinnace or barge, probably,) obliged to throw everything overboard, and make the best of her way to the frigate. The boats had barely time to fetch the ship, when a second wave rolled into the bay; this carried on shore all the boats that were afloat, and on its receding all the houses that had formed the village of Simoda were washed into the bay, covering the water with ruins of houses and wrecks of junks. The frigate now dragged her anchor, and the second bower anchor was let go, but the ship had not time to bring up when a third wave, larger and more impetuous than the preceding came rolling in.

At 10.15 the water again receded, and only one solitary building pointed out the site of the former village, and that was a Japanese temple, in process of being built. A column of smoke was observed on the side of the hill, but no one could see whence it came, while a strong sulphurous odour filled the atmosphere. After this the water advanced and receded so quickly, that regular whirlpools were formed in the bay; causing the Japanese junks to whirl round and round rapidly; the frigate also turned round, but her anchors only allowed her to describe three quarters of a circle; her motion, however, was so rapid that all on board became giddy.

At 10.30 a large junk came with great violence against the starboard bow of the frigate, carrying away flying jibboom, jibboom, martingale, and swinging boom, and injuring the bow. Three men from the junk managed to scramble on board the frigate, but the other five refused to go, and in two minutes all went down alongside, the ship at the same time swinging violently. She was between two small islands, the one about three cables, the other half a cable's length from her. She continued this motion for about half an hour, and during this time must have made from sixty to seventy revolutions, dragging her anchors all the time, and gradually approaching one of the islands. At 10.45 they let go another anchor, the ship at that time being so near the shore that the bowsprit was not above five feet from the rocks, and more than once officers and men raised their caps expecting instant death; but, as my informant says, "God would not have it so."

The ship was now at the mercy of the waves, all command of her

was lost, and at one time she fell on her beam-ends, so that it was impossible to stand on deck, (probably she had touched a piece of rock,) but from the gyration she made no shock was felt. This lasted for five minutes, when the water rose and she slipped off, tearing away rudder, half of stern-post, false keel, and a piece of keel 81 feet long, besides two planks; and before she righted she described the same circle several times. One of the midship guns broke adrift, and jumped across the two guns on the opposite side, killing one man and injuring four others.

At twelve o'clock the current was less violent, and shores were got out and placed against the ship's side. At 12.30 the water again rushed into the bay with the same impetuosity, swinging the ship to and fro as before. This continued until 2.30, during which time she was on her beam-ends five times, but not so much as before; the shores were carried away, the water rose and fell very rapidly; in five minutes it would decrease from 23 feet to 3 feet, and at one time it was so low that all the anchors were visible above water. At 3h. everything was still, and the ship in 22 feet water, making 22 inches every hour. Around nothing could be seen but wrecks of junks and fragments of houses; from the roof of one of the latter an old woman was taken, quite insensible.

The whole of the day had been remarkably fine, the wind light from N.E., the barometer stood during the whole day at 29·87, and the thermometer 58° Fahrenheit. At 3.30 an attempt was made to clear the anchors, but they were so foul that it was late in the evening on the 24th before it was accomplished; both bower anchors came up at once, bringing with them several Japanese anchors, quantities of clothes, a large net, &c. The people on shore stated the loss of life among the Japanese amounted to 300.

On the 25th a boat was sent to discover the rudder, false keel, &c., and the latter was found about half a mile inland, together with the admiral's barge. In the afternoon they visited the shore, and so complete had been the destruction that it was impossible to find a trace of the town. When they were about to return to the ship the water again began to flow and recede; at one time the boat would be high and dry, and then far out in deep water; after much difficulty they succeeded in getting on board.

A kedge was laid out from the frigate to haul her into deep water, and she began to swing as before. At one time there was only one fathom water alongside. A large junk was driven two miles inland.

They remained at Simoda until the 12th of January, but not finding a convenient place to heave the frigate down for repairs, they attempted with a false rudder to go round to Tortoise Bay, about thirty-three miles. She went very well before the wind, but when they attempted to beat into the bay she became totally unmanageable, would neither stay nor wear; all sails were furled, and they allowed her to drive, and though near the land no bottom could be found. At last the leadsman gave nine fathoms, and the anchors were immediately let go, she being at this time not more than five fathoms from the shore.

January 15th.

The pumps were insufficient to keep her clear, and it was agreed to desert the ship, which was done. On the 16th a rope was made fast from the ship to the shore, down which the men slid, as no boat could live on account of the surf.

January 17th.

There was six feet water on her lower deck, and an attempt was made to save the stores &c.; but nothing was rescued.

January 18th.

The Japanese sent 300 boats to tow the frigate up the bay, a distance of five miles; the whole of her white streak was then under water, but when they had towed her about three and a half miles the wind freshened and they deserted her; in about ten minutes afterwards the frigate gave one lurch, righted for a moment, and disappeared with everything on board,—guns, ammunition, stores, &c. The place was afterwards sounded, but no bottom could be obtained at 1,000 fathoms.—*Shipping Gazette.*

NAUTICAL NOTICES.

SAILING DIRECTIONS AND GUIDANCE TO COMMANDERS OF VESSELS RESORTING TO THE NICOBAR ISLANDS, *for the Purchase of Cocoa-Nuts, and Description of Barter required for that Purpose, with General Instructions how to deal with the Natives.—By Neat Major, Agent for Lloyd's, Moulmein.*

These islands have been so very little known by Commanders of European vessels trading from England to the ports of Burmah, now open to all nations and under the British rule, and where so many benefits can be derived from a knowledge of them, the writer has taken up his pen to furnish these brief instructions, sincerely hoping they may prove of service to his brother shipmasters, beneficial to shipowners, and profitable to the mercantile community at large.

Ships coming from England with a coal cargo bound to Aden or Point de Galle, and thence to this port, or Rangoon, for timber, might always lay in articles for barter, and touch at these islands for cocoa-nuts, and with judicious management, make sufficient money to pay their disbursements, up to the time the ship is loaded with her homeward cargo, and cause very little delay.

I will commence at the South part of the Great Nicobars, which is described by Horsburgh as a "promontory," but there is a large deep bay, seven miles in breadth, with excellent anchorage, with 5, 6, 7, 8, and 9 fathoms water, clay bottom, and a ship can be sheltered from either monsoons, at each side of the bay, being able to bring each extreme point of the bay S.S.E. There is a reef runs out a long way from the West point in an E.S.E. direction, which must be carefully avoided. There is a river at the head of the bay, with a bar at the entrance. It is about a pistol-shot wide, and runs up the centre of the island. H.D.M. frigate *Galathea's* boats went up about thirty-six miles, but did not penetrate further in consequence of a most violent thunder storm with heavy rain. The interior of the island is

most fertile, and the soil very rich. Sugar cane in abundance growing wild, and also coffee, and numerous tropical fruits. The natives are a different race entirely from those on the sea coast, and are supposed to be savages. We could not get a sight of any of them during the brief time the frigate's boats remained up the river. This is no place for trading for cocoa-nuts, and the natives on the sea coast are very shy. Quantities of tortoise-shell can at times be picked up there.

Both on the East and West side of the Great Nicobar, there are numbers of bays, but the South is the only one I made myself thoroughly acquainted with.

Next comes the St. George Channel to the North, between this island and the Little Nicobar, which is quite safe navigation, the discoloured water showing all the reefs, but is very narrow, and no place for trade. To the North of the Little Nicobar there is a beautiful little harbour, only open from N. ½ W. to N.W.b.N.; the entrance is directly opposite Track Island, in the Sombrieu Channel, and a ship can lay within 100 fathoms from the shore, in 9 fathoms water, on the starboard side of the harbour, under the small island of Pulo Meloe, or commonly called Buseh Island by the Danes. The natives here are very inoffensive and willing to trade, but they are very poor. This harbour is perfectly safe at all seasons of the year, and Poon spars in abundance procurable in the jungle for disabled ships without any expense, only the trouble of cutting them by the ship's crew, and bringing them to the ship, which would not be much labour.

The next small islands are Trice and Meroe; the former must not be too closely approached, the latter can, and a great number of cocoa-nuts can be got there, but it is not safe in the S.W. monsoon.

The next important islands are Noncowry, Carmorta, and the narrow island of Trincutte, forming the inner and outer harbours of Noncowry, which is too well described by Horsburgh for me to comment upon; but I would recommend vessels going there for cocoa-nuts in the S.W. monsoon, to anchor in the outer Noncowry Harbour, to the eastward of the island, half-way between it and the South part of Trincutte. There is only a passage between it and Carmorta for boats.

There is abundance of cocoa-nuts on these islands, but the natives are very treacherous and not to be trusted. Due caution should be taken not to allow too many natives on board at one time. They bring the cocoa-nuts off in large canoes which have out-riggers, something similar to those of Ceylon, but much larger; it is impossible that they could board any moderate size ship by force.

The natives of Katchell are also very treacherous. There are plenty of cocoa-nuts to be got, and good anchorage on the east side of the island. The islands of Terecia and Bompoka are awkward places for a stranger to visit, especially in the S.W. monsoon.

The island of Carmorta on the West side abounds in bays and beautiful harbours, and there is a good place at the N.E. part for cocoa-nuts. The village is called Kakana. There is also another on the N.W. end of Trincutte, about seven miles to S.S.E. of the Kakana anchorage, a famous place for loading cocoa-nuts, and another on the N.W. side of Carmota, due east from the island of Bompoka. The whole of the group of the Nicobar Islands abounds with coral reefs; they are mostly off the extreme points, and should not be closely approached; and a good look out is necessary, and due attention to be paid to the lead. The reef off the N.E. point of Trincutte, the extreme point, is a quarter of a mile from the shore.

All the channels between these islands from Acheson Head to the Car Nicobar, are safe navigation; but at times there are very great ripplings and overfalls, which to a stranger appear alarming. The currents generally set East and West through the channels.

The principal and only moderately civilized island which is most frequently resorted to by country vessels, is Car Nicobar, the northernmost of the group. The natives here are very honest, kind, and hospitable, and most of them speak a little broken English. There are a number of villages round the island; you can approach within 10 or 11 fathoms, hoist all your colours, and you will soon have the natives off to show you the best place to anchor. Tell them what you have come for, and after you have got your ship comfortably at an anchor, and decks cleared, show them your barter; you will soon get familiar with them. They are very forward in their manners, and take many liberties, but do not mean any harm. It is only for the want of knowing better, being only half civilized; therefore on no account get angry with them. They will do anything for kindness.

Articles best adapted for Barter for Cocoa-Nuts, and Instructions to Commanders, the most appropriate Mode to deal with the Natives, paying particular Attention as to the Characters in the different Islands in the Group, as described in these instructions.

A vessel leaving England with coals for Aden, or Galle, and bound to Burmah for a cargo, and intending to touch at these islands for cocoa-nuts, should purchase the articles for barter before leaving. The following assortment are the most likely to please the natives, viz.:—A quantity of gay cotton handkerchiefs; common white and coloured long cloth; common red and blue turkey and blue punjams; pigtail, cavendish, and shag tobacco; a quantity of spirits, rum or arrack, which had better be bottled off; small hatchets; straight cutlasses; some showy common fowling-pieces or muskets, with flint and steel locks; canisters of powder and bags of shot; some blue and red common flannel shirts; some Scotch caps; German silver spoons and sauce ladles; German and real silver ware, of sizes; long straight common Birmingham or Sheffield carving-knives, pointed, and good length. This assortment I think sufficient for all purposes, always calculating the size of the ship, and the quantity of nuts she will carry, so as to have an equal assortment; but should you have any surplus barter it will always bring a profit here.

In trading with the natives it is necessary always to conciliate them, and endeavour to make them attached to you. On no account allow your crew to interfere with them, or to go on shore.

In calculating the value of the different descripitons of articles you have for barter, bear in mind you must only pay four to six annas, or from 6d. to 9d., per hundred for cocoa-nuts. The nuts are larger and cheaper in the centre island than they are at Car Nicobar.

Edible birdsnests, tortoise-shells, ambergrease, and betel-nut, are also procurable at these islands, and abundance of beche-de-mer on all the reefs.

In paying particular attention to these instructions it is impossible to err, and the author again sincerely hopes that they may prove beneficial to the community at large.

N.B.—A thorough knowledge of these islands, the bays, and splendid harbours, would be of the greatest service to shipmasters, and most beneficial to shipowners and underwriters. Vessels leaving the River Hooghly, Arracan, and other different ports on the Pegu and Tenasserim coasts, in getting disabled, with loss of spars, or other incidental accidents, such as springing a leak, short of water, &c., would be spared the painful necessity of bearing up to the ports of Moulmein, Rangoon, or Calcutta, for their required repairs, which are well known to entail ruinous expenses; and the vicinity of these islands, with the knowledge of them, and their facilities, as these instructions describe, would, I am convinced, be most advantageous to the whole of the mercantile and shipping interest, and encourage civilization.

Shipping Gazette.

Particulars of Lights Recently Established.

(Continued from vol. xxiv., p. 678.)

Name.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks on the Lights.
49. Singapore	Government Hill	F.	226	6	Est. 17th March, '55 Lat. 1° 16·4′, long. 103° 51·4′.
49. Raffles	Coney Island			12	No account.
50. Georgia	Fig Island				Fog bell established to answer vessels
50. C. Romain	Shoals				Buoys on edge of Cape Romain Shoals.
50. Charleston	Bar				Bell boat outside of Main Ship Bar.
51. Ceuta, Africa	Almina Pt.	R.	476	27	Est. 1st Dec., '55. Lat. 35° 53·7′, long. 5° 17 2′ W. Revolves once a minute.
52. Nice	Outer Mole	Ff.	80	12	Est. 1st July, '55. Varied by red flashes every half minute.
53. Egersund, Vibber Odde	Egero, S.E. Point	F.	69	12	Est. 28th Nov., '55 Visible from westward between S.¼W. and N.¼E. Lat. 58° 24′, long. 5° 56′ E.
53. Egersund	Grundsund-holm, N.W Point	F.	41	10	Est. 28th Nov., '55. Visible from sea between W.b.S. and W.b.S.½S. Inside Gulcholm it is visible from W.S.W. round North to E.N.E. Lat. 58° 26′, long. 5° 50′ E.
54. Lille Blegen, Langevaad	Bommelo Is. East side	F.	16	3–4	Est. 16th Dec. '55. Lat. 59° 37′, long. 5° 16′ E.
54. Mosterhavn	Midtholmen	F.	37	4–5	Est. 16th Dec., '55. Lat. 59° 42′, long. 5° 24′ E. Visible from N N.E. round by East and South to S.W.b.W.
54. Stoksund	Folgeroen	F.	49	5–6	Est. 16th Dec., '55. Lat. 59° 48′, long. 5° 20′. Visible from North round by East and South to West.
54. Leeroen	West side of Island	F.	54	6	Est. 16th Dec., '55. Lat. 16° 14′, long. 5° 11′.
					S. Passage to Bergen
55. United States	Maine				The fixed harbour lights of Little River and Prospect Harbours, in the State of Maine, have been changed: the first to a fixed light varied by flashes, and the last to a revolving light of one minute interval.
56. Point Loma, California.	S Diego Bay, West Point	F.	450	20	Est. 15th Nov, '55 Lat. 32° 40′ N., long. 117° 13′.
1. Troubridge Island		R	80	16	Est. 1st Jan., '56. Lat. 35° 7·7′ S., long. 137° 52′ E. See Addenda.

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

No. 1.—*Directions.*—Vessels bound through Investigator Strait into St. Vincent Gulf, should make Troubridge Light on a N.E. ¼ N. bearing, and steer E.N.E. ½ N. to pass it a distance of 7 miles, bringing it to bear W.b.N. ½ N.; thence a course N.E. ¼ N. 30 miles will reach a berth 2 miles south-west of Port Adelaide light-ship, when heave to for a pilot or a steam tug.

Vessels from the westward and southward should not approach the Troubridge Light nearer than 4 miles, where they will find soundings in from 10 to 14 fathoms.

Vessels bound down the Gulf in westerly gales will find good anchorage under the lee of Troubridge Island with the light bearing S.W. about 1½ miles distance, in 8 fathoms over a clean sandy bottom.

Guichen Bay, South Australia.

Harbour Office, Port Adelaide, South Australia,
26th September, 1855.

Sir,—I have the honour to enclose you a copy of the late published Sailing Directions for Guichen Bay, South Australia, for your information, in the hopes that you may find a space for them in your valuable publication. The Light on Troubridge Shoal and Island, Investigator Strait, which is to be a flashing one, 80 feet above high water mark, will be exhibited in January, 1856. I have already sent a description to the Hydrographic Office at the Admiralty, which I presume will be duly made public when necessary.

I have, &c.,

B. Douglas,
Naval Officer and Harbour Master, South Australia.

To the Editor of the *Nautical Magazine*, London.

Harbour Office, Port Adelaide, South Australia,
12th September, 1855.

Cape Dombey, Baudin Rocks, Obelisk.—Guichen Bay is formed by Cape Dombey, in lat. 37° 9′ 45″ S., long. 139° 44′ 15″ E., on its southern extreme, and Baudin Rocks and Reefs, N.b.W., four and a half miles from thence at its northern extreme. From Cape Dombey a reef of rocks extends N.N.W. one mile and a quarter; from Baudin Rocks another reef a mile and a quarter in a S.E. direction. Cape Dombey may be known by an obelisk of white stone on its extremity; being about one hundred feet above the sea level, it is visible twelve miles from the deck of a moderate sized vessel. The coast to the southward is composed of sandy hillocks lightly wooded. Breakers reach fully two miles off this part of the coast; and, from their treacherous nature, and the heavy ocean swell setting directly on them, should be most carefully avoided. Baudin Rocks form a group of islets visible about seven miles.

The Bay.—Guichen Bay is three miles deep, a clean sandy beach; the bottom (quite clear) is excellent holding ground, depth gradually shoaling from five fathoms in the stream of the reefs to the shore, with the exception of a few rocky points near the township, which terminate a few fathoms from the beach.

Moorings.—Frigate's moorings have been laid down in four fathoms, under the shelter of Cape Dombey and its reef, ready for vessels of any tonnage, the water being rather deeper at the eastern buoy. Vessels to use the moorings must haul up on the small chain until they can shackle on to the heavy buoy chain of 1¾in., of which there is thirty-seven fathoms to each buoy, being sufficient to heave in to the bits; but small vessels using them with small hawse pipes, must shackle on their best bower chain, or both, if requisite, on the approach of bad weather; and any vessels should then veer away, using their own chains, so as to ride easily in case of any swell coming in.

Jetty.—A convenient jetty, with a tramway, is now completed, terminating in six feet at low water, where boats can load in any weather, having a line fast to a grapnell outside, to steady them and haul off by.

Directions to Vessels coming from the Southward.—Vessels bound from the southward, should bring the Obelisk on Cape Dombey to bear S.E. two miles and a quarter, when the point of the reef will bear E.S.E.; having a leading wind, run in East until the obelisk bears S.S.W., shorten sail, and from thence steer South for the mooring buoys, to which make fast as above

directed. Small vessels will find excellent anchorage inside the buoys, with the pier-head S.W.b.S. ½ S, and the obelisk W. ½ N., in three fathoms, veering away a good scope of chain at once, and, in the event of bad weather, having a second anchor ready to let go.

Directions to Vessels coming from the Northward. Cape Bernouilli and dangerous Reef.—Vessels from the northward should carefully avoid the reef off Cape Bernouilli, in lat. 36° 55′ 30″ S., long. 139° 35′ 30″ E., by giving the point a berth of at least ten miles; for though the outer rock is not more than five miles from the beach, the bottom is so uneven that the sea often breaks in deep water, in bad weather, with such violence as would jeopardize a small deep-loaded vessel.

Having sighted the obelisk, and brought it to bear S.E., six miles, and the Baudin Rocks East two miles and a half, steer S.E.b.E., keeping the Reef off Baudin Rocks on the port hand or to the eastward until the obelisk bears S.W.b.S. ½ S., when shorten sail and run to the moorings or the anchorage, keeping close to the eastern mooring buoy; or, by passing between the two, anchoring as before directed.

Small Vessels to avoid a rocky Point.—Small vessels in the winter season should carefully avoid anchoring too close to a rocky point at the eastern end of the town, as, in the event of their wanting to veer away cable, such a position might be inconvenient.

Working in.—Vessels working into the bay with head winds will find the channel between Baudin Rocks and Dombey Reefs fully two miles and a quarter broad; by not closing them within the above mentioned distances, and keeping the lead going, they may work in safely, taking care not to approach the shelf which lies inside Cape Dombey, in a line with the mooring buoys, too closely.

Barometer.—The barometer in this bay, as is generally found on all parts of the coast, is an invaluable guide. The mercury falling, with a N.E. wind and sultry close weather in the winter season, is a sure precursor of bad weather, for which preparation should be made.

In conclusion, I have much pleasure in corroborating the very correct opinion my predecessor, Captain Lipson, R.N., has given of it, and can add from personal experience that it is undoubtedly a most valuable anchorage and harbour of refuge, being situated on the very part of the coast which vessels find so much difficulty in avoiding, and near some of the finest land in the colony. I fully agree with Captain Lipson as to commanders of vessels seeing this anchorage, a personal examination of which, in the event of necessity, will render them confident in running for it in the very frequent westerly and southerly gales, against which it is almost useless to contend without great wear and tear, and possibly finding the Cape Bernouilli Reefs under the lee. There is positively no sea in the anchorage with even a N.W. gale; an occasional swell rolls in, but a good scope of chain will always allow ships to ride easily.

B. Douglas,
Naval Officer and Harbour Master of South Australia.

The bearings are magnetic; variation 5° E.

Dartmouth Harbour Light.—The Castle Light at the entrance of the harbour is at present discontinued, because the master gunner, who has attended to the light, has a claim of about £60 for three years' salary, which he cannot get paid, and consequently refuses any longer to light the lamp.

Cay Sal Light.—It appears also, by that valuable paper the *Shipping and Mercantile Gazette*, the Light on the Cay Sal Bank is discontinued from some similar cause! What is our Colonial Lighthouse Board about?

Crozet Isles and the Ship "Ben Nevis."

A statement appears in that valuable paper, the *Shipping Gazette*, (21st Jan.,) purporting to be a communication from the "correspondent" at Liverpool, relating to the *Ben Nevis* passing the Crozet Isles on her way to Melbourne. It would seem, from the general appearance of the very unsatisfactory account stated to be an extract from the log of the *Ben Nevis*, that her commander is under the impression that he has discovered some unknown island in the vicinity of the Crozet Isles, which are laid down in the Admiralty charts between 45° 55′ and 46° 30′ S., and 50° 20′ and 51° 20′ E. As far as the published account is intelligible, it would seem that the *Ben Nevis* has had a narrow escape of being wrecked on those islands, as it is pretty clear she was entangled on the western side of the western isles, with the Twelve Apostles, Hog Island, the Heroine Rocks, and the Penguin Islands, under her lee! placing her while among snow storms and in dark nights in a very critical position, and that the *Ben Nevis* has really found no new land whatever. This view of the case may, however, be erroneous, and we trust that her commander, for the benefit of his brother seamen, will submit the ship's log to some close investigation as to her reckoning, observations, and such matters on which geographical position depends, in order to establish the reasoning on which some safe conclusion can be arrived at regarding a subject so important to navigation.

Mouth of the Hooghly.

Calcutta, December 9th, 1855.

The Mutlah question, as it is called, approaches rapidly to a solution. The mercantile world in Calcutta, has long been of opinion that a secure outlet is necessary for the commerce of the capital. This they conceive may be found in the salt water creek called the Mutlah, which runs parallel to the Hooghly to a point within twenty-five miles of Calcutta. After a wearisome amount of discussion, the Chamber of Commerce has requested Government to buoy off the Mutlah. The request has been granted, and an enterprising firm, Messrs. Borradaile and Co. are about to load three ships there. They believe the saving will amount to at least £1 per ton.

To make the experiment succeed, however, we need a railway to the new river; it would be about thirty miles long, and receiving, as it would, all the trade between the capital and its port, it must answer well. It is hoped that the East India Railway Company may take up the project, and thus complete their line from the North-West to the Mutlah. The territory on the banks of the creek is a barren desolate region, but private speculation is fast clearing the jungle, and with a little expenditure of capital the land may be redeemed. The Government displays considerable eagerness in the matter. Messrs. Borradaile were assured that not only would every facility be given them, but their losses, if any, in the experiment would be defrayed. It would be well worth the while of the Court of Directors to build the railway for themselves. They would save at once half the expences of their pilot establishment, which are rapidly increasing.

Mr. Alfred Gregory has submitted to our inspection his improved mechanical method of cleansing the basins of closets by a very ingenious and not expensive contrivance, which is easily applicable to them, and, whether ashore or afloat, would much contribute to cleanliness. For ships the method is peculiarly desirable.

Convention between Her Majesty and the Emperor of Japan.

From the "London Gazette" of January 15th.

The following Convention was signed at Nagasaki, in the English and Japanese languages, Oct. 14th, 1854, and the ratifications were exchanged at Nagasaki, October 9th, 1855. The expositions were agreed to on 18th October, 1855:—

Convention for Regulating the Admission of British Ships into the Ports of Japan.

It is agreed between Sir James Stirling, Knight, Rear-Admiral and Commander-in-Chief of the ships and vessels of Her Britannic Majesty in the East Indies and seas adjacent, and Mezi-no Chekfu-no Kami, Obanyo of Nagasaki, and Nagai Evan Ocho, Omedski of Nagasaki, ordered by his Imperial Highness the Emperor of Japan to act herein; that:—

1st.—The ports of Nagasaki (Fisin) and Hakodadi (Matsmai) shall be open to British ships for the purpose of effecting repairs, and obtaining fresh water, provisions, and other supplies of any sort they may absolutely want for the use of the ships.

Exposition.—The first article of the convention opens the ports of Nagasaki and Hakodadi to British ships for repairs and supplies. It opens the whole and every part of those ports; but ships must be guided in anchoring by the directions of the local government. Safe and convenient places will be assigned where ships may be repaired. Workmen, materials, and supplies will be provided by the local government according to a tariff to be agreed upon, by which also the modes of payment will be regulated. All official communications will hereafter, when Japanese shall have time to learn English, be made in that language. A British burial-ground shall be set apart on Medsume Sima, fenced in by a stone wall, and properly protected.

2nd.—Nagasaki shall be open for the purposes aforesaid from and after the present date; and Hakodadi from and after the end of fifty days from the Admiral's departure from this port. The rules and regulations of each of these ports are to be complied with.

Exposition.—The second article provides that at each of the ports of Nagasaki and Hakodadi the port regulations shall be obeyed; but the Japanese government will take care that they shall not be of a nature to create embarassment, nor to contradict, in any other way, the general tenor and intent of the treaty, the main object of which is to promote a friendly intercourse between Great Britain and Japan.

3rd.—Only ships in distress from weather, or unmanageable, will be permitted to enter other ports than those specified in the foregoing articles, without permission from the imperial government.

Exposition.—The third article declares that only ships in distress from weather, or unmanageable, shall enter other ports from Nagasaki and Hakodadi without permission from the imperial government; but ships of war have a general right to enter the ports of friendly powers in the unavoidable performance of public duties, which right can neither be waived nor restricted; but her Majesty's ships will not enter any other than open ports without necessity, nor without offering proper explanations to the imperial authorities.

4th.—British ships in Japanese ports shall conform to the laws of Japan. If high officers or Commanders of ships shall break any such laws, it will lead to the ports being closed. Should inferior persons break them, they are to be delivered over to the Commanders of their ships for punishment.

Exposition.—The fourth article provides that British ships and subjects in Japanese ports shall conform to the laws of Japan, and that if any subordinate British subjects commit offences against the laws they shall be handed over to their own officers for punishment, and that if high officers or Commanders of ships shall break the laws, it will lead to the closing of the ports specified. All this is as it should be; but it is not intended by this article that any acts of individuals, whether high or low, previously unauthorised or subsequently disapproved of by her Majesty the Queen of Great Britain, can set aside the convention entered into with her Majesty alone by his Imperial Highness the Emperor of Japan.

5th.—In the ports of Japan, either now open, or which may hereafter be opened, to the ships or subjects of any foreign nation, British ships and subjects shall be entitled to admission and to the enjoyment of an equality of advantages with those of the most favoured nation, always excepting the advantages accruing to the Dutch and Chinese from their existing relations with Japan.

Exposition.—The fifth article secures in the fullest sense to British ships and subjects in every port of Japan, either now open or hereafter to be opened, an equality in point of advantage and accommodation with the ships and subjects or citizens of any other foreign nation, excepting any peculiar privilege hitherto conceded to the Dutch and Chinese in the port of Nagasaki. If, therefore, any other nation or people be now or hereafter permitted to enter other ports than Nagasaki and Hakodadi, or to appoint consuls, or to open trade, or to enjoy any advantage or privilege whatever, British ships and subjects shall, as of right, enter upon the enjoyment of the same.

6th.—This convention shall be ratified, and the ratification shall be exchanged at Nagasaki on behalf of her Majesty the Queen of Great Britain, and on behalf of his Highness the Emperor of Japan, within twelve months from the present date.

7th.—When this convention shall be ratified, no high officer coming to Japan shall alter it.

In witness whereof, we have signed the same, and have affixed our seals thereunto, at Nagasaki, this fourteenth day of October, 1854.

(L.S.) JAMES STIRLING.

N.B.—The Japanese text was signed by the Japanese Plenipotentiaries.

Arrangement regarding Stamps.

An arrangement made subsequently to the convention requires that British ships intending to visit Japan shall be provided with a document in proof of their nationality, and as a check upon the conduct of vessels in Japanese ports; and her Majesty's government has directed a form of certificate of registration to be adopted,* which has been accepted as satisfactory by the Japanese authorities; and merchant ships arriving in Japanese ports are to submit their certificate of registration to the officers to be appointed by the Japanese authorities, and to permit them to make such extracts from it as may seem good to them, before such ships can be admitted to obtain repairs and supplies. Her Majesty's ships of war will not be provided with such documents, but the officers in command, upon proper application, will afford all reasonable information regarding their ships.

---

* The form of register issued to British vessels at the Custom-house.

***Regulations for the Port of Nagasaki, communicated to Rear-Admiral Sir James Stirling by the Governor of Nagasaki, Oct.*, 1854.**

Standing Port Regulations.

Art. I.—Ships shall anchor within two sima, and there await the directions of the Governor.

Art. II.—No firearms to be discharged.

Art. III.—No person to land on any of the islands.

Art. IV.—No soundings to be taken, nor boats to be pulling about.

Art. V.—Should any communication be desired, a boat of the upper officers shall be called; but no communication shall be held with merchant boats, and no exchange of articles take place, or trading of any sort.

The above being according to the law of Great Japan, all Commanders and other officers shall obey the same, and orders shall be given to the crew that the aforesaid law shall not be broken.

No regulations for the port of Hakodadi have yet been communicated.

Shipping and Mercantile Gazette.

Russian Intrigue and Victimizing.

Mr. Seymour, in his very valuable work on "Russia on the Black Sea," from which we have borrowed largely in some of our former pages, relates a couple among the every day instances of Russian victimizing, that cannot be too widely known. They are vouched for by Mr. Seymour as facts, after telling another important fact, that "*there were nearly two thousand literary persons in Germany who openly received their quarterly pensions at the Russian embassies to uphold Russian interests!*" It is not then for want of Russian gold that Russian diplomacy may not prosper. Mr. Seymour says:—

As so much is now said by some parties respecting the supposed fairness and moderation of Russia, I will relate two anecdotes of what happened under my own cognizance in the East. When the Russians seized, about the year 1840, the island of Ashtoráda, near Asterabad, at the South-East corner of the Caspian Sea, which they have since fortified and garrisoned, and when they explored with steamers the Gourgan and Atrak rivers, flowing exclusively through the Persian territory, but leading in the direction of the best road to India, there was one Turcoman chief resolutely hostile to them, whom they could neither frighten nor seduce. One night, therefore, troops were disembarked, his house surrounded, and he and all his sons were carried off and conveyed into the interior of Russia, whence, at the prayer of a very influential personage, his place of exile was changed to Tiflis, where I knew him.

The second is a more daring violation of the territory of the same power, with whom, be it remembered, we have a treaty of alliance, and at the Court of which we have long had a minister constantly residing. A certain member of the Georgian royal family, Suleiman Khan, lived in the Persian provinces ceded to Russia in 1828, and having an inveterate enmity to that power, he refused to remain there when they became Russian, and fled into a remote part of Persia. After many years he thought he might come and live at Tabreez, the capital of Azerbijan, and near his own country. He had sounded the Russian consulate, and found them apparently favourable, and

when he arrived he was invited to dinner by the Russian Consul-General. Everything passed off very agreeably until after dinner, when, as he was sitting on a sofa with the Consul, drinking his coffee, the latter begged to be excused for an instant, and left the room. Immediately upon his quitting a file of Russians appeared at the door, with their pieces levelled at the Khan, *and the Consul from behind them* told him he was extremely *sorry* that he was obliged to treat a guest in so *uncourteous* a manner, but that he must execute his orders, that Suleiman Khan must consider himself a prisoner and prepare instantly to be conveyed into the interior of Russia."

Who after this would ever trust a Russian! As usual, Russia cannot lose by the present condition of affairs, but if it end in nothing she again gains *time*.

ARCTIC COLLECTION.

This interesting collection, made by the several Officers employed in the Arctic Seas while on the search for Sir John Franklin, and presented by them from time to time to Mr. Barrow, continues to attract great attention at the Polytechnic Institution, where they have been on view for some months past. A lecture is delivered every evening to a room full of people.

Mr. Barrow has presented the entire collection to the British Museum, where it will be removed next spring, and preserved among the National Collections in that noble Institution.

We are sure that our readers, and especially the "Arctics," will be glad to know that the Collection has been so well disposed of.

SIR ROBERT M'CLURE, R.N.

Sir,—In your last number of the *Nautical Magazine*, you mention the honour bestowed by our Sovereign on Sir Robert M'Clure, and you quote Lord Byron, (or your printer's devil does,) in a devilish dry matter of fact way,—"that glorious roll of men, who circumnavigate the Pole." Allow me to suggest that I presume you or he meant to say,—

"———— that glorious roll
Of men who circumnavigate the Pole."

Pardon this correction, and allow me to subscribe myself

AN ADMIRER OF ALL ARCTICS.

[Our P. D. has added the following:—ED.]
Byron's lines are,—

"His name was added to the glorious roll
Of those who search the storm-surrounded pole."

Has the pole ever been "circumnavigated?"

TIMBER BENDING.—We have received two specimens which have undergone the process of "bending" by an art, which is patented by a company in this country, that seems to have originated in America. The power of bending straight timber and making it assume any required form, and preserve that form under all circumstances, is evidently of great importance in the majority of cases where timber is used, and more especially so in ship-building, where so much bent timber is required. The specimens of hard wood sent to us appear to promise all that can be desired, but we shall look into the subject in another number.

ROYAL RECOGNITION OF MECHANICAL GENIUS.—The public will be gratified to learn that the merits of the gentleman to whom belongs the exclusive credit of having invented and adapted the screw-propeller has been at length worthily recognised by her Majesty. Captain Francis Pettit Smith has received a letter from the First Lord of the Admiralty, communicating the gratifying intelligence that, on the recommendation of Viscount Palmerston, her Majesty had been pleased to confer upon him a life pension of £200 per annum, in consideration of the services he had rendered his country, as the first proposer and fitter of the screw to the mercantile marine and fleet of Great Britain. This generous and well-considered act on the part of the Crown sets at rest for ever the rival claims of the many competitors for the merit of this valuable acquisition to the navy.

NEW AND CORRECTED CHARTS, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

Indian Ocean, sheets 1 and 2, 1856 - - - - each	3	6
Islands between Formoza and Japan, with the adjacent Coast of China, 1855 - - - - - - - -	3	0
Kok-si-kon, Port, to Ta-kau-kon, with Plans, Mr. Richards, R.N., 1855 - - - - - - -	2	0
Loo-choo and adjacent Islands, 1855 - - - - - -	1	0
Gulf of Siam, Mr. Stabb, R.N., Commander Stephens, I.N., and Mr. Bonnyman, 1855 - - - - - - - -	2	0
Cochin China, sheet 1, corrected to 1855 - - - - -	2	0
Min River, Captains Kellett and Collinson, and Mr. J. Richards, R.N., 1854 - - - - - - - -	3	0
Nagasaki Bay, Siebold, corrected by Mr. Richards, R.N., 1855 -	1	0
Nova Scotia Pilot, Captain Bayfield, R.N., 1856 - - -	0	6
Sailing Directions for the Island and Passages of Palawan, Commander W. T. Bate, R.N., 1855 - - - - - -	1	6

EDWARD DUNSTERVILLE, Commander, R.N.
Hydrographic Office, Admiralty, January 22nd, 1856.

The foregoing monthly produce of the Hydrographic Office, includes some information of a most desirable kind to seamen, and when we find the charts in the above list mostly accompanied by instructions for his guidance, we have good reason to congratulate him not only that such materials are wisely provided for him by the British Government, but also that they are immediately placed within his reach. Thus our own pages have long ago given him the directions for the Min, of which a seamanlike chart is now published; the same of the coast of Formoza, from Kok-si-kon to Ta-kau-kon, and also the Gulf of Siam, so soon to become one of the principal resorts of commerce in the Eastern seas, by the sagacious views of an Eastern monarch, anxious for the benefit of his country, and wise enough to see where its real interest lies. Among the rest we perceive a lithograph of the recent discoveries of Dr. Kane beyond Baffin Bay, vying with the attempt of Parry to attain the nearest proximity to the pole and finding land about as far North as where he found none North of Spitzburgen; an interesting chart if only telling of the hardships, the difficulties and dangers surmounted by daring seamen from the

days of Baffin to those of Kane. Another lithograph of Nagasaki, from Siebold, improved by our surveyor, Mr. Richardson, in the *Saracen*, will be no less acceptable to seamen now that the exclusiveness of Japan is overcome. We trust that her aversion to surveys of her coast will also be overcome, as nothing can be worse than the charts of that coast. On the whole our monthly contribution to hydrography keeps pace with what it should be, but serves to remind us of how much there is yet of which we know nothing.

TRACK CHART *of the Coast of Western India, on Mercator's Projection, compiled, &c., &c., by Lieut. Fergusson, I.N., F.R.A.S., Hydrographer Indian Navy.* Smith and Elder, London; Smith and Taylor, Bombay, 1856.

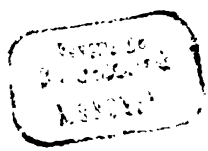
We have just received a copy of this very handy little chart, (about two inches to a degree of M. Lat.,) including Cape Comorin and the coast of Scinde. It is contained in two sheets, forming one of a very convenient size, and large enough for a track chart. It appears to be compiled with some care, notwithstanding the Ados Bank off Cape Ramas is omitted, and even a track chart requires some further attention to lights than this has received. Thus the seaman is informed by it that there is a light on Minora Point, Kurrachu, and also one at Bombay; but of their character, whether Fixed or Revolving, he is not informed. The same with that of Goa, and as to those of Mangalore, Calicut, Cochin, &c., they seem to be beneath all notice. We must set all this down, however, along with the poorly graduated scale, to the effects of haste, generally made to save time, mails perhaps; but no one knows better than the hydrographers of Bombay the importance of these matters, and no doubt they will be timely remedied. When they are, this will become a favourite little chart with the navigator.

ARCTIC SUFFERINGS.—Our readers will, we hope, admit that we are not much given to appealing to their sympathy for relieving distress either occasioned by an accumulation of unfortunate circumstances or any other cause over which the party in question could have no control. But such a case appears in that of Mrs. Blenkey, (mentioned in our advertisements,) the widow of the Ice Master who has perished with the rest of the followers of Sir John Franklin, and for the variety of whose misfortunes and the respectability of whose character we can personally vouch. Any contribution from the charitably disposed who may read these lines will be well appropriated and gratefully acknowledged.

ERRATA.

The reader is requested to make the following corrections in the current number.

Page 59 line 20 *for* rocks *read* Rue Point.
" 59 " 22 *for* N.W. ¼ N. *read* N.W. ¼ W.
" 60 " 34 *for* high *read* low.
" 60 " 5 from bottom *add* the word "knots" to end of line.
" 51 " 9 *add* the words "or a mile" to end of line.



THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

MARCH, 1856.

NARRATIVE OF THE LOSS OF THE CHINESE JUNK "NINGPO" ON D'ENTRECASTEAUX REEFS, NEAR NEW CALEDONIA, WITH AN ACCOUNT OF THE REEFS,—*By Lieut. William Chimmo, of H.M.S. "Torch," Ordered to their Rescue in* 1854.

The lorcha *Ningpo*, William Billings, Master, sailed from Hong Kong on the 15th of April, 1854, bound to Port Philip, in ballast; there to be employed as a lighter. She experienced light variable winds until the 21st, when it came on to blow a heavy gale from the N.E.; which continued until the 23rd, the vessel labouring heavily. On the 26th passed between Orange and Monmouth Islands, and found the chronometer had gained 2′ 50″ on its original rate; which was attributed to the violent motion during the gale.

Wood and water getting short, determined on putting into Port Lloyd (Bonin Isles) on the 29th May, in company with the *Exchange*, Chinese coolie ship, with 697 passengers, from Hong Kong to San Francisco.

On making the land found the watch still gaining, its error being 5′ 45″ above the original error. While at this port procured a supply of wood, water, sweet potatoes, and turtle. Here it was the intention of the Master to have beached the vessel to fire and black her bottom; but, owing to the barrier reef and the insufficiency of rise and fall of tide, was prevented.

Sailed from Port Lloyd on the 5th June, with a strong breeze from

S.W. and heavy rain, which continued until the 20th. The vessel now made much water, and it was at first intended to put into the Isle of Pines, but her course was afterwards altered for Moreton Bay.

On the 22nd July passed close to the westward of Tucopia or Barnett Island: wind strong from S.E. with a high and confused sea,—thick weather following.

On the 28th of July, at noon, strong breezes and cloudy, with a high sea; the N.W. end of Bond Reef, by account, S.b.E., twenty-five miles distant; wind E.S.E.; steering S.S.W., in order to give the N.W. end of the reef a wide berth. At 4h. p.m. ordered a mast-head look-out, but nothing could be seen. As the vessel had been going six knots since noon, the Master felt convinced all dangers had been passed; but, as the chronometer was in error, the same course was steered (S.S.W.) until 8h. p.m., when the vessel was hauled up S.S.E. After the watch had been relieved and the look-out stationed, the Master went below to consult the chart, leaving orders with the chief-officer, whose watch it was, to keep a good look-out for breakers until he came on deck again, and to put the vessel round immediately if he saw anything suspicious,—the vessel now going about five knots.

The Master says:—"He had not been more than ten minutes below when he felt a slight shock. He at once ran on deck, and to his dismay found the *Ningpo* hard and fast on a coral reef. Although going so fast through the water the shock was so trifling that his first impression was that he had run foul of some portion of a wreck, as the day previous a vessel's lower mast was passed."

At the time of her striking no surf or breakers indicated the proximity of danger, and the vessel went on as easily as if she had been run on a shingle beach. This idea was, however, quickly dispelled. On looking over her side the bottom was distinctly visible, with several rocks (?) showing above the water. Having got sail off the vessel (after fruitlessly attempting to back her off), one watch commenced discharging the ballast, while the other got up and bent one of the anchors, which was taken aft and let go to prevent her drifting further on the reef. This was hardly done when the vessel began to make water rapidly; sails, provisions, and everything were got up from below, and in less than fifteen minutes the vessel was half full of water. Daylight appeared and showed the utter hopelessness of their position. The vessel lay with only two feet water alongside at low water, with her stem projecting over a ledge, outside of which was no ground at forty-five fathoms; the vessel's bottom stove in so that the tide flowed in and out.

Two small sand islets were seen about six miles due West, and immediate preparations for landing the provisions and crew were made. At 10h. a.m. of the 29th, the first load was despatched on a raft made of the spare spars, &c. This raft did not reach the islet until next morning, the water being too low on the reef. The remaining portion of the provisions had to be headed up in water casks and towed on shore, as the raft was not able to return to the vessel and the only boat on board was too small to carry a cask. It was not, therefore,

until the fifth day after the vessel struck that everything was safely landed.

Commenced sinking holes on different parts of the island to obtain water, but without success, salt water always being found at the depth of ten feet. This was a source of great anxiety, as only two casks and a half of water were saved from the wreck, and one of these spoiled by the salt water getting in.

As to provisions there was no immediate apprehension, as the island was covered with various kinds of sea fowl and the reef swarming with a variety of fish, including sharks of an enormous size (having captured one, with a harpoon, sixteen feet in length) and turtle, a few of which were seen and they succeeded in taking one weighing over 600lbs. The difficulty of obtaining water was soon overcome by condensing the salt water from the ship's coppers. A gun barrel was introduced into them, and by the application of cold water outside the condensed water poured through the nipple of the gun into a small water cask. By these ingenious means eighteen gallons of water were obtained in twenty-four hours; much water was saved during some passing showers.

Having brought all the provisions on shore, and being unwilling to trust the boat any more going off to the wreck (as she had been stove in once), knowing that all their hopes depended on her, they commenced fitting her with a canvas deck and wash boards ready for a passage to the Isle of Pines, that being the nearest port where assistance could be procured. This design was, however, frustrated by the men who had volunteered at first to go refusing afterwards, saying they were afraid of the natives of New Caledonia and the adjacent islands, but if the Master would go to the coast of Australia they would proceed with him. This, in a boat thirteen feet long (over all) and very lightly built, was not considered prudent, as the boat could not carry provisions and water for so long a passage. At last, after many days spent in a fruitless endeavour to induce them to abandon this apparently mad scheme, he consented to attempt the passage to Moreton Bay, provided they would wait till the middle of September. This was agreed to and everything was going on smoothly until the 27th of August; when, according to custom, the Master went out at daylight on the North end of the island to look for turtle, remaining until eight o'clock. On his return he was informed that some of the men had taken books, spy-glass, &c., from his tent. "This," to use his own words, "he thought nothing of until he found his charts and *Nautical Almanac* had been taken, when the horrible suspicion flashed across his mind that they contemplated running away with the boat. He at once started to prevent, if possible, such a proceeding; but when he arrived at the beach it proved that his fears were well founded," as the boat had already shoved off and was out of musket range. Heart-sick and in a state bordering on despair, he returned to his tent to see what had been taken and found charts, navigation books, and spy-glass gone, leaving him without any guide to go by in the event of being able to construct a raft.

The crew now came one by one to excuse themselves for the share they had taken in the affair, offering as an excuse that they feared the boat was intended for the Isle of Pines and they had a dread of the natives there.

The Master now tried to induce the crew to build a raft of the wreck of the *Ningpo*, as he never expected to hear anything more of the boat; but without avail, as they said "they had no tools and that the whalers would be coming about in a short time," and that they would be sure to see the flag-staff that had been erected on the North end of the island. This he considered a very poor chance of getting away, as no sailing vessel would ever come near such a place.

Every preparation was now made for a long sojourn on the island by keeping a vigilant look-out for turtle, which now began to come on shore in great numbers. Two large pens were built, and upwards of eighty, weighing on an average 5cwt., were put into them.

The pens being full they commenced drying the flesh of others to provide against the time they would desert these shores; which they do during the months of November and December, after depositing their eggs, and return as early as July, increasing daily from this period. They were so numerous in September that the Master turned twenty-seven one morning without wetting his feet, and he counted eighteen more asleep in about six inches water, which could have been captured without difficulty. In addition to turtle, quantities of fish of different kinds were caught; all of which were excellent food. These fish were principally of the cod species, but much larger than any before seen. One was harpooned which weighed upwards of 700lbs.; it was black, with large scales of an inch in diameter; the flesh was palatable but tough and full of sinews.

A canoe which had been found in the centre of the island was now fitted with outriggers, sail, &c., and they were thus enabled from time to time to visit the wreck, which had not yet broken up.

They had now been two months and a half on the island and lost all hopes of receiving any assistance from the boat, which every person gave up as lost, when one of the men (Lyttle), who had been always willing to do anything the Master proposed, agreed to venture in the canoe over to an island they had seen to the S.E. This island he afterwards found to be Surprise Island, bearing S.S.E., about thirty miles from the one on which were the crew. Everything was therefore arranged, and on the morning of the 7th of October she started at 4h. a.m., but had to put back, the sea being too rough and the canoe filling. At 6h. 30m. started again, with the intention that if they could discover land to the South of Surprise Island to stand on and endeavour to reach New Caledonia. She arrived at Surprise Island at sunset that evening completely exhausted, having had to paddle all the way against a head sea. Could see nothing like land to the southward, and returned next day to the island.

Another effort was now made to build a boat, but some refused to lend their aid, although saws had been made out of new iron hoop (which on trial worked pretty well) and some cutting tools out of a

ship's cutlass. They then all volunteered their assistance. Water now ran very short and operations were postponed until a supply should be provided, as the weather threatened rain. Two days afterwards it commenced and continued for seven days, enabling them to fill every available receptacle. During this period the wind, which continued to blow half a gale, raising a high sea, prevented them going to the wreck.

On the 26th they were about to commence their boat when the Master was informed that a vessel was in the offing. At first sight they supposed her to be a whaler trying-out. In order to attract notice large fires were made on each extreme of the island, where quantities of wood had been placed for the occasion, and the ensign was hoisted on the staff union downwards. From the various movements of the vessel they were thrown into great suspense, fearing that the fires had not been seen and that they were doomed to remain on this island without the hope of rescue. However, on her nearer approach, the report of a gun gave them intimation that their signals of distress were observed The vessel advanced towards the island as near as was safe, and sent her boats to their assistance. Their joy may be more easily imagined than described; they had given up every hope. The same evening they were all safely housed on board H.M. steam-vessel *Torch*, commanded by Lieut. William Chimmo, R.N.

WILLIAM BILLINGS,
late Master of *Ningpo*.

Notes by William Tough, Chief Mate, who made a voyage in the Ningpo's boat to the coast of Australia, nearly eight hundred miles.

He says that as soon as the boat and sail were ready Mr. Dainty (a passenger), one seaman, and himself started for the mainland, on the 26th of August. On the 28th they had rain and a strong wind from S.E. On the 6th of October saw land in lat. 26° S. and, being short of water, proposed to land. When near the shore natives were seen, and when the boat was close two of them swam towards her and were taken into her, seeming very friendly. They could speak a little English and told them they could get plenty of water and to come on shore. The natives assisted them to get out of the boat. Afterwards they took everything out of her, and then wanted the crew to take the clothes off their backs, but they would not do so. They then struck them with clubs, and, being so weak, they could not defend themselves. Tough's right arm was broken and his head cut very severely; the passenger and seaman were also wounded and left insensible on the beach. Tough was the first to come to, and he found he was lying with his head and shoulders just out of the water. He found he could not stand and crawled on his hands and knees to some water; he took some also to Mr. Dainty, which revived him a little. The seaman continued insensible until the following morning, when they all started for Moreton Bay.

For four days they had nothing to eat. They fell in with a native named Moysa, who took them to a hut and gave them some fish. He told them he would take them to Moreton Bay, and early next morning they started. After walking half a mile, Mr. Dainty and the seaman could go no further. They told Tough to proceed and send them back assistance if possible. After walking two days another tribe was met, who said they would see him safe to Moreton Bay. Moysa was then sent back to see what he could do for Mr. Dainty and the seaman. Tough then proceeded with one native for six days; during which time they had to swim several bays and creeks, which was found very painful with a broken arm and the skin burnt off his back by the sun. Two days before reaching Moreton Bay the natives gave him a covering for his back; which was very acceptable, as he had been naked for ten days.

On their arrival at Moreton Bay they were taken to Captain Wickham, the Government Resident, who sent them to the hospital, where they remained a week. Two boats were sent to look for Mr. Dainty and the seaman; the latter only was found, and they were told the other had gone to Wide Bay.

Tough returned to Sydney, when he was sent on board H.M. steam-vessel *Torch*, Lieut. W. Chimmo; which vessel was immediately despatched by the senior naval officer, at the earnest request of the Colonial Government of New South Wales, to rescue the survivors of the *Ningpo;* which she successfully accomplished on the 26th of October, 1854, and carried them all safely to Sydney.

WILLIAM TOUGH, Chief Mate.

A cursory view of D'Entrecasteaux or Bond Reef during the search of H.M. steam-vessel Torch for the survivors of the crew of the Ningpo, by Lieut. Wm. Chimmo.

This dangerous and extensive reef, North of New Caledonia, occupying a space of nearly 1,000 square miles, is an invisible coral reef, with only a few large rocks or stones on its margin; one of these in particular on its N.W. end is nearly twenty feet high. This reef has two openings on its western face, and one (?) on its eastern. The former lead to small sand islets; and from the centre island I think there is a passage through the reef.

The North portion of this reef was seen by Captain Bond, in the *Royal Admiral*, in the first attempt to make the great eastern passage to China, 28th November, 1792. North Huon Island was also seen, and said to be the only one. Earlier in the same year (1792) the South part was discovered by Admiral D'Entrecasteaux, as well as Surprise Island. It is stated, "to be the most dangerous reef he ever saw."

This reef encloses four small islands, of about two or three miles in circumference, viz., North Huon, in lat. 18° 2′ S.; Middle Huon, in 18° 18′ 37″; and South Huon, with Surprise Island on its South extreme; also a few small sand islets and the rocks above-mentioned.

North Huon Island has a good and safe anchorage from easterly winds; but should be carefully approached, particularly by sailing vessels, having many sunken coral patches two to three miles W.N.W. from it, which is the channel. The landing is good, on a steep sandy beach, having eight feet water over the boat's stern when her bow is on the beach. This island abounds with turtle, fish, and sea birds, but no water.

Middle Huon is safe of approach; but the anchorage is bad, irregular coral bottom, in twelve fathoms, close to the fringe or inner reef which surrounds the island and renders it difficult and dangerous for boats to cross. It is in lat. 18° 18′ 37″, and abounds with turtle, seafowl, fish, and landrail. It was here the crew of the *Ningpo* lived for three months, but they found no water, although wells were dug eighteen to twenty feet deep.

South Huon has also a fringe reef round it, and is still more dangerous of approach for boats than Middle Huon. Being more to the westward it has not the advantage of the shelter of an outer reef. This island is about South four miles from Middle Huon.

Surprise Island, so called by Monsieur D'Entrecasteaux, when he thought he had weathered the North reef of New Caledonia, is S.S.E., twenty-six miles (about) from Middle Huon. The Master of the *Ningpo* landed on this island, and describes it "the same as the other islands." I have not seen it.

The current found on the West face of this reef was generally influenced by the winds, and sets to the N.N.W. The rise and fall of water for five days, hourly observations, gave on an average three and a half to four feet. The current set through the reef and round the extremes of the islands, at the rate of two to three miles per hour.

From the *Ningpo* another wreck could be seen; which shows its fatality to more than one vessel. Her name I could not ascertain, nor is it known whether the crew had landed or perished. They were not, nor had been on any of the islands in this reef.

The Approach to the Islands.—Directions.

It was found that the West face of this reef, instead of being a continuous line North and South, forms two deep bights. The N.W. extreme may be known by several rocks fifteen to twenty feet out of the water,—one, the highest, much resembling a boat's lug sail.

The N.W. extreme forms one arm of a deep bay strewn with patches of coral (awash); in the bight of which lays North Huon Island, of crescent shape, magnetic North and South, and forming, with its sand spits and coral patches, a good anchorage open to the westward on ten points of the compass.

The course for this anchorage is to bring the centre of the island E.S.E., distant five or six miles, and steer for it, keeping (with the sun to the West) a good look-out for the small coral patches awash directly in the entrance and distant from the island two to three miles.

Gradual soundings, from fifty to ten fathoms, will be carried to the anchorage.

The centre portion of the reef has not so much western extent and forms the South arm of North Huon Bay. It is a detached reef from the main, and is connected with the islands and sand islets.

South Huon Bay is of much greater extent; the depth of which is formed by Middle Huon and South Huon Islands and two sand islets. Here the anchorage is not so safe or good and the ground foul. The islands are entirely surrounded by a fringe reef only passable for boats on their lee or N.W. side at high water, which makes it dangerous to cross, a heavy sea rolling over it. I had not time to examine Middle or South Huon Islands; but the late Master of the *Ningpo* stated it was more dangerous of approach than Middle Huon, but contained more soil and a similar abundance of turtle, birds, and fish.

The S.W. point of this reef, forming the South arm of South Huon Bay, is an abrupt point with deep water close to it. Between Middle and South Huon Islands there is an apparently clear passage as far as the eye can reach to the eastward; but I had not an opportunity of examining it, nor would the unsettled state of the weather allow me to take the *Torch* through on my return.

Admiral D'Entrecasteaux showed great discretion in making the whole outline of the reef unapproachable by a continuous line, as no sailing vessel should attempt to approach it.

Brief Sketch of the Natural History, &c., of North, Middle, and South Huon Islands, by Dr. McDonald, Assistant Surgeon of H.M. steam-vessel Torch.

The basis of these islands appears to consist of a coarse-grained yellowish brown sandstone and superimposed coral beds, on which broken shells, fine sand, and heterogeneous matters continually accumulating have formed the nidus for a scanty vegetation. The great profusion of small masses of pumice stone sufficiently indicates the elevating cause; which, however, must have been very gradual in its operation.

On North Huon Island especially the vegetation is exceedingly poor. The few herbaceous plants to be seen are only such as "love a dry and sandy soil," and the spare foliage of the stunted trees scarcely afford any shelter to the young of the fish-hawk, booby, and noddy, whose rudimentary nests, composed of a few dead leaves matted together, are generally fixed on well selected branches. The masked gannet, scorning even this incipient approach to the exquisitely constructed dwelling of the land birds, brings forth its downy and trembling offspring on the open sand flat, alike exposed to the sweeping storm and the potent rays of a tropical sun. This species was found plentiful on Howe Island as well as Norfolk Island, but specimens are rare in European collections of ornithology.

The fish-hawks, or frigate-birds, and noddies take up their abode a

little way in the bush, and a handsome cream-coloured gannet, with a bluish beak and red feet perches on the trees near the beach, which is lined by an innumerable host of sea swallows in every stage of growth.

During our stay we had rather extensive practice in turtle turning; these animals coming up in considerable numbers to reconnoitre the ground for depositing their eggs.

Middle Huon Island, on which we found the crew of the *Ningpo*, presents a striking contrast, in the character of its soil and vegetation, to the sterile monotony of the former. The brown mould covering the coral beds is about two feet in depth, and so burrowed and undermined by mutton birds, which do not frequent the northern island, that it is quite impossible to walk through the bush without stumbling continually into these deceptive pit falls.

In addition to the mutton bird, the island is visited by the tropic bird, which forms its nest at the roots of trees in sheltered places. But the most interesting of the feathered tribe is a species of landrail *(rallus)*, which Mr. Billings states occurs also on both South Huon and Surprise Islands. On arriving at New Caledonia we found that the bird was well known there; but how it could have found its way so far to the northward with wings so ill adapted for flight is not so easily accounted for.

The fishes seen were sharks of large size, numbers of the wrasse family, the mackarel family, the eel-like fishes, large sucker fishes, and a great variety of brilliantly tinted species—and in particular the little Emperor of Japan—sporting among irridescent patches of living coral on the reefs.

Of the botanical orders represented in Middle and South Huon Islands the more important are leguminosæ, goodeniaceæ, malvaceæ, capparidaceæ, and compositæ.

Reflections on Sir John Franklin's Expedition, and where his Ships were most probably Beset in the Ice.

The question of the North-West Passage, which has occupied the attention of this country for many years, has at length been set at rest, and its discoverer, Sir Robert M'Clure, has received his just reward. But few victories of any kind are gained without their price, so this contention with thick-ribbed ice in arctic seas has cost us dearly in the loss of Franklin and the gallant band of British seamen by whom he was accompanied. A strange fatality has followed them. With all our efforts we have been unable to succour them in their distress. The different routes which they might have adopted to effect their object,—the ever changing condition of the ice through which they had to penetrate, now arresting their progress and now encouraging it by a tempting lane,—the risks,—the delays,—the acci-

dents to which ice navigation is ever liable,—all these have contributed to bewilder us in attempting to form a conclusion as to where Franklin would most probably be found,—as to where or in what direction assistance should be sent; and he left us nothing to guide it.

When time had passed on and Franklin appeared not; when hopes were disappointed in those early precious days of deep anxiety, search was commenced; but nothing beyond his first wintering place was found. And after seven years continuance, when all reasonable hope of finding him living was gone, it was relinquished. And no sooner was it relinquished,—when perhaps a thousand miles of coast-line had been examined in the far North, both East and West, where opinion led that Franklin would be, and he was not,—than a sudden light was thrown on the subject by relics that were brought to us, showing too plainly where search had not been made!—that while we had been exploring with a degree of careful anxiety never to be surpassed the sinuous shores of that archipelago of islands to the North, we had left a portion of the South unheeded; and there these relics were discovered. Let us now try to trace them.

The materials from which we shall endeavour to show where Franklin's ships were most probably beset are not new. They have been before us from the commencement of our search; but they have been rejected and unheeded because they were unconnected and not likely;—besides they came from Esquimaux, who are looked on as no high authority! Yet these reports, considered in connection with the expressions of Franklin, the expressed opinions of the highest authorities on arctic matters generally, the vestiges of wreck, and the relics of the party that have been found, become consistent and contribute to form a mass of evidence showing the probability of Franklin's unhappy position that could scarcely have been expected.

To consider duly all these remarkable features of the subject it may be proper first to state what we know of the proceedings of Franklin's ships. It is but little; yet that little is *certain*. We know, for instance, that they left us in the month of May of the year 1845; that after reaching the Danish settlement of Disco, in Greenland, they were to leave it about the middle of July following; that on the 19th of that month they were off Upernavik; and on the 26th that they were in the position marked on the chart herewith in Baffin Bay, all cheerful and happy. Captain Fitzjames, one of the officers, in alluding to the passage they had made to the Bay, in that lively and exhilirating strain so peculiar to him, says, in some letters which appeared in our April number of 1852 (p. 198),—"We bounded along merrily, shaking hands with ourselves and making imaginary short cuts through America to the Pacific." It is difficult to leave those interesting accounts which Fitzjames gave of his messmates, those amusing sketches of character, as well as of the proceedings on board: one cannot help admiring the noble spirit, the fine feelings, and the animated style of Captain Fitzjames, who must indeed have been "the darling of the crew:"—it is difficult to leave the fascinating pictures which he so ably pourtrayed and turn to the sad reality that all are gone! When

last seen the ships were making their way to the West, crossing Baffin Bay, pursuing the route to Beechey Island; where we know that they passed the winter of 1845–46.

Of the discoveries made at Beechey Island enough has been said. All the world knows that abundance of relics were found there, and there was evidence also that the ships had not left that place in the month of April following. And, saving a statement of Sir John Ross, which would prolong that stay to September (and then of course another winter) there is nothing to throw any doubt that Sir John Franklin pursued the object of the expedition as soon as the state of the ice permitted him. And it is generally believed that Sir John Ross was mistaken, having too easily received the assertion of another.

From Beechey Island the advocates of the Wellington Channel route have concluded that as soon as possible the ships passed that way and thence into the Polar Sea. But in support of this view not one atom of evidence has been found in all the search that has been made. That there was a beaten track from Beechey Island to the northward along the eastern shore of that channel there is no doubt; made by walking parties during the winter, probably, for the sake of exercise, and at the same time to observe the state of the ice in the channel. Yet proof cannot be adduced from all the evidence collected there that Franklin's ships went that way, notwithstanding all the assertions that they did so!

There is, however, certain circumstantial evidence, which will appear hereafter, that renders it more than probable (and we apply the term after due consideration) that Sir John Franklin did adopt the route to the South-West and had long been in a position from whence no tidings could be obtained of him; that while he has been sought for on the shores of the North he has been in the South, irrevocably fixed in the ice and perhaps beyond the reach of succour! It will not be admitted for a moment that he could have taken this course by those who believe he went up the Wellington Channel, or others that he went down Prince Regent Inlet or Peel Sound. But let us leave him at present as having departed from Beechey Island, and admit that considerable anxiety begins to be felt for his safety, while we turn to the several relief expeditions sent out to find him, all of which have so lamentably failed in their object. Rich enough they have been in their contributions to geography, but sadly deficient in those results for which they were destined—the saving of Franklin and his companions. As a tabulated statement of them is preserved here for reference we need not go into the fruitless detail of their geographical discoveries. They are all before the reader in the accompanying chart.

The first expedition was that of Sir James Ross, who proceeded with two ships, the *Enterprise* and *Investigator*.

The reader may perhaps remember when Sir George Back, in 1836, went out to relieve Sir John Ross, (of whose expedition to Boothia nothing had been heard for some three or four years,) that he was accompanied by Dr. Richard King. While Sir James Ross was

preparing for his voyage a proposal was made by this gentleman to proceed on a land expedition to the relief of Franklin by the route which he had previously passed with Sir G. Back, and he pointed out in his letter (see Parliamentary Return of Arctic Papers, 1848,) that Franklin would be found on the western lands of North Somerset. Dr. King's knowledge of the country gave him confidence not only in his capacity for such an undertaking, but his view of the whole subject enabled him to foretell with a most remarkable correctness where it was most probable that Franklin's ships would be found.

The proposal of Dr. King might perhaps have been in certain parts unsound: it might have wanted good preconcerted arrangements and a larger party than he had contemplated to secure the relief proposed. It was submitted to the consideration of Sir James Ross, and from the same Parliamentary document, which contains it, we copy the following comments upon it. After referring to the possibility of Sir John Franklin having penetrated as far as long. 115° W., in the parallel of 72°, where Dr. King considered his ships might be found, Sir James Ross says,

"It is far more probable, however, that Sir John Franklin, in obedience to his instructions, would endeavour to push his ships to the South and West as soon as they passed Cape Walker, and the consequence of such a measure, owing to the known prevalence of westerly winds and the drift of the main body of the ice, would be (in my opinion) their inevitable embarrassment, and *if he persevered in that direction, which he probably would do,* I have no hesitation in stating my conviction that he would never be able to extricate his ships, and would ultimately be obliged to abandon them. *It is therefore in lat.* 73° *N. and long.* 105° *W. that we may expect to find them involved in the ice,* or shut up in some harbour, and this opinion will be much strengthened if nothing should be heard of them in the course of this month, as this is almost the only point in which it is likely they would be detained, or from which it would not be possible to convey information of their situation to the Hudson Bay settlement."

This opinion of Sir James Ross is dated in April, 1848, and Franklin's ships did not return within the month.

Dr. King's proposal met with no support and was set aside, probably from other reasons besides those to which we have alluded, and the *Enterprise* and *Investigator* hastened away with ample orders* from the Admiralty; which, had they been carried out, would in all probability have produced something more than trophies of geographical discovery. Thus, these orders required Sir J. Ross to go to Melville Island; to send from thence a travelling party to Banks Land, which he was directed to explore to the South-East, meeting Dr. Richardson to the southward. Had either the *Enterprise* or *Investigator* wintered at Melville Island instead of Port Leopold in 1848–49, that precious period when the *Erebus* and *Terror* were about to be abandoned by their crews, who can say what that party might not have

* An outline of them will be found in our volume for 1848, p. 363.

found? They would indeed have been led to the South-East from Banks Land by a coast-line since discovered, and might have intercepted a famishing party in boats toiling to get to a southern land, where lay their only chance of relief. But it was not to be so. Ice navigation, ever faithless, ever uncertain, was not propitious to this scheme, and Sir James Ross could only reach Port Leopold by the month of September. A few days were passed by his ships hovering to the westward of that port, but by the 11th of that month they were in winter quarters in Port Leopold. One year, all but fourteen days, afterwards they escaped from their ice-bound retreat, but their provisions were found to be reduced to one half of what they sailed with, and this was a condition that did not admit of going to Melville Island; they therefore reached England in October, 1849, having expended two of the most precious years for search, because they were the earliest, when relief would have been relief indeed! There were travelling expeditions, while navigation was suspended, by the officers of Sir James Ross's ships to Maxwell Bay, on the opposite side of Barrow Strait, not fifty miles in a direct line from Beechey Island, and he himself performed a lengthened journey, discovering the shores of North Somerset; and Fury Beach was visited and so was Port Bowen,—all of which proved that Sir John Franklin had never been to any of those places.

The return of Sir James Ross in 1849 was the signal for a fleet of ships to hurry away to the search; when all the expeditions of 1850 hastened to the Polar Sea (a statement of which will be found at the end of this discussion), not only by Barrow Strait, in the East, but by Behring Strait, in the West. The *Plover*, under the command of Captain Moore, had already gone to the latter about the time that Sir James Ross had sailed for the former, and sent boat expeditions under the command of Lieuts. Pullen and Hooper, who ascended the Mackenzie River after navigating the arctic coast between it and Behring Strait. Captain Austin, in the *Resolute*, with Captain Ommanney, in the *Assistance*, sailed in April of 1850 to take up the search from the East, accompanied by the *Intrepid* and *Pioneer*, tenders.

And this fleet was increased by the addition of two ships from our friends of the United States, who, with warm and generous hearts in the cause, in answer to an appeal to the President made by Lady Franklin, sent the *Advance* and *Rescue* to assist in the search. The name of Mr. Grinnell, of New York, may well stand conspicuous on land discovered in this search, and let it be recorded in History's page in glowing terms as that of the patron of arctic enterprise in the cause of humanity, and gifted with those magnanimous sentiments which will add lustre to that name by inducing him to become so. Nor did his liberality stop here. It is well known that the officers and crew of another vessel sent out by the same gentleman have very recently returned from an exploration of Smith Sound in Baffin Bay, having been compelled to abandon her; an interesting account of which appeared in our January number, and the narrative of which is preparing for publication.

Never had the shores of Lancaster Sound been so thronged by vessels on such a mission as they were that year of 1850 by those on their way to rescue the ships of Franklin. But all returned with disappointed expectations, and Capt. Austin's letter to the Secretary of the Admiralty, dated 12th August, 1851, between Capes Martyr and Hotham, Wellington Channel, contains the following statement.

"46. Having yesterday been released from our winter quarters, and most unexpectedly reached those of Captain Penny, I have now the honour to state, that having maturely considered the directions and extent of the search (without success) that has been made by this expedition, and weighed the opinions of the officers when at their extremes, I have arrived at the conclusion that the expedition under Sir John Franklin did not prosecute the object of its mission to the southward and westward of Wellington Strait." (See *N. M.*, 1851, p. 549.) And, after looking into Jones Sound, the ships returned home, having found nothing of Franklin.

The expedition of Capt. Austin was followed by that of Sir Edward Belcher, the object of which was to examine thoroughly the Wellington Channel to the North-West, on which so much stress had been laid by Lady Franklin and Capt. Penny. But, like all the rest, it was productive only of geographical discovery; and we remained in our ignorance of Franklin's fate, hoping for the best and fearing the worst.

Let us now return to Franklin, who had left Beechey island in 1846, perhaps in May or June, and instead of adopting the Wellington Channel, which we have now seen has yielded no vestige of his expedition whatever to show that he passed that way, let us assume that he adopted a South-West course, and then let us see what we have to support this view of the subject.

We have already seen that Sir James Ross thought, in 1848, that "in obedience to his instructions" he would do so. The fifth clause of those instructions, which it is not necessary to quote entire, (but it is the first relating to the route he was to follow,) required him to push to the westward in lat. 74° 15′ to about 98° West, and *thence to penetrate South-West.* And notwithstanding all the rigid search that has been made to the northward, the opinion really seems to have been general among the highest authorities, that Sir John Franklin would first attempt the South-West route. Thus Sir Francis Beaufort said, "Sir John Franklin is not a man who would treat his orders with levity, and therefore his first attempt was undoubtedly made in the direction of Melville Island to the westward." Nay, Sir Francis adds more than this, he says also, "If foiled in that attempt, he naturally hauled to the southward, and using Banks Land (N.E. point of Baring Island) as a barrier against the northern ice, he would try to make westing under its lee."

Sir Edward Parry says of Franklin, "He was a man not to look back if he thought he could accomplish his object, and he did intend, *if he could not go West*, to go up the Wellington Channel."

Sir John Richardson says, that "His first endeavour would be to

act up to the letter of his instructions, and that therefore he would not lightly abandon the attempt to pass Lancaster Sound."

Again, Col. Sabine says, "If Sir John Franklin had proved that no passage could be found South-West of Cape Walker, 'he would have tried another;" but all show that he would decidedly have tried the South-West route first, and we have already seen that this was also the opinion of Sir James Ross. "Only tell me," said Lady Franklin, in a letter addressed to this journal, "that they could not have taken a South-West course, and then I know that they would besiege the gates of the Wellington Channel."* And Lady Franklin had then been assured by Capt. Austin's report, that Franklin's expedition did not pursue the object of its mission to the southward and westward of Wellington Channel.

In fact, the South-West route had been abandoned, while the shores of Banks Land *were not yet searched*, and the opinion that Franklin, foiled in that direction, had taken the Wellington Channel, was then almost general. For our own part we could never subscribe to it, often as the subject has been discussed in this journal, and the views of the different authorities we have quoted appear in its pages.

The place where Sir James Ross considered the ships of Franklin would be beset in the event of their taking this South-West route, is marked on the accompanying chart. But ice navigation is so uncertain, that we have adopted a wide range, much in the same direction where the foregoing opinions authorize that belief. Now the fifth clause of Sir John Franklin's orders (being the first relating to his route after gaining Lancaster Sound,) was to the effect that he should push to the westward in lat. 74° 15′ to about 98° West, and *thence to penetrate to South-West;* so taking his ships from Beechey Island, where they wintered in 1845 and 1846, past Cape Walker by the westerly course, let us assume that this track was adopted.

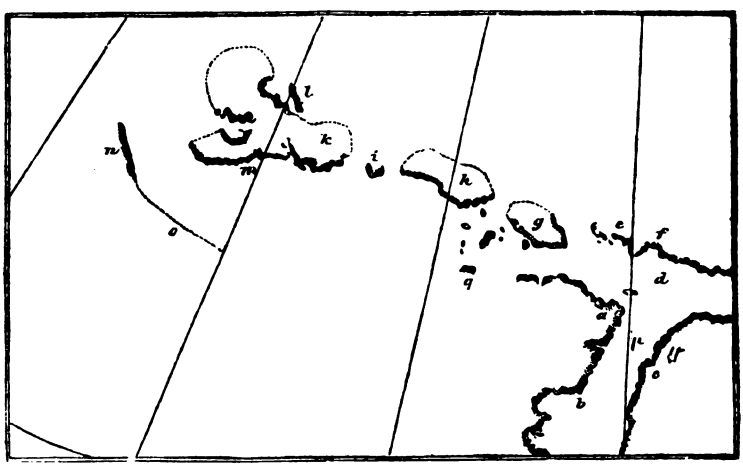
Sir Edward Parry has drawn so able a picture of the uncertainty of ice navigation in a few words, that they will show the facility with which Franklin's ships might have entered that apparently permanent barrier to the South-West. He says, "I have been for two or three days together beset by ice, and from the mast-head you could not see water enough to float a bottle, and in twenty-four hours there was not a bit of ice to be seen. Nobody can tell why. I cannot tell why."† Sir Edward was then alluding to the probability of Franklin having gone up the Wellington Channel, which with others he thought was the case; but his remark applies to ice navigation: and as Sir John Franklin was a man not to be diverted from his purpose, he would use all his endeavours to penetrate South-West in obedience to his orders, availing himself of his *engine* and his sails to make good use of openings such as those to which Sir Edward Parry has alluded. A determination to effect his object indeed was evident. Mr. Barrow

* This letter appears in p. 583, vol. for 1851.

† Speech of Sir Edward Parry at Lynn, on the return of Lieut. Cresswell, p. 678, vol. 1853.

says, "In all the letters I received from Capt. Fitz-James, there was but one idea uppermost,—to go ahead. The very words he repeatedly used are,—'Don't care is the order of the day. I mean, don't care for difficulties or stoppages, *go ahead* is the wish.'" We might multiply such expressions as these,—here is another, "If we don't get through it will not be our fault," for they all show the determined spirit that prevailed* "to make the passage; whether, as Fitzjames said, South or North of Parry's Group, remains to be proved." But we must still quote another remarkable passage which occurs in the letters of this same officer. "At dinner to day, (the 7th of May,)" he says, "Sir John gave us a pleasant account of his expectations of being able to get through the ice on the coast of America, and his disbelief in the idea that there is open sea to the northward."†

In a former page we have applied the words "most probable" to this part of the subject of Franklin's progress. But here we have his own words from Capt. Fitz-James, expressing his intentions of trying to get through the ice *on the coast of America*, and here is a fac-simile of that portion of the chart with which he was supplied by the Admiralty, showing the state of our knowledge at the time, and presenting an inviting opening for him to penetrate!



a. Cape Clarence, Port Leopold, Whaler Point, North Somerset.
b. Fury Point.
c. Port Bowen.
d. Barrow Strait.
e. Beechey Island, Cape Riley: wintering place of Franklin in 1845–6.
f. Maxwell Bay.
g. Cornwallis Island.
h. Bathurst Island.
i. Byam Martin Island.
k. Melville Island, East part.
l. Sabine Island.
m. Winter Harbour of Parry.
n. Banks Land.
o. Loom of land.
p. Prince Regent Inlet.
q. Cape Walker.

* See vol. 1851, p. 586.

† See vol. 1852, p. 160.

The above will be immediately recognised on the accompanying chart; but such was its condition when supplied to Franklin in 1845, as containing all that we then knew.

The foregoing is painful to contemplate now. Had those words of Franklin been published before, for they only appeared in a paper called the *Leader* in 1852, from whence they were copied into our pages,—had they been known before our expeditions sailed, and considered with the opinions above quoted, and the distinct order shewing the route which Franklin was to follow, how much sorrow and suffering might not have been spared. Could we then have explored the North with so much determined perseverance before we had thoroughly explored the South, which we have not yet done? Impossible! But Providence rules, and man alone misrules. The Admiralty, in giving the necessary orders for the guidance of these expeditions, called in the aid of the Arctic Council, consisting of those officers who were most experienced in arctic navigation, and their decisions were followed throughout. Search had been very properly directed first to the South-West, but it was incomplete, and while it still was so, the Wellington Channel mania unhappily prevailed!

Let us now turn to another portion of this melancholy subject, that seems to have been unfortunately disregarded from merely having been naturally misrepresented. Considering the number of channels through which rumours and reports had to pass before they reached us, affecting perhaps the interests of those parties from whom they first proceeded, it could scarcely be expected that we should receive other than unsatisfactory and apparently improbable stories concerning the absent ships and their crews. Still stories there were, and some foundation there must have been for them. The truth lay at the bottom of them; but flowing through channels infected by fears of displeasure or hope of gain, or by bad interpretation, they were wild and improbable, and obtained no attention. Thus no one believed the first, that of Adam Beck; but that Adam Beck's tale was founded on truth, and picked up by him and transferred to a locality which suited his views, is now possible, for we find something of the same kind in the West.

Every one remembers the story brought home by Capt. Parker of the *True Love* whaler, given second hand, it is true, from another whaler named the *Chieftain;* how that the Esquimaux came on board and represented by chalk on the deck four ships in the ice, two of which had been there one year and the others four; that they had communicated with each other across the ice, and that the two ships which had been longest in the ice were away in the West, two on one side of Prince Regent inlet and two on the other. It will be remembered also that this story attracted the attention of Mr. Goodsir, who had a brother with Franklin; that he investigated it afterwards, and found that the Esquimaux still asserted that two of the ships had been *three years* fixed in the ice.

This occurred in 1849, when Sir James Ross was yet absent, and inspired the hope that the four ships were two of Franklin's and

two of Sir James Ross'; but, alas, when Sir James returned, that hope was annihilated: Sir James had seen no ships all the winter; there had been no communication between four ships; he did not even see the *North Star*, which had been sent out to him in the autumn of 1848 to replenish his stock of provisions so as to enable him to continue his search!

Mr. Goodsir's investigation, which appears in our volume for 1849, (p. 605,) seems but to confirm the original account that Franklin's ships were at Whaler Point, (Port Leopold,) and those of Sir James Ross at Port Jackson, Prince Regent Inlet (the former is the N.E. point on the West side, and the latter a little North of Port Bowen on the East side of this inlet). The Esquimaux said that he had even been on board the three ships three moons before, about April or May (1849); but the extreme difficulty of obtaining correct information from the Esquimaux, we might add of understanding it when obtained, and other reasons, threw doubt in the mind of Mr. Goodsir on the whole story, and it passed away unheeded like that of Adam Beck.

Now the earnestness and unsolicited care with which the Esquimaux traced the outline, as he did on board the *Chieftain*, always impressed us with the idea that truth lay at the bottom of his report. The addition of two other ships, which he knew well enough had been there, might have been merely to obtain attention, and the intercourse between them also, or it might have been that he alluded to two boats leaving them, such is the difficulty of arriving at the real meaning of the Esquimaux.

But let us compare the statement with what is related above. If Franklin left Beechey Island in 1846, and there is good reason to suppose that he did so, he might have been hampered and locked in the ice in 1846, 1847, and 1848, which will agree with the Esquimaux story; and another curious fact, strongly corroborative of the above, is, that an old Esquimaux *cache*, (a secret hiding place of anything,) was found by Capt. Ommanney at the bottom of the bay bearing his name in Prince of Wales Land, showing that some time or other Esquimaux had been along that coast.

The inference that might be drawn from the foregoing, is evident; the story coincides with the time Franklin's ships had been in the ice, and the Esquimaux having been along the coast, knew of their position; indeed the man who visited the *Chieftain* is reported to have said that *he had been on board of them!* But his story was rejected.

The next part of the subject to be considered, appears in a report from Dr. Richardson, mentioned in a letter from the mouth of the Mackenzie River; and this too shared the fate of the foregoing, being considered by Dr. Richardson as not even worthy of attention, but was still worth mentioning! Thus it came from the fountain head with a bad character, and of course obtained no attention whatever. It does not even appear to have been alluded to since its arrival, and like the former it comes second hand; indeed, through several hands.

The original account is dated from Peel River, West of the Mackenzie, 17th of December, 1847, by Mr. Peers, who states that "I have

reason to believe that some white men were off the coast last summer, as a party of Indians, who came here this fall, stated that they were some days in company with the Esquimaux East of the Mackenzie River in the summer. The latter showed the former knives (like our scalpers) and files, that they said were given to them gratis by some white men whom they saw in two "large boats," and who spoke to them in a language they did not understand." Noises had been heard like distant thunder in the fall of 1845, and also "late in October, 1846."

The letter containing these remarkable statements belongs to the arctic papers, and is preserved in our volume for 1848, and who can say that with what has been previously stated here, there is not matter in it for very grave consideration. In the first place, Franklin in 1845 was at Beechey Island, where the strait is about forty-five miles across, and in October, 1846, and the summer of 1847, he was supposed to be off that coast, about where Sir James Ross considered the ships might have been hampered in the ice, which is but thirty miles from the nearest land, called Prince of Wales Land! And we know from the Esquimaux cache above-mentioned that those people are occasionally on that coast. So that there really seems no reason for doubting the story either that reports of guns were heard by them, or that they visited the ships off that coast. We know that the ships were each provided with two long brass six-pounders, as signal guns, along with chambers; and these might have been plentifully used in making as much noise as possible to give notice of their position in the ice, especially in 1847, to ships, which they might suppose would be sent out to follow them. Besides, if they were not exactly in that position, they might have been not far from it, within the limits marked on the chart, and have been equally visited and their guns heard. The noises alluded to might also have proceeded from blasting the ice, in attempting to get to the South-West.

For our own part, this report, considered "unworthy of attention," appears to open out another vein of important evidence of Franklin's presence, concurrent with the former leading in reality to the position of his ships, and forming an important link in the chain of reasoning, which goes far to establish that position. And it is no stretch of the imagination to infer from it that the ships were really down on the southern shores of Melville Sound and were visited by the Esquimaux somewhere near them.

Both these stories derive from each other much probability of truth. In point of time and of ships beset in the ice they agree. The place of the four in the former has only to be removed further West, as might have been really intended by their author, who said he had been on board of them; and that communication supposed to have been going on between four ships, has merely to be translated into two ships and two boats, and the coincidence is complete. There is no improbability in this, for the term ship is synonimous with boat we believe among the Esquimaux. But here are two distinct stories from totally opposite sources, and it cannot be denied that, improbable as they al

first appeared, they really go a great way towards establishing the truth of Sir John Franklin's ships being locked in the ice in the southern part of Melville Sound; independent of other circumstances which tend to confirm that conclusion.

We must now go still further West, for Capt. Moore, at Behring Strait, had been busy collecting evidence of a similar nature, and attached much importance to it also. With difficulty and at different periods of 1850, he gained from the Esquimaux an account of two boats arriving from the North at a river called Kopac, close to the West of the Mackenzie, in the summer of 1848, containing two officers and ten men: (whether they each contained this party or not does not appear:) that they had bartered their arms for food, were since dead, and were buried there by the natives. He was told that "the place where these people were was unapproachable except by sea:" afterwards he was told that the crews had quarrelled with the natives and had been killed, and were buried some on one side of the river and some on the other; that one of the boats still remained at the Kopac, but that the other had been washed away by the sea. Such stories might have been told with the view of obtaining a proffered reward; but, such as they are, they are entitled to consideration in connection with the subject of Franklin's ships.

This rumour again is considered by Dr. Richardson to be altogether a fabrication, because the Russians, he says, have all the tribes in the North-West corner of the continent in subjection. But on this it has been justly remarked by Mr. Barrow, that the massacre of Lieut. Barnard and others of Capt. Collinson's ship, does not warrant such a good opinion of these people, and every one knows that a weak party commands much less respect from Indians than a strong one. Ample proof of this is found in Lieut. Pullen's progress along the coast. The thieving propensities of the quarrelsome Esquimaux West of the Mackenzie River were displayed early in his boat voyage along the shore of the Arctic Sea. Even at Point Berens it began, where that officer's good management alone prevented mischief, so daring were the Esquimaux at seeing two boats, which to them might apparently become an easy prey.

On the 13th of August, 1850, when Lieut. Pullen was re-embarking from the western part of Return Reef, on which Lieut. Hooper and he had landed to dine, he says, "We saw two omiaks coming out from the land, paddle up to the westward of us, just as we were shoving off, *quite bent on doing us mischief if they could*, for every man, forty in number, had his bow and arrows, and directly as they thought within distance fired, two arrows dropping astern and one ahead. Mr. Hooper and I fired over them, which they returned." This is no favourable portrait of the Esquimaux, and such hostile behaviour more than this which has been displayed by them towards Lieutenant Pullen, might have originated in a previous easy sacrifice of Franklin's boats falling into their hands. The last of these Esquimaux were seen at Escape Reef, and Mr. Pullen was by no means sorry at losing such troublesome characters.

But such characters ill accord with the opinion expressed by Dr. Richardson, and it is by no means unreasonable to suppose that such people as these, dealing with a boat's crew weakened by want of sufficient food, and endeavouring to trade with them for it, might come to a quarrel from the boldness of their thievish acts, and the crew be overpowered by numbers and eventually killed as related. The circumstance however corresponds with what has been stated, and thus we leave it.

It cannot be asserted that the two boats above-mentioned really belonged to Franklin's ships; but, on the other hand, who can say that they did not? In the early summer of 1848, they might have left the ships to penetrate to the South-West, making for the Mackenzie River by Prince of Wales and M'Clure Strait, and containing the most vigorous party, who had suffered least from the effects of former winters, and selected to make their way to the nearest settlement on that river. The circumstance may or not be true.

In the point of provisions nothing has yet been advanced here respecting Franklin's ships; but we happen to have preserved in our volume for 1852, some important information on that subject. Thus, without inquiring into any official return, we find it stated, that Capt. Martin "solemnly declared before a magistrate, that on the 22nd of July, 1845, he fell in with Franklin's ships in lat. 75°, long. 66° W., that he was fifteen minutes alongside, and conversed the whole time with Sir John Franklin and Reid, the ice-master; that on asking Sir John what provisions he had, he answered, 'Five years, and if necessary could make them spin out seven,' that he would lose no opportunity of killing birds and whatever else would be useful in keeping up the stock; that he had already got several casks of birds salted, and had at that time two parties out shooting birds, which were numerous; that on the 26th or 28th (June) some of the officers dined on board his (Capt. Martin's) ship, and said the same thing, and that they expected to be absent about four, or five, or perhaps six years."

And the following curious paragraph closes the information then given, which is stated to be from an authority well informed in arctic matters. He says,—

"A gentleman residing at Southampton states, that Le Viscomte, one of the lieutenants, said, that they should abandon the ships and try for the passage with the boats." Here then is another confirmation of that determined spirit to go ahead, and to make the passage even in the boats, that seems to have prevailed in the ships before they sailed, and to which Fitzjames so often alludes in his letter to Mr. Barrow. Noble fellows were they! The British navy has lost in Franklin and his companions as gallant and brave a band as ever adorned its annals. They never turned back!—their motto was "onward!" to the end.

We have now done with rumours and reports, all of which have not proved so barren as they have been considered, for they bear out each other's truth as well as opinions and intentions expressed, that Franklin went to the South-West from Beechey Island. We have next to

turn to another branch of the subject, that of the vestiges and relics that have been found. In treating on the former, our probability began to assume the character of certainty. But in the relics that have turned up there is no mistake. Here indeed we have the stern reality suggesting reflections of the most painful kind, and adding still more probability to the foregoing conclusions.

The relics of Franklin's expedition found at Beechey Island by Capt. Austin, it is well known consisted of that refuse which might have been expected; bits of rope and canvas, whitened by exposure to the weather, the empty tin cannisters of preserved meats, and even some coal bags, were all reported as found in profuse quantity at that place. Something was also said of gardens, which, with a report of Sir John Ross, led us to believe that Franklin's ships had passed two winters there. That, however, is not probable, for we have now seen sufficient to conclude that Franklin would not turn back. These then were the first relics, besides the graves of three of his crew, found in the summer of 1850, bearing the date of April, at Beechey Island, at the entrance of Wellington Channel, where lay that *ignis fatuus* which attracted attention towards the barren North, from the first point of Franklin's orders, the South-West.

The next vestige that was found lay on the eastern shore of Victoria Land, in the South, about a hundred miles to the westward of the River Back, consisting of two pieces of wood, which had evidently belonged to a ship. These were found by Dr. Rae at Macready Point, in August, 1851, and some other pieces were also discovered on the shores of the bay off which Admiralty Island appears, not far from the former.

Again, as Captain Collinson was returning to the westward along the southern shore of the same island, in April, 1853, he found what appeared to be the panel of the door of a ship's cabin, and by the government mark on the latch remaining on it, had evidently belonged to a government vessel. Indeed, it appears by Capt. Collinson's evidence before the Committee of last year, that he concluded it had belonged to the *Terror*.

The most important relics found by Capt. Collinson are alluded to in the following extract of a letter relating his proceedings. He says,

"Shortly after our arrival, (in Cambridge Bay, South coast of Victoria Land, Sept. 1852,) we were visited by a tribe of Esquimaux, mustering in all about 200, &c. It was evident that they had had little or no communication with white men, but they had in their possession more implements of brass and iron than those seen at our last winter quarters. * * One of these is a portion of a connecting-rod, (iron,) probably belonging to a steam-engine; the other seems to have been part of a large metal crutch, on which are traces of a broad arrow; the former may have been obtained from the *Victory*, and the latter from the boats at Coppermine River."—Arctic Papers, p. 947.

But previous to the latter discovery being known in England, about the time when the last Arctic Expedition returned, in the autumn of 1854, from a fruitless search in the North, Dr. Rae dropped among us

from this same part of the Arctic shores, and startled us from the trance of despair into which we had fallen concerning any more discovery of Sir John Franklin's fate, with that collection of officers' plate, consisting of forks, spoons, &c., that truly told by their initials to whom they had belonged; and gave undeniable proof, with the account of their discovery, of that sad reality which had been already anticipated, but in a totally different quarter! We learnt from them for the first time that we had been seeking Franklin where he had never been after leaving Beechey Island!—that we had looked for his ships everywhere except in the right place,—and that we did not even know the coast by which he must have passed to arrive at the mouth of Back River (where these relics were found) to save himself and his companions from perishing by famine!

It is a humiliating and sad reflection to consider the care and pains with which our rigid searching has been thrown away in the North, that should have been directed to the South! Never were the severities of the arctic climate more heroically braved or more zealously endured than they have been by our officers and men in their vain attempts to find the unfortunate party of Franklin. But those attempts have not been directed where these relics were found. Nay, more than this,—we did not know, when Capt. Austin's expedition returned home, anything to the West of Crozier Bay of Prince of Wales Land, left by Lieut. Osborne in May of 1851. At that time we were entirely ignorant of land to the South-East of Banks Land of Parry, and should have remained so even now had not Capt Maclure's officer, Lieut. Winniett, discovered and explored it towards Osborne Bay, in the South-East, a task originally and wisely assigned to Sir James Ross three years before.

Certainly it is a remarkable fact, that while ship after ship has returned home from exploring those interminable barren shores of the North, a large portion of coast has been left undiscovered in the South, which has become a subject now of the most lively interest, because it is now more than probable that Franklin has been there! Between the nearest positions of Osborne and Winniett, the former from the East, on Prince of Wales Land, and the latter from the West, on Prince Albert Land, there is about a hundred miles of distance; and whether these are separated by a strait, or make with Victoria and Wollaston Lands one large island, we know not. But at this moment this is more worth knowing than all the discoveries of the North, for it would solve the question whether Franklin's party could have passed that way or not? Notwithstanding we have done our best, and planned and worked as our judgment directed, our judgment has been at fault. We turn from the thought of this neglect in sorrow and sadness, arising from the conviction that we have here even done what we should not have done, and left undone what we ought to have done. But what we did was under the direction of a council of officers well experienced in the risks and dangers of the arctic shores!

The account that was brought home by Dr. Rae appeared in these pages and will be in the recollection of our readers; but belonging so

entirely as it does to the present inquiry it is repeated here. The articles to which he alludes in it are preserved (as is well known) in Greenwich Hospital; and will ever remain the emblems of that devoted heroism displayed by Franklin and his followers, and of the misdirected exertions of those who went to his rescue! Dr. Rae's letter says:—

Repulse Bay, July 29th.

Sir,—I have the honour to mention, for the information of my Lords Commissioners of the Admiralty, that during my journey over the ice and snow this spring, with the view of completing the survey of the West shore of Boothia, I met with Esquimaux in Pelly Bay; from one of whom I learned that a party of "white men" (Kabloumens) had perished from want of food some distance to the westward, and not far beyond a large river containing many falls and rapids. Subsequently, further particulars were received, and a number of articles purchased, which places the fate of a portion, if not of all, of the then survivors of Sir John Franklin's long-lost party beyond a doubt, a fate terrible as the imagination can conceive.

The substance of the information obtained at various times and from various sources was as follows:

In the spring, four winters past, (spring, 1850,) a party of "white men," amounting to about forty, were seen travelling southward over the ice, and dragging a boat with them, by some Esquimaux who were killing seals near the North shore of King William Land, which is a large island. None of the party could speak the Esquimaux language intelligibly, but by signs the natives were made to understand that their ship or ships had been crushed by ice, and that they were now going to where they expected to find deer to shoot. From the appearance of the men—all of whom, except one officer, looked thin—they were then supposed to be getting short of provisions, and purchased a small seal from the natives. At a later date the same season, but previous to the breaking up of the ice, the bodies of some thirty persons were discoverd on the continent, and five on an island near it, about a long day's journey to the North-West of a large stream, which can be no other than Back's Great Fish River, (named by the Esquimaux Doot-ko-hi-calik,) as its description, and that of the low shore in the neighbourhood of Point Ogle and Montreal Island agree exactly with that of Sir George Back. Some of the bodies had been buried, (probably those of the first victims of famine,) some were in a tent or tents, others under the boat, which had been turned over to form a shelter, and several lay scattered about in different directions. Of those found on the island one was supposed to have been an officer, as he had a telescope strapped over his shoulders, and his double-barrelled gun lay underneath him.

From the mutilated state of many of the corpses, and the contents of the kettles, it is evident that our wretched countrymen had been driven to the last resource—cannibalism—as a means of prolonging existence.

There appeared to have been an abundant stock of ammunition, as

the powder was emptied in a heap on the ground by the natives out of the kegs or cases containing it; and a quantity of ball and shot was found below high water mark, having probably been left on the ice close to the beach. There must have been a number of watches, compasses, telescopes, guns, (several double-barrelled,) &c.; all of which appear to have been broken up, as I saw pieces of those different articles with the Esquimaux, together with some silver spoons and forks. I purchased as many as I could get. A list of the most important of these I enclose, with a rough sketch of the crests and initials of the forks and spoons. The articles themselves shall be handed over to the Secretary of the Hudson Bay Company on my arrival in London.

None of the Esquimaux with whom I conversed had seen the "whites," nor had they ever been at the place where the bodies were found, but had their information from those who had been there, and who had seen the party when travelling.

I offer no apology for taking the liberty of addressing you, as I do so from a belief that their lordships would be desirous of being put in possession at as early a date as possible of any tidings, however meagre and unexpectedly obtained, regarding this painfully interesting subject.

I may add, that by means of our guns and nets we obtained an ample supply of provisions last autumn, and my small party passed the winter in snow-houses in comparative comfort, the skins of the deer shot affording abundant warm clothing and bedding. My spring journey was a failure, in consequence of an accumulation of obstacles, several of which my former experience in arctic travelling had not taught me to expect.

I have, &c.,
JOHN RAE, C.F.,
Commanding Hudson Bay Company's Expedition.

The following are extracts from Dr. Rae's journal:—

On the morning of the 20th we were met by a very intelligent Esquimaux, driving a dog-sledge laden with musk ox beef. This man at once consented to accompany us two days' journey, and in a few minutes had deposited his load on the snow, and was ready to join us. Having explained to him my object, he said that the road by which he had come was the best for us; and, having lightened the men's sledges, we travelled with more facility. We were now joined by another of the natives, who had been absent seal-hunting yesterday, but, being anxious to see us, had visited our snow-house early this morning, and then followed up our track. This man was very communicative, and on putting to him the usual questions as to his having seen "white men" before, or any ships or boats, he replied in the negative; but said that a party of "Kabloonans" had died of starvation a long distance to the West of where we then were, and beyond a large river. He stated that he did not know the exact place, that he never had been there, and that he could not accompany us so far.

The substance of the information then and subsequently obtained from various sources was to the following effect:—

In the spring, four winters since, (1850,) while some Esquimaux families were killing seals near the North shore of a large island (named in Arrowsmith's charts King William Land), about forty white men were seen travelling in company southward over the ice, and dragging a boat and sledges with them. They were passing along the West shore of the above-named island. None of the party could speak the Esquimaux language so well as to be understood, but by signs the natives were led to believe that the ship or ships had been crushed by ice, and that they were now going to where they expected to find deer to shoot. From the appearance of the men—all of whom, with the exception of an officer, were hauling on the drag ropes of the sledge, and looked thin,—they were then supposed to be getting short of provisions, and they purchased a small seal, or piece of seal, from the natives. The officer was described as being a tall, stout, middle-aged man. When their day's journey terminated they pitched tents to rest in.

At a later date the same season, but previous to the disruption of the ice, the corpses of some thirty persons and some graves were discovered on the continent, and five dead bodies on an island near it, about a long day's journey to the North-West of the mouth of a large stream, which can be no other than Back's Great Fish River, (named by the Esquimaux Oot-koo-hi-ca-lik,) as its description and that of the low shore in the neighbourhood of Point Ogle and Montreal Island agree exactly with that of Sir George Back. Some of the bodies were in a tent or tents; others were under the boat, which had been turned over to form a shelter; and some lay scattered about in different directions. Of those seen on the island it was supposed that one was that of an officer (chief), as he had a telescope strapped over his shoulders, and a double-barrelled gun lay underneath him.

From the mutilated state of many of the bodies, and the contents of the kettles, it is evident that our wretched countrymen had been driven to the dread alternative of cannibalism as a means of sustaining life. A few of the unfortunate men must have survived until the arrival of the wild-fowl (say until the end of May,) as shots were heard and fresh bones and feathers of geese were noticed near the scene of the sad event.

There appears to have been an abundant store of ammunition, as the gunpowder was emptied by the natives in a heap on the ground out of the kegs or cases containing it, and a quantity of shot and ball was found below high water mark, having probably been left on the ice close to the beach before the spring commenced. There must have been a number of telescopes, guns, (several of them double-barrelled,) watches, compasses, &c., all of which seem to have been broken up, as I saw pieces of these different articles with the natives, and I purchased as many as possible, together with some silver spoons and forks, an Order of Merit in the form of a star, and a small silver plate engraved "Sir John Franklin, K.C.B."

Enclosed is a list of the principal articles bought, with a note of the initials, and a rough pen-and-ink sketch of the crests on the forks and spoons. The articles themselves I shall have the honour of handing over to you on my arrival in London.

None of the Esquimaux with whom I had communication saw the "white" men, either when living or after death; nor had they ever been at the place where the corpses were found, but had their information from those who had been there, and who had seen the party when travelling on the ice.

From what I could learn, there is no reason to suspect that any violence had been offered to the sufferers by the natives.

List of articles purchased from the Esquimaux, said to have been obtained at the place where the bodies of the persons reported to have died of famine were found, viz:—

One silver table fork—crest, an animal's head, with wings extended above; 3 silver table forks—crest, a bird with wings extended; 1 silver table spoon—crest, with initials "F.R.M.C." (Captain Crozier, *Terror)*; 1 silver table spoon and one fork—crest, bird with laurel branch in mouth, motto, "*Spero meliora;*" 1 silver table spoon, 1 tea spoon, and one dessert fork—crest, a fish's head looking upwards, with laurel branches on each side; 1 silver table fork—initial "H.D.S.G." (Harry D. S. Goodsir, Assistant-Surgeon, *Erebus)*; 1 silver table fork—initials, "A. M'D." (Alexander M'Donald, Assistant-Surgeon, *Terror)*; 1 silver table fork—initials, "G.A.M." (Gillies A. Macbean, Second-Master, *Terror)*; 1 silver table fork—initials, "J.T."; 1 silver dessert spoon—initials, "J.S.P." (John S. Peddie, Surgeon, *Erebus)*; 1 round silver plate, engraved, "Sir John Franklin, K.C.B."; a star or order, with motto, "*Nec aspera terrent*, G. R. III., MDCCCXV."

Also a number of other articles with no marks by which they could be recognized, but which will be handed over, with those above-named, to the Secretary of the Hudson Bay Company.

Repulse Bay, July, 1854. JOHN RAE, C.F.

The result of this intelligence on the subject of our solicitude, and which in revealing its tale of woe and misery reflected sadly on the judgment which had directed our searches, was a determination to inquire at once into the veracity of the Esquimaux report brought by Dr. Rae. And, as related in our last number, at a council held at the Admiralty, at which he was present, with Sir George Back, it was determined to lose no time in requesting the Hudson Bay Company to send out orders in accordance with their advice; and how this was determined on one day and executed the next we have already stated in the same page as that containing the report of Mr. Ander-

son, the gentleman to whom was entrusted the performance of this duty.

He arrived at Montreal Island in the Back River and found various articles that had belonged to the ships of Franklin, such as chain-hooks, chisels, blacksmith's shovel, a three feet bar of iron, a tin oval boiler, small pieces of rope, bunting, and other things too numerous to mention,—in fact everything that would betoken careful provision for a well organised retreating party from a wreck—prepared to provide by hunting and shooting for their support. Apart from these a short distance lay the mutilated remains of a large boat, apparently destroyed by Esquimaux, and pieces of plank bearing evidence of having been cut by unskilful hands. There were pieces, indeed, of several kinds of wood—of oak, elm, and even of mahogany—and on one was found cut the word "Terror"; which pieces were lying scattered in various directions, showing that the party had been well provided in the way of stores. Not a remnant of written paper was discovered to assist in revealing the tale of suffering,—to say where the party had been or whence they had come.

On this subject it is supposed by Dr. King, to whom we have already alluded, that in a hiding place named King Cache, formed by him in a particular part of the island when he was there with Sir G. Back, and which place was known to Sir J. Franklin, but unknown to the Esquimaux,—that in this cache a paper will be found: that the remains of one of the persons found on the island were probably those of Sir John Franklin or some one sent by him to place it there; and that it would contain all the history of their proceedings. It is difficult to believe that there is not some such a paper in existence somewhere. Sir John Franklin—nay, many more with him,—how anxious they must have been, when seeing that it was their inevitable fate to perish on those distant inhospitable shores, to convey intelligence to those they had left behind,—to those who they knew would mourn their loss,—to say a few brief parting words of fond affection, along with a short account of their sad career, concluded by a final prayer for those to whom they were addressed! Such evidence must have been in existence; whether it has escaped the effects of snow and ice, of wind and rain, or prying Esquimaux, may well be doubted; but it would be most likely to do so if secured in some concealed place as that above mentioned. And they are words which one would desire to preserve to the grave! But what besides these is there worth seeking,—even from the hands of wily Esquimaux,—for the elements have long since done their work on the rest!

As if to add more cause for the painful reflections produced by all these relics, there is the curious fact of Dr. Rae having been near the place on Victoria Land and finding vestiges of wreck in 1851, already mentioned; also Captain Collinson two years later, while all these relics were lying at the mouth of the Back River; for the boat with Franklin's party had really passed down Victoria Channel in the spring of 1850 to that river, and they had been lying

there ever since! It must have been a momentous event to the Esquimaux to see a large boat, with forty persons, come among them in a famishing condition; and that they had eventually perished there from want of food must have been known to every tribe on the coast in the interval of four years before it was reported to Dr. Rae! The nearest part of Victoria Land (explored by Dr. Rae in 1851) to Point Ogle, at the mouth of Back River, is not more than one hundred and fifty miles; and Cambridge Bay, where Captain Collinson wintered in 1853–4, is not two hundred and fifty miles from it—a position from which he could have reached it in a very few days.

Now had these southern shores been explored with the same zeal as the barren North, and in due season, as they might have been, who can say that the sad end of Franklin's expedition might not have been prevented, and that he or some of them would have been among us at this moment. But the following gaps and spaces between the ends of coast-line appear still on the chart; where, from Franklin's party having passed with their boat, they are of more than common interest:

1.—King William Land, East shore, from Booth Point to Cape Smyth, forty-five miles.

2.—King William Land, S.W. shore, from Cape Herschel to the Point West of Cape Jane Franklin, fifty-five miles.

3.—Victoria Land, eastern shore, Cape Collinson to Kennedy Bay, one hundred and sixty miles.

4.—Victoria Land, North shore, Crozier Bay to Point Reynolds, one hundred miles (Admiralty chart 70).

5.—Boothia, Cape Nicolai to Bellot Strait, one hundred miles.

Whether there is straight coast-line, bays, or channels between these points no one can say. But the portion alluded to in No. 4 is now of considerable interest, as the knowledge of it would decide whether there is a channel connecting Victoria Strait with Melville Sound.

Here indeed the advocates of geography might truly point and say that "England in her solicitude of centuries for the discovery of the North-West Passage has nobly rewarded her hardy seamen by whom the existence of that passage has been established! And yet here she has left unexplored the shores of that only channel by which it is to be accomplished! Parry, Kellett, Collinson, and M'Clure have proved this. And shall the blank remain as the only blot to tarnish her glory in the discovery? Shall it be left for admiring nations, who have been all the while looking on, to whisper to us Yes, England has done all that, but she has abandoned the very part that should most interest her as a great maritime nation; a part that yet remains unknown to her and is sacred to the memory of her gallant sons who have fallen in her cause! Could she not make one final effort more to avert this remark? That effort would be comparatively inexpensive, for the road by water and by land has almost become a beaten track." The remark would almost amount to a rebuke! Were such an appeal to be made, how ardently it would be seconded by the friends of those who have fallen, we need not say. Some leaves of painful history

might be thus preserved to them and recorded to the honour of their lost relatives.

Our subject has led to a much greater length than had been anticipated; but there were certain features of it necessary to be considered, for, although they are apparently unimportant, they derive value from being placed in connection with each other. And what is to be inferred from a general view of the foregoing but that Franklin and his followers, as Sir James Ross has said in those prophetic words, after alluding to Dr. King's proposal, "if he persevered in the direction which he probably would do he would never be able to extricate his ships, and would ultimately be obliged to abandon them." And there they seem to have been abandoned at the very latest hour; there the prediction seems to have been realized. We know that one large boat came with his people to Back River: it is by no means improbable that others went to the South-West.

There are many persons who have other opinions as to the course which Franklin followed: yet for those advocated here there is ample foundation. Indeed, nothing has been now advanced for which there is not abundant authority, and the inevitable conclusion to which we are led is that not very far from the limits of that space encircled (in Melville Sound) on the chart, it is most probable that Franklin's ships were hampered in the ice. It may appear strange, and there is something humiliating in the idea, that he should have been detained there so long;—that he should only have crossed the threshold of the North-West Passage in a direction which Parry had passed long before. But what has been found to show that he went in any other direction? The answer is—Nothing! And Sir John Franklin, it has been shown, was not one to turn back. He was for going to the West "along the American coast," and he might have penetrated so far that he could not return in a direction indeed in which he had no desire to go.

And opinions on the question of what has become of his ships, are as divided as are those of his having gone to the North-West or the South-West, as to whether they are still in Melville or Peel Sound, or Prince Regent Inlet, or at the bottom of the Atlantic Ocean! We are among those who join in the latter opinion, and have seen as yet no reason for changing our views of this part of the subject, the reasons for which we gave long ago. Indeed the present aspect of it has tended rather to confirm that belief. It was the fashion at the time—one that was set by certain writers who knew as much of ships as they did of icebergs—to treat the idea of the ships discovered by the *Renovation*, on her way to Quebec, with ridicule; and because they were not seen from Newfoundland (from whence it was impossible to see them, for they were too far away in the Atlantic!) the public was led to believe that these could not be Franklin's ships. Oh no! Franklin's ships were then pronounced to be gone up the Wellington Channel into the Polar Sea! and "that is the road to find them," as he pointed to the North-West, was reported to have been said by a high authority in arctic matters to the leader of one of our expeditions

in search of them! Now, perhaps, it will be decreed that they are in the interior of Melville or Peel Sound, or in the Victoria Channel! It matters little where they are, for no one is in them now to be saved; nor was there, to all appearance, in the month of May, 1851, when they were seen in the ice by the *Renovation*—possibly that same ice which had imprisoned them during their long absence. The appearance of the boat in Victoria Channel, with forty people out of the one hundred and thirty-eight which formed the crews of those vessels, show that they must have been abandoned before April, 1850. The winter of 1849–50 might have been the last in which they afforded shelter to those crews; and between that period and the time the ships were seen was sufficient to allow them to drift into the Atlantic, when no guiding hands were on board to direct them on another course! Then, as if to prove such a result probable, the *Resolute*, a ship abandoned by the last expedition in May, 1854, is reported in Davis Strait in the month of December, 1855, and taken possession of by the commander of an American ship. And who can say how far the position of Franklin's ships was from that of the *Resolute* when they were abandoned likewise, or what the effects of the tides are when assisted by a current produced by a powerful wind. That assigned to them by Sir James Ross is about a hundred miles from where the *Resolute* was left, and what is that when the forces of tides and currents are in question. So that the fact of the *Resolute* having drifted out of Melville Sound, as she has done, confirms the probability of Franklin's ships having done the same!

At the risk of being thought tedious we must still add a line on this subject, and quote here the account of the mate of the *Renovation*, the vessel from which the ships in the ice were seen, as well as some extracts from the opinion of Capt. Ommanney, given in his official letter on the subject, that appears in our volume for 1852, with the view of the ships. At page 270 Mr. Simpson, the mate, says,—

British Queen, Limerick, April 19th.

My dear Uncle,—I received your letter this morning, dated the sixteenth, and feel great pleasure in writing the particulars relative to the two ships which were seen by me and others when on our outward-bound passage to Quebec in April, last spring, in the *Renovation*. It is now twelve months ago, and so many occurrences have happened in the interval that the real circumstances have nearly escaped my memory; but I shall feel great pleasure in relating them to the very best of my recollection.

On the 6th of April, 1851, we sailed from Limerick for Quebec in ballast, and one cabin passenger, a very respectable young man named Mr. Joseph Lynch. We experienced a most beautiful run at the rate of nine, ten, and eleven knots per hour as far as the Gulf of St. Lawrence, nothing remarkable occurring until about the 18th or 19th, when we were surrounded by numerous gigantic icebergs; and I think it was on or about the 20th, at 6h. a.m., my watch on deck, I discovered on the starboard bow a large iceberg with two ships on it, as did

also the men that were in my watch. I immediately went below and informed Capt. Coward, who, being very ill at the time, did not notice at first what I said. I again repeated the circumstance, and asked him what he intended to do; but he only groaned out, "Never mind," or something to that effect. I was anxious to get on deck again; but before I went up called Mr. Lynch, who immediately jumped up and looked at the vessels a few minutes, when he went below again and dressed himself, the weather being at the time excessively cold, the wind from the northward and eastward blowing a fresh breeze; and, I think, but am not quite certain, under double-reefed topsails, whole courses, jib and reefed trysail. This can be easily ascertained by a reference to the log-book, which is now on board the *Renovation*, and on her passage to Venice. However, in continuation of my story; Mr. Lynch, after putting on his clothes, came on deck, when he and I, in our turns, stood watching the two ships for about three-quarters of an hour, when we lost sight of them, but not the berg, which was then on the starboard quarter. We pursued our course with the greatest regret that we did not board the ships, which, to all appearance, had been a considerable time on the ice. The largest one was lying on her beam ends, with her head to the eastward, and nothing standing but her three lower masts and the bowsprit; the smaller one, which was sitting nearly upright, with her head to the southward, with her three masts, top-masts on end, topsail and lower yards across,

and to all appearance having been properly stripped and abandoned. These are the total circumstances which I can recollect; but, as the Admiralty have ordered an investigation into the circumstances, letters from Mr. Lynch, at Quebec, together with the log-book, will help to throw some light and verification of the truth. Mr. Coward told me at Quebec he had reported the ships, when I of course supposed that the news would certainly reach England. All this has come out lately, from a letter which was written by Mr. Lynch, after his arrival, to an uncle of his, a Mr. Croilly, whom I know very well, and now residing in Limerick.

This letter, it appears, was published in the *Limerick Chronicle;* but, strange to say, the circumstances never got circulated, I believe, out of Limerick, until Capt. Coward, a few weeks ago, told a friend of his, a master of a ship residing at Tynemouth, who, it appears, had been conversing about icebergs to another gentleman, and thus the circumstance got spread about until it reached the Admiralty, who will (and no wonder) think it a very strange affair altogether. I never heard anything more about it from any one but Mr. Lynch; and I used often to regret the ships not having been boarded.

ROBERT SIMPSON.

And Capt. Ommanney's opinion appears in the following extracts:

The statement made to me by Mr. Simpson, in the presence of Comdr. J. J. Palmer, R.N., Comdr. William Ellis, (a,) R.N., and the Inspector of Police, Capt. William Caldwell, is herewith transmitted. That two vessels were seen in the position described, there seems to be no shadow of doubt, though it is to be regretted that, owing to the distance at which the *Renovation* passed from the piece of ice with the ships lying on it, no fact can be elicited by which the vessels can be identified, though I have put every question which my experience dictates.

The duration of the time while the vessels were visible, appears to have been no more than three quarters of an hour. The *Renovation* at the time was making about a W.b.N. (true) course, running six or seven knots an hour through the water.

The circumstance of a ship's crew being ignorant of the reward held out by Government for the discovery of Franklin's expedition may at first sight appear incredible. In consequence I have made the most searching inquiry in this town if the reward ever obtained publicity) but even the principal merchants, the chief of police, the postmaster, the editor of the *Limerick Chronicle*, the Chambers of Commerce, and the tradespeople immediately connected with the mercantile community, brokers, and masters of Quebec traders,—never heard of such reward being offered until the present moment!

It is a matter of some importance to know that the position of the *Renovation* as first reported appears incorrect, and that she was considerably to the northward of her reckoning, (about eighty miles,) which will bring the ice on which the ships lay nearly on the 47th parallel; this fact is clear from the circumstance that the *Renovation*

was nearly run on shore owing to this error. * * The following day they were set right by a French brig as to their position; they bore up, the wind having changed to the N.E.; after running along the coast they rounded Cape Race at about 2h. p.m. Mr. Simpson states the course steered from the ships was about W.b.N. (true), and running at the rate of six or seven knots for fourteen hours. With this data the position of the ships where seen is assumed to be E.b.S. of St. John's, about ninety miles.

Whatever ships they may have been, whether Franklin's or not, the fate of the crews must be a subject of public sympathy, and many surmises will result. My firm conviction is that those vessels drifted a considerable distance on that piece of ice; from the description given I cannot denominate it a berg, the most elevated part being no more than thirty or forty feet high, while it was five miles long, which appears very like a portion of a heavy floe, with a hummock upon it. From the fact of being found drifting with the current which sets along the coast of Labrador from Davis Straits, I infer they came from a high northern latitude. The removal of the spars, and absence of the boats, indicate that the abandonment of the ships had been a work of time and deliberation. The fact of the ships being close together has the appearance of their being consorts.

If the hulls were in a floating condition when released from the ice, there is yet a chance that they may be fallen in with some day, as timber ships have drifted to the coast of Portugal and the Bay of Biscay.

I have spared no pains to obtain every particle of information on this important circumstance; and it is to be deplored that no measures were taken to examine the vessels: it appears to have been a subject of deep regret on the minds of Mr. Coward and Mr. Simpson ever since, and Mr. Lynch was strongly impressed with the idea that they were Sir John Franklin's ships.

Such is Capt. Ommanney's opinion, and we observed in conclusion,

There is however a feature in the account of the ships reported by the *Renovation* which will not fail to occur to the mind of the seaman, and is that to which we alluded as unobserved by the landsman inexperienced in nautical matters. *These ships are dismantled aloft*, one even to leaving her lower masts only standing, and the other with nothing above her topmasts and no sails on her yards. Such a process as that of stripping a ship aloft must have been deliberately done; why, we need not inquire. But are whalers left thus when they are abandoned by their crews in case of being nipped, do they stop to dismantle aloft? or do their crews leave them and make their escape on the ice as fast as they can?

But the *Resolute*, above-mentioned, is not the only recent instance of this kind; there are several others besides. Sir James Ross himself drifted helpless from near his wintering place of Port Leopold through Lancaster Sound down Baffin Bay. The two American schooners *Advance* and *Rescue*, as if to show the extraordinary effects of currents, ac-

tually drifted, fast in the ice, up the Wellington Channel and down it again; then through Barrow Strait and Lancaster Sound and down the Bay to Davis Strait, still fast in the ice, and had many narrow escapes from destruction. Similar instances might also be cited of whalers, but here are enough to show that Franklin's ships might have done the same. And those ships that were seen in the ice favoured the opinion that they were his by being in a condition that can only be duly appreciated by nautical men.

But it is time we brought our reflections on this mysterious subject to a close,—a subject affording nothing but useless vestiges, reports, and rumours, visions of ships in ice, and only two tangible facts,—one at the beginning and the other at the end of this mournful tragedy. The first when their crews were busy and active and anxious to go forward; the last when they presented a sad and melancholy picture at the final retreat of their expiring hopes. In the view here taken of this sad series of adventures in arctic discovery we may be as mistaken as they have been who directed the search up the Wellington Channel before that to the South-West was complete, and although our conclusions are formed on facts it matters little whether they may prove right or wrong;—no ulterior project—no measures of rescue—on them depend: the scene of the earthly career of Franklin and his party has long since closed! They are insensible to our sympathies, and they have left us that hard lesson to learn, that all that is, is right! With the sorrowing friends of those whose fate we all deplore,—whose noble daring and whose enduring fortitude, amidst the severest of trials, we all admire,—in humble resignation to the great King of Kings, that Almighty Providence which rules us all, and guides us all to serve his own inscrutable designs,—let us always say, "As in Heaven, so on Earth thy will be done."

A. B. B.

Franklin, 1st land expedition	1819–21	Collinson, *Enterprise*	1850–55
Parry, *Hecla* and *Griper*	1819–20	M'Clure, *Investigator*	1850–54
Parry, *Fury* and *Hecla*	1821–23	Austin, *Resolute*, *Assistance*, *Intrepid*, and *Pioneer*	1850–51
Parry, *Hecla* and *Fury*	1824–25	John Ross, *Felix*	1850–51
Franklin, 2nd land expedition	1825–27	Penny, *Lady Franklin* and *Sophia*	1850–51
John Ross, *Victory*	1829–33	DeHaven and Kane, *Advance* and *Rescue*	1850–51
Back, land expedition.	1833–35	Kennedy, (Bellot,) *Prince Albert*	1851–52
Back, *Terror*	1836–37	Rae	1851–54
Dease and Simpson, boat expedition	1836–39	Maguire, *Plover*	1852–54
Rae, boat expedition	1846–47	Belcher, *Assistance* and *Pioneer*	1852–54
Franklin, *Erebus* and *Terror*	1845–46	Kellett, *Resolute* and *Intrepid*	1852–54
James Ross, *Enterprise* and *Investigator*	1848–49	Pullen, *North Star*	1852–54
Richardson, boat expedition.	1848–49	Kane, *Advance*	1853–55
Moore, *Plover*	1848–52		
Pullen, boat expedition	1849–51		
Hooper, boat expedition	1849–50		
Saunders, *North Star*	1849–50		

A British Captain of the Olden Time.

In these days, while the efforts of Lieut. Maury and a host of officers, both of the Royal Navy and Merchant Service, have been directed to improve the quality of the logs kept on board ship—and the advantages to navigation and nautical science that have resulted therefrom cannot be too highly appreciated—it may be interesting, if not instructive, to turn our attention for a brief moment to the journals kept on board H.M. ships two centuries ago. We therefore propose to give our readers a few extracts from the jonrual kept by Captain Christopher Gunman, while in command of H.M. yacht *Anne*, in the year 1675; which, after having been stowed away with other family records for many years past, has at length been brought to light and, in our opinion, will amply repay perusal.

Capt. Christopher Gunman, son of William Gunman, of Gouard, in the county of Norfolk, was born in Dramm, in Norway, anno domini 1634.

17 Nov., 1646.—He was bound apprentice to Ed. Nicholls, citizen and marriner, of London.

3 Feb., 1663.—He was Master of his Maj$^{ie's}$ ship the *Bonaventure*.

1666.—He was made Capt. of his Maj$^{ie's}$ ship the *Orange*.

28 June, 1666.—He takes (after 5 houres fight) a ship of 22 guns, from Madagascar, belonging to y^{e} Frenich Royal Company, the cargo valued at £100,000, w^{ch} soon after sunk.

3 Aug., 1666.—He lost his left hand in an engagement with a Dutch man of warr.

29 Jan., 1667.—He was made Capt. of his Maj$^{ie's}$ ship the *Reserve*.

6 Mar., 1668.—He was made Capt. of his Maj$^{ie's}$ ship the *Fforester*.

16 Feb., 1669.—He was made Capt. of his Maj$^{ie's}$ yacht the *Anne*.

11 Aprill, 1670.—He was by Act of Parliament naturalized 22 Car. 2. R.

26 Oct., 1670.—He was made a Younger Brother of the Trinity Company.

15 May, 1674.—He is comanded by his Royall Highness the Duke of York, then L^{d} High Admirall, to be his Master of the *Royal Prince*.

19 June, 1675.—He sent the Excheq^{r} £500 (= now near £700.)

22 June, 1675.—He is made an Elder Brother of y^{e} Trinity Comp. by recomendacon of y^{e} Duke.

15 May, 1676.—There is by Wm. Dugdale, Esq., Norway (Norroy?) King of Arms, by vertue of a warr^{t} under the hand of James Earle of Suffolk, Deputy unto y^{e} Right Honorable Henry Earl of Norwich, Earl Marshall of England, dated 15 Ap^{l} 1676, devised and granted a Coat of Armes and Crest unto the s^{d} Capt. Ch^{r} Gunman, Comand^{r} of y^{e} *Anne*.

July, 1676.—He refuses to strike his topsaill to y^{e} castle of Cronenbourg.

16 Feb., 1677.—He finds a large harbour at Garnsey.

20 Sept., 1677.—The *Mary* yacht launched; he has a comission to comand her.

26 Xb., 1679.—He was made a burgess of the citty of Edenborough, in Schotland.

6 May, 1682.—The *Gloucester* ffrigate lost.

28 9b., 1682.—He was made a member of y^e^ Artillery Company.

25 March, 1684.—He dyed, having broke his leg by a fall in Deep Harbour, in France, aged 50.

See *Biographia Navalis*, vol. i., p. 225.

Extract from Evelyn's Memoirs.

26 March, 1685.—I was invited to the funerall of Capt. Gunman, that excellent pilot and seaman who had behaved himself so valiantly in the Dutch warr. He died of a gangrene occasioned by his fall from the pier of Calais. This was the Captain of the yacht carrying the Duke (now King) to Scotland, and was accused for not giving timely warning when she split on the sands, where so many perish'd; but I am most confident he was no ways guilty either of negligence or designe, as he made appeare not only at the examination of the matter of fact, but in the vindication he shew'd me, and which must needes give any man of reason satisfaction. He was a sober, frugal, cheerfull, and temperate man: we have few such seamen left.

On board his Royal Highness yacht *Ann*, in Deptford wett dock, in January, 1675.

26th.—We haled into Deptford wett dock to bee repaired, painted, and gilded; the first of w^ch^ the carpentiers went to work on. Painting and gilding could as yett nott be agreed on who should doe it. Att last it was contracted w^th^ Mr. Scattlife that hee should have 200£ for gilding and painting in side and outside all the carued workes, &c.

The 27th, being Wednesday, I receiued a comission from his Maj^y^ (bering date the 21st instant) to comand in chiefe all his Maj^tie's^ shipps and vessells in the River of Thames. I alsoe received an order from the Right Hono^rble^ the L^ds^ Comitionars of the Admiralty to call a Cort Martiall, consisting of Captains and Comanders, to make inquiry concerning some offences said to bee comitted by Captain Henry Carvett, Comander of y^e^ *Woolwich* sloope; and the 29th instant I sent sumons to all the Comanders then in the river, viz.: Capt. Dikinson, Capt. Sanderson, Capt. Clements, Capt. Lowell, Capt. Smith, Capt. Tyte, Capt. Kempthorne, Capt. Wright, Capt. Day; all these to bee on board the *Grayhound*, frig^tt^, on Munday the 1st day of Feb^y^ 167$\frac{4}{5}$.

The 1st being Munday, att 8 this morning all the Comanders I had sumoned did mete on board the *Grayhound*, as alsoe Jam^s^ Southerne, who at y^e^ time was Deputy Judge Advocate. The s^d^ Capt. Caruat being brought before us by Mr. Joynes, Deputy Marshall for the Ad-

miralty; and I caused all psons concerned in this matter strickly to bee examened. And finding itt somwhat difecult, the Cort desired an adjurnement, w^ch^ I thought fitt to grant, till wee could bee advised in som points of law from S^r^ Lionell Jenkins, Judge of the Admiralty Cort. For there came : 5 : or : 6 : psons that were in the shipp w^th^ Capt. Caruet, who vine voseth *(vivâ voce?)* proffered to make oath to the contrary of what was aleged against Capt. Caruett; besides all the psons that had signed and sworne against Capt. Caruett did alsoe confess that they heard nott the instrument reed to w^ch^ they had sined and sworne, for itt was doen in hast at Coues Castle, in aprehending an Ostend Captain, for the acusation was butt a word misplaced by Capt. Caruet him selfe in his diclaration against an Ostend Captain.

The 4th being Thursday, I sent sumons to the several Comanders to mete again on Capt. Creuats justification or condemnation, according as it should be found by euidence, being resolued in ouer queries by S^r^ Leonall Jenkins, &c.

The 5th being Friday, about 8^cq^ in the morning wee came all together and sutt on board the *Richmond* yacht (the *Grayhound* then was haled on shore to cleanse). And according to the examination of all the wittnesses conduring in one, it did plainly apere unto us that the said Capt. Crauatt was not gilty of any crime, butt had carefully doen his duty. Where upon wee aquitted him. and I gave unto the Right Hono^ble^ the Lords Comisioners of the Admiralty the result of the Cort as followeth, viz.:—The Court having inquired concerning the behaviour of Capt. Henry Carveth, (Carew?) late Comander of his Maj^ty's^ vessell the *Woolwich* sloope, at his meting with two Ostend men of warr, on the : 30th : of Aug^st^ last, of Diepe, itt apered by the euidence of severall of the officers and company that belongeth to the s^d^ sloope examined *viva voce* by the Court, that although Capt. Carueth did cause y^e^ head sailes of the s^d^ sloope to bee braced to the mast after y^e^ biggest of the s^d^ Ostenders was come up w^th^ him, and had comanded the same from him, yett the same was not doen at the comand of the said Ostenders but by y^e^ advice of the officers and company of the *Woolwich* sloope in order to the staying for and securing y^e^ galliott hoy, then under their convoy, who was then above two miles asterne of them, and w^th^ whom the lesser Ostender was neere gotten upp. And moreouer all the wittnesses did puntually agree in this circumstance that the head sails were not braced to the mast till neere three quarters of an hour after the last threatenings of the Ostender to bee on board them if they did nott doe itt; during all w^ch^ tyme the Ostender was upp with y^e^ *Woolwich* sloope and might have been on board him when soever he had pleased. Uppon w^ch^ the Court did resolve that the said Capt. Carueth is nott guilty of any failer of his duty in this matter.

J: SOUTHERNE. C: GUNMAN.

March, 167¼.—The 15th being Munday wee did receve : 23 : monts

: 2 : wikes and 4 day pay, for the whole yacht's company was upp att the pay office in Broad Street, were wee were paid from the : 1st day of 7b. : 1672 : untill the 25th day of June last, exclusive.

The 20th being Thursday itt bleu a verie hard gale of wind att N.E.b.E.; and a little past : 3 : this afternoone I haled out of the wett dock at Deptford, being now wholy finished of what way I intended to bee doen unto us, &c.

The 29th being Friday I haled on shore uppon the wayes to wash; being rainy weather I could not grave, soe I ownly washed and soe haled away to my morins this night.

The 31st being Wednesday itt was verie dorthy rainy weather, the wind was att South. A little before midnight I Received an Express from Secretary Pypes (Pepys) that I was to be Redie to saile by breake of Day for holland, w^th^ Beuior Skelton, Esq., and Major Ashton, both sent to visitt the Prince of Orange, who Leyth Dangerously sik of the Small Pox.

Aprill the 1st being Thursday, all this foorenoone itt was Callme, and did Raine verie hard, so that my passengers came nott on board till one of the clock afternoon; then wee had a braue gale att W.S.W. and W.b.S., And I did Emediately sett saile and Rune Downe to the bay of the Reedsand, where I anchored about : 9 : at night, &c.

The : 2nd : being Goodfriday, this morning by : 4 : I sett saile and Rune Down To the Narrow, where the Boy of the Spell was Droue away att Least Halfe a mile to the : W.N.W. : of where itt should Lay, and I stopt till past Nien of the Clock before I could find water Anof to goe through, And then I had butt : 8 : foote, I Rune Doune Under the pitche of the fooreland where I came to an anchor in : 7 : fath. by Reason itt Blew hard and I should haue been ouer befoore Day, the wind was : W.S.W. : w^th^ Gusts and Shouers of Haile, a little past : 6 : this evening I sett Saile and stired : E.b.N. : Running after the Rate of 10 Leagues a Watch w^th^ : 3 : sailes. About : 9 : the wind Dullard a Little and I gott upp ouer Topsaile. Towards midnight the wind began to Viere about to the eastward; itt was Verie Could. I then haled upp East, And soe Continued till past midnight. Wee ad : 1 7 : fath water.

The : 3th : being Saturday this morning from midnight till : 5 : the Wind was at S.S.E. with an Easie Gele, wee stered East and E.b.N. and then itt came at S.E. and S.E.b.E., wee Closed the wind all what wee could Laying upp : N.E.b.E. : itt was verie handsum weather. Att : 9 : the wind came at : E. : and about Noone at : N.E. : and then tackt and stood in : E.S.E. : about ½ an ho^r^ p^st^ : 1 : I came upp w^th^ the *Cleaveland* Yacht who came from the brill, a Litle past : 2 : I sie the Land, w^ch^ was the Iland Walsheren, making plaine west Capell, Domberg, and Ternere, I stood Close into the banjard and then I tacktt, having then West Capell : S.b.W. : of me, I lay N.b.W. of (off) till I gott into : 13 : fath. and then I tacktt about againe, and I turned to windwas all what I could till past : 8 : neare : 9 : Itt was almost Callme and the tyde w^ch^ holpe me to the N.Eastward quitt spent, I

came to an anchor in : 9 : fath : having Gore Steple : S.E.b.E. : of me itt was Dark Rany weather I Red fast till morning.

The : 4th : being Sunday and Easterday, the wind N.N.E., a Litle past : 3' : this morning the tyde of flood was Doen and wee gott under saile and turned upp to the Maze, making one board of to the West ward and then afterwards I fetched in uppon a board; at : 6 : I was twart the first boy : w^ch I left a Good Distance on the starboard side and stered in towards the other boys E. and E.b.S. : Directly with the Great Bacon y^t stands a Good way w^thout the point on the Sand, then came a Pailott on board mee w^ch carried me to the brill, his name was Leuard peters, hee had : 9 Gilders of me, att the brill there came an other pailott on board me w^ch Caried Mee to Delph'shauen, who had : 4 : Gilders of me; att : 10 : Just I Came into Delphs hauen, and presently the Gentlemen I brought went away in a Coatch to the Hage, where they arrived in Less than : 3 : houers tyme for 20*b.* (*sic.* probably guilders.

The : 5th : being munday untill the : 9th : wich was friday the wind was att N° And N.b.W. and N.b.E. : on these : 3 : points the wind continued as I said with very hansum weather all the tyme, att Night on friday y : 9 : itt came to the : S.W. : w^th Close misline weather.

The : 10th : being Satturday the wind was att : S.W. : with Close Rany weather.

The : 12th : being munday itt was verie hansom weather, the wind Cme this morning to the : N.E. : and did blow a stife gele. I heard ne newes from my passengiers whome I Expected to come this day.

The : 13th : being tuesday itt was Reasonable handsum weather, the wind N.E. with a stife gale. Noe newes of my passengiers.

The : 14th : wednesday itt was hansom weather, the wind N.E. At 8 att night my passengiers came to Rotterdam.

The : 15th : being thursday the wind was N.E. : about : 4 : this afternoon my Passengiers w^ch I brought came on board me and presently after I sett saile being Just then a high water. I had a pailott w^ch caried mee Doune to the Brill who had : 10*b* : of me, his name was Clais Lysen. And from the Brill I Caried her out me selfe, I could find Butt : 8 : foote for a boue one mile together, it was about ½ an houer past : 7 : and a springe tyde and the wind N.Easterly, w^ch made the tydes Verie Low, wee did tuch once w^th the sent of A sea & y^t was all. Att : 8 : we were twart y^e first or Innermost Boy & then wee gott : 9 : & : 10 : foote water and nott befoore. Att : 9 : we were cleare out and in : 8 : fath. water, and wee tock in ouer Boete and Stired : W.b.S. and W.S.W. : all the whole night having a whole See ward tyde in hand ; about : 10 : itt became verie Thick and foggie.

The : 16 : being friday, the wind : N.E. : this morning att : 4 : wee had : 21 : fath. water, wee stired : W.b.S. ½ p^t S. : att : 6 : wee had : 20 : fath. and att : 7 : 25 : fath. And att : 9 : 20 fath. I still continued my Corse, att ½ and houer Past : 9 : I had : 15 : fath. att : 10 : I had : 9 : fath. att w^ch tyme I judged me selfe about : 2 : Leagues Distance from y^e N. fooreland, and att ½ an hour past : 10 : I sie the pitch of the

fooreland Right A head Distance about one Leagne, then I stired : W.N.W. : Att : 11 : or a Litle past I was twart of margatt. Att noon or : 12 : I was in the Narow on the flatts, and being about a High water I stired Right upp ouer all, and att : 3 : I was twart the boy of the Nore. Att : 11 : att night I gott up to Deptford, &c.

* * * * *

The : 22th : being thursday this morning by : 5 : I Receaved Orders to saile ouer to Ostend to fetch Thos. Porter, Esq. from thence, and I sent to the Victuling office for Provition as Breed, Beefe, and Porke, Butter and Cheese, &c., and about ½ an houer past : 8 : I sett saile from Deptford, the wind : N.W. : att : 3 : I was twart of Graes for itt was Butt Verie Litle wind; the waiters from y^e^ Custom house went on shore who had bien on board Ever since wee passed by Grauesend, Although there was nott any thing on board the Vessell more than The Victualls the men did Eate and theire Drincke they Droncke. Att : 7 : wee were twart of Lee, and a Litle before : 9 : I came to an anchore a Litle below the boy of the Ousedge in : 7 : fath. being Verie Darke, and a stife gele, w^th^ a shouer of Raine, where fore I thought fitt To anchor, und till the morning flood, &c.

The : 23th : being friday, this morning a Litle before : 3 : I sett saile and stired Doune : E.b.N. : till I gott halfe the Reeds and Doun, then I stired E.b.S. : and Rune ouer the Reedsand in : 3 : fath. and soe Right Doune. Att ½ an houer past : 5 : I was betwine y^e^ two boyes In the Narrow on the flatts, att : 7 : I was Cleare w^th^ out the fooreland and I shaped my corse : E.b.S. : the wind was then Att : N.W.b.N. : towards noone y^e^ wind Northward and then I stired : E. : a Litle past : 12 : att noone I sie Dunkirke steple bering of mee : S.E.b.S. : I stired in, the Northered tyde Layd me doune a pace; at : 2 : the wind came att : N.E.b.N. and N.E. : soe that I could butt Just fetch in w^th^ y^e^ high sandie hill a Litle to the Westward of Newport, w^ch^ was Just att : 5 : I stood into : 3 : fath. and soe tackt of and stood into : 20 : fath. and tackt, w^ch^ board I fetch upp w^th^ Newport or a Litle to the Eastward of it, att ½ an houer past : 9 : att Night I Came to an anchor in : 8 : fath. w^th^out the Inner bank, about ½ a League short of Ostend.

The 24th being Satturday this morning by : 5 : wee began to heave a hed, itt Blew a stife gele at : E N.E. : and by : 7 : wee gott upp ouer anchor and Turned upp twart of Ostend, having the body of y^e^ town : S.E.b.E. : and at : 10 : wee came to an anchor, being then more than halfe Ebb And the tyde doen Running to the Eastward soe that it was Emporsible to gett in, and att night when the tyde did Ssrve there went soe great a sea and blew soe hard that wee could not gett upp ouer anchor butt were forced to Ride Itt out all the whole night, where wee tumbled Exedingly.

The : 25th : being Sunday this morning a Litle past 5 we began to heave a Head, itt blew a stife gele at : E.N.E. : and with motche adoe wee Did purchase a head, and by : 7 : we got under saile, and wee Did stand Close into the shore, turning itt upp w^th^ in a musquet shotts Distance of the toune, and at ¼ an Houer past : 8 : I came in ouer the Barr into the harbore, itt was then Just a high water, and wee had

one cast butt : 11 : foote on the barr butt then wee were som what Easterly (there Came a Pailott of to mee in the Road : the best of the Roade is to bring Both the winmills in one and anchor in : 7 : fatb. &c.) after I was Gotten in itt began to blow Extreame hard. I sent to Esq. Porter.

The : 26th : being munday itt was hansum weather and litle wind, and that att : N.N.E. : and N.b.E. : I heared noe newes of my Passengier that I came for. * * *

The : 28th : being wednesday the wind was E.N.E. : the tyme alowed mee in my order to stay for Mr. Porter was Expired, and I was therefore Intended to saile hence this night (for I heard nott one word of any body Concerning his Coming), I wrote a Letter w^ch^ I Leaft w^th^ Mr. Linch for Mr. Porter to give him an Acompt of my stay and the tennar of my order, about : 11 : This night I sett saile, having a shallope on board to helpe mee out w^ch^ alsoe helped me in to w^ch^ I paid : 30 : when I was out I stired N.N.W. w^ch^ mad good a N.W.b.N. : Corse, by reason There was one Mr. Gray who had bought a Vessell hiere in w^th^ S^r^ J. smith was concerne and y^e^ s^d^ Gray Desired Convoy over fearing the french Capers *(sic*, probably Captains is meant) from whome y^e^ Ostenders had taken y^e^ s^d^ Vessell, &c.

The : 29th : being thursday, itt was hansum weather, the wind E.N.E. : from midnight till : 8 : this morning I stired N.N.W. : and then I Judged the Nazeland to bere of me : W.b.S. : and I stired : W. : being Just then on the North End of the Galloper in : 4 : fath. water, the Vessell w^ch^ was with me stood on N.N.W. : and would noe Longer Cebb me Company, for hee Intended for Jarmouth Roads. Att : 10 : I sie Olford kerke (church) and Castle bering of mee N.W. : in halfe an houers tyme more I came over the Gaber in y^e^ same Dept I came ouer y^e^ Galloper, I then stired in W.b.S. and W.S.W. Att noone I was twart y^e^ boy of y^e^ Gunflitt, Then I stired S.W.b.W. : and att : 2 : I was twart y^e^ boy of y^e^ spitts, then I stired S.W.b.S. : and att : 3 : I was by the boy of the Made, att : 4 : I was twart y^e^ shoo, att : 9 : I was att Grauesend, and att : 11 : I came To my morines att Deptford, &c.

The : 3th : being Munday, this afternoone about : 5 : I Received orders To Goe over to Ostende again for Mr. Porter, and att : 7 : I sett saile being Verie Letle wind I toed w^th^ the boete a head Till I Gott below barking shelve, then wee gott a small brise Westerly w^ch^ Increased more and more soe y^t^ I was able to steme The flood and gett ground, I sailed all night and by midnight I was Gotten as Low as tilbure hope.

The : 4th : being tuesday the wind was N.N.W. : at : 7 : this morning I was in the narow on the flatts, the boy of y^e^ spell was drove away, Itt was then ½ Ebb ; the sholdest Cast I had was : 2 : fath. ; att ¼ of an houer past : 8 : I was twart the N. fooreland, and then I shaped my Corse : E.b.N. : by Reason the wind was Northerly, and wee had : 4 : houers Ebb (or a Northern tyde) ; att noone y^e^ foreland bore : W. : of me Distant 6 Leagues, att : 3 : I sie Dunkirk steple bering of me : S.b.E. : I still continued my Corse E.b.N. : att a Litle

past : 4 : I sie the high sandie Hill to y^e^ westward of Newportt; att : 5 : I sie Newport bering of mee S.S.E. : as y^e^ sandie hill alsoe Did bere of me when first I sien itt. Att : 6 : I sie Ostend bering of me E.b.S. ½ pt. S. : Distance : 3 : Leagues, about : 7 : I came to an anchor in Ostend Road in 7¼ fath. water Having both the stepells shut together, then they bore S.S.E. ½ pt. E. : Itt was then halfe : Ebb, and there went a great sea, and therefore nott safe to adventuer going in, the wind was : N.N.E.

The : 5th : Being wednesday itt was verie handsume weather, the wind N.N.W. : this morning att : 3 : I began to heave, and By : 5 : I gott Into the harbore being then a high water or Rather a Litle pinched. There came a boete to helpe us in, att night the wind came Easterly.

The 6th being thursday it was handsum weather, the wind W.N.W. About : 8 : att night Esq. Porter came to toune with his Goods and Servants, all w^th^ Imbarqued to Rights, &c.

The : 7th : being Friday itt was Verie hansum weather, the wind W.S.W., this afternoone the wind came to the N.E. : and about : 6 : being near a high water I sett saile and went out the West Chanell, where I had noe less than : 14 : foote The shouldest caste, and when I was Cleare I paid : 30 : to Peter w^th^ his boete helping me out, and I stired N.W. ouer till midnight.

The 8th being Satturday from midnight till : 4 : I stired W.b.N. And then I stired West, the wind N.b.W., and at : 6 : I sie the N. foreland bering W. ½ S. of me, and then itt fell flatt callme, and we lay driving till about : 2 : wee gott a small brise att South, and att : 5 : were verie Close in by the fooreland. Mr. Porter my passenger being verie mutch tortured w^th^ the gout Desirred to goe on shore att Margatt, vere I landed him at ½ an houer past : 6 : and I gott upp into the upper End of the gore (? jaw,) where I anchored a Litle past : 8 : in : 5 : fath. being then almost flatt callme.

The : 9th : being Sunday this morning a Litle past : 3 : I sett saile, the wind was W.N.W. : I turned through the narrow, where I was Just at : 4 : the shouldest cast I had was : 9 : foote, w^ch^ was but one cast, att : 7 : I was att the boy of the Reedsand, it blew a stife topsaile gele, and Att : 10 : I came to an anchore twart the boy of the Nore ¼ of a mile Distance. Att : 2 : or a Letle past I sett saile againe and turned Upp to Purflitt, where I came to an anchor att a high water, &c.

The : 10th : being Munday, this morning about : 5 : I sett saile, the wind N.W.b.W. w^th^ verie hansum weather, at : 11 : I came to my moorins att Deptford.

The : 13th : being thursday itt was Verie hansum weather, and almost callme safe a Litle brise att S., this morning I Receaved Orders to saile to Calais w^th^ shevalier Vandosnuy, and about : 4 : in the afternoone I sett saile and Gott Doune into Long Reach where I anchor'd att : 8 : being then flatt Callme and the tyde spent soe that I Could gett noe further this tyde. &c.

The : 14th : being friday itt was Verie hansum weather and allmost

Callme. This morning by : 2 : I sett saile, and w^th^ y^e^ boete a head toed Doune to Grauesend where I anchored att : 5 : for my passengiers were to Imbarque there, and about one a Cloke being then a high water there came a small brise at N.W. : and I sett saile, butt By that tyme I gott to the Lower End of tho hope the wind came upp att East and I turned Downe to the boy of then Nore, and then the wind came att N.N.W. : but that continued nott above one houer, and then itt came at N.E. : and the Ebb being doen att : 8 : att night I came to an anchor in : 10 : fath. water having the boy of the Ouzedge E.N.E. ½ pt. N. of me Distance about one mile.

The : 15th : being Satturday this morning a Litle before : 2 : wee were under saile the wind N.E.b.E. : I made a board over to the North^d^ standing into : 9 : fath. in the N. Chanell and then I tackt it and just Come To windward of y^e^ boy of y^e^ Ouzedge and I made one tripp more To the N.ward and soe rune ouer the Reedsand a mile above the Boy, and ¼ past : 4 : I came through the Narrow on the flatts, and then afterwards I turned Doune w^th^in ½ a mile from the pitch of the fooreland when I was forced to anchor at : 10 : for I could nott possible gett about, itt was butt Litle wind and a bigg poping sea, I anchored w^th^ y^e^ fooreland : S.E. : of me, till about one a Cloke or somewhat past I sett saile and made one board to weather the fooreland and soe stretched itt ouer S.E. ¼ E. (being a whole Tyd out of y^e^ N. w^ch^ I had in hand by that I gott y^e^ Lenght of y^e^ North Sandshead) w^ch^ did but Just fetch in a Litle to y^e^ Eastward of Callis, And By : 8 : I was at Calais, And Cleare of all my passengiers.

The : 16th : being Sunday itt was dorty rainy weather, the wind att N., and blew hard soe that wee could not goe to sea this day, &c.

The : 17th : being Munday itt was close huridury weather, the wind at N.E.b.N. : and about ½ an houer past one a clocke, being a Litle before a High water, I sett saile and stired after I was out Cleare, N.W.b.N. w^ch^ being an Easy gele Did butt Just fetch in w^th^ the South sandshead, and at : 7 : I came to an anchor in : 11 : fathom water halfeway betwine y^e^ S. foreland and y^e^ Southsandshead. Till about : 11 : att night y^e^ tyde of Ebb had doen Running I sett saile againe being a Verie small brise westerly, att midnight I was twart of the shipse y^t^ Red in y^e^ Downes.

The : 18 : being Tuesday from midnight till one a Clocke I stired N.N.W. to Gett the soundings of the maine, w^ch^ hauing Gotten I stired N. and N.b.W. till I Gott upp as high as the querens, (*sic*, probably Queen Channell is meant,) then I stired N.N.E. and the shouldest Cast I had w^ch^ was but one was 4½ fath., and when I was gotten Northward of Ramsgatt I stired away N. and N.b.W. and a Litle past : 3 : I came to an anchor in 7 fath. twart of y^e^ Ness, having the Lighthose Due south of me, the wind then was West and the tyde Come strong out of y^e^ river, a Litle before : 9 : I sett saile having Then a small brise att East, and att noone I was in y^e^ narrow on the flatts, and by : 4 : being then a high water or Rather the Ebb come I was twart the boy of then Nore, having then a small brise Southerly, soe that I Chequed the Ebb and Rune upp close under then Nore in

y^e^ Eddy Cebbing in : 3 : fath., and when I gott upp twart of holehauen the wind came westerly, butt being then : 10 : And a low water I turned upp into the upper End of Long Reach when I anchored att a high water y^e^ 19th by 5 morning.

The : 19th : being Wedneeday itt was flatt Callme and I cebbt the Boete a head toeing the Vessell a head, and about : 5 : being then a full high water I came to an anchor att y^e^ Upper End of Long Reach or the Lower end of the Raunes in : 4 : fath. water on the south side having the great Elme on the Key of erith, and about noon wee sett saile again toeing w^th^ the boete ahead, and att : 4 : I gott upp to Deptford, &c.

Bonnici's Deep Sea Sounding Instrument.

H.M. steam-vessel *Spitfire*, off Sevastopol,
13th November, 1855.

Sir,—Having for some time given my attention to the best means for obtaining correct soundings at great depth, and tried several instruments for this purpose, no instrument that I have ever seen or heard of equals, for ingenuity, simplicity, and neatness, the instrument I now bring to your notice by a model and drawing,—the latter of which accompanies this letter and description.

The inventor of this new and clever "Deep Sea Sounding Instrument" is Carmelo Bonnici, a Maltese, and the blacksmith of the *Spitfire* since she was commissioned in 1851.

Several other instruments for this object having been previously made by him, in the course of the past year he produced the one now recommended for a fair trial in depths and conditions that do not occur in the sea I am now employed in. But it has answered perfectly in depths of 300 fathoms and under; and I have no doubt will answer equally well in any depth yet reached, where it is desirable for the weight to become detached on reaching the bottom, and not possible during its descent.

The advantage it possesses over the American instrument, of a rod passed through a shot, described by Lieut. Maury, U.S.N., and which has been so generally used by Lieut. Lee, in the recent voyage of the U.S. ship *Dolphin* in the Atlantic Ocean, is obvious at first examination, viz., in its application to any kind of weight that can be slung with a simple white line becket or loop. Thus, a pig of ballast, an old fire bar, or an elongated weight of any kind can be used; which, from its more rapid descent than a spherical body, (a shot as used by Lieut. Lee, U.S.N.,) possesses great advantages under circumstances of sounding where there is a superficial current.

With the instrument is used a small cup or hollow cylinder *a*, containing some arming to bring up an indication of the bottom. This

is fastened to the instrument by a small wire or line *b b*, and is attached by the two projecting points *c* that act as springs to grasp the end of the weight, if sufficiently pointed, or to a piece of stick lashed to the pig of ballast or weight for the purpose, as *d*.

It will be seen that the weight is taken up by the instrument by placing the arms *e e* in the position shown in fig. 2, so to open the double hook connected with the arms. And with the arms placed erect, as in fig. 1, the sinker is held by the instrument during its descent; but on reaching the bottom it becomes released through the two arms falling downwards by their gravity.

This instrument being one that may be of great use in every survey, I trust the inventor will meet the reward his ingenuity merits, and that it may be generally adopted in all our surveying vessels.

I am, &c.,

T. SPRATT, *Captain, R.N.*

Captain Washington, R.N., Hydrographer to the Admiralty.

Fig. 1.

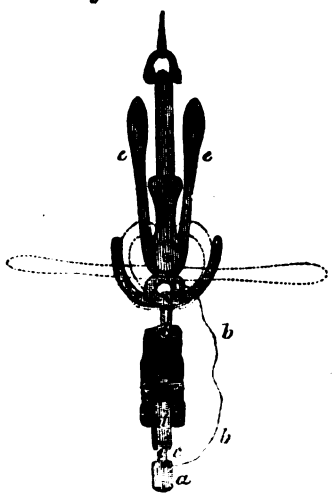
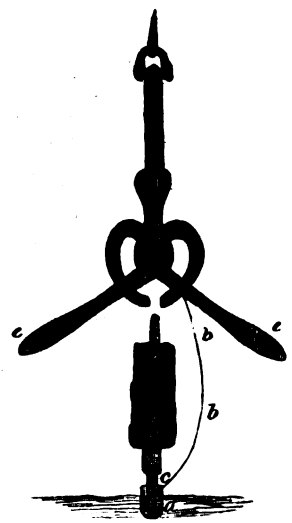


Fig. 2.



With this instrument and the use of a silk line I trust to be able to obtain the greatest depths that can be found in the Meditertanean or the Black Sea, ——— having nearly ten years since used a silk line for depths of nearly 1000 fathoms with great success; they being rapidly obtained, and not vitiated in any appreciable amount by the influence of local currents, or from the little friction offered, and the short time the weight is in consequence descending.

Wrecks and Casualties on or near the Coasts of the United Kingdom in 1855.

The annexed Report of the Board of Trade, containing an abstract of the returns of wrecks and casualties on or near the coasts of the United Kingdom, from the 1st January to the 31st December, 1855, with a statement of the number of lives lost and saved, and of the amounts granted out of the Mercantile Marine Fund as rewards for the salvage of life, and for contributions towards the maintenance of life-boats, during the same period, has just been presented to both Houses of Parliament by command of her Majesty:—

The total number of wrecks and casualties reported to have occurred to vessels on the coasts of the United Kingdom in 1855 is 1,141, representing a burthen of 176,544 tons; 963 being British, 11 colonial, and 116 foreign. Of which number were—

Totally lost by wreck	272
Stranded and recovered	246
Stranded (but whether total or partial loss not reported)	167
Totally lost in collision	55
Seriously damaged in collision	178
Slightly damaged in collision	14
Leaky and foundered.	49
Leaky and put back to discharge and repair	47
Destroyed by fire	14
Found derelict	19
Dismasted and otherwise damaged	49
Abandoned	20
Capsized and sunk	9
Seriously damaged by spontaneous combustion of cargo	2
	1141

Of these—576 occurred on the East coast, 251 on the West coast, and 117 on the South coast of Great Britain; 127 on the Irish coast; 10 off the Scilly Islands; 6 off the Channel Islands; 34 off the Northern Islands—viz., Orkneys, Shetland, and Hebrides; 13 off the Isle of Man; 7 off Lundy Island.

Of which the number reported to have been stranded on the various sands and banks were 7 on the Scroby; 4 on the Kentish Knock; 4 on Whitburn Steel; 1 on North Bishops; 8 on West Hoyle; 1 on the Sunk; 1 on Long Sand; 2 on Dogger Bank; 3 on the Barber; 1 on the Balls; 3 on the Gaa; 3 on the Shipwash; 6 on the Hasboro'; 1 on the North Bull; 1 on the South Bull; 16 on the Goodwin; 4 on the Gunfleet; 1 on the Hook; 4 on the Brake; 1 on the Langham; 2 on the Middleton; 2 on the Maplin; 1 on the Nore; 3 on the Barnard; 2 on Hubberstone Pill; 2 on the Pye; 5 on the Newcome; 3 on Cardiff Sands; 1 on the Barrow; 3 on the Blacktail; 2 on the Swin; 1 on the Wainfleet; 2 on Tetney Sand; 3 on the Galloper; 1 on the Knowle; 1 on the Tongue; 1 on Hayle Sand; 1 on the Coatham; 2 on Burbo Bank; 1 on North Spit; 3 on the Nash;

1 on the Blakeney; 2 on Arklow Bank; 2 on the Rose; 6 on Donna Nook; 3 on the Owers; 2 on the Stanton; 2 on the Herd; 2 on the Holm; and 4 on the Leman.

The number of casualties in each month was—January, 102; February, 113; March, 93; April, 43; May, 58; June, 33; July, 41; August, 54; September, 64; October, 134; November, 176; December, 230.

Of the whole number of vessels wrecked or damaged—541 were under 100 tons; 496 were 100, and not exceeding 300 tons; 67 were 300, and not exceeding 600 tons; 27 were 600, and not exceeding 900 tons; 4 were 900, and not exceeding 1,200 tons; 6 were 1,200 and upwards. 34 of the number were steam-vessels.

Freights.

Manure and oilcake	22	Timber or bark	45
Iron, ironstone, or copper ore	44	Fruit or potatoes	11
Grain, oatmeal, or flour	85	Passengers	17
Cotton	4	Coals	229
Salt	22	Colliers in ballast	81
General merchandise	125	Other ships in ballast	90
Clay	12	Fishing smacks	16
Stone, lime, slate, or bricks	28	Unknown	310

Number of wrecks in 1852, 1,015; in 1853, 832; in 1854, 987; in 1855, 1,141.

The wrecks reported in 1855 show an increase of 12·4 per cent. as compared with 1852; of 37·1 per cent. as compared with 1853; of 15·6 per cent, as compared with 1854. This increase, in all probability, arises, in part at any rate, from the facility with which returns are now obtained from Inspecting Commanders of Coast Guard and Receivers of "Wreck" under the "Merchant Shipping Act, 1854."

The number of lives reported as saved from wrecked vessels was:—

By luggers and other small craft	439
By assistance from shore with ropes, mortar apparatus, &c.	399
By ships and steam-vessels	290
By lifeboats	251
By individual exertion of a meritorious character	9
	1388

In 1855 the total number of lives lost was 469. In 1854 the total number of lives lost was 1,549; in 1853, 689; in 1852, 920.

The number of collisions reported is greatly on the increase, being 247 against 94 registered in 1854, 73 in 1853, and 57 in 1852. This increase is perhaps attributable, in part at any rate, to the same cause as that of the number of wrecks above mentioned.

The wreck experience of the year 1855 has been extremely favourable to life, the number lost being 451 less than 1852; 220 less than 1853; and 1,080 less than 1854. The only casualty of magnitude being the ship *John*, off the Manacles, on the 3rd May, by which 191 lives were lost; 6 lives were also lost in the *Stranger*, on the Barber

Sand; 8 in *Maria Branson*, off Bude; 21 in the *Morna*, on the North Bishops; 6 in *John Bannerman*, Caernarvon Bay; 8 in *Ampulla*, off Beech Haven; 5 in *Sovereign*, off Holmpton; 6 in the *Commercial*, off Flamborough Head; 8 in *Brailsford*, on West Hoyle; 12 in *Enchantress*, off Dungeness; 7 in *Echo*, off Bardsey; 6 in *Charlotte and Mary*, off Aldborough; 5 in the *Charles*, off Whitby; 18 in the *Will-o'-the-Wisp*, off Burn Rocks; 6 in *Hero*, off Youghal; 10 in *Emeihiden*, off Cape Wrath; 13 in haddock boat, off Mabray Head.

By the 459th section of the "Merchant Shipping Act, 1854," salvage for life is paid in priority to all other claims for salvage, and the Board of Trade are empowered to grant remuneration out of the Merchant Marine Fund to persons saving life where the salvage is insufficient; and by the 418th section they are also empowered to grant sums for the establishing and maintaining life-boats, with the necessary crews and equipments, on the coast of the United Kingdom. Under the above powers the board has granted the following sums during the past year:—

Through the National Lifeboat Institution.

For payment of crews of lifeboats	£571	3	8
For rewards to crews of lifeboats	141	10	6
For rewards to fishermen and others for saving life	325	12	6

By the Board of Trade Direct.

For payment of crews of lifeboats	11	0	0
For rewards to crews of lifeboats	60	0	0
For rewards to fishermen and others for saving life	68	0	0
For gratuity to the widow of Thomas Coble, who lost his life in the attempt to rescue the crew of the Swedish brig *Vesta*	50	0	0
For gratuity to the widow of Henry Holmes, who lost his life in the Spurn lifeboat	10	0	0

Total amount paid to lifeboats during the year	£582	3	8		
Total amount as rewards for saving life	655	3	0		
				1237	6	8

Shipping and Mercantile Gazette.

THE COLLISION AND FOUNDERING IN THE CHANNEL OF THE SHIP "JOSEPHINE WILLIS."

This shocking catastrophe created the most painful interest along the coast. The moment the intelligence was made known at Ramsgate, Margate, Folkestone, and the other places in the vicinity of the Downs, crowds of boats made off to the spot where the ill-fated *Josephine Willis* was reported to be on her beam-ends, for the twofold object of saving life and property; but on reaching the place it was discovered she had gone down about nine miles S.S.W. of Folkestone, and her topgallant yards were just above water. The

sea for several miles round was scoured by the boats, in the hope that some of the unfortunate creatures might be found floating on some spars or hen coops, but none were to be observed.

On the Tuesday following, one of the partners of Messrs. Willis and Co., the brokers, with Captain Eagles (who is connected with the owners, Messrs. Fletcher of Limehouse,) and the chief officer of the ship, went out in a steam tug to the spot where the wreck was, and several divers went down, and carefully examined it. We understand they found it to be a total wreck. So great was the damage done by the steamer, that very little hope is entertained of any portion of her valuable cargo being recovered. The *Mangerton* steamer—the vessel that run into the *Josephine Willis*—remains at Ramsgate. She has been seized under Admiralty warrant for the loss of the ship.

The scene on board the vessel, just before she careened over on her starboard side and went down, is described by the survivors to have been truly horrible. Captain Canney, the unfortunate master, it should be observed, was below at the time, making out his course on a chart he had on the cabin table, the chief officer, Mr. Clayton, having charge of the watch on deck. William Grindle, seaman, was at the wheel, and two look-out men (John Sheen and another man) were forward.

Sheen, in his depositions before the Receiver of Droits at Ramsgate, states that the ship was going about six knots at the time, on the port tack, the wind being S.E., and not E.N.E., as reported. Seeing a steamer approaching, he notified the same to the Mate, who immediately called out to the man at the wheel to put her helm a-starboard. The Mate at the same time shouted to the steamer, but no notice was taken; the steamer continued her course, and in less than five minutes the collision took place.

Captain Bouchier, of the steamer *Mangerton*, in his report of the occurrence to Lloyd's agent at Deal, admits that he observed the *Josephine Willis* apparently starboard her helm, he (Captain Bouchier) having just previously put his helm hard a-port, and before there was time to reverse the engines the vessels met, the ship striking them on the port bow, and the steamer striking the ship abaft the rigging on the starboard side.

In the cabin, along with the Captain, were Mr. Alexander Jarvis, the Surgeon, (who at the time was conversing with him on the superiority of the chart before him, and the probability of the ship making St. Catherine's Point by five o'clock the next morning), and Mr. Andrews; the other passengers, being rather sea sick, having retired to their cabins. Hearing the terrible crash, the Captain rushed on dek. His first order was to sound the pumps, and on the steamer backing out, which might have occurred some eight or ten minutes afterwards, he called to the man at the helm to keep her due North. The helm was put up, but by this time she was careening over, and she would not steer. The poop-deck was crowded with the passengers, and the Captain, seeing that the ship was foundering, told them to throw the hencoops overboard and hold on to them. All the boats were gone; they were capable of holding all hands, but they were sent adrift with only a few people in them. The last that was seen of the Captain—if the passenger's cook speaks correctly—was after the ship had fallen over on her beam-ends, with her top-gallant yards in the water. He was then clinging to a hencoop in the water, together with two females.

The first boat that left the ship contained only Mr. Henry Ray, his wife, a steerage passenger named Catharine May, the ship Surgeon, Mr. Jarvis, and three seamen. The boat stove in lowering, and would have sunk but for the Surgeon pulling off his coat and thrusting it into the hole in the bottom. Several of the crew next lowered the pinnace and the lifeboat, but ere the passengers had time to get into them they were cut away. They were all

shortly picked up by the steamer. One of the crew states that he thinks there were at that time about sixty people collected on the side of the ship.

Mr. George Andrews, a young farmer, a native of Trenance, St. Ausletts, Cornwall, a chief-cabin passenger, one of the seven who were taken off the topmast heads some hours after the collision, furnishes some thrilling details of the catastrophe. In about ten minutes after the ship had been struck she turned over on her beam-ends on the port side, and the passengers clung to the rigging. He had taken charge of a Miss Logan, a young lady eighteen years of age, who, on the collision occurring, rushed out of her cabin, attired only in her night-dress. He took off his greatcoat and put it round her, and when the ship turned over he caught her round the waist, and got into the mizen rigging; and a passenger named Golding, who had a little child in his arms, was near him. In this position they remained upwards of an hour—the passengers who kept clinging to the rigging shouting to the steamer to save them. About a quarter of an hour after the ship had gone over, Captain Canney, who was on the side of the wreck, was swept overboard by a sea which broke on the ship, and disappeared. Perceiving that she was fast sinking, he proposed to Golding to crawl along the mizen-mast, which was resting on the water, as the vessel in going down would be likely to right. The unfortunate fellow replied that he thought it would be better to remain where he was. Mr. Andrews, with Miss Logan in his arms, then made an effort to get along the mast. The poor girl, however, if not dead, was completely exhausted; and in getting her up the mast he was several times nearly overcome himself. On reaching the crosstrees, a sea caught them both, took the girl from his arm, and she was swept away. He believed, however, that she had expired before. The sea even caused him to lose his hold, and it was only through a desperate effort that he succeeded in regaining his grasp. He saw poor Golding, and the child he was so anxious to save, swept into the deep. The hull of the ship then gradually went down, and he saw some forty or fifty men, women, and children struggling in the waves, screaming for aid. Their cries were heard a few minutes, and all was over. He then made his way up to the mizen-mast head, and a little boy, named Sutton (whose parents and brother and sister perished), a passenger, and the chief steward managed to hold on to the rigging of the yard near him. Three others got up to the maintopmast head, and one poor fellow lost his life in endeavouring to pass along the stay between the two masts. The water gradually rose up to their legs. They could see the steamer, and kept shouting for help. About half-past eleven their cries were heard by a Deal lugger which had been sent in the direction of the wreck, and, benumbed and almost half-dead, they were taken off by the boatman Pearson, whose conduct is spoken of in commendable terms. About ten minutes before they were rescued a brig passed them within 150 yards; she, however, took no notice of their shouts, and went on.

Mr. Andrews expresses his belief that most of the passengers could have been saved by the ship's boats and the steamer had they lain by. With the exception of the Captain and the two stewards, he did not see a soul of the crew a few minutes after the collision took place. The ship was lying on her beam-ends more than an hour, with the passengers clinging to the rigging, before she went down, and there was ample time for the lifeboat to have taken the whole of them off the wreck in two or three journeys to the steamer, had they stood by. He was confident that the steamer did not remain by the ship more than ten minutes. Mr. Andrews speaks highly of the noble courage displayed by Captain Canney.—*Daily News.*

MAGNETIC VARIATION AND DIP FOR THE YEARS 1854 AND 1855.—*From the Astronomer Royal.*

Table showing the mean monthly westerly declination, or westerly variation of the magnet, and the mean monthly dip, at the Royal Observatory, Greenwich, in the years 1854–5.

1854.	Variation.				Dip.	
January	22°	3′	42″	W.	68°	49′
February	22	2	8		68	48
March	22	2	28		68	47
April	22	2	4		68	49
May	22	2	18		68	46
June	22	1	2		68	48
July	22	0	23		68	48
August	22	0	20		68	48
September	21	59	2		68	48
October	21	57	33		68	46
November	21	57	53		68	47
December	21	56	3		68	45

1855.	Variation.				Dip.	
January	21°	49′	50″	W.	68°	43′
February	21	48	13		68	46
March	21	48	51		68	45
April	21	48	47		68	47
May	21	48	25		68	46
June	21	50	12		68	44
July	21	48	14		68	46
August	21	48	31		68	44
September	21	47	9		68	42
October	21	46	21		68	43
November	21	45	59		68	44
December	21	45	54		68	45

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 mean of readings taken at 9h. a.m.; 1h.; 3h.; and 9h. p.m. daily.

The mean dip has been found by taking the mean of observations at 9h. a.m.; 3h. and 9h. p.m. on one day in each week. G. B. AIRY.

THERE'S WORK ENOUGH TO DO.

The following lines from the *Liverpool Mercury* convey a moral too good to be lost.

The blackbird early leaves her rest,
To meet the smiling morn,
And gathering fragments for her nest,
From upland, wood and lawn;
The busy bee, that wings its way
'Mid sweets of varied hue;
And every flower, would seem to say,—
"There's work enough to do."

The cowslip and the spreading vine,
The daisy in the grass,
The snowdrop and the eglantine,
Preach sermons as we pass.
The ant, within its cavern deep,
Would bid us labour too,
And writes upon his tiny heap—
"There's work enough to do."

The planets at their Maker's will,
Move onward in their cars,
For Nature's wheel is never still,—
Progressive as the stars!
The leaves that flutter in the air,
And summer's breezes woo,
One solemn truth to man declare—
"There's work enough to do."

Who, then, can sleep when all around
Is active, fresh, and free?
Shall man—creation's lord—be found
Less busy than the bee?
Our courts and alleys are the field,
If men would search them through,
That best of sweets of labour yield,
And "work enough to do."

To have a heart for those who weep;
The drunkard, too, to win;
To rescue all the children deep
In ignorance and sin;
To help the poor, the hungry feed,
To give him coat and shoe;
To see that all can write and read—
"Is work enough to do."

The time is short—the world is wide,
And much has to be done;
This wond'rous earth and all its pride
Will vanish with the sun.
The moments fly on lightning's wings,
And life's uncertain too,
We've none to waste on foolish things—
"There's work enough to do."

COPY OF SENTENCE OF A COURT MARTIAL—*Held at Bermuda on the Officers and Ship's Company of H.M.S. "Wolverine," 28th November*, 1855:

The Court is of opinion that the course shaped at noon from the position obtained by good observation and making allowance for the current experienced in the previous twenty-four hours, would have carried the ship fourteen

miles to windward of the S.S.E. Long. of the Courtown Bank; that attention was paid to the steerage of the *Wolverine* up to eight o'clock of the night of the 11th of August, but that care was not taken in that important duty by the Officer of the first watch, Mr. Anthony E. Maynard, Mate, who was asleep and not sober. The Court doth therefore adjudge the said Mr. A. E. Maynard to be dismissed from Her Majesty's service. And the Court is further of opinion that blame is attributable to Commander John Corbett and Mr. Horace Cook, the Master, for not having the lead going on getting into the vicinity of the Cays, and doth adjudge the said Commander J. Corbett and Mr. Horace Cook to be reprimanded for that omission; but that no blame whatever attaches to the remaining Officers and ship's company, and doth therefore adjudge them to be acquitted.

It further appears to the Court that every exertion was used to preserve the furniture and stores of the ship after she was stranded.

The Court also have to state that the cocoa-nut trees on the Courtown Bank marked in the chart, No. 3, West Indies, and mentioned in the "Columbian Navigator," Vol. 3, p. 258, do not exist.

The Court is of opinion that the loss of H.M.S. *Wolverine* may be attributed to the currents which appear by the directories to be uncertain in their direction and velocity.—*United Service Gazette.*

THE SALT WATER CONDENSER.—The condensing apparatus on board the *Wye* is working most satisfactorily and up to the 18th of January had produced 25,120 gallons of the purest fresh water, and had delivered to ready recipients 7,542 gallons. The expenditure of fuel has been at the rate of one ton of coals for ten tons of water. As soon as the *Wye* was moored into Kazatch Bay the Senior Officer gave orders that she should be employed in watering the squadron, and, if necessary, the troops, all of whom have availed themselves of the advantages offered them. Mr. Grant deserves well of his country for introducing so important an invention, and the public thanks are equally due to Sir Baldwin Walker and Captain Milne for the part they have taken in the matter.

CONDENSING APPARATUS IN GUN-BOATS. We are glad to find that Sir Baldwin Walker, Surveyor of the Navy, has recommended that each of the screw gun-boats should be supplied with Mr. Grant's condensing apparatus.

We find the above in that valuable naval paper the *United Service Gazette*, and having ourselves watched the progressive success of this most important addition to a ship's furniture, while congratulating the Navy in general on its acquisition have the additional satisfaction of stating that it is indebted for it to the perseverance and patronage of Captain Alexander Milne, one of the Lords of the Admiralty.

THE AMOOR RIVER.—A San Francisco paper contains the following:—We are informed by Mr. James Pike, chief officer of the bark *Palmetto*, recently arrived from Ayan and the Russian settlements on the Amoor River, that the forts erected at the latter place by the Russians, under the direction of the Governor of Siberia, are actually impregnable, and were so regarded by the English observing officers. No naval power possessed by the Allies in the Pacific is strong enough to take the three forts. The *Palmetto* entered the Amoor River and proceeded some distance up. The navigation is intricate, and at the mouth, where the river empties into the Saghalien Gulf, not

unlike the Mississippi. The Gulf for many miles is discoloured by the great volume of water discharged into it. The country bordering on the river is low and alluvial, and the banks and channels constantly changing, owing to the great number of quicksands and *debris* sent down the stream. The Russians have good charts of the river, and the Allies were making a survey when the *Palmetto* left. The supply ships of the Allied Fleet have been wrecked, so that provisions and naval stores were scarce, and commanded an unparalleled price.—*United Service Gazette.*

TELEGRAPHIC PROJECT.—The Piedmontese papers state that it is the intention of the Mediterranean Telegraph Company, which is now sinking a cable between Sardinia and La Calle, on the coast of Africa, to continue its line to Melbourne, South Australia. After establishing branches from La Calle to Bugia, Algiers, and Oran, they will direct their main line through Tunis, Tripoli, Alexandria, Cairo, Suez, Jerusalem, Damascus, Bagdad, Bessora, Hyderabad, and Bombay. At the latter city the line is to separate into two branches, one going northward to Agra, (whence secondary branches will extend to Lahore, Peshawur, and be therefore at a short distance from Cabul and Cashmere,) Benares, and Calcutta; and the other passing through Bengalore and Madras, and likewise ending at Calcutta. From that capital the line is to follow the north-eastern coast, of the Gulf of Bengal and the peninsula of Malacca; then pass over to the Sound Islands and the North of Australia, whence it will follow the eastern coast, touching at the numerous colonies there, and ending at Port Adelaide. The whole distance is calculated at about 20,000 kilometres (12,500 miles).—*United Service Gazette.*

THE NORTH AUSTRALIAN EXPEDITION.—The Admiralty requiring the services of a naval officer to proceed to the Gulf of Carpentaria, in connection with the North Australian Exploring Expedition, under Mr. A. C. Gregory, Lieut. W. Chimmo volunteered at a very short notice for the service, and leaves by the steamer *Royal Charter*, from Plymouth to Melbourne, whence he will proceed to Sydney and Port Essington. Lieut. Chimmo has already had much experience in the Australian coast survey while in command of the *Torch*, and has only been home a few months.—*United Service Gazette.*

The following subscriptions in aid of Mrs. Blenky, the widow of the ice-master of the *Terror*, are gratefully acknowledged by her.

	£	s.		£	s.
Admi. Sir F. Beaufort K.C.B.	5	0	The Earl of Ellesmere	2	0
Sir John Richardson, C.B.	1	0	Capt. Washington	1	0
Capt. Trollope	1	0	Sir Jas. C. Ross	1	0
A Friend	1	0	Lady Franklin	5	0
Capt. Becher	1	0	Mr. Barrow	5	0
Capt. Ommanney	1	0	W. E. P. Hooper, Esq.	0	10
Mrs. Fairholme	2	0	Robt. White, Esq.	1	0
Lieut. Fairholme	1	0	R. Ward Jackson, Esq.	2	2
Geo. Fairholme, Esq.	1	0	Dr. Rae.	1	0
W. Fairholme, Esq.	2	10	Capt. Cracroft	1	0

Mr. Barrow of the Admiralty will continue to receive further subscriptions for the poor lady, which will be duly acknowledged in the *Nautical Magazine.*

NAUTICAL NOTICES.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from p. 103.)

	Name.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
	2. Rathlin O'Birne	Outer Point of Island, Donegal	Ffl.	116	16	Est. 14th April, '56. A bright flash every 20 seconds. Visible all round the compass. Coloured red towards the land. Lat. 54° 39·8′ N., 6° 49·9′ W.
	3. Courtoun Cays	Tree removed				
	4. Sylt Island	Rode Klif, Sleswig Cst	Ffl.	200	20	Est. 1st March, '56. A bright flash every fourth minute. Visible in all directions. Lat. 4° 56·9′ N., 8° 20·5′ E.
	5. San Francisco	S. Farallon	R.	300	26	Est. 1st Jan., '56. Revolves once in a minute, but at near distances will not wholly disappear. Lat. 37° 41·7′ N., 122° 30·3′ W.
	6. Chesapeake	York Spit	F.	40	10	Est. 3rd Dec, '55. Light vessel painted cream colour, and marked "York Spit" Lies with New Point Light N.N.W.¼ W., Black River S.S W.½ W., Zewas Point W.¼ N.
	7. Buskar	Winga Snd. Gottenborg.				Improved.

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

NEW AND CORRECTED CHARTS, &c.

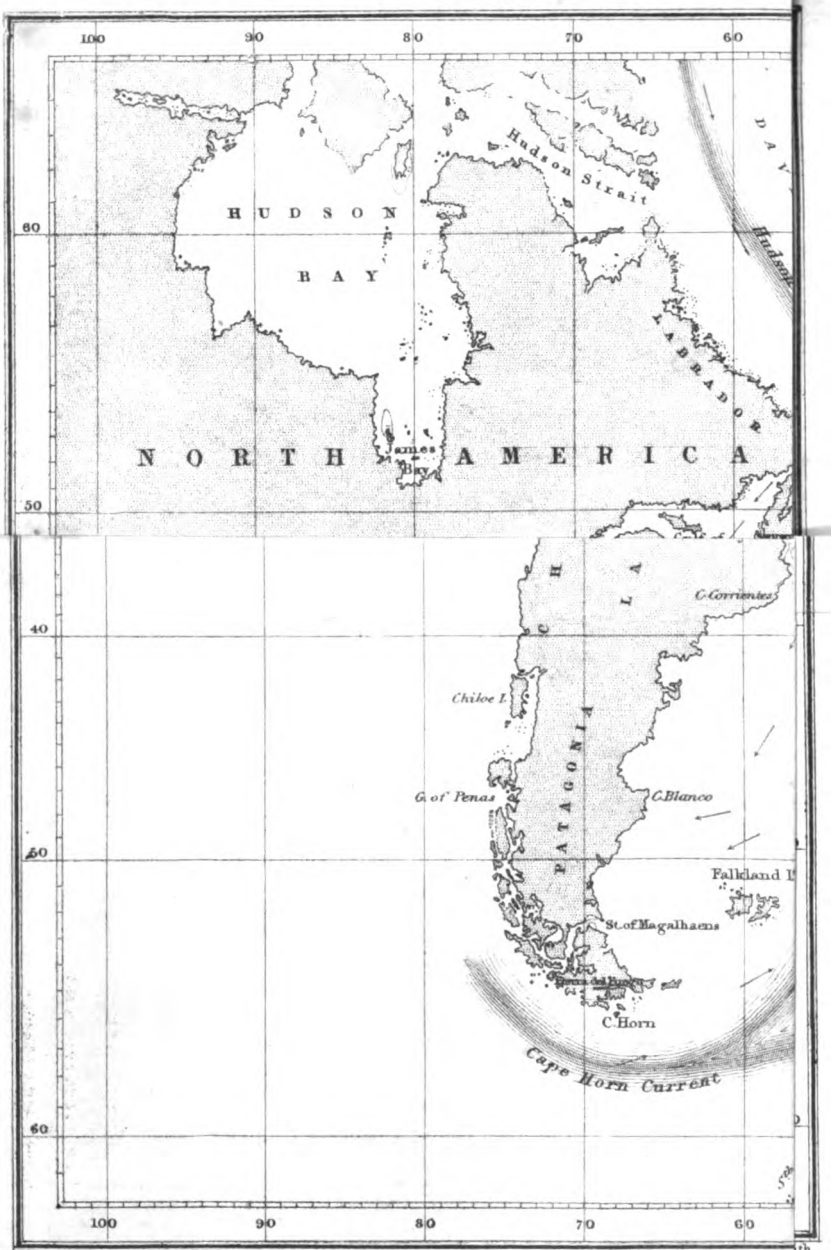
Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, *Poultry, and* 11, *King Street, Tower Hill.*

American Arctic Expedition, Dr. E. K. Kane, 1855 - - - 1 0
Queen Charlotte Islands, on the Western Coast of North America, Sailing Directions, 1853, Mr. G. H. Inskip, Master, R.N. - - 1 0
Bay of Fundy, Sailing Directions, to 1855, Commander P. F. Shortland, R.N. - - - - - - - 0 6

EDWARD DUNSTERVILLE, Commander, R.N.
Hydrographic Office, Admiralty, February 21st, 1856.

ADMIRALTY CHARTS.—By a return to an order of the House of Commons of all the sums received from the sale of the Admiralty Charts during the year 1855, it appears that there was received for the sale of 55,580 charts from the agent in London £2,969 13s. 3d.; received for the sale of 300 charts from the agent at Malta £20 11s. 3d. Total number of charts sold 56,880; total receipts £2,990 4s. 6d.

CHART OF



Nautical Magazine, Vol. 5, 2nd Series.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

APRIL, 1856.

PASSAGE OF THE SHIP "GLORIANA," FROM SYDNEY TO CALCUTTA, THROUGH BLIGH'S ENTRANCE, TORRES STRAITS,—*From September 7th to November 5th*, 1855,—*By Captain H. Toynbee.*

The passage through Torres Straits is still considered so dangerous, it was so late in the season when we left Sydney, and the route we took has been so seldom followed, that I think an extract from the log of the *Gloriana* will be found useful by the nautical world; and I will commence by giving the charts we used, numbered for the purpose of reference in the following narrative.

No. 1.—The General Chart of Australia, published by the Admiralty. From the surveys of Captains Flinders and King, R.N., with additions by Lieutenants Jeffreys and Roe, also Admiral D'Entrecasteaux, Captains Baudin and Freycinet, of the French Marine, to the year 1829; corrected from the surveys of Commanders Wickham and Stokes, 1843.

No. 2.—Chart of part of the N.E. Coast of Australia, by P. P. King, Commander, R.N., 1819–21, sheet 3. The reefs that are delineated with double dots and the outline soundings are from other authorities. Torres Straits and the South of New Guinea are taken from Captain Flinders, corrected to 1822. Additions by Lieutenant Roe, R.N., 1829, and by Captain F. P. Blackwood, R.N., 1844.

No. 3.—Torres Straits; N.E. Entrance along the Coast of New Guinea, surveyed by Captain F. P. Blackwood, R.N., 1845.

No. 4.—Torres Straits; the Western Entrances of Endeavour Straits and Prince of Wales Channel. Surveyed by Captains F. P. Blackwood and O. Stanley, R.N., and again sounded by Lieutenant C. Yule, 1844–48.

Friday, Sept. 7th, 1855.—We left Sydney, and by the advice of my friend Capt. P. P. King, R.N., I determined to try the northern route, or Bligh's Entrance. On the 7th and 8th the wind continued South of East, and at noon of the 8th we were N. 47° E., 150 miles from Sydney Heads, lat. 32° 9′ S., long. 153° 29′ E., current S. 30° E. 31 miles.

9th.—Wind from E.b.S. to E.N.E., a good breeze and we made N. 32° E. 181 miles, lat. 29° 35′ S., long. 155° 19′ E., current N. 41° E. 17 miles.

10th.—Wind E.b.N., sea easterly and confused, course and distance N. 12° E. 167 miles, lat. 26° 52′ S., long. 155° 59′ E., current N. 64° E. 11 miles, var. 9° 16′ E.

11th.—Wind E.b.N. to N.E.b.E., sea easterly and confused, course and distance N. 5° E. 164 miles, lat. 24° 9′ S., long. 156° 13′ E., current N. 69° W. 17½ miles, var. 9° 26′ E.

12th.—Wind E.N.E. to N.E.b.N., sea smooth, course and distance N. 25° W. 127 miles, lat. 22° 14′ S., long. 155° 15′ E., current N. 79° W. 22 miles. The wind would have allowed us to weather Wreck Reef, but we steered a course for sighting Bird Island on its East end that we might test the chronometers. At 5h. 40m. a.m. saw Bird Island bearing N.E.b.N.; made a tack to the south-eastward, hoping to weather it, but, after standing off two hours, on standing in we made the island bearing as before. Finding that the current was setting to the westward we ran along the southern side of the reef, and at noon had the sandbank on its western extreme W.b.N.½N. We found that our two chronometers (which agreed to a quarter of a mile) also agreed with the chart in the position of Wreck Reef. Whilst comparing chart No. 1 with Raper's Maritime Positions I found that Raper gave in table X (101) 3 a sandy island, lat. 21° 24′ S., long. 158° 34′ E. The chart has a low sandy island, with rocks above water in 21° 24′ S., long. 159° 34′ E., but nothing in Raper's position. If Raper be right it should be on the chart, for an island there would narrow the channel between Kenn's Reef and the reefs to the East of it by 27 miles.

13th.—Wind from N.N.E. to N.b.E., sea smooth, course and distance N. 46° W. 118 miles, lat. 20° 53′ S., long. 153° 44′ E., current S. 13° E. 26½ miles, variation 9° 53′ E.

14th.—Wind N.E.b.N. to E.N.E., a N.E. swell, course and distance N. 38° W. 94 miles, lat. 19° 39′ S., long. 152° 43′ E., current S. 9° E. 6 miles, variation 7° 42′ E.

15th.—Wind E.N.E. to N.E.b.N., a N.E. and confused swell, course and distance N. 11° W. 116 miles, lat. 17° 45′ S., long. 152° 20′ E., current S. 6° W. 13 miles, variation 8° 37′ E. Alert Reef N. 34° W. 52 miles; the doubtful eastern extreme of Lahou Shoal (by Raper) N. 75° W. 20 miles. Stood on, with a hand on the fore-topsail-yard, N.N.W. 14 miles and N.W.½W. 10 miles, wind gradually decreasing, when at 6h. p.m. the officer sent up to look round at sunset reported breakers on the weather bow, and a sandy islet where the sun was setting, Went aloft myself, and distinctly saw

from the fore-yard a line of reef extending from a point bearing N.½E. (where it seemed to terminate in the heaviest breakers visible) in the direction of, and as far as the eye could reach, towards a sandy islet bearing W.½S.; this islet appeared to be 15 or 20 feet high. Between these points I could just trace the edge of the reef, only breaking in some places. There was little wind and a smooth sea. Meridian altitudes for ascertaining the latitude were obtained at noon and at 7h. p.m., and sights for finding the longitude at 3h. 40m. p.m. and 6h. 45m. p.m.; these agreed to a mile in giving the following as the ship's position when the bearings were taken:—lat. 17° 29′ S., long. 152° 9′ E. Now the chronometers agreed with Wreck Reef and with each other, and the best one placed Booby Island four miles too far East by sights taken on shore with an artificial horizon eleven days afterwards. I considered the sandy islet to be about eight miles off, and the extreme point of the reef about five miles. From these data I deduce the position of the islet to be in lat. 17° 28½′ S., long. 152° 1′ E., and of the spot where the breakers terminated lat. 17° 23½′ S., long. 152° 10′ E. If I understand Raper rightly, he says that the supposed eastern limit of Lahou Shoal is in lat. 17° 40′ S. and long. 152° E. The Admiralty chart No. 1 has a few dots which enclose the space where this shoal was seen, but so written over that they might not be noticed. On Norie's chart Lahou Shoal is doubtful, and its eastern limit is in lat. 17° 40′ S., long. 152° E. Henceforward these positions should be distinctly marked on the charts as having a dangerous reef between them,—most dangerous on account of there being so few breakers along a line of eleven or twelve miles of sea.

16th.—Wind North to W.N.W.; swell easterly and confused; course and distance N. 84° E. 73 miles; lat. 17° 37′ S., long. 153° 36′ E.; current S. 30° E. 11 miles; variation 8° 20′ E.

17th.—Wind North to S.W.; sea smooth; course and distance N. 32° E. 60 miles; lat. 16° 46′ S., long. 154° 9′ E.; current N. 78° E. 18½ miles; variation 9° 5′ E.

18th.—Wind South to S.E.; sea very smooth; course and distance N. 36° W. 100 miles; lat. 15° 25′ S., long. 153° 8′ E.; current N. 61° E. 19 miles; variation 8° 40′ E.

19th.—Wind S.E.b.E.; sea smooth; course and distance N. 60° W. 104 miles; lat. 14° 34′ S., long. 151° 35′ E.; current S. 15° E. 22 miles; variation 8° 14′ E.

20th.—Wind S.E.b.E.; a slight easterly swell; course and distance N. 51° W. 127 miles; lat. 13° 14½′ S., long. 149° 53′ E.; current N. 41° W. 4½ miles; variation 7° 12′ E.

21st.—Wind S.E.b.E.; sea smooth; course and distance N. 60° W. 145 miles; lat. 12° 3′ S., long. 147° 44′ E.; current S. 6° E. 16 miles; variation 6° 41′ E.

22nd.—Wind S.E.b.E.; S.E. swell; course and distance N. 41° W. 169 miles; lat. 9° 56′ S., long. 145° 50′ E.; current S. 9° W. 16 miles; variation 5° 9′ E. We steered a course to sight the eastern part of the Eastern Fields, and at 10h. 45m. a.m. saw them bearing from West to S.W.b.S.½S.; it was very hazy and only the breakers

were visible. Raper says that there is brush-wood upon them; we could not even see a sand-bank, but the weather was so thick that both sand-bank and brushwood may have been there without our distinguishing them. The position of the breakers agreed very well with chart No. 1, and with that given by Raper for the East end.

On comparing charts Nos. 2 and 3, preparatory to entering the Straits, I found that they differed about seven miles in the longitudes of the different places we were to pass. Bramble Cay (mentioned by Captain Blackwood as the best guide for this entrance) is placed by No. 2 in lat. 9° 8′ S., long. 143° 49½′ E.; by No. 3 in lat. 9° 7¾′ S., long. 143° 56′½ E. From these I turned to Raper's Maritime Positions, and found it there to be in lat. 9° 13′ S., long. 143° 55′ E. Here was a new difficulty of five miles in the latitude. All these positions I placed on the chart as being possible, and proceeded as follows:—Having had a current to the southward for the last two days, I thought that it might continue, and also expecting a set to the westward, steered N.W.b.N. until we were (by dead reckoning) in 9° 15′ S., allowing for a set of eight miles to the southward: this I was convinced would keep us well clear of the Portlock Reef. At 9h. p.m. kept away W.¼N., and at 10h. 30m. sounded in 53 fathoms, sand and coral; stood on under topsails and jib; it was so cloudy that no observations could be taken.

23rd.—Wind S.E.; very cloudy and slight squalls. 2h. a.m. sounded 38 fathoms, shells and coarse sand. As this sounding proved that we were North of our reckoning, altered the course to W.b.S. 4h. a.m., sounded in 36 fathoms, coarse sand and red coral. 5h. a.m., sounded in 28 fathoms, coral and sand. 5h. 45m., sounded in the ordinary way and with Massey's patent lead; both gave 38 fathoms, green mud and sand. Now by looking at charts Nos. 2 and 3 it will be seen at once that we were North of the route between Anchor and Bramble Cays, for had we been South the depths would have been greater and no mud. Both these charts have a sudden decrease from 39 to 24 fathoms, and then as suddenly increase to 35 and 40 fathoms, in a position E.N.E. from Bramble Cay; therefore, at 6h. a.m., we stood to the S.W., and kept a good look-out from the mast-head,—the weather thick. 7h. 20m. a.m., sounded in 38 fathoms, green mud, sand, and shells. About 7h. 30m. saw a cay from aloft to the W.N.W. Not being able to distinguish the Black Rocks, and wishing, as the weather continued thick, to establish our position beyond a doubt, kept away and passed round the North side of the cay at a distance of a mile or a mile and a half, where we rounded to and sounded. The weather having cleared up, saw the Black Rocks and took a set of sights for longitude; it was then 9h. 40m. a.m. The soundings were 24 fathoms, sand and shell; which proved it to be Bramble Cay, for at that distance North of East or Anchor Cays there would have been nearly 40 fathoms.

At noon we obtained the latitude by double altitude. My usual practice is to take a double altitude each day, and it generally agrees with the meridian altitude within a mile. The latitude by double al-

titude at six minutes past noon was 9° 20′ 45″ S., and since taking the morning sights we had run a true course of S.W.$\frac{1}{2}$S. 19 miles (the tide was setting the last of the flood to the westward); hence the latitude of the ship at 9h. 40m. a.m., when the sights were taken, was 9° 6′ 45″ S., and Bramble Cay being about a mile or a mile and a half South of her, would be in 9° 8′ S. I think that 9° 13′ S. must be a misprint in Raper's work, as no chart agrees with him; still it is in his latest edition, which my chief officer had. The longitude of Bramble Cay by these sights, using the Sydney error to my chronometers, was 144° 0′ E. Three days afterwards I took sights with the artificial horizon on Booby Island; two sets of five sights each were taken, and they agreed to the tenth of a second. These sights, compared with those taken near Bramble Cay made it exactly 2° E. of Booby Island; when giving a new rate to my chronometers, I allowed the longitude of Booby Island to be 141° 56′ E. The mean of good ☉ and ☾ lunars, (using the method I have given in the *Nautical Magazine* for February, 1850, and am about to explain more fully in a pamphlet devoted to that subject,) gave an error for the best chronometer (Dent, 1759) which was eight seconds more than that found by the sights on Booby Island, and a daily rate eight tenths of a second more than that obtained by comparing the Sydney sights with those taken on Booby Island; this lunar error gives the longitude of Bramble Cay 143° 58′ E. On the 20th the mean of ✱ and ☾ lunars gave an error seven seconds less than that obtained on Booby Island, and a daily rate of one tenth of a second more than that obtained by comparing the Sydney and Booby Island sights; this error gives the longitude of Bramble Cay 143° 54½′ E. Hence we have the following longitudes for Bramble Cay by independent means:—

Allowing it to be 2° E. of Booby Island	By chart No. 2	143° 53′	E.
	By chart No. 4	143 55½	
By chart No. 3		143 56½	
By the Sydney error of the chronometer, Dent, 1759 .		144 0	
By the ☉ and ☽ error of „ „ „ .		143 58	
By the ✱ and ☽ error of „ „ „ .		143 54½	

Now the mean of all these is 143° 56′ 15″ E. and chart No. 3 gives it in lat. 9° 7¾′ S. and long. 143° 56½′ E., which I think may be safely taken as sufficiently correct for all purposes of navigation.

I have been thus particular because Bramble Cay certainly is the best mark for this entrance and any doubt as to its position is very perplexing.

2h. p.m., Stephens Island, East;—a high, beautifully-wooded island, from which many natives ran down to the beach, waving to us. 2h. 40m. p.m., Campbell Island, E.$\frac{1}{2}$N.; Keats Island, E.b.S. 3h. 45m. p.m., Marsden Island, S.S.E. 5h. p.m., Rennel Island, East. 6h. p.m., shortened sail and anchored with the port bower in 15 fathoms, mud, with 60 fathoms of cable in the hawse; furled sails. Arden Island bore S.E.b.E. and the tide was running strongly to the westward, which prevented our getting as near to Arden Island as I wished. During the night it blew fresh from the S.E.

24th.—Wind S.E.b.E.; a fresh breeze. Between midnight and 1h. a.m., swung to the ebb or easterly tide, and were riding to that when, at 5h. 30m. a.m. we commenced shortening in. The time at which the tide turns should be carefully noticed the first night at anchor. Between six and seven we swung to the flood, and at 8h. a.m. 'wayed and made sail with our head to the N.E. When the anchor was secure and all sail set we tacked to the S.W.; but, finding that the westerly set prevented our laying up for the island marked (Village) on the chart, and drove us quickly over towards the Dungeness Reef, tacked and stood to the N.E. until noon, when Rennel Island bore N.E.b.E., and Arden Island S.¾W. The strength of the westerly tide being over, we tacked and passed close to Arden Island, making the course we wished. During the flood tide the water was very much discoloured in patches, and though it was not caused by any change in the soundings it made Dungeness Reef more indistinct than it otherwise would have been. 2h. 30m. p.m., passed Cocoa-nut Island at the distance of a short mile, as I wished to weather the grassy sand-bank. Abreast of Cocoa-nut Island we had a few casts of 5 fathoms. On referring to chart No. 3, it will be noticed that no soundings are given very close to the island. However, I was on the foretopsail-yard as we passed and saw no spots of discoloured water, or anything to indicate danger. We saw natives on most of these islands; they waved green boughs and held up cocoa-nuts to us, and we heard them shouting as we passed Cocoa-nut Island:—this may be a guide as to our distance from it when the above soundings were taken. 4h. p.m., grassy sand-bank, N.W.b.N. 4h. 50m., sailed close round the East end of Sue Rock, and brought up in 10 fathoms, smooth water, under the lee of Poll Rock; veered to 50 fathoms in the hawse and furled sails: Poll Rock, S.E.b.E.; Sue Rock, North; Saddle Island, N.W.b.N.; Mount Augustus, W.b.N.½N.; Nine-pin Rock, W.b.N. I see no difference between the Poll and Sue Rocks and the other low islands in these straits. We were surprised to find an island where a rock is marked on the chart, and as they are useful places to anchor off, I strongly recommend their being called islands on the charts.

25th.—6h. a.m.—We landed on what I shall for the future call Poll "Island," and found native huts, a canoe, an idol, some reddish brown and white dogs—miserably thin, numbers of white pigeons, and some other land birds. The pigeons had fed on a red hard fruit, about the size and shape of a damson, which grew plentifully on a glossy-leaved tree of the size of a pear tree; it had a bitter, unpleasant flavour like a horse-chesnut. There were also several skulls of turtle collected in a heap, like those described by Mr. Jukes, in the *Voyage of H.M.S. "Fly,"* as marking native graves. We saw no natives, but they may have been in the bush, which is almost impenetrable in some places. Whilst we were on shore a native stood on the beach of Sue Island waving a green bow, their sign of peaceable intentions. We did not disturb the idol nor shoot the dogs, not wishing to give them an ill feeling towards ships passing, and left a small bag of ship's

biscuit in one of their huts. 9h. 30m. a.m., wind S.E.; a fresh trade and cloudy weather; 'wayed with the flood tide running strong to the westward. Passed about half a mile to windward of Harvey Rocks, the sea discoloured in patches, but there was no difference in the soundings; it was requisite to make great allowance for the tide to the westward. After passing Harvey Rocks we soon made out Double Island from the fore-top-mast-head. Passed in mid-channel between it and Strait Island at 1h. p.m. and proceeded through the Prince of Wales Channel. Found Hammond Rock an excellent mark. Passed near the wreck of a steamer on the Ipili Reef, which we afterwards learnt was the *Phœnix*, from Sydney. It is very useful, as she is on a part where no rocks are above water; I think that I saw her nine foot mark just awash. The tide to the westward was running strongly past her. After passing the Ipili Reef, hauled up well towards Goode Island, as we could see nothing of the Sunk Reefs marked in chart No. 4 to the westward of the Ipili. A buoy or other mark on these reefs would make the Prince of Wales Channel very safe; probably by hauling up to avoid these unseen dangers the *Phœnix* was lost. The White Rocks were distinctly visible from our deck when five miles distant, still the chart No. 4 has one fathom as the least water on them; this error has been already mentioned by Captain Mackenzie in the *Nautical Magazine* for 1852. 5h. 30m. p.m., anchored under the lee of Booby Island, as I wished to examine the post-office for any notice of the crew of the wrecked steamer, and to obtain sights for rating my chronometers and fixing the relative position of Bramble Cay. When at anchor, found that the tide was running 1½ knots to the E.N.E.

26th.—8h. 30m. a.m.—Landed on Booby Island. Left a few fresh stores in the cave, and saw others there; there were some casks of water, but it seemed more scarce than food. Any one reading this before passing through the Straits, would do well to prepare some water and a post office. We had some difficulty in finding the latter, which consisted of a rusty preserved potato tin (with a bung so much dried that it had fallen in) encircled on the S.E. side by a wall of loose stones a few feet high. It was on the top of the island, and several yards from the flag-staff. Captain Clarkson, of the barque *Alverton*, had supplied a small record-book, but the establishment is still capable of great improvement. I copied the notices that had been entered in the book, and collected all the scraps of loose paper which I thought legible; from which we derived the following information:—

	Anchored at Booby Island.
Barque *Colinsburgh*, of Newcastle, Capt. Charles Hinds, bound to Batavia. Saw three wrecks. Left Melbourne April 23rd.	1855. May 11th.
Ship *Janet*, Capt. James Chalmers, bound to Calcutta. Saw a brig on shore to the northward of Raine Islet. Left Sydney May 29th	June 24th.
Brigantine *Robert and Betsey*, Capt. J. P. Jamieson. Entered by Yule Reef on the 5th of June. Saw a barque on shore on the S.W. part of the Great Detached Reef, stripped, bilged, and foremast gone.	June 8th.

	Anchored at Booby Island.
Schooner *Coila*, in company, bound to Batavia. . .	June 8th.
Brig *Strive*, Capt. John Cooke, bound to the Mauritius. Left Melbourne June 11th.	June 30th.
Brig *Richard and William*, Capt. John Brigstock. Saw a large ship on shore on the middle of the Great Detached Reef, on her beam ends, with all her sails set; another wreck, without masts, on the North end of the reef; and a brig to the northward of Raine Islet. Left Sydney July 5th. . .	July 25th.
Ship *Rose of Sharon*, bound for Calcutta, and barque *Gipsey Queen*, bound for Bombay. Entered by Raine Islet. Boarded the steamer *Phœnix*, on shore on the Ipili Reef, stripped and a total wreck. Left Sydney July 7th. . . .	July 23rd.
Barque *Sultana*, Capt. William Tapper, bound for Brest, with the crew of the *Aventure*, French man-of-war. Left New Caledonia July 26th..	Aug. 7th.
Barque *Alverton*, Capt. Clarkson, brig *Zorolan*, Capt. Uitermark, and the *Revensorao*, Capt. Schoot, bound to Batavia. From Melbourne.	Aug. 23rd.
Ship *Marie Gabrielle*, of Nantes, Capt. Doly, bound to Samarang. From Sydney.	Sept. 9th.

Having now completed the passage through Torres Straits, I will make a few remarks upon it before continuing with our route through the Arafûra Sea. Not having passed through before, I am not in a position to compare the different entrances; it is human nature to "praise the bridge which has carried us safe over," and large allowance should usually be made on this account. The *Nautical Magazine* has high recommendations for most of the routes possible.

The great difference between Bligh and Raine Islet Entrance seems to be that in the former you have soundings and, if you over-run your distance, good anchoring ground; in the latter neither of these are available, and a strong current is helping you into danger. I should have been very sorry to have been running for Raine Islet with such weather as we had on making the Eastern Fields. I suppose that the Inner Passage is equally safe, but it requires a ship to anchor more frequently and would take more time; at the season we left Sydney time was of great importance. It would not be wise for ships to keep on the 'way during the night after passing Stephens Island, for the tide seemed to set nearly at right angles to the course from it to Double Island; our having to tack off Dungeness Reef proves that great caution is required. The flood tide discoloured the whole strait so much that the officer at the mast-head could not see any difference between the colour of Dungeness Reef and the part in which we were sailing. It was only by looking carefully, and knowing the position of the reef, that I could see it and distinguish the part marked four fathoms, mud, between two and three miles distant; and it would be difficult to shape a correct course from Cocoa-nut Island to the grassy sand-bank in the night with a strong tide running, in fact it would be dangerous to attempt it. But why should a ship keep on the 'way here during the night, with safe anchorage everywhere at hand, and the straits so short that it will hardly ever be requisite to anchor more

than twice? I think it only fair to give these cautions, and to say that with ordinary precaution these straits should be navigated with few, if any, losses. It has been said that ships aiming for one of the openings in the barrier frequently find circumstances so much against them that the most judicious management cannot save them, and I believe this to be the case; but think that the perusal of our passage will prove that this can very rarely, if ever, happen with Bligh Entrance. In Bligh Entrance the risk is ordinary, in the others extraordinary.

Chart No. 3 seemed to be quite correct, so far as I was able to judge, except in calling the three sisters Bet, Sue, and Poll rocks instead of islands. Captain Blackwood calls them low woody islands in his account of this passage in the *Nautical Magazine*, vol. ix., new series, p. 693. It was by sending for this book up to the mast-head that I was able to make out what the islands were that we were fast approaching. I think that the chart ought to call them islands, or at least where they are called the Three Sisters the remark should be continued by saying "low wooded islands." We did not see Bet, but, according to Captain Blackwood, it is also a low woody island.

I cannot say too much in favour of Massey's Patent Lead, which we found very true. All seamen know the great difficulty of fixing a ship's relative position with the ground below her so as to get good soundings; if the wind and sea do not move her, most likely a current will. Now by allowing from ten to twenty fathoms more than I expected to have soundings, dropping half in the fore-channels and half in the main, we struck the ground in forty to fifty fathoms, going five knots.

26th.—10h. 30m. a.m.—Returned from taking sights on Booby Island, 'wayed and proceeded on our voyage through the Arafûra Sea. 1h. 30m. p.m., Booby Island, E.b.N.$\frac{1}{2}$N., about nine miles distant; wind N.E.; weather fine and sea smooth. 8h. p.m., sounded, 15 fathoms, coarse gravel and sand. 10h. p.m., wind very variable from East to S.W., with passing squalls. The route I chose was to pass North of the Money Shoal, and then to keep a little South of 10° up to the S.E. coast of Timor.

27th.—Wind S.E.b.E.; sea smooth; course and distance S. 89° W. 141$\frac{1}{2}$ miles; lat. 10° 39′ S., long. 139° 32′ E.; current N. 85° W. 22 miles; variation 4° 19′ E. 3h. a.m., sounded, 27 fathoms, coarse sand and gravel. 4h. a.m., sounded 30 fathoms, rock. 8h. p.m., sounded, 38 fathoms, green mud. Midnight, sounded, 33 fathoms, green mud. At noon this day the sea was all shades of yellow, blue, and green, caused by what I suppose to be fish spawn; it had a fishy smell, and its shape, when seen through a small microscope was like that of grass seed. The early part of this twenty-four hours we steered W.b.S. to avoid a shoal on chart No. 1, W.$\frac{1}{2}$N., 55 miles from Booby Island.

28th.—Wind E.b.S. to S.E.; sea smooth and green; course and distance N. 82° W. 119 miles; lat. 10° 23′ S., long. 137° 32′ E.; current N. 85° W. 12 miles; variation 3° 48′ E. 1h. p.m., sounded, 29 fathoms, green mud and shell. 4h. p.m., 30 fathoms, green mud and

shell. 8h. p.m., 34 fathoms, no ground. 11h. 30m. p.m., 37 fathoms, green mud.

29th.—Wind S.E. to E.S.E.; sea smooth and green; course and distance, N. 80° W., 116 miles; lat. 10° 4′ S., long. 135° 36′ E.; current N. 71° W. 5 miles; variation 3½° E. Noon, sounded, 38 fathoms, green mud. 8h. p.m., 38 fathoms, green mud. Much fish spawn was seen again to-day; in some parts it was quite dark enough to be mistaken for a sand-bank; it floated in lines pointing in the direction of the wind.

30th.—Wind N.E. to East; sea smooth, but not so green as before; course and distance N. 86° W. 110 miles; lat. 9° 57′ S., long. 133° 45′ E.; current E. 15 miles; variation 3° 19′ E. Noon, sounded, 42 fathoms, green mud. 8h. p.m, 42 fathoms, no ground. Midnight, 42 fathoms, no ground.

Oct. 1st.—Wind S.E. to N.E.; sea smooth; course and distance S. 88° W. 117 miles; lat. 10° 1½′ S., long. 131° 46′ E.; current S. 60° W. 9 miles; variation 2° 30′ E. Noon, sounded, 48 fathoms, no ground. 3h. p.m., 48 fathoms, no ground;—there were strong ripplings on the water. 8h. p.m., lightning to the southward; it seemed to radiate from a point or shine through a hole in a cloud, I could not say which.

2nd.—Wind S.S.E. to East; sea smooth; course and distance S. 86½° W. 106½ miles; lat. 10° 7½′ S., long. 129° 58′ E.; current N. 73° W. 8 miles; variation 2° 23′ E. 2h. a.m., sounded, 78 fathoms, rock, shell, and coarse gravel. 1h. p.m., 55 fathoms, sand and shell. 8h. p.m., 52 fathoms, coral and shell. 11h. 30m. p.m., 43 fathoms, coarse sand and shells. During the afternoon and evening there were strong ripplings on the water.

3rd.—Wind S.E. to S.S.E.; sea smooth and slightly confused; course and distance S. 86° W. 108 miles; lat. 10° 15′ S., long. 128° 9′ E.; current N. 5° E. 7 miles; variation 1° 47′ E. Noon, sounded, 43 fathoms, green mud, coral, and sand. 8h. p.m., 47 fathoms, sand and coral. This day we passed several cuttle-fish and water-snakes.

4th.—Wind E.N.E. to E.S.E.; sea smooth and a slight easterly swell; course and distance S. 86° W. 76 miles; lat. 10° 21′ S., long. 126° 52′ E.; current S. 77° W. 6½ miles; variation 1° 47′ E. Noon, sounded, 60 fathoms, coral, sand, and shell. 8h. p.m., 90 fathoms, no ground. Midnight, 60 fathoms, no ground. This day we passed numerous small crabs and cuttle-fish, and saw a land bird like a sand-piper.

5th.—Wind variable from the eastward; a slight swell from the eastward; course and distance S. 82° W. 52 miles; lat. 10° 29′ S., long. 125° 59′ E.; current S. 56° W. 13½ miles; variation 2° 11′ E. 5h. p.m., sounded, 65 fathoms, no ground. There was much fish-spawn seen this day.

6th.—Wind N.N.E. in the early morning, being, as I suppose, influenced by the land of Timor; in the day it drew round to the eastward, and as we passed through the Straits of Rotti (if the passage between the islands of Timor and Lando is to be so called) the wind

kept shifting suddenly from N.E. to S.E. A slight S.W. swell with numerous white heads as we passed through the straits; course and distance N. 87° E. 116½ miles; lat. 10° 23′ S., long. 124° 1′ E.; current S. 66° W. 28 miles; variation 1° 20′ E. At daylight saw the fine mountainous outline of Timor. 9h. a.m., it bore from W.¼N. to N.E.¼N. The wind gradually freshened into a strong breeze as we drew near the straits, and helped us along at the rate of nine or ten miles per hour. At 4h. 45m. p.m. the N.E. point of Lando shut in the N.E. point of Rotti, bearing S.¼W., and at the same time the S.W. point of Timor bore N.½E.: this we found a good mark as to our progress through the straits. There were long reefs extending from the South and S.W. points of Timor. The only natives we saw were on one of these reefs, apparently gathering something from the sand. Cocoa-nut trees abounded, even on the tops of the hills, and we saw a well-formed wooden fence, and some cattle grazing, but could see no houses; I suppose they were in the shade of some of the numerous trees we saw in all parts.

The chart we used was "Islands East of Java, from Baly to Timor, by Lieut. H. D. A. Smits, Dutch Royal Navy." In it the southern part of the Island of Semao is incomplete; it, and the island S.W. of it, appeared to me to extend as far South as Timor. The island was low and, so far as I could distinguish, had a reef extending from it; still there was a clear space of at least five miles between this island and the small islet near Nakasa Point on Lando. The wind helped us through the straits before the sun set, and we hauled up W.S.W. to pass between Rotti and Savou; but at 7h. 45m. p.m. we were caught aback by the wind from W.S.W., so we determined to stand to the westward, when the easterly wind soon returned, and at daylight of the 7th we hauled up S.b.W. and passed to windward of Savou. This baffling wind would not have been experienced had we passed to the eastward (? westward) of Rotti; but the hydrographical world seems to be in doubt as to the position of Sahul Bank and the amount of danger there would be in trying this route. I could not learn that any danger existed above water North of 11° 30′ S.

7th.—Wind E.S.E. to S.E.b.E.; a slight S.W. swell; course and distance S. 80½° W. 124 miles; lat. 10° 43′ S., long. 121° 56′ E.; current S. 79° E. 7 miles; variation 52′ E. This day we passed along the eastern side of Savou (the island so highly spoken of by Captain Cook) at a distance of about three miles. It abounded with cocoa-nut trees, and we saw several sheds near the beach, in some of which I think I distinguished canoes. At the S.E. point of the island we saw two well-constructed villages; the houses were long and well thatched, and seemed to be on cleared ground with ornamental trees near them. I saw a man riding fast on horseback, and a horse with some cattle feeding on the pasture land, of which there appeared to be a large proportion.

8th.—Wind E.S.E. to S.b.E.; a slight westerly swell; course and distance S. 74° W. 121 miles; lat. 11° 18′ S., long. 120° E.; current

N. 54° W. 4 miles; variation 1° 1′ E. Once more we considered ourselves in the open sea, and stowed our anchors.

I have little to say on our passage through the Arafûra Sea. Most of the reported dangers are under water, and we found none of them. It will be seen that we had soundings of 15 fathoms about fifty miles to the westward of Booby Island; 27 fathoms forty miles further to the West; and 38 fathoms seventy-five miles further; then the depth decreased to 29 fathoms at the spot where we passed the line between Wessel Island and Frederic Henry Island: from this point it gradually increased again, so that it is probable that a line of less soundings connects these islands. We averaged 109 miles per diem through this sea, which quite equalled my expectations, and were in 11° S., on the meridian of Cape Leuwin on our thirty-third day from Sydney. Thence we gradually increased our southing until we were in 13° 51′ S. lat., where we had a good S.E. trade. On the 18th October we were in 10° S. lat. and 90° E. long.; and between the 25th and 26th we crossed the line, in 87° E. On the 5th of November we anchored at the Sandheads, the lower floating light bearing E.b.S.¼S., about 4 miles, and the lower floating light buoy E.¼S., about 3 miles. In this position the latitude and longitude by the mean of several observations, which nearly agreed, was 21° 4′ N. lat. and 88° 9′ E. long.: hence the buoy is in 21° 4′ N. lat. and 88° 12′ E. long.; and the light-vessel is in 21° 3′ N. lat. and 88° 13′ E. long. This agrees with Raper's position; while Horsburgh's chart of the Bay of Bengal should be corrected, as it places the light-vessel in 88° 25′ E. long. In October, 1848, I made the lower floating light buoy to be in 88° 12′ E. long. The above longitude is by lunar rates, which by ✱ and ☾ gave the same error to seven seconds, and exactly the same rate as by ☉ and ☾. One of my chronometers had increased its daily rate thirty-nine seconds during the passage from Sydney, and was daily changing, still by lunar rates it gave the longitude to seventeen miles.

The length of our passage from Sydney was fifty-nine days, with fine weather the whole way; so that the first week in September does not seem too late to leave Sydney for India viâ Torres Straits.

[In the foregoing paper, Captain Toynbee has made some important observations on our charts, and has displayed much good judgment in safely conducting his ship through an intricate navigation, with the assistance of the excellent surveys from which they are constructed. But we may first observe, with reference to those enumerated by him, that No. 1 is one of an old date, although completed from time to time with new information,—such as that, for instance, of the sandy island to which he alludes near Bellona Shoals, mentioned in page 170. With reference also to the Lahou Shoal, mentioned in the following page, this old chart gives sufficient indication of danger for a ship to give it a wide berth; but if the index chart of "the N.E. coast of Australia and its barrier reefs" be referred to (No. 2385) this shoal is more conspicuous still and the *road* is plainly indicated by the nu-

merous tracks to the eastward of it;—and this is a chart which no Australian navigator should be without. We may next observe that the chart No. 2 of Captain Toynbee's list has been cancelled in consequence of the very discrepancies to which he has alluded between it and No. 3; and allowance must here be made for the progress of hydrography, that same chart, No. 2, having been constructed about thirty-six years ago and being part of the original general survey of the coast, while the former is part of a special survey, naturally obtaining more care. The remarks of Captain Toynbee on the distinction between "rocks" and islands are useful, as well as his extracts from the *Notice Book* on Booby Island, some of which we have received on some former occasions, but could wish they had been oftener sent to us. On the whole, we quite agree with him in the superiority of Bligh Entrance to Torres Strait, to which we have perhaps often alluded in our pages. We are glad to find that they have been of service to him in the novel position in which they were used by him, at the mast-head of his ship, while sailing over the ground which they described.—ED. *N. M.*]

THE CHINCHA ISLANDS.—*From a Correspondent recently returned from Callao.*

Most people have heard of the fertilising virtues of guano, the excrement of sea-fowl, tribes of which have until recently held undisturbed possession of certain bold rocks for countless ages—probably from the creation; and merchants, seamen, and dealers know it as an article of highly profitable commerce; but few probably are aware that the acquisition of this deposit, which enriches our lands and fills the purses of our traders, entails an amount of misery and suffering on a portion of our fellow creatures, the relation of which, if not respectably attested, would be treated as a fiction.

In the first place, for the information of those not hitherto interested in their locality, it may be stated that the Chincha Isles, the depositories of this manure, are three huge rocks, situated about 100 miles from Callao, the seaport of Lima, chief town of Peru. And it is a curious subject of reflection that a country once famous for reputed mineral and metallic riches should in the present age derive no inconsiderable revenue from an article so mean in its nature, yet so prolific of wealth;—such are the ordinances of a provident Creator! Yet, like all other sources of riches, this has its concomitant evils, and these of a grave and lamentable magnitude.

These islands, covered to a great depth with guano, are perfectly barren, from the excessive quantity becoming destructive of vegetation. Those employed in transporting the manure to the loading places are Chinese, whilst negroes and the lowest of the mixed races of Callao and Lima are employed in stowing the cargoes. The Chinese,

who, under specious promises, are inveigled to the islands for a term of three years, seldom live to complete the term of their slavery, for the nauseous dust and the overpowering effluvia of ammonia in which they work are of themselves rapidly destructive of life. Sometimes they embark in China, and often at Melbourne, where they find nothing to do, and it is well known that shippers receive so much per head for every Chinese they land at the Chinchas. There they are detained by an armed force, hutted in the most miserable manner, fed only after performing a certain amount of labour, and subject to a treatment, of which some idea may be gathered from the following facts:—

Whilst we were at the islands a poor Chinaman threw himself off the rocks and was dashed to pieces rather than submit to the tortures that awaited him for having accidentally broken some tackle he was using in his course of labour; and we can form a good notion of the severity of the punishment they are subjected to by the horrible howling constantly heard on the islands. The following are some that are constantly inflicted on the labourers by order of the Commandant, for the most trivial offences, under the eyes of Englishmen and other reputed civilised people—and certainly nothing more devilish, nothing more ingenious could be invented—viz., hanging in ropes and chains round the waist, and in other ways, from sunrise to sunset, without food during that period, one, two, or more days, in proportion to the magnitude of the offence; and lashing to half-tide buoys, subject to exposure to the water, in addition to heat and cold. These punishments we saw inflicted in several instances, and it was reported that one man, whom we saw suspended daily for fully a week, had already suffered a fortnight previously to our arrival. We were also shown a refined instrument of torture, combining the fabled labour of the Danaides, with the penalty of death staring the culprit in the face if he failed, from exhaustion or otherwise, in performing the task allotted him. This was a lighter with a large hole in the bottom; in which the offender was fastened, with a bucket to save his life by incessant baling.

We were credibly informed that one of the punishments inflicted on the Chinese on the islands is that of placing them on a small point of rock, to which they are chained, so small that sleep or change of position must result in their falling off, to hang in their manacles, severely bruised perhaps, until the period of relief.

But will it be believed that an English Captain whilst we were there surrendered a negro, whom we well knew, to the mercies of Peruvian Lynch law after being flogged, and that he was hung in a bow-line on the Commandant's hulk for three days successively, and this for merely swearing at "his honour?" I have seen on this hulk as many as eight or ten at a time; some swung to the davits, and others, one above another, on masts temporarily rigged up. It is not long since that British and other seamen were subject to the same treatment, and a case is recorded of one who disappeared from the buoy, and then it was time for interference.

Does it not seem strange that civilized nations, banded together to suppress slavery, cannot, by remonstrance or force, with a trifling power like Peru, put an end to such inhuman practices at these islands? for they do not obtain at Callao. And if the voluntary slavery entered into by the deluded Chinese cannot be prevented, surely something may be done by those who profit by their labours to alleviate their sufferings.

No doubt those who have actually been on these islands could tell a heartrending tale of the treatment of the poor creatures that would exceed in horror what is here related. It is reported that the islands and their produce are to be sold. We hope they will fall into the hands of people more humane than their present possessors, and that such cruelties as theirs will be no more heard of.

Wendover, Jan. 29th.

Sir,—You published yesterday a communication upon the subject of the cruelties perpetrated upon the labourers employed at the Chincha Islands, Peru.

Referring principally to the Chinese labourers employed, you allege that among some similar punishments it is common for the men engaged there to be chained upon a buoy in the open sea, or anchored off the land in a boat with a hole in the bottom; and that many poor fellows upon the islands have destroyed themselves in despair. You also state that labourers there have often died from the deleterious effects of the guano.

I am able to confirm these statements. Two years since I was at the Chinchas. Ten years' residence in the South Pacific, and no little time passed upon the "blue water" there, had made me familiar with many harsh practices. The sad stories, however, which were whispered about among the crews of our ships lying at the islands respecting their own men—who at that time were frequently punished in the way narrated by your correspondent—led me to inquire carefully into the truth of such reports.

I give you one case. A sailor from the English barque *M*———, upon some dispute with his Captain, was handed over to the Commandant of the island for punishment, and was, by his direction, taken out in a boat, chained upon a buoy, and left there. The following day the unfortunate man was discovered to have slipped off the buoy, and disappeared—the calm waters of the Pacific flowed silently over the friendless mariner!

I am, &c.,

A New Zealand Settler.

Sir,—I hope that some sincere lover of freedom and mercy may be found in our Parliament to advocate the cause of the helpless and miserable Chinese in the Chincha Islands, and that Government may

have the honour and happiness of rescuing them from the tortures and tyranny of their barbarous employers. The country will gladly support such a sacred mission, and it is its bounden duty to do so.

I am, &c.,

A VOICE FOR THE OPPRESSED.

Daily News.

[The foregoing extracts from the *Daily News* of January and February last appear to authenticate some disgraceful proceedings on the coast of Peru that are unbecoming to any civilized country in these days.—ED.]

THE ATLANTIC OCEAN CONSIDERED WITH REFERENCE TO THE WANTS OF THE SEAMAN.

(Continued from p. 71.)

General Currents.

The currents of the Atlantic are of two kinds: one occasioned by tides, and observed only at short distances from the coast; the other by causes differently explained, but almost constant in their direction, and deviating only near those coasts which impede their progress.

These last, called general currents, are divided into cold and warm currents, according to the waters of which they are composed. The result of all observations on currents may be thus expressed:—cold currents flow from the poles towards the equator on the western coasts of continents; currents setting from East to West flow along the equator; warm currents flowing from the equator towards the poles pass along the eastern shores of great continents. Thus we find a cold current setting from North to South on the western coasts of Europe and the N.W. coast of Africa; a cold current from South to North on the S.W. coast of the same continent. But, on the contrary, on the coast of Brazil a warm current is found flowing from North to South; then a warm current, which after having circulated through the Gulf of Mexico leaves it by the Bahamas, and flows along the coast of the United States, being known by the name of the Gulf Stream.

Such are the general currents of that vast basin, called the Atlantic Ocean, formed by an immense longitudinal valley, separating the European and African continents from that of America. At present we will confine ourselves to the notice of these currents.

Philosophers differ as to the originating causes of these general currents. Some attribute them to the action of the trade winds; while the greater number admit that, like the winds, they are produced by the sun's heat, and by the rotatory motion of the earth. Thus, they say in consequence of this movement, and the passage of the polar waters towards the equator, a current, apparently directed

from East to West, must be formed at the equator, according to the same that takes place in the atmosphere and produced by the same cause.

Now, a constant current must necessarily produce an attraction of the adjacent waters towards one of its extremes, say the eastern, and on the contrary a lateral displacement at the opposite one, the western; or, in other words, admit a flow of the polar waters towards the equator on the western coasts of the great equatorial continents, then on the contrary a flow towards the poles on the eastern sides of the continents must ensue. We may further observe that the equatorial waters as they flow onwards for the poles, on account of the greater velocity of rotation at the equator, as well as on account of the flow of the polar waters towards the equator, should follow a certain direction easterly from the West, like the Gulf Stream in the North Atlantic and the current of the South Atlantic flowing from the coast of Brazil towards that of Africa.

Equatorial, polar, and tropical current.—We call the equatorial current that which flows from East to West at the equator. We shall distinguish by the name of *polar currents* those flowing from the poles towards the equator on the western coasts of the continents; and by the name of *tropical currents* those flowing from the equator towards the poles on the eastern coasts of the continents. The velocity of these currents varies in different parts of their courses; the greatest that has been observed is from 60 to 120 miles in twenty-four hours. Their general temperature is higher or lower than that of the sea through which they pass according to that of the climate where they originate. We shall now allude to the direction and limits of the Atlantic currents, showing their mean velocities and temperatures; and first those of the equatorial current.

Equatorial current.—The equatorial current commences on the West coast of Africa in 5·3° or 5·8° E. of Greenwich. It passes by the Isle of Anno-Bon and continues westward parallel to the equator between 1° and 1° 30′ N. lat. and 2° or 3° S. It soon extends itself northward and southward, and although it hardly passes north of the parallel of latitude above-mentioned, it ranges abreast of Cape Palmas between 3° 30′ and 5° S. lat. For the space of a thousand miles, nearly as far as 12° or 14° W., along the equator in the Gulf of Guinea it runs by the side of another current taking the opposite direction from East to West, called the Guinea current. This part of the sea then presents the remarkable phenomenon of two currents adjacent to each other running with great velocity in opposite directions, and having a difference of temperature of about seven degrees; so that imagining a vessel to be in either of these currents sailing eastward in the Gulf of Guinea, her progress would be accelerated or retarded forty or fifty miles a day, that being the rapidity of the two currents in this part. We shall hereafter return to this important fact.

Advancing westward on each side of the equator, the equatorial current in 20° or 21° W. throws itself into the northern hemisphere

under the name of the N.W. branch of the equatorial current, reaching to 20° N. lat., extending itself gradually, and sometimes is even felt as far as 30° N. At this point also it extends more southerly, and thus covers a space of three hundred miles, nearly reaching to Cape St. Roque, where it becomes divided into two distinct branches. The northern branch, which is the largest, forms the Guinea current, and reaches to the Antilles. The southern branch, running parallel to the coast of South America, and extending far out to sea, forms the Brazil current.

Extent of the equatorial current.—The length of the equatorial current from the coast of Africa to Cape St. Roque is 2,500 miles, and to the Antilles 4,000 miles. Its breadth near its origin is 160 miles; abreast of Cape Palmas 360 miles; and it runs for 450 miles before it divides.

Its velocity.—This current has most velocity in summer and least in winter. Between the meridians of 5° E. and 8° W. long. its mean rate is from 25 to 30 miles a day. Between 8° and 14° W. long., towards the end of June and the beginning of July, it varies from 44 to 75 miles. Between 14° and 21° W. long., from 45 to 60. Its mean velocity may then be estimated at 46 miles in twenty-four hours.

Temperature.—The mean temperature of its waters is 73°, or about 4° or 5° above that of the ocean in different seasons.

The N.W. branch of the equatorial current, flowing first to N.W., assumes afterwards a more northerly direction. This current is always felt in 18° N. lat., and sometimes even as far as 30°. It is lost in the current produced by the N.E. trade, to which it appears to give a N.W. direction, besides increasing its rapidity. The width of this current at the point of separation is nearly 200 miles, and further North 300 miles. Its velocity up to 10° N. lat. is 20 or 24 miles a day; from that it gradually decreases. This current is important to ships passing to the northward from the southern hemisphere.

The general set of the waters towards the West in the zone adjacent to the equator, here alluded to, cannot be doubted; nevertheless, several navigators have asserted that in the same zone, and for several days, they have experienced currents flowing to East; amongst others the commanders of the *Bayadère*, the *Zealous*, and the *Clorinde*, who have crossed the easterly current setting at a rate varying from 0·3′ to 1·0′ per hour.

These cases, we conceive, may be regarded as exceptions, and the currents as eddies or counter-currents on the limits of the general current. Some authors, however, mention the existence of a current running from West to East between 8° and 10° N. lat. It is felt first about 53° W. long., and will reach as far as 26° W. long. On the first meridian its general direction is between North and N.N.E., and in proportion as it advances towards East it increases in breadth. It also increases in velocity till it reaches to about 38° W. long., and its direction becomes more easterly. Beyond the meridian of 38° its velocity decreases, while it becomes more extended, and it can hardly

reach the longitude of 26° W. We recommend this current to the examination of seamen.

We have hitherto alluded to secondary currents, which philosophers attribute to winds blowing in the same direction for a longer or shorter period. The secondary currents which owe their origin to winds as constant as the trade, are constant themselves, and flow in the same direction with nearly uniform strength. They are found in the Atlantic between the tropics, but are only considered regular between 23° N. lat. and 9° S. lat., the space in which the trade winds blow regularly, and they attain a mean velocity of 9 or 10 miles in twenty-four hours. The currents caused by the prevailing winds are neither constant in their direction nor velocity; they are found both North and South of the 32nd degree of latitude.

The Guiana current.—The Guiana current, which is a continuation of the equatorial current, runs along the low coast of Guiana towards the Isle of Trinidad. About the equator it is crossed by the waters of the Amazon, a river which, receiving an immense volume of water from tributaries, forms a counter-current to it, producing considerable overfalls. This, however, owing to the impetuosity of the fresh water, does not influence its direction. The river waters and those of the Guiana current do not intermingle with each other; for after crossing that current the river water is recognised at 300 miles from its mouth.

A little South of Trinidad the river Orinoco discharges a considerable quantity of water into the equatorial current, mingling with it; these two directions forming a sharp angle, the waters easily combine with each other, and the rapidity of the current is thus considerably augmented. It then enters the sea of the Antilles by the strait formed on one side by the Isle of Trinidad and on the other by that of Martinique; in which space are the islands of St. Vincent, St. Lucia, Grenada, Barbados, and Tobago.

Current of the Carribbean Sea and of the Gulf of Mexico.—In the Carribbean Sea no constant currents have been observed; nevertheless, if in the midst of this sea and about the islands which bound it on the East and North variable currents are found, although generally directed towards West, yet along the coast the general current still prevails, following the direction of the coast at a variable distance. Thus, it flows from East to West from the Isle of Trinidad to Cape Agullhas; thence it proceeds W.N.W. and N.W. as far as Cape Catoche, crossing the Gulfs of Darien and Nicaragua and the Bay of Honduras; then it takes a complete circuit of the Gulf of Mexico. Thus, after reaching Cape Catoche it turns westward towards the shores of Campeache, along the coast of Yucatan; it thence continues towards Vera Cruz, changes its direction and flows northwards as far as the Rio del Norte and even beyond that river; it flows afterwards N.E. till it meets the waters of the Mississipi; then takes a S.E. direction towards the Tortugas. At this point its direction becomes East, N.E., and, lastly, North, following the Florida Chan-

nel, and discharging a second branch across the Bahama Islands that loses itself in the Atlantic Ocean.

In the middle of the Gulf of Mexico the waters do not appear to follow any particular course, as is the case in the Carribbean Sea, and they most frequently depend, as to strength and duration, on the prevailing winds.

The temperature of the seas of this archipelago has been generally found higher than that of the open sea of the same latitude; but, notwithstanding the increase of caloric carried to its water by the surrounding continents, it is considered that the high temperature of the Carribbean Sea arises in a great measure from the currents of heated water that penetrate it from the torrid zone of the North Atlantic Ocean.

Rapidity of the Guiana current.—The Guiana current varies in strength during its course (which is about 590 miles) from 10 to 21 or 36 miles a day, according to the locality. It has been sometimes found to be four miles an hour, while near the coast it gradually diminishes to less than half a mile an hour.

Temperature.—The temperature of the waters of this current has been estimated at 80°; that of the waters of the River Amazon very near the line of demarcation is also 80°. The line of separation between the waters of the Amazon and those of this current was N.W.$\frac{1}{2}$N., and the two waters were as distinct from each other as if they had been two separate fluids.

Gulf Stream or current of Florida.—The Gulf Stream has its origin in the Gulf of Mexico, and the waters having been heated there flow across the Bahama Channel. Issuing from this strait they flow to N.W. along the coast of Florida, over 31° N. lat., in a more N.E. direction as far as Cape Hatteras. There, from the indentation of the coast, the West limit of the current takes a more northern direction, while its principal bed is still directed N.E. until it reaches the Shoals of St. George and Nantucket, where its direction becomes more easterly. Soon after its direction is E.b.N., passing the southern extremity of the great bank of Newfoundland; and it preserves this direction, between 35° and 43° N. lat., till it reaches the meridian of 36° W. There it turns S.E. and South; afterwards, passing the archipelago of the Azores on the West, it loses itself in the ocean. Its warm waters have, however, been found sometimes on the West coasts of Europe; they have been recognised between the parallels of 44° 20′ and 39°, once also, among others, by Franklin.

Extent of the Gulf Stream.—The course of the Gulf Stream is about 3,000 miles from its source to the West of the Azores. It traverses in this course nearly twenty degrees of latitude,—from the parallel of 23° to that of 43°.

Its velocity.—According to observations made regarding this current, its mean velocity from the entrance of the Florida Channel, at the island of Bemini, to 31° N. lat. is about 70 miles in twenty-four hours. A mean speed of 80 miles a day has been found between the

parallels of 26° and 27° N. lat., although a strong North wind blows against it. At the outlet of the Gulf Stream, off Cape Carnaveral, it is like a torrent, and sometimes attains 120 miles in twenty-four hours. It gradually decreases in strength in its progress to the East. Between the meridians of 65° and 66° W. long. it is 55 miles a day; and on that of 42° 30′ it is only 30 or 35 miles. The rapidity of the Gulf Stream afterwards diminishes more rapidly when it curves to the South or to the West of the Azores; near these isles it does not run more than 10 miles a day.

Temperature.—The mean temperature observed in the waters of the Gulf Stream is 86°, which makes it 9° above that of the ocean under the same parallel; ten degrees further North it is found to be 84°, having in this space diminished about 2°; in 61° W. long. it is found to be 81° in summer, and 76° in winter; in 43° W. long. 75°; and in 38° W. long. 73°. Thus the temperature appears to decrease with the rapidity, but not so quickly, as the waters advance eastward; but they still have a very high temperature when they turn towards the South. On coming out of the Bahama Channel, the waters of the Gulf Stream have a blue tinge, and the line of their separation from the waters of the Atlantic is perfectly evident for the space of a hundred miles.

N.E. branch of the Gulf Stream.—At the place where the Gulf Stream curves towards the S.E., to the northward of the Azores, in 36° W. long., a portion of it continues in a considerable branch towards the N.E., about 600 miles in length, which continues towards the pole, passing between Iceland and the coast of Norway and surrounding the Ferroe Isles. The water of this current is warm, and its temperature in summer has been estimated at 54°; in winter at 51°. Its direction is towards N.E.; but there are very few data as to its rapidity.

This current is important to ships bound from the West Indies to Norway, Denmark, or to places situated on the northern coast of the North Sea.

Arctic current.—It is considered that the arctic current takes its rise in the frozen regions surrounding the North Pole; from whence it descends along the East coast of Greenland towards Cape Farewell. It passes round the cape, a large portion proceeding along the West coast of Greenland till it reaches the latitude of 66° N.; it then turns and again flows towards the South, along the coast of Labrador, forming the current known by the name of the Hudson Bay current.

In arriving at the North extremity of Newfoundland it sends a branch across the strait of Belle Isle, which mingles with the waters of the St. Lawrence and continues along the South coast of Newfoundland, while the principal current continues down between the Great and Little Banks of Newfoundland and meets the Gulf Stream between 41° and 45° W. long. It there divides into two branches: the one, flowing South towards the Sea of Antilles, reaches that part by an under-current; an hypothesis which serves to explain the presence of fields of ice met with in crossing the Gulf Stream. The

other branch of the arctic current, flowing towards S.W., past the Island of Nantucket, forms the counter-current of the United States, occupying the space comprised between the Gulf Stream and the coast extending from Cape Hatteras to that of Florida. The arctic current thus replaces the hot waters of the Gulf of Mexico caused by the Gulf Stream.

This current facilitates very much the navigation of the coast of the United States from the northward. It is a cold current, as we have said, and consequently it will be easy to keep in it by means of thermometrical observations, and also to avoid entering the Gulf Stream.

Although to the West of the Azores the current of the Gulf Stream turns partly towards South, yet between the archipelago and the coast of Europe a general movement of the waters from West to East ensues. This current is known to mariners by the name of the "Bay current." Can this current be produced by the warm waters of the Gulf Stream, or is it occasioned by the cold waters carried from the pole towards the equator is a question which has not yet been solved.

The rapidity of the bay current is very variable: it is sometimes 10 or 14 miles a day, and sometimes 24. In the latitude of Cape Finisterre the direction of it is from E.S.E. to S.E., and it divides into two branches; one forming the Rennel current, the other that of the coast of Portugal.

The Rennel current.—The Rennel current, which bears the name of the learned Major who first discovered its course, has an easterly direction near Cape Finisterre. It flows along the North coast of Spain, then proceeds North along the West coast of France, where it is felt at thirty or forty miles off shore, and is fifteen or twenty miles across. It has been found to run from one half to two thirds of a mile per hour. It is very variable, according to the strength of the wind and its direction. It is sometimes found to flow at the rate of a mile an hour, and to this current is attributed the loss of many vessels in the English Channel. It becomes wider as it proceeds northward; in the latitude of Brest it is eighty miles across, and its direction nearly N.W. It issues from the Bay of Biscay, passes West of Ushant at fifteen or twenty miles from that island, crosses the entrance of the channel, and takes a westerly direction from the Scilly Isles. At the entrance of the Irish Sea it discharges a second branch into that sea, the principal branch flowing W.N.W. and West, towards Cape Clear, and losing itself, near the meridian of 18° W. long., in the polar current towards Northern Africa.

The Portugal current.—The second branch of the bay current, called the Portugal current, flows from Cape Finisterre towards the S.S.E. and S.E. along the coast, on which, however, it partly approaches. Off Cape St. Vincent its direction becomes S.E., and proceeding South, it becomes more and more easterly towards the Strait of Gibraltar; towards which, under the meridian of 18° W. long., all the waters comprised between Cape St. Vincent, on the North,

and Cape Cantin, on the South, are directed, forming the Strait current, which carries the waters of the ocean into the Mediterranean.

The velocity of the Portugal current has been found to be from 12 to 24 miles a day. It is very variable, according to the prevailing winds, their strength and duration. This current, then, on the coast must never be trusted, especially in the winter or with strong N.W. winds, when it is necessary to keep well off the coast. The same attention also must be devoted to the current generally of the Bay of Biscay, known as the Bay current, and that of Rennel. These two currents are strong when the West winds, changing from N.W. to S.W., have continued long and with force. In this case it will be prudent to look out for the approaches of the English Channel, and on leaving the Bay of Biscay to double Cape Finisterre well out at sea.

This Gulf, then, presents us with this important fact that while out at sea the waters are setting towards East, E.S.E., and S.E., as proved by a number of bottles found near Bayonne and the basin of Arcachon, the waters of the interior and near the coast of France make their escape towards the North and N.W.

Polar current of Africa and current of North Guinea.—The polar current of North Africa takes its rise in that part of the Atlantic situated abreast of the coast of France. Between Cape Clear, of Ireland, and Cape Finisterre, of Spain, it flows South, towards Cape St. Vincent. Between this cape and Cape Cantin of Morocco, the entire mass of water, as far as 18° W. long., flows to the S.E. and N.E. towards the Strait of Gibraltar; through which the waters rush like the conduit pipe of a funnel. From Cape Cantin to Cape Bojador, between Madeira and the Archipelago of the Canaries, it is directed more easterly and S.E.; but it does not extend in this part and in this direction further out than 150 or 180 miles from the coast. Farther out at sea its direction is South and S.S.W. From the Archipelago of the Canaries to Cape Verd its direction is generally from South to S.S.W. Afterwards, at Cape Verd, it flows towards South, a little easterly, following the coast of Africa, and takes the name of the North Guinea current off Cape Palmas.

Its western limit, near Cape Verd, is between the island of Sal and that of San Nicolas; afterwards between the island of Maio and that of Santiago, in the archipelago of the Cape Verd Islands. Its direction is from South to S.W. nearly all throughout its course from its rising till it reaches this part. Off Cape Mesurade its direction becomes E.S.E., and even East out at sea; while at a little distance from the coast it is S.E. as far as Cape Palmas. Off this cape its direction out at sea is easterly; then E.N.E. as far as the Gulfs of Benin and Biaffra. It then meets with the equatorial current, and after having compassed Princes Island the waters probably mingle with those of the equatorial current.

Extent of this current.—The width of the North Guinea current varies according to the seasons. In the latitude of Cape Palmas it extends nearly 180 miles to seaward, that is, as far as 12° W. long.;

and it occupies the space comprised between the parallel of 2° 30′ N. lat. and the North coast of Guinea. On the meridian of Cape Palmas it is nearly 150 miles across; but to the East, in the Gulf of Benin, it attains to a considerable breadth, nearly 300 miles from North to South.

It is not felt in the vicinity of Isle St. Thomas, neither is the equatorial current, which is only first found a little to the West of this island, in about 6° E. long.

Velocity of the polar current of North Africa.—The velocity of the polar current of North Africa near its origin on the coast of Portugal is about 12 miles a day. On the coast of Africa it varies from 16 to 10 miles till it reaches Cape Palmas.

Velocity of the current of North Guinea.—The current of North Guinea flows with the greatest rapidity from June to September. When East of Cape Palmas this is found to be 40 or 50 miles a day. Off Cape Three Points it is nearly 34 miles per day. It then decreases, and in the Gulf of Benin its direction is from East towards the South.

Temperature of the current.—Near the Cape Verd Islands, the temperature of the waters of this current is 8° or 10° below that of the waters of the ocean; it then increases rapidly in proportion as it proceeds South. In the Gulf of Guinea the temperature of the water has been observed to be 84° in the middle of the current; 83° and 81° at its southern limit; in contact with the colder waters of the equatorial current it is 79° or 81° in the North part, adjoining the coast.

This current is of the utmost importance in navigating the western coast of Africa.

Such are the general currents of the North Atlantic Ocean, the other portions of which are occupied by currents flowing from these; the principal of which, as above stated, is that flowing towards the West and S.W., caused by the constant trade winds from N.E.

North Atlantic Ocean.—Comparative Table of the mean velocity of the currents for twenty-four hours.

Equatorial current	46 miles.
Current of Guiana	30 ,,
Gulf Stream	33 ,,
Current caused by N.E. trade winds	10 ,,
Rennel current	18 ,,
African current and North Guinea	20 ,,

According to the numerous bottles thrown into the sea, it appears that in the North Atlantic Ocean the waters have a general set from West to East; for, according to a work on this subject by the learned hydrographer Daussy, all those which have been recovered have arrived on the coasts of Europe, and not one has been recognized on the coast of America.* The wind must necessarily influence the

* M. Daussy could not have seen our Bottle Chart or he would have found two or three exceptions, apparently from the eddy of the western edge of the Gulf Stream, viz.:—Nos. 115, 116, 119 *a*, 106 *a*, and 104.—Ed. *N. M.*

route of these bottles towards the continent, and they will only indicate a motion of the surface currents of the ocean; but the solution of the great question of the currents of the North Atlantic Ocean is the study of the currents and temperature of the waters in the Strait of Gibraltar.

Are the waters brought by the ocean to the Mediterranean hot or cold? Do they arise from those led to it by the Gulf Stream or from those which, coming from the North, descend along the West coast of Africa? Such is the scientific question so long proposed which has not yet been solved. We now proceed with the currents of the South Atlantic Ocean.

Brazil current.—We have already spoken of the current of Brazil, a southern branch of the equatorial current, dividing at Cape St. Roque. It extends 250 or 300 miles along the coast of South America, and commences from 6° or 7° S.

The space between the coast and this current is occupied by other currents which follow the direction assigned to them by the alternate S.E. and N.E. winds of the coast of Brazil. The current of Brazil is crossed by the waters of the River Plata, which may be recognised more than 200 miles from the mouth of that river. These waters do not, however, appear to produce much effect on the Brazil current, which in these latitudes seems to divide into two branches. The most considerable, taking an easterly direction, forms the cross current of the South Atlantic Ocean. The other branch, flowing southward, forms a current which, though very feeble, is sometimes felt as far as the entrance of the Strait of Magellan.

Velocity.—The mean velocity of this current in the part nearest the equator is about 20 miles a day.

Alternate currents of the coast of Brazil.—We have said that between the coast of Brazil and the current of which we have spoken alternate currents are met with, occasioned by the periodical winds which blow on this coast. The force of these currents depends on the strength of the wind, and consequently is very variable. From March to September, when winds from S.E. to E.S.E. prevail, the current sets northward, and from September to March, with N.E. winds, veering to E.N.E., they set southward; but these directions are much varied, owing to the form of the coasts. This current is felt only about 50 or 60 leagues from the coast of Brazil, and is of the utmost importance to the navigation.

Current of Cape Horn.—The current off Cape Horn sets constantly from the Antarctic Sea and round the Cape from the Pacific Ocean into the Atlantic, and is generally accompanied by strong westerly gales. Its general direction is E.N.E. and N.E. However constant may be the prevailing winds on the East coast of America, it flows to N.E., passing the Falkland Isles. In some seasons it preserves its N.E. direction as far as the parallel of 48° or 49° S. lat., and it is most probable that it joins the cross current of the South Atlantic Ocean, of which we shall speak presently.

On the coasts of Terra del Fuego the rate of this current has been found to be 12 and 15 miles in the course of the day. In 57° S. lat. and 72° W. long. it is 35 miles. Near the coast its mean rate is about 24 miles. While between Cape Horn and Staten Land, in 55° S. lat., its direction is N. 51° E., and its rapidity 56 miles per day.

The waters of this current, flowing northward and partly coming from the Antarctic Polar Sea, have a lower temperature than those of the adjacent ocean.

That part of the South Atlantic occupied by the cross current which flows from the coast of Brazil towards the Cape of Good Hope is only partially known. It is considered in a great measure to be formed by the tropical current of the coast of Brazil; but this is not established as certain. It flows rapidly to the eastward, passing 150 or 180 miles South of the Cape of Good Hope. It then penetrates the Indian Ocean, and traces of it are found more than 2,000 miles beyond the Cape, where it unites with the polar current of Australia. This current is very favourable to ships rounding the Cape to the eastward.

Current of the Cape of Good Hope.—The current off the Cape of Good Hope is formed of two others from the Indian Ocean: the principal of which flows southward from the Mozambique Channel along the African coast; the other coming from that part of the ocean southward of Madagascar, is the S.W. branch of the equatorial current of the Indian Ocean. These two Indian currents unite a little South of Port Natal, where they take a more southerly direction over the Bank of Agulhas. Instead of then flowing entirely, as one might imagine, into the Atlantic Ocean, the greater portion of this returns by a counter-current to the Indian Ocean, mixing with the cross current of the Atlantic, above-mentioned, after the Agulhas Bank has modified the direction of the current off the Cape of Good Hope to the West. This current is known as the cross current of the Cape of Good Hope.

Polar current of the South Atlantic—The other portion of the current off the Cape of Good Hope flows into the South Atlantic Ocean, following nearly all the western coast of Africa. This branch is called the polar current of the South Atlantic, or the South Atlantic current.

At the point of junction of these two currents, near Cape Recif, the current of the Cape of Good Hope is 90 or 100 miles wide. In some parts its velocity is from 60 to 100 miles in twenty-four hours.

Temperature.—Beyond the bank off the Cape its temperature has been marked at 70°, that is, 9° above that of the ocean. Near the edge of the bank it is found to be 68°, namely 7° above the temperature of the ocean. On the bank itself the temperature of the water has been found 5° below that of the ocean.

The counter-current of the Cape of Good Hope, above-mentioned, is sometimes 210 and even 240 miles wide.

Polar South Atlantic current.—The polar South Atlantic current,

which, as we have seen above, is the only branch of the current off the Cape of Good Hope which penetrates the Atlantic Ocean, flows round the Cape of Good Hope, extending 80 or 100 miles out to sea, passing to the northward of the cross current of the Atlantic Ocean. It increases off the Cape even to about 150 or 160 miles in extent. It then flows northward, enlarging more and more, when its principal direction becomes N.W. Near the Cape of Good Hope, and nearly in the same latitude, it receives a branch which appears to proceed from the cross current of the Atlantic Ocean.

Velocity of this current.—The rate of this current has been found generally 16 miles in twenty-hours, in a N.W. direction generally. In its course it meets with the waters of the River Congo, flowing with great rapidity; but they do not appear to attain any decided influence over it, the direction of it and those of the current forming no considerable angle. The waters of the Amazon do not mingle with the ocean for a considerable distance, and at 200 miles from the river's mouth the more highly coloured water of the Congo may be perceived.

Temperature.—Near the Cape of Good Hope the temperature of this current is 67°, that is, 3° above that of the ocean. On the parallel of 30° S. lat. it is not more than 64°.

Current of South Guinea.—From St. Paul de Loando the current continues along the coast of Africa, flowing nearly N.W. Off Cape Lopez a portion of the principal current takes a more northerly direction, following the coast of Gaboon as far as the Gulf of Biaffra. It is there lost in the equatorial current and may be called the current of South Guinea. The principal direction it takes is N.N.E. and N.E. near the coast, and N.W. further at sea and near the isles of the Gulf of Biafra.

At sea the limit of this current appears to be to the eastward of Princes Island.

Velocity.—The velocity of it is often 24 miles per day, but is generally about 10; it is, however, very variable, sometimes ceasing altogether. Still, southerly currents are found in this part of the Gulf of Guinea, but the circumstance is very rare.

Temperature.—The temperature of the current of South Guinea at its limit near the coast of Gaboon has been found to be 77°, and in the middle of the bed of the current 77° and 79°. Thus it is 6° or 8° higher than that of the waters of the equatorial current. The knowledge of this current is very useful to vessels sailing towards Gaboon.

Such, then, are the currents of the South Atlantic Ocean.

The vast portion of sea forming the centre of the South Atlantic is occupied by currents produced by the S.E. trade wind; their general direction varies from West to S.W. and S.S.W. in proportion as the waters approach the exterior limit of the current of Brazil, with which they mingle in order to return eastward by the cross current of the Atlantic.

Table showing the mean velocity of the currents of the South Atlantic Ocean for twenty-four hours.

South Atlantic current	15 miles.
Brazil current	20 ,,
Cross current of the Atlantic	15 ,,
Current of Cape Agulhas	80 ,,
Cross current of the Cape	30 ,,
Current caused by S.E. trade	10 ,,
Current of South Guinea	10 ,,

(To be continued.)

MANBY'S MORTARS AFLOAT.

Royal Harbour Office, Ramsgate, March 12th, 1856.

Sir,—Since you did me the favour to insert my paper, in your January number, "On the use of Manby's Mortars afloat," I have been addressed by several Master Mariners and others on the difficulty attending the use of any projectile, where powder and fire is necessary, on board a ship or vessel upon a lee shore with the sea breaking over her, &c., &c., &c. Really the subject is of too serious a nature to be thus coolly shelved, and it has led me into a train of thought which, if allowed, I will communicate to these gentlemen through the medium of your pages.*

And first, then, I will remind them that it is seldom any ship encounters a forlorn hope without some warning. The lee shore, perhaps, cannot be weathered and time for preparation is afforded before the fated ship encounters the breakers! Or she is driving with her anchors—ahead—and the mortar may be prepared for the emergency!

* As an instance of the apathy pervading too many of the Masters of merchant vessels take the following recent matter of fact:—In my official round I noticed on board a British vessel a brass nine-pounder howitzer, fitted most perfectly and judiciously for signals of distress and assistance. I requested the Mate to inform the Master that a few shillings would provide him with wooden cones from my turners, and I would gladly explain and instruct him in the use of them. The Mate replied, "Its no use." "No use," I exclaimed, with some surprise, "Why did the owner place it there?" "Well, Sir, all I can tell you is this, I have been in the vessel some time but I have never seen an ounce of gunpowder on board of her yet!" Mark the curious coincidence.—Two days afterwards the following telegraphic message was delivered at my office:—"If the *E*——, of T——, is in your harbour detain her. The Captain is a defaulter. ——— Owner." I omit names as it is useless to give unnecessary pain, but while so many of our merchant vessels are in charge of such men who can wonder at the melancholy fate of our equally reckless and comparatively helpless mariners! No amendment must be expected till the emoluments of Commanders in the Mercantile Marine elevate the standard and restore them to their proper position in the social scale.

Surely it may have a tarpauling case over it, and the line to be thrown is quickly attached, and if neither portfire, salamander, nor slow match is available, a pistol discharged upon the vessel will instantly ignite the quill tube and discharge the piece.

It is a curious fact that all of them have admitted the vantage position of sending a projectile before the storm to an object which cannot be missed—namely, the shore—in lieu of against the wind to a vessel, which may require both skill and practice to be reached, after, perhaps, repeated trials. And, again, when a line so thrown reaches the ship all the auxiliary aid has to be contrived; whereas the line thrown from the ship may have all the readily available resources, such as life-lines, buoys, or a hawser, attached to its end before the appalling trial is upon the crew.

I am engaged in a series of experiments with the object of illuminating the wooden cone, in order that when it fell upon the shore in the dark its whereabouts might be instantly recognized. It may be made phosphorescent by several methods of using that chemical preparation, but it is an unpleasant and not entirely safe thing to handle. The most simple method I believe is to rub the surface of the cone with a paste of tallow and fine powder, but any hint from a skilful pyrotechnist might prove a valuable acquisition.

I cannot quit the subject without a few remarks as to the practicability of doing without powder, especially on board our magnificent steam ships, as far as life-projectiles may be concerned, and to awaken the sympathy of some eminent engineer in this self preserving and humane cause. The late Sir Isambard Brunel took me to see the steam gun, and I shall not easily forget the enthusiasm with which he dwelt upon steam war projectiles. I ask, then, Is it not as easy to have in every steam passenger ship a contrivance which, by merely turning a valve connected with the steam chest, should propel our cones and lines to any desired object connected with the safety or rescue, in lieu of the destruction of human life?

From the engineer I turn to the gunsmith, and ask him if he cannot supply my sceptical friends, who are afraid of "burning their fingers," with an air gun? In this age of invention much more might be done for our Mercantile Marine! With heavy demands upon a limited income, I can only offer my humble suggestions, and that Manby's mortars on shipboard may be instrumental in saving many valuable lives there cannot be a doubt in any experienced and unprejudiced mind.

I remain, &c.,

K. B. MARTIN,

Harbour-Master, Ramsgate.

To the Editor of the *Nautical Magazine.*

NEW CALEDONIA.—*By Captain Tardy de Montraver, Commanding H.I.M.S. "Constantine." Translated from the Annales Maritimes et Coloniales.*

(Continued from page 80.)

Pindre, Tuho, Uagop or Ituaka.—Between Yengen and Kwawa we found several tribes on the coast, of little importance in the present day, though as fertile as the preceding. Such are the two small tribes of Pendre and Tuho; whose names even were scarcely known when our missionaries founded their little Christian community in the midst of the latter. The sloop *Prony* found the same elements for prosperity and colonization here as at Yengen and Pouepo,—the same soil, the same fertility, the same people—but the total absence of an anchorage in all seasons. This radical defect will long condemn these two tribes to complete isolation from all change. It is the same with Uagop or Ituaka, which, from the account of the missionaries recently established there, is as rich, powerful, and populous as Yengen.

All that portion of the coast comprised between Yengen and Kwawa separated from us by the difficulties of approach can offer no interest at present, and seems condemned to remain for a long time to come unknown and stationary.

Kwawa.—From the tribe of Uagop to that of Kwawa the coast is inhabited by several colonies, little known, who live in their mountains without connections with any one. The country they inhabit is said to be extremely fertile, and very rich in perfumes of wood; but, like the preceding coast, it is unapproachable, and will not be called at present to take part in the movement that is in preparation.

These different tribes are limited on the East by Kwawa Harbour, a deep and narrow opening, reported to be an excellent shelter in the winter season. A broad and fertile valley, watered by a river, barred at its entrance, opens into this harbour, and presents a rich field for important cultivation.

The recent and almost complete destruction of the tribe of Kwawa has removed, with the population, one of the barriers against the foundation of a private establishment beyond the line of a protective post. The small number of the inhabitants escaped from the massacre have remained on the desolate territory of the tribe, and are now in such a state of misery that I have no doubt they would work if food, which entirely fails them, were ensured to them, with a few morsels of tobacco.

Kanala.—The details given elsewhere respecting the harbour and territory of the tribe of Kanala are sufficiently comprehensive to call attention to this particular point, which I look upon as the only one throughout the eastern coast which combines every condition desirable for a large settlement. Its magnificent harbour invites commerce, as its beautiful valleys, its rich platforms, its numerous streams, and its forests will call upon agriculture and industry. As for the popula-

tion, it is comparatively as much reduced as that of Kwawa, and would easily be brought to labour by its utter destitution.

In no point of New Caledonia have I seen land so rich as in the valleys which meet at the further end of the harbour; no where have I seen vegetation acquire such vigorous dimensions. The sugar-cane especially assumes there an extraordinary development in length as well as in diameter, and its juice appeared to me equally rich in saccharine matter. I more particularly instance this product because its beauty struck me the most, and because I think it will be one of the principal elements of the future prosperity of the colony.

Nikety.—Adjacent to Kanala, the tribe of Nikety presents us with the same advantages, the same riches to cultivate,—with the exception, however, of its harbour, a vast bay which can give shelter only in the fine season. The union of the three latter tribes of whom we have just spoken would form an admirable centre for cultivation on a large scale, whatever the object to which it might be devoted.

It is on this central spot, to which, by the necessity of things, every eye and every effort of the first free colonization will be directed, which above all things will desire to rely on the only port on all the eastern coast that is eligible for a military post, easy to defend and so placed as to protect the neighbouring settlements throughout the seasons.

The port of Kanala seems to me, therefore, destined to afford that protection which will be needed by our future settlements on the eastern coast. Its magnificence, its geographical position in the middle of the island, the rich territory of which it occupies the centre, and the facility with which it may be converted into an impregnable military position, leave no doubt on my mind as to its future destiny, and its occupation at no distant period.

From Nikety Bay to Queen Charlotte Foreland, the S.E. extremity of New Caledonia, we know of no particular which permits us to deny or affirm that this portion of coast is different from that which we have seen thus far. In judging, however, from what the natives have told us, who have had intercourse with the tribes which divide it between them, it is not less rich, less worthy of interest than those of Kanala or of the South-West, of which we shall shortly speak. To me it is not doubtful that the same riches will be discovered there as we have met with in the S.W. of the island, from Port St. Vincent to Queen Charlotte Foreland; to which we are going down again with the *Constantine* on leaving this port.

Western Coast.

Port St. Vincent.—All that I have seen of Port St. Vincent, from the archipelago which forms it and the mainland which borders it, has been set forth already in too much detail to make it needful to discuss it anew in any other light than that of examining its application to colonization. The total deficiency of water and wood on the islands, the distance which separates the anchorage from the mainland, which

alone can be suitable for farming of any importance, seem to me ample motives for turning aside from it all speculation as to settlement.

The soil of the mainland appears fertile, and yet I think it less fitted for cultivation than that of the other parts we have visited. The mountains at the further end of the bay are separated from the sea by alluvial lands which have been formed and enriched with their deposit, and thus they appear more naked than in any part besides. Some valleys, however, present the aspect of richness and fertility, but they are distant and the lowlands of the sea shore must be overcome before them. They will not, therefore, be brought into cultivation till very late, and I question if, at the commencement of a colonization, capitalists will risk farming on low grounds—difficult, slow, and toilsome cultivation—when immediately at hand they will find richer and more open land. At a later period no doubt colonization will take possession of it, when required to be extended, but until then nothing, I believe, can be attempted there with advantage.

Without having studied the interior of the country, one may predict with certainty that the tillage which would best succeed in the alluvial lands which separate the mountains from the sea are rice and the sugar-cane. The timber, judging by the canoes of the natives, is of considerable dimensions; but it can only be found beyond the low lands and far enough from the sea to render the felling and preparation of it very difficult.

On the South of Port St. Vincent the foot of the mainland continues to be bordered with islands or projecting peninsulas; which, seen from the sea, present the same aspect as those of St. Vincent. No doubt we shall find good and fine harbours at the back of those islands,—that of Ghitena, for example, which has been pointed out to me by the natives,—but here again I was forced to leave a gap in order to hasten to Numea Bay, where I was anxious to fix our southern post in a magnificent harbour, between coal mines which had been long made known to me, and the position of which had at last been discovered by our boat. This discovery was too important for me to delay for a moment our arrival at the spot, the effectual occupancy of that part of the island, and the investigation of its real wealth.

Port de France.—The *Constantine* then, with the *Prony*, repaired direct to Numea Bay, where the largest field for study awaited them that New Caledonia had yet presented. What struck us all at first was the splendour of the harbour which our boat had observed at the entrance of Numea Bay. A harbour formed by a peninsula which presents in its clefts several creeks, of themselves fit to receive ships, and by an island which runs parallel to the shore and is separated from it by a channel three miles in length and about a mile in mean breadth. This channel, which presents throughout an anchorage sheltered from all winds, is divided into two parts by a bar, which cuts it at its narrowest point without entirely intercepting the communication from one to the other by ships drawing less than fifteen feet. It possesses the invaluable advantage of having two outlets, the one to the

East the other to the West of the island, which serves it as a defence towards the sea. It is, in short, impossible to see anything more complete than this harbour, of which every advantage will be evident at a glance on our survey. Complete security is there first evident, facility of defence, and easy appropriation to any kind of establishment, convenient ingress and egress with all winds. I confess that, with every one near me, I was lost in admiration at so many advantages united in a single spot, yet I would not decide on making choice of it before I had assured myself that Morace Bay, which is separated from it by a peninsula did not possess the same advantages. I repaired thither, therefore, in order to compare the two bays, and at the same time to discover the coal mines which exist on the banks of the latter.

The result of this examination brought me back to the harbour first visited, and I chose the most salient point of the peninsula to establish there a fortified station; an almost impregnable position, at once commanding the two anchorages and the channel to the East.

The works of defence and establishment began immediately and were carried on with ardour by the crew of the *Constantine* and a little detachment of artillery workmen, who in a few weeks made a regular fortification, capable of resisting, with an armament of eight pieces, a considerable force from sea, and of repelling by land an attack of all the tribes of the South together. At the time of my departure the establishment could already lodge a garrison of a hundred men and six months of stores and provisions, and was defended on the land side so as to leave no uneasiness respecting the security of the garrison of twenty-five men, and towards the sea with the only two pieces of coast ordnance which we had at our disposal, and which would be sufficient to protect the vessels that will come ere long and winter in this harbour.

I thought I could not give a better name than Port de France to this valuable discovery. I have given the names equally of the Admirals Laguere and Despointes; the former to the harbour situated North of Numea, the latter to that on the South; as well as the name of Dubouzes to the principal island; and to the points of detail those of the officers composing the staff of the vessels which have co-operated in taking possession and reconnoitring New Caledonia.

I have said enough here and in a preceding account of Port de France to make it evident that there is nothing to desire for it in the finest harbours known, and that its position, fronting New Holland, will forcibly render it the most important point under all respects, and the bulwark of our new colony. This being admitted, I shall examine, with a view to colonisation, the portion of coast which it commands, from Laguere Harbour, situated to the North of Numea Bay, to the S.E. point of New Caledonia.

Laguere Harbour.—The harbour of Laguere, as the plan which has been made of it indicates, is a narrow bay running three miles into the lands of medium height which are in front of the principal chain. It receives, by several branches, the waters of a broad valley,

the alluvial deposits of which have limited the anchorage to about half the depth of the bay, and have formed at the further end of it a belt of low ground partly submerged and covered with mangroves.

The principal river, that which comes direct from the valley, traverses, before arriving at these heaps of sand and gravel, a plain of incomparable richness. M. Campenou, the Lieutenant of the ship, who undertook to explore the upper course of this river, whilst M. Senez carried on the hydrographic research of the bay, as far as the limit of navigation of the same river, and both found there extraordinary richness and vegetation. The latter of these officers discovered the excellent harbour, well sheltered by an island which partly encloses the entrance of the bay, and the river navigable for small vessels to about two miles from its mouth, where the tide ceases. M. Campenou, on the other hand, disembarked at the further end of the Bay of Numea and, directing his course N.N.W., sought, under the guidance of a native, for the coal mine which was to be found in that direction. He walked on in this manner for several leagues, through plains of remarkable natural richness and covered with magnificent trees, several of which, measured by him, attained the dimensions of 1m. 45in. circumference, and he arrived at the mine of which he was in search, and which in reality is situated on the banks of a river.

The river, this officer tells me, runs from N.N.W. to S.S.E., which seems to make it come straight to the cape with two heads towards which our aim was constantly directed.

It is on the right bank, which is steep, that the first apparent vein is met with. The coal is stratified by thin layers; the surface is of a brilliant black and of a rich lustre; it lights with difficulty. I think it is a strong pit coal. Lower down, and still on the right bank, a second vein is met with, equally on the surface. We were able easily to detach some good sized specimens. The material is of a less brilliant black, dry to the touch, leafy, with a little mixture of clay, which brings it near to the character of the anthracite.

Still lower down, and on the left bank, is a third vein, the specimens of which resemble those of the first. Between these three points indications were seen everywhere of the presence of this combustible. In digging, other veins would certainly be found, or perhaps these indications would lead to one single large bed.

Wishing to know where this river terminated, I had recommended him to follow its course to the sea; but two days of fatigue along its marshy banks did not permit him to arrive there, and he was forced to stop in that place where the mangroves entirely barricaded the way below the point M. Senez was able to reach with a light boat.

To make known the discovery of these coal mines on a stream of water flowing into Laguere Harbour is sufficient to explain all the interest attaching to this harbour for colonization in time to come. These officers in exploring the river met with some plantations of bananas, but a very small number of natives, whose habitations could not be far off. Every kind of tillage would, I doubt not, prosper in the plain which separates the mountains from the belt of mangroves

which line the coast at the further end of the harbour; but, above everything else, this harbour will acquire a great importance from the vicinity of the coals discovered by M. Campenou.

The preceding harbour is separated from Numea Bay by a peninsula which forms one of the sides of the wide channel conducting to this bay, at the same time as to Port de France. This peninsula is hilly and presents some wooded parts. Its eastern coast forms, at the entrance of the harbour, a cavity, in which is delineated a circular creek deep enough for mooring a ship. At the further end of this creek the richest natural spring of the whole basin is found. This alone, of all we have discovered in the whole extent of Port de France, has continued its supply of water as abundantly as ever after a continued drought of more than forty days; which had, if not dried up, considerably lowered all the other springs.

The N.E. point of the above creek is at the same time the N.W. point of the great bay of Nou Mea; the entrance of which is bounded on the East by the extreme western point of the peninsula. About 600 metres from this last point, a lofty hill, rounded at its summit, lessens the straggling breadth of the channel. On the right and on the left of the passage the bay reaches in considerably, so as to form, with Laguere Harbour, the western peninsula, and with Morace Bay and Port de France the adjacent one.

Mea Island or Nou Mea (Nou representing in the local language the word island) occupies the centre of this immense bay, which affords no anchorage except in its unsheltered part, encumbered as it is with coral patches and accumulations of sand and gravel from the currents of water that flow into it.

From Laguere Harbour to Morace Bay, the territory which extends from the sea to the foot of the mountains is inhabited by a single tribe which till now we have called wrong, from the name of Nou Mea Bay, and which the natives designate by that of Gamba. The principal centre of this population, the number of which does not exceed 400, at my estimation, is in the direction of N.W. of the bay, where a dozen houses constitute the village of Cash, principally inhabited by the Chief of the tribe and his people. The remainder of the population is scattered over the other parts of the bay, on the two peninsulas, and on the banks of the rivers, without fixed habitation,—living sometimes here, sometimes there,—now on the islands, now on the mainland,—feeding on roots, on the produce of fishing, or, since we have been settled there, on the liberality of our sailors. We must not conclude form this kind of life, so nearly approaching that of animals, that these people are deficient in intelligence. On the contrary, they possess a great deal, but they are as indolent as the country is rich and prodigal towards them. Some days of labour in the year for planting yams and carrots, one hour at most each day for gathering roots, which, on failure of yams, serve them for food, and for the procuring of fish and a few shells, were sufficient till but lately for their subsistence. The same resources suffice them now, and are as

liberally bestowed on them by nature; they have therefore remained wandering and careless about their food, which they know they can find everywhere without labour. But they have been taught to feel a new want, an imperative want too that their soil does not yet afford them the means of gratifying. The custom of smoking tobacco is become with the New Caledonian a passion capable of leading him to anything, even to labour. It is to obtain this that he plants near to us his four stakes covered with leaves or herbs, which form a sufficient shelter for him as his abode,—that he lights his fire,—that he lives, in short,—according to his way. He makes over to us some hours of his day for a fig of tobacco or a pipe. For the same reward his wives and his daughters sell themselves; and the latter are the more valuable for, besides their virtue, of which they are little niggardly, they have also their hands, which the ordinary habits of savage life have more accustomed to work than those of the men. The passion for tobacco, which among us is almost a vice, may therefore be with these new people an incitement to labour. Nevertheless, the savage nature seldom completely disappears, and the most laborious are almost always seen to shake off, after some days, the prudence which has constrained them and disappear from us until the tobacco is exhausted which has cost them so much trouble to acquire.

Thus, whatever efforts I have made to gain over the most intelligent and least idle of the tribe, I have wholly failed except in one, who remained faithful to us till the last day. I had, notwithstanding, carried my experiments so far as to clothe several of them and feed them from my own table; with which they seemed to me as happy as they could be. They were proud of showing themselves to their countrymen dressed in an old shirt, a pair of trousers full of holes, and a bit of red or blue stuff for a cravat. One might have said that for nothing in the world would they renounce these garments, and that in future they would be devoted to a kind of life that rendered them so happy. Far from it. Some fine morning you would in vain look for them at their work; and I learned from another native that they had gone back to their people without any other motive than the mere gratification of a whim. A fortnight or a month later, according to the duration of their tobacco, they would return to us as ingenuously as at the first, having no other clothing than that of savages, a covering which the pen could not describe, and which I leave to others the task of explaining.

The women, it must be acknowledged, are less disposed than the men to forsake work for the idle life and natural dress of the savage; they have been faithful to us from first to last, and those who were fortunate enough to procure a garment religiously preserved it. As for the rest, whatever be the strength of this capital and original vice in the members of this tribe, I think we shall succeed in giving them, if not the taste, at least the necessity for labour.

The population is, on the whole, more gentle, more docile, and quite as intelligent as those of the northern tribes. The timidity of

this tribe indicates its numerical weakness, and if sometimes I have exercised severity towards it the misdemeanours have been referrible to the Chiefs or excited by the people of Pine Island, who shared in it, taking care to render themselves irresponsible by flight.

After having observed that the Chiefs were the worst part of the population, I began to think that the only way to stop short the robberies, which were multiplying, was to render each Chief responsible for them, and it was indeed but justice to act thus, for I knew, beyond a doubt, that the smallest theft was known to them, and that they reaped more advantage from it than did the thief himself. This mode of suppression quickly brought about the result I expected. A few days in irons inflicted on two Chiefs of the tribe of Gambia, and on the two first Chiefs of Moraré, was sufficient punishment to stop the robberies, and maintain Chiefs or subjects in salutary fear, so great is the authority of the former over the latter! I persist on this particular point, that it may be clearly understood that the really guilty, not only in collective crimes, but more often in individual offences, are the Chiefs of the tribes. They are generally the instigators if not the actors; it is, therefore, on them that the punishment should fall, and not on their subjects, who, I repeat, are generally mild and patient, and can only be compared to bad children, whom it is as easy to stop in the road to evil as it is to urge them onwards.

The true type of the Caledonian Chief of one of the southern tribes, is the Chief of Nou Mea; I have studied him sufficiently to be able to give his portrait truthfully, and in him to draw all his colleagues. His name is Koundo, and his official residence the village of Cash, at the far end of Nue Mea Bay. As far as the age can be judged of in the form of a savage, he must be from thirty-five to forty years of age; he is of the common height, with long curly hair, which he wears brought up to the top of the head, and wrapt up in a cylindrical form in a piece of stuff, the colour of which varies according to circumstances, black or blue habitually, red when he is full dressed. His complexion is very dark, his eyes shotten with blood, express the cruelty and deceitfulness of the tiger, and his mouth, deformed by a scar on the lower lip, grins a false smile when he is in the presence of those he fears, and most often expresses threats and injury when he addresses himself to one of his subjects or slaves. Apart from the expression of his countenance, Kounda is not uglier than any other native, and yet one experiences on seeing him for the first time a vague feeling of repulsion; I felt it strongly myself, notwithstanding his eagerness to anticipate my wishes, and his protestations of satisfaction on our taking possession. This feeling arises from one's seeing at a single glance the bad traits depicted on his features.

(To be continued.)

The Arctic Expeditions.

March 2nd, 1856.

Sir,—In your article entitled "Reflections on Sir John Franklin's Expedition," which appeared in your last number, you have quoted several passages from letters which were addressed to me by my friend Fitzjames, when the unfortunate expedition was on its way to Lancaster Sound. These letters were full of hope and determination of purpose: doubtless, they breathed the spirit of all on board. "*Go ahead* is the word." "If we don't get through it wont be our fault," and many similar expressions as you observe occur.

There is one letter, however, from which you have extracted the following remarkable passage, viz:—"At dinner to day (7th May,) Sir John gave us a pleasant account of his expectations of being able to get through the ice on the coast of America, and his disbelief in the idea that there is an open sea to the northward." I am desirous that it should be clearly understood that this passage does not occur in any of the letters which Captain Fitzjames addressed to myself, and that I was not even aware of its existence until it appeared in the *Leader* in 1852.

It is indeed painful to contemplate now how different might have been the course of events, had the words above quoted been generally promulgated before the sailing of the several expeditions. The "Wellington Channel *mania*" you allude to arose from a widely different passage in a letter of Fitzjames, which was addressed to me, and which, in the earlier stage of proceedings, I felt it to be my duty to make publicly known.

"The North-West passage" he says, "will certainly be made, but whether north or south of Parry's Island remains to be proved. I am for going north, edging north-west, till in long. 120°,* if it can be attained. I had myself always entertained a strong opinion that the expedition would go up the Wellington Channel, but the *mania* only seized the public mind when the two first expeditions had entirely failed—when Cape Walker (the first point in the instructions to Sir John Franklin had been searched, and Melville Island visited.

Five years had passed away, and no tidings of the lost ones had been gained. In 1850 the first sad traces were found *at the entrance of the Wellington Channel.* It was then that the public mind began first to entertain strong opinions that the expedition had tried the northern route, and had passed through the Wellington Channel into the Queen's Channel, and into the Polar Ocean through Penny Straits;—but a long term of years had passed away.

In 1852 the Wellington Channel *mania*, of which you speak, really became a *mania*, and all eyes then followed the expedition of Sir Edward Belcher.

I shall feel obliged by your inserting these few lines, as it is, I

* See Parliamentary Papers, 1848.

believe, generally known that I was one of the strongest advocates for a search to the northward through the Wellington Channel, founded on the fact of Fitzjames being himself inclined for that route, and upon the faith of seven years' tedious search having failed to find any clue whatever to their route, I beg you will believe that while I entertain the highest opinion of your ably written paper on this painful subject, I agree with many of your arguments, and with all your generous sentiments so feelingly expressed.

I remain, &c.,
JOHN BARROW.

VISIT TO PITCAIRN ISLAND.

PITCAIRN ISLANDERS.—It has long been known that the island, which these very interesting people are inhabiting, is already too small for their increasing numbers, a condition which has occasioned much anxiety to their numerous friends. It was therefore determined to ascertain whether the inhabitants would be ready and willing to take advantage of an opportunity of removing to Norfolk Island,—which latter has been evacuated by the convicts and has thus become available for them. The contrast between the late inhabitants of Norfolk Island, should this transfer take place, will be rather remarkable. The following extract of a letter will show the result of a visit to Pitcairn Island with this object.

Having left Sydney on the 6th ult., I arrived off that Island on the 18th instant. (17th, according to the Pitcairn date)

As we approached Bounty Bay, a whale boat, containing the magistrate, G. M. Frederic Young, and several other natives, came alongside, and having assured us that landing was practicable, I shortly after accompanied them on shore with half the officers.

The cordial reception which is accorded to officers of men of war by the ingenuous, warmhearted and loyal inhabitants of the Island need not be repeated. The visit of one of Her Majesty's ships is always a short season of gaiety and innocent excitement. Labour and studies are suspended, and all occupy themselves in the service and entertainment of their welcome visitors.

After having been heartily greeted by the whole population, we proceeded to the church and school house, the spot usually chosen for assembling the community upon public matters. Here the object of the mission was explained to them. The Rev. Mr. Nobbs also read out a brief description of Norfolk Island, which had been drawn up and furnished by His Excellency the Governor General of New South Wales.

The generous proposal of Her Majesty's Government was not altogether unexpected ; rumours of such intention had already reached Pitcairn, and although the mind of the people generally was made up,

they asked for a day or two for inquiry and consultation, before finally deciding upon so grave a question, and one so closely affecting their future destiny.

The following evening a general meeting of the community was held, and a very large majority at once closed with the offer which had been made. Some there were, however, whose attachment to Pitcairn was apparently too strong to reconcile them to the thoughts of abandoning it. Among these was George Adams, the son of old John Adams, of the *Bounty*. All felt the necessity of some change, for another subdivision of land would reduce the portions to mere insignificant patches scarcely worth cultivating. All felt most grateful for the solicitude and liberality manifested in their behalf by Her Majesty's Government, but the anticipated removal was a melancholy subject for deliberation; the addresses were very abrupt, and in some instances confined to the monosyllable "Go." The discussion, however, ended by one hundred and fifty-three, out of a population of one hundred and eighty-seven, declaring for Norfolk Island; the rest I will not say determined to remain on Pitcairn, but they would not then acquiesce in the voice of the majority. The lamentable migration to Tahiti in 1831, still fresh in the recollection of the older and more influential part of the community, no doubt prompted misgivings as to the present scheme, although they seemed greatly reanimated by the assuring prospects held out by Sir William Denison's summary, and the account of Norfolk Island given by the officers.

The final issue of the meeting was conveyed in writing, signed by the Magistrate and Chaplain of the island. The islanders expressed a hope that they may be allowed to live on Norfolk Island in the same seclusion from the rest of the world as they had hitherto done at Pitcairn; and it is impossible for any body who has once been an eye-witness of the exemplary conduct and the pious single-minded character of this innocent people, not to urge a compliance with a request so natural and so reasonable. There was much anxiety to know what succour or protection those that remained behind might expect hereafter, a point on which I was unable to afford positive information. George Adams in particular pressed hard, that, when the ship was sent to convey them away, the position of those who were left, with respect to the British Government, might be explained to them. It was also suggested that the time of their removal should not take place during the winter months, that is, between March and July: and I think I could detect a general wish, that the dissolution might be postponed till after rather than to precede that season of next year.

Subsequently to the meeting I held some conversation with George Adams and the others who are disposed to stay at Pitcairn; and being asked for advice, I endeavoured, without using any undue persuasion, to show that it would be better that no separation should take place. The few that remained would probably find themselves very much isolated, without grown up men sufficient to work the plantation or to man the boat, and without the means of controlling the crews of whalers, which now frequently call off the island for water, and to

barter clothing and other necessaries for fruit and vegetables: or prevent their settling there. Much of the interest felt towards them would be transferred to Norfolk Island, whither the main body would be gone, and it is to be feared, that without clergyman or teacher, the rising generation might not imbibe or retain those pious and moral principles which are now universal. There is great reason to expect that when the time comes, not one will adhere to the resolution of stopping behind; so affectionate, so attached are they to each other, and the ties of relationship necessarily so interwoven, that the moment of parting will in all probability stifle all other considerations.

The condition of the island and of its inhabitants has in no respect been changed since it was visited by Admiral Moresby in 1852–53. So much has been written and published about them, that it would be superfluous to recapitulate the peculiar characteristics which have excited so much interest in England, and gained for them the affectionate sympathy of all their fellow Christians. I can only add my corroboration to their still remaining the same cheerful, docile, unsophisticated community as they have been so often represented. The enthusiasm displayed by the officers, and especially by the ship's company, for their welfare, was quite uncontrollable; they were ready to part with anything, everything, to supply or gratify them; and equally anxious to carry away some object or token in remembrance of the island, even to the stones on the beach; but the girls perceiving this, ran and collected a quantity of tapa, sufficient for every man in the ship to receive a suitable memorial.

The yam harvest having been recently gathered in, there was no deficiency of the ordinary means of subsistence; but their stock of animal food is very limited, and fish have become of late years exceedingly scarce. A liberal contribution of salt meat was furnished by the men and officers from their messes, and in addition the Paymaster was authorized to supply them with four casks of beef on the part of the Government, likewise a small quantity of soap, of which they were almost destitute. The poor people expressed their gratitude with frank simplicity; they especially prize any favour or attention which has its source from the Crown or Government of England, and they evince the greatest anxiety, and esteem it their highest privilege to be recognized as subjects of her most gracious Majesty.

The population consists of one hundred and eighty-seven persons; the sexes are evenly divided. One half being above the age of fifteen, may be considered adult; the rest are children and infants. Two men and six women are all that remain of what they call the first generation, that is, the immediate descendants of the *Bounty's* people. The following is a complete list of the islanders, with their names, ages, and other particulars, which may not be devoid of interest to those who are familiar with the singular origin and history of this primitive colony.

The last man of war that touched at Pitcairn was the *Amphitrite*, in February last. An American whaler, the *Matthew Luce*, Mr. Coon, Master, was off the land in daily communication with the shore.

Population of Pitcairn Island, September 19th, 1855.

	Approximate Age.
Rev. George H. Nobbs	56
Sarah	47
Fletcher	22
Susan	22
Cathline Laura	9 months
Francis	20
Jane Agnes	19
Ann Naomi	17
Johnson	15
Edwin	12
Jemima	10
Alfred	8
Sydney	6
Ellen Quintal (adopted)	18
Peggie Christian	40
Jacob	22
Henry Chads	2
Polly	17
Emily	15
Stephen	12
Nathan	11
Swain	9
Abigail	7
Thursday October Christian	39
Mary	32
Agnes	14
Albert	12
Elias	10
Alphonso	9
Annie	5
Heywood	2
Daniel	3 months
Benjamin Christian	23
Eliza	22
Ephraim	6
Emily	3
Holmes	1
Isaac Christian	31
Miriam	26
Hunt	10
Emiline	8
Godfrey	6
Leonard	4
Parkin	2
Charles Driver Christian	24
Lucy Maria	17
Maria Quintal (step-sister)	17
Philip M'Coy	25
Sarah	20
Edith Maria	4
Ophelia	1½
Charles Christian	37
Charlotte	33
Catherine	16
Andrew	14
Adeline Sophia	13
Gilbert	11
Eleanor	9
Cordelia Ruth	7
Hagar	6
Wellesley	4
Holman	2
Charles Allen	5 months
Arthur Quintal	60
James	30
Priscilla (wife of James)	20
Ruth	27
Absalom	18
Nathaniel	17
Joseph	15
Cornelius	13
Mary	11
Arthur Quintal	38
Martha	36
Victoria	15
Rhoda	12
Edward	9
Edmund	7
Louisa Hope	6
Julia	4
William Quintal	38
Maria	39
John	14
Oliver Macoy	12
Abby Louisa	9
Helen	7
Frances Adelaide	5
Alice Maud	3
Amelia Rosamond	6 months
Mary Louisa	6 months
Dina Quintal	60
Edward	31
Abraham	28
Esther	23
Fairfax Moresby	4
John Acland	2
Henry	19

Caleb	18
Emma	6
John Quintal	35
Dina	30
John	17
Augusta	15
Matilda	14
Kezia	12
Hannah	5
Sarah	3
Moses Young	25
Albini	26
Elizabeth	7
Charles Vider	5
Simon Young	31
Mary	27
Fisher	9
Eliza	7
Robert	5
Benjamin	3
Rosaline Amelia	2
Mary Ann ....months	3
Hannah (Simon's mother)	56
Jemima (Simon's sister)	27
Frederick Young	31
Mary	23
Charles	5
John Young	3
Emily ....months	9
Elizabeth Young	63
Matthew Quintal	40
Mayhew Young	28
Dorcas Young	23
Lydia M'Coy	23
George Adams	51
Jonathan	27
Phœbe	31
Calvin	7
Sabre	6
Isabella	5
Augusta Rosa	3
Jonathan Lorenzo	1
Josiah Chester	26
John Adams	28
Caroline	28
Polly	11
Gilbert	10
Byron	8
George	6
William	4
Elizabeth Holman	2
Margaret M'Coy	34
Jane	18
Diana	17
Mary	13
Sarah	12
James Russell	10
Harriet Malicia	8
Alice Sophia	5
Mary Ann	4
Rebecca Holman	3
Samuel (brother-in-law to Margaret)	28
John Buffett	58
Dorothy	58
Thomas	29
Louisa	27
Mary Emma	1
Robert	25
Edward	20
Mary Christian (half sister to Dorothy)	60
John Buffett	30
Elizabeth	30
Henry Seymour	9
Eveline Helen	7
Joseph Allen	4
Emily Evangeline	2
Collin William Lindsay .months	4
David Buffett	28
Martha	25
Thomas Austen	4
Fortescue Moresby	2
John Evans	48
Rachel	52
John	25
William	23
Rebecca	25
Laura	1
George	20
Dina	19
Martha	17

The undermentioned are living of the first generation, descended from the original Settlers.

George Adams, son of John Adams.
Dina Quintal, Rachel Evans, Hannah Young, daughters of John Adams.

Arthur Quintal, son of Matthew Quintal.
Mary Christian, daughter of Fletcher Christian, and never married.
Dorothy Buffett, Daughter of Edward Young.
Elizabeth Young, daughter of John Mitts.

Bearing the Name of	Number in Family.	Males.	Females.	Married.	Unmarried.
Nobbs	14	6	8	4	10
Christian	49	27	22	12	37
Quintal	44	20	24	12	32
Young	24	11	13	10	14
Adams	17	11	6	5	12
M'Coy	11	2	9	3	8
Buffett	19	11	8	9	10
Evans	9	4	5	4	5
Total	187	92	95	59	128

THE FRENCH IN MADAGASCAR.

We regret to perceive by the late advices from Mauritius that the Hovas have been indiscriminately slaughtering the French settlers at the Bay of Vavatoube, on the North-West coast of Madagascar. At present we have but a brief and imperfect version of the affair. It would appear, however, that on the night of 19th October last eight Frenchmen, with a large party of Sacalaves in their employ, who were occupied in working a coal mine, were unexpectedly set upon by an overpowering army of 1,500 to 2,000 Malagaseys, and seven Frenchmen were barbarously murdered and mutilated, the survivor, with 100 of the workmen employed, being carried off prisoners, with five pieces of cannon, a quantity of muskets, ammunition, and other plunder. This outrage seems to have been committed with the full sanction of Queen Ranavala, who, on receiving the news of the result, celebrated the victory by a *feu de joie* at the capital in the presence of her assembled subjects. Aware as we are of the former disturbances which have prevailed between the French settlers and the Hovas, together with the dissensions existing between the rival tribes, we had hoped that affairs were tending towards a more peaceful state of things. The re-opening of the trade with Mauritius in 1854, the payment of the sum of £3,000 by the English merchants as compensation for the losses inflicted at Tamatave, and the staple products of rice and sugar now coming forward from Madagascar, had led us to believe that the natives and their monarch were settling down into the more profitable relations of agriculture and commerce, and desirous of continuing on peaceable terms with their more civilised neighbours.

If, as it would seem, this attack was a cold-blooded, unprovoked massacre, it will doubtless bring down condign punishment by the French nation on the aggressors. As to the legality of the tenure upon which France holds possession of that portion of the island we have nothing to do: it is alleged to be in virtue of a recent concession of the ex-King of Nossi Bé, as well as in right of her ancient claims on Madagascar by settlement. But it is evidently very unwise for a few settlers to plant themselves, almost unprotected and far from reach of assistance, in the midst of aggressive and barbarian hostile tribes, unsupported by their nation and liable to constant assaults. The ruling authorities of Madagascar have always been exceedingly jealous of foreign settlers, and one of the stipulations made by the Queen with the Mauritius merchants, when re-opening some of the ports of the island for trade, was a strict prohibition to settle permanently on any part of the Hova territory, or for European residents to establish themselves on shore. In an article on Madagascar, published in January last year, we stated that, "as a preliminary step towards extended commercial intercourse with Madagascar, it is essential that the minds of the natives should be divested of all apprehension of future attempts at invasion and encroachment. The simultaneous recognition of Madagascar as an independent nation by the great naval powers of France, the United States, and Great Britain, should be at once negotiated."

At intervals during the lapse of a century and a half, vast and repeated efforts have been made by France to effect the colonization of Madagascar. A brief sketch of the proceedings of the French, and of their issue, may at the present juncture be both interesting and instructive. In 1642 France formed a settlement on the island, under the auspices of a commercial company and a société de l'Orient. Messrs. Pronis and Fonquembourg, proceeding thither as agents of the company, and arriving at the commencement of the sickly season, injudiciously founded the colony at St. Luce, an unhealthy locality. In 1643 Pronis took possession of the Isle of St. Marie and of the Bay of Antongil, on the East coast. In the following year he established posts at Tenerife and at Manahar; he then removed from St. Luce to the peninsula of Tholangar, where he built a fort, which was subsequently enlarged, and named Fort Dauphin. In 1648 M. Hacourt arrived as Commandant-General of the Island of Madagascar. In 1664 a new commercial association was founded by M. Colbert, to which were ceded the privileges enjoyed by the former company. The King of France and the Princes of the Royal Family took a pecuniary interest in this commercial enterprise. In 1665 M. de Beaume was sent out by the King as Governor-General of the territory, which was styled Oriental France. But meanwhile the colonists had become involved in a most disastrous war with the native Chiefs, and were only saved from total destruction by the influence and generosity of a countryman, M. la Case, who had separated from the colonists to marry the daughter of the Chief of Ambouk. In 1669 Count Mondeverque landed at Fort Dauphin in the capacity of Viceroy, bringing with him

two vessels. The millions of francs contributed by the King and the nation, instead of conducing to the success of the object proposed, only occasioned, and for a while sustained, vile defalcations, and, owing to reckless improvidence, incapacity, and dissension, the rights of the company were surrendered in 1670 to the King; and, gradually, the French withdrew from the island. Admiral De la Haye, with a new fleet of twelve vessels of war, was sent out in the close of 1670, and, on landing, again took formal possession of the island. He was soon engaged in uncuccessful hostilities with the natives, which induced him to retire to Surat. The colonists, reduced to the greatest extremity by perpetual collision with the aborigines, withdrew, with a few native women and sailors, in the close of 1672, to the Island of Bourbon, where they formed a settlement.

At the commencement of the eighteenth century the political maritime importance of possessing Madagascar again engaged the attention of France, and her pretensions were renewed in 1719, 1720, and 1725. The Bay of Antongil was examined by M. de Casigny, an Engineer, in 1733. Thirteen years afterwards the country was explored by General la Bourdonnais; and in 1750 the French India Company formed an establishment in the Isle of St. Marie, the cession of which it obtained from Bete, daughter of Tamsimalo, the deceased Sovereign of the country interjacent between Foulepoint and the Bay of Antongil. In 1768 the Count Mandavi was sent out to Madagascar as Commandant. He obtained from the native Chiefs a special cession of land, to the extent of nine or ten leagues, situated on the River Fanzahere. Here he attempted to form an establishment, but, compelled from want of means to abandon the enterprise, he quitted the island in 1769, owing to the war with America. Nothing further was done till 1774, when Count De Benyowski was sent out as Governor-General. He selected a position in the extremity of the Bay, on the bank of the River Tungumbaly, which he named Louisbourg, and constructed forts along the eastern coast at Angutzy, on the Island of Marosse, at Tenerife, at Foulepoint, at Tamatave, at Manahar, and at Anstirak. Under his administration for a time the infant colony succeeded well, and he kept at bay the powerful native tribes. The ultimate result of this, as of former endeavours, was unsuccessful, and we need carry down the narrative no further.

We have cited sufficient instances to show the perseverance of the French at all hazards in this scheme of colonisation; and in Bourbon the descendants of the early colonists have always cherished a strong desire for the annexation of Madagascar to the French Empire. Any such attempt, however, must be carried out on a much more effective and systematic scale to be successful, and the powerful hostility of the Malagasey tribes is not easily to be overcome. The dissensions, however, are calculated to have an injurious effect on the Mauritius trade, in probably closing once more the ports against the supply of cattle, for which the colonists mainly depend on Madagascar.

Shipping and Mercantile Gazette.

THE RISE AND PROGRESS OF TRANS-ATLANTIC STEAM NAVIGATION.—*From the New York Herald.*

On the 23rd of April, 1838, a tremendous excitement prevailed in New York. "From an early hour until dark," we quote the language of this journal, "myriads of persons crowded the Battery to have a glimpse of the first steam-vessel which had crossed the Atlantic from the British Isles and arrived safely in port; it is said that every Englishman in the city at one time or other during the day was gazing at the dark-looking vessel (the *Sirius)* with the American colours at the fore and the flag of Old England at the stern. The excitement was further increased by the arrival of the *Great Western* from Bristol, which left that port on the 7th instant, making the passage in fifteen days, thus solving the problem of possibility, and showing what can be done by enterprise, expenditure, courage, and skill. The *Sirius* is, however, the pioneer. It is a singular coincidence that both vessels should have arrived on St. George's day, the patron saint of the country to which they belong."

On the 31st of March of the same year, the London papers alluded to the experiment doubtfully. "There is really no mistake," said the *Times*, "in this long-talked-of project of navigating the Atlantic Ocean by steam. There is no doubt of an intention to make the attempt, and to give the experiment, as such, a fair trial. The *Sirius* is absolutely getting under weigh for America."

Eighteen years will soon have elapsed since these doubts were uttered, and their solution thus enthusiastically recorded. What a change! We have fourteen lines of steamers actually running between the United States and Europe, comprising no fewer than 42 vessels!

Their rise and progress are curious. The *Sirius* and *Great Western* did not long enjoy a monopoly of the ocean ferry. They were quickly joined by the *Royal William*, (which made a trip or two,) the *City of Liverpool*, the *British Queen*, and *President*. Soon the *Sirius* and *British Queen* were sold, the *President* went down, and their place was taken by a new line, got up by a combination of Scotchmen and Bluenoses—an astonishing set of people for enterprise. The new line was called the Cunard line, from the leading Bluenose, and launched four steamers—the *Acadia*, the *Caledonia*, the *Britannia*, and *Columbia;* they commenced to run about 1840, and ran from Boston and Halifax to Liverpool. In 1843, the *Columbia* was lost—the only vessel ever lost by the Cunard line; all the lives on board were saved.

Shortly after, a French line, consisting of four steamers, was established, but after a few trips it was abandoned. Then a Belgian line was organised, and also abandoned. Soon afterwards, the first American line of transatlantic steamers was inaugurated by the sailing of the *Washington* for Bremen. She was shortly after followed by the *Hermann*—both of which ships run still, with apparent success and profit. They were followed, at an interval of four or five years, by the Collins line, which launched successively the *Atlantic, Arctic, Baltic* and *Pacific*, and are now building the *Adriatic* to take the place of the lost *Arctic*.

Latterly, several new lines have been established. The American-Havre line, which was started a few years ago, having lost its two vessels—the *Humboldt* and *Franklin*—replaced them by the *Arago* and *Fulton*. Glasgow started a line of screw steamers to New York, and another line on the same plan was shortly afterwards started between Liverpool and Philadelphia, without, however, competing with the Collins or Cunard lines. Quite recently a screw line, consisting of the *Minna* and *Brenda*, has been established to run between London, Cork, and New York; they will probably be called the

Corkscrews. The Cunard Company has also begun to run a line between Havre and New York; a Belgian company has launched vessels to run from Antwerp, and the French are going to run vessels with warlike names from Havre on their own account.

Altogether we may sum up the ocean steam lines established between the United States and Europe in the following table:—

Liverpool and New York.

	Name.	Class.	Tonnage.
Collins line	*Atlantic*	Paddle-wheel	3000
	Pacific	,,	3000
	Baltic	,,	3000
	Adriatic	,,	4200
Cunard line	*Persia*	,,	3600
	Africa	,,	2250
	Asia	,,	2200
	Europa	,,	2250

Liverpool and Boston.

Cunard line	*America*	Paddle-wheel	1800
	Arabia	,,	2250
	Canada	,,	1800
	Niagara	,,	2250

Glasgow and New York.

Scotch line	*Edinburgh*	Screw	2500
	New York	,,	2150
	Glasgow	,,	1962

London, Cork, and New York.

Cork line	*Minna*	Screw	1300
	Brenda	,,	1300

New York and Havre.

Cunard line	*Ætna*	Screw	3000
	Jura	,,	3000
	Emeu	,,	2000
	Lebanon	,,	2000
	Cambria	Paddle-wheel	1800
French line	*Alma*	Screw	1500
	Barcelone	,,	1500
	Sebastopol	,,	1500
Old Havre line	*Arago*	Paddle-wheel	2700
	Fulton	,,	2500
	Union	,,	2000
New Havre line	*Ariel*	,,	2000
	North Star	,,	2000
	Vanderbilt	,,	3600
Indian Havre line	*Ericsson*	,,	1800

Antwerp, Southampton, and New York.

Belgian line	*Belgique*	Screw	2500
	Constitution	,,	2500
	Leopold I.	,,	2500
	Duc de Brabant	,,	2500
	Congress	,,	2500

New York, Southampton, and Bremen.

	Name.	Class.	Tonnage.
Bremen line	*Washington*	Paddle-wheel	2000
	Hermann	,,	2000

Liverpool and Philadelphia.

Philadelphia line .	*City of Baltimore* ..	Screw	2367
	City of Washington.	,,	2382
	City of Manchester.	,,	2109

In addition to the above, a line has been established between Portland and Liverpool, in which the *Sarah Sands* and *Canadian* run.

The disasters to ocean steamships may likewise be summed up as follows:—

President	Never heard of.
Columbia	All hands saved.
Humboldt	All hands saved.
City of Glasgow	Never heard of.
City of Philadelphia.....	All hands saved.
Franklin	All hands saved.
Arctic.....	A few only saved.

The bill of mortality is really very small when the total number of steamers afloat is considered. As science progresses, even this proportion will be lessened. We may hope that when we have a hundred steamers afloat we shall neither hear of lost vessels nor feel excited or anxious, with good reason, when a steamer is unduly delayed.

NAUTICAL NOTICES.

Barracouta, Shanghai, January 5th, 1856.

Sir,—I herewith enclose a copy of sailing directions for the Yang-Tse-Kiang River, forwarded by me to the Admiralty in October, 1854. Should they be of any service to you for your Journal, you are welcome to them.

I am, &c.,
W. R. FREEMAN, Master, R.N.

SAILING DIRECTIONS FOR THE RIVER YANG-TSE-KIANG FROM GUTZLAFF TO WOOSUNG.

From the Saddle Island or Gutzlaff, keep the North Saddle Island, S.E.b.E ½ E. or S.E.b.E ¾ E., so as to pass to northward of Gutzlaff at distance of 14 to 16 miles. When Gutzlaff bears south, distant about 15′ miles, steer N.W. ½ W., or N.W. b. W., allowing for tide wind, &c., and bring it to bear S. b. E. ½ E., sinking it on that, or a S.S.E. bearing, (which in clear weather will be at about the distance of 22 miles.) After losing sight of Gutlzaff as above, if you do not shortly see the low land on port bow, haul in more westerly, especially if you are in 5 or 6 fathoms, as with latter depth you will be close to the north bank, which at all times ought to be avoided or approached with great caution. While Gutzlaff is visible from the deck, you cannot touch the north shore, but should you unavoidably sink it on a bearing more southerly than S.b.E. ¾ E., (which is likely to occur as the only mark for correctly judging your distance (the North Saddles) is often obscured) steer more

westerly immediately, and get hold of the south bank, as you may be certain you are northward of the fairway. It is however at all times advisable to keep along the edge of the south bank in from 8½ to 4½ and 5 fathoms, according to time of tide, as the lead is here a safe guide. The first point of land seen on port-bow, called Padui (a fishing station) must not be approached nearer than two miles, as the bank extends out a long way, with several knolls upon it. When Padui bears S.S.W., you will deepen your water to 6 fathoms. From this steer up N.W. ½W., N.W., or more northerly or westerly, according to wind, tide, &c., gradually closing the land (to southward) to a mile and a quarter, by the time Block house, (a small Isle on starboard side) bears N N.W. afterwards you may borrow on it to three quarters of a mile. Beware of the spit, the east part of which lies from the east point of Block house Island, S.W.½ W. two and a quarter miles, extending N.W. two miles, and dries at low water springs. The navigable channel is abreast of this bank not more than three quarters of a mile. Tree point, tree not distinguishable, may be passed at half a mile, but be careful, and trust to your soundings rather than to your supposed distance off shore, &c. After having rounded Tree point in from 6 to 5 fathoms (in order to avoid Woosung east spit) do not bring Paou-shan-Fort, N W. angle to the north of W.b.N.½N., until the centre of Fort bears S.W.b.W. ½ W., when the channel will be open.

N.B.---There are at present two white marks with two poles over them, and a shorter pole to the E.N.E., this between the others is the leading mark up the channel, which is very narrow.

Woosung to Gutzlaff.—From the anchorage off Woosung steer to the eastward, taking care to avoid the east bank by keeping N.W. angle of Paou-shan W.b.N. ½ N., nothing northerly. Round Tree point at from half to one mile distant. From the latter distance steer S.E. b.E., allowing for wind, tide, &c. Be careful to avoid Block house spit and keep along the south shore at about the distance of a mile, increasing it to one and a quarter by the time Block house, bears N.N.W., and to two miles before Padui fishing station bears S.S.W., in order to avoid the spit off that place from which Block house in clear weather is just discernable, and on which the clipper snip *Inor* was lost. Soon after passing this you will shoal your water to 5, and 4½ fathoms, increasing your distance from the land; and if on the ebb the north bank will be plainly visible. You will carry down from 4 to 4½ on the ebb, and 5 to 6 fathoms on the flood. (if the latter depth you are close to the north bank.) After you have lost sight of the lowland, especially with southerly winds, and flood, steer S.E.½ E. along the south bank in from 4 to 4½ and 5 fathoms, according to tide. Get a bearing of Gutzlaff as soon as possible. When first seen it will bear about S.S.E. from deck, or half a point more easterly from mast-head.

Working up from Gutzluff.—It is very difficult to give any directions for working up the Yang-Tse-Kiang, as judgment and the lead are the only things to guide you, the present charts being in many respects incorrect both as to position of banks and the depth of water. Along the edge of the north bank where it is marked 3 fathoms will be found 5½, 5½, to 4½ fathoms. H.M.St. *Barracouta* has anchored with Gutzlaff, just visible from mast-head, clear day, bearing S.b.E.½E. easterly, at a cable's length, distant found 2 fathoms on north bank, and had 4½ fathoms at low water. The following remarks may however be of some service:—

In beating up from Gutzlaff do not bring it to eastward of south, until it is distant fourteen or fifteen miles, after which to S.S.E., when you will be on the edge of the south bank in about 4 fathoms, if so the Island will be distant about nineteen or twenty miles. Take your soundings from the south shore, standing into 4 or 3½ fathoms, and off to 4½. 5, or 5½ fathoms, &c., according to tide, &c., taking care not to cross the deep water and shoal on the north

bank, which is steep to. In standing towards Padui, or the first point tack in 4 fathoms, at two miles distance. From here you can reach to the northward about three quarters of a mile, or one point, but tack before, or *immediately* you shoal to the northward. After Padui is S.S.W., the water deepens to 6 fathoms; and when Block house Island is in sight you may approach the south shore to one and a half miles, and after it is to the northward of N.N.W. to three quarters of a mile, but go not into less water than 4¼ or 4 fathoms, as there are places on the shore between the First point and Tree point, which shoal suddenly from 4 to 3¼ fathoms. When the east point of Block house is east of N.E. do not stand farther to the northward than half a mile, the channel here being only three quarters of a mile wide, with from 6½ to 8½ fathoms. Standing toward Tree point tack in 5 fathoms or 4½, and when to westward of it, do not in standing to southward bring the north point of Paou-Shan-Battery to northward of W.b.N. ½ N. in order to avoid Woosung Spit.

N.B.—It is to be remembered that the ebb tide always sets a ship on the sonth band, and off the north, while the flood sets on the north bank, and off the south. The lead is a safe guide for the south shore, but not for the north, as the bank on that side is steep to, the water shoaling suddenly from 5½ to 4 and 2 or 1¼ fathoms. The fishing stakes along this bank are generally in 4½ fathoms. Always leave them to northward, but do not trust to their position, as from various causes they may be drifted into shoal water. The Yang-Tse-Kiang ought never to be entered without a good sight of Gutzlaff, as many ships have been lost owing to their mistaking Shawershan Island for it, not having, I suppose, seen the Saddle Islands. It is also unsafe to navigate it during the nights, as the tides are strong, uncertain, and so irregular in every respect that a compass course cannot be relied on.

Tides at the entrance of the river (low land just visible.)—I have found the flood, when not influenced by the winds, to set in W.b. N., gradually veering to N.N.W. The ebb runs from E.S.E. to S.b.E. Between Padui and Block house the tides, when fairly made, run north-westerly and south-easterly, the flood five hours, inclining on the north shore, and the ebb seven hours, inclining on the south bank. It is high water at Woosung shoal one and a half hours, and at Shangai two hours later than at the entrance of the river, where the time on full change days is about twelve o'clock.

N.B.—I have found the rise and fall from nine to thirteen feet, and the velocity from two to three knots: but at times the flood will scarcely be perceptible, especially during rainy season and north-westerly winds. The water rises on the shore at Woosung and Shanghai one and a half hours before the stream runs up, and falls about the same time before the stream makes down.

S. W. K. Freeman, Master, R.N.

The Cortez Bank.—*California.*

By a notice from the Coast Survey Office, dated January 10th, 1856, the point of a rock has been discovered on Cortez Shoal by Lieut, Commanding Archibald McRae, U.S.N. It is four miles southward and westward of the rock formerly determined by him, and is reported as in lat. N. 32° 26′ 42″, long. W. 119° 07′ 23″, approximately.

It is probable, in the judgment of this officer, that the Cortez Reef is some fifteen miles in length, and composed of sharp isolated peaks approaching more or less near to the surface, and with deep water around. The buoy formerly placed by this officer on Cortez Bank was not found by him.

Cape Borda, situate on the north-west extremity of Kangaroo Island, is the first land within the limits of the colony of South Australia that is generally made by ships arriving from the westward. A vote of council has been taken

for the erection of a lighthouse at this point, the cliff on the summit of which the light will be placed being about 250 feet above the sea. The light will be visible about twenty-five miles, and between a south-west and by south, and an E.N.E. bearing from the Cape. The northern coast of the island presents to view generally a bold coast intersected with deep ravines, the whole covered with dense scrub.

Three miles east from Cape Borda is a small beach (Flagstaff Beach) covered with sand in the month of February, on which a landing can be effected in fine weather. Ten miles further eastward the River De Mole runs into the sea, carrying sufficient water to float a vessel of probably twenty-five tons, half a mile inland. At this distance the river enters a rocky gorge, and after a southerly course of two miles divides into two branches, the eastermost of which is met with five miles inland, running a strong fresh water stream towards the sea, with a bed averaging 20 feet in width; the land through which the river flows is, however, of a sandy nature, and the trees on its bank do not attain any great size.

About twenty-two miles east of Cape Borda a safe anchorage for small vessels is found at Snug Cove; a watercourse dry in summer runs down to the Cove, in the bed of which, by sinking a few feet, good fresh water is to be obtained in abundance. There is some difficulty, however, in reaching the general level of the island from this cove, as the hills by which it is enclosed are very steep, and the country inland for two or three miles quite impracticable. Grass-trees and honey-suckle abound between the Cove and the River De Mole.

Western River, about ten miles from Snug Cove, next demands attention. Good gum timber, very straight, and of considerable length and girth, is to be found on its banks for three or four miles inland. Two vessels had been partially built at this place, and if completed would have been floated down the river, the entrance to which, though obstructed in the summer by a dry sand bank, yet is about five feet deep in winter time. Fresh water is found in a small branch of the river one mile from the coast. The land here is tolerably good and capable of cultivation with success.

From Western River to Kingscote the island presents nothing very peculiar to remark on. At Freestone, near Point Marsden, some good land has been brought under cultivation.

On the Three-well or Cygnet River, close to the site of the place formerly known as the South Australian Company's farm, Mr. Goodiar has erected a steam saw mill, and employs a great number of workmen in the expectation of supplying the Adelaide market with good timber of colonial growth.

Further eastward, at Freshwater (or Hog) Bay, under Kangaroo Head is a small settlement of islanders, who cultivate some 200 acres of fertile land. These people are comfortably housed, and have surrounded themselves with most of the necessaries and some of the luxuries of civilised life. It was at this place that the French surveying ship *Le Geographe* obtained water in the year 1803. The visit is recorded by a rude inscription, still very legible, on a rock close to the watering-place, and where at the present time fresh water still appears on the surface.

QUEEN ADELAIDE NAVAL FUND.—The friends of this valuable but unobtrusive Institution will be happy to learn that her Majesty the Queen has been pleased to grant her royal patronage to a Bazaar, which is to be held for its benefit at the Crystal Palace on the 7th, 9th, and 10th of June next. The undertaking is also honoured with the countenance of their Royal Highnesses the Duchesses of Kent and Gloucester, and of many distinguished ladies

among whom are the Marchionesses of Hastings and Londonderry. The Countess of Derby, the Countess of Hardwicke, Lady Harriet Hamilton, Lady Amelia Beauclerk, Lady Mary Wood, Lady Palmerston, the Honorable Dowager Lady Grey, Lady Adam, Lady Beaufort, Lady Parry, and Lady Brown. We are glad to notice that these ladies not only give their names, but appear resolved to exert themselves actively in the good cause, for we find that contributions of work, &c., will be received by the Marchioness of Hastings, 21, Kensington Palace Gardens; Lady Parry, Calverly Park, Tunbridge Wells, and Lady Brown, the Park, Blackheath, as well as by Mrs. Skyring, Admiralty, Somerset House.

Under such auspices we trust that the happiest success will attend this effort on behalf of a society which we have been always ready to support, believing that the "Orphan Daughters of Naval and Marine Officers" have the strongest claims on the sympathy of the public, and that the pecuniary relief which is afforded to them by the Queen Adelaide Naval Fund upon the personal investigation of the members of the Ladies' Committee, has often greatly benefitted those whom benevolence could not have assisted in any other form.

NEW BOOKS.

ARCTIC ENTERPRIZE. A Poem.—*By Charles Hoskins Abrahall, Esq.* Hope, Great Marlborough Street.

There are some clever lines in this little poem,—one perhaps more remarkable for much arctic information embodied in a small compass than for the excellence of the poetry in which it is given. It is in seven cantos, and begins with the earliest period of the Norskmen's discoveries, continuing down to the present time, doing justice to all, and written with good feeling towards our noble profession

> "Whose march is o'er the mountain wave,
> Whose home is on the deep."

Some of the lines are undoubtedly full of sentiment and unexceptionable rithm. They may fairly be pronounced highly poetical, yet others again are sadly wanting in these qualities. On the whole the poem is one of merit, and the author well deserves encouragement and success. It is in fact qnite an epitome of "Arctic Enterprise," and any one may learn from it a great deal more than from many far more expensive works. Neither our space nor our calling admits much of indulgence in poetical fancies but the following is a fair specimen of the general style of the work:—

In allusion to the search for Franklin, we read

> "Deeds speak their dues: with justice fair and even,
> Let then to each the honour'd palm be given;
> Now boundless still M'Cormick's zeal proclaim
> Wreaths ever fresh bedeck M'Clintock's fame."

There are some fair lines on the unfortunate Bellot:—

> "Hurl'd by the blast beyond the power to save,
> A bright fame fell: it had an icy grave.
> Lamented Bellot! science' favourite child!
> Adventure's soul! whose presence still beguiled
> Toil of his burthen—suffering of her pains—
> Oh! what of all thy promise now remains!"

Here are one or two more characteristic descriptions, in allusion to "Arctic Enterprise," unhappily so wrongly directed, as we showed in our last number,

"Penny, for this, renounced his ancient fame,
And shaped his prowess to a nobler aim;
The intrepid whaler—he, whose sterling worth
Old in the storm, familiar with the North,
Inspired a promise like his spirit large,
And bless'd those barks, confiding sorrow's charge.
* * * * * *
Unswerving chief! in sorrow's cause most true,
So with that cause thy power and fervour grew;
Train'd to the search, in danger's straits well skill'd,
All that thy genius taught, thy zeal fulfill'd."

LUMINOUS APPEARANCES OF THE SEA.—*From the Bombay Times.*

In the last number of the Journal of the Royal Asiatic Society of Bengal we observe a notice of a luminous appearance of a large tract of the sea near Canton—a phenomenon so often noticed and described by mariners, but hitherto so very imperfectly explained. These singular patches of water are most frequently observed near the centre of the Arabian Sea, betwixt the tenth and twenty-second parallels and sixtieth and sixty-fifth meridians. They are adverted to generally by Horsburgh.

One of the earliest minute accounts of them is to be found in the Transactions of the Royal Asiatic Society of London of 1840. It is there stated that Captain David Seton, when Resident at Muscat, was in the habit of frequently encountering them in the months of June, July, and August, on his voyages betwixt that port and Bombay or Zanzibar. The sloop *Clive*, from Bombay to the Persian Gulf, on the 22nd of August, 1832, came into a sheet of bluish white water, which speedily appeared white as snow, bright and luminous. It extended to the horizon all around, and lighted up the atmosphere to an altitude of from seventy to eighty degrees. The light was so uniform that it was impossible to discern betwixt sea and sky. Towards its upper edge it was so brilliant as to obscure the stars previously visible. The patch of the heavens over head least affected by it was of a pale bluish tint, like polished steel. The sea became smooth, as if covered with oil, and though the breeze continued and the ship made way as before, there was no ripple or dash to indicate her progress, and the feeling on board was that of a dead calm. The Masters of native vessels trading in these parts describe the phenomenon as of very frequent occurrence. A sea of milk of this sort was passed through by the *Victoria*, steamer, on her voyage from Aden to Bombay in May, 1840. And an excellent account has been published by Captain Kempthorne of a similar sea having been passed through by the *Moozuffer*, in lat. 16°, long. 62°, on the 23rd of January, 1849. He mentions having observed the same thing in nearly the same place in January, 1842. In these cases the heavens were much less brightly illuminated than in that mentioned by the *Clive*. The same year a similar luminosity was observed from on board the *Maria Soames*, in lat. 21°, long. 42°, on her way from the Persian Gulf. In January, 1854, the Peninsular and Oriental Company's steamer *Bengal*, Captain Bowen entered a sheet of perfectly milky sea in lat. 12°, long. 69°. He speaks of having encountered a similar appearance off the Malabar Coast about 1840; on this occasion the sky was lit up as well as the sea. The ac-

count last published, referred to at the commencement, is given by Dr. Wright of the P. and O. steamer *Lady Mary Wood*. This gentleman, when on board the *Shooting Star*, from New York to Hong Kong, met, a little after dark on the 27th of July, 1854, with a sea of milk in lat. 11° 27′, long. 105° 40′, or in the opening of the China Seas. It resembled in most particulars those already described; it extended over an area of thirteen miles in diameter, a second patch covering one of about ten miles.

In all these cases buckets of sea water had been taken up and examined, and in none was any indication afforded of difference of gravity or temperature from that prevailing in the surrounding ocean. In most of them small hair-like animalcules were discernible by the naked eye: in some cases in a state of activity, but most generally in repose. In that examined in May, 1840, a microscope luckily was employed, when the hair-like appearance, under a very moderate power, showed like a string of beads, and was in all likelihood spawn.

The phenomenon, though frequently observed, is nearly as ill understood as it is striking and, in some cases, magnificent. It is obvious that it is met with most frequently near the point where the lines opening to the Gulf of Aden and the Persian Gulf cross each other, for the most part to the northward of the former of these. We do not know whether or not they be more prevalent at one period of the year than at another; and, although earlier accounts assume it to be peculiar to the South-West monsoon, the notices of it we have given refer almost equally to it at all periods of the year. It would be in the last degree interesting to know if there were any particular coral or other zoophitic beds in the bottom of the ocean under or near the spots where the water is chiefly discoloured, or, in short, to what circumstance we are to ascribe the fact of its being so much more prevalent at one place than at another.

It is a circumstance worthy of note, that although for seventeen years we have constantly had from half a dozen to a dozen medical men on board our Red Sea or Persian Gulf steamers, navigating some of the most interesting seas and bays on the earth's surface, that Dr. Carter is the only one of them who has ever published a single line in reference to the wonders of the great deep or its shores. In this case the excuse of want of time, urged for not making meteorological observations on shore, is of no avail. The medical men afloat, for the bulk of the day seem really not to know what to do with themselves, and, on an average, less than an hour a day suffices for the discharge of all their medical duties. When the packet service was in the hands of the Indian Navy, the chief occupation of the Doctor seemed to be to play chess or backgammon with the passengers.

These phenomena afford one illustration more of how much of the traditions of superstition, deemed purely fabulous, may have been founded on fact, and been merely mistaken solutions of phenomena simple and natural. The showers of blood,—the armies seen fighting in the air,—the images of divinities, supposed to have fallen from heaven,—are now known to be exhibitions of red rain, of the aurora borealis, of the descent of meteoric stones. What more natural than that Hindoos on ship board, finding such things as we have described in unknown regions at the extreme verge of the voyage, should describe them as seas of milk? It might naturally occur to them to associate this with butter or with ghee, and add the latter of these as an adjunct to their creed. In reality, the milky appearance manifest at night is often exchanged during the day for the semblance of a sheet of oil or melted butter,—and such is described to have been the aspect of that witnessed in the Arabian Sea in May, 1840.

[Accounts of these appearances extend far earlier than 1840.—Ed]

The Marine Artificial Horizon.

The following observations with the Pendulum Marine Artificial Horizon of Capt. A. B. Becher, R.N., were made on board H.M.S. *Fairy*, in November, 1839, in Harwich Harbour, at anchor; the correction of the instrument being, 9′ 39″; sextant, Carey's, Strand.

Two meridian altitudes of the Moon's lower limb for the latitude of the anchorage observed with the aid of the lamp.

By Lamp at Night.

	Saturday, 16*th*. 7h. 57m. p.m.	*Monday*, 18*th*. 9h. 47m. p.m., heavy dew.
	° ′ ″	° ′ ″
	35 54 0	49 59 0
Correction	— 9 39	— 9 39
	35 44 21	49 49 21
Sem. Dr.	+ 16 17	+ 16 46
	36 0 38	50 6 7
☽ Cor.	+ 46 35	+ 38 13
☽ T. A.	36 47 13	50 44 20
Zen. D.	53 12 47	39 15 40
Dec. S.	1 16 35	N. 12 41 7
Lat.	51 56 12	51 56 47

The correct latitude is 51° 56′ 58″

It will be thus seen that the latitude of an anchorage *at night*, may be obtained by means of this instrument attached to a sextant without landing anywhere from the ship, an advantage which on many occasions would be most desirable.

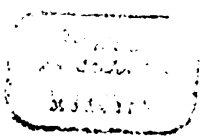
New and Corrected Charts, &c.

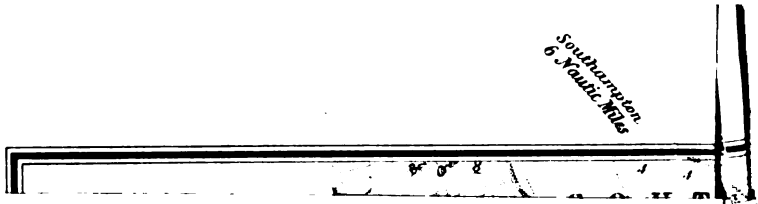
Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, *Poultry, and* 11, *King Street, Tower Hill.*

English Channel Pilot, part 1, edited by J. W. King, Master R.N., 1856	3	0
North Polar Sea, various authorities, 1855	3	0
Norway and Lapland, Index Chart, 1856	4	0
Black Sea, Gulf of Pyrgos or Burghez, Captain Spratt, R.N., C.B., 1854	3	0
Australia, Torres Strait, sheet 2, North-East and Eastern Entrances, Captain Blackwood, R.N., 1845	3	0
Papua or New Guinea, South Coast, Bampton Island to Aird River, Captain Blackwood, R.N., 1845	2	0
New Zealand Islands, General Chart, Captain J. L. Stokes, R.N., and Commander Drury, 1848 to 1855	4	6

Edward Dunsterville, Commander, R.N.

Hydrographic Office, Admiralty, 24th March, 1856.





THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

MAY, 1856.

The Great and Little Skelligs, West Coast of Ireland,—*By Commander W. H. Church, R.N., Surveyor.*

The passage between the Puffin Island (which is just detached from the mainland) and the Lemon Rock—two miles wide—is quite safe, with a depth of 32 to 39 fathoms.

The passage between the Lemon Rock and the inner or Little Skellig (two miles wide) is also safe, with a general depth of 30 to 39 fathoms; and the passage between the two Skelligs (a short mile wide) is likewise safe, with from 32 to 42 fathoms.

These rocks may be passed in fine weather, at the distance of two cables' length, in deep water, except the Great Skellig, on its S.W. side, where it has, outlying three cables W.S.W. from its S.W. point, a detached reef—Washerwoman Rock; the highest part of which is about five feet above high water, and always may be seen. Between it and the S.W. point of the Skellig is a passage nearly two cables wide, with from 7 to 20 fathoms water; and at two cables outside the rock to the westward are 26 fathoms. There are two other rocks outlying from North side of Great Skellig, but not exceeding the distance of half a cable.

The Lemon rock is a small mass of dark schist, 300 feet long, East and West, and 200 broad, North and South, the highest part being 70 feet above high water. There are four small reefs just detached from its West end, to the distance of 100 feet; and S.E., to the distance of 300 feet, is a small detached reef which covers at high water.

The Little Skellig is 2,400 feet long, East and West, and 1,100 broad. Its configuration is very irregular, with deep indentations. The highest pinnacle near its centre is 430 feet high, and is surrounded by sharp spires of lesser altitude. The East end of the rock is somewhat narrow; and the West end forms in two high semidetached obelisks, the bases of which run out in sharp prongs to the West. There are no outlying dangers at any great distance, except a rock off South side at less than half a cable. It is the breeding place and roost of numerous sea-fowl—gannets, gulls, puffins, peterels, &c., and the most southern abode of the gannet on the West coast of Ireland. A man on the mainland pays £1 per annum rent to the owner, Mr. Chas. O'Connell, for the pasture on the rock, and keeps half a dozen sheep on it.

The Great Skellig Rock is 2,700 feet long, S.W. and N.E., and about 1,600 feet broad; the summit of the highest pinnacle, called the Needle's Eye, is 704 feet above the sea. It is deeply indented in its coastline with coves, and is inaccessible from the sea except in three places, where the Dublin Ballast Office has excavated steps through the steep precipitous rock: one in the Blue Cove on North side, one near Cross Cove on South side, and the third in Blindman Cove at East end, under shelter of the long projecting N.E. point. This last is the best and principal landing place, and a well constructed road, defended by a wall of solid masonry, ascends from it in a gentle inclination along the South side to the lower lighthouse, which is situated on the S.W. point of the rock. The two other landing places are used, according to which may be the lee side, when easterly winds throw too much sea into Blindman Cove; but they are both much more difficult to ascend from, more especially that at North side.

From the lower lighthouse a zigzag wall, defended by a solid wall, ascends to the upper lighthouse at the western end of the rock. The latter bears from the former N.$\frac{3}{4}$W., magnetic, distant 800 feet, the lantern of lower light being 175 feet above high water, of the upper light 372 feet. These lighthouse establishments appear to be in excellent order, and everything well conducted about them. There are two light-keepers, a principal and an assistant, attached to each; and the people of one establishment are quite independent of control by, or responsibility to the other—each being separately accountable to the Ballast Office at Dublin. The names of lower light-keepers are Nolan and Moore, and of the upper Gregory and Redmond; the last-mentioned has been seventeen years on the rock without visiting the mainland, and says he has no desire whatever to do so. There are twenty people altogether on the Skellig,—five men, twelve women, and three children,—all belonging to the establishments of the light-keepers.

The high eastern part of the rock contains the remains of a monastic establishment of the early Christian ages. There is a walled enclosure on it, solid and unbroken (though originally of dry masonry without any cement) after the lapse of so many centuries; also seven cells (now called oratories) of the shape of a beehive, of dry masonry

of curious and peculiar construction, all the stones being horizontal. It is wonderful how they have withstood the assaults of wind and weather for such a period in such an exposed position, and they are now watertight, and quite dry inside. These cells appear to have been the habitation of the monks and the largest is about twelve feet high inside at the centre, and much the same in circumference, the walls being three feet thick. Adjacent to the cells is a small square building of similar mode of structure, said to have been the church. A modern cross has been placed on it by one of the light-keepers, and each Sunday the people assemble there for their devotions. There is also close by a small well, perennially filled with water, which is considered holy and dedicated to the archangel Michael. The people from the mainland sometimes come to this well to perform their devotions and "make rounds" either for the cure of distempers or to obtain pardon for sins. A flat stone adjacent to it has roughly engraved on it some inscriptions of very ancient character, said to have been interpreted by a priest as an exhortation to the people to perform their devotions in a certain manner: viz., to commence their prayers at the rude stone cross over Cron Cove, and continue repeating them as they ascend the rock from thence; and if they succeed in carrying them up to the highest pinnacle of the Skellig, called the Needle's Eye, (a difficult and dangerous task to all but cragsmen,) and reach the "stone of pardon," that their sins will be absolved and a clean bill of health obtained. Close by the cells, church, and well are rude crosses of the schist rock, and ancient graves.

The people have a legend that a blind man who came to the holy well recovered his sight, from whom the landing-place "Blindman Cove" derives its name.

From the N.W. part of the rock rises the highest spire; on the summit of which, called the Needle's Eye, is a small breastwork of dry masonry, of a semicircular or horse-shoe shape, erected by the monks as a place of prayer—remaining through so many ages in such an exposed position a monument of their hardihood and devotion.

Between the Needle's Eye peak and the eastern elevated part of the rock is a deep depression, called Christ's valley, which has some sweet herbage and several ancient graves; there are also in it some rude stone crosses of ancient times.

The people of the lighthouses keep about forty sheep on the rock, where they find good pasture on the steep slope of the eastern high part and in Christ's valley; the mutton is said to be very excellent.

I have heard that the Skellig was bought by the Dublin Ballast Office about thirty years since of Mr. Butler, of Waterville, for £1,500.

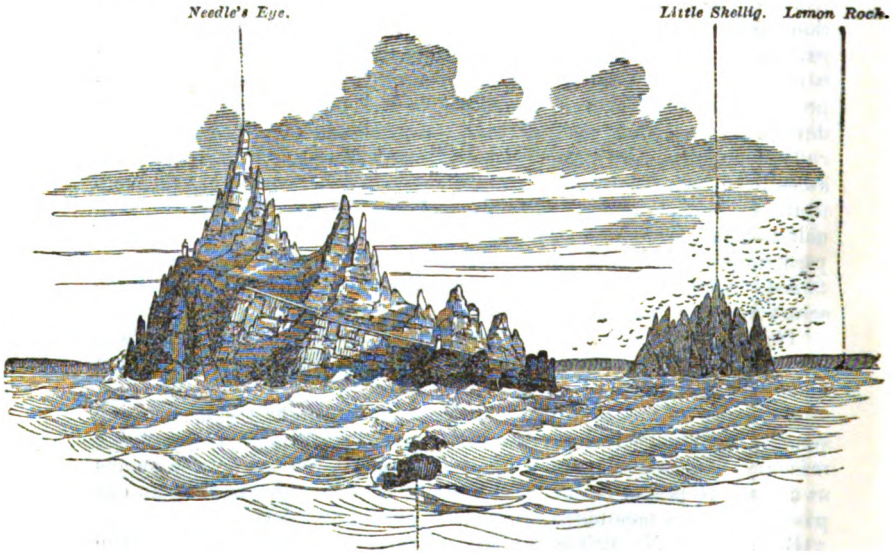
A boat from Portmagee is employed to communicate twice a week with the rock, to bring intelligence back and forward, convey fresh water, &c. The well on the high part of the rock does not contain sufficient, and is too difficult of access, moreover it is regarded as sacred. The longest time they have been without communication in bad weather has been five weeks.

The wave of flood tide coming in from the westward appears to

split a little to the southward of the Skelligs and goes through the passages between them and the mainland to the northward in a curl. The approach of the Bay of Ballinskelligs near Bolus Head seems to be the line of separation of flood stream, which goes from thence to the southward by Scariff Island and through the passages amongst the islands between it and Lambs Head.

The tide streams amongst the Skelligs appear to have a tendency to set a vessel that might be becalmed clear of the rocks. The same remark applies to the headlands of the adjacent coast.

There are many bold and interesting views about the Skelligs, which have been illustrated by the accomplished pencil of Lieut. H. G. Veitch, R.N.



NEW CALEDONIA.—*By Captain Tardy de Montravel, Commanding H.I.M.S. "Constantine." Translated from the Annales Maritimes et Coloniales.*

(Concluded from page 205.)

Crafty, cruel, vindictive, cowardly, and mean in the presence of those whom he fears or from whom he desires to obtain some present, proud and rigorous towards his people, Koiundo represents the most exact type of the despot whom no curb will restrain. Absolute

master of the lives and property of his subjects, he uses his power, I am assured, with the readiness and cruelty of a tiger, which makes them tremble even at his approach. Before our arrival at Nou-Mea, his despotism was felt as far as the settlement of Captain Padden. He went and stayed there with all his people; for when his caprice induces him to move from one point to another all are obliged to accompany him and to remain near him until it pleases him to say he has no further occasion for their services.

It is easy to imagine the effect produced on this man by the formal announcement made to him by me to confine the exercise of his authority to certain limits. When I afterwards made him responsible for the misdeeds of his subjects he was like a tiger deprived of his teeth and claws; but he feared me, and in spite of those emotions of rage which he betrayed he was obliged to submit. Twice he attempted to defy me, but finding me always inflexible and meeting immediate punishment he was compelled to succumb, but he withdrew gradually from our establishment, followed by a great many of his tribe. These return to us when they want pipes and tobacco, and all, excepting the Chiefs, have come to us to work a few hours every day for food. What has been said of Koiundo applies literally to the Chiefs and tribe of Morare; their condition and our method of managing them is the same and with the same effect, and we have now no complaint of the behaviour of either.

The territory occupied by the tribe of Gamba is considerable, varied and susceptible of all kinds of improvement, and it has a richness of soil and vegetation which is unequalled in the island. The high lands are remarkable for their variety and natural fertility, from that near the sea to the summit of the mountains nothing but rich vallies, magnificent forests, and smiling plains are to be seen; besides natural pastures, which constitute the riches of a colony, if the working of the mines that may be found there did not already promise an abundant source of prosperity. The peninsula is little wooded in comparison with the mainland, but nevertheless is sufficiently so to supply the wants of the establishments which may be founded there. Its indented shores present several fine bays, some of which are large enough to receive several ships, and will form, no doubt, hereafter so many small ports. The valleys and hills of which it is composed display the most beautiful pastures, and show the species of cultivation to which it is destined.

The island Dubouzet is not less rich than the peninsula and presents the same variety of wood and pasture, divided into two parts by a narrow passage running across it, one end of which terminates at the sea, the other at the harbour. It seems to me to combine every favourable condition for the site of a town, or for an establishment of some kind or other on a large scale.

Morare.—The great bay of Morare, excepting the anchorage, offers the same advantages and the same elements of prosperity and colonization as that of Nou-Mea; it is even, perhaps, more favoured than the latter in regard to the richness of the soil and the beauty of its

vallies, which are broader and deeper and watered by larger and more numerous streams. It may be considered as the principal centre of the coal mines, and hence destined to be the first point towards which capital and industry will resort. It is true that it is deficient of a good harbour, but that of France is so near the site of the coal, and the establishment of communication with it across the peninsula is so easy, that this defect will have little influence in the future of this part of the coast. Besides, as I have remarked elsewhere, nothing would be easier than to construct a harbour at the end of this bay by making a barrier to the sea on the line of rocks resting on Bureau Point, and extending about twelve hundred yards in a W.S.W. direction. Despointes Harbour, situated at the entrance of Morare Bay, on the peninsula itself, is on its part a port near enough to the working of the mines for ships to carry their cargo there with ease and safety.

From Morare Bay to the S.E. point of the island the shore is as fertile as that of which we have spoken above; it is less indented and affords no other shelter than the Straits of Constantine, in which there is a perfectly sheltered harbour on the coast of Ouin Island. This latter island and the mainland which faces it are under the authority of the Chief of the Isle of Pines, and are, according to the natives, superior in fertility and richness of vegetation to all other portions of the sea coast. M. Senez, who has explored the strait and the neighbouring shores, was astonished at the rich vegetation he everywhere met with, and the number of plantations he found on Ouin Island.

It may, therefore, be truly said that from the S.E. point to Laguere Harbour nature has been pleased in some way to heap together all her treasures, and to unite every desirable condition for the formation of a colony. So many advantages call for colonization on this part that I do not for a moment doubt that it will soon be the centre of the first agricultural and industrial establishment, and that the choice of the first founder will be attracted here for the capital of the new colony.

As already observed, the middle of the island is occupied, between Bonde and the South, by several tribes; the most considerable of which would be, according to the accounts of the natives, that of Mere, which extends from Kanala to the South. The intercourse of these central tribes with those of the coast are pretty frequent, although they have nothing to exchange with each other. The former are said to be more populous and richer than the latter, which would seem to indicate an extraordinary fertility in the central vallies. I think they will become peopled soon after our settlement by a portion of the natives from the coast, who will here, as everywhere else, retire before civilization; and yet we may hope, from what we know of the character of the Caledonians, that the number of the refractory will not be so high as might be apprehended if we had another population to deal with. From Port de France to Kanale the communications will be short and easy; the distance is not more than two days' march and is often gone over in less time by the natives, who, in order to go from one

side of the island to the other, pursue a path tracked out by them between the two mountain chains. These two points, destined by the advantages of their position to become the principal centres of the colony, should be connected by an interior road, which would have the advantage of carrying civilization to the heart of the central community.

I think that up to the present time the total number of the population of New Caledonia has been exaggerated. Judging as a person only acquainted with the North of the whole island, by the few tribes with which we had dealings, and adopting the erroneous opinion that the South of the island was more inhabited than the North, I was led to rate the population at fifty thousand souls. But after visiting the South, I am satisfied that the population there is much less than in the northern part, and I think, without being far wrong, I might reduce the number which I first gave by one-fifth.

It was with much regret that I was unable to pursue the investigation of the western coast as far as its northern boundary. The intelligence, however, that I have been able to procure relative to this portion, vaguely and scantily given it is true, induces me to believe that it is far from equalling in richness the portion of the coast which we have explored. I have been assured that from Port St. Vincent to the N.W. point there did not exist one sheltered harbour, one secure anchorage; but one is so often misled by accounts from people who have an interest in concealing the truth that I place little confidence in them.

Future Relations between New Caledonia and Australia.

The relations between New Caledonia and Australia will certainly have two phases: one whilst our colony is tributary to her neighbour, and the other when each of them employing her own resources will enrich herself by reciprocal exchange, and then the advantage must rest with ours.

In order clearly to understand these two periods of relationship, it is important to say a few words on New South Wales, on whose markets we must depend for provisional supplies during the infancy of our colony, until, in our turn, we shall be able to supply it with certain produce which it does not possess.

I shall confine myself to considering New South Wales in the light of its usefulness to our colony at present, and of the advantages we shall have over it in the future, leaving aside secondary productions, which can only come in as accessories in our after relations. I shall speak here only of the works which now form the riches of Australia and which will hereafter form those of our colony,—that is to say, the raising of cattle and the variety of commerce to which it gives rise, the working of coal mines, and the exportation of sugars.

The result of the official statistics, published in 1854, shows that the population of New South Wales had risen, 31st December, 1853, to 231,088 inhabitants, and that emigration during that year had reached the number of 13,767 individuals of both sexes.

In these same documents we see that in 1853 this colony produced:

1,384,541	bushels of corn	342	hundredweights of tobacco.
684,253	bushels of maize.	34,595	tons of hay.
69,128	bushels of barley.	57,491	gallons of wine.
36,886	bushels of oats.	1,587	gallons of brandy.
20,308	tons of potatoes.		

These productions are far, we may easily believe, from being sufficient for the consumption of the colony; we must look elsewhere then for a direct supply of corn and other commodities of first necessity which are imported into New South Wales.

The true riches of this colony consist, as is indicated in its table of exportations, in the enormous number of its cattle which goes on increasing every year in a proportion of which the following comparative table will give some idea.

Years.	Horses.	Horned Beasts.	Pigs.	Sheep.
1843	55,739	850,160	54,607	3,452,539
1844	64,093	971,559	52,196	3,743,732
1845	73,011	1,116,420	56,022	4,409,504
1846	76,726	1,140,297	39,733	4,909,819
1847	90,118	1,270,706	57,395	5,673,266
1848	97,400	1,366,164	65,216	6,530,542
1849	105,126	1,463,651	52,902	6,784 494
1850	111,458	1,374,968	52.371	7,092.209
1851	116,397	1,375,257	65,510	7,396,895
1852	128,404	1,495,984	78,559	7,707.917
1853	139,765	1,552,295	71,395	7,929,708

There have been exported from the colony in this present year 907 horses; 6,425 head of horned cattle; 41,151 sheep. And besides this exportation the raising of cattle has produced a revenue of about £1,205,000 sterling.

Within reach of a market so well provided, New Caledonia will draw thence for the present, the cattle necessary for her wants, and for the future the productive elements of an extensive industry. The pastures of our colony are fresher and richer than those of New Holland, cattle will therefore prosper more in the former than in the latter. Our wools will be of finer quality, and if the reduction of duties lately granted to the wools of Australia is applied to those of New Caledonia, it is manifest that France will in preference supply herself from her own colony.

One of the first steps towards colonization will be the immediate introduction of cattle, necessary for consumption and for the prompt propagation of the best species. Great sacrifices should be made to this end, in order to liberate us as quickly as possible from a heavy tax and to enable us to supply ourselves should the day come when

the neighbouring market would be closed against us by circumstances of which we can neither tell the nature nor the period.

Four points of New South Wales are open to our colony to help it to pass through the first period of its existence; all four favourably placed in regard to the nature of the wants that each is called to satisfy. Sydney will be our point for supplies of everything except victuals, those articles of first necessity coming from without. Newcastle will furnish us with coals until our mines are in a state for working; and the districts of Brisbane, or Moreton Bay, and Port Curtis, nearer to us, must furnish us with cattle. The two latter points possessing more interest for us than the others, and being at the same time less known, a few words about them may be added here.

The province of Moreton Bay, of which Brisbane is the capital town, is within 300 leagues of New Caledonia, and is esteemed the richest and most flourishing district of New South Wales, though its population does not yet rise beyond 16,000 souls. Rich in pasturage, its principal occupation is the raising of cattle. Agriculture and horticulture especially favoured by the beauty of the climate, which is at once extra and inter-tropical, have attained there a high degree of development and tend to rival the former for placing the province at the head of the colony.

This district, comparatively so little peopled, possessed on the 1st of September in this year: 1,906,774 sheep; 233,986 horned beasts; and 8,152 horses;—enormous numbers when one thinks of the rapidity with which this capital is multiplied.

Brisbane reckons about 3,000 inhabitants and is situated above the mouth of the river which falls into the bottom of Moreton Bay. Its climate is reputed to be the best in New Holland, and a great number of invalids resort there every year for the sake of health.

Only small vessels can go up the river as far as Brisbane, those of heavy tonnage being forced to stop about fifteen miles from the town, under shelter of Moreton Island, on Cleveland Point.

It is from this port that we must supply ourselves with cattle, for they are cheaper here than at Sydney, and the point of embarcation being nearer the chances of loss at sea will be less, and might become almost void if by a timely sacrifice we wished to ensure the quick introduction of cattle of the best quality into New Caledonia, their transport was effected by steam-vessels.

The district of Curtis, called Port Curtis, is an establishment of too recent a creation for us to be able, at present, to reckon in any way upon it in the relations of our colony with New South Wales. Open to colonization only at the moment when Sydney was made acquainted with the occupation of New Caledonia by France, this point is still in a state of embryo; but as settlements progress rapidly in Australia, we shall have shortly in face of us a rival, the importance of which will increase with our own, and which, friend or foe, will always claim from us serious attention. The intention of the Government of Sydney is sufficiently clear for us not to lose sight of this new colony founded

over against us; it is for us to have our eyes open and to progress with an equal rapidity.

We find in the same documents that eleven coal mines working in New South Wales have produced 96,000 tons of coals, out of which 51,000 tons have been exported to New Zealand or other Australian colonies at exorbitant prices and out of all proportion, on account of the difficulty of working, rendered almost impossible from the excessive rise of wages since the discovery of gold. The province itself, therefore, only consumes 45,000 tons, notwithstanding the great movement in its steam navigation. The high price and the scarcity of coal should be looked on as the cause of the low figure of this consumption in the province, and we might add to this reason the no less powerful one of the inferiority of the indigenous coal. It is on this account that the Peninsular and Oriental Company, who serve by steam ships between Europe and Australia, is obliged to supply its depôts by sending coals direct from Swansea. It sent 8,000 tons in the course of the year 1853, and we found at Sydney the three-masted French vessel *Louis Napoleon*, which alone had brought 2,000 on the company's account at the enormous freight of 100 francs per ton.

With these numbers before us what may we not expect from the working of the coal mines of New Caledonia. Thanks for their position on the sea shore and for their proximity to the surface of the soil, the coals drawn from thence will be free from the expense of transport and from the difficulties of extraction that press heavily on those from New South Wales; and if we employ the convict as well as paid labourer in working them, the expenses of hand-labour will be so inferior to those which press on the English colony that the latter will not be able to maintain any competition with ours. And if, as we have every reason to believe after the conclusive experiments made on board the *Prony*, the coals of New Caledonia bear the test with those of England, we may rest assured that nearly alone we shall supply the consumption for the whole of Australia.

And, independently of this vast market open to the production of our pit coal, have we not again to supply the markets of China, which also are obliged to have recourse to England. The numerous vessels which go from Australia to China by the Eastern route repairing thither generally empty, it cannot be for a moment doubted but that they will stop at New Caledonia, which lies in their way, in order to compensate by a cargo of coal the loss of so long a voyage without any.

The merchant vessels coming to New Caledonia on account of the colony or for private advantage would be sure to find a freight there wherever their ulterior operations might call them. And if the introduction of Chinese labourers into the colonies of the Atlantic was admitted in principle, the same vessels that had been freighted for New Caledonia would take a cargo of coals for China, and there would embark those who were hired, whom they would convey to their destination, thus executing three advantageous operations in a single

voyage. It is then that the prosperous period of New Caledonia will begin, and it cannot now be foreseen to what degree of prosperity she may be raised by her mines progressing equally with those agricultural conditions which her soil invites.

In looking over the statistics of New South Wales, an enormous importation of unrefined sugar appears, sent there mostly by the Dutch colonies in the Indian seas. The amount of this importation reaches 17,549 tons; in value about 7,500,000 francs. This market would be a certain outlet for the sugar houses which would be established at those parts of the colony best suited for that employment.

Thus an attentive examination shows that New Caledonia will have only to ask from Australia the cattle necessary for her support during the period of her foundation and the first elements of her flocks, and that at no distant period she will become a formidable competitor for its wool trade and will undersell her coals.

Conclusion.

From what has been previously said of New Caledonia and from the foregoing, it may be concluded that the new colony with which the government of his Majesty has enriched France presents in its whole, as in all its details, every condition for prosperity and immediate success; at the same time its geographical position will enable it on some future day to bear an important part in the destinies of that portion of the globe. In short there is in it a complete union of all that can be desired in a new land: salubrity; an agreeable and temperate climate; rare fertility of soil; facility of cultivation; a great variety of produce from natural or foreign culture already in practice; magnificent harbours; a population which if it cannot be wholly rendered useful will at least not be troublesome; mines easy to be worked and which by themselves alone are a pledge of success by forced labour, as in a penal colony.

Admitting that all the points now visited present wholly or in part these favourable conditions, and thoroughly believing that the whole island enjoys the same advantages, the portion described here has been divided into four parts, towards which the first trials of colonization are by preference invited. These groups are, beginning in the North:

The circle of Balade, including the valley of Diabot, a field for agricultural purposes that I should think best to be devoted to free labour, and the islands of the North; the most important of which, Boulabio, might be appropriated to a penitentiary establishment destined to furnish hands for the farms to be established in the North of the mainland.

The second portion, composed of the tribes of Mouhelebe and Yengen, should be reserved for great private enterprises of cultivation and for the working of timber by the aid of manufactories composed of convicts provided by the penitentiary in the North.

The third portion, formed by the union of the three tribes of Kwawa, Kanala, and Nikety, would have its centre in Kanala; which, for the

beauty of its harbour and its geographical position, would become the military and central point of the eastern coast. It would be almost exclusively reserved for great colonial cultivations. That of the sugar-cane seems to me more suitable than any other to the soil of this third part.

The fourth portion is in short the more important for the future as well as for the present, by its climate, its fertility, its mineral riches, its harbours, and the almost providential division of its territory, of easy application to any colonization, single or combined, and above all by its geographical position. The fourth portion would comprise the Isle of Pines, that of Ouin, and of the territory between Laguere Harbour and the S.E. point of the mainland. Every thing promises that in this portion agriculture must be partially sacrificed to the employment which will adopt the working of the coal mines, a natural source of riches which should be considered as the principal wealth of the colony.

It is for this reason that it seems to me necessary to make the Isle of Pines the chief penitentiary by annexing to it either Ouin Island or the Isle Dubouzet, to which the convicts should be sent after a time of trial undergone at the Isle of Pines. From these secondary penitentiaries they could be sent either to the agricultural settlements or to the mines worked, at the demand of proprietors or companies.

In pointing out the preceding division of New Caledonia into four centres of occupation, I am not for shackling in any degree the movement of emigration or endeavouring to induce capitalists to choose one part rather than another at their convenience. My aim has only been to make known the spots which seem to me most favourable to an occupancy directed by the state and having chiefly in view the creation of a penitentiary colony. For, as regards free colonization, I would say let us leave hands and capitalists to choose for themselves their own ground;—let us open to them a wide door, whatever be their nationality;—let us permit them to become proprietors of the soil, which they will be able to turn to advantage;—in a word, let us create at the antipodes, in the high road of the commerce of an empire which is progressing with giant strides towards China, a free colony in the fullest acceptation of this word as applied to commerce.

If gold mines are discovered, as I am persuaded they will be, in New Caledonia, let us leave those English and American adventurers that California and Australia have seen contending over their mines to flock to them. In their train will follow the ravenous wolves who turn to account these first pioneers of colonization; and when at length the mines no longer suit their purpose, or when a small number of fortunate speculators have been enriched by them, these latter will in part fix themselves on the soil, and those less successful in the pursuit of gold will lend their hands to these new proprietors or to other employments. Thousands of people now without occupation in New Holland, in consequence of the diminution of gold and the commercial crisis, await but the word which will open to them the door of our

colony where they hope to meet with better fortune or at least a corner of land to cultivate, a last resource which New South Wales refuses them in their poverty.

Whatever may be said of France in the present day, in ignorance of the past, she knew formerly how to create colonies, and even served as a model in this respect to the states which have surpassed her since circumstances have turned her attention from colonies and directed it wholly to the continent. And how did she create those rich colonies of Louisiana, St. Domingo, Canada, &c.? It was only by those free-booters and associations of men who were scarcely worth a better fate, to whom was left all liberty of action. Many lost their lives in the enterprise, the only thing they possessed; but those who survived succeeded in founding a settlement and no one stopped to inquire how many were lost on the way any more than they now think in Australia and California of the thousands of pioneers who have died from misery and hunger. In a few years a colony rose from the waves on the other side of the Atlantic; once formed and started into life, it regulated its machinery and progressed with time.

A system of absolute licence like that is too far from our present habits not to be revolting to our senses. But between it and the system of restriction and exclusion there lies a boundary of commercial and industrial liberty, within which it will not be difficult for us to found a distant colony having near it a rival one open to every one and to every purpose.

J. TARDY DE MONTRAVEL,
Captain, Commander of the *Constantine*.

TRADE IN CONNEXION WITH THE NAVIGATION OF THE DANUBE.—*By Dr. Michelson.*

The Delta and the lower course of the Danube, touch upon four different territories, to which that river serves as the only channel for the disposal of their productions, viz.:

1. Bessarabia, (belonging to Russia,) with the ports Sulina, Reni, Ismail, and Tomarova.
2. Dobrudscha, (belonging to Turkey,) with the ports Tultsha and Matsheen.
3. Moldavia, with the port Galatz; and
4. Wallachia, with the port Ibrail.

The principal products which find their way by these ports to the markets of Europe are:—Maize, wheat, rye, barley, linseed, cattle, salt meat, prunes, caviare, and some tallow and wool. The imports thither consist of:—Coffee, sugar, wine, spirits, manufactures, and articles of luxury, and also of a small quantity of coals for the use of the steamers in the Danube.

Of all the above-named ports Galatz alone has succeeded, within the last few years, in bringing her trade to some degree of importance, though it is still far, very far, from forming the emporium upon the Danube, such as London and Liverpool are for Eastern and Western England, or Havre and Marseilles for Northern and Southern France. Trade and commerce, it is true, are split and nearly equally distributed over those four territories—so much so that vessels are frequently obliged to sail from one port to another to complete their cargoes; still, it does not sufficiently account for the want of a principal emporium, when we consider that the Elbe and Weser, though they cross eight or ten different states, have still Hamburg and Bremen as the staple places for the German trade.

Agricultural articles are so cheaply produced in the Principalities, that despite the high rate of freight and manifold obstacles both nautical and political, they successfully compete upon the principal corn markets of Europe with those of other agricultural countries. In 1847, immense quantities of corn were exported thence to Europe; so also in 1854 and 1855, though since 1853 the Principalities were not only continually and alternately occupied by three large armies, but were even compelled to supply with considerable quantities of corn the theatres of war in the Crimea and Anatolia. These facts alone may suffice to show the vast agricultural resources of the Principalities.

Closely connected with the agricultural advantages are the benefits arising from the navigation of the Danube. Various foreign flags which were hitherto hardly known by name in these waters, were navigating largely in the Danube within the last four or five years, and we will, for illustration sake, only cite those of the two most distant parts, Holland and Oldenburg, which (according to the Austrian *Lloyd*) sailed for the Danube:

	Dutch Vessels.	*Oldenburg Vessels.*
1845	20	3
1846	26	—
1847	49	6
1848	17	1
1849	7	—
1850	21	—
1851	15	79
1852	87	39
1853	223	37
1854	139	55
1855	—	53

The Danube has three principal embouchures—the Kilia in the north, the Sulina in the central part, and the St. George in the south. They all exhibit the natural process peculiar to all large rivers. The current continually carries from the interior masses of sand, which deposit themselves at the mouths, where the bed is the widest and the stream therefore less rapid, and completely choke them up in process of time. Thus, of the seven ancient mouths of the Nile only two are

now extant, and even these are not now accessible to maritime vessels, though Rosetta was still a seaport in the last century. The various mouths of the Rhine have equally long since been choked up, and a similar fate threatens those of the Po, Rhone, Thames, Weser, Elbe, &c. But as the waters of a river must have an outlet into the sea, it only requires the helping hand of man to keep that natural channel in a navigable condition. The mouths of St. George and Kilia have long since been inaccessible to large vessels; nor are they provided with buoys, beacons, lighthouses, or any other signal for the safe guidance of mariners.

The Sulina, however, has, with few interruptions, been navigable until the most recent times. Taitbout de Marigny in 1850, published a chart of the Black Sea, according to which the Sulina mouth measures the following depths:—20, 18, 16, 15, 14, 13½, 12½, 12, and 11½ feet.* These depths vary much, according to wind and weather. By protracted east winds, as also after heavy rains, or when the snow begins to thaw, the minimum depth is from 12 to 13½ feet; while by continual westerly winds or dry weather the minimum sinks as low as eight feet. It is asserted that in previous times the depths were more considerable than at present, *Quis scrutatus est?* Before 1830, the Danube was navigated exclusively by Turkish and some Russian merchant vessels, and he who supposes that they ever made or undertook soundings must surely never have caught sight of such coasters. It is an indubitable fact, that no maritime vessel ever visited the Danube previous to that period.

Russia was, until the spring of 1854, sole mistress of the Danube mouths, and had engaged herself by treaties to keep the lower Danube in a navigable state. The same chart by Marigny gives also the various depths of the Danube itself; it begins with 14 feet, and terminates with 90 near Galatz. There are only three spots beset with some difficulties:

1. Between Sulina and Tultsha, (east of the islet Zelenoi,) where there is a bank in the arm of the river measuring only 12 feet depth;

2. At the western coast of Zelenoi is the Algani bank, with 15 feet water; and

3. Near Tultsha is a cliff or rock upon which the stream drives the vessels sailing down the river, if proper care is not taken to steer off betimes.

With the exception of these drawbacks, the Danube affords everywhere a fine and easy navigation, despite the general cry of the "scandalous state of the river."

No vessel ought to venture passing the bar into the Danube which draws more than 11 feet. Nor is it less dangerous on the other hand for vessels to ride in the open roadstead with an incomplete cargo, by

* Marigny's chart is taken from the Russian chart of the Black Sea by Manganari, executed between the years 1832–6, with corrections to a later date. Captain Spratt, R.N., C.B., in the year 1855, made a survey of the Sulina mouth of the Danube, which has been published by the Admiralty and which shows 11 feet over the bar at that time.—Ed.

which tacking and manœuvring become exceedingly difficult, and has been the cause of many wrecked and stranded vessels. At Sulina there are, however, pilots, lighters, and a lighthouse, as also ready hands to offer assistance in case of need.

For the back voyage to Galatz, there is a good supply of pilots at hand. Many captains provide themselves with them at Constantinople, while others only at Sulina. The pay of a pilot for the whole voyage there and back, which lasts from three to four months, averages from £20 to £30, the half of which he receives in advance, and the rest after bringing the vessel back in safety into the Bosphorus. If an accident happens through his neglect, he loses the remaining half. These pilots are usually insular Greeks from the Archipelago or the Ionian Islands, or even deserted Austrian sailors from the coasts of Dalmatia and Illyria. They stand under no authority whatever, have no examination to undergo, and are therefore free to act as they please. Their services are nevertheless exceedingly valuable and their skill in navigation is admired by even the most experienced sailors in the Atlantic. When accidentally coming in the narrow bed of the river upon a vessel steering in the opposite direction, and where there is no chance of avoiding a contact, the pilot at once steers the vessel upon the steep bank, so that the fore part rises on high, while the current seizes the stern part, turns the vessel round, and brings it afloat into the usual course, without any damage whatever.

This emulation in skill and confidence can only be explained by the great competition that exists among the fraternity. A sort of control has, however, been introduced in the following manner:

The harbour master of a port is usually applied to by the captain of a vessel for the engagement of a pilot. The former is strictly prohibited from engaging any one whose former conduct has been complained of, and he is moreover bound to return the money advanced to the pilot of his recommendation if he be found unfit for his post. By these means the harbour master is obliged to have an intimate knowledge of all the pilots in his port, that he may with safety recommend only those of whose honesty and skill he is perfectly convinced.

No sooner, however, is Galatz approached than a series of annoyances begin, in consequence of the so-called "Danube fever." The whole coast of the lower Danube is a wide marshy plain, deluged in the winter and rainy season by snow and rain, which, becoming stagnant, produce in the summer myriads of flies, gnats, mosquitoes, in addition to the so-called marsh fever. It is a rule that during the passage upon the Danube no one is allowed to sleep on the deck in the free air, as one single night thus spent is sure to bring on a deadly fever.

Merchants of all nations are established at Galatz, who do a good deal of business in the import and export trade, but take advantage of the advances they make to the captains upon the freightage with regard to the rate of exchange. The advances are usually made in Austrian ducats at the rate of 10s. each, though the actual rate at Constantinople is only 9s. 6d. Having finished loading at Galatz, the

captain must now prepare for a series of annoyances of a novel character, and which reach the climax at the passing of the bar, where he must seriously think of procuring lighters. As a matter of course he first applies to the pilot, who is sure to ask 200, 300, 400, and even £500 for the safe conveyance of the vessel and cargo across the bar. Indignant at such an extortionate demand, the captain turns his back upon him, makes inquiries about lighters at Galatz, Tultsha, or some other place, but receives no satisfactory answer. Should he still persevere in his resolve to act for himself, and venture through the bar without lighters, he may be sure that the pilot will take the first opportunity of losing the vessel, and take to his heels afterwards. Arrived at Sulina, the captain is surrounded by lightermen, who increase the demand even to £800, and to which demand he is now obliged to submit, as the pilot now entirely declines to treat for himself, as he usually receives his share of the extortion from the lighterman who concludes the bargain. We must, however, consider, that the pilot can hardly live and maintain a family with the £20 or £30 wages which he receives for a voyage of three or four months' duration, without having recourse to unfair means to increase his earnings.

The uncommonly high price of the lighterage is owing to the following circumstances:—vessels can only clear out with a westerly wind, which prevails very rarely in that part, and when it does it considerably diminishes the depth of the bar, and compels the employment of a large number of lighters. No sooner, moreover, has the long-expected west wind made its appearance than the demand for lighters becomes excessive, and by far exceeds the supply at hand. Each Captain is anxious to get over the bar without the least delay, and the affair thus takes its usual course, as in all countries and at all times when the demand exceeds the supply of an article. The money is, however, deposited at Sulina, and not paid until the lighterman produces a certificate from the Captain to the effect. Being unloaded, the vessel passes the bar and reloads in the open roadstead. Should a gale be drawing on, the vessel is in momentary danger during the operation. The lightermen then hurry the work of reloading, casting vast quantities of corn upon the deck without losing time in stowing them away in a proper manner. Should the storm actually have made its appearance before the reloading is completed, the lightermen rush into their boats and disappear over the bar together with a portion of the cargo, leaving the Captain to wait until the storm has somewhat abated. If the wind is, however, so strong as to compel him to take to sea, he may bid eternal farewell to the remaining cargo, which he is sure never to see again, glad to save his vessel, crew, and a part of the cargo from utter destruction, as the danger is even then not over until he arrives at the Bosphorus, since the cargo, consisting mostly of corn, and not properly stowed away, is apt to fall upside down, thereby exposing the vessel to capsize.

Such was the condition of the Danube navigation until the departure of the Russians from the Principalities. Sulina was afterwards

destroyed by fire and sword, including the lighthouse, quarantine, and other public buildings. This exploit was at that time hailed in the public press as the liberation of the Danube, though it was far from being so, and it only showed how little the public knew about the real difficulties of the Danube navigation. Not long after, the Danube mouth was blockaded by the allied fleet, which of course entirely stopped the navigation of the river.

In the winter of 1854–55, Baron Bruck and the Austrian government having succeeded in persuading the allied powers to raise the blockade, a few Austrian and some foreign neutral vessels actually ventured to visit the Danube; but as the Russian authorities at Reni stopped their further progress, it required new negociations with the Russian cabinet to remove the restraint also at that place. The permission was at first confined only to the firm Gopzewitz, at Trieste, who were allowed to ship their cargo from Galatz to an Austrian port, and in an Austrian vessel. By the efforts of the Consuls at Galatz, however, the license was extended to all neutral vessels to sail with neutral goods to neutral ports. At that time perfect anarchy did prevail at Sulina, whither the inhabitants had returned, and where they lived in complete lawlessness. As no one thought of showing a light in the lighthouse, many disasters happened to some Norwegian, Lubeck, and Dutch vessels, which stranded at the bar, when in some instances even the whole crew went down in the very sight of many vessels in the roadstead, who were unable to render assistance. The Austrian government thereupon stationed a steamer at Sulina, re-established there a sort of local authority, brought into active operation the lighthouse, and introduced there a species of piratical republic under Austrian protection.

During the whole year of 1855, the depth at the bar averaged about 8½ feet, owing chiefly to the continual east and northerly winds, as also to the excessive drought of the summer. Also the Algani Bank, which, according to the above-named chart, is 13 feet deep, has in recent times decreased to 10.

The greatest evil consists in the absence of all means of saving life at Sulina. On the 14th March, 1855, the brig *Braga*, from Lubeck, was wrecked at the bar, and the crew with difficulty saved themselves on land. The lawless inhabitants appropriated to themselves the whole of the stores and cargo, leaving the crew exposed to die of hunger in the lighthouse, where they had taken shelter. Fortunately a brig from Bremen, the *Ocean*, arrived two days after and rescued them from their perilous position. On the 4th December, 1855, a ship from Bremen sunk, with every soul on board, in sight of the roadstead, filled with hundreds of vessels of all sizes, without anything being (or could have been) done to save them. A Norwegian vessel was about to share the same fate, when the Captain of another vessel of the same country hastened in his boat, with two of his crew, to the rescue of the people in the sinking vessel. After much toil and risk, he succeeded in reaching the wreck, when the first Captain

lowered into the boat his wife, who was far gone with child. Hardly, however, had she set foot into the boat when a heavy sea upset it, drowning the whole of the occupants. The now widowed Captain took charge of his deceased countryman's vessel, which was also wrecked a few days after. The Captain and some of the crew, however, saved themselves by swimming, and the first object that met the Captain's eye on land was the dead body of his wife, which had been washed to the strand. Such is the present condition of the Danube navigation, and the question naturally arises, What is to be done to remedy the evil?

There are three ways to attain the object in view:

1. To construct a canal between Rassova and Kustenjeh.
2. To establish a free port between Kustenjeh and Sulina.
3. That the mouths should be under the supervision of a European commission.

We will examine these projects in so far as they simply relate to the trade and navigation of the Danube, irrespective of the political considerations connected with them.

The canal between Rassova and Kustenjeh affords, no doubt, considerable advantages to the navigation of the Upper Danube for maritime vessels from Rassova, and should the river be made navigable as far as Braila, the advantages would even extend to the Lower Danube, by which the distance to Galatz would be considerably shortened. The conditions attached to this plan to ensure its success are,

1. That the canal, as also the distance from Rassova to Galatz, should be made navigable for maritime vessels to the depth of 12 or 14 feet.
2. That the export of corn should be allowed on the canal.
3. That the dues should not exceed those on the Danube.

Without these conditions the plan may as well be given up altogether, since Russia has only to clear the bar, and abolish the dues, to dispel all notions of vessels sailing upon the canal.

The project of a free port between Kustenjeh and Sulina has the advantage of creating an universal emporium for the trade of the Lower Danube. Small coasting vessels might then convey the products of the Danubian ports and environs to the free port where the maritime vessels might freight them at a much cheaper rate.

The success of the third plan, the supervision of a commission, depends on its being charged with—1. Clearing the shallow spots of the bed and mouths of the Danube. 2. Marking the dangerous spots by buoys, and other signals. 3. Erecting and maintaining lighthouses at the requisite places. 4. Maintaining at Sulina apparatus and men for saving vessels and their crews in case of need. 5. A sufficent number of lighters and a medical staff. 6. Fixing a tariff for the lighters at so much per ton, according to the cargo and season. 7. Establishing a pilot board for the control and examination of the Danube pilots, as also for their remuneration, according to the season. 8. Devising means to prevent the overflow of the river, by dykes, dams, &c., as also to render the mouths more healthy by draining off the

stagnant waters. 9. Erecting stores and warehouses for goods saved from wrecks.

In addition to the foregoing from the *Daily News*, we find the following on the

Danubian Route to Constantinople.

According to a telegraphic despatch from Galatz, says a Vienna letter, the Austrian war-steamer *Castalone*, which directs the labours of the vessels charged with the clearing of the Sulina mouth, had arrived there, and all the necessary preparations have been made to commence at once their labours. The commerce between Turkey and the Principalities has experienced much animation. The same has taken place between Germany and the countries of the Lower Danube. Zollverein goods are carried by rail to Vienna or Pesth, where they are embarked on the Danube. They take only ten days to go from Pesth to Giurgevo (Bucharest station) or to Galatz. On Monday next will open the weekly line of rapid steamers from Pesth to Galatz in connection with the Lloyd steamers, which go from Galatz to Constantinople. These passages are so organized that the journey from Pesth to Constantinople will be performed in eight days.

The Atlantic Ocean Considered with Reference to the Wants of the Seaman.

(Continued from p. 196.)

Navigation of the Atlantic Ocean.

It is a general rule in the navigation of the ocean when going from East to West to attain, if convenient, the zone of the trade winds; and to avoid it when going in the opposite direction. In the first case, then, it becomes desirable to reach it, and in the other to leave it, as soon as possible.

Having treated on the prevailing winds and currents of the Atlantic Ocean, we shall now allude to the routes which should be taken for crossing it.

Routes from Europe to North America.—In the routes from Europe to North America, it is generally acknowledged that the further North the port of departure is the greater are the chances of a speedy passage.

In the beginning of the year it is advisable to keep North of 46° or 47° N. lat. as far as the meridian of about 32° W., and then to haul South to the parallel of 43° N., and to keep in or near this parallel without making northing, especially in approaching the coast of North America, in order to pass well clear of Sable Island, this being so dangerous that it cannot be avoided too carefully. By following

this route the northern limit of the Gulf Stream will be avoided, and after leaving Newfoundland the arctic current will assist in the track to the S.W. for the ports of Nova Scotia and New Brunswick, or those of the North United States.

Towards the end of the year it may be better to adopt a course to the northward of that. Thus, leaving Europe, proceed to the N.W. as far as 55° latitude and 30° W. longitude. From thence cross the banks of Newfoundland on a S.W. course in 46° latitude; then pass about sixty miles South of Sable Island, and from thence make for the desired port.

In these passages it is recommended never to pass northward of Sable Island on account of the frequent fogs met with in those regions and strong S.W. currents that are found near it, the effects of which cannot be foreseen.

Routes from Europe to the Ports of the United States.—Passages from Europe to the United States are much retarded by the Gulf Stream, which should be avoided, for in case of contrary winds or calms an easterly set would be inevitable. In order to reach these ports, then, the routes previously indicated should be followed, passing southward of Sable Island and from thence following in the southerly current which flows along the coast of the United States, in order to avoid that of the Gulf Stream. In all cases if this current is to be crossed to the westward it should be done as quickly as possible.

There is another route which, although longer as to distance, appears preferable; for if the time occupied in the passage might appear greater in consequence of the distance it is really less as to the speed with which the vessel would sail from port to port. This route is that of the trade winds. On leaving Europe, if the wind be not favourable to a direct route towards the ports of the United States it would be better to make good a course South or S.W., as the wind permits, in order to find the trade winds as quickly as possible. The best course to reach their latitude is either between the Azores and Madeira or Madeira and the Canaries. It would be better to avoid passing between these last named islands and the coast of Africa because the trade wind there loses its force and direction. But a vessel when once in the region of the trade winds may pursue the most convenient course, according to her desired port, only being cautious as to making the land, and in crossing the Gulf Stream so as to be about ten leagues or so to windward of her port.

There are, however, many circumstances under which this route can be made without the assistance of the trade winds, and they occur principally during the forty or fifty days after the two equinoxes, periods in which N.E. winds are frequently found; so that vessels sailing then may shape their course at once. Besides, if a vessel in the cross current of the Atlantic meet with contrary winds, it is better to make southing, in order to fall in with the trade, than to be striving against these winds. In the spring, summer, and autumn seasons, when the N.E. trade winds extend as far as 28° and 30° N. lat., the passage by the trade winds will be advantageous. Lastly, if the wind

admits of it when going from Europe to the United States, West is the course to adopt; if not, and if at the time of the equinoxes, adopt that which is the nearest to it. In any other case we should prefer adopting a southern course, so as to attain the region of the trade winds.

On comparing the passages of ships made during six years between Liverpool and New York, it appears that the passage is made on an average in forty days. As a specimen of quick passages we may mention the following:—the *Charlotte*, sailing from Bremen to New York, has made two voyages in thirty-three and twenty-eight days; the *Alexander*, starting from the Weser, has been twenty-seven days in reaching the same port; and the *Clementina*, starting from Bremen, has reached Baltimore in twenty-nine days.

Homeward Course from the United States to Europe.—In the homeward course from the ports of the United States to Europe, those currents which set to the southward should be crossed as quickly as possible, so as to gain the Gulf Stream and attain a northern latitude in order to get clear of this current, because it is frequently subject to bad weather; and in the months of July, August, September, and October severe weather is experienced in it. During the other months, however, probably a good vessel might keep in it, and would thereby much shorten her passage. When on the meridian of 42° W., the course should be directed so as to pass to the northward of the Azores; and from thence, according to the winds, to follow the course most convenient for reaching the port of destination. These passages are greatly assisted by West winds, veering to S.W. and N.W. In fact, the general passage made by sailing packets from New York to Liverpool, deduced from all the voyages made by them during six years, is twenty-three days. The same passages made by steamers present the following results:—

From East to West.	*Longest.*	*Shortest.*
Great Western, Bristol to New York	21½ days.	13 days
Royal William, Liverpool to New York .	21½ ,,	18½ ,,
Liverpool, Liverpool to New York	18½ ,,	16 ,,
British Queen, Portsmouth to New York.	20½ ,,	14 ,,
From West to East		
Great Western, New York to Bristol....	15 ,,	12 ,,
Royal William, New York to Liverpool..	17½ ,,	14½ ,,
Liverpool, New York to Liverpool	17½ ,,	13¾ ,,
British Queen, New York to Portsmouth.	22½ ,,	13½ ,,

In leaving Europe for the Gulf of Mexico or for ports of the Caribbean Sea, as soon as an offing is obtained the course should be directed to the S.W., in order to reach the region of the N.E. trade winds as soon as possible. In this part of the route care must be taken not to approach too near the coast of Africa, in consequence of the current and the wind becoming more westerly. If obliged to continue as far South as the Canaries to find the trade they should be left to the eastward.

A vessel once in the region of the trade winds, bound to the Lesser Antilles, may make directly for her port, keeping as long as possible on the parallel of 19° or 20° North latitude, from the month of May till December. From December to June, on the contrary, a more southern track should be followed. But in approaching the Antilles much allowance must be made for the current as the reckoning will always place the vessel East of her true position. In such cases it will be well to add twelve miles a day to the westward course to allow for this current. If the vessel be destined for the Great Antilles or the ports of the Gulf of Mexico she will enter the Caribbean Sea between Guadaloupe and Antigua, or between Isle St. Martin and Culebra. This is invariably the entrance chosen in voyages to St. Thomas, Porto Rico, Kingston, Havana, Tampico, Vera Cruz, and New Orleans. When bound to La Guayra, Porto Bello, Carthagena, or any of the ports of Venezuela, vessels generally pass between St. Lucia and St. Vincent. Vessels bound for Guiana should keep in shore and to the South of their destined port on account of the currents.

Routes from Europe to Guiana.—On leaving Europe for Guiana, the general route, from November to July, will be to cross the parallel of 10° N. lat. in the most direct line between the meridians of 48° and 50° W., in order to cross the zone of calms to the West of the most difficult part. Having reached the parallel of 10° they would keep a point or a point and a half farther South to meet the effect of the general current setting N.W., so as to attain, at about fifty leagues from land, the parallel of 3° or 3° 30′ N. latitude. A westerly course, until in about eight or ten fathoms, might be adopted for the coast. From July to November the following course might be better adopted and sometimes with advantage. Passing 150 leagues to the West of the Cape Verd Islands, steer South, so as to cross the zone of the variables, and reach the S.E. trade, which at this season is felt as far as 5° and 6° or even 7° or 8° N. lat. Having found these winds, a westerly course between the equator and 3° 30′ N. lat. would make the coast in a depth of six or eight fathoms.

Vessels from the Lesser Antilles bound to Europe generally pass between Guadaloupe and Montserrat. From thence, with East and N.E. winds, it is best to make northing in order to get clear of the trade winds as soon as possible. When the zone of the variable winds is attained, a ship would proceed as previously directed in the homeward routes from North America to Europe. Vessels from Jamaica generally pass between St. Domingo and Cuba, and thence between Inagua and Crooked Island. If we are going to the Lesser Antilles we must steer between the North Coast of St. Domingo and the S.E. shore of the Bahamas. From thence, avoiding the wind, we shall reach the Lesser Antilles sooner than by plying to windward in the Caribbean Sea. Vessels from La Guayra, Porto Bello, or Cumana for Europe leave the Caribbean Sea by the Mona Passage, formed by the Isles of St. Domingo and Porto Rico. From thence they pro-

ceed towards N.E., in order to cross the parallel of 40° N. latitude between the meridians of 30° and 35° W. longitude.

Ships leaving Porto Rico proceed directly North, in order to pass the region of the trade winds, following nearly the same route. On leaving Cuba or the ports in the Gulf of Mexico, vessels pass up the Bahama Channel and thence steer to N.E. to leave the stream. They then proceed eastward, passing South of the Bermudas and again cross the Gulf Stream, in the neighbourhood of the Azores.

It is our opinion that vessels leaving certain ports of Costa Firma for the Lesser Antilles will perhaps derive advantage from adopting the Bahama Channel, instead of contending against the wind in the Caribbean Sea and thus lengthening the voyage.

We here give the general lengths of the out and home voyages between Europe, the Antilles, and the Mexican Gulf:—From the mouth of the Elbe to Havana fifty-nine days; return forty-nine days. Hamburg to Guayra, fifty days. Brest to St. Domingo, forty-six days. Havre to Vera Cruz, forty days. Brest to Martinique, twenty-seven days.—The longest passages have generally been forty-six days and the shortest twenty-seven and twenty-eight days. In fourteen voyages from Brest, L'Orient, and Rochefort to Martinique the ordinary passage is thirty-two days. Kingston to Brest, thirty-two days. Havana to Gibraltar, forty-seven days. Vera Cruz to London, forty-two days. Guadaloupe to Brest, thirty-seven and twenty-eight days. Port Prince to Brest, thirty days. St. Thomas to Hamburg, generally forty-five days,—a voyage has been made in thirty-six days by the Prussian vessel *Elizabeth Louisa*, Captain Kasten.

Routes from Europe to South America.—Vessels leaving Europe for the ports of South America, such as Rio Janeiro or Buenos Ayres, ought to steer South and West to fall in with the N.E. trade wind as soon as possible, passing between the Azores and Madeira, or between Madeira and the Canaries, and to the West of this archipelago, unless required to stop here. Thence they would proceed to cross the line, traversing the zone of the variable winds.

Crossing the Line.—It has been for some time the rule to cross the line in 22° or 25° W. longitude. Numerous facts have proved it preferable to cross it between 25° and 30° W. In fact, between these meridians the zone of the variable winds of the equator is less extended than it is towards the coast of Africa, and it is frequently passed without experiencing calms from the N.E. and S.E. trade winds.

Their change is frequently accompanied by stormy weather. As to the fear of being drawn towards the West and towards Cape St. Roque by the equatorial current, it would seem that this has been much exaggerated and also that the trade winds in this part blow more from the East than they were supposed to do, so that Cape St. Roque may be doubled without any difficulty. As a general rule it may be stated that the winds from the sea on the coast of Brazil blow nearly always at right angles to the line of the coast, principally from

October to March. During this period, then, the coast may be approached without fear, the winds being generally from N.E. to E.N.E., and the current near the coast setting from North to South thereby, as observed, assisting the passage. From March to October, on the contrary, the winds coming from East to E.S.E. and the current near the coast setting from the South, it will be preferable to keep forty or fifty leagues from the coast, in the current of the coast of Brazil, and pass westward of Trinidad in order to reach Rio Janeiro and Buenos Ayres.

Vessels bound to Cape Horn, whether sailing from Rio Janeiro or Buenos Ayres, or coming from the northward, should keep at a distance of 100 miles from the coast of Patagonia, in order to avoid a high sea, caused by the West winds which prevail there, and to profit by the changes of the wind on the coast. They will then pass between the Falkland Islands and Terra del Fuego—that is if they are bound for the Pacific—and will generally pass East of Staten Land, the Strait of Lemaire being often difficult to adopt. The courses to be taken in leaving the ports of South America differ according to the latitude of these ports.

Homeward Voyage from South America to Europe.—Vessels from the ports of Brazil to the northward of the Point of Olinda may generally stand along the coast on the starboard tack and direct to the northward. Those leaving any port of Brazil to the southward of that point are generally obliged to get on the port tack, to avoid the coast, and make a board to the southward. Sometimes the N.E. winds oblige them to continue on this tack for twelve or fourteen days, and standing to the S.E. and S.S.E. as far as 28°, or even to 32° S. latitude. This tack should be kept as far as 32° W., so that on standing to the northward on the starboard tack a vessel may be certain of reaching to windward of the Isle of Trinidad. As the vessel proceeds northward the wind will be found more easterly, admitting a slack bowline, or it would be extraordinary if she does not weather Fernando de Noronha, crossing the line between the meridians of 32° and 37° W. From thence the zone of the variables of the equator, generally West of the meridian of 32°, will be crossed and the starboard tack is kept through the N.E. trade as far as 30° N. latitude. Once beyond the region of the trade winds, the course must be shaped according to the destination, passing northward of the Azores.

After these observations concerning the ports of Brazil, there will be very little difficulty as to the course to be pursued in leaving the southern ports or coming from Cape Horn. The West winds which prevail in this zone will facilitate a vessel's progress as far as the limits of the S.E. trade.

According to fifteen voyages made from different ports of Europe to Rio Janeiro, the mean duration of the voyage is found to be fifty days. Several voyages have been made from the West coasts of France and England in forty and forty-two days. Packets leaving Rio Janeiro for England generally make the passage in thirty-five days.

Outward Voyage.

The Channel to St. Catherine	77	days.
Straits of Gibraltar to St. Catherine	53	,,
Havre to Maranhao	43	,,
Marseilles to Rio Janeiro	65	,,
Bordeaux to Cape St. Augustine	45	,,
Bordeaux to Cape St. Antoine	64	,,
Rio Janeiro to St. Catherine	6	,,
Brest to Montevideo	57	,,
Brest to Cayenne	31	,,
Ports of Europe to Cape Horn	82	,,

Homeward Voyage.

Montevideo to Rio Janeiro	11	days.
Rio Janeiro to the Channel	58	,,
Rio Janeiro to Brest	48	,,
Ports in the North of Brazil to Europe	33 to 37	,,
Montevideo to the Channel	83	,,
Maranhao to the Channel	65	,,
Cayenne to the Channel	56	,,
Cape Horn to Rio Janeiro	18	,,
Cape Horn to Europe	73	,,

The foregoing will suffice to give a general idea of the voyages from Europe to the coasts of South America. Let us now proceed with those from Europe to that part of the coast of Africa situated North of the equator.

The masters of vessels from the English Channel must bear in mind what has been said in regard to the currents of those parts. After having doubled Cape Finisterre, according to the time of year, at a distance of thirty-five or sixty leagues, a vessel should steer between South and S.W. giving the coast of Portugal a wide berth, especially during winter, in order to pass East or West of Madeira or to reach the Canaries, which are always sighted by vessels on their passage to the coast of Africa. These islands may be passed on either side, the channel between them and the African coast presenting no danger which is not apparent. If it is desirable to pass through them the preferable channel is that between Palma and Hierro on the West and by Gomera on the East.

It is rarely after having passed to the southward by the other channels that calms are not met with, along with a swell which endangers the masts, under the lee of the large islands of the archipelago. This is especially the case with the wind from the North and N.E. which, interrupted by them, does not reunite in a steady course till far to the southward. In November and December it is preferable in bad weather to pass clear away to the westward of these islands in case of meeting the S.E. winds, which are frequent at that time.

If desirous of touching at the Canaries the best anchorage for a ship is that of Palmas, North of the Grand Canary. The town there offers more resources than those of Santa Cruz, in Tenerife, and the bay is easy to leave under sail in all weathers; which is not the case

at Santa Cruz, a harbour generally frequented though very dangerous with a S.E. wind.

On leaving the Canaries, a vessel bound to Senegal or Goree will adopt a South, S.W., or S.S.W. course, according as she may have passed outside or through one of the channels of the group. Having passed the parallel of 19° at the southern extremity of the bank of Arguin, she would gradually haul to the eastward till getting thus into the North polar current, in which she would keep her course. St. Louis should be made a little to the northward of its latitude. If bound for Goree a vessel would pass round Cape Verd. When bound to places South of Goree, such as the Gambia or Sierra Leone, or even to the coast of Liberia, the route as far as Cape Verd will be the same; for we must generally pass it unless leaving the Cape Verd Islands. In all these cases should a vessel not touch at the islands it is best to steer in such a manner as to pass nearer to Cape Verd than to the islands of that name, because the wind is steadier and fresher than on the coast. From Cape Verd the navigation depends on circumstances, being comparatively easy with N.E. winds in the fine season but difficult with S.W. winds of winter.

Vessels proceeding to places on the North coast of Guinea or to the Isles of the Gulf of Biafra or the Gaboon, after having left Cape Verd will make for Cape Palmas, either with the favourable winds from October to May, or with the contrary ones principally during June, July, August, and September, when they blow from S.W., W.S.W., West, and W.N.W., interrupted by calms. At this period it is best to keep 100 leagues from the coast. They will then steer so as to sight the cape or about twenty leagues or more to seaward of it. At this distance they will take the North Guinea current, which is only a continuation of the polar current of North Africa, setting to the East and E.N.E. from 15° or 16° W. longitude. After reaching the parallel of Cape Palmas, they will find, as already stated, the trade wind from S.W. and W.S.W. Winds with a current will then be found favourable for reaching any of the places of North Guinea. But it must be observed that in these routes a vessel should pass further South than 2° N. lat., in order not to get into the equatorial current which sets to the westward. Thus as soon as the parallel of Cape Palmas is reached and the cape sighted by a vessel bound to the Gold Coast or the Ivory or Slave Coast, she should keep in the zone comprised between the coast of Guinea and 2° N. latitude.

The best method for a vessel to navigate this coast is to keep the land in sight, at about the distance of ten or fifteen miles, and to approach it to about the distance of one or two miles when thirty or forty miles West of her destination, taking great care not to run beyond it. In estimating the route it will be very important to consider the velocity of the current—which runs from twenty to twenty-four miles a day—for it is requisite to approach it well to westward of the point to which she may be bound.

If bound for the islands of the Gulf of Biafra or Gaboon, a vessel, having doubled Cape Palmas, should steer East, keeping between 3°

and 2° N. lat. as long as possible, according to the island she is bound for. She should then cross obliquely the zone comprised between 2° N. lat. and the equator, running before the wind for her port, in order to make the land to the southward of it. The same must be done in going to the islands of the Gulf of Biafra. In the vicinity of these islands the current of South Guinea is met with setting to the N.E., and sometimes N.N.E.; then S.S.W. winds will be found, veering, perhaps, to South as the equator is approached. In sailing from Princes Island to Gaboon the current of South Guinea is crossed, setting N.E., N.W., and sometimes North. It is therefore necessary, in going from Princes Island to Gaboon, generally to make the land to the South of this river in order to counteract the effect of the current.

In the bottom of the Gulf of Biafra the currents are variable, although in the latitude of Fernando Po, and between this island and the coast, they generally set to E.N.E. and N.E. If from thence it is desired to proceed to the southward, a vessel should keep at a little distance from the coast of Gaboon, in order to profit by the alternate breezes and to take advantage of the tides.

The current of North Guinea formerly terrified seamen, for they supposed that having once entered the gulf they could not leave it without much difficulty. These fears, as will be seen, were groundless.

(To be continued.)

CAUSES OF WRECK.

London, 8th April, 1856.

Sir,—In the list of causes of shipwreck given in the number of your Magazine for December, one is "Incorrectness of Charts," which is undoubtedly a very fertile one—much more so than the generality of seamen suspect; for in most cases where land is stumbled upon unexpectedly, or appearances of land do not coincide with what is expected, people are apt (and I think very often) to think the error arises from their own misapprehension, or have a doubt of the correctness of their observation, and thus take on themselves the blame justly belonging to erroneous charts. I bring this subject forward by no means as the first time in your pages, but in the hope that it may eventually be taken up and remedied by the simple means of confining the issue of sea charts to the Admiralty, or at least to make it illegal to sell any not bearing the Admiralty stamp.

The charts of the Indian Seas are even to this day very incorrect. I have now before me one of the Bay of Bengal by Horsburgh, undoubtedly a good authority, but Horsburgh is dead and the chart in question has been *corrected* to 1856, and this corrected chart places a

light on Amherst Doint at Moulmein, where no such thing exists. I have on a former occasion in the *Nautical Magazine* shown that a light on Amherst Point would be mischievous; and it must be much more so if navigators are led to look for a light where none exists.

Again, the ships *Ann* and *Lettelia*, both of Calcutta, were lost on the Cargados Garajos Reefs, near the Isle of France, from these reefs being laid down twenty-five miles too far East on the charts used. I speak from my own knowledge in the case of the *Ann*. The *Lady Munroe*, of Madras, was lost on Amsterdam Island in the Indian Ocean, from its being placed too far East by about thirty miles, supposing the relative positions of Amsterdam and St. Paul to have been correct, being in sight of each other. I can also speak from my own observations to both having been laid down about thirty miles too far East until corrected about fifteen years since. The detection of this error of longitude in these islands, which are as familiar as milestones in the passage to India, is, I believe, due to the Captain of the American ship *Roman*, published in the *Nautical Magazine* at the time. I had about the same time fallen in with St. Paul's *before* expecting it, but supposed that its situation *must* be correctly laid down, from having been so long known, and attributed the error to myself. On a subsequent voyage, however, I found, by lunar observations taken by objects on each side of the moon, it was actually laid down about thirty-two miles too far East; and I was pleased to observe, on reaching port, that it had been so published in the *Nautical Magazine* on the authority of the Captain of the *Roman*. Now if these charts had been published by the Admiralty, what a delightful thing it would have been for a merchant captain to fall foul of the Hydrographer and Capt. Becher for their short comings; but as these things are managed under "uninterested competition," we must put up with them with the best grace we can, nobody being to blame.

I remain, &c.,

J. H. MILLER.

To the Editor of the *Nautical Magazine*.

ERRONEOUS CHARTS.

Sydney, New South Wales,
October 15, 1855.

Sir,—In the *Nautical Magazine* for March of the present year, I observe in an article headed "Erroneous Charts," you copy a letter of mine (signed "A Colonial Skipper") to the Sydney Morning Herald, respecting the position of Elizabeth Reef in which I also referred to some inaccuracies I had found in Imray's Charts of the Pacific Ocean, 1849.

In your April number is a letter from the Messrs. Imray who ap-

pear to be very irate at the charges brought against them in that article. I must disclaim on my part any attempt to undervalue their charts for the purpose of more effectually lauding those issued by the Admiralty, for well I know that errors exist in these generally carefully compiled productions, especially in comparatively unexplored regions, such as those alluded to by me. An experience of twelve years as a shipmaster from this port has taught me that in many particulars the Admiralty charts even of this coast are not quite correct, though generally so in all material points. My sole reason in moving in this matter was what I considered my bounden duty to my professional brethren to warn them of known errors, and if in the exercise of this duty I have been instrumental in preserving one ship from danger by exciting extra caution, I shall consider myself amply repaid for any angry feelings I may have called down on myself for so doing.

Messrs. Imray & Son whilst not disputing the accuracy of my assertion respecting the only instance I especially noticed, viz., that the South point of Tahiti was in *latitude twenty-two* (22) miles in error, triumphantly point to an instance of a difference of twenty-nine miles in the *longitude* of Turtle Island between Captain Worth of H.M.S. *Calypso*, and Captain Wilkes, of the United States Exploring Expedition. I cannot see how this unaccountable discrepancy can excuse their errors, for there is an old, though somewhat inelegant proverb, that "two wrongs don't make a right," or that an error of 29 miles of longitude can be considered as great or rather as inexcusable as 22 of latitude. I opine that in the old days of the Cross Staff latitudes were obtained with greater accuracy than that, though till a comparatively recent period longitude was very uncertain.

I quite agree with Messrs. Imray that the Pacific is yet very imperfectly known, the errors of chronometers and the absence of well determined secondary meridians, as alluded to by them having had much to do with the errors of the old charts. Until recently most of our information respecting the detached islands spread over its surface has been derived from whalers, and no doubt many islands on the charts having been seen by different vessels are placed in the position assigned by each, when had their longitudes been correctly ascertained, one island would only appear where in some instances there are three or four. But this vast ocean is now traversed by merchant ships and men-of-war in great numbers, and scientific navigation has become the rule instead of the exception as formerly, so that positions reported now-a-days may in most instances be relied on. What I find fault with, therefore, is that no notice seems to be taken of the discoveries and reports of modern navigators of undoubted standing and reputation.

I send herewith copies of letters by me, published in the *Sydney Morning Herald* of December 1st and 17th, 1851, nearly three years prior to the one before referred to, in which the subject of these chart inaccuracies is more fully gone into. As giving an account of a voyage from this port to California, via Auckland, New Zealand, and the

Sandwich Islands and back to the port, they may not be without interest to some of your readers, should you find a stray corner in the *Nautical* in which you might stow them away. Although Messrs. I. & Son say they have in their *recent* editions adopted the French and other discoveries, it is not improbable that many a shipmaster in ignorance of the danger is sailing by the previous ones. Your publishing this may put any such on their guard.

I am, &c.

HENRY T. FOX,
Marine Surveyor, late Master Mariner.

To the Editor of the *Nautical Magazine.*

From Sydney to California.

Sydney, November 30th, 1851.

Gentlemen,—Having, prior to my leaving this port in April last for Honolulu and California, experienced much difficulty in discovering the usual route from hence to those places with the winds and weather to be expected, and subsequently during the voyage on various occasions noticed the palpable errors and discrepancies in the charts now in use, I beg to send you the following notes of my voyage, trusting they may be of use to some future navigator. I enter on the subject with much diffidence, knowing how much more conversant with the navigation of the Pacific many of my brother shipmasters are; but I hold it to be a duty incumbent on all mariners to contribute for the general good any nautical information they may become possessed of, however insignificant it may appear to be in itself. Were all to contribute their mite in this way we should have better charts and fewer losses at sea than we have. I have searched through files of the *Sydney Shipping Gazette* from the time of the arrival back here of our first California fleet to the present time, and have only found one instance where the commander has thought it worth his while to let us know the track he pursued whilst fearful evidences of the dangers of the route are chronicled in that valuable periodical in the numerous wrecks that have occurred. I trust therefore I shall not be encroaching too much on your valuable space by giving the results of my own experience and researches.

The Charts by which I was guided and of which I shall have frequent occasion to speak, were two large sheets styled respectively "New Charts of the North and South Pacific Ocean, published by James Imray, late Blachford and Imray, 116, Minories, London, 1849." The scale not being large (about two-fifths of an inch to a degree), I was prepared for trifling inaccuracies, but from the date being so recent, I of course expected that in all main points they would be correct.

The passage from hence to New Zealand being so well understood I shall omit it, and commence from my leaving Aukland on May 13th. After clearing the Islands which was done before daylight of the following morning, we had strong westerly and south-west winds for the most part, till the 21st; when in lat. 34° 20′ S. and long.

164° W.; we experienced strong easterly and north-east winds which continued till the 24th, when the wind veered to the westward, but only lasted two days. Having then reached the meridian of 155° W. I stood to the northward intending to make Tahiti, and crossed the tropic in long. 152° about midnight of the 29th, with a steady breeze at E.S.E. and very fine weather. On the 30th, passed about 20 miles west of the Island of Ruruta or Ohiteroa, which has a hill on its west extremity that may be seen from the ship's deck upwards of 30 miles. From hence shaped a course for the east end of Tahiti, but encountering strong winds from E.S.E. with thick squally weather and a strong current setting to the westward, we found ourselves at daylight of the 1st of June on making Tahiti so far to leeward that it became necessary to pass to the westward of that Island; and here it first became painfully apparent to me, just entering on an intricate and novel navigation, how little deserving of credit my sole guide my chart was, as I found the south point of Tahiti laid down on it in lat. 18° 15′ S., while the chart of that island and Eimeo, published by the Admiralty, places the same point in 17° 53′ S., a difference of twenty-two miles. The nearest distance between Eimeo and Tahiti on the general chart is *twenty-two* miles; on the large scale it is *seven miles and-a-half*. The channel between these islands seemed to us to be quite clear from the encircling reef of each to the other and we passed through it about noon, but being much baffled with gusts and unsteady winds, occasioned by the great height of Tahiti, I should not be inclined to choose this channel again; but if unable to weather that Island and not intending to touch there, would pass a short distance to leeward of Eimeo, by which means I imagine a continuance of the trade wind may generally be insured. The next night was squally, with baffling winds and much rain, and the following day we had a hard gale from due south, accompanied by continued torrents of rain. We ran before this all day under close-reefed topsails and foresail, on a course which, by my chart, would carry me in the fairway between the Islands of Recreation and Lazaroff, but the weather being excessively thick, and my experience of the previous day having shown me how little dependence could be placed in the charts, caused an anxiety, which had I but possessed my subsequent knowledge respecting these islands, there would have been no necessity for. Some time after this on reading Commander Wilkes' "Narrative of the United States Exploring Expedition," under his command, I found him stating that one of his ships, the *Porpoise*, about the commencement of October, 1839, "*passed over the position of Recreation Island without discovering any signs of land;*" yet, in a chart published in England ten years later, it still retain its own place.

The other Island Lazaroff, I subsequently found had been seen from H.M.S. *Talbot*, and its position accurately determined. This was communicated to the *Honolulu Friend*, in a letter dated April 1st, 1845, from the master of the above ship, and again copied from that paper into the *Sydney Shipping Gazette*, from which, as I prefer giving authorities when possible I transcribed the notice verbatim :—

"As most of the charts which have come under my observation place the Island of Lazaroff much too far to the westward, it will be advantageous to captains of vessels passing in that vicinity to know its true position, which according to my measurement from Tahiti with three chronometers is as follows: East end 148° 40′ W.; West end 148° 45′ W. The latitude and longitude adopted for rating the chronometers at the Consul's house in Papeite Harbour, Tahiti, was lat. 17° 32′ S., lat. 149° 35′·5 W.; I also forward you the position of Wastock Island, seen by H.M.S. *Modeste*, on her passage from these (Sandwich) Islands to Tahiti in December last, lat. 10° 09′ N., long. 152′ 19 45′ N.

HENRY THOMPSON.
Master of H.M.S. *Talbot*."

I am informed that this account was afterwards published in the *Nautical Magazine*,* but be that as it may, the compilers of my *new* chart in 1849, seem either to have known nothing of it or cared nothing, for Lazaroff Island is there placed in 149° 18′ W., or *thirty-three* minutes of longitude further west than the above authenticated position; and as for the Island mentioned as being called Wastock Island, it has no place whatever on the chart.

Thus by trusting to such blind guides as these, a commander who never omits an opportunity of determining accurately the position of his ship, may by running with confidence (from his chart placing him many miles from land) suddenly stumble on a dark night over one of these "half-drowned islands," as Captain Cook quaintly terms the coral islets of the Pacific, and the loss of his ship and crew be the consequence of the culpable negligence of these chart compilers.

From lat. 13° to 3° S. the wind was moderate from the eastward, with occasional showers, but there being always some northing in the wind and a strong current setting westward of nearly a mile per hour, we could make no easting through all this space. After this the wind allowed us to lay a little higher and we crossed the equator on the 12th of June, in long. 149° 40′ W., with a fine breeze at E.b.S., which continued till the 16th, when it died away and was succeeded by a day of baffling squally weather, with heavy rain. On the 17th, in lat. 8° 00′ N., long. 156° 50 W., we got the north-east trade, which continued fresh, and though still keeping close to the wind we did not fetch much to windward of Owhyhee, which Island we made on the 23rd of June, and having passed to windward of it and Maiu, ran in the night through the channel between the Molokai and Oahu, and arrived at Honolulu on the 24th, at 9 a.m. My reason for choosing the route to windward of these islands, in preference to the shorter one to leeward, was formed from some remarks, published in the *Nautical Magazine* for July, 1848, by Mr. Thompson, H.M.S. *Talbot*, 1846, from which authority I have before quoted. He says, "From my own experience, which is also borne out by the opinion of the

* A portion in *Nautical Magazine* for July, 1848.

pilots, I consider it better for all vessels bound to the port of Honolulu from the southward, to pass to windward, that is on the north-east side of Owyhee and between Molokai and Oahu, by which means they will generally insure carrying the trade-wind right down to the bar of Honolulu Harbour; whereas, if a vessel should attempt to gain that harbour by passing to south-west of Owhyhee, in all probability several days will be lost in calms under the lofty mountains of that island. Moreover, there exists at all times a westerly current in that vicinity, on some occasions, running at the rate of one and-a-half miles an hour, which would probably drift a vessel so far to leeward during the interval of calm, as to cause her a dead beat to windward when the regular trade-wind reaches her, ere she could gain her destination."

These remarks my own experience and inquiries lead me fully to coincide with.

The Port of Honolulu cannot be entered without a pilot and a leading wind; but there is a small space outside the reef which forms the harbour, that is occasionally used for an anchorage. Here the holding ground is very inferior and during the irregular season from October to March, when the trade-wind cannot be depended on and occasional strong winds set in from sea, it is unsafe to lay here. The best anchorage in this indifferent roadstead, as communicated to me by the chief pilot and harbour master, Captain Maughan, is in 15 fathoms with the native church, a conspicuous stone-coloured building, bearing N.b.E. and Diamond Hill, E.S.E. As this bank is of no great extent, it is necessary to be cautious in bringing up, as some persons, from disdaining the use of the lead, have found on letting go their anchor that they could get no bottom with a *whole chain*.

We remained in this port nine days, leaving it on 3rd July for San Francisco. During the time we were there the trade-wind from north-east blew freshly every day from about 10 a.m. and as its direction is right out of the harbour, the only time when a square-rigged vessel could get in was before that time in the morning when the wind generally veered more easterly. When within the bar, you can be tracked in by the natives, who come down on the reef for the purpose, the pilot sending them a warp from the ship. In our case, sixty men were employed who received about a *real* (sixpence) each.

The passage from hence to the coast of California, is nearly all plain sailing. After clearing the islands you stand to the northward, across the trades until beyond their limit, when the usual variables of high latitudes will be experienced, according to the season. We had to stand as far as 40° N. before we got rid of the easterly winds, and from this to the coast the weather was so fine that our royals were never in. The only known danger in the track is a rock seen by the U.S. sloop-of-war *Falmouth*, in May, (1851,) in lat. 37° 24′ N., long. 137° 27′ W. It had been seen before by a vessel from Tahiti, but I believe has not yet appeared on the charts.

The coast of California, about the entrance of San Francisco, and probably other parts of it is much further west than my chart places

it; and I believe, in this instance, mine is not singular. According to the recent surveys, by order of the U.S. Government, Point de Reyes is in lat. 38° 1′ 30″ N., and long. 123° 02′ 00″ W., and the north-weternmost Farrallon Island, lat. 37° 44′ N., long. 123° 8′ W. Point de Reyes is considered, by those experienced in the trade, to be the best place to make the land when bound to San Francisco, especially in the summer months, when the north-west winds are very prevalent. But the great bane of this coast in the summer season is the almost constant thick fog, which renders making the land very difficult.

We came into the fog when about 40 miles off the land by our reckoning on the morning of July 31st. We ran slowly onwards till 4 p.m., when it still continuing very thick, hauled off for the night and got soundings in 40 fathoms, sand and mud. This was within a few miles of Point de Reyes, as we found on making that point the following morning. The fog setting in again almost immediately afterward, we did not get a pilot on board till the afternoon of August 2nd, and even after that had to anchor outside the heads all night in a thick fog, in which a ship that had been in company with us for nine days previously, the *Tagus*, of Boston, whose pilot did not act so cautiously as ours, ran on shore within half-a-mile of us without being perceived and became a total wreck.

From California to Sydney.

We beat out of San Francisco on the afternoon of August 29th, against the usual breeze from S.W., which blows in the day time almost constantly during the summer months, and generally a fresh gale. The tides being very strong, carry a ship out rapidly, and the wind always lessens as you approach the sea. In our case, it died away to a perfect calm soon after the pilot was discharged, and we lay tumbling about in a thick fog with an uncomfortable swell setting on the land on which the breakers were distinctly heard. It was not till the following day that we got any wind to draw off with. After 4 p.m. getting clear of the coast we had a succession of light baffling winds, principally from S.W. till September 7th, when we crossed the parellel of 30° N. in long 126° W.; the wind then drew to the N.N.E., between which point and east it continued till our arrival at the Sandwich Islands. It may not be generally known that some of these islands are immensely high; Mauno Keen or Owhyhee is thirteen thousand six hundred and fifty-six feet above the level of the sea; and when we saw it in June last, though the sun was within three degrees of being vertical at noon, a few patches of *snow* were distinctly visible to us through small openings in the clouds that hovered constantly around its summit.

On the 23rd of September, at 9 a.m., we discovered a round hill "up among the clouds," which was immediately recognized as the higher one on the Island of Maui, the elevation of which, according to the United States Exploring Expedition, is upwards of ten thousand.

feet. The lower part of the island, from the haziness of the atmosphere, were not seen for three hours afterwards, though we were running towards it with a fresh breeze. At this time the outline of the mountain was beautifully defined from the clearness of the atmosphere at that height, the numerous ridges standing out in bold relief, while the portions of the islands at a small elevation, though much nearer, were comparatively indistint, being enveloped in the thin gauze-like haze so peculiar to the tropics.

We arrived at Honolulu at noon on the 24th, and remained inside three days. The weather was much more unsettled during our short stay than on our visit three months previously. The breeze during the day, instead of coming strong over the hills as it did on that occasion, now drew round Diamond Head from E.S.E., causing the outer roadstead to assume an appearance of insecurity. From September 27th, on which day we left for Sydney, to October 2nd, when we crossed the parallel of 10° N., we had for the most part strong breezes from E.N.E.; but from hence to the equator the winds were more unsettled, inclining much from the southward, obliging me to make more westing than I had intended. We crossed the equator on the 8th of October, in long. 170° 55′ W., and continued standing to the S.S.W., with moderate easterly winds and fine weather. In this track, from about the lat. of 3° to 6° S., is a group of islands and reefs, which from their number and relative positions on my chart I should have rather sought to avoid; had I not fortunately procured in San Francisco a chart, though on a small scale, of this part, by the United States E. E., which, with the aid of the "Narrative" of that voyage, determined me in passing through them, rather than go still further to leeward.

We saw no islands through the whole track, as indeed we ought not to have done by the American chart, though by Imray's chart we passed six miles west of Mary's Island, in lat. 2° 50′ S., long. 171° 56′ W., and the same distance west of Elizabeth Island, in lat. 4° 18′ S., long. 172° 35′ W. We also passed fifteen miles east of Mary Letitia's Island, laid down in lat. 4° 47′ S. and long. 173° 20′ W., and directly over the spot assigned to a rock, in lat. 5° 40′ S. and long. 173° 31′ W., all these positions were passed in broad daylight, yet a look-out from the foretopsail-yard could discover nothing, which could not have been the case had they existed anywhere near, as the weather was very fine.

The position assigned to the various islands in the whole group are so different in the American chart from my *new one*, which I believe to be in general use in English ships, that it is difficult to reconcile them one with the other. The former being from *actual survey* is most likely correct; and as it may be useful to those who have not that authority to refer to, I give below the positions, &c, as established by Commander Wilkes.

When in San Francisco, Captain Pryde, of the *Sea Witch*, kindly gave me one the position of an island, in lat. 3° 35′ S., long.

174° 17′ W., seen by him on his previous voyage, which he then did, and probably still does, consider to be a new discovery, from not being in the chart, yet it corresponds *exactly* with the position of M'Kean's Island given below. In Commander Wilkes' Narrative, he say, "On the 19th August, 1840, we made an island in the neighbourhood of the position assigned to M'Kean's or Gardner's Island. Its true place is in lat. 4° 37′ 42″ S., long. 174° 40′ 18″ W. This is a low coral island. Believing it to be the one discovered by Captain Gardner, I have retained his name. At 10 in the morning of the 20th, breakers were discovered from the mast-head, and by noon a small island was seen, to which I gave the name of the man who first saw it, M'Kean's Island. In the afternoon boats were dispatched to survey it. It is composed of coral sand and blocks, and is three-fourths of a mile long, by half-a-mile wide, and is twenty-five feet above the level of the sea. Our observations place M'Kean's Island in lat. 3° 35′ 10″ S., long. 174° 17′ 26″ W.

"On the 26th we made a lagoon island not found on any chart, I therefore called it Hull Island after that distinguished officer of our navy. It has no doubt been frequently taken for Sydney Island. Its N.W. point lies in lat. 4° 29′ 48″ S., long. 171° 8′ 30″ W. It is a coral island three miles long by two and a half wide."

These islands were all that were seen from the *Vincennes* (Commodore Wilkes' ship), though she spent thirteen days in this vicinity. Subsequently the *Peacock* and *Flying Fish*, belonging to the same squadron, were dispatched for the purpose of determining the position of islands, &c., previously reported, but not seen by the expedition. From the 9th to the 17th January, 1841, they cruised in this locality without discovering any more islands than those enumerated above, except Birnie; which, according to their account, "lies in lat. 3° 34′ 15″ S., long. 171° 33′ W. It is no more than six feet above the sea, about one mile long and a quarter of a mile broad. It is a strip of coral, apparently uplifted, and is exceedingly dangerous for vessels as it cannot be seen from a distance."

These vessels, on the 29th of January, discovered an island eight miles long and four miles wide; the centre of which they placed in lat. 9° 50′ S., long. 171° 3′ W., being about thirty-five miles E.S.E. from Clarence Island. This, being a new discovery, they named Bowditch Island. It is not in Imray's chart. In fact, I cannot perceive that the researches of this expedition have in any part been taken the slightest notice of in that *valuable* production of the year 1849, *eight* years after these discoveries were made. The ship *Novelty* was lost a few months ago on an unknown (?) island hereabout. Might it not have been this same Bowditch Island? I think it extremely probable.

Having passed through Phœnix Group, as before described, we continued steering to the S.S.W. when practicable; but the winds were light and variable, with much rain and a short jump of a sea from S.S.E., so that we made but little progress. On the 17th of October

we passed five miles East of the position of Solitary Island, said to have been seen in 1595 in lat. 10° 40′ S., long. 176° 50′ W. We saw nothing of it, though the locality was passed at mid day with a good look-out from the top-gallant yard.

From the 17th to the 20th we had brisk breezes from E.S.E., with dark unsettled weather. On the latter day at noon we were in lat. 16° 13′ S., long. 176° 22′ E., being about midway between the north-westernmost islands of the Feejee Group and a dangerous reef recently discovered by the *Balmoral* in lat. 15° 40′ S., long. 175° 52′ E. On the 21st at noon we passed within a mile of the alleged position of a reef on which an American ship was said to have struck some years ago in lat. 18° 10′ S., long. 175° 12′ E., but, though with a clear atmosphere, we saw nothing of it. For some days after this the weather was very unsettled, with squalls and great quantities of rain, the wind veering much.

We made Hunter Island on the 25th, when upwards of forty miles from it. The position assigned to it by the United States Exploring Expedition, and which differs slightly from our charts, is lat. 22° 27′ S., long. 172° 10′ 33″ E. Its height above the level of the sea they ascertained to be 1,186 feet. It is of a conical shape and about a mile in circumference. By some singular mistake this is called by them Matthew Rock, but its identity with Hunter Island cannot be doubted.

On November 2nd we passed the position of New Island, in lat. 31° 21′ S. and long. 160° 45′ E., without discovering any sign of land. I have since been told by an experienced whaling Captain that it has no existence. At 8h. a.m. of 3rd November we made Howe Island, then distant, by observations, fifty-eight miles. On the 4th a strong current swept us to the North of that island. At noon, November 5th, it was just dipping from our poop, though distant, by good observations, fifty-seven miles. The next day we experienced a current to the N.W. of thirty miles in twenty-four hours. This strong northerly set I hear was the cause of the recent loss of the *Tyrian*. Nothing particular occurred from this till our arrival here on the 9th of November.

Thus, Gentlemen, though mine has been a longer yarn than I intended originally, I have confined myself to my own tracks—truly, a small portion of this vast ocean. Had I noted all the discrepancies and errors of these charts that have come within my notice I should have extended it far beyond your limits. The authorities I have had to consult have been but few, but were those shipmasters who have the power occasionally to publish what they know of new discoveries, and establish positions previously doubtful, a great benefit would be conferred and an absolute duty performed. From a false delicacy and dislike at seeing their names in print too many shrink from this means of making their knowledge available for the good of others. For myself, should any one quibble at my style or expressions, I can only say that it is the production of one who, having been constantly at sea from a very early age, has had few opportunities for acquiring literary at-

tainments, and whose sole desire is to assist in giving to others that confidence which from long experience he well knows can only be obtained by good charts of the ground you are going over.

I am, Gentlemen, yours, &c.,

HENRY T. FOX,

Master of ship *Mary Catherine*.

To the Editors of *Sydney Morning Herald*.

I may be allowed to state that I have every confidence in my own positions on both tracks, as one of the chronometers I had on board (by Barraud) was a most excellent instrument, maintaining so near an average rate throughout the voyage, which occupied seven months, that with the rate given me on leaving Sydney I found on my return it was only fourteen seconds of time, or 3′ 30″ of longitude, in error. As I obtained a fresh error and rate in San Francisco my track does not even possess this small inaccuracy.

Sydney, Oct. 19th, 1855. H. T. F.

[This paper is highly creditable to the writer, and we regret that his example is not more generally followed in the Mercantile Navy.—ED.]

THE LATE NAVAL REVIEW.

The naval review of the 23rd of April must assuredly have attracted to the coast of Hampshire the greatest multitude ever assembled in that busy and populous portion of our island. On no one occasion were Portsea and the adjacent towns ever before visited by so vast a concourse of people; nor will the scene they presented fade rapidly from the memory of the spectators.

The architectural arrangements of Portsmouth, Landport, Southsea, Portsmouth, Langston, and Gosport are such as to suggest the idea that these kindred towns are not on speaking terms—that, in fact, there has broken out amongst them a family feud of the deadliest description, but the *entente cordiale* was on Wednesday complete. Portsmouth and Landport, Portsea and Southsea, Langston and Gosport made common cause in the presence of a common invader, whom however, it is but right to say, they received with open arms; and never cerrtainly was there such an invasion as that to which the seaports of Hants were on Tuesday and Wednesday subjected. Every train, both of the South-Western and the South Coast Railways, brought thousands of new arrivals, till at last the streets became so densely crowded as to be scarcely passable. The demand for lodgings greatly exceeded the accommodation the various hotels could possibly afford, and after seven o'clock on Tuesday evening the traveller could not be sure of obtaining, either for love or that yet more powerful agent, money, a shelter for the night. To those who had had the good luck to secure beds for themselves, but to none others, it was in-

finitely amusing to see their less fortunate fellow-travellers wandering through the streets and "mooning" about, weary and footsore, in search of similar accommodation. Beds fetched a fabulous price. Three or four guineas was the ordinary charge at midnight, and we have been credibly assured that in some instances the lodginghouse-keepers had the conscience to demand £15 for a single bed! Whether they permitted the tenant to take the bed and bedding away with him in the morning is more than we were able to ascertain, but they ought to have done so. Thousands of persons sat up all night; many, we are assured, slept on board various vessels in the harbour, and many, no doubt, spent the night walking about on the ramparts, and took no horizontal refreshment whatever. Fortunately it was a fine night, and there was a good view of the moon.

The day broke gloriously, gladdening the external world and sending sunshine to the breast of every one. They may say what they like about our gravity and *solidité*, and all the rest of it, but no people on earth can enjoy a holyday with a keener relish than the English; and there never were hearts—if our climate would let them—better formed to be joyous and happy than ours. And really it is no such bad climate after all. It is the best-abused in the world, but it scarcely deserves all the reproaches heaped upon it. It is all very well to talk about "a London particular," and a summer that is only winter painted green, and a year that consists of eleven months wet and one month moist; but there is no country in the universe where, when there *is* a fine day, it is finer than in England. But, let this be as it may, it is at least certain that on Wednesday the weather was glorious. The sun was on his good behaviour, and it was gala day with him as with everybody else. The guns in Portsmouth were, however, somewhat erratic in their mode of announcing the dawn. First came a fusillade of musketry, the firelocks of the sentinels on board the ships of the fleet being discharged as the minute arrived that day was "calculated" to dawn. This seemed quite *en règle*, but several minutes—some ten or fifteen—afterwards a huge 32-pounder was fired to denote sunrise. After the lapse of another ten minutes a third explosion announced that the garrison recognized the daylight, this last visitation being accompanied by a flourish from a most asthmatic bugle. Soon after six the town was astir, and gradually the streets became peopled with anxious throngs crowding towards the various places of embarcation, many of the visitors in elegant costume. The scene at an hour later resembled the multitude of a Derby-day noon more than an aquatic spectacle.

At eight o'clock the whole fleet, as if by magic, was "dressed" in flags and ensigns from their main trucks to the water's surface; and now the curtain seemed to have risen upon the glorious pageant of the day. But the busiest sight in the national drama about to be enacted was that presented on the land. The myriads of human beings who poured on to the beach from every point and outlet, were beyond all precedent; and the heterogeneous commixture of character was not the least remarkable feature of the whole affair. Gradually the walls,

ramparts, ravelins, mounds, housetops, and even church steeples entered into bold competition with the water in exhibiting their venturous masses, until surrounding objects, even the great fleet itself in the distance, became almost insignificant items in the animated panorama. The scene from Southsea beach was magnificent. A violet sky, pure and unclouded as that of Italy—a rippling, dimpling, flashing, sparkling sea—a green elastic sward of the freshest verdure—dazzling uniforms, and many-coloured costumes—brilliant equipages, music, flags, laurel wreaths, happy human faces, and "ladies' laughter ringing through the air," were the accessories of a scene as gay, brilliant, and animated as any that, with much experience of popular spectacles, we remember to have ever witnessed. Nor should we omit to enumerate among the sources of enjoyment the aromatic sea-breeze, that *vif et âcre parfum de la mer* of which Alexandre Dumas descants so eloquently, and which is so delightfully exhilirating to those whose fate it is to be pent up in cities. Tents and pavilions brightly dotted the green turf, and waggons, barouches, phaetons, and all manner of things that run on wheels, were drawn to the margin of the water. Thousands of people sauntered over the sands or lay on the shingle of the beach watching through telescopes and opera-glasses the movements of the fleet. This multitude extended from Fort Moncton on the west to Southsea Castle on the east, a distance of three miles; and must have comprised something like 100,000 persons. Near Southsea Castle a great stand had been erected in the cause of sight-seeing; and it, like other smaller structures of the same description, was crowded with visitors. Yet, brilliant as was the scene and exuberant with life and gaiety, it was not without its ludicrous associations; and of these the most remarkable were the hideous statues erected on the Clarence Esplanade in desecration of the memories of Nelson and Wellington. Even the Londoners, who ought by this time to be casehardened in the matter of bad statues, were horrified at those atrocious figures, and expressed their indignation in no measured terms. The thought of being caricatured in this outrageous manner after death, is really enough to deter a man from ever doing anything for his country. It is not too much to say that these execrable statues are as disgraceful to the Southsea Islanders of Hampshire as they would be to their namesakes of the Pacific. But strange is the fate of our great men, who live in honour, but dying leave a bust at which the world grows pale!

From the contemplation of such unworthy libels on art and greatness we turn with delight to the vivid and glowing picture which Nature everywhere presented to the eye. The *coup d'œil* in the foreground was everything brilliant and delightful that fancy could imagine. The sea flashed and sparkled in the morning sun, and over its waters glided every variety of craft, from the leviathan three-decker of one hundred and thirty guns and twelve hundred men, to the little river steamer that, by some speculative freak, found itself on the joyous bosom of the Solent. It was interesting to observe the contrast of this picture—to

compare the yachts with the frigates, and to watch the tiny craft as they picked their way daintily among the mighty ships of war. The shipping was everywhere decked in the gayest colours, and upon every breeze came the strains of martial music—the commingled melodies of France and England. The order issued by the Admiralty, that steam vessels, of whatever class, should burn anthricite coal, was rigidly obeyed by all the steamers, except one; and let future historians take note of the fact—for it affords an amusing commentary on the difference between preaching and practising—that the offending vessel was no other than the Admiralty yacht the *Black Eagle*. To the horror of the ingenious Mr. Prideaux, and to the indignation of all beholders, on she came in the full insolence of official pride, dimming the atmosphere with a volume of black smoke that burst from her funnel as from a factory chimney.

Her Majesty's train arrived at the Royal Clarence Victualling-yard at five minutes to twelve o'clock, being above three-quarters of an hour after its time. On alighting Her Majesty was received by Admiral Sir William Parker, G.C.B., principal naval aide-de-camp; Admiral Sir Edmund Lyons, G.C.B., the Marquis of Townshend, Aide-de-Camp, Sir Charles Wood, Sir Maurice Berkeley, Rear-Admiral Peter Richards, Rear-Admiral Eden, Captain Milne, Sir Robert Peel, &c., forming the full Board of Admiralty; also by Admiral De la Graviere, of the French Imperial Navy, Captain Superintendent Dacres, Master-Attendant Davies, Storekeeper Pinhorn, R.N., Mr. Godson, Mr. Stevens, Mr. Scott, and other officers of the railway company, and a guard of honour. The Court immediately embarked on board the State barge, and was steered by Captain the Hon. Joseph Denman to the *Victoria and Albert*, lying in the harbour stream. Her Majesty was accompanied in the yacht by Sir William Parker, Sir Edmund Lyons, the Marquis Townshend, Admiral De la Graviere, and Mr. Osborne, Secretary of the Admiralty. After a short interval the trumpeter stationed on the Pier Battery announced the approach of the Royal yacht. The guns of the Platform Battery instantly confirmed the intelligence, and in a few minutes the *Victoria and Albert* rapidly steamed out of the harbour, and glided swiftly towards Spithead, amid the enthusiastic acclamations of the assembled multitude, the bands ashore and afloat striking up the National Anthem, while every vessel dipped her ensign.

The extraordinary exertions made by the Admiralty to have ready a strong naval force for the opening of another campaign, had been crowned with complete success as far as the batteries and gunboats are concerned. They are built, armed, and manned, move easily and in good order, and appear fully equal to the kind of work that was expected of them. The new and smaller flotilla, added as an appendix to our baffled giants of the deep, is ready, but only to celebrate the conclusion of peace by playing its part in one of those grand spectacles which may be called national. They have often been seen before, though rarely during the last forty years, for they can only be pro-

duced in all their grandeur in a time of war. One naval review is still of recent remembrance, and the display of Wednesday, we believe, confirmed in the minds of all who witnessed both the impression that such exhibitions of human power may follow without completely resembling each other. The spectacle of Wednesday, fine as it was in its mere material elements, did not, however, excite the same interest or depth of feeling as the review of 1854. There was much curiosity in the thousands of spectators afloat and ashore, but there was no enthusiasm. The decorations of the scene were splendid, but all poetry and passion had been eliminated from the drama, and it fell flat. "Is it war or peace?" asks Tennyson in his latest sepulchral song; there was a similar doubt on Wednesday upon all minds. What did men go out to see? It was not a triumph for victory achieved; the part of the navy in our past success has been subordinate and secondary. It was not hope, the exulting confidence in success to come; for the cannon are silenced, and diplomacy is drawing its web across their muzzles. Was it merely the country "taking stock" of its means of offence, laid in regardless of cost, and suddenly, by change of circumstances, obliged to be laid by in store unused? We believe this is nearly the truth, and, unconsciously felt by the public on Wednesday, it deprived the review of that deep and terrible interest with which the departure of the fleet was witnessed two summers ago. In this spectacle there was much of the same form, but its spirit was no more; the *morituri te salutant* of the Roman gladiators as they descended to the arena would have had no significance if they were only going to a rehearsal of conflict with blunted swords!

In describing the effect of peace as taking off the keen edge of interest in a warlike spectacle we do not for a moment regret that "our wars are over," for the present at least. But the fact must be noted that the sight of such an addition to our naval force as that fleet of gunboats did awaken some unholy wishes that they had existed sooner, or that—perhaps it is better not to pursue the speculation further. There are lovers of peace in the abstract who do not welcome the Peace of Paris with extreme heartiness. They are in that frame of mind illustrated by Shakspeare's Captain, who, in danger of being disbanded by a similar untoward breaking out of a compromise between the parties, said, "Heaven grant us its peace, but not the King of Hungary's." We noted many yesterday in the same mental condition; Heaven's peace they would willingly pray for, but not the Emperor of Russia's!

These elements subtracted, the review, as a spectacle, had some moments of much grandeur. When London rushes per rail to a seaport on such an occasion its eye does not anticipate the space over which the evolutions will extend; it is measured by miles, consequently all the crowding and squeezing is on shore; on the ocean there is ample room and verge enough for all possible movements by every variety of craft. There is thus a disappointment resulting from this vastness of our peculiar element. From no one point can more than a part of

the movements be seen; and of that small portion the chances are that very little can be understood.

The day was magnificent and in every way favourable to the occasion, to be accounted for by Her Majesty's proverbial good fortune and the fact that official "arrangements" had nothing to do with it. Some of these "arrangements" failed lamentably; the hitch between routine and accident this time luckily caught two of the estates of the realm, the Peers and Commons, and, to do them justice, they growled as heartily as humbler men, and may possibly agitate the matter "elsewhere." But this was only a disagreeable episode, of which the million knew nothing. They were lining the shore, crowded in a dense mass on the esplanade and every point from which a view seaward could be obtained.

The day was clear and golden,—the finest we have had for the season; the wind was light,—a blessing to the weaker kind of landsmen who ventured afloat; there would have been too little, perhaps, for evolutions under canvass, but modern fleets dispense with the "waven wings," steam having literally "put a hook in the nose of Leviathan."

The water between the Wight and the mainland was dotted, not crowded, with craft of all shapes and tonnage, from the row boat to the stately line-of-battle ship.

The most curiosity was excited by the new gunboats, which were to make their *dêbut* in the presence of the Sovereign, and by the floating batteries. The latter,—four low, flat, squat, black, unwieldy constructions, the *Trusty*, the *Glatton*, the *Thunder*, and the *Meteor*,—remained motionless at anchor. Their appearance inspires a doubt whether they are capable of motion; they were, however, a feature of the scene, for to compensate for their shapelessness they had put on the gayest of toilettes; they were more brilliantly "dressed" than any other vessels in the harbour, It was in vain; beauty of form—the one thing needful for the eye of the amateur,—was not there; their ugliness is irredeemable; garlands of roses would not give grace to these hippopotami.

The gunboats, without being models of elegance, move easily through the water, turn deftly, and have a blunt, determined look, with a spice of mischief in it. We have heard ancient mariners speak with much respect of the capacities in that line of the Danish gunboats of the Baltic; we can fancy a flotilla of them approaching with earnest purpose, making the commander of a squadron of prouder vessels look grave.

The following are the names of this portion of the fleet:—

White Squadron.

Under the command of Captain the Hon. Henry Keppell, C.B., in the *Colossus*, 81.

Name.	Guns.	H.P.	Commander.	Name.	Guns.	H.P.	Commander.
Victor	6	350	De Horsey	Nimrod	6	360	
Alacrity	4	200	Majendie	Vigilant	4	200	Armytage
Pelter	4	60	Round	Ruby	4	60	Hale
Thistle	4	60	Spain	Tickler	4	60	Balfour
Landfly	4	60	Nicholas	Seagull	4	60	Reilly
Plover	4	60	Stewart	Bullfrog	4	60	Martin
Carnation	4	60	Saumarez	Hasty	4	60	Menzies
Insolent	4	60	Smith	Herring	4	60	Geneste
Mayflower	4	60	Temple	Shamrock	4	60	Heath
Spey	4	60		Primrose	4	60	
Pickle	4	60		Griper	4	60	Singer
Spanker	4	60	Bosanquet	Thrasher	4	60	Sullivan
Renard	4	200		Foxhound	4	200	
Traveller	4	60	Pr. Hohenlohe	Growler	4	60	
Parthian	4	60		Quail	4	60	
Ripple	4	60		Savage	4	60	
Wolf	4	60		Julia	4	60	Clutterbuck
Louisa	4	60	Pauli	Cherokee	4	60	
Cochin	4	60		Sapoy	4	60	Knox
Orne	4	60	D'Arcy	Surly	4	60	
Swan	4	60		Manly	4	60	Arthur
Mastiff	4	60	Johnson	Mistletoe	4	60	Harvey
Lively	4	60	Byng	Magnet	4	60	Rowley

Red Squadron.

Under the command of Captain Henry J. Codrington, C.B., in the *Algiers*, 91.

Name.	Guns.	H.P.	Commander.	Name.	Guns.	H.P.	Commander.
Flying Fish	6	350	Dew	Pioneer	6	350	Mends
Ringdove	4	200	Saulez	Lapwing	4	200	Saumarez
Biter	4	60	Anderson	Swinger	4	60	Nelson
Starling	4	60	Piers	Skylark	4	60	Pyne
Snapper	4	60	Villiers	Pincher	4	60	Mariscaux
Bustard	4	60	Gilford	Charger	4	60	Symonds
Dove	4	60	Herbert	Grasshopper	4	60	Lee
Leveret	4	60	Codrington	Mackarel	4	60	Weld
Peacock	4	60	Beresford	Pheasant	4	60	
Fervent	4	60	Mitchell	Forester	4	60	Innes
Beaver	4	60	Hoskins	Whiting	4	60	Nicholl
Opossum	4	60	Campbell	Partridge	4	60	Jones
Cormorant	4	200	Bowden	Coquette	4	200	Risk
Firm	4	60	Gooch	Flamer	4	60	
Fly	4	60		Beacon	4	60	Stubbs
Blazer	4	60	Robinson	Brave	4	60	Hardinge
Brazen	4	60	Bridges	Bullfinch	4	60	Thomson
Rainbow	4	60	Grove	Raven	4	60	Knowles
Redbreast	4	60	Wratislaw	Rocket	4	60	
Rose	4	60		Albacore	4	60	
Amelia	4	60		Hardy	4	60	Wilson
Havock	4	60	Berkeley	Highlander	4	60	
Earnest	4	60		Escort	4	60	

Blue Squadron.

Under the command of Captain Hastings R. Yelverton, C.B., in the *Brunswick*, 81.

Name.	Guns.	H P.	Commander.	Name.	Guns.	H.P.	Commander.
Intrepid	6	350	Wood	Roebuck	6	350	
Mohawk	4	200	Close	Osprey	4	200	Blomfield
Stork	4	60	Malcolm	Weasel	4	60	Cragie
Dapper	4	60	Dyer	Jackdaw	4	60	Swinburn
Gleaner	4	60	Bogle	Hind	4	60	Ward
Magpie	4	60	Pim	Lark	4	60	Cuming
Redwing	4	60	Forbes	Snap	4	60	De Crespigny
Badger	4	60	Cumming	Sheldrake	4	60	Simpson
Skipjack	4	60	Chetwynd	Cockchafer	4	60	Porcher
Forward	4	60	Nelson	Stanch	4	60	
Banterer	4	60	Whitshed	Charon	4	60	Pollard
Haughty	4	60	Hamilton	Tilbury	4	60	
Assurance	4	200	Jones	Sparrowhawk	4	200	Cresswell
Procris	4	60	Irvine	Prompt	4	60	
Porpoise	4	60		Goldfinch	4	60	Boxer
Goshawk	4	60	Goodenough	Delight	4	60	Bingham
Grappler	4	60	Silverlock	Bouncer	4	60	Drake
Hyæna	4	60	Gregory	Nightingale	4	60	
Violet	4	60	Woolcombe	Camel	4	60	
Caroline	4	60		Confounder	4	60	
Crocus	4	60		Foam	4	60	
Wave	4	60		Spider	4	60	

Light Squadron.

Under the command of Captain A. C. Key, C.B., in the *Sanspareil*, 71.

Name.	Guns.	H.P.	Commander.	Name.	Guns.	H.P.	Commander.
Surprise	4	200	Vernon	Wanderer	4	200	Luce
Cheerful	2	20	Rason	Chub	2	20	Cochrane
Fidget	2	20		Flirt	2	20	
Daisy	2	20	Brent	Dwarf	2	20	
Pert	2	20	Doughty	Onyx	2	20	Hewett
Midge	2	20		Tiny	2	20	
Drake	2	20	Peile	Janus	2	40	Robson
Blossom	2	20		Gadfly	2	20	
Gnat	2	20		Garland	2	20	
Angler	2	20	Howarth	Ant	2	20	Salmon
Pet	2	20	Stubbs	Nettle	2	20	Key
Rambler	2	20	Rivington	Decoy	2	20	Clark

Shortly after 12 o'clock, as we have before stated, Her Majesty's yacht left Clarence-yard, and as she passed outside the first ship of the line, to return down the centre of the double line of ships of war and gunboats, the *Duke of Wellington* opened the Royal salute; it was rapidly taken up by the other vessels with grand effect; it was one of the finest moments of the review. As the Queen's yacht passed all the ships manned the yards. The yacht returned through the line to near the Warner Light; and there was a pause in the proceedings of some length, which the experienced devoted to refreshment. The rest of the programme of the day was pretty closely adhered to. Between 2 and 3 o'clock the gunboats steamed down the line, and

passed up it again on the outside. Soon after 3 the Royal yacht was seen standing towards the *Rodney* and *London*, anchored to the E.N.E. of the Nab Light as pivot ships; she was followed by the *Duke of Wellington* and the *Royal George*, the leading ships of the line; the rest following in their order of anchorage. They passed between the pivot ships, doubling back outside them, and returned in the same order to their former stations. No canvas was spread, which rather detracted from the beauty of the scence; but the immense screw men-of-war glided easily and silently along, apparently without aid or effort, and the manœuvre was perfectly performed.

The following were the ships engaged in it, and the order in which they passed down and returned:—

Order of Sailing.

Starboard.

Name	Guns.	H.P.	Captain or Comdr.
Royal George	102	400	Robinson (flag)
Nile	91	500	Mundy
Conqueror	101	800	Symonds, C.B.
Cressy	80	400	Warren
Cæsar	91	400	Robb
Algiers	91	450	Codrington, C.B.
Sanspareil	71	400	A. C. Key, C.B.
Centurion	80	400	Williams
Ajax	60	450	Warden, C.B.
Hawke	60	200	Ommanney
Hastings	60	200	Fanshawe
Imperieuse	51	360	Watson, C.B.
Arrogant	47	360	Lyster, C.B (flag)
Pylades	21	350	D'Eyncourt
Cossack	21	250	Cockburn
Esk	21	250	Sir R. M'Clure, C.B.
Falcon	16	100	Pullen
Conflict	8	400	Cochran
Harier	16	100	Derriman
Eurotas	12	200	Moorsom, C.B.
Seahorse	12	200	Heath, C.B.
Retribution	22	400	Fisher (flag)
Magicienne	16	400	Vansittart
Sampson	6	467	Hand
Vesuvius	6	280	Hore
Basilisk	6	400	Crofton
Gorgon	6	320	Crawford
Firefly	5	220	Otter

Port.

Name.	Guns.	H.P.	Captain or Comdr.
Duke of Wellington	131	700	Caldwell, C.B. (flag)
Orion	91	600	Erskine
James Watt	91	600	Elliot, C.B.
Majestic	80	400	Hope, C.B.
Exmouth	91	400	Eyres, C.B.
Colossus	80	400	Hon. H. Keppel, C.B.
Brunswick	80	400	Yelverton, C.B.
Edinburgh	58	454	Hewlett, C.B.
Hogue	60	450	Ramsay, C.B.
Blenheim	60	450	Hall, C.B.
Russell	60	200	Scott
Euryalus	51	400	Ramsay, C.B.
Amphion	36	300	H. Chads
Pearl	21	400	Sotheby
Desperate	8	400	White
Forth	12	200	Lord J. Hay
Tartar	21	250	Dunlop
Archer	14	202	Heathcote
Cruizer	17	60	Hon. G. Douglas
Horatio	8	250	Hon. A. Cochrane, C.B.
Vulture	6	470	Glasse
Dragon	6	560	Stewart, C.B.
Centaur	6	540	Clifford, C.B.
Bulldog	6	500	Gordon
Geyser	6	280	Tower
Merlin	4	312	Sulivan, C.B.
Hecla	6	200	Aplin

The Royal yacht, which had remained outside the pivot ships, then returned towards Portsmouth, and took up a position in the rear of the line of gunboats, which were by this time (about half-past 4 o'clock) ready to begin a mimic attack on Southsea-castle. The signal being given, they opened a brisk fire on the devoted fort, and directly in the faces of many thousands of stunned and delighted spectators under and in front of it. From the seaside little could be seen of this attack, which did not last so long as expected, the expenditure of powder

being limited to six rounds from each boat; nor did the Castle return the fire, from considerations, we believe, of the safety of those between the belligerents. We have nothing to record of this affair more than that there were considerable smoke and noise; there was, perhaps, a plan of action, but, if so, it was like chance "direction that we could not see." The Royal yacht, after the cannonade, returned to Portsmouth, the ships of war again saluting Her Majesty. This closed the maritime proceedings of the day. There was a rush on shore and another fearful squeeze at the railway station, and it must have been very late indeed before all the London guests returned to the metropolis. Her Majesty and the Court left Clarence-yard for London at half-past 5 o'clock.

The French Admiral and his Staff were guests of the Lords of the Admiralty on board the *Black Eagle*.

The fleet was led by Vice-Admiral Sir George Seymour in the *Royal George*, 101, *apropos* to the day being St. George's.

The presence of the members of both Houses of Parliament was an essential feature in the programme of the review. It was intended that the steamships bearing the Lords and Commons should attend closely upon the Royal yacht during Her Majesty's passage down the line-of-battle-ships, and it was thus proposed to add to the grandeur of the spectacle by giving to the proceedings something of the character of a national demonstration. The two Houses of Parliament were to typify the cordial aid given to Her Majesty during the war just ended by statesmen of all parties, and were to express by their presence the confidence felt by the nation in the valour of our seamen and the resources of our navy. But the infusion of this moral element in the great naval review was frustrated by a series of mischances and mismanagement which can scarcely fail to become the subject of complaint and explanation as soon as the two Houses assemble. The steamers containing the Peers and members of the lower Lower House did not arrive until the review was half over. When they did appear upon the scene their presence was officially ignored. They were not invited to take any part in the demonstration or to approach in any proximity to the Royal yacht, and were, in fact, treated as outsiders, like any of the hundred other steamers afloat.

So early as half-past 8 o'clock several members of both Houses of Parliament, who had taken the precaution to come to Southampton on Tuesday, assembled upon the quay to await the arrival of the tenders which were to convey them to their respective vessels. The scene presented within the docks was exceedingly animated. The magnificent steamers of the Peninsular and Oriental Company and the West India Royal Mail Company conveyed thousands of passengers to the review. One by one, the Peninsular and Oriental Company's boats *Manilla*, *Sultan*, *Euxine*, *Ripon*, *Simla*, and *Alma*, received their complement of directors, shareholders, and their families, and slowly moved out of the harbour. The West India Royal Mail Company's boats the *Tay*, *Atrato*, and *La Plata*, followed with their vast living freights, and in the numerous catalogue must also be noted the

South-Western Company's ships *Courier*, *Alliance*, and *Express*, the Union Steam Company's *Saxon* and *Union*, the General Screw steamer *Queen of the South*, and about 30 other ships. Southampton might well be proud of her contribution to the grand review of the fleet since the tonnage of these steamships was said greatly to exceed that of Lord Nelson's fleet at Trafalgar. These stupendous results of private enterprise greatly added to the grandeur of the scene at Spithead. They were gaily decorated with flags, had bands of music and many elegantly dressed ladies on board; and as they dropped down the stream, under the bright sun of a lovely April morning, our senators had ample leisure at once to witness the beauty of the scene and to observe the order and regularity with which the passengers stepped on board these vessels from the quay.

The Government steamers were two or three miles down the river, and tenders were appointed to carry their passengers on board. The *Transit* screw steamer, Commander C. R. Johnson, was appointed to convey the members of the House of Peers. The *Perseverance*, Commander Macdonald, was allotted to the House of Commons. For officials of the various public departments four steamers were engaged —the *Himalaya*, *Vulcan*, *Holyrood*, and *Thames*. The tenders for these steamers were the *Harbinger*, *Widgeon*, *Monkey*, and two Government tugs. About 9 o'clock the Right Hon. C. S. Lefevre, Speaker of the House of Commons, arrived upon the quay, and there were also assembled Lord and Lady Overstone and the Hon. Miss Jones Loyd, the Earl of Malmesbury, the Duke of Roxburghe, the Earl of Carnarvon, Lord Berners, Colonel Boldero, Mr. Hildyard, Mr. Peacocke, and many other peers and members of Parliament. Having taken their places in their respective tenders, our legislators awaited the arrival of the special train which was to leave London at 6 a.m. At length rumours were current that the train had broken down, and, as it seemed doubtful when it would arrive, and the morning was wearing away, it was proposed that Peers and Commoners should go off to their steamers in one and the same tender, leaving the other available for the passengers by special train when it should arrive. The arrangement was made, and after waiting another quarter of an hour the tender left the dock and steamed down the river. The *Transit* was the first vessel gained, and here were seen Lord Granville, Lord Colville, of Kinross, and a few other Peers who were anxiously looking for the arrival of the tender. The Peers on board the tender having been transferred to the *Transit*, the tender steamed for the *Perseverance*, where accommodation had been provided for 450 members of the House of Commons. After a tedious delay of an hour a boat came alongside with Lord Granville and two other peers, with a suggestion that the members of the Lower House should leave the *Perseverance* and be put on board the *Transit* in the boats of the two vessels. The *Transit* could then proceed to the review, and the Lords and Commons who might arrive by the special train would be enabled to follow in the *Perseverance*. After some

discussion the members of the Lower House declined to adopt this proposal, and there was accordingly nothing left for it but to wait for the missing train. The delay was most provoking, for the distant sound of the Royal salute upon Her Majesty's arrival at Spithead had reached the ears of the impatient legislators, and they felt that they were losing the most picturesque part of the review—Her Majesty's progress down the columns of the fleet, and the manning of the rigging. The policy of making Southampton the port of embarcation for the occasion was seriously impugned and scarcely found a defender. Then it was argued that it was unadvisable to make the departure of the steamers contingent upon the arrival of the morning train from London, and that members who had arrived the night before, and who had presented themselves upon the quay at the hour fixed by their notice for embarcation, ought to receive the reward of their punctuality by being conveyed to the scene of action in time to witness the proceedings. The tedium of waiting was somewhat relieved by the arrival of a tender with about a dozen members of Parliament. Some dissatisfaction was expressed that the *Perseverance* had been detained all this time for a handful of individuals, and it was expected that the anchor would then be weighed. But it appeared that the main body were still behind, and another demand was made upon the patience and good humour of those who had made sacrifices to be punctual. Where this tender came from, who sent her, and why she was not in the docks upon the arrival of the special train afterwards became a mystery which some one will probably endeavour to unravel.

At length the *Harbinger* appeared in sight. Her decks were crowded, and it would evidently be a work of time to dispose of her passengers. There was another long delay. It took a long time to put her alongside the *Transit*, and there were so many peers and ladies to go on board that minutes seemed to expand into quarters of an hour to the hon. gazers from the *Perseverance*. Then the *Harbinger* stood for the latter vessel, and, after some further delay, 200 or 300 infuriated legislators climed the decks of the *Perseverance*. A chorus of complaints arose, and it appeared that, after being delayed for more than an hour upon the railway, Lords and Commoners had been compelled to wait three-quarters of an hour upon the quay at Southampton because no tender was at hand to convey them to their respective steamers.*

Her Majesty arrived at Spithead at noon, and her faithful Commons, then distant several miles from their Sovereign, started from

* It has been most satisfactorily shown by Sir Charles Wood in the House of Commons that all the arrangements of the Government vessels were perfect in every possible respect,—that the two vessels appointed at Southampton for the Peers and Commons were best for their convenience, and that had the railway kept its time, as was promised, every one concerned would have been in the place allotted to him. No arrangements were ever more complete, but unhappily, in regard to the Peers and Commons, marred from want of punctuality.—Ed. *N. M.*

their anchorage precisely at half-past 1 to join their Royal mistress. When the *Transit* and *Perseverance* reached the scene of the review the gunboats were performing the manœuvre of steaming to the westward outside the columns of frigates and line-of-battle ships. The light and graceful screw corvettes forming the double columns were first passed, then the 50-gun frigates, beginning with the fast-sailing *Impérieuse*, and afterwards that splendid array of two-deckers, more than 20 in number, with their heavy guns and tremendous weight of metal. The three-deckers, the *Duke of Wellington* and the *Royal George*, formed a suitable climax to this most imposing display of naval strength.

When Her Majesty led out the fleet, towards the Nab Light, the *Transit* and *Perseverance* obtained a good position near the *Rodney* and *London* pivot ships. The skill and precision with which the whole fleet turned outwards in passing round the pivot ships—the imposing appearance and majestic motion of the line-of-battle ships as they advanced in close order of sailing,—the swarm of sailors aloft as each vessel on turning manned her rigging,—the hearty cheers which became truly musical in their transit across the water, were by turns the subject of comment and admiration. This was declared to be the most striking feature in the review which had come under the notice of the two Houses. The Royal salute upon Majesty's departure afterwards put in a powerful claim to attention. The reverberation of hundreds of heavy ordnance, and lurid flashes seen through the smoke, appealed powerfully to the senses, and terminated the review with *éclat*. The *Transit* and *Perseverance*, with *Himalaya*, the *Atrato*, and the other vessels of the wonderful mercantile fleet of Southampton then slowly steamed up the waters of the Solent, and arrived at Southampton between 6 and 7 o'clock. The weather had left nothing to be desired, and the grand spectacle of the day, it was felt, was not one to fade away easily from the memory.

The following are the officers of the Imperial French who navy represented that service at the review :—

Rear-Admiral M.M. Jurieu de la Gravière, Président de la Députation.

Post-Captains.—Belvèze (Capitaine de Vaisseau), Gironeau, Didelot, and Gollman.

Commanders.—Lejeune (Capitaine de Frégate), Beuic, and Chaperon.

Lieutenants.—De Fanques de Jonquières (Lieutenant de Vaisseau), Duburgnois, Touboulie, Lufond, Zéde, M.M. Boille, Hamelin, officier d'Ordonnance du Ministre de la Marine, De Beaulieu, and Hocquart.

Mates.—De Burburin (Ensigne de Vaisseau), Le Roux.

Illumination of the Fleet.

The most interesting and only novel feature in the day's movements was that reserved for the night, as an Emeralder might say; and this was a thorough novelty to such of the present generation as accidentally witnessed it. We say "accidentally," because no notice of an

intention to illuminate was given in the Admiralty's programme, and consequently thousands who had borne the cold and langnor of the day had left on their return to distant homes before the ships made this grand and brilliant demonstration. This was effected by simultaneously lighting up the yards and portholes with bluelights. At 9 o'clock gun fire, the whole fleet at anchor burst into light as by magic; the jets one above another, maintopmast high aloft, and the ports of each opened at once, showing a vivid glare between decks, caused an unusual roar of cheering from the shore, which was echoed and given back with interest from the boats of the legion afloat. This in the stillness of the calm night had an effect as imposing as it was rare, and cheer upon cheer applauded the spectacle. From 9 to 10 rockets were sent up thickly from the ships, and raised a golden shower upon the "floating capital." The Commander-in-Chief, Sir George Seymour, entertained the admirals, captains, and other officers of the fleet at the Admiralty-house in the evening, where the French Admiral and staff were the honoured guests. The *Erebus*, one of the three monster-floating batteries, built of wrought-iron by Napier, arrived at Spithead, from Glasgow, just in time to be a feature in the *finale*.

Times.

The following is the Admiralty programme.

No. I.

The fleet is to be anchored at Spithead in two columns at three cables apart; the ships of the line, at a cable and a half, and the smaller ships at one cable's length from each other.

The ships of the line will anchor to the eastward; then the screw frigates, screw corvettes, and paddle-wheel steamers. The divisions of gunboats will continue the line to the westward, two divisions in each line, formed each into two sub-divisional columns (half a cable apart), to the west of its divisional leader.

The *Mæander*, *Belleisle*, floating batteries, exercising brigs, and mortar vessels, will anchor and form a stationary line to the westward of the Spit Buoy.

The *London* and *Rodney* will take up a position as pivot ships to the E.N.E. of the Nab Light, at four cables apart, as marked on the chart. Two other pivot vessels, the *Dee* and *Volcano* will be similarly placed at one mile west of Cowes.

A royal salute will be fired by the fleet on Her Majesty's yacht approaching the Spit Buoy on coming out of Portsmouth Harbour, and also on Her Majesty's return into harbour after the review; but not until the royal yacht shall have reached the Spit Buoy. No other salute is to be fired.*

All the ships while at anchor are to be dressed in colours; and on the royal yacht passing, each ship is to man the rigging and the crews

* The *Mæander* and floating batteries will not salute, nor any vessel under the number of guns prescribed by the Admiralty order.

are to cheer. The *Mæander* and stationary ships are to man yards and cheer.

If the weather is tolerably fine, and there is not much swell in the offing, the fleet will have steam ready (but with the fires banked) and be hove short by eleven o'clock in the forenoon.

Her Majesty's yacht, on leaving Portsmouth Harbour, will probably steam past Gilkicker Point, and entering, at the western or Cowes end, will pass between the lines of ships at anchor. As soon as Her Majesty has passed the eastern vessels of the gunboat flotilla, the flotilla will weigh, and will follow the Queen's yacht, between the lines in the same order in which they were anchored. On reaching the flag-ships, the van *(White)* and rear *(Blue)* squadrons of the flotilla will turn in succession to port, round the *Duke of Wellington*. The van squadron will take up a position, at anchor, for attacking the *Mæander* and stationary line. The rear squadron will place itself to the eastward of the Boyne Buoy, opposite to Southsea Castle. The centre *(Red)* and light *(White* and *Red)* squadron of the flotilla will turn in succession to starboard, round the *Royal George*, and, passing to the southward of the south column of the line of ships, will cross to the westward of both columns. The centre squadron will take up a position at anchor for attacking the battery on shore, near the centre of Stokes' Bay. The light squadron will follow the centre division, and place itself off Fort Monckton in a position between the centre and van squadrons.

As soon as the whole flotilla has passed the flag-ships Her Majesty's yacht will proceed to the south-eastward towards St. Helen's, and take up a position beyond the pivot ships, and the whole fleet will weigh on the signal being made by the Commander-in-Chief, hauling their flags down together, and follow the royal yacht in close order of sailing, at such a rate as will allow the ships to maintain the order of sailing, and closing the columns to a cable's length apart.

On reaching the pivot ships to the E.N.E. of the Nab, each column, after passing between them, will turn outwards round these ships, the starboard column turning to starboard, and the port column to port, manning the rigging and cheering the royal yacht as they pass. They will then return to Spithead in the same order, closing their columns after the ships returning westward shall have passed the rear of the columns advancing eastward, and take up their former anchorage at Spithead.

Her Majesty's yacht will return towards Portsmouth, and take up her station in the rear of the line of gunboats, and the whole flotilla will be prepared to open fire, on signal from the royal yacht or Commander-in-Chief.

No. II.—*Plan to be adopted in case a signal shall be made for the purpose.*

The position of the fleet will be as in No. 1; but should the signal be made which refers to this plan, the gunboats only will weigh, but after passing round the flag-ships, as in No. 1, instead of proceeding

to the points of attack, they will return to the westward, outside the lines of ships at anchor. Having passed the westernmost ships, they will close their columns, and proceed to the pivot vessels off Cowes, and passing between them, the white and blue squadrons will turn in succession to starboard, and the red and light squadrons to port, and return to the eastward. They will then form into single columns of squadrons, white leading, blue 2nd, red 3rd, and light 4th, and will pass on, north of the fleet, (which will have remained at anchor) to their respective positions of attack, as in programme No. I, in the order prescribed, and be ready to open their fire on the signal being given for the purpose.

CHARLES WOOD.
M. F. F. BERKELEY.

THE COMPASS AND ITS EVILS.

This subject is again revived. and always ready as the *Nautical* is for its discussion, we give place to the two following communications on the subject, trusting that something will eventually turn up to reduce the evils to which the Mariner's Leader on the trackless ocean is liable. Of the first we know nothing more than the letter contains. But of the second we hail the author as an old friend, whose ideas on the subject we have already set forth in these pages, aud whose opinions and views (which we shall not lose sight of) we are glad to see creating that attention to which they are entitled.

Boston, 11th March, 1856.

Dear Sir,—I have the pleasure to hand you a report to the Boston Board of Trade, made by a Committee, of which I was the Chairman, on the subject of a valuable mode of correcting the effect of local attraction on iron and wooden vessels. I am aware that several expedients are resorted to, in England for correcting compasses; but, so far as I am informed, the modes adopted in England and France, are not found to be free from very grave objections.

The fact that there are several modes in use, seems to show that nothing entirely satisfactory for all latitudes has been found. I infer also that this is a fact, because Dr. Scoresby has gone out in an iron ship in order more fully to study the effect of local attraction in both hemispheres.

Capt. Morris has apparently done here what we have had no means of doing before. It is a matter of very great importance, and I beg you will do me the favour to publish the report in your Magazine.

I am, &c.,

R. B. FORBES.

To the Editor of the *Nautical Magazine.*

BOSTON BOARD OF TRADE.—*Report of Committee on Correction of Compasses.*

Boston, March 3rd, 1856.

Your committee appointed on the 4th of February to inquire into and report upon the method of correcting the effect of local attraction to the compasses of ships and steamers of wood or of iron, as claimed to have been discovered by Capt. Griffith Morris, now have to report that a full inquiry into the philosophical researches made in Europe and America by scientific men, in order to ascertain whether Capt. Morris has really made a discovery or not, would be far beyond the province of your committee. We, therefore, confine ourselves to a few practical facts, which fully sustain Capt. Morris in stating that he has accomplished a result, by his own study on board of an iron steamer during a period of nearly eleven years, which, so far as your committee are advised, philosophers have failed to accomplish.

It appears that the compasses of the *R. B. Forbes* were adjusted by Mr. Fry of New York some seven years since, but, as Capt. Morris states, they could not be depended on and the boat was often exposed to danger in consequence, and was nearly wrecked by striking on a ledge of rocks off the Graves at the entrance of Broad Sound, one compartment of the boat was filled in part by the water, but the damage was soon repaired; from this time Capt. Morris studied the subject by instituting a series of experiments, which he carried on silently and steadily until about four years and a half since, when he came to the conclusion that the corrections which he had applied to his boat were to be relied on; he has proved them to be so during many expeditions to and from New York towing valuable ships, and he states that he has made no alterations in his compass corrections during that period; this one fact, in a practical point of view, speaks volumes for the compass corrections of Capt. Morris. No vessel can be put to more severe tests as to straining, vibration, pitching and rolling, than the iron tow-boat. In addition to this valuable experience he has produced the most conclusive and satisfactory statements from the following persons:—

Capt. Obed Baker, master of steamer *Palmetto*, whose compasses have been corrected now about six months.

Capt. Amos Stow, of the steamer *S. A. Stevens*, who says that his compasses were 4½ points out of the way on a westerly course; he has had the corrections in use for about six months.

Capt. Solomon Hayes, and his mate, Mr. Loveland, of the steamer *Joseph Witney*, whose compasses have been corrected about twelve months; they were out from one-quarter of a point to two and a half points.

George Loring, Master, and Nathaniel Hopkins, of the steamer *Henry Morrison*, belonging to the city of Boston. They say that the compasses were four points out of the way; "in fact, perfectly useless, and are now right on all courses."

William A. Hallett, Master, and S. C. Lovell, Mate, of the steamer *William Jenkins*. During about nine months experience, from being two to two and a half points out of the way, "have found them perfectly correct on all courses."

The evidence before your committee is conclusive as to the fact that Captain Morris has found a way of doing what no one has, to our knowledge, done before; and we therefore unhesitatingly recommend to merchants and navigators the adoption of his correction, which your committee cannot describe, because he wishes to preserve his secret for his own use, and for the public through him, as long as possible.

Your committee would remark, in conclusion, that nothing connected with the shipping interests of the country is of more importance than a correct compass, and they believe that Captain Morris has discovered a mode of correcting the effect of local attraction in all ships. He does not profess to treat all ships in the same way; on the contrary, he states that every ship has her peculiar error, and must be treated according to the intensity of that error.

This report is made without Captain Morris's knowledge or solicitation, and is the result of a full appreciation of the value of the method by the writer (R. B. Forbes), who asked your Board to take up the subject for examination.

R. B. Forbes.
Lewis W. Tappan.
C. O. Whitmore.
Chas. B. Fessenden.
Samuel T. Dana.
} Committee.

To the Government of the Board of Trade.

The Compass Committee of Liverpool.

Liverpool, 22nd April, 1856.

Sir,—In the same number of the *Daily Post* which contains my letter (of the 12th instant) on the compass question, I see a statement from the "Compass Committee" of Liverpool, acknowledging plainly what I ventured to state with some feeling of delicacy—viz., that difficulties still exist as for navigating steamers; and calling for the assistance of a public institution to further investigate the subject. I need, therefore, scarcely apologise for offering my "mite" towards the elucidation of facts bearing on the question.

That all the laboured observations and experiments of living philosophers should have failed to produce a system of "correction," to be depended on, justifies the remark that "something more is wanted." Yet in my opinion (such as it is) we should not assume that what has been done is lost labour. For, as in our own bodies, prescriptions, excellent in themselves, may be vitiated by the method of administration (for instance, our "diet" may be such as to decompose and raise "incompatibles" in the very prescription itself,) just so in a steamer, influenced by certain constitutional disturbance from "diet" and other

causes, the remedy may have been ably prescribed though injudiciously administered. I propose, then, to examine certain diagnostics which appear to me never to have received merited attention. To drop metaphor. I propose either to explain the source of present compass uncertainties, or to open up a path of investigation thus hacked out by my very humble self; and a stronger arm than mine and better tools will soon facilitate inquiry. We have to deal with the fact that compass corrections which are perfectly applicable at one period are not so at another. It is the *change* which has hitherto baffled us, and in which lies the great danger to navigation.

I propose, in considering what an iron steamer really is, to add some information on this subject, not wearying your readers with the oft-repeated proof of the cause of ordinary disturbance of the compass, as existing in the line of position in which built—the hammerings, riveting of plates—the twistings, heelings, vibrations from heavy blows at sea, &c.; all these we know have their share in the formation of a most complex combination of magnetic and electric forces! But to proceed at once to notice certain properties peculiar to steam vessels. In availing myself of a few facts connected with the interesting science of thermo-electricity in its relation to, and connection with chemistry, perhaps I may be allowed to aid some of your readers by referring, in some detail, to a few general and acknowledged fundamental principles. We know that every substance in nature possesses its allotted portion of electricity; and it is believed that every atom of every substance has its poles round which electric currents circulate generating magnetic currents at right angles to them. Whether these be the "opposing forces" which maintain the various particles of a substance in their normal *quiescent* condition as regards surrounding atoms, I cannot say; certain it is that these atoms are not in actual contact, because, speaking in general terms, the density of a body may be affected by external causes, such as the application of heat, hammering, &c. Let it once be granted that "hammering," &c. has amply done its work of molecular disturbance in an iron ship, we are still left in this dilemma, viz., no experiments on these disturbances justify our considering them to be the great source of difficulty. Let us, then, examine the effect of "heat" on this substance. We know that the permeation of heat in a mass of metal expands its bulk, and we have the term "thermo-electricity" to designate the effects produced.

Now we cannot introduce a substance or principle among the atoms of any body without disturbing the forces which hold them in proximity; and it is known that the effects produced by the application or introduction of heat indicate change in the electric condition of a body, and consequently change in the magnetic condition, because, as before observed, the one is ever present with the other. *New currents* of magnetism are therefore formed when we heat a substance—and these pervade the whole mass or "fabric" (as in the case of iron steamers) according as such mass is homogeneous, or as conductors of different qualities interpose. Now, again, as in iron steamers, the parts sur-

rounding that to which heat is applied are peculiarly adapted to the absorption of these new magnetic currents; for, in the first place, magnetism is found to collect on the surfaces of metal; therefore, the plates, rivets, angle-iron knees, beams, the parts of the engine, &c., retain a much larger amount of magnetic influence than a *mass* of iron itself would, weight for weight; and again—the retentive power has already been increased by hammering (as before referred to): furthermore much of the surrounding metal is *cast iron*, which, from rapid cooling, carbonization, &c., possesses particular aptitude for absorbing magnetic influence, and indeed excellent *permanent* magnets may be formed of it, inferior only to steel! What is more, this "aptitude" increases with increase of temperature! Could a sponge seize upon water with more avidity? We may from these considerations fairly conclude that at least from one neglected cause, we alter the magnetic state of an iron steamer from the moment at which we light her fires! The importance of this will be conceded when I remind your readers that large steamers have upwards of thirty furnaces!

Again, if, (I am obliged to repeat,) no changes in the molecular condition of bodies *can* take place without the evolution or disturbance of electricity, and therefore magnetism, there is, besides the "mechanical" perturbation alluded to, another and even more serious change caused by heat in lighting the furnaces. I allude to "chemical" operation in the production of steam; for it is known that, by heat, water in its conversion into steam is expanded into 1,700 times its bulk; that (nearly) every cubic inch of water is changed into a cubic foot of steam. The effect of such enormous disturbance of "forces" rests not on my conjecture, for, about 16 years since, Capt. Ibbetson, F.R.S., caused to be publicly exhibited in London an immense evolution of new electric and magnetic currents, from a steam boiler. Hence is adduced a second neglected cause of alteration in the magnetic state of an iron steamer consequent upon lighting her fires. To what amount this is likely to operate may be estimated when we hear the roaring of gigantic accumulations of unemployed steam which issue before starting from an impatient steamer—

> "——— like greyhounds in the slips
> Straining upon the start;"

and thus the product in some cases of the combustion of six to eight tons of coal per hour!

The very combustion of coal is of itself a source from which magnetism is poured, as it were, into the frame of an iron ship in abundance. In considering this we are met again at the onset by the fact that no chemical decomposition can possibly occur without the evolution of electricity and magnetism. Now coal is, roughly speaking, composed of carbon and "earthy matter." The carbon during combustion enters into combination with the oxygen of the atmosphere, and escapes by the funnel in the invisible state of carbonic acid gas. No one will, perhaps, doubt the polarity of the atoms of carbon as found in the diamond, because it is capable of evident crystallization.

Here also occurs an enormous disturbance, being the third neglected source from which heat causes an alteration in the magnetic state of an iron vessel from the moment the fire is lighted.

Again, the "earthy matter" of coal, varying in quantity from 1 to 10 per cent., is mainly either pure oxide or sulphuret of iron. If we take a small piece of the sulphuret (say iron pyrites) and burn off the sulphur by the blow pipe, we find the residuary ash to be strongly magnetic oxide of iron. If, in addition, we examine and compare the ash from a steamer's furnace, we find the same magnetic residue of coal existing in large quantity! To those inclined to test this, as I have often done, even from a house grate, I would recommend their placing the small and even the dusty ash on a sheet of paper, and passing a magnet close under it. Magnetic particles will be seen to start up in abundance, and may be made to perform curious antics, as the poles of the magnet are reversed. Thus we have the fact that these particles are not merely sensible to the magnetic influence, but are permanent magnets themselves! I expose, then, a fourth neglected source of magnetic disturbance, caused, too, by lighting the fires in any steamer! And when we consider that ocean steam vessels consume from 100 to 200 tons of coal per day, and thus manufacture some tons weight daily of magnets (I say "manufacture," for in the state of sulphuret in coal the iron is not magnetic)—remembering that an aggregate of magnets has much more power than a simple one of equal weight, can we wonder that the compass of such a "laboratory" as a steamer, however carefully such compass is "corrected" in dock, should play tricks when at sea, and after her fires are lighted?

I fear I am exceeding the limits you gave me, and will therefore reserve my comments on the dispersion of all this magnetism—on the present compass—on the proposed system of correcting posts to be placed on the dock walls of the Mersey, and to change of hemisphere, &c., to a future and early letter, contenting myself that, seeing, as it were, a gang of "suspicious characters" lurking about the hearths, boilers, funnels, and frames of iron steamers, the management of which is too often at sea wrested from the hands of captains and crew by unknown power, often to the destruction of life, ship, and merchandise, I can, without any presumption, call the attention of the authorities to the circumstance; and I earnestly do so rather to suggest a direction to inquiry, than to thrust my own very humble opinions upon the public—convinced, from my own small experience of the unwearied attention of the naval heads of the Board of Trade, that every possible assistance will be given the maritime world by that body.

I am, &c.

S. M. Saxby.

To the Editor of the *Liverpool Daily Post.*

REMARKS ON—"*Reflections on Sir John Franklin's Expedition, and where his Ships were most probably beset in the Ice.*"

London, 12th of April, 1856.

Referring to an article in the *Nautical Magazine* of March last, under the above designation, I acknowledge that, if it has done nothing else, it has contributed to arrest public attention, and has especially attracted the notice of those officers who have been recently employed during the long search for Sir John Franklin, in which category I am constrained to consider myself; albeit, my advice and opinions have been uniformly disregarded.

Regarding the article in this point of view, I am induced to make some observations upon it. The first remark I am called upon to make, is the total omission of all mention of the severity of the winters preceding the years 1845 and 1846, on which the progress of the Expedition of Sir John Franklin materially depended, and which must undoubtedly have not only frustrated his endeavours, but, in conjunction with other circumstances to be hereafter mentioned, must have decided and directed the future plans of the arctic navigator. In corroboration of the severity of these winters, I have, besides my own experience in returning from Sweden, letters from several masters of whalers, representing that Lancaster Sound was frozen across in 1846, and that the land ice extended further from the coast than usual.

The next omission, is the fact, that in consequence of the promise I made to Sir John Franklin, that I would volunteer to rescue him, and that the winter preceding 1847 being favourable, I submitted my plan of four small instead of two large ships, to Lord Auckland, which was unfortunately rejected by the Admiralty in consequence of the opinions given by a committee of Arctic Councillors, of which I was not a member, an arrangement and plan which it has now been admitted would have had a much better chance of success than that subsequently adopted after the severe winter preceding 1848, which ended, as I had anticipated, in a complete failure.

It is true, that when the last accounts, dated 23rd of July, 1845, came from the expedition, it was supposed to have three years' provisions; but they had still been in the region of wild fowl as well as their own supply of fresh beef, and had not discovered that their whole supply of "preserved meats" were putrid and unfit for human food. Taking this into consideration, the fact that Sir John Franklin had promised me that "IF HE ADVANCED" he would notify in a cairn of stones, in several places, the route he had decided upon; and the fact that Lancaster Sound had been impenetrable in August; that Adam Beck had seen a piece of tin, which had been fixed on a post, a statement which he could have no motive to make if not true: all these combined, I ask, is it not most probable that, after consulting his second in command, (who was not a likely person to advise a hopeless perseverance,) that he had been obliged to abandon the enterprise, and, after

his release in September, to endeavour to return to England? It is indeed quoted,—"that Franklin was not a man to be diverted from his purpose; he would use all his endeavours to penetrate South-West in obedience to *orders*, &c." I deny that Sir John Franklin had any *orders* from which he had not a discretionary power to deviate. His instructions *recommended* three routes; but since the voyage of 1818, when the orders given to me to return were positive, no such *order* has been given.

On the other hand, Sir John Franklin, on several occasions, most solemnly promised to leave notices in several cairns to inform me which route he had taken "IF HE ADVANCED," and I may justly add, "That Sir John Franklin was not the man to give his word and break it."

The truth is, that the expedition never proceeded further than Beechey Island; but before I make any remarks touching the subsequent route, I must devote a few lines to the chart explanatory of the Arctic Sea, which, being on a polar projection, gives but a partial view of the distance navigated, and the route and position of the ships have no less justly been denominated "conjectural."

I must here do justice to the elaborate manner in which the Editor (after throwing overboard the "Wellington Channel mania") has proceeded to convince himself that the expedition may have advanced;—reports of Esquimaux, masters of whalers, pieces of wreck which can easily be accounted for, as many of the wrecked whalers as well as the *Isabella* and *Victory*, were formerly king's ships and that had been purchased, have been resorted to in order to make out a case; but in absence of all indications proved by the unflinching perseverance of Capt. Ommanney, Lieuts. Osborne and Brown of the ships having passed Cape Walker, and the very route so particularly examined, it is impossible to give the smallest credit to the belief that they made any attempt,—far less being wrecked,—in that direction, and which I believe to be the general opinion.

Again, let us take a view of what would take place when Sir John Franklin, in consequence of what I have stated, made up his mind to return to England. It would be the middle of September, 1846, before he could leave his winter quarters, and it would then be necessary for him to get to the northward of the main ice, which will account for the ships being seen off Cape Dudley Diggs, where the Esquimaux informed Adam Beck that a boat had come ashore from them, and the ships had "disappeared." It was then probable that they were beset, and during the winter, like the *Dundee*, carried up and down Baffin Bay; and it was not until 1848 that any searching expedition was sent. It is probable that in 1849 they were, for want of provisions, unable to remain on board any longer, and that a part, at least, of the crew had abandoned the ships when off the West coast, probably at that part named by me River Clyde, in order to make their way to the Hudson Bay settlements, but had perished at Backs River. Other parties may have tried a more southern latitude in Davies Strait, and may at this moment be prolonging a miserable existence among the Esquimaux. Certain it is, that no examination has been made on the

West side of Baffin Bay or Davies Strait. In August, 1851, Capt. Penny undertook it; but, instead, he made the best of his way to England. On the following year Capt. Inglefield was to have made a search there; but, instead, went to Wolstenholme, Whale, and Smith Sounds, which had been previously examined.

Page 129, the Editor goes on to say, "The Admiralty, in giving the necessary orders for the guidance of these expeditions, called the aid of the Arctic Council, consisting of those officers who were most experienced in arctic navigation, and their decisions were followed throughout." I am here called upon to disabuse the public with regard to myself, inasmuch as having spent no less than fourteen winters in the frozen regions, it may be supposed that I was one of the "Arctic Council;" which I neither belonged to nor to any of their Committees, and I am not disposed to incur either the responsibility or the blame which must ever be attached to their lamentable decisions; more especially as they were in direct opposition to my own views, and frequently asseverated convictions; nor can I account how they could conscientiously maintain opinions which appeared to me so absurd, and were acknowledged so, but, alas! too late! And it is now no less evident that Dr. King's plan ought not to have met with a negative.

I am myself indeed too far advanced in life to undertake such an enterprise; but should peace be happily ratified, there are young officers who would nobly perform the duty which I still think is due to the gallant Franklin and his brave companions, by searching the regions which ought to have been the first instead of the last for examination.

JOHN ROSS.
Rear-Admiral.

ERUPTION OF MAUNA LOA, SANDWICH ISLANDS.

The March number of the *American Journal of Science and Art* contains a very interesting account of the eruption of the volcano of Mauna Loa, in Hawii, which, it appears, continues in a state of fearful activity. The first appearance of the eruption was observed in August last, when a small glowing point was seen on the north-western slope of the mountain at the height of 12 000 feet. This radiant point rapidly expanded, and gave birth to a stream of lava, which in November threatened the destruction of Hilo. Mr. Coan, who visited the spot at that date thus describes the terrific scene:

A little before sundown our guide led us at right angles from the stream we had been threading for six hours, and in a few minutes the fires of the volcano glared upon us through the woods. We were within six rods of the awful flood, which was moving sullenly along towards Hilo. The scene beggared description, and for a moment we stood mute and motionless. We were on the right or southern verge of the stream, and about two miles above its terminus, where it was glowing with intense radiance and pushing its molten flood into the dense forest which still disputed its passage to the sea. We judged the stream to be two or three miles wide at this point, and over all this expanse and as far as the eye could see the whole surface was dotted with countless fires, both mineral and vegetable. Immense trees which had stood for

hours or for a day in this molten sea were falling before and below us, while the trunks of those previously prostrated were burning in great numbers upon the surface of the lava.

It is impossible to give any just conception of the scene. The great fire-vent on the mountain discharges its flood of incandescant minerals into a subterranean pipe which extends, at the depth of from 50 to 200 feet, down the side of the mountain. Under this arched passage the boiling fusion hurries down with awful speed until it reaches the plains below. Here the fusion spreads out under a black surface of hardened lava some six or eight miles wide, depositing immense masses which stiffen and harden on the way. Channels, however, winding under this scorified stratum, conduct portions of the fusion down to the terminus of the stream, some sixty-five miles from its high fountain. Here it pushes out from under its mural arch, exhibiting a fiery glow across the whole breadth of the stream. When the ground is not steep, and when the obstructions from trees, jungle, depressions, &c., are numerous, the progress is very slow—say one mile a week.

NAUTICAL NOTICES.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from p. 168.)

	Name.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
9.	Bishop and Clerks, U.S., Mass.	Vineyard Sound	F.		7	Est. 10th Jan., '56. Bass Rock Light N.E ½ E.; Point Gammon Light N.b.E.; Hyannis Harbour Breakwater, East end, N.& W.
9.	Watch-hill Point	Rhode Island	F.	58	12	Est. 1st Feb., '56. Revolving Light discontinued. New Light is 17 yards N.W. of the old Light.
10.	Swan Foot Knoll	Patapsco R.	F.	55	11	Est. 10th Jan., '56. Bodkin Point Light will be discontinued.
10.	Cape Fear River	East Bank	F. F.	42 65		Est. 1st Mar., '56 Near Upper Jettee three miles below Wilmington, leading through channel on East side of river.
11.	Cape San Blas	Florida	Ftl.	80	12	Est. 15th Feb., '56. In 29° 39′ N., 85° 24′ W.
11.	Passe a l'outre	Louisiana	Ftl.	77	12	Est. 15th Jan., '56. From the Nun Buoy outside the bar it bears S.W. Run for the Spar Buoys W.S.W. westerly and pass between them.
12.	Punta Concepcion	St. Barbara Ch., California	R.	250	22	Est. 1st Feb., '56. Period of Revolution twice in a minute. In 34° 26·8′ N., 120° 25·5′ W.
13.	Loffoden	Scaaholmen	F.	30	7	Est. 20th Jan., '56. In 68° 9·5′ N., 14° 41·5′ E.
	Channel	Kia Island	F.	52	7	Est. 20th Jan., '56. In 68° 13·2′ N., 14° 37′ E.
14.	Lipso Kutala	Gulf of Athens	F.	184	10	Est. 13th Mar., '56 On summit of cape. In 37° 56 4′ and 23° 36·9′ E. The temporary light near tomb of Themistocles discontinued.
15.	Cape Shahlah	Beacon Tower	F.	120	16	Est. 1st Feb., '56. In 43° 33 5′ and 28° 38·7′ E.
16.	Cape Elizabeth, and Wood Isld.		F.			Est 1st April, '56. The Light at present on Cape Elizabeth will be fixed. A Revolving Light will appear in tower of old Revolving Light. Vessels from westward will first make Wood Island showing a Red Revolving Light, and then Cape Elizabeth Lights showing two natural lights, one Fixed and one Revolving.
16.	Martins Industry Shoal	Port Royal S. Carolina	F.	40	10	Est. 15th Mar., '56. Light Vessel carrying two lights. In 32° 6·5′ and 80° 34′ W.

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

NEW AND CORRECTED CHARTS, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

	Price	s.	d.
England, St. Ives Bay, Captain G. Williams, R.N., 1848		2	0
,, Milford Haven, Commander Alldridge, R.N., 1854		4	0
,, Hartlepool, corrected, Mr. E. K. Calver, R.N., 1855		3	0
Scotland, Loch Fyne, Captain C. G. Robinson, R.N., 1848		2	0
,, Colonsay and Oronsay Islands, Commander E. Bedford, R.N., 1855		3	0
Ireland, West Coast, sheets 8 and 9, Commander Beechey, R.N., 1854	each	2	0
Baltic, Wormso Sound, Captain Sulivan, R.N., C.B., 1855		1	0
Narrows of the Dardanelles, Captain T. Spratt, R.N., C.B., 1855		3	0
Black Sea, Routes from Kustenjeh to Chernavoda and Rassova, Captain T. Spratt, R.N., C.B., 1854		2	6
North America, Gut of Canso and Chedabuctou Bay, Captain H. W. Bayfield, R.N., 1854		4	0
Indian Ocean, 2 sheets, various authoriteis, 1856	each	3	6
Tartary, Victoria Bay and D'Anville Gulf, Messrs. May and Wilder, Masters, R.N., 1855		1	0

EDWARD DUNSTERVILLE, Commander, R.N.

Hydrographic Office, Admiralty, 22nd April, 1856.

THE CHART OF SPITHEAD.—It is fortunate as contributing much towards the successful execution of the manœuvres and disposition of the fleet at the late naval review that our chart of Spithead was so perfect, and that we had not to trust to the old chart of Mackenzie, about a century old. The review we believe was planned by the Hydrographer to the Admiralty, Captain Washington, R.N., on the chart of Captain W. L Sheringham, the accuracy of whose survey gave the depth of water throughout the whole of the scene of operations, and thus contributed not only to the confidence with which the arrangement and the evolutions of the fleet were planned but executed.

Literary Notice.

Mr. Potter has in the press, and announces for publication in the course of May, "The LANDFALL OF COLUMBUS, with the Baron Bonnefoux's Preliminary Account of his Life. And his Voyage Home. By A. B. BECHER, Captain, R.N." One volume 8vo.

TO CORRESPONDENTS.

Mr. Rough's communication in our next.

Thanks to an Anglo-French correspondent.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

JUNE, 1856.

Visit to White Island and the East Coast of New Zealand in H. M. Surveying-Vessel "Pandora," November, 1855.

The following notes of a visit to some parts of the eastern coast of this province may be the better understood by an occasional reference to the chart* of New Zealand. It will thus be seen that immediately to the eastward of the Waitemata (Auckland Harbour) there is a chain of islands that not only effectually protects our safe and commodious port, but also forms a well sheltered anchorage of great extent in the passage between the islands and the main shore.

This beautiful strait seems to have been made known to Europeans by the Master of the *Prince Regent*, schooner, who sailed through it in the year 1820. The first of the islands above-mentioned, called Rangitoto (Bloody Sky), is a mass of scoria, terminating in a volcanic peak nearly one thousand feet above the level of the sea. It forms an excellent landmark to vessels steering for Auckland, and being clothed with trees growing from the fissures and between the rude heaps of volcanic remains, it forms also a picturesque object to the inhabitants of the town and neighbouring country.

The largest island of the chain, Waiheki (sometimes called the New Zealand Isle of Wight), is about twenty miles in length, moderately elevated, and covered with trees and plants of various species,—some of the former being very valuable as spars, or for ship-building, house-building, and firewood. The shores are indented with little coves and bays, inhabited by the native owners of the soil, and by a few Euro-

* Published in March last by the Admiralty.

pean settlers and wood-cutters. There is an excellent watering-place for ships at the East end of the island, where, with the pinnace only, we got off upwards of twenty tons in little more than two days. The wooded hills and winding valleys near the stream present numerous specimens of the ferns, mosses, and other plants peculiar to this country. At some seasons wild-pigeons abound; and before the dawn of each morning we heard from the ship the clear and sweetly ringing notes of many singing birds amongst the trees on shore. These birds are usually quiet during the heat of the day, which may account for the *silence lugubre* said by French navigators to reign in the forests of New Zealand. Amidst scenes of so much natural beauty it is a sad thing to witness the dissolute conduct of some Europeans, who set a lamentable example before the natives, and counteract the salutary effects of the instruction that has been given to them by Christian Missionaries. The weather being remarkably fine during our stay at Waiheki, the sailors were allowed time to wash their clothes on shore, and in the evenings to amuse themselves in dancing or playing at leap-frog on deck by moonlight.

A range of mountains, known to contain gold, forms the eastern shore of the Gulf of Hauraki or Frith of the Thames, and terminates at a remarkable point, called Cape Colville after one of the Lords of the Admiralty in Captain Cook's time. The passage between this cape and the Great Barrier Island at the entrance of the gulf is about nine miles wide. Coasting vessels meeting with adverse winds find good shelter in a harbour of the island which bears about N.E.b.N. from the Watchman or Passage Islet near Cape Colville. In that harbour vessels of large burden may anchor, and procure abundance of wood and water, or supplies of fresh meat from a herd of cattle belonging to Mr. Barstow.

Beyond Cape Colville there is a group of islands called by the French the Hausez Islands, but familiarly known to our coasters as the "Mercuries," being opposite Mercury Bay, where the transit of the planet Mercury was observed by Mr. Green, the Astronomer of Captain Cook's first voyage, on the 9th of November, 1769. In the largest of the Mercury Islands there is a narrow and deep creek, where a brigantine that had been piratically taken from the Chatham Islands by some lawless desperadoes was retaken in 1843, and afterwards restored to her proper owners, by such means as the Colonial Government could command at the time.

In the wide Bay of Plenty, Tauranga is the only harbour easy of access; from thence large quantities of native produce are shipped to Auckland. It is a mission station, and the residence of the Archdeacon of the district. As Tauranga is within three days' journey of the lakes, it will most probably soon be frequented by coasting steamers bearing passengers on summer excursions to the wonderful boiling springs and luxurious natural warm baths in the interior of this province.

Nearly in the track of vessels crossing the Bay of Plenty there is a volcanic island, called, on account of its sterile appearance, "White

Island, from which clouds of vapour—more or less dense according to the state of the atmosphere—are ever rising. It affords no shelter, and is therefore seldom touched at by passing vessels; but as the weather was perfectly settled and the sea calm when we approached the island, the Commander kindly allowed a large party to land at the eastern end, and gave us time to explore the crater, which appeared to be about half a mile in length by about a quarter of a mile in width, forming an awful void in the centre of the island, but leaving a shell of high and crumbling rocks that enclose it on all sides, save one chasm, by which we entered that vast amphitheatre of desolation and convulsion. The arena-like bottom of the crater, over which we trod with necessary caution, is very spacious. Sulphurous vapour exhales from innumerable perforations, and at several places the treacherous crust of calcined earth has sunk into awful caverns containing boiling mud and water, from which jets of hot water and clouds of vapour are sent forth with a noise like the roar of an enormous high-pressure steam-engine. Crystalized sulphur in various forms and curious combinations is found near the brink of these cauldrons, and some of the smaller holes are covered by hollow pyramids of brimstone. The sun's rays darting through clouds of vapour that enshroud the summit of the island cast gleams of light into the crater and on the precipitous rocks around it, tinging them with strange colours, which give an unearthly appearance to the wild scene.

Betwixt Cape Runaway and the East Cape there is a fine bay, called Hicks Bay, which affords good shelter in southerly and westerly winds.

About two miles further eastward there is a Mission station, now placed under the care of an aboriginal native Missionary, a Deacon of the Church of England, ordained by the Bishop of New Zealand. A pleasant walk over the hills led to a kumera plantation, where we found Rota with a number of young men and women actively employed. He gave us a very friendly reception, and in a short time fish wrapped in leaves, and sweet potatoes cooked on the spot, were spread before us under the trees on the bank of a rivulet. The young Missionary's manners are simple and prepossessing, and although we had no time to form an opinion as to his usefulness, we were very favourably impressed with the good feeling that appeared to exist between the minister and his people;—of course they are on familiar terms, for nothing else would satisfy the thoroughly independent New Zealanders. At our departure, some wild pigeons, shot during our visit, and several baskets of kumeras were sent (as a present) to the boat, then lying at a considerable distance.

The East Cape of New Zealand is, like most other capes, noted for the stormy weather and high seas usually encountered by vessels that pass near it. The land is high and the white cliffs on the shore are steep. There is an island about a mile from the extremity of the cape, and a passage for small vessels between the island and a reef that projects from the shore.

The first extensive indentation of the coast to the southward of

East Cape is Waiapu Bay, where a river of considerable size reaches the sea after flowing through a wide and fertile valley capable of sustaining a large population, but as yet only cultivated in detached patches by the native inhabitants. Towards the upper end of the valley the Hikorangi Mountain, about 5500 feet in height, forms a very picturesque object to the view from seaward, especially when the summit is covered with snow.

We had an opportunity of landing at Waiapu, and had the pleasure of seeing a large and substantial church, built of timber, sawn, prepared, and put together by native workmen from their own resources; —Mr. Baker, the resident Missionary, having very judiciously dissuaded them from seeking or accepting extraneous aid, the natives being now well able to afford the outlay required for such purposes.

In sailing along the coast pleasing traces of cultivation meet the eye,—the sombre hue of the woods being variegated and relieved by the bright green of wheat fields and potato plantations on the slopes of the hills and around native villages nestling in the valleys.

The first deep bay to the southward of the East Cape is Tologa or Uawa Bay, a part of New Zealand which by our colonists and their descendants must ever be regarded as classic ground, for it was there that the illustrious Captain Cook held peaceable intercourse with the natives and procured water for his ships a few days after he had discovered the coast in the month of October, 1769.

We landed at a little cove that bears his name and is, to all appearance, in the same state as when his renowned associates Banks and Solander rambled along its shores, rejoicing in the new aspect which Nature presented to their keen research.

Beside a little stream that trickles over the rocks, within a grove of trees, there are letters cut into the soft stone which are said to be the initials of some persons in the expedition; and the wide span of a natural arch in the cliffs over the entrance to a narrow valley, particularly mentioned in the accounts of that voyage, still forms a very picturesque and interesting object.

In the centre of Tolago Bay there is a river that, like other streams on the coast, has a considerable quantity of good land on its banks, partially cultivated by the natives. From a European settler we procured good supplies of salted pork, bacon, &c.

In addition to the hospitality and pleasant society enjoyed on board a ship of war, it is a great advantage to see the Day of Rest properly respected. Several natives who had come on board were present during Divine Service whilst we lay at anchor in the bay. They looked at the officers, seamen, and marines assembled on the quarter-deck with thoughtful gaze, and no doubt reported the whole proceedings to their friends on shore. Being trained to a strict keeping of the Sabbath, the natives narrowly watch the conduct of Europeans with regard to religious observances, especially that of persons in authority, which has a very decided influence in strengthening or weakening the effect of missionary instruction on their minds and practices.

Soon after leaving Tologa Bay we anchored near Young Nick's

Head, on the southern side of Poverty Bay. That headland was the first point of New Zealand seen by Captain Cook, and so called from the name of a boy (Nicholas Young) who descried it from the mast-head of the *Endeavour*.

From the deck of a vessel Poverty Bay appears to be encircled by a range of steep hills, and might readily be deemed a sterile and unpromising tract of country; but in reality there is a rich alluvial flat, about thirty thousand acres in area, between the hills and the beach in the bosom of the bay, which appears to have been formed by the deposits of two rivers that still flow from the hills through the plain to the sea. These rivers have bars or sand-banks at their entrances but are accessible to small vessels, and, having deep water close to their banks inside, may form available calling stations for steamers when they are established on this side of the island.

Near the central river, and about two miles from the sea shore, is the Church Mission station. A considerable extent of the flat land near it has been cleared and cultivated or become covered with grasses, affording good pasture to cattle, and presenting to view a verdant landscape studded with groups of tall trees. The pleasing effect of this park-like scene is heightened by varying lights and shadows on the encircling hills, which at sunset are tinged with a deep purple hue like evening colours on the Appenines or the first soft shades of twilight on the beautiful coasts of Italy.

The Mission premises are enclosed by a hedge of roses and ornamented with graceful willows, elms, and other European trees. The orchard is stocked with excellent fruit trees, from which scions have been distributed about the native villages. There are some wheat fields in view and a general appearance of fertility and plenty which entirely dispels any unfavourable impression that the name of the bay might otherwise leave on the mind of a visitor.

Attached to the Mission station is a training school, for natives of both sexes, which is considered to be of so much importance that the venerable Archdeacon of the district is about to sacrifice his own comfort and all the advantages of the present establishment to begin a new station further back, where the natives have given so much land as will render the school in a great measure self-supporting.

The native artists in this part of the island are celebrated for their proficiency in wood-carving. One house in particular contains some grotesque but very elaborate and curious specimens. The posts and rafters would be an acquisition to the collection at the Crystal Palace, Sydenham, and we ventured to suggest that they should be sent to that great exhibition of architecture of all nations, but something more tangible than the prospect of reputation for excellence in this branch of the fine arts is wanted to induce New Zealanders to give up anything on which they set a value. A large building, somewhat similarly ornamented and intended for a place of worship, was commenced long ago, but they cannot be prevailed on to complete it, both their time and attention being now given to cultivation, from which they

have lately received returns so large as to distract their thoughts from their former pursuits and higher objects of interest.

The European settlers at Poverty Bay and other places along the coast have as yet no tenure of land from the Crown, only old native conveyances or possession by sufferance—conditions very unfavourable to enterprise or outlay of capital. They cultivate the soil, breed cattle, and trade in connection with mercantile houses at Auckland, exchanging the manufactures of Europe and the productions of India and America for those of the natives, which are carried to Auckland in coasting vessels, and from thence frequently sent to Sydney and Melbourne markets. The whaling stations at several points along the coast have not lately been very successful, but at some seasons of the year it is the resort of many sperm whales, which might more easily be caught by boats from vessels than by shore parties.

It is extremely necessary to approach every part of the East coast of this island with caution, on account of the sudden changes of weather that take place at all seasons and the want of safe anchorages sheltered from easterly winds. During westerly winds vessels anchor and discharge or take in cargo near the shore, but they must always be prepared to start and gain an offing with the first of any wind that blows upon the coast. Notwithstanding these difficulties attending the East coast trade it is rapidly becoming more extensive, and is likely to add materially to the commercial prosperity of Auckland and to the public revenues of this province.

The Atlantic Ocean Considered with Reference to the Wants of the Seaman.

(Concluded from p. 252.)

Leaving a place Eastward of the North coast of Guinea, a vessel should stand well out on the starboard tack till she is clear of the Guinea current and has entered that of the equatorial; and, according to the time of year, she may cross the line to the Southward for Southerly winds. She may then get on the port tack, so as to reach well to the West of her port of destination, in order to allow for the effect of the current of North Guinea, which will be found in 2° N. latitude; and if she cannot make it so on this tack, she must go about in 2° N. lat. and stand out on the starboard tack again till she has gone far enough West to be sure of reaching the coast to the Westward of that port. In a few days, by this method, the port will be gained. Vessels which have endeavoured to get to windward on the coast of North Guinea, are sometimes thirty or forty days in reaching Grand Bassam from Cape Coast, and have been obliged to give up the attempt and stand out to sea.

On leaving Fernando Po, a vessel must make her way along the

coast of Gaboon, profiting by the slants of wind and current, and consequently keeping near the coast until she has made Southing enough to stand into the equatorial current. Leaving Prince Island, she should take the starboard tack, with South-West winds, and continue on that tack as far as the coast permits; she may then get on the port tack and thus get clear of the Gulf of Guinea.

If intending to leave the Gulf of Guinea, after reaching the equator she may keep to the Southward, profiting as she may by winds from South and S.S.W. to S.S.E., till she reach the meridian of Cape Palmas, and in the case of intending to go to the Northward, after reaching about 17° West, she may make for the Atlantic on a course according to her destination. Then, if returning to Europe, it will be best to leave the equator in about 23° W. and make to the Northward, and afterwards pursue the same route as that indicated in returning from Brazil to Europe; but if near the equator West and N.W. winds are found, which is often the case during winter from May to September, the ship may then cross it in 17° or 18° W., and pass between the Cape Verd Isles and the coast of Africa. North of the Cape Verd Isles the N.E. trade will be found, which will enable her to proceed on the starboard tack. If returning to any point on the coast of Africa, Sierra Leone, Gambia, Goree, or St. Louis, a northerly course must be taken in 16° or 17° W., and a course made good between the meridians of 22° and 28° W., in order to avoid entering into the polar current of North Africa until the parallel of the Bissagos is reached. This last course will be especially favourable from May to September, which is the winter season. Lastly, a vessel bound to the United States or the Antilles, should proceed North in 28° or 33° W. long.

Favourable Season for leaving the Gulf of Guinea.—The most favourable season for leaving the Gulf of Guinea is from May to December. A vessel is then seldom obliged to cross the line; the S.E. winds are generally well established at this period, and reach beyond the equator. But from December to May it is better to cross the equator, and proceed at least in 0° 30′ or 1° S. lat. By following the foregoing directions, a vessel will in a few days be clear of the Gulf of Guinea. In order to enter it, a vessel should pass near Cape Palmas, and keep in the North Guinea current, between the coast and 2° or 3° N. lat.

But in order to leave the Gulf of Guinea, as a general rule, a vessel should endeavour to reach the equator by the most direct route according to her longitude. From May to December she may keep on the equator, or a little North of it. During the other months it will be better to keep South of 30′ or 1° lat., and to the Westward as far as the meridian of 16°, 17°, or 23° W. long., according to the port of destination in the North Atlantic Ocean.

Passages.

Ports in the North of Europe to Madeira	15 days.
Strait of Gibraltar to Madeira	4 to 5 ,,
Ports in the North of Europe to the Canaries.....	16 ,,
Strait of Gibraltar to the Canaries	7 ,,

Ports in the North of Europe to	Cape Verd Island	20 days.
	St. Louis	18 „
	Goree	20 „
	Gambia	24 „

On the coast of Africa, South of St. Louis, the length of the voyage, according to the season, will vary greatly. Thus in the fine season 28 days are taken to go from Goree to Prince Island, and in the winter generally 36 or 38 days.

Returning.

Prince Island to Goree	38 to 40 days
Gambia to Goree	3 to 4 „
Goree to St. Louis	5 to 7 „
St. Louis to Brest	30 to 40 „

There are some instances of this voyage having been made in 24 and 22 days.

Routes from Europe to Ports of Africa South of the Equator.—The routes from Europe to those ports of Africa situated South of the equator, are very different according to the latitude of these ports. They are distinguished as the *Great Route* and the *Little Route.*

The Great Route is that adopted to reach the Cape of Good Hope, and in general all the ports situated South of Cape Negro.

The Little Route is that which ships take to reach ports situated North of Cape Negro. The Great Route is however followed by many vessels bound to these ports. Vessels taking the great route on leaving Europe, will follow the directions given for the routes from Europe to Brazil; they will consequently cross the line between 23° and 28° W. Thence, profiting by the S.E. trade, they will shape their course for the isle of Trinidad. They will pass West of it, and trying to get to the Southward will meet West winds, and the cross current of the South Atlantic. They will then make for the Cape of Good Hope, so as to cross the parallel of 30° S. lat., near 18° W. long. By following these routes vessels have been only 59 days in sailing from the English Channel to Cape Town. A similar route may be adopted when bound to places on the West coast of Africa, North of Cape Negro. Thus, after crossing the line between 23° and 28° W. long., a vessel may take the port tack with the S.E. trade and stand on, so that when taking the other tack she may reach the coast to the Southward of where she is bound to, and so counteract the effect of the African polar current setting N.W. along the South coast of this continent. But if destined for Benguela, Angola, or even a point North of Cape Negro, the course may be so modified, as above shown, so as to render the passage shorter.

On leaving Europe a vessel should shape her course so as to reach the trade winds as soon as possible, passing either West or East of Madeira and West of the Canaries or in the channels through those islands. Thence she would pass West of the Cape Verd Islands if it is winter, that is to say from June to September. During the other months she would pass between those islands and Cape Verd, keeping

closer to the cape than to the islands, because near the continent the winds from N.E. and N.N.W. are fresher and better established in this season. Whichever passage is adopted, after having passed South of Cape Verd she would keep along the African coast, at the distance of sixty or eighty leagues, until the parallel of the Bissagos is passed. From thence she would steer for Cape Palmas, passing it at the distance of twenty leagues, and cross the Gulf of Guinea on the starboard tack. This tack will generally enable her to reach Cape Lopez, and often South of the island of Anno Bon. She would then get on the other tack to look for the S.E. winds of the southern hemisphere, and, keeping in the space comprised between the coast and the line passing from the Cape of Good Hope to Cape Palmas, she would again get her starboard tacks on board to fall in with the S.W. winds which prevail there and blow alternately from sea and land from January to September. She would then keep near land to profit by them. The sea breeze lasts during day from ten or eleven o'clock in the morning, blowing from W.S.W. to S.W.; the land breeze lasts the night, from S.E. to South. She would therefore manage her boards in such a manner as to be near the coast for the land wind at night, and to be at a distance from it in the morning for the sea breeze. This navigation is similar to that on the coast of Senegambia in the northern hemisphere; but here the coast is much more extended and the season from January to September is particularly favourable for it. In the rainy season, near Cape Lopez squalls from the westward are sometimes met, but of short duration.

Routes from Europe to the Islands of the South Atlantic Ocean.—Vessels from Europe to the islands of the South Atlantic Ocean have been sometimes a hundred days on their passage. The following remarks on this subject may prove useful.

To reach Ascension from the channel a vessel should gain the N.E. trade as soon as possible, and pass between the Cape Verd Islands and the continent or else West of the Cape Verd Islands. From thence she would steer so as to double Cape Palmas and make it if she can. As soon as she has lost the N.E. trade she should steer South, to cross the zone of the variable winds without passing West of the meridian of 15° or 17° W. In approaching the limit of the S.E. trade winds near Cape Palmas, and even North of this cape, winds from S.W. will always be found and sometimes from W.S.W. With these she should get on the starboard tack and cross the line in 5° or 6° W. long., or even more to the eastward if she would improve her speed with the currents of the Gulf of Guinea. In this case she should make nearly the same course as shown for the islands of the Gulf of Biaffra, keeping on the parallel of 2° N. in order to reach the Gulf of Guinea easily; then cross to the South, reaching Cape Lopez on the starboard tack. As soon as the South and S.E. winds are found she would get on the port tack and soon reach Ascension.

Routes to St. Helena.—There are two different routes from Europe to St. Helena. Considering the position of this island in the S.E. trade it cannot be reached from North without first standing away to

the East or West in order to run down on it. The quickness of the passage will depend generally on the time occupied in crossing the zone of the variable winds of the equator. The season will therefore determine which of the routes it will be best to pursue. The western route may always be taken. That of the East is only advisable during the months of November, December, January, February, and March, —a period when, as above said, the zone of the variable winds of the equator is diminished. The eastern route during the months just mentioned will be the same as that employed in going to Ascension, only the course should be prolonged towards the coast of Africa until the winds fail. The other tack is then adopted and St. Helena is generally reached by this route more quickly than by the westerly one. But when the sun has North declination the eastern route becomes very uncertain and the western is preferable. It may however be taken for granted that a smart sailing ship holding a good wind may adopt the eastern route in all seasons. After having crossed the line between 23° and 28° W. long., a ship adopting the western route will have to get on the port tack. This will take her towards the coast of Brazil, and she must generally tack nearer to it than to St. Helena. On the starboard tack she will then make to the S.E. as far as 23° S. lat., where she will put about again, standing N.E. and North, profiting by wind and current to the East of the isle, having passed South of it.

The currents near St. Helena are not strong, and when the wind is favourable there will be little trouble in reaching the bay, except during the syzigies, when the N.W. current prevails.

The average voyage from Europe to the Cape of Good Hope is about ninety days. Horsburgh, in the *Anna*, made it in sixty-seven days; this is one of the shortest which has been made. A steam-vessel leaving England has reached the Cape of Good Hope in fifty-nine days. The general passage from Europe to St. Helena is sixty days.

Routes from Ascension and St. Helena to the Coast of South Africa.—St. Philip de Benguela being one of the southernmost places reached from Ascension on the coast of Africa South of the equator, we may choose it, as all other points to the northward will be easily attained. On leaving Ascension the starboard tack should be adopted, and in order not to fall into the great westerly current a vessel should endeavour not to pass North of the parallel of 4° S. lat., and also not to stand further South when the wind will not permit her to lay about S.E.b.S. true. This however will depend on circumstances. It will be easy to make a short board so as not to pass the above limits; but it will often happen that the passage may be made without changing the tack, because the winds in general along and near the African coast veer to S.W. and sometimes W.S.W. A vessel from St. Helena one can understand has only to lay her head for the point of the coast she is bound for, or something to the South of it, to allow for the polar current of the South Atlantic. And generally, notwithstanding the opinion of several authors who advise that on leaving these islands

a vessel should take the port tack to get to the South and West when bound to a place on the coast of Africa as far North as St. Philip, we should take the starboard tack on leaving those islands and steer for our destination, allowing for the effect of the current, which flows, with a rapidity of fifteen miles in twenty-four hours, to the N.W. and W.N.W.

But leaving Ascension or St. Helena for a more southern part, the Cape of Good Hope for instance, on leaving these islands a vessel should adopt the port tack to make southing and stand towards the American coast, profiting then by the remarks made concerning the routes from Europe to the Cape of Good Hope in the Southern Hemisphere.

Routes from the Coast of Africa to Ascension and St. Helena.—The routes from ports on the coast of Africa to Ascension and St. Helena have been shown in coming from places North of the equator; they are nearly the same as those followed in reaching them from Europe, whether the great or little route is adopted. When a vessel leaves the coast of Africa from anywhere South of these islands the wind and currents are favourable, and she should endeavour to make to windward of it, that is more to the southward than to leeward.

Homeward Routes from the North Coast of Africa to Europe.—In referring to the navigation of the Gulf of Guinea the routes from thence to Europe have been alluded to. On reaching 23° W. long., standing to the South of the equator, a vessel should then commence her northing on the starboard tack and cross the zone of the N.E. trade winds. As soon as she has reached the zone of the variable winds she would make progress, passing to the North of the Azores or between them. A vessel starting from a point to the northward of Cape Palmas should get to the westward with S.W. winds which prevail in the vicinity of that cape, passing as quickly as possible through the zone of the variable winds of the equator; she would then take the starboard tack with the N.E. trades and make her northing. A vessel leaving the ports of Senegambia, the Gambia, Goree, or St. Louis with N.E. and N.N.E. winds, during the fine season, would stand out on the starboard tack till she reached the zone of the variable winds. In the homeward routes from points on the West coast of Africa South of the equator that from the Cape of Good Hope to Europe may serve for the rest.

Route from the Cape of Good Hope to Europe.—On coming from the Indian Ocean round the Cape of Good Hope, if in the fine season, a vessel may approach the land without fear and steer North when the cape is passed. But if in the winter season, namely from June to September, before steering North it will be best to get an offing to the West of forty or fifty leagues from the land, in case of meeting with West and N.W. winds, which prevail during this season. After doubling the cape, in the fine season, namely from October to April, we shall pass near St. Helena, a short distance either to the East or West of it. From St. Helena she would steer N.W., in order to pass twelve or thirteen miles East or West of Ascension, and thence cross

the line between 23° to 28° W. long. The route she would then take has been previously pointed out in returning to Europe. In the case of doubling the Cape of Good Hope between August and September a vessel should keep at a respectful distance from the coast and steer South of the zone of the S.E. trade winds in order to cross the parallel of 20° S. lat. on the meridian of about 18° W. long. She would then endeavour to cross the line between 26° and 28° W. long. In this season the average of many passages from the Cape of Good Hope to Europe is seventy days; from the Cape to St. Helena generally fifteen days; and from St. Helena to Ascension generally six days.

Routes from the Ports of North America to the Coast of North Africa.—From the ports of North America to that part of the coast of Africa North of the equator the course at first is nearly the same as that for returning to Europe; but when a vessel has reached far enough to the eastward to make her port she would then steer for that part of the coast crossing obliquely the region of the N.E. trade winds.

Routes from North America to West Africa or South America.—When steering for any port of Africa South of the equator she would cross the zone of the N.E. trades obliquely, and then the equator between 23° and 28° W. long, and take one of the routes previously indicated, either to the western coast of Africa or the eastern coast of America. In treating of the routes from the coast of Africa to the ports of North America, that from the Cape of Good Hope to these ports need only be pointed out, from which the rest may be easily deduced.

Leaving the Cape between October and April the prevailing winds will be found from S.E., and the course will be the same as that previously shown for returning to Europe until the equator is crossed in 28° W. From thence a vessel would pass West of the shoal called Penedo de St. Pedro and proceed with the trade winds from East or E.N.E. in order to pass at a good distance to windward of the Lesser Antilles. This course, as may have been seen, presents no difficulty.

A ship rounding the Cape of Good Hope between the months of March and September should avoid the coast on account of the N.W. winds, which blow with violence during the winter, and keep South of the zone of the trade winds in order to reach the parallel of 20° S. lat. in the meridian of 18° W. She would then steer northward and cross the line in 33° W. long. During this season it is preferable to cross the equator on this meridian rather than in a more eastern one. It is also better to pass East of the Bermudas if she should be bound to a port of Nova Scotia, instead of West of them, because at this period easterly winds are often found in those parts. The rule generally adopted is to pass East of the Bermudas from the middle of March till October in going to any port on the North coast of America situated North of New York.

From the different routes now pointed out it will be easy to design any that may be required from one point to another of the Atlantic Ocean.

Thus nearly all the most important information has been here made use of for placing in the hands of seamen the best directions how to proceed on their several courses in the Atlantic Ocean. But, although the directions given here have been confirmed by many observations, it must not be imagined that they will be absolutely correct under all circumstances. Nothing can be more variable than the elements that have been here treated on. The Seaman should make them his constant study, in order to be able, according to circumstances, to avail himself of the most probable result of general appearances, and to shape his course as most convenient when exceptions occur in the general laws here defined.

A GLANCE AT THE SLAVING PLACES ON THE AFRICAN COAST.—*Extract.*

Proceeding from Cape St. Paul to Blookos, there I landed. Numerous slaves have been shipped there from time to time, more particularly through the medium of its late principal resident, a Senor Bieta, at present living in Brazil. A connection of his named Lema, a Brazilian, educated in England and speaking the language of that country with considerable fluency, at present resides there. He is now engaged in legal traffic, but in 1854 he dabbled in that of negroes and in so doing burnt his fingers most amazingly.

Elmina Chica is just now exporting a very fair quantity of palm oil, but it is a trade to which its chiefs have only turned their attention per force—the old Adam is as strong with them as ever. At Porto Seguro are usually to be seen one or more Dutch vessels loading with oil. Little Popoe, as bad a place as need be, has for some years been the residence of an Austrian named Amadie. He has frequently tried his hand at the forbidden trade, but I fancy from his appearance, &c., it has fared with him but indifferently. I saw him at Accra last July on his way to Europe. I do not think any European resides there at present.

At Ahgwey the presence formerly of a factory belonging to a London or Liverpool firm named Hutton had no effect in the way of rescuing its name from a deservedly slave dealing polluted reputation; but of late legitimate trade has made rapid strides there. A Mr. Le Grisley—half Scotch, half Jerseyman—is the head, indeed the only white resident. He has a considerable connection with Lagos, and is doing, for a man sprung from an obscure position, a large business in palm oil. In passing Great Popoe I have generally seen an American vessel loading.

Whydah is becoming as thriving a place for the trade of palm oil as it was formerly for that of slaves, though that those good times should have passed away—good times according to the creed of the

Messrs. Le Souza and other slave dealing merchants there—is a circumstance deeply regretted by the inhabitants. Next comes an isolated spot named Jackin. It will frequently be found furnishing a couple of ships at a time with cargoes of oil; but if the slave trade was to break out again with any force I could not put my hand on a more likely place from whence negroes would be embarked.

Leaving it, we reach the district lorded over by the notorious Jose Domingo Martinez, whose residence is now at Appi Vista anon at Porto Novo. A large number of Bristol ships are annually consigned to him; and at either one or the other place, according as the paths from the interior may be open or closed, quite a fleet will always be found loading with palm oil. This man's wealth has been set down as something fabulous, but numerous captures and severe losses attending his trade in slaves of late years have caused him, I rather imagine, at present to be anything but a millionaire, although continued consignments from England are made to him in part payment for oil, consisting of most magnificent articles of plate, such as candelabra, epergnes, vases, horses, cups, fountains, a bath, splendid clocks, &c., all made either of silver or gold, or both, and weighing from three to five hundred ounces each, and these he as constantly transhipps and sends to Bahia. One would almost be led to suppose that he kept a perfectly regal establishment there. I know that his house is more like a palace than anything else, yet for these many years is he residing in a hut and eating with an iron fork and spoon! I have heard that he is an outlaw from Brazil, but I do not know if it be so. Altogether he is a mysterious character, but he has dealt enormously in slaves and would with pleasure do so again if he had the chance.

Badagry appears to have become a favoured field for the operations of the servants of the Wesleyan Mission. This of itself should do away with its celebrity as one of the best marts for slaves on that part of the coast.

It is the peculiar province of the higher authorities of the African squadron to speak of Lagos. I shall therefore say nothing regarding it save the fact that whenever I have had an occasion to pay an official visit to the Consul, Benjamin Campbell, Esq., I have been received and entertained with much hospitality.

With regard to the state of the ship's company's health during our period of service in the Bights, though with a crew consisting of seventy-five men and officers, the number sick did certainly not average more than 1·8 daily.

Whilst at anchor in the roads of Accra, in the early part of August, a Spanish barque, named the *Fernando Po*, arrived, last from Barcelona, bound to the island after which she was named. The appearance of the Spanish flag in those waters being a most unusual if not unprecedented event, it was deemed advisable to search her. Finding a number of large casks on board, together with some two or three hundred packs, of which the Captain could give no reasonable account, also a second name, such as vessels put on their stems, stowed away in her hold, we conceived we had more than sufficient grounds for

seizing her, and she was accordingly sent to the Mixed Commission Court at Sierra Leone for the purpose of adjudication.

A considerable connection existed between this vessel and two brothers of the name of Mustach: one, Pedro, a notorious slave dealer at Whydah; Domingo, the other, recently appointed Governor of Fernando Po in the place of the late Mr. Consul Beecroft. This man also either is or was a slave merchant, and actually at the time that he was appointed he was at the Havana prosecuting some case having reference to slave transactions.

Though the seizure was made so long ago as August, I regret to say that up to the present time no news concerning her of any kind whatever has reached me.

On the 7th of September H.M. brigantine crossed the equator on her way to join the southern division of ships. Till the 11th ultimo we were, with the exception of a trip to St. Helena, stationed to the southward of the River Congo,—visiting in that period St. Pauls Loando, Ambriz, and Ambrizette, besides some of the bays of the southern shore of the river, up as far as Madora Creek.

I am forcibly struck here, as I have been in other parts of the world, with the fact that the presence of the Portuguese Government at any place, however fair it may be, acts on it as a blight, and that nothing of a healthy character can thrive within its baneful influence. It seems to be quite evident that they are desirous of extending their dominions northward. They have already seized upon Ambrize, a place at which the trade in ivory, red and white gum, copper ore, and palm oil has been gradually increasing; but that I opine will now cease, for as their obnoxious custom-house duties come into operation so will the natives take their wares to some other place where the same are not in force and where consequently the European merchant can afford to pay a better price for them. Into their rapacious maw would they also have drawn its neighbour Ambrizette but for the energetic measures of the Commodore. One of their brigs, the *Villa Hora*, has been excessively busy of late up the Congo. I should not be surprised at hearing that the factories at Punta da Linha had become amenable to the authority of the Portuguese Governor-General. Their factories are also increasing at the Bananas, at least they would have done so if the other day some natives of the Congo had not burnt them down. To proceed further North,—I do not think the people of Kabenda consider themselves perfectly safe from encroachment, though the advent to them of the Portuguese as a government would be, so they say, the greatest blow that could be inflicted on them. Whilst at anchor at Loango the other day one of the English residents there mentioned a report that had just reached him, founded on what he considered to be good authority, that three Portuguese men-of-war—the two brigs at present on the station and a three masted frigate-built ship which I believe left Loando some months since for the Mozambique with the view to return here—had arrived and were then anchored in the Bay of Kabenda. I proceeded there as soon as possible, but found that it was not the case. It is evident,

however, from the above that an official visit from the Loando authorities would not create any very great astonishment.

The trade of this last-named place if it ever has been of any magnitude is sadly fallen off. It possesses now but one factory, that the property of Messrs. Hatton and Cookson, of Liverpool, and the country produce their factor is enabled to export is confined to a few teeth, an exceedingly limited amount of the almost valueless white gum, with a quantity of palm oil so small as scarce to be worth mentioning; and this factory even it is thought will shortly be given up.

At Kabenda is no European to be found, nor would it seem that its trade at present is sufficient to justify any one making it his residence. It has a far famed notoriety as a slave dealing spot, and such a reputation is quite sufficient to account for its having no legitimate sources of commerce. It should be otherwise, for its country, as far as beauty and richness of soil are concerned, has scarce an equal; its bay abounds in fish; and the population is most dense—towns being as thick as hamlets or, one might almost say, houses at other places. In no part of the world did I ever find stock so plentiful or so cheap. Money is appreciated at its proper value, but old clothes and empty bottles continue to be at a premium. I cannot speak in praise of its water, it arrives on board in a very discoloured state and very soon turns almost black, leaving a deposit at the bottom of the tank surprising to behold. The water from the river at Loango is not considered particularly good, but a small stream filtering through the rock close to the entrance of the creek running up inside the spit and the mainland, some fifty yards from the landing-place of the factory, is delicious. We watered there and found it quite equal to the island water.

One, if not the principal, chief at Kabenda, an educated coloured man named Chico Franca, residing at a beautifully clean and neatly built town called Porto Rico, stated that he wished to place himself in communication with the officer in charge of the southern division relative to our government giving permission, or perhaps more properly speaking, affording its countenance to the settlement there of liberated Brazilian slaves originally imported from Africa, similar to what has been done at Lagos for some time past. Such a desire was very praiseworthy, and I suggested that prior to his making such an application, himself and his brother chiefs endeavoured to improve the excessively questionable reputation that their country at the present time enjoyed.

Though no barracoons appear to be extant, domestic slavery is carried on to such an extent that slaves abound in any number, and their value is something frightfully small. It is the same at Loango, possibly to a greater extent. I am convinced that at either place one or more slave ships might be supplied with a cargo at any moment.

The only factory on this part of the coast belonging to the Portuguese is an unimportant one at Malemba Bay, and which I visited for the purpose of learning something of it, as well as to see if water was easy to be procured. Strange to say, there is none there at all, except

here and there may be a dirty hole used by the natives. The Europeans have to send three miles to the southward for it, to a low point slightly projecting to seaward, and this even I believe they have to dig for.

During our short sojourn here we have discovered the currents to be extremely uncertain in their strength though not in direction. We have been led to expect frequent heavy rains and numerous tornadoes at this season, but on the contrary we have had but little of the former, and the two or three breezes that we have met with have been of little moment. The season is however not an ordinary one, for the natives sadly complain of the want of rain, their crops being in a very backward state;—they cannot account for the dryness of the present time.

To the southward of the Congo I more than once observed that in running down the coast it was necessary to make a considerable allowance—say as much as two points—for the inshore set of the current.

In crossing over to St. Helena, when leaving the neighbourhood of Ambrizette I made frequent tacks to windward, not liking to go so far to the northward as the prevailing winds at the time would have compelled me had I kept on the port tack. But this I have reason now to think was so much time thrown away, for I did but little by it, only gaining in the end what I have thought proper to call a "turning point" situated near about the latitude and longitude of 7° 30′ S. and 6° 15′ E.; from thence I made nearly a fair wind for the island. And on returning, before I could shape a course for the original place of our departure, I had reached to the same position; and, strange to say, which will be a confirmation of what I have asserted, at that spot I fell in with H. M. screw steamer *Plumper*, bound on precisly a similar voyage as that from which I was returning. Up to that period she had met with adverse winds, but afterwards made her course good. She had steamed some distance to windward prior to getting away from the coast, but it would not seem that it had advantaged her much. At any future time making the same passage I would at once go away on the port tack if that the ship headed anything to the westward of North (which she would be sure to do) the variation being in my favour.

From the *Colonization Herald* of Philadelphia we borrow the following.

New Church and Seminary at Cape Palmas.

We have received from the Rev. J. S. Payne, our Missionary at Cape Palmas, and from the quarterly conference of the mission there very gratifying intelligence, under date of November 22nd, 1855.

Our new substantial stone church is finished and stands as a beacon light without, and offers the light of the knowledge of the glorious Gospel within. It was dedicated by the Pastor on the 16th of November last. The members of the mission contributed the money for

seating the church and purchasing a bell. The quarterly conference of the mission, at a formal meeting, November 20th, passed several resolutions, which they have forwarded to the Board, expressive of the profound respect and gratitude they feel towards the Board for the liberal aid extended towards them in Africa for years past, and particularly for the means to enable them to build this house of God; and they express very great respect and obligation to the Rev. J. S. Payne for the fidelity and energy with which he has carried the church to completion. The quarterly conference resolved to call the mount on which the church was built Mount Scott, and the church itself Mount Scott Church, out of respect to the memory of the first and as yet only Bishop of our church that has visited the mission. It is said this new and substantial church is the first and most prominent object seen from sea as the voyager approaches Cape Palmas. May it long shed light on the surrounding empire of darkness.

The importance of Cape Palmas long since attracted the attention of the Board, and they took measures last year to have a substantial and commodious seminary building of brick erected. The work was commenced in March, 1855, and in November following brother Payne reports that the seminary is completed according to the plans sent out by the Board, with the exception of the partitions in the attic, for which he could not get plank. We feel ourselves much indebted to brother Payne for the energy with which he has executed the orders of the Board in this respect. We doubt whether there is another instance of such rapid erection and completion of a large and substantial building in Liberia. The quarterly conference of the mission, at its meeting in November, passed a resolution of warm thanks to the Board for its liberality in providing the seminary and other means of education for the youth of Cape Palmas and the adjacent native families. In their resolution they call the seminary Mount Emory Seminary, and say it is "the best finished building in Liberia." We hope God will move the heart of some suitable and well qualified brother with his wife (or without a wife if it must be so) to offer to go to Cape Palmas and become Principal of this new seminary. Our young sisters Margaret Kilpatrick, Caroline M. Brown, and M. E. B. Staunton are in Liberia ready to assist. Is there no man, coloured or white, whose heart is moved to this great work?

Another extract from the same paper reports proceedings at Cape Mount.

Monrovia, October 11th, 1855.

By the last English mail steamer that left us homeward bound, on the 23rd ult., I sent you a short letter. Since that time I have embraced an opportunity that presented itself of visiting Cape Mount, where I spent the last Sabbath very agreeably. My stay of four days there was employed in making such observations in person, with relation to a more extended missionary effort among the natives in

that important portion of our work, and taking such counsel as to the best means of promoting and making it successful as the occasion and the individuals with whom I associated supplied.

I have had the honour of informing you that early in the present year between seventy and eighty men were sent up to that point to take possession and form a garrison in such temporary buildings as they might find it convenient to erect, with the ulterior view on the part of the Government of laying off a town and effecting a permanent settlement. In order to pitch upon the most eligible site for the future town, on Friday last his Excellency the President, in whose company I had the pleasure of going to Cape Mount, took fifteen men from the garrison and, placing himself at their head, sallied forth to explore such parts of the mountain as the day would admit of. With this exploring party I was permitted to connect myself. We found all that we could reasonably ask for,—a fine location, good land, abundance of excellent water, and at sufficient elevation to secure, under ordinary circumstances, general good health.

We were out six hours and returned to the garrison more than pleased with what we had seen. We found Cape Mount, as to its form, not to be a solid mound, as we had supposed and as its appearance from the sea would indicate, but rather a common base, varying in altitude from one hundred to two hundred feet, superimposed by two or three high ridges, running parallel with the line of sea coast, with deep depressions between them. This condition of the mountain would indicate with great certainty an abundance of good living water from springs, which, so far as our walk extended, our observations went to confirm. To the very top of the ridge we passed over the soil was good, with sufficient quantities of both timber and stone for any purposes, whether public or private. On one side of this pile of hills or ridges, overlaying a high common base, is the sea.

It would seem that the superstitions of neighbouring tribes have preserved whatever belongs to this charming locality from spoliation. On the opposite side, interiorwise, is a beautiful panoramic view of rivers, and a somewhat large lake, dotted in different directions with islands of varying forms and dimensions.

But the most interesting consideration to the mind of the Christian missionary is that from this point one may gain access to thousands of the most gifted and inquisitive natives on the coast. And they seem anxious to have our literature and the Gospel of Christ. That there are no difficulties must not be supposed. But the way is evidently open, and we ought now to enter in. But where are the men?

We stayed at the garrison over the Sabbath. We have a few members there among the band of men and the few women (their wives and relatives) who have gathered to the place. At 6h. a.m. a prayer meeting. At 8½ the tap of the drum summoned to the Sabbath school such as felt disposed to go. I met here in all thirty-two; a superintendent, who himself taught a class, and two other teachers. Twelve adults were reading in the Old and New Testament in two separate classes; one, a half-blood native, read better than any other.

He is quite an important man, though evidently young. I learned subsequently, however, that he is a polygamist. To these adults were added about a dozen native children, and the remainder were children belonging to men in the garrison. The drum rolled at 10h., and the soldiers, after answering to their names, were marched into the little bamboo chapel, which, with others that attended, filled it to its utmost capacity.

Ten years since we had been on this spot. A few feet to the right of where we now stood was then occupied by the residence of Theodore Canot, of unenviable notoriety; and I had reasons of fear, for purposes very different from those which had gathered us together in this Protestant chapel, and under the ægis of a Republic, that from its heart abominates slavery.

I preached, and subsequently administered the holy communion to two preachers, myself making the third, and twelve communicants. The floor is of dirt, and at the time was covered with sand from the sea beach. In the circumstances it constituted an easier kneeling board than I have knelt upon for years. It was a touching scene. Here was the chief officer in the republic, three ministers, and a few sheep of Christ's flock, mingling their tears, their sympathies, and their prayers on a spot of ground long known as a great rallying point of sin and oppression, but for the first time since Adam lived the scene of the holy Christian eucharist. Many a poor slave had suffered and bled here; but never till now had Christ been so set forth on the cross as crucified among them.

The Lights on the Basses off the South-East Coast of Ceylon.

Madras, March 10th, 1856.

Mr. Editor,—The numerous arguments and convincing proofs which have been adduced in favour of an object so essentially wanting to give security to navigation and the protection of life and property on so much frequented a track as that which is obstructed by those prominent and dangerous reefs, the Great and the Little Basses, have at length prevailed, by carrying conviction everywhere, that a project of such utility and importance should no longer be delayed.

Copies of the correspondence on this subject will be found in one of those well known Blue Books published under the orders of the House of Commons on the 12th of August, 1853, to which I refer all persons desirous of making themselves well acquainted with it. Therein will be found a narrative of disasters, of providential escapes, and positive proofs of the imminent danger that has been encountered in the vicinity of the Basses. And those records plainly show that all sailing vessels and steamers are exposed to considerable risk by the frequency of strong, irregular, and uncertain currents which they have

to contend with where there is that prevalence of thick hazy weather which may obscure every land-mark. It is therefore evident that so perilous a track should be guarded by beacons which will lead the mariner both day and night.

And such liabilities, when steaming or sailing either to the eastward or westward in the vicinity of the Basses, have for a number of years perplexed and baffled the care and skill of the most cautious mariner, until at length it became a general rule to steer clear of those dangerous rocks by giving them, according to every prudent calculation, a very wide berth. Even that precaution has not always been successful, as instances have occurred when, under a more than ordinary allowance of drift, mariners have most unexpectedly found themselves fearfully and anxiously close to the Basses, and have on their future voyages to avoid a repetition of such a dangerous proximity, lost much valuable time and distance in their practice of extreme care and caution; and to that system of forethought, aided by a vigilant look-out, may be attributed the absence of disastrous events for a length of time.

However within the last five months a remarkable instance of narrow escape has occurred, when a first-rate steamer, well found and ably commanded, and under apprehensions of danger about the Basses, was, on her passage from Point de Galle to Madras, driven so suddenly and completely out of her given course and distance, that when it was concluded the Basses had been passed a considerable distance, rocks were unexpectedly seen on her starboard bow, and thus instead of being *without* the Basses she was *within* those dangerous shoals, and had to veer round and haul out. Most providentially the discovery was made about 5h. p.m., but two hours later, and in the dark, her unknown position might have involved all the perils of shipwreck.

This remarkable case adds another positive proof that a correct departure from a position so well known as Point de Galle, and having to round the equally well known position of either Basses and under the guidance of vigilant care and caution, will not at all times, even in a steamer, command success. And when we know that soundings are not to be depended on a guide, and that the mariner is also perplexed in his look-out by thick and hazy weather, and may, on the one hand, be driven almost upon the Great Basses before a breaker is either seen or heard, or, on the other hand, he may have drifted within that reef and be forced among the still more dangerous shoals of the Little Basses, there cannot remain a doubt that the Basses *ought to be efficiently lighted.*

As, however, it seems to be determined to erect a lighthouse on the Great Basses, whence a first rate light shall be exhibited, under an impression that that light will give a sufficient range of illumination to relieve the mariner from all embarrassment about the Little Basses, I will offer a few remarks on what may be considered the most efficient system of illuminating lighthouses and show that one light will not suffice.

It may be observed that a lantern at the height of 150 feet above the level of the sea, commands a range of illumination of upwards of

twenty miles, and is sufficient for all the ordinary purposes of the navigator when the state of the atmosphere will give free scope to its fullest range.

A light intended to guard vessels from reefs, shoals, or other dangers should be so placed as to enable the navigator to make it with perfect confidence, and the interests of navigation will best be served by placing the light where it ought to be, and adding on a smaller scale such subsidiary lights as the intricacy or danger of the navigation may require. Every light needlessly erected may, in certain circumstances, become a source of embarrassment and confusion to the mariner.

The important question now to be considered is, whether a light on the Great Basses can command that range as would avert every danger in the mariner's approach from the eastward or the westward to the Little Basses? I am, for the following reasons, decidedly of opinion that it would not.

The distance from the one reef to the other is known to be beyond what is stated by Horsburgh, and is about twenty-five miles; therefore, unless the weather is devoid of that haze which so much prevails in the vicinity of the Basses, the mariner could not reckon with any degree of certainty or confidence how far the light on the Great Basses would be discernible; and when on the verge of that other most dangerous shoal, without being sure of his position, and not making the light exhibited for his guidance, he might be placed in a very critical situation. This might be forcibly exemplified when steamers or sailing vessels from the Bay of Bengal or the Straits of Malacca approach the Little Basses, as that reef comprises a few rocks above water, some awash, and scattered shoals only denoted at times by breakers. And even when bound to the eastward, and having passed close to the Great Basses, vessels could not at all times keep the light thereon in view at such a distance as would enable their Commanders to pursue a course with any reliance as to the true bearing and distance of the Little Basses; on which they might be driven in the midst of thick weather by the force of an extraordinary current.

The difference of latitude between the two reefs is fourteen miles, and if the mariner could be sure of his latitude at all times, he might with one light run either way with safety; but it has frequently happened that vessels near the Basses have been without observations by day and night. And whenever that important work of lighting the Basses is undertaken, it will be absolutely necessary to bear in mind that unless it is carried through with that efficiency which will guard in all weathers against every danger, and always to be relied on, it would be better to leave the mariner in a state of dependence on his own resources, which point to a good look out, and by giving the Basses a very wide berth.

Under these circumstances, I am decidedly of opinion that the only sure and certain means of obtaining the great end in view, is by establishing two lights, the one a revolving light at an elevation of forty feet above the sea on the Great Basses, which may be approached

within half a mile, and the other a fixed light on screw piles on the largest rock amongst the Little Basses, and equally elevated. But as any attempt to exhibit a light on the Great Basses to command the required range of illumination in fair weather as well as foul weather, would render it necessary to erect a column at least 160 feet above the level of the sea, I do not think the cost of two plain lights, each at so moderate a height as I have recommended, would exceed the expense of one first rate light on a lofty column. And having, through the medium of the press, ever since the 4th of November, 1847, strenuously advocated the emergent necessity of illuminating the Basses, I have no hesitation in saying now that commanders of mail steamers, who have had so much experience in traversing the vicinity of those dreaded reefs, by day and night, are so well aware of all the doubts and difficulties they have had to encounter, and how much their embarrassment has been aggravated by the prevalence of thick hazy weather, would neither have the confidence nor the means of conducting the invaluable vessels committed to their charge in safety under the guidance of a single light.

And when we reflect on the very serious consequences which would attend the loss of a mail steamer, when many lives, much specie, and other valuable property, and very important intelligence would in all probability be doomed to utter destruction; there cannot remain a doubt that the projected safe-guard to avert so dire a calamity should be sure and certain, void of all doubt, and such as would (with God's blessing) light the mariner on his onward course without alarm and anxiety.

As we are apparently on the eve of being blessed with what every Englishman and our faithful Allies have a right to expect, a safe and honourable peace, I would strongly advise what is very much wanted, and what can then be readily granted, an earnest and a careful survey of both the Great and Little Basses with the least possible delay, as those remarkable rocks are neither well laid down, nor perfectly delineated.

Taking into consideration the distance the Basses are from Galle on the one side, and from Trincomalee on the other, whence supplies and assistance must be obtained, the forlorn condition of those poor people who will have to live by day and night within the watch-tower well deserves care and attention; and although iron light houses are the least expensive, yet I must say the Basses is not a position on which any thing but the most substantial, the most durable, and the most habitable should be erected. Iron light houses, within the tropics, are intolerable as the heat within them is so excessive, that it would be scarcely possible for the keepers stationed on the Basses, with no prospect of relief perhaps for weeks together, to sustain the suffering from heat to which they would be exposed. I am, therefore, of opinion that the tower should be constructed with masonry, and well fitted and ventilated with every possible regard to comfort and convenience.

In conclusion, I think it may be asked why I have said so much about lighting the Basses when that great national object has ap-

parently obtained the sanction of the highest authority. In reply to such a question, I would urge attention to the arguments I have adduced, shewing as they do the absolute necessity of fixing a light on each of the Basses as the one thing needful. But as I have heard, from good authority, that some persons are now lulled into security, and declare that not even one light is wanting, because no wreck has occurred on those rocks since the loss of H.M. ship *Dædalus* in 1813, when several H.C. ships had a very narrow escape, and further, that no very serious disaster has occurred thereon since that which befel the ship *Earl of Moira* in 1821, and the ship *Charles Forbes* in 1827; and calling attention to those perilous encounters, it is well to arouse such persons from a state of lethargy and indifference, and tell them in the words of His Excellency Sir Fleetwood Pellew, in his letter to my address on this very subject, dated the 29th of April, 1853. "I am convinced that if lighting the Bases is much longer delayed, and with the vastly increasing traffic and passage of vessels, especially of steam vessels in the night, there will occur some fatal calamity and great loss of life."

And, moreover, should those persons and all others who cannot fail to be deeply interested in the safety of navigation have only the Blue Book to refer to, I would beg their attention to the marvellous escape of the ship *Celestial*, Captain Jarman, on the 29th of June, 1353, which is subsequent to the date of Records in that publication.

This ship, having troops and passengers on board, and with the crew numbering about 200 persons, on her passage from London to Madras, had an opportunity of correcting her chronometers on that very day, which were out in a remarkable manner, by lunar observations, by which she was unexpectedly found to be nearly on the meridian of the Little Basses, and within a few leagues of that reef. Looking well out with the lead going, suddenly at 3 a.m. on the 30th, she got into 10 fathoms, without seeing either reef or breaker, and brought up all standing. "At daylight," says one of the passengers, in a letter to my address, "I returned to the deck to see our position and the vessel got under weigh. To my surprise I saw a reef of rocks (with the surf dashing over them close on our larboard quarter and bow.) We were, in fact, at anchor inside of, and within 500 yards of the Little Basses, the mainland of Ceylon being, I should suppose, about three miles off. At one time while getting up the anchor, Capt. Jarman said I have a great mind to slip and leave the anchor and cable as the vessel's head may tend the wrong way, and then we must drift on the rocks. But Providence protected us, and we hove up the anchor, the vessel's head tending the right way, and we ran through the channel (shoalest water 4½ fathoms) without seeing the *Dædalus* shoal, and by 8 a.m., were clear of all danger. However light one might be inclined to make of the matter when one is safe on shore, I can only say I did not feel very comfortable till I knew all danger was past, and Capt. Jarman himself, several times to me and others, expressed a sense of our very narrow and merciful escape."

Notwithstanding any show of indifference or apathy on so interesting

a subject as that which so materially concerns the welfare and prosperity of navigation, I have great pleasure in stating that I have already received the congratulations of my friends Capt. Lovell, and other commanders and officers in the P. and O. Company's Service, on the prospect of our earnest wishes and my persevering endeavours being crowned with success—and I hope ere long the passage round Ceylon will be disarmed of its terrors, and so effectually guarded that we may hereafter exclaim with the poet—*The Light on the Basses.*

"Steadfast serene, immoveable, the same,
Year after year, through all the silent night;
Burns on for evermore that quenchless flame:
Shines on that inextinguishable light.

A new Prometheus, chained upon the rock,
Still grasping in his hand the fire of Jove;
It does not hear the cry, nor heed the shock:
But hails the mariner with words of love.

'Sail on,' it says, 'Sail on, ye stately ships!
And with your floating bridge the ocean span;
Be mine to guard this light from all eclipse:
Be yours to bring man nearer unto man.'"

It is well worthy of remark that Rear Admiral Sir Fleetwood Pellew sent H.M. war steamer *Styx*, to inspect both Basses in May, 1853, when Capt. Hall steamed around both shoals, and having anchored within each reef, he, in the first place, pulled in *Styx's* cutter to within fifty feet of the Great Basses, under its lee, and declared his conviction of the feasibility of erecting a tower of any magnitude thereon, but a fresh wind and heavy sea prevented his landing, which at a favourable season could easily be accomplished. Capt. Hall then proceeded on to the Little Basses, and anchored in 6 fathoms, three cables' length distant from the rocks all a-wash, with the exception of two or three spits elevated about four feet. He pulled in a well-manned cutter to within fifty yards of these rocks, and with a sketch of both reefs, Capt. Hall reported to the Admiral that a lighthouse could be erected on the eastern ledge of the Great Basses, and a lightvessel could safely be moored within a cove close to the Little Basses, and advised that one should be a fixed, and the other a revolving Light, but he deprecated in the strongest terms, the plan suggested to him elsewhere, of erecting a lighthouse on the adjacent coast of Ceylon. I fully concur with Capt. Hall, as a light on the shore could never be depended upon on account of the haze, and a vessel might be amongst the breakers before it would be seen. I must, however, say that floating lights are very objectionable from their liability to drift from their moorings, and lessening that confidence in the mind of the navigator which never should be shaken by any doubt or surmise. And I am well persuaded that a good foundation can be found for a light on screw piles on one of the rocks of the Little Basses.

CHRIS. BIDEN.

To the Editor of the *Nautical Magazine.*

SOMETHING ABOUT THE ISLAND OF TENERIFE.—*From a Work of last Century.*

Point Anaga, or Nago, the N.E. end of Tenerife, bears N.W., about sixteen leagues distant from the N.W. part of Canaria to the nearest part of Tenerife, the distance is not above twelve leagues. This island is almost triangular, the three sides being nearly equal, and each about twelve leagues in length. In the centre is the famous Pike of Tenerife, called by the ancient inhabitants Teyde, which name it still retains with the present natives, who call it El Pico de Teyde, *i.e.* the Pike of Teyde.

Coming in with the island in clear weather, this Pike may be easily discerned at the distance of 120 miles, and in sailing from it, at 150 miles distance; it then appears like a thin blue vapour or smoke, very little darker than the sky. At a further distance the shade disappears, and is not distinguishable from the azure of the firmament. Before losing sight of this towering mountain, it seems a considerable height above the horizon, although by its distance, and the spherical figure of the earth, all the rest of the island (the upper part of which is exceeding high) is sunk beneath the horizon; but in general in sailing towards Tenerife, when the trade-wind blows, the island appears as an haziness of the sky, or a cloud, till within the distance of five or six leagues, and then the points of the land are first conspicuous, and show like land.

At a small distance from the N.E. point of the island, called Punto de Nago, are some high perpendicular rocks, and five or six leagues from thence, on the S.E. side of the island, is the bay or harbour of Santa Cruz, the most frequented port of any in the Canary Islands. The best road for shipping here, is between the middle of the town and a fort or castle, about a mile to the northward of it. In all that space, ships anchor from a cable's length distance from the shore, in 6, 7, and 8 fathoms water, to half a mile, in 25 or 30 fathoms. When a ship lies any time in the road, it is necessary to buoy her cables, as the ground is in some places foul, and consequently they will be apt to rub and spoil. Here ships, if moored with good cables and anchors, may lie secure in all winds, although the bay is exposed and open to those which blow from the N.E., East, and S.E.; however, it is not above once in the space of four or five years that they blow so hard as to cause any considerable damage.

Some years ago, almost all the shipping in the road were driven on shore by one of these gales; some English ships were at that time in the bay, the crews of which prudently cut away their masts, and so rode out the storm safely. On that occasion some Spanish seamen there publicly declared they saw the devil in the height of the storm very busy in assisting the heretics.

In the middle of the town is a mole, built at a vast expence, for the convenience of landing. It runs to the northward, and the outermost part of it turns toward the shore. In mild weather goods are landed

at a creek among the rocks, near the custom-house, at the distance of a stone's cast to the Southward of the mole.

In going from the mole into the town, there is a square fort on the left hand, named St. Philip's, which is the principal one in the bay; to the Northward of it along shore, are some forts or batteries, mounted with guns; the most considerable of which is called Passo Alto. Near it is a steep rocky den, or valley, beginning at the sea-shore, and running a long way inland, which would render any attack of an enemy on that quarter extremely difficult. There is another fort along shore, to the Northward of this.

At the South end of the town are some batteries; and beyond them, close to the shore, there is a fort called St. Juan. All the sea-shore, from thence to the Southward, is generally inaccessible, being naturally fenced with rocks, on which the surf breaks almost continually. All these forts are mounted with cannon, and joined to each other by a thick stone wall, which begins near the rocky den, and continues, with little interruption, to fort St. Juan. This wall is only breast-high within, but higher without, facing the sea. The entry to the town from the sea is at the mole, where there is an open passage between the wall and St. Philip's castle, which commands and guards this entry.

Santa Cruz is a large town, containing several churches, three convents of friars, an hospital, and the best constructed private buildings of any of the Canary Islands. It is in fact the capital of them all, though the episcopal see and courts of judicature are in the city of Palmas in the island of Canaria; but the Governor-General of the islands resides always in Santa Cruz, where there is continually a great concourse of foreigners, as being the centre of the Canary trade with Europe and America.

The number of inhabitants I imagine to be about six or seven thousand. The water they drink is conveyed in open wooden troughs, or spouts, into the town, from a spring situated beyond the above-mentioned den or valley. Besides these, there are in many houses of the town, pits of water, which serve very well for the purposes of cookery, &c. The town is not fortified on the land side, as no danger is apprehended from that quarter. All the country near Santa Cruz is dry, stony, and barren.

About four leagues to the Southward of Santa Cruz, close to the sea, is a cave, with a church or chapel, called Our Lady of Candelaria, in which is an image of the Virgin Mary, held in as much reverence here, as the image of the great goddess Diana was at Ephesus; and this chapel is endowed with so many ornaments, that it is the richest place in all the seven islands.

At a certain season of the year, almost all the inhabitants of the island go thither in pilgrimage. I have met troops of young girls on their way, singing as they went, in a very agreeable manner, the praises of the Virgin, and the miraculous deeds of the image. It would be in vain to endeavour to undeceive the natives here, with respect to the many incredible stories related concerning this image;

for, from the priest to the meanest peasant, every one appears to be convinced of its efficacious mediation and intercession with heaven. I have heard some Canary seamen declare, that when they were returning from the Spanish West Indies, and in imminent danger of perishing in a hard gale of wind, they saw Our Lady of Candelaria in the night time, in the height of the storm, assisting them to reef and furl the sails, &c. And, moreover, they assured me, that when they came home to Tenerife, they were told that in the morning after the very night in which they were so miraculously assisted by the Virgin, she was seen in the church of Candelaria with her clothes and hair wet with the spray of the sea that came upon her while employed in that friendly office!

* * * * *

The reason of my being so particular in describing this image, is to afford light to some curious and learned person, by which he may form some judgment of its antiquity.

Southward from Candelaria is Point Prieta, the S.W. point of the island; from thence the coast trends westward to a Montana Roxo (i.e. the Red Mountain); and from thence N.N.W. to Point Teno, the N.W. point of the island. All this coast is barren, and almost uninhabited, except about half way between Montana Roxo and Point Teno, or rather nearer to Teno, is the bay of Adexe, or, as it is pronounced, Adehe; where large ships may anchor. I never was in it, but am informed that it is open to the S.W., and but little frequented, except by boats from the island of Gomera, which lies over-against it. Near Adehe the Count of Gomera has a house and some lands, on which he keeps a thousand Negro slaves for planting of sugar-canes and preparing of sugar. It is hard to know his motive for maintaining those Negroes in a country that abounds with poor labouring white people, who, with all their industry, can hardly earn enough to keep soul and body together. Was he to sell all those slaves in the Spanish West Indies, I am certain the annual interest of the nett produce of the sale would bring him in more than the present clear income of all his sugar-works and estates in Tenerife, Gomera, and Hierro; for, as I am credibly informed, it amounts to no more than fifteen hundred pounds per annum. The only reason that I can assign for such strange mismanagement, is a certain low pride he has in being lord of a thousand slaves.

In the neighbourhood of this port there are some mountains that are covered with stately pines, and are very easy of access; for this reason the inhabitants of Gomera generally come hither for the wood which they use in building, the woods of their own island being more difficult of access.

Between Adehe and Point Teno the shore is about half a mile in height, and perpendicular as a wall. Several streams fall down from the summit into the sea.

Point Teno runs a considerable way into the sea, in the form of a crescent: behind it, to the southward, the sea is very smooth when

the trade wind prevails, which, in blowing weather, makes a great sea to the northward of this point. I never was at anchor there, but have passed near it several times, and by what then I had an opportunity to observe, I judge it to be a convenient port.

From Teno the land stretches away E.N.E. and N.E.b.E. to Point Nago, the N.E. end of the island, from whence we set out. This side of Tenerife has quite a different aspect from the other two already described; for in viewing it from the sea we perceive a number of villages, woods, vineyards, and corn-fields, that make a most agreeable appearance.

Along shore, to the N.E. of Teno, is the village of St. Jago; and three leagues in the same direction, from that point, is the village of Buenavista, situated among the vineyards near the sea; but we meet with no port until we advance above two leagues further, where there is a haven called Garrachica, formerly the best port in the island, being then a bay in the form of a horse-shoe, but was destroyed in the year of earthquakes, (for so the natives term the year 1704,) and filled up by the rivers of burning lava that flowed into it from a volcano; insomuch, that houses are now built where ships formerly lay at anchor; yet vessels come to Garrachica in the summer, and lie secure with the trade wind, which at that season commonly blows there at E.N.E. Some time after the year of earthquakes the following account of them was written, and which is recorded in several descriptions of the Canary Islands.

"In the year 1704, there happened the most alarming instance of this kind that has ever been known. The earthquake began the 24th of December, and in the space of three hours, twenty-nine shocks were felt. After this they became so violent as to rock all the houses on their foundations, and oblige the inhabitants to abandon them. The consternation became universal, and the people, headed by the Bishop, made processions and public prayers in the open fields. On the 31st, a great light was observed on Manja, towards the White Mountains. Here the earth opened, and two volcanos were formed, which threw up such heaps of stones, as to raise two considerable mountains; and the combustible matter, which still continued to be thrown up, kindled above fifty fires in the neighbourhood. In this situation things remained till the 5th of January, when the sun was totally obscured by the clouds of smoke and flame, which continually increased, and augmented the consternation and terror of the inhabitants. Before night, the whole country, for three leagues round, was laid in flames by the flowing of liquid fire, with the rapidity of a torrent, into all quarters, and caused by another volcano, which had opened by at least thirty different vents within the circumference of half a mile, towards Oratava. What greatly increased the horror of the scene, was the violence of the shocks, which never once remitted, but by their force totally overthrew several houses, and shook others to their very foundations, while the miserable inhabitants were driven defenceless and dismayed into the open fields, where they expected

every moment to be swallowed up by some new gulf. The noise of the volcano was heard twenty leagues off at sea; and it is credibly attested that the sea shook at that distance with such violence as alarmed the mariners, who imagined the ship had struck upon a rock, till the continuance of the motion gave them the first intimation of the real cause. A torrent of sulphur, and melted ores of different kinds, rushed forth from the last volcano, towards Guimar; the houses and public buildings of which place were thrown down by the violence of the accompanying earthquake. On the 2nd of February another volcano broke out in the town of Guimar, which swallowed up and entirely annihilated a large church. Thus, from the 24th of December to the 23rd of February, the inhabitants were kept in constant alarms by continued shocks of earthquakes, and by terrible volcanos breaking out in different quarters of the island."

Garrachica is still a town of note, and pretty large, containing several churches, and convents of both sexes. It has a small trade for wines and brandy, which are generally sent from here in barques, or large open boats, to Santa Cruz or Port Orotava. Several vessels are built here, some of three hundred tons burthen and upwards, which are strong and durable.

Two leagues to the eastward of Garrachica stands a town called the Port of Orotava, the situation of which is erroneously laid down in all our sea charts, which place it three or four leagues nearer to Point Nago than it really is.

The marks by which a stranger may find Port Orotava are these:—it lies about half way between Teno and Point Nago, but rather nearer to the latter, and close in to the sea shore. Above it, about a league inland, is another town, somewhat larger, called Villa de Orotava; between these are two small hills, shaped liked sugar-loaves. No boat will go from hence to a ship in the offing until she approaches within a mile of the shore, when the pratique-boat puts a pilot on board, who brings her into the road, which is about a mile to the westward of the town, where shipping lie moored in forty or fifty fathoms water.

This is a good port in the summer season, or from the beginning of May to the end of October; but in the winter, ships are often obliged to slip their cables and put to sea, for fear of being surprised by a N.W. wind, which throws in a heavy sea upon this coast. But these winds rarely happen, and commonly give warning before hand, so that ships have time get away. The pilot that boards a ship on her arrival, remains there until she departs. These pilots are very careful to slip and put to sea when they apprehend any danger. It is commonly calm in this road; but there is almost always a long northerly swell, that causes ships to roll very much, so that one would be apt to imagine it almost impossible to load a cargo there.

The landing-place is near to the middle of the town, where is a small creek or haven among the rocks. There large boats load wines, &c., and carry them off to the ships in the road. Each of these boats generally carries fifteen or twenty hands, who hoist the wines aboard,

and stow them away with amazing quickness and dexterity, even when a ship rolls from gunwale to gunwale, which is often the case in this road.

Port Orotava is a place of considerable trade, and has flourished greatly since the destruction of the harbour of Garrachica, it contains some good private buildings, two churches, two convents of friars, and two of nuns. At each end of the town is a black sandy bay; along the northernmost is a low stone wall, built to prevent an enemy from landing: at the other bay is a small fort or castle, for the same purpose; and between them, at the landing-place, a battery of a few cannon. But the surf that continually breaks upon the shore, is a better defence than if it were garrisoned by ten thousand of the best troops.

Port Orotava is plentifully supplied with good water, which is conveyed to it from a rivulet at a great distance in open wooden spouts or troughs. About half way from Port Orotava to Point Nago is a point of land, and behind, or to leeward of it, a small bay or anchoring place called Puerto de Madera. Between which and Orotava are some landing-places of less note, lying behind points, where boats load wine for Port Orotava or Santa Cruz; but from Puerto de Madera to Point Nago the shore is high, rocky, and steep—consequently inaccessible. Having now described the sea coast of the island, I shall proceed to give an account of the inland parts.

About four miles inland from Santa Cruz, stands the city of St. Christobal de la Laguna, *i. e.* St. Christopher of the Lake. The road to it from Santa Cruz is a pretty steep ascent till you come within a small distance of the town, which is situated in the corner of a large plain, about four miles in length and about a mile in breadth. This city is the capital of the island and contains two parish churches, three convents of friars, two of nuns, and three hospitals—two of which are for the venereal disease, and the other for foundlings,—with many handsome private buildings. The convents of friars are of three different orders, viz., the Augustine, the Dominican, and the Franciscan; and those of the nuns, Dominicans of St. Catherine and Franciscans of St. Clara. The Jesuits have a house here where only two of that order reside, having found little or no encouragement for more in the place. The water which the inhabitants drink is conveyed in troughs or spouts to the town from the mountains situated to the southward of the plain.

In this city there is no trade nor any show of business, it being chiefly inhabited by the gentry of the island, particularly the officers of justice, such as the Corregidor and his Teniente or Lieutenant, the Regidores or Cavildo, with the Judge of the Indies, who presides in the India-house, where all matters relating to the West India commerce are managed. Here is also an office of Inquisition, with its proper officers, subject to the Tribunal of the Holy Office at Gran Canaria. Notwithstanding all those people reside here, the city appears to a stranger passing through it as desolate and almost uninhabited, for he can hardly see anybody in the streets, in the most frequented of which he may observe grass growing. A person who has been in

Holland, and compares St. Christobal de la Laguna with Santa Cruz, will naturally think of the difference between the appearance of Delft and Amsterdam.

At the South side of the city, or rather behind it, is a laguna (*i. e.*, a lake), about half a mile in circumference, from which the city takes its name, which is dry in the summer season but in the winter full of stagnant water. This city, situated on a plain and elevated a great height above the sea, is extremely cold in winter, and exposed to the wind in all seasons. When the trade wind blows fresh at N.N.E. and N.E. in the bay of Santa Cruz the N.W. wind prevails here, and blows generally with great vehemence. The inhabitants of Laguna have planted an avenue of trees on the brow of the hill or extremity of the plain, just where the road descends to Santa Cruz, but by the violence of the wind they are all bent to the S.E. and stripped of their leaves. They were obliged to build circular walls around each of them when they were planted, to secure them from the wind until they were strong enough to resist its force.

From the western extremity of the plain of Laguna the road descends to la Mantanza de Centejo, a large village, chiefly inhabited by peasants; it is in the midway between Santa Cruz and Port Orotava. From thence to la Villa de Orotava, the country abounds with habitations; for on the right hand are the large villages or rather towns of Tacoronte, Sausal, and la Rambla, besides many small villages and detached houses. La Villa de Orotava, about three leagues inland from Port Orotava, is a large place, and contains several churches, convents of friars and nuns, with a number of stately private buildings of stone. A rivulet runs through the midst of the town, which supplies the inhabitants with water, and refreshes their gardens and orchards. This place appeared to me to be about as large again as Port Orotava. Continuing the same route to the Westward, the next town is Realijo; being a large place, situated about a league or four miles beyond la Villa de Orotava, and surrounded with vineyards. All these places are populous, and situated a little way from the sea, from whence most of them may be seen; and indeed no habitations here are at a greater distance from it than three leagues. The whole island continues rising on all sides from sea, till it terminates in the Pike, which is the centre. The North side is the most fertile, and ascends more gradually than the others particularly a space along the shore about three leagues in breadth, bounded on the sides by high mountains, or rather cliffs; but inland, or upwards from the sea, it rises like a hanging garden all the way, without any considerable interruption of hills or valleys, till you come within a league of the clouds. In the western border of this space is situated Realijo; and on the eastern, La Rambla. Between them are the towns of Orotava and Port Orotava, with a number of detached habitations scattered about from the sea-shore upwards to the clouds, in or beyond which are no houses or habitations; yet the clouds are not higher than the middle distance between the sea and the summit of the Pike. All the fertile ground within a league of the sea, is covered with vines;

that of the next league produces corn; and the third, some corn woods of chestnut-trees, and many other different sorts, particularly bresos, which are used by the natives for fuel. Above these woods are the clouds, which, in fine weather, toward the evening generally descend gradually, and rest upon those woods until the morning, when they reascend about a league, and there remain until the succeeding evening. In that height of the island where they rest in the day-time, there was formerly a great quantity of stately pine-trees; but being easy to come at, they were almost all cut down by the inhabitants of the adjacent villages, so that few now remain in this part which I am describing; but in other places of the island in the same altitude, and which are distant from any habitations, there are great numbers of them. From Orotava, ascending to the summit of the island, leaving the Pike* on the right hand, and then descending to the S.W., we come to the town of Chazna, called by some Villa Flor, where there is a convent of friars; near it is a well of an acid water, which has a medicinal quality, and is reckoned an efficacious remedy for many disorders, but pernicious and fatal to those who drink it sometimes.

On the S.E. of the island, inland from Candelaria, is the town of Guimar, a considerable place, but, like Chazna, remote from other habitations; both these towns have some families living in them, who know themselves to be the genuine offspring of the Guanches. I have seen and conversed with some of these people, but they could not gratify my curiosity in any thing concerning the manners and customs of their ancestors, whose language they have entirely lost. They appeared to me to be of a fairer complexion than the Spaniards of the province of Andalusia. Above, or inland from Garrachica, is Ico, a large and populous town, abounding with wealthy people. Here are some manufactures of silk, particularly stockings, which are exported to the Spanish West Indies. Besides those places already described, are many small villages, particularly Westward from Realejo, towards Ico and Buenavista; also in the mountains, between the city of Laguna and Point Nago, are many pleasant romantic little valleys and hollows, well watered, and abounding with shady groves; these are the most agreeable places in the island; but the gentry of Tenerife have no taste for country houses or solitary retirements, choosing rather to live in towns. The inhabitants of those mountains are fairer than the other inhabitants of the island; probably they are the offspring of those fair people who lived on the North side of the island, of whom mention is made in the history of the discovery and conquest.

Considering the number of large and populous towns situated in Tenerife, with the villages and detached habitations, it will be no surprise to understand that this island when the last account was taken contained no less than ninety-six thousand persons. Indeed it is computed to contain as many inhabitants as all the rest of the seven is-

* I do not consider the Pike as the top of the island, but rather as a hill or mountain upon it.

lands together. I never heard the number of any of them calculated but Tenerife, Palma, and Hierro. The second of these is said to have thirty thousand inhabitants and the last one thousand. These added fall short of the number in Tenerife by sixty-five thousand; which, according to the above-mentioned computation, remains to be divided among the islands Lancerota, Fuertaventura, Gran Canaria, and Gomera. I suppose, then, by what I have had opportunity of observing, that Fuertaventura may contain ten thousand persons; Lancerota, eight thousand; Gomera, seven thousand; and Canaria, forty thousand.

Before I leave the description of Tenerife it will not be improper to give some account of the Pike, so much taken notice of by all who have had occasion to pass near it and observe its prodigious height.

The Pike of Tenerife.

In the beginning of the month of September, 1761, about four o'clock in the afternoon, I set out on horseback, in company with a Master of a ship, from Port Orotava to visit the Pike. We had with us a servant, a muleteer, and a guide. After ascending about six miles, we arrived, towards sunset, at the most distant habitation from the sea this way, which was in a hollow. Here we found an aqueduct of open troughs or spouts that convey water down from the head of the hollow. Here our servants watered the cattle, and filled some small barrels with water to serve us on our expedition. While they were thus employed, we alighted and walked into the hollow, which we found to be very pleasant, abounding with many trees that sent forth an odoriferous smell. Near the houses are some fields of maize or Indian corn; in several places on this side of the island the natives have two crops of this grain.

Mounting again, we travelled for some time on a steep road, and got into the woods and the clouds just as it grew dark. We could not well miss our way, the road being bounded on both sides with trees or bushes; which were chiefly laurel, savine, and bresos or brushwood. Having travelled about a mile, we came to the upper edge of the wood, above the clouds; where we alighted, made a fire and supped. Some time after we lay down to sleep under the bushes.

About half an hour after ten, the moon shining bright, we mounted again and travelled slowly two hours through an excessive bad road, resembling ruins of stone buildings scattered over the fields. After we got out of this road we came upon small light white pumice-stone like peas or shingle. Here we rode at a pretty good pace for near an hour. The air now began to be very sharp, cold, and piercing, and the wind blew strong about S.W. or W.S.W.

Our guide advised us to alight here, as it was a convenient place, and rest till four or five in the morning. We followed his counsel, and entered into a cave, the mouth of which was built up to about a man's height to prevent the wind and cold from getting in. Near this place we were so lucky as to find some dry withered retamas, which was the only shrub or vegetable we saw hereabout. With these we

made a great fire to warm ourselves, and then fell asleep, but were soon awaked by an itching of the skin, which we imagined proceeded from fleas, but was owing to the cold thin air, want of rest and sleeping in our clothes, a thing I have known to happen to people on such expeditions. We passed away the time here as well as we could, but while we crept so near the fire that one side was almost scorched, the other was benumbed with cold.

About five in the morning we mounted and travelled slowly about a mile, for the road here was rather too steep for travelling on horseback, and our horses were now fatigued. At last we came among some great loose rocks, where was a sort of cottage built of loose stones. The name of this place our guide told us was Estancia de los Ingleses (*i. e.*, the English pitching place), so called, I imagine, from some English people resting there on their way to visit the Pike, for none go that journey but foreigners and some poor people of the island who earn their bread by gathering brimstone, the Spanish gentry having no curiosity of this kind.

Here we alighted again, the remainder of our way being too steep for riding, and left one of our servants to look after the cattle, and then proceeded on our journey afoot. We walked hard to get ourselves a heat, but were soon fatigued by the steepness of the road, which was also loose and sandy. When we got to the top of this rising or hill we came to a vast number of loose great stones, whose surfaces were flat; each of those stones or rocks was, on a medium, about ten feet every way. This road was not so steep as the other, but we were obliged to travel a considerable way over the rocks, leaping from one to another, for they were not all quite close to each other. Among these is a cavern, where is a well or natural reservoir, into which we descended by a ladder which the poor people placed there for that purpose. This cavern is spacious within, being almost ten yards wide and twenty in height; all the bottom of it, except just at the foot of the ladder, is covered with water, which is about two fathoms deep, and was then frozen towards the inner edges of the cave. We attempted to drink of this water, but could not by reason of its excessive coldness; however, our guide filled a bottle which he had purposely brought from the Estancia.

After travelling about a quarter or half a mile upon the great stones or rocks, we came to the bottom of the real Pike or sugar-loaf, which is very steep, and, to add to the difficulty of ascending, the ground is loose and gives way under the feet, and consequently extremely fatiguing, for although the length of this eminence is not above half a mile, yet we were obliged to stop and take breath I believe thirty times. At last we got to the top, where we lay about a quarter of an hour to rest ourselves, being quite spent with fatigue. When we left the Estancia in the morning the sun was just emerging from the clouds, which were spread out under us at a great distance downward, appearing like the ocean. Above the clouds, at a vast distance to the North, we saw something black, which we imagined to be the top of the island of Madeira. We took the bearings of it by a pocket com-

pass and found it to be exactly in the direction of that island from Tenerife; but before we got to the top of the Pike it disappeared.

We saw from hence the tops of the islands Palma, Gomera, Hierro, and Gran Canaria; they seemed to be quite near. But we could neither perceive Lancerota nor Fuertaventura, because they are not high enough to pierce the clouds. Unfortunately we did not find the air quite clear and free from clouds, otherwise I know not but we might have seen Madeira, Porto Santo, and even the nearest part of Mount Atlas, which is about an hundred leagues distant from hence; for although I said before that, viewing the Pike from the ocean, it could not be distinguished from the sky farther off than a hundred and fifty or a hundred and sixty miles, yet it must be observed that the air above the clouds is by far thinner, more pure, and freer from vapours than the air below, for before we came to the Estancia de los Ingleses we observed the moon and stars to shine with uncommon brightness; besides, the spherical figure of the earth could not prevent our seeing Mount Atlas because its summit and that of Tenerife, by reason of their immense height, although so far asunder, would yet be far exalted above the horizon. But whether or not vision extends so far as what I am now hinting, I leave to others to determine.

After we had rested some time we began to look about and observe the top of the Pike. Its dimensions seemed to be exactly as described by one, Mr. Eden, whose journey to the Pike we find related in some of our accounts of the Canary Islands. He says the length is about a hundred and forty yards, the breadth a hundred and ten. It is hollow, and shaped within like a bell subverted. From the edges or upper part of this bell, or cauldron, as the natives call it, to the bottom is about forty yards. In many parts of this hollow we observed smoke and steams of sulphur issuing forth in puffs. The heat of the ground in some particular places was so great as to penetrate through the soles of our shoes to our feet. Seeing some spots of earth or soft clay, we tried the heat with our fingers, but could not thrust them in further than half an inch, for the deeper we went the more intense we found the heat. We then took our guide's staff and thrust it to the depth of three inches into a hole or porous place, where the smoke seemed to be thickest, and held it there about a minute and then drew it out, when we found it burned to charcoal. We gathered here many pieces of most curious and beautiful brimstone of all colours, particularly azure, blue, green, violet, yellow, and scarlet. But what chiefly engaged the attention of my companion was the extraordinary and uncommon appearance of the clouds below us, at a great distance. They seemed like the ocean, only the surface of them was not quite so blue and smooth, but had the appearance of very white wool; and where this cloud ocean, as I may call it, touched the shore, it seemed to foam like billows breaking on the shore. When we ascended through the clouds, it was dark; but when we mounted again, between ten and eleven, the moon shone bright, the clouds were below us, and about a mile distant: we took them for the ocean, and wondered to see it so near; nor did we discover our mistake until the sun arose.

When we descended to the clouds, in returning from the Pike, and entered within them, they appeared to us as a thick fog or mist, of the consistence of those we frequently see in England: all the trees of the fore-mentioned woods, and our clothes, were wet with it.

The air on the top of the Pike was thin, cold, piercing, and of a dry parching nature, like the south-easterly winds which I have felt in the great desert of Africa, or the Levanters in the Mediterranean: or even not unlike those dry easterly winds which are frequent in the northern parts of Europe, in clear weather, in the months of March or April.

In ascending the highest part of the mountain, called the sugar-loaf, which is very steep, our hearts panted and beat vehemently, so that, as I observed before, we were obliged to rest above thirty times to take breath; but whether this was owing to the thinness of the air causing a difficulty of respiration, or to the uncommon fatigue which we suffered in climbing the hill, I cannot determine; but believe it was partly owing to the one and partly to the other. Our guide, a slim, agile, old man, was not affected in the same manner with us, but climbed up with ease, like a goat; for he was one of those poor men who earn their living by gathering brimstone in the cauldron and other volcanos, the Pike itself being no other, though it has not burned for some years past, as may be plainly understood by the nature of its substance; and indeed all the top of the island shows evident marks of some terrible revolution that has happened in Tenerife; for the sugar-loaf is nothing else than earth mixed with ashes and calcined stones, thrown out of the bowels of the earth: and the great square stones, before described, seem to have been thrown out of the cauldron or hollow of the Pike when it was a volcano. The top of the Pike is inaccessible in every way but that by which we went up, viz., by the East side. Its steepest part is on the North-West towards Garrachica. We tumbled some loose rocks down from that quarter, which rolled a vast way, till we lost sight of them.

Having surveyed everything worthy of observation, we returned to the Estancia, where our horses were left; the whole time spent in descending from the top of the Pike to this place, was only half an hour, although the ascent took us about two hours and a half. It was now about ten in the morning, and the sun shone so excessively hot, as to oblige us to take shelter in the cottage. Being exceedingly fatigued, we lay down there intending to sleep, but could not for the cold, which was so intense under the shade that we were obliged to kindle a fire to keep ourselves warm.

After taking some repose, we mounted our horses about noon, and descended by the same way that we went up, and came to some pines, situated about two miles above the clouds: between these pines and the Pike, grows no herb, shrub, tree or grass, excepting the fore-mentioned retama. About five of the clock in the evening we arrived at Orotava, not having alighted by the way to stop, only sometimes to walk where the road was too steep for riding. The whole distance we rode in the five hours spent in coming down from the Estancia to

Orotava, we computed to be about fifteen English miles, travelling at the rate of three miles an hour: suppose then we deduct five of these for windings and turnings, the distance from the sea to the Estancia, in a straight line, will be about ten miles; which, if carefully compared with the ascent of the road,* I reckon will make the perpendicular height of the Estancia to be about four English miles; to which add a mile of perpendicular height from thence to the Pike, the whole will be about five English miles: I am very certain I cannot be mistaken in this calculation above a mile either way. There is no place in the world more proper for an observatory than the Estancia: if a commodious warm house or cottage was built upon it, to accommodate astronomers while the moderate weather continues, viz., all July, August, and September, they might make their observations, take an account of the wind and weather of the region above the clouds, and remark their nature and properties. But if any person intends to visit the Pike, I would advise him to wait for fine clear weather, carry a good tent, plenty of water, and some provisions along with him, that he may be enabled to remain at the Estancia four or five days, in which time he might go twice or thrice to the top of the Pike, and make his observations at leisure.

A Shoal Cast in the Channel.

The maxim with which we set out on this work, and which stands recorded in the first page of our earliest volumes commencing in 1832, was this:—

"There are no charts of any part of the world so accurate and no directions so perfect, as not to furnish frequent occasion for revision and amendment."

They are the words of the late Hydrographer to the Admiralty, Admiral Sir Francis Beaufort, and every day proves the correctness of his observation. That charts of *foreign* coasts and seas should be imperfect might occasion no great surprise when the vast extent of coast line and surperficies of sea surface presented throughout the world is considered. It would be extraordinary if it were not so. It would be wonderful if any chart should escape the charge of imperfection. Even where the surveyor's pains have been well bestowed on it, when the lead has searched the bottom closely, and more soundings obtained than can be laid down on it: even then dangerous pointed rocks have afterwards been found.

But we need not look abroad for imperfect charts. The surveys of our own shores, which have been in hand ever since the peace of 1815,

* I imagine that no one who has been at Orotava will think twenty-two or twenty-three degrees too great an ascent from thence to the summit of the island; for so many have I allowed in calculating the perpendicular height.

are not yet completed. On the West of Scotland and Ireland, and on the South of England, the naval surveyor is yet busy confirming the truth of the words of Sir Francis Beaufort which we adopted long ago.

On our eastern shore, the North Sea for the most part has been well surveyed, especially in its southern portion, where long tortuous sandy ridges are concealed by a few feet of water, or shown in their full length by a crest of breakers, the channels between them being rendered more difficult to navigate by treacherous currents. This sea has been deprived of much of its danger by the admirable surveys of the late Captain Hewitt of respected memory; but the English Channel, after the Varne and Ridge are passed, presents a field for plain sailing, a gradually deepening bottom, or at least one supposed to be so, where the careful navigator has no sands to fear. Hence the difference between the two. While the North Sea chart has been covered with soundings, that of the less dangerous British Channel shows fewer casts of the lead; and these, when beyond a few miles from the land, appear to have been laid down by latitude and longitude, while those of the North Sea, it is well known, are carried out by trigonometrical operations from the shore, these being facilitated by its shoal character affording anchorage.

It was with no great surprise, in this state of things, that we found the following letter in that excellent daily journal, the *Shipping and Mercantile Gazette*, of the 14th of May.

May 12th.

Sir,—I beg leave to acquaint you, for the information of the Lords Commissioners of the Admiralty, that when in command of the Royal Mail ship *Tay*, last from Lisbon, at 2h. p.m., on the 11th ultimo, I struck shoal soundings, at 29 fathoms, in the fairway of the British Channel, about twenty-eight miles S.S.W. ½ W., by compass, from Plymouth Mewstone. The vessel's way was completely stopped for one quarter of an hour, and I and my officers are most positive that such soundings were obtained; though in the Admiralty chart, in that position, nothing less than 40 fathoms is marked, and in charts in ordinary use, 50 fathoms. The obtaining the above soundings caused me, in thick weather, to deviate from my course, and haul to the northward to make the land, and has, unfortunately led to circumstances which have caused my dismissal from the service of the Royal Mail Company, though no damage has occurred to the vessel, and the officer in charge of the deck stopped the engines, as he was ordered, as soon as land was made. The severe sentence I have thus unexpectedly had to submit to, has placed me, with a wife and a young family, in the greatest distress.

I have, &c.,

George Bridges.

To Thos. Phinn, Esq., M.P., Secretary to the Admiralty.

Now, referring to the chart, we find no such depth as 29 fathoms

twenty-eight miles S.S.W. ½ W. from the Mewstone. Indeed, this would place it within a mile or two of 40 fathoms,—and the commander of the *Tay* says, that charts in ordinary use give 50 fathoms, but the depth of 29 fathoms is unheard of. Still, there stands the assertion, and, as we have observed on former occasions, a statement of this kind is easier to make than it is to prove it wrong, and until it be so it is entitled to confidence.

Now a discreet commander in such a case would have reduced his speed and kept his lead going while he recovered himself from the surprise occasioned by such a cast disagreeing with his supposed position, (especially if the weather was thick,) until he had satisfied himself where he was; not leaving his deck for one instant while a symptom of doubt remained. It appears by the letter that the *Tay* stood to the northward for the land, and we have heard that the commander considered himself then on the South side of the Channel!—a rather strange conclusion considering that it would be difficult to find 29 fathoms at any moderate distance from the coast of France in the direction from which the *Tay* was coming to make the land. The commander of the *Tay*, it appears, however, by standing to the northward, was not long in finding out his real position without the assistance of his chart,—that his reckoning had been really correct, and that his chart was at fault in not showing that he might have expected this shoal cast,—if his eyes have not deceived him as well as an officer of the *Tay* who was assisting.

But what is to be said of the charts? One shows about 40, another 50, and the commander of the *Tay* finds 29 fathoms—a depth which neither of them gives! In this state of things we understand that directions have been given to that experienced and excellent officer, Commander Edward Burstall, well accustomed to such work, to examine the place of the *Tay's* soundings, and we hope also the whole of the adjacent district between it and the Start, and for the result of this officer's examination, when published, we shall look with great interest,—a result from which, if we anticipate rightly, the seaman will have *something to learn*.

But in reference to our Channel soundings we trust the time is not far distant, now that the surveys of our coasts are drawing towards their completion, that the antiquated system of laying down soundings in a comparatively narrow sea like the English Channel, by latitude and longitude, will give place to others determined in position by a trigonometrical process. In opportunities offered by the fine calm weather of summer, with anchorage varying from 30 to 50 fathoms, a series of small iron beacon buoys, of Mr. Herbert's principle, with good ground tackle, and light surveying steamers might ride long enough for trigonometrical fixings carried out from the shore, and thence the soundings might be *thoroughly examined* and laid down from them. We should then have a piece of work so closely done, and so perfectly committed to paper, as to produce a chart of the English Channel that would be worthy of a great maritime nation, and one

which might almost form an exception to the aphorism of Sir Francis Beaufort, that "there are no charts so perfect as not to afford frequent occasion for revision and amendment." And possibly in such a work our neighbours on the opposite side of the Channel, ever foremost in the pursuits of science, might take their share South of the fairway midchannel line.

NAUTICAL NOTICES.

ANCHORAGE IN TONGOY BAY—*Coast of Chile.*

Sunderland, May 14th, 1856.

Sir,—Since the establishment of smelting works by the South Mexican Copper Company in Tongoy Bay, it is rising to a place of some importance; and as there is no pilot to take a ship in, nor yet a chart of the Bay, I think the following notice would be of service to masters who have never been at this port:—

At about half a mile south from the high chimney on the hill there is a rock which is covered at high water, and at low just awasL there is nothing on it to mark its position; it is just the place where strangers would bring their ships up in a convenient birth for discharging.

There is a good passage inside of this rock. If I had not obtained some information from a Captain in Coquimbo, it might have proved very disastrous to me. As soon as I was inside of Point Lingua de Vaca, it fell calm, and it coming on dark, I was anxious to get to the anchorage; so I out boats to tow ship, when, thinking I was past danger, and just going to let go the anchor, a man in the first boat struck the rock with his oar. There was not the least swell to indicate its position; this is not mentioned in any of the Directories I ever saw of the coast of Chile, and by inserting this in your valuable work, it may be of benefit to brother shipmasters.

Yours, respectfully,
A WEST COAST TRADER.

[Our trader has our thanks for his communication. Is he aware that "the directions say that no vessel, however small, should go into less than 4 fathoms."—*Sailing Directions for South America*, p. 322.]

HYDROGRAPHICAL REMARKS ON THE ROCAS SHOAL.—*Made during the Visit of H. M. Steam-Vessel "Sharpshooter" to that Place in the Month of March*, 1856.

On the 5th of March, 1856, I sighted the Rocas from the mast-head at 4h. 15m. p.m., bearing W.N.W., about nine miles distant, at which time we had no bottom with 46 fathoms. I then bore up N.W. to close the group, and on sounding at 5h. p.m obtained coral bottom in 13 fathoms, the rocks not being even then in sight from the deck. I therefore determined on remaining in that position during the night, and consequently anchored in 12 fathoms, the highest rock being then first visible from the deck, bearing West, true.

At 6h. 40m. a.m. the next day I proceeded under steam to the N.W., giving the shore a berth of about five miles, until arriving on the N.W. side of the sand-banks; where I anchored in 20 fathoms, coral bottom, at about 2¼ miles from the shore, with the following bearings:—

Compass Bearings, Deviation 10° West.	Breakers southern extreme	S. 15° E.
	Middle of sandbanks.....	S. 27° E.
	Highest rock of group	S. 42° E.
	Breakers eastern extreme	S 50° E.

Whilst describing the semicircle, our soundings were 13, 14, and 15 fathoms until the group bore S.b.E., when there was no bottom with 70 fathoms From this it appears that the shoalest water exists on the eastern side. A careful attention to the deep sea lead would alone betray to a vessel in doubt the vicinity of the shoal on approaching in that direction; when, if practicable, anchoring is a course strongly to be recommended, until daylight or clearer weather enables the Master to ascertain his true position.

As the prevailing winds in that quarter will always enable a vessel bound North to choose a course either to the East or West of this shoal, I do not see that any Masters would be justified in endeavouring to sight the same, a proceeding which might be attended with considerable danger and the benefits to be derived from which I am at a loss to conceive.

Having landed on the eastern sandbank, I caused a number of cocoa nuts to be planted thereon, which were furnished me by H. M. Consul at Pernambuco, with the view of their forming, in time, distinct land marks which will enable the place to be discerned at a much further distance than is now possible.

From the means of the sights taken on board the ship and on shore, the position, as follows, may be relied on:—Centre of southern sand island, lat. 3° 51′ 25″ S., long. 33° 46′ 23″ W. of Greenwich.

This position agrees as nearly as possible with that given by Baron Roussin, and as laid down on the English Government charts.

The highest part of the bank may be set down at about ten feet above high water mark. Rise and fall of tide seven feet. We found the current to set W.N.W., true, between one and two miles per hour.

There were many wrecks of vessels lying on various parts of the sandbanks, only one of which presented signs of having been recently cast on shore,—probably the remains of the English barque *Countess of Zetland*, lost during the month of October, 1855.

Between two and three hundred bales of cotton, with some anchors, were also observed, and two large casks of fresh water were found high up on the beach out of the reach of the tides. This fact, combined with the place abounding with birds, which may be taken with ease, and the ground being almost covered with eggs, would enable a shipwrecked crew to exist on this group for a lengthened period.

J. E. Parish, Lieut.-Commander.

From a plan of the shoal that accompanies the foregoing remarks transmitted by H. M. Consul abroad, it appears that the Rocas consist of three distinct patches of coral rock lying in a W.b.S. and E.b.N. direction. The easternmost is about a mile East and West, and half a mile broad. The middle one is scarcely a mile long, lying N.W. and S.E., having a good large patch of coarse grass. The westernmost is about the same size, lying East and West; and the edge of the coral bank which surrounds them is about three miles in length, about W.b.S. and E.b.N.; the whole being about eight miles in circumference. A remarkable rock, ten or twelve feet high, stands on the outer edge of the reef about half a mile due East (true) of the eastern bank. A wreck lies on the eastern edge of the eastern bank and a hut stands on the western edge of it—the surface between them being covered with cotton bales.

The sand hummocks are about ten feet above high water mark, and the rise and fall of tide observed was six or seven feet.

A bank carrying fourteen and fifteen fathoms affords anchorage as far as five miles to the N.E. of the dry banks.

In reference to the position of these dangers, it appears to have been carefully determined by M. Lartigne, an officer charged with the scientific operations of Baron Roussin during the construction of his charts of the Brazil coast. In chart No. 11 of his *Brazilian Atlas* we read that the geographical position of the isle of Fernando Noronha and that of the danger known under the name of Rocas have been verified and connected by M. Lartigne in December, 1825, in the operations of the *Bayadere*. The positions assigned to these places may therefore be considered very exact.

Now, by this chart of M. Lartigne, the place of observation adopted by the officer commanding the *Sharpshooter* is in lat. 3° 55·7′ S. and long. 33° 46·7′, allowing the difference between Paris and Greenwich, and which position appears almost identical with that adopted by Raper, p. 702, vol. 1839, allowing for difference of place of observation and assuming that Raper takes the centre of the shoal. But this will show an error in the lat. of 4·3′ in that given by the *Sharpshooter*, which, in comparison with the superior means of the French surveyor, and already followed by Raper, cannot be retained.

On the whole, Lieut. Parish has made a very useful contribution to our knowledge of the state of the Rocas, that would have been still more acceptable had he completed his plan of the shoal, with the soundings on the bank eastward of it in all directions out to deep water.

It was entirely the idea of Mr. Cowper, H. M. Consul at Pernambuco, to suggest the planting of the cocoa nut trees on these shoals, and to carry out the measure through Lieut. Parish, the Commander of the *Sharpshooter*. But we trust it will not have the effect of enticing ships too near them in order to make them out; and we caution them not only to have their lead overboard now and then, but also to have an anchor and cable ready for letting go in case of requiring it.

Australian Navigation.

St. John's Lodge, near Aylesbury, Bucks,
May 21st, 1856.

Dear Sir,—Having read my paper in the *Nautical Magazine* for April, 1856, I shall feel obliged by your making public the following remarks. In page 179, line 18 from the bottom there is, "had we past to the Eastward (? Westward) of Rotti," now my intention was to say, had we passed to the Southward of Rotti; for passing to the Southward would have taken us over the Sahul Bank.

Again, you do not say whether the island (on the general chart of Australia, and also on the index chart you mention) is in 21° 24′ S., and 159° 34′ E., is really in that longitude, or, as Raper says, in 158° 34′ E.

You say that all Australian navigators should have the "index chart of the N.E. coast of Australia and its barrier reefs," but this chart was not to be obtained before January, 1856, which was three months after the *Gloriana* passed through Torres Straits.

You make no mention of the White Rocks, but it would be well if the *Nautical Magazine*, which is much read by seamen, gave the opinion of the Hydrographer as to whether they are above or below water, for all navigators will not have the corrected charts.

I also wish to make public an extract or two from my remarks in the meteorological register which I have kept for the Board of Trade, as they trench on this subject. They are as follows:—

"I think that the navigation of this part of the sea would be much easier, if good plans on a large scale were made of the different out lying shoals which ships must pass on their way from Sydney to the Eastern Fields, several of which are still marked 'position doubtful,' 'extent unknown,' &c. I would also have a good survey of the Eastern Fields, and that part of the sea between them and New Guinea, in which space the Admiralty General Chart of Australia gives an unnamed danger, twenty-five miles West of Hood Point in New Guinea. I found no mention of it in Raper's Maritime Positions; it would be important to know if any danger exists there, as it is exactly between Hood Point and the Eastern Fields. In this survey I would include the Portlock Reefs and part of the coast of New Guinea. In fact, if Capt. Blackwood's chart, called 'Torres Strait N.E. Entrance along the Coast of New Guinea,' were accompanied by another which extended from long. 144° 20′ E. (where Capt. Blackwood's leaves off) to 147° 20′ E., *i. e.* to the coast of New Guinea East of the Eastern Fields, and if the outlying reefs were properly surveyed, this route would be quite as safe as any of the straits to China, indeed more so than some, because the anchorage here is good, and the charts 3 and 4 of my paper, seemed to be excellent."

I also send you the results of my lunar observations for this voyage, to show how certainly chronometers may be rated by them. Having derived much benefit from this method myself, I wish to make it more generally known to others. They also are taken from the meteorological register kept for the Board of Trade.

I remain, &c.,

HENRY TOYNBEE.
Commander of the E.I.S. *Gloriana*.

To the Editor of the *Nautical Magazine*.

Errors and Rates of Dent's Chronometer, 1759, *deduced from the Lunar Observations taken on board the "Gloriana," during her voyage from London to Sydney, Booby Island, Calcutta, Madras, Table Bay, and London*. Commencing April 12th, 1855, ending, May 13th, 1856.

My experience in the results of lunar observations has led me to place very little faith in a single set of lunars taken on one side of the moon, unless the observer has found by comparison with the true Greenwich time how much his lunars on that side are generally in error. But from the combination of lunars observed East and West of moon, however few the number, whether sun or star, I find that most satisfactory results may be deduced. I shall therefore give the rate and error of my best chronometer each time that I deduce it from lunar observations, and, for the convenience of comparison, shall also give the last shore error and rate I have for the same chronometer on that date. The difference of these errors applied to the longitude of any day will be the longitude by lunars.

Dent, 1759, went well, but it will be seen how the lunars caught every little variation in its daily rate. My other chronometer, Dent, 1690, increased its daily rate 39 seconds during the passage from Sydney to Calcutta, still by the lunar rate it was right to seventeen miles of longitude on our arrival at the Sand Heads. I found afterwards that it slid on its gimbals: but it always has been much affected by changes of temperature. Of course the lunars proving the good chronometer to be right, also showed how much the bad one was wrong. I may add that very often only two sets of lunars were obtained during any one time of the sun and star being in distance, and that not one set has been rejected.

By casting the eye over the various rates of this chronometer, one fact is plainly proved:—that the different state of a ship in harbour affects the rate of her chronometers. In every port we have touched at the daily rate has been altered more than one second. Another fact is, that where the lunars differ from the shore authorities, they make the error generally from eight to twenty-five seconds less, which, being a subtractive error, would make the Greenwich time that much more, or place the ship from two to six miles West of the shore authorities. The cause of this I have not been able to discover.

[In reply to our Correspondent, whose remarks are always acceptable and useful to seamen, the island in 21° 24′ S. we believe to be in the longitude as laid down on the Index Chart which we have already recommended to the attention of all Australian navigators. The district in which it is situated is represented on a scale (most probably from not having yet been entirely examined) scarcely sufficient to justify entire confidence that everything is shown that is there, and should therefore be approached with great caution until more of it is known. The same index chart will also inform our correspondent of the several important charts of New Guinea that have appeared in his absence, and they approach the Eastern Fields as well as the other yet unexamined portions of the reefs of that extensive district. We have no doubt that all the suggestions of our correspondent to the Board of Trade are rendered important by his experience. And in reference to the White Rocks, he will find as much on the chart No. 2422 of the Admiralty Catalogue as we can inform him, as it is a most essential chart to the Australian navigator. But in reference to his allusion to the opinion of the Hydrographer to the Admiralty on these subjects he appears to be under a wrong impression of the character of this work. We are glad to know from our correspondent that it is consulted by seamen as it was always intended it should be, but it never was and never will be a channel for the Hydrographer's opinion on them. It is strictly non-official, and, we have reason to know, useful both on shore and afloat, and better as having nothing to do with the Hydrographer to the Admiralty.

We do not see what benefit would arise from printing our correspondent's long series of figures on correcting his chronometer rates by his lunars, having given the result in his own words. It is very well known that the rates of chronometers even embarked are different when at sea and in harbour, and that the sooner a rate is renewed the better when it has become a fortnight or three weeks old.—Ed. *N. M.*]

Chart.—Australia, Papua, sheet 2, Torres Strait, North-East and Eastern Entrances, with the outlying Reefs.

Winds and Weather at Panama.

Dear Sir,—In compliance with your request, accompanying is an account of the usual "Winds and Weather at Panama," which may probably agree with any other information you may have upon the same subject.

I am, &c.,
J. H. Smith.

January—Fresh North winds, fine weather and clear sky.
February—Ditto ditto ditto.
March—Ditto ditto ditto.
April—North winds decreasing, with frequent calms, and light Southerly airs, in the day, latter end of this month, occasional squalls from the North in the afternoon, with rain, thunder, and lightning.

May—During the day frequent calms, and light Southerly winds, weather becoming cloudy, and occasional fresh squalls from N.E. to S.E., with rain.

June—The rainy season well set in—breezes during the day increasing from the South, with squalls and heavy rain; nights generally clear, with light land breezes from the North. Latter end of this month, eight or ten days of fine weather frequently occurs.

July—Moderate South winds, squalls, and rain.

August—Ditto ditto ditto.

September—Ditto ditto ditto. During the Equinox, four to six days of strong South winds, without cessation during the night, and frequent squalls, with rain.

October—South winds, squalls, and rain. Frequent land winds at night, and fine West.

November—South winds decreasing, with frequent intervals of fine weather, and occasional squalls off the land.

December—First part of this month frequent calms, and light South winds during the day; latter part occasional North winds and fine weather.

The rainy season in Panama is not so severe, as in some parts of India, seldom a continuance of rain for more than twenty-four or thirty-six hours.

When the North or South winds continue fresh during the day and night at Panama, it always blows strong at the entrance of the bay. With the South wind a long swell sets in, causing a heavy surf on the reef on the South side of the town.

The anchorage in Panama Bay may be considered secure; the ground is muddy, and hold well. During my residence in Panama near five years, I have never known a vessel to be driven from her anchor; in fact, with good ground tackle and common precaution, a vessel may lay there all the year round, with one anchor down.

The last rainy season 1852 was unusually severe, and the rains continued until the 5th of February of the present year, an occurrence seldom known before.

The City of Panama is so situated that two or three hours after heavy rain, which, at the time, will flow the places and streets, the inhabitants are enabled to walk in any part; and it only requires proper sewerage, to keep it cleanly all the year round.

Houses of Refuge.

["In our volume for last year, (July number, p. 388,) we inserted a notice very considerately forwarded to this journal, concerning these Houses of Refuge at the mouth of the Hooghly, which we hope has been of service; and as a repetition of such information may also be useful, we repeat that which is published since our last number by the India House."]

Houses of Refuge, for shipwrecked mariners thrown on shore on the sea face of the Sunderbunds, have been put up as follows:—

No. 1.—Painted Red.—Erected just to the Northward of Jackson's Grove on Seyers' Point, forming the Eastern entrance to Channel Creek. It is an on extensive plain, covered with short grass, inside or to the Eastward of some high sand hills that here line the shore.

No. 2.—Painted White.—Erected at the Eastern entrance to the Subtermookey River, 400 yards to the Northward of the point that forms from Bulcherry Island, and 200 yards from high-water mark. It is in the midst of thick low jungle.

No. 3.—Painted Black.—Erected at the Eastern entrance to the Jumera River, 400 yards to the North of the point that forms from the entrance of the Subtermookey River, and 200 yards from high-water mark.

In each house there is a supply of biscuit and water, which will be easily found by reading the instructions put up in each, which also give other directions that will be useful. A catamaran is attached to each house.

Persons cast away reaching land to the East of Saugor, should make search for the Houses of Refuge; and it should be borne in mind, that when a vessel is lost with a pilot on board, the fact would soon become known at the Pilot Station and in Calcutta. Parties, therefore, finding their way to the houses should remain there, and husband the means of subsistence, in the assurance that succour will speedily reach them; or if compelled to leave, endeavour to get Westward to Saugor Island, and travel along the beach until they arrive at the lighthouse; or make their way to a large fishing village, situated on the S.E. side of Saugor Island, using the catamaran as far as practicable.

By order of the Superintendent of Marine,

JAMES SUTHERLAND,
Officiating Secretary.

Fort William, Marine Superintendent's Office, March 8th, 1856.

H.M.S. PANDORA—*Com. Drury.*

H. M. brigantine ***Pandora***, Com. Drury, arrived in harbour on Thursday evening from a cruise to the Southward, in the course of which she touched at Wellington.

It is with regret we learn that the ***Pandora's*** services, as far as New Zealand is concerned, have been brought to a close, and that, in the course of fourteen days, she may be expected to bid a final adieu to these shores. For upwards of four years and four months the ***Pandora*** has been employed in the survey of the coast, estuaries, hights, bays, and rivers of New Zealand. That survey has been performed ably, assiduously, and most efficiently, by Capt. Drury and the officers under his command; and the large amount of valuable information, geographical and topographical, as well as maritime, coupled with the clear and comprehensive sailing instructions for well known and little known harbours, which have so constantly been published to the world, are so many invaluable contributions to nautical science and trading security as cannot fail to render the labours of the ***Pandora*** as memorable as they are honourable in the annals of a British Maritime Survey. So much we must state as due to the professional exertions of Capt. Drury, his officers, and ship's company. As private individuals long and intimately associated with us, we cannot bid them farewell, without saying how much we shall regret their departure. They will leave their memory amongst us; and their works will remain on beneficial record to many generations. We hope, however, that ere they depart they will receive some proof of the estimation in which they are, and have long been held by the inhabitants of Auckland. In a similar instance, the inhabitants of Hobart Town have not been backward in giving expression to their feelings. Let us trust that our own colonists will not prove less sensitive and just.

H.M.S. ***Pandora*** arrived here on Saturday last, having sailed from Auckland by way of the East Coast, where Capt. Drury, has completed soundings and surveys that he had previously undertaken, but was unable to complete until this summer.

We understand that Capt. Druary has visited the Whaling Station at Table Cape, and induced the whaling parties at that important station to adopt a code of regulations among themselves, that they may be the means of preventing disputes that have heretofore been of frequent occurrence at this station. Capt. Drury's suggestions were unanimously approved of by the whalers, and he was well received both by the European and native inhabitants of Table Cape, and the adjacent coast towards Ahuriri, of which an accurate survey is now made.

The indefatigable exertions of Capt. Drury and his officers in carrying on the coast surveys of this colony, cannot be too highly spoken of; we may now soon expect, not only to have accurate charts of the coast, but to have also the surveys of many of the most important rivers in this island, such as the Kaipara, Hokianga, Whaingaroa, Aotea, and Kawhia, on the West Coast, the entrance to Ahuriri and other rivers on the East Coast side of the island; nor have these surveys been confined to the coast alone, they have been carried on as far as the *Pandora's* boats could go. The inland tracks through the country are laid down, and more minute and accurate information connected with it given on these charts than on any others that have ever been made.

In carrying out these duties extending now over a period of three years, we have never heard of any difference between Capt. Drury and the natives, who might be jealous of a war vessel surveying those unceded portions of the country they inhabit; on the contrary, the *Pandora's* officers and crew appear always to receive a hearty welcome, and to be on the best terms with the natives wherever they go.—From the *Wellington Spectator*, Jan. 23.

[It is highly gratifying to find our naval officers employed surveying abroad spoken thus of; showing that while they have been carrying out the intentions of the Admiralty in performing the scientific duties with which they were charged to their completion, they have been no less happy in regarding the feelings and prejudices both of the colonists and the natives, and have thus every where secured their good will and even regret at the termination of the survey.]

The Magic Effects of Marine Insurance.

Under this quaint title, a correspondent has sent us the following, which appears to contain a curious account of the loss of the *Schomberg* on the coast of Australia. For our own part, we have always been at a loss to see what the *Schomberg* had to do so close in shore as to have the baffling winds of the cliffs. And we believe there is some truth in his remark, had such a case occurred with one of Her Majesty's ships. But, no doubt, it was all right and ship shape; for it is said the *Schomberg* was insured, and the good folks abroad are ready for another. You will observe, says our correspondent, that Capt. Forbes, of the *Schomberg*, has been acquitted for the loss of that vessel. I apprehend, if the case had taken place with a vessel of the Royal Navy, the result would have been very different. Such is the indifference to loss under the operations of Marine Insurance, that, although the *Schomberg* had a very valuable cargo, I do not hear a complaint from any quarter about loss of property; and as no lives were lost, and the Captain and officers acquitted, *we are ready for another* similar loss, without any one caring a straw about it.

The Story of the Schomberg, told by herself.—

I was a fine large ship, a good ship too, tight, strong, and well fastened. I left Liverpool on the 8th of October, but on the 26th of December I ran

on shore and got knocked to pieces on the rocks. In the evening they saw something like land, and I thought I could take care of myself, so on I went for it, for there was no one who seemed to care about me. And soon afterwards I found myself getting well in with the land, indeed I got so far in that when I wanted to put my head outwards again, not exactly liking the appearance of the berth I had chalked out for myself, I was not able; and as I could not get it round any way on shore I went into a place they call Cutler's Inlet, between Cape Otway and Portland. To be sure there was a sand bank outside of me, and some rocks too to which I was not accustomed; in fact, I knew nothing about them, nor of the tide or current. All that I know was that I got there, and do you see I was better there than in many other places I could name, for you see every one got on shore snug enough, for it was a nice light night, so that every thing was done as it should be. But there was a great hubbub among the passengers, for you see they were raw, and not up to such work, and they wanted me to anchor, as if there was any occasion to do so, or to make a fuss about getting on shore as well as they could—boat or no boat; wasn't there plenty of spars and such like for those who could not swim, and those who could might do very well for themselves. I had been jolly enough the day before, those on board little thinking this was to be my last, but I was bent on it, and so I kept my cables unbent, and dashed myself bows end on right on to the beach, for some one told me, and I heard them too, that the insurance was all right. And now I am feeling that I have not got so easy and quiet a berth as I have had, as my ribs are fast separating from each other, and all the rest of me will be in all directions very shortly, which will be all right, and you will not be troubled any more by

"Your insured,

"SCHOMBERG."

DISPOSAL OF ANOTHER BRITISH MERCHANT SHIP.

The Local Marine Board of the port of London, in pursuance of directions from the Board of Trade, have instituted an inquiry into the loss of the ship *St. Abbs*, Bell, from London for Bombay, which took place on St. Juan de Nova.

The Court then inquired of Capt. Bell whether he had any evidence to offer.

Capt. Bell replied that he had, and proceeded to read the protest which he had made as to the loss of the ship. The ship being tight, staunch, and strong, and properly equipped for the voyage, sailed from London bound to Bombay, on March 5th, 1855; and nothing important occurred; sighted Madeira on the 29th of March, 1855. Sighted the island of Bourbon at midnight, during the hours of eleven and twelve of the night of the 10th of June; at daylight, made all sail, steering N.W., at eight steered N.N.W., and at nine steering N.b.W., during the morning of which I got good careful observation, to find the rate of my chronometers, and *I found them correct.* I then shaped my course to go between the Island of Madagascar, and the Island of Juan de Nova, intending to give the latter a berth of sixty-five to seventy miles, according to its position, as represented on my chart, published by Blachford and Co., at London, dated 1848. On the 14th of June, at noon, my lat. was 11° 56′ S., and long. 52° 5′ E., steering from that time N.b.W. and N.b.W. ½ W., with strong current setting W.N.W., and a strong wind at S.E., with passing squalls of rain, and the variation one point, which would carry me in a fair way between the two islands above named. At six p.m.,

in topmast studding sail, being more wind; at seven p.m., in main royal mizentopmast gallant sail, and set up preventer mizentopmast backstays. At eight relieved the watch, sent the second mate to the fore part of the ship to tell the watch to keep a good look-out for ships. When he came aft I inquired of him who had the first look-out, as it was usual to do so before leaving the deck. He answered me, "Richards," and the other man, whose name I do not remember. At 9 50 I gave him orders for the night—to keep a good look-out, and to call me if there was more wind, and if less, to make more sail. The night was rather dark and overcast, ship making 9 knots to 9¼ per hour, with a strong wind. At ten I left the deck in charge of the second mate; at 10 30 went to bed.

At 11 30 I was called by the second mate, who told me the water had a strange appearance a-head, the water being all white. I then jumped out of bed in my drawers, and ran to the poop deck, and saw the broken water, about three times the ship's length a-head. I ran to the man at the wheel, and hove the helm hard a starboard with him; but, before the ship had time to answer, she struck forward, and then aft, striking as her head was paying off, until she came broadside to the sea, striking very heavily, and the sea breaking over her. At this time I let all the halyards go, fore and aft. I gave the order to clew up the sails. The ship now lurched heavily to wind-wind. I ordered the mainmast to be cut away; but, before anything was cut, the mainmast went by the deck, taking in its fall the foretopmast and mizen-topmast, and falling over the starboard side; and by this time the ship had got her head to sea. My first object was to see if the boats were uninjured in the fall of the mainmast; found the long boat all right, but the second boat was damaged, and the third boat was all right. I then ordered the crew to get the third boat on the poop deck. The second boat I told them to let remain. After that being done the chief mate and the carpenter went to sound the pumps, when the mate told me they were choked by the gear of the mainmast. The chief mate, and one hand went into the lower hold to see what water there was in the ship. He reported about five feet. I told the crew that were about me to look well all round to see if we could see any land, but I saw nothing. I then called the remainder aft and told them to go into the cuddy till day-light, and then we should see what was best to be done. Myself and chief mate went into the cuddy to get some clothes on, when the crew asked me for a glass of grog, when I told the steward to give them one. After that they turned to on their own account and drank beer and wine, and smoked cigars till they were completely stupid by daylight, having by this time finished 3¼ dozen of ale, and 2½ dozen of sherry wine, and, I am sorry to say, three of the passengers joined in with them.

At daylight, found the ship had struck upon a reef, the two islands being connected by the same; the ship one and a half miles west of one, and six miles from the other. I then commenced to clear the longboat, as we kept our sheep in her; we split the chocks out, and got the boat ready by nine o'clock; put some bread and water, chronometers, and a chart and compass, ship's log-book, ship's papers, wine and beer, and carpenters' tools and nails into her; and it was my intention to build a boat on shore out of the wreck of the ship. But my greatest difficulty arose from not being able to collect the men together, as some were drinking, others eating bread and cheese and ham, they would not pay any attention to what orders myself or my chief mate gave. At ten we launched the long-boat into the water, all safe; the chief mate and two hands jumped into her to receive the rest, but to my surprise, I found they were not willing to follow. I begged and entreated of them to follow the mate into the boat, so as to get her away from alongside of the ship, but in their delay, and the sea being so heavy, she beat alongside the ship till, to our dismay, she filled with water, and went to pieces in about thirty-five minutes, and with

great difficulty we got the men on board again. The tide by this time begun to flow by the reef, and so put an end to our doing anything more this day, the crew and passengers still eating and drinking, and found they had opened some of the one dozen cases of brandy in the between decks, which accounted to me for the state they were in. Up to this time the ship gave no signs of breaking up, although the weather was very bad. At dark they began to lie down in different places in the cuddy, the mate and myself on the move till daylight. The second mate during the night begged of me to give him laudanum, for what reason I did not know, nor would he tell me. On the morning of the 16th got a coil of rope up, and got a lot of small line ready. At seven got a spare topmast over the side of the ship, with a rope bent on in the form of a bridle, in the hopes that this would ground on the reef, and so form a communication between the ship and the reef. I then asked my chief mate to go with our last remaining boat, to try if there was a passage from the reef to the island. He replied to me that he could not swim, and the boat could not live. I then asked second mate if he would go; he replied that he could not swim, and the boat could not live. I then proposed going myself. I asked who among my crew would go with me, upon which Bouch, an able seaman, and a man named Edge, and another named Fitzgerald, said they would go, and try what we could do.

The boat by this time was got ready, having been slung by the middle with a rope six fathoms long, so as, when the boats should touch the water, the rope would unreave, and so clear the ship. I then told the mate to make fast a small new line to the boat, thinking that if the boat should capsize, there might be some chance of getting back to the ship again, and if we reached the reef, it would serve for a hauling-line to the reef. The greater part of the crew by this time was much the same as before stated, at 11 30. It was now time to endeavour to make a landing on the reef, in hopes to find a passage to the nearest island. The three men before named and myself got into the boat, the chief mate standing by to slip the rope, and as the boat was slipping, one of them, named Fitzgerald, jumped out of her again, and so went the boat. The first sea hove the boat 20 fathoms from the ship in the direction of the reef, the second one capsized her. The first man who left the boat was Bouch. The boat now turned bottom up, Myself and Edge got on her bottom, and I saw Bouch had a footing on the reef. When Edge saw this he left the boat, and so did I, and we all three reached the reef. In my efforts to do so, the back water was so heavy. I very much cut my legs and feet by the coral, and my strength very much exhausted. I then, according to promise, made my way the best I could to the nearest island, finding the reef at some parts dry, and others three to four feet of water, and one place eleven feet water. Some time afterwards reached the island, and then sat down much exhausted. I then stuck some bushes on a piece of bamboo in the ground so as to show those on board that there was a passage to the island. I then went to the lee side of the island to see if there was any person on it, but no one. I then was returning to the reef with the man Edge, when I met the carpenter and Mr. Ross, and Bouch and Richards, who told me the tide was flowing, and no chance of returning, so I was obliged to remain, in hopes of getting back the following day, this being about two o'clock. Spent the remainder part of the day in watching the ship. Passed a miserable night, our only shelter being the bushes, and, during the night, the wind blew very heavy. When daylight came, found the ship had broken up. At eight o'clock saw a portion of the wreck, with three persons on it, but having no boat, could not render any assistance. By eleven the tide had fallen. Bouch and the carpenter and myself went to the scene of the wreck to see if we could render any assistance, but found no person. Picked up some brandy and gin, and brought them to the island. About one hour afterwards the man

Richards was mad drunk, and the others had quite sufficient. After this time we continued much the same, going on the reef every day to see what we could pick up, the carpenter and the man Richards most of the time drunk. At the full of moon made a raft and crossed over the reef to the largest island, distant six miles, and on the second day myself and the carpenter went in search of water, and found a well and two huts; returned to the others next day at daybreak. We all went to it, and here our condition was better, having now found fresh water. In this state we lived sixteen days, when the schooner *Uroine*, of Mahé, came there for turtle, and the Captain kindly took us on board and conveyed us to Mahé, having sailed from Juan de Nova, July 23, and arrived at Mahé, August 2. My crew, on my arrival at Mahé, demanded money of me to sign my protest, they having got persons to come forward and offer to advance me money on my cargo. Because I would not assent to their proposals they would not sign. Mr. Ross, passenger, and the civil commissioners, demanded of me a passage and outfit equal to what Mr. Ross had lost; because I would not do this, he then became my most bitter enemy. My crew, and the civil commissioners together, because I would not abandon my cargo to their satisfaction to obtain money to give them, caused my arrest, and would not allow me to write to my owners, without the letters being read over by the civil commissioners. He then read the protest which he made at the Mauritius.

Masters' Certificate and Charts.

The Local Marine Board of London having inquired into the circumstances attending the loss of the *St. Abbs*, East Indiaman, and having reported that Alexander Campbell Bell, late master of that vessel, had been proved incompetent, and was guilty of gross misconduct, the Board of Trade have, after consideration of the report and evidence, cancelled his certificate as master. The following passages in the report of the Local Marine Board demand special notice:—"The chart used by the master was laid before the Court. It is marked, 'Sold by Blachford and Imray, 116, Minories, new edition, 1848,' in which Juan de Nova is laid down in long. 52° 30′ E.—the true longitude given by Horsburgh being 51° 2′ E., and so placed in his chart of the Indian Ocean. It was resolved, that in the opinion of this Board the loss of the ship was mainly owing to the error in the chart; at the same time the Board think the master was highly culpable in not having consulted other authorities in his possession; neither did he use due vigilance, knowing that he would cross the parallel of the island during the night; and that after the ship struck the master appears to have lost all command, and all means as were within his power were not applied for the safety of the crew and passengers."

[We perceive the *Shipping Gazette* in allusion to this subject, states that the Local Marine Board of London blamed the Captain of the *St. Abbs*, for losing his ship on the shoals of Juan de Nova, and considered it mainly attributable to an error in the chart on which the Captain depended. Possibly this was an old chart marked "approved by the chart Chart Committee of the Admiralty," which sat about fifty years ago. A chart that was condemned several years ago, and ought to have been consigned to the waste paper rooms on the publication of Capt. W. Owen's chart, on the dangers to the N.E. of Madagascar, wherein Juan de Nova stands as well as in the memoir published at the same time, and has stood since the year 1828 in its correct position under the names of the Farquhar Islands, and in the memoir accompanying it as the Farquhar Islands or Juan de Nova.

The Compass and its Remedies.

Rock Ferry, 24th May, 1856.

Sir,—In your last number you did me the honour of giving to some remarks of mine on the compass question a place in your respected Magazine; I beg, therefore, to be allowed to add a few more, should you deem them worthy.

Now as we may confidently rely on the continued vigilance of merchant captains, the material of which a ship is built need scarcely cause public anxiety. But to owners, merchants, and the captains themselves, it becomes a serious question.

Considering, as a scientific problem, the *change* in amount of magnetism in an iron ship, I submit to your readers, and to the Compass Committee, that in my letter of the 22nd ult. the agents in such disturbance are plainly exhibited, perhaps a valuable partial remedy itself is given.

In that letter I proved that an enormous amount of magnetic influence is called into exercise from the moment at which the furnaces of a steamer are lighted;—that whatever might have been the previous condition of a ship (from direction on which built, from mechanical operations during construction, &c.) there does exist an immense daily production of magnetic power, and this arising from thermo-electric and chemical action, in the disturbance of galvanic distributions from heat, the combustion of coal, the conversion of water into steam, &c.; and this in such quantity, that *its not overwhelming the compass altogether*, might seem to raise doubts of its presence. I propose, therefore, with your kind permission, to consider the circumstances under which this accumulation is probably dispersed, or so disposed of, as to reduce local disturbance even to its present fickle and still perplexing average quantity: for I have proved, and it is admitted, that after a few voyages, or probably after a single voyage, an iron ship attains a more equable condition as regards magnetism; differing little if anything in constitution from a wooden ship.

As I am not qualified to write for learned professors, but merely seek to explain to or rather remind shipowners and intelligent and scientific sailors of certain simple principles, as they appear to me to bear on the great question under consideration, I need scarcely apoligize for some slight repetitions in the use of accepted terms; and would here remark that we can as effectually test the quantitative presence of an imponderable fluid like electro magnetism, as of an ordinary liquid.

A Leyden jar, for instance, suggests three states of electricity, distinguished as negative, quiescent, and positive; and without our attempting to suggest any precise limit of capacity for electricity, (the source of magnetism,) there is a certain point at which what we may call quiescence, or saturation, is apparent: for any addition of electricity to a body in that state insures a disposition in that fluid to escape, as by a spark, or by some better conductor than common air. While any diminution of this normal quantity which nature seems in every substance to require to produce this saturation, is shown by the ready transmission of electricity towards it from any contiguous body having its point of saturation more nearly satisfied. I assume, therefore, that the magnetism of an iron ship is purely a question of the positive, or negative, or quiescent electric state of such ship; and that we have been on the wrong scent when merely seeking for correction of compass. Whether we turn the handle of a machine specially arranged to produce electric charges and discharges, (and equally, be it remembered, to produce magnetic currents,) or whether we by lighting furnaces, by burning coal, or converting water into steam, produce the same phenomena in a body not specially arranged for the exhibition of magnetic currents, we have the same elements to work with, with the difference that whereas in the common electric machine we have an instrument, or arrangement, sur-

rounded totally by atmospheric air, in the iron ship, partly immersed in a much better conductor, and with very considerable superficial metallic contact, and therefore alteration in the electric and magnetic state or condition of such ship as a body will be governed to a certain extent by the proximity of such ship to such conductor feeble or otherwise.

Now an iron ship from the stocks the moment she touches the water in her launching, undergoes a *change*, not from the mere mechanical act of motion alone, as generally supposed, but from the change caused in her electric condition by being placed suddenly (as above observed) in a better conductor than air. She goes into dock, where, in perfectly still water, (but water which has an immense superficial and galvanic action on the metal sheathing of other ships, and which is pervaded in all directions by an intricate network of commingling and untraceable galvanic currents,) into water, I say, peculiarly adapted to influence the electric condition of such ship, whether such disturbance be the work of days, or hours, or seconds, is immaterial; certain it is she undergoes a change, and attains a new state of saturation, for natural electric equilibrium requires this, and is as certain as that a nail placed on a hot plate approaches its temperature.

This new state probably lasts until her cargo, perhaps of iron or some metal, is received on board, and modifies still further the state of saturation, any hour changing the amount of this variation from the increasing immersion of the ship in water of a magnetized mass of matter, weighing in some cases thousands of tons! Now it is extraordinary that the Compass Committee announce the change in vessels, wooden vessels laden wholly or partly with iron. To proceed, while such changes are in progress the ship's compasses are examined (carefully, it is true, by competent men, but under great disadvantages) and certain fixed corrections (so called) are recommended for a compass subject to still varying influences! for, next her furnaces are in requisition, and then comes the last great and most enormous change of all, as described by me in your last number. The huge ship, which before was partially magnetized, becomes, as before stated, a receptacle for vast accumulations of active magnetic fluid, and but for certain other laws, which are called into operation, this repletion must destroy the usefulness of the compass altogether. However, it does worse! it affects it insidiously, and at times leads even the cautious mariner to destruction. Better is an open enemy than a false friend! Poor abused compass! Faithful have you been to me and to my father before me, often hast thou led me in safety to my home! I hope to free thy reputation and yet to take thee as my unerring guide!

But the subject expands under our field of view! Still other changes have to be described. The bloated and excitably magnetized ship is to be forced through a dense medium, through water holding in solution acids and alkalies, and a proportion of solid matter, which increases its susceptibility to galvanic or electric influences. In passing one body over another, whether it be a stick of sealing-wax upon the coat, or copper sheathing or iron plates over and through sea water, we, in producing what is called friction, disturb heat, electricity, and therefore magnetism. The paddles revolve, the ship is propelled at a rapid rate, the accumulated magnetism is set in action by the friction of the ship's sides, and partially dissipated; a continuance of the action for some time induces a less sensitive condition of the mass until a state of saturation is attained, which we find in ships of iron which have made repeated voyages.

Now having, I respectfully submit, proved that from numerous sources change in the magnetic condition of an iron ship is to be expected, and the Liverpool Committee having demonstrated that it does exist, can it be matter of surprise that corrections recommended on data obtained when a ship is in one state are found useless when the state of that ship has undergone considerable change.

In my own anxious and prolonged inquiry into the true state of compass disturbance, it is too apparent that the perfect remedy, if ever attainable, is to be sought rather in the laboratory of the chemist than in the workshop of the compass maker or the studio of the mere experimentalist, or in observations made during a voyage. Experiments on the needle, conducted hitherto by able heads, have led to only partial and mechanical reliefs. Circulars are being issued to all shipmasters by the Liverpool Committee containing forms for the registration and concentration of facts, and it is acknowledged that years must pass before sufficient information from this source can be collected to palliate the grievous evils which afflict British commerce in its shipping.

Now, in order to continue my very humble advice that it is to the chemist we must look for aid, I shall ask you shortly to permit me to lay before your readers a few more simple but neglected facts, preparatory to a report which I hope to produce in a future number of the *Nautical Magazine* having a vital bearing on the real capabilities of the compass itself as an instrument. In treading a path entirely novel, I shall need all the indulgence of the public. However Utopian the idea which has possessed me for some time, I must brave the sneers of those who know only the object in view, not my means of attaining it. Already a warning and friendly voice (but of one in total ignorance of my recent experiments) says to me, "You are pursuing an Ignis Fatuus, a will o' the wisp;" says another, "I have tried everything." Now I remember with extreme acuteness (and it bears so strongly on the present discussion that I scruple not to declare it) on a certain occasion the most illustrious and amiable of our astronomers was holding his delighted auditors as if spell bound in the Senate House of Cambridge by his thrilling description of the approach of a mass towards our earth, which, though unseen by man, was felt by the mathematician to affect parts of the solar system. I remember also his declaration that we absolutely knew nothing of magnetism, and that every fact is precious; and this confession moved me towards a public exposition at Cambridge, before a large audience, some days after, of certain views connected with terrestrial magnetism, and which have never since that day been doubted or disputed. But the exposition was at the time met so fiercely by a learned professor, who, in attacking my groundwork, declared, "that any one having the smallest acquaintance with magnetism must see my error," and he moreover adduced certain physical facts in proof of my mistake; which facts I had the felicity of showing were the strongest evidence of the correctness of my views; and although the applause of some hundreds of members of the university attested my success and satisfied my wrath for the time, it left a timidity in proposing publicly even what I feel to be truth.

I shall have soon to describe some recent experiments, which, so far as they have gone, engender the hope of my being about to assist the compass question. Even if I fail as to the object sought for, my giving publicity to the experiments themselves will, I have not a doubt, lead to the final shutting off all local attraction on board ship. Why may it not be sought for without the imputation of credulity and intellectual weakness? I can at preesnt only promise to produce sufficient grounds by which to justify and demonstrate the consistency of the hope above expressed. I shall brave the obloquy! In this age say what is impossible? I believe I have found the key, if I cannot unlock the door I shall seek assistance.

I have, &c.,
S. M. Saxby.

To the Editor of the *Nautical Magazine*.

New and Corrected Charts, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

	Price	s.	d.
Wales, Pembroke Reach, Commander Alldridge, R.N., 1852	-	3	6
Ireland, West Coast, sheets No. 11 and 15, Captains Frazer, Wolfe, Church, and Beechey, R.N., 1851	each	2	0
West Indies, Caledonian Harbour and Port Escoces, Mr. J. Parsons, Master, R.N., 1854	-	3	0
South America, Sketch of River Paraguay from Corrientes to Asuncion, Lieutenant G. F. Day, R.N., 1853	each	2	6
Falkland Islands, Port Egmont, Keppel Sound, &c., Captain B. J. Sulivan, R.N., C.B., 1843	-	1	6
West Coast North America, Port Simpson, Messrs. Inskip, Gordon, and Knox, R.N., 1853	-	0	6
Polar Sea, Mackenzie River to Behring Strait, various authorities, 1856		3	0
British Lights, corrected to June, 1856	-	1	6
British North American Ditto	-	0	6
West India Ditto	-	0	6
Gulf of Bothnia, Supplementary Directions	-	0	6
African Pilot, Part 1, from Cape Spartel to River Cameroons, 1856	-	2	6

Edward Dunsterville, Commander, R.N.

Hydrographic Office, Admiralty, May 22nd, 1856.

Edwards' Patent Preserved Potato.

Edwards' Preserved Potato having been used in her Majesty's Services many years, proving its value as a vegetable and antiscorbutic diet, we consider it due to those gentlemen to refer to the following favourable testimony from Dr. Rae, of the Hudson Bay Company's Service:—

"London, 14th April, 1856.

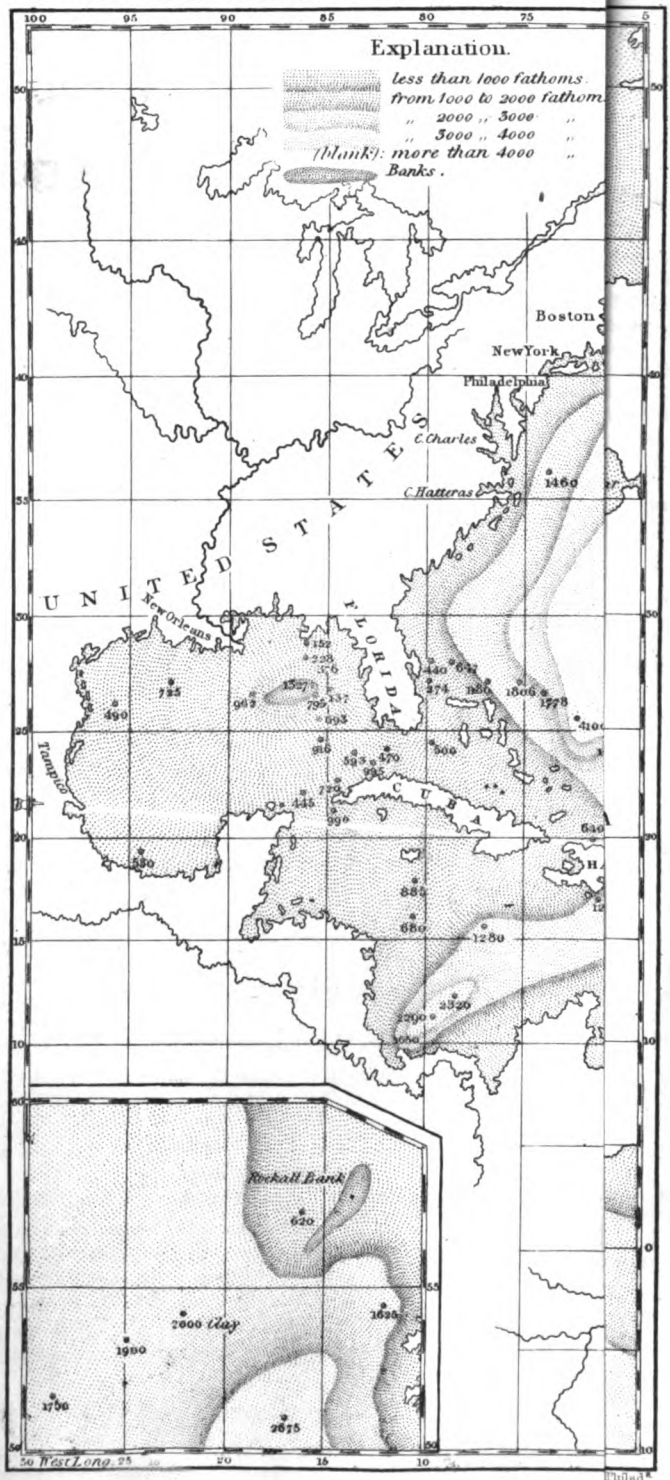
"I beg to add my testimony to a host of others in favour of Edwards' preserved potato. I used it on my last Arctic journey and found it extremely useful and beneficial. By mixing it, instead of flour, with our pemican, the latter was made much more palatable and apparently no less nutritious than if flour had been used.

"It has the very great advantage of being cooked in a few minutes by the addition of boiling water; whereas other descriptions, as far as I know, of this preserved vegetable require fully an hour's cooking; thus causing a great saving both of water and fuel, two very important considerations either on the Arctic coast or on shipboard.

"At York Factory, in Hudson Bay, Edwards' potato is highly approved, and has been a daily dish at the mess table for a number of years past. Since its use there has been less tendency to scurvy.

John Rae, M.D., H. B. Co's Service."

Basin of the North Atlantic Ocean.



THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

JULY, 1856.

JOURNAL OF H.M.S. "RATTLESNAKE," COMMANDER HENRY TROLLOPE, ON HER RECENT VOYAGE TO BEHRING STRAIT.

At 4h. p.m. on the 23rd February, 1853, we cleared the Needles channel and the wind and sea increased very much. At 5h. 30m. the towing hawsers carried away; we made sail and stood to the westward. At 6h. p.m. Portland high light bore N.W.b.W., about thirteen miles; Needles light, N. 87° E., twenty-three miles. The wind from the northward blew keenly. Sharp snow squalls came on frequently, but they were fair and we stood W.½N. and W.½S.,—*Basilisk* in company. As it was full moon, and high water at Portland at 6h. 30m., we did not get the S.W. going or ebb tide until 9h. p.m., but it could not be called against us as the last of the flood sets W.N.W. We kept rather to the southward, to avoid the Shambles, and kept sight of Portland until midnight, when it bore N.E.b.N., thirteen miles. The wind continued steady from the northward; the glass was rising although the weather was gloomy.

24th.—At daylight the Start and Praule point were indistinctly seen N.N.E., about six or seven leagues distant. Captain Martin White, in his admirable directions for the English Channel, lays great stress on the rotary movement of the tides, and his elaborate tables appear to prove it; but it appeared that we had been certainly set to the southward since we cleared the Needles. At noon, in lat. 49° 37′ N., long. 4° 13′ W., the wind was North and N.N.W., but in

the afternoon veered to W.N.W., and as we could not clear Ushant, bearing S. 25° W., seventy-six miles, I tacked and stood N.N.E.

About 6h. p.m. the *Basilisk* took us in tow at great risk to our light gigs, and to our great loss also as far as drifting by our shortening sail, when there was, however, so much swell that we did but little. She barely towed us two knots an hour, and in less than two hours the hawsers parted and we were once more on our own resources. As I thought we were hardly sufficiently to the northward, I determined to stand in N.E.b.N., with the wind at N.W., and make the Eddystone light. The tides in the channel are an intricate subject, and I cannot say that I fully understand them even with Captain Martin White's most admirable descriptions. We certainly made the Eddystone much sooner and on a different bearing to what we expected. We had been set since noon (E.b.N. magnetic) N.E.b.E., true, eleven miles. The light, instead of bearing E.b.N., bore N.N.E.$\frac{1}{2}$E. (magnetic), and we made it two hours before we expected to do so, or, according to our reckoning, we were eleven miles S.W.b.W. (true) of our actual position! I attributed this to the Rennell current, but Captain White says that this northerly set may be accounted for by the motion of the tides. Reckonings are proverbially inaccurate; I do not say more dependance can be placed on ours than on any other, but merely note it as we found it. At 11h. 20m. p.m. wore ship and took a departure from the Eddystone, bearing N.$\frac{1}{2}$E. (magnetic) about seven miles. Soundings forty fathoms, coral and sand. The wind was strong from N.W., with a heavy cross sea.

On the following day the wind hauled round to the northward and we stood West or W.b.N., indifferent about southing, until we had got into the meridian of Cape Finisterre. At noon, in lat. 49° 37′ N., long. 4° 13′ W., sounded in forty-nine fathoms sand and shell, agreeing with the chart. Soon afterwards we parted company with the *Basilisk*, which, except in towing us clear of the Needles, had not aided us. The swell was still considerable and we did not communicate. She left us the remnants of her hawsers, which amounted to nearly 100 fathoms, as they carried away each time close to her bows.

26th.—Noon, lat. 47° 55′ N., long. 6° 56′ W.; Ushant light N. 52° E., eighty miles.

With the wind from North and N.N.E. we cleared the channel without further delay, passing Cape Finisterre, 130 miles to the westward, on the 28th February; falling in with what became the N.E. trade, if it were not so actually, on March 4th, 250 miles North of Madeira; sighting that island on the 7th March five or six leagues West of Punta del Pargo. We were evidently set to the eastward in passing the land, and the accumulated current in eleven days amounted to S. 49° E., ninety-two miles. Weddell, in the admirable account of his enterprising voyage, considered he was set eighty-five miles to the eastward during ten days. Sir Erasmus Gower estimates it as eleven miles S.E. in fifty leagues, which will be about eighty or ninety miles for the whole passage.

The weather continued favourable, and on the 15th, at 2h. a.m.,

we made San Antonio, passing between it and St. Vincent, and at 8h. a.m. anchored in Porto Grande. The beautiful charts of Captain Vidal render directions almost needless, but there is a bay to the eastward of Porto Grande which to a stranger has every appearance of the port, and the houses and shipping are not seen until you get very close to Bird Island, a rocky pyramidal spot well named.

The bay is usually considered perfectly safe, but there was considerable swell where we anchored, which was well out, for the convenience of watering. I procured men and a boat to water the ship, as I did not wish to injure our own boats or to expose the men; but we were obliged to provide our own casks, as they had but one and that was discovered to be unsound. We anchored at 8h. a.m. with the following bearings:—Bird Island, N. 14° W. (angle); South point San Antonio Island, 54°; watering place N.E.; six fathoms, sandy bottom. The only recommendation of this island is its port, which is certainly the best among the group; but all its supplies come from the other islands, chiefly San Antonio and San Nicholas. We procured three bullocks, averaging about 200 or 220 pounds each, for 3½d. a pound; oranges and lemons 100 for a dollar; and fowls about eighteen shillings a dozen. Building appeared to be progressing, for the steamers making it their rendezvous will doubtless tend to create a population; but at present it is one of the saddest places I ever saw, notwithstanding there is a billiard room as a resource for the idlers. We paid two dollars a ton for the water, which, although rather dear, saved our boats and also spared our men, for it was very laborious occupation and they must have been in the water the whole day; as it was, we had two or three laid up with slight attacks of fever.

During the last year an epidemic proved very fatal here and carried off the greater part of the residents. The English Consul, Mr. Rendell, and his son, the Vice-Consul, complained of the climate, and were evidently suffering from its ill effects.

There were in the bay six French, two Austrians, two Portuguese, and one Dane laden with coal from Swansea, and not one English vessel. Although there was abundance of coal on the shore, had we required any we should have had to pay £3 a ton for it, for the supply was all anticipated for the *Antelope*, from Cork, belonging to some private Liverpool company; the *Australian*, from Liverpool to Sydney; and the *Calcutta* (G. S. S. S. Co.), from Calcutta to England. The last named arrived on the evening of the 15th March, and, if before I had been somewhat depressed in not finding one English vessel in the port, my spirits were raised by seeing such a magnificent specimen of enterprise and capital in this desolate and hitherto remote part of the world.

The water from the well is not particularly good; it has a soft insipid taste, but it kept very well for upwards of a month and we found no inconvenience from using it. We received eight tons between eleven o'clock on Tuesday and two o'clock on Wednesday afternoon, without working at night. I was told that there was a much better

stream on the opposite side of the bay; but on sending Lieutenant Miller to examine it he found it very insignificant, although in the rainy season there is no doubt a rapid torrent down the gully.

At sunset on the 16th we sailed, with the trade wind fresh from E.b.S. Passing between San Antonio and San Vincent, we shaped a course for 20° W. on the equator.

23rd.—A falling barometer, windy sky, and lightning in the S.E. indicated a change, and at daylight the wind shifted in a heavy squall, which carried away the bentick yard of the foresail, owing to its being far too slight for the purpose. The breeze freshening for some hours from E.b.S. and E.S.E. buoyed us up with the hope of its being the S.E. trade; but it soon died away and we remained six days among the variables; heavy rain, passing squalls, a few albacore; and several vessels in the like condition with ourselves. We saved about two tons of water and might have had more if we wished.

26th.—We passed the path of the sun, the meridian altitude being 89° 20′, zenith South. About 10h. p.m. observed a boat coming from a very fine vessel on the port beam, which we at first took for a man-of-war. It proved to be, however, the *Joseph Fletcher*, 675 tons, of London, bound to London from Shanghae, laden with tea and silk, only seventy-seven days out. The Mate, who came in the boat, reported extraordinary sailing qualities, and certainly she had made a very quick passage; calling the distance 11,000 miles, she had averaged nearly 140 miles a day. He was anxious to be off, for he had a bet with another Mate as to beating a rival vessel and did not wish to lose time.*

27th.—We exchanged numbers with H.M. brig *Cygnet*, standing to the northward.

29th.—Crossed the line in 21° 30′ W. Neptune did not come on board. I have seen him three or four times, and to my mind "'tis a custom more honoured in the breach than the observance." I heard no regrets on the occasion.

Immediately after twelve on the following day we were taken aback with the real trade after two or three pretenders had deceived us. It certainly is one of the pleasures of life, at all events of a sea life, to get the trade wind after boxing to and fro among light winds and variable, rain and squalls. The trade came fresh from S.E. We stood to the S.W. with topmast studding sails set. The Cross, the Centauri, and z Argus began to rise higher and higher.

"Another pole-star rises o'er the wave."

The nights are beautiful. Watching the rise of the southern constellations and the disappearance of those of our native skies relieves the tedium of the silent watches and carries the mind back to the

* The *Joseph Fletcher* arrived in the Thames on April 27th, 105 days from Shanghae. The navigable distance cannot be called less than 15,000 miles: therefore she averaged 140 miles a day and upwards.

days of the early navigators, when, with feelings we can hardly enter into,

"Full to the south the shining cross appeared."

I was anxious to sight Trinidad and as no benefit would be derived from nearing the coast of Brazil we hauled up S.b.W.

On April 4th, in 10° 32′ S., 27° 43′ W., by Fox's dipping needle (cq needle c) crossed the magnetic equator or line of no dip.

April 6th it fell calm for five or six hours. Although 16° S. is full early to lose the trade it seemed as if we had lost it, for when a breeze sprung up again it was East and E.N.E., veering more to the northward even than that. I felt great confidence in our chronometers and ran for Martin Vaz Rocks without fear.

At 4h. a.m. on Saturday, 9th April, (before daylight), they were in sight S. 40° W., nine or ten miles. At daylight we were abreast of them, three miles distant. They are most remarkable objects, high and barren, except a few bushes here and there. A boiling surf rages round, affording security to innumerable sea birds, for whose refuge they seem expressly formed. The sketch gives the best idea of their formation, and I could only wish for a geologist to examine and talk about them.

The channel between them and Trinidad is twenty-six miles broad, and we got no bottom with 100 fathoms when four miles from the centre rock and twenty-two from Trinidad. This island has been visited and described by many so that a mere passer by can add nothing to what is already known. It has a most desolate and barren appearance, rising abruptly from the sea, reminding me of St. Helena. Its steep and rugged cliffs are entirely destitute of verdure, and its interior renders it of little value to man. It is, notwithstanding, connected with many celebrated names. Halley took possesion of it in the name of William III. La Perouse visited it and found it inhabited by a company of Portuguese from Rio Janeiro, and gives rather a diverting account of the jealousy with which the Governor viewed his visit. Flinders, Captain Peter Heywood, who alone give an interest to any spot they visited, and, latterly, Sir James Ross are all connected with this desolate spot.

By three observations I made the height of the summit 2,020 feet above the sea; and from the poop, which is twenty-two feet above the water, we could see the centre rock of Martin Vaz, twenty-five miles off;—or, rather, I should say it dipped then below the horizon, and then going three or four ratlines up the mizen rigging, we caught sight of it again at the above distance. From this I consider its height to be 300 feet.

The wind continued from N.E., steady as the trade. We left Trinidad astern and stood 500 miles to the S.W. until Wednesday, 13th April, when, in 26° S., 35° W., the wind hauled round to the westward, with gloomy threatening appearances and a falling barometer. At 5h. p.m. a sharp squall took us with topmast and topgallant studding sails and royals set. I was anxious not to lose the fair wind and

kept the sail on as long as possible, but although we got our light sails in without damage, we had a mishap where we least expected it —the bentick boom of the foresail carried away; this was the second time it had happened, the spar we were supplied with being evidently too slight. The squall proved very transient and ended with heavy rain, thunder and lightning, and complete failure of the wind.

Variable breezes and extremely unpleasant unsettled weather, with frequent calms and light winds, prevailed for some days. Wind from all quarters—East, South, and S.W.; heavy squalls, with thunder and lightning; a heavy rolling swell, which, deeply laden as the ship was, added very much to our discomfort. The people messing on the main deck, which in the hurry of our fitting out had been but partially fitted for the purpose, gave us a great deal to do in the way of raising the combings of the hatchways, caulking the hawse holes, and running cant pieces athwart the deck to prevent the water from getting into the messes. We had, however, our intervals of fine weather, and, with two or three exceptions, the health of the people did not suffer, and those who did had chronic cases which would probably have suffered equally in England.

The westerly variation had been gradually diminishing. To-day (19th April) we crossed the magnetic meridian and entered easterly variation. Dark gloomy weather. Breeze, which had been steady for eight and forty hours from S.E., hauled round to East and N.E., and blew very hard for several hours. About 6h. a.m. (20th April), in a heavy squall, the wind shifted suddenly from N.E. to S.W. and continued to blow very hard during the day. Towards midnight it moderated but the wind still continued from West and S.W. This was a very ugly gale, accompanied with heavy rain, thunder and lightning, and a most turbulent, trying cross sea. I never thought a ship could have been so uneasy. I got up in the night more than once, and could hardly believe that she was not striking heavily. The barometer gave us good warning of this gale: on the 19th April it was 30·31, and on the 20th it was 29·70. We close reefed to this gale. The rigging gave out so much after the tropics that we were obliged to get a pull of it notwithstanding the unfavourable weather.

25th.—I was now anxious to make westing, in accordance with Captain Fitz Roy's advice, but the wind still continued from West and S.W. Heavy dew falling, head sea on (S.W.), and lightning in the same quarter made me fear a gale, the more so as the barometer fell four-tenths in the course of eight or ten hours.

27th.—Heavy cross swell; ship very uneasy; winds very variable, S.S.W. and N.W. succeeding each other, and easterly winds and calms to diversify the log,—the strongest breezes from West and N.W. The barometer rose again after a fresh gale from N.W., but the wind was still S.W. until the 28th April, when it hauled round to S.E. and E.N.E., and after carrying us 150 miles, suddenly shifted to N.W. and died away into a calm, leaving us rolling about in a heavy turbulent sea.

29th.—Heavy dew falling, lightning in the S.E. A fresh breeze from West and N.W. carried us 150 miles to the S.W. The following morning was one of the most beautiful I ever saw, but in the afternoon the most threatening squalls came on, ending however without any wind, but with rain and hail of a most enormous size, thunder and lightning in vivid flashes close to us. A patch of sea weed was seen to-day. Since the introduction of the admirable invention of Sir W. Snow Harris, lightning has been robbed of much of its terrors —we hardly remember or think upon the terrible destruction it formerly caused. This thunder storm brought the wind from the East, but did not last very long in that quarter, hauling round again to N.W.

30th.—At 6h. 15m. p.m., a comet was observed bearing W.b.S. Extreme length 4° 52′. Sirius to head of comet 34° 16′; Pollux to head of comet 52° 17′. Altitude 5° 30′.

We had tried for soundings frequently, but did not get them until the 2nd May, when, in 43° 30′ S. and 61° 6′ W., we got bottom in 46 fathoms, fds. Cape Delgado, the nearest land, bore N. 68° W. (true) 116 miles. Soundings off a coast are a great boon to the navigator. They tend to security if precautions within the reach of every one are taken. We did not make the land although I should have been glad to have done so, but the wind was against it; and although we continued in soundings, and were at times within seven or eight leagues, we did not sight it until the 8th May; when, with gloomy weather and a fresh breeze from N.N.E., we stood in for Cape Sanchez, near Port Gallegos, on purpose to sight it. I was in doubt whether we had not better run on to Cape Virgins, but there was no moon and we could not have sighted it before dark. I therefore thought it better to verify the longitude by actually sighting the land.

Just at noon on May 8th the land was reported, and although it was hazy and we could not depend much on the bearings, the result was very tolerably satisfactory—in fact I made up my mind that they agreed with the chronometers within a couple of miles. But the position of the ship was not exactly what was to be wished. The wind hauled round to N.E., and we were consequently rather embayed. I therefore hauled out E.S.E., under a heavy press of sail, to secure an offing, more particularly as the weather was threatening and the glass had fallen considerably—five-tenths of an inch. After standing forty-five miles S.E. (true) E.S.E. (magnetic), we laid to under close reefed topsails and fore staysail, with very heavy squalls and a heavy sea. The wind during the night hauled round to North and W.N.W., and towards daylight of the 9th May moderated very much. As the result proved, we need not have stood quite so far off; but, however, it is easy to judge when the result is known. The falling glass and the gloomy weather made me expect a change of wind, and I therefore kept on the port tack that the change might be aft (Directions Capt. P. P. King, p. 81, art. 219).

The change came on the morning of the 9th May, but not with any

violence, and at noon Cape Virgins bore N. 69° W., fifty miles; the wind S.W. and West with a heavy cross sea. Soundings in sixty fathoms sand and stones. A brig was seen under treble reefed topsails standing to the westward. Towards sunset the wind moderated altogether and the weather was beautiful. With the wind from N.W., we stood in for the straits under topsails, jib, and driver, sounding every hour.

(To be continued.)

ON THE DEPTHS OF THE OCEAN.—*By Lieut. Maury, U.S.N.*

Until the commencement of the plan of deep sea soundings, as now conducted in the American Navy, the bottom of what the sailors call "blue water," was as unknown to us as is the interior of any of the planets of our system. Ross and Dupetit Thouars, with other officers of the English, French, and Dutch Navies, have attempted to fathom the deep sea; some with silk threads, some with spun yarn, and some with the common lead and line. All of these attempts were made on the supposition that when the lead reached the bottom, either a shock would be felt, or the line, becoming slack, would cease to run out.

The series of systematic experiments recently made on this subject shows that there is no reliance to be placed on such a supposition, for the shock caused by striking bottom cannot be communicated through very great depths, and therefore it does not follow that the line will become slack and cease to run out when the plummet reaches the bottom. Furthermore, the lights of experience show that, as a general rule, the under currents of the deep sea have force enough to take the line out long after the plummet has ceased to do so. Consequently, there is but little reliance to be placed on deep sea soundings of former methods, when the depths reported exceeded eight or ten thousand feet.

Attempts to fathom the ocean, both by sound and pressure, had been made; but in "blue water" every trial was only a failure repeated. The most ingenious and beautiful contrivances for deep sea soundings were resorted to.

By exploding heavy charges of powder in the deep sea, when the winds were hushed and all was still, the echo or reverberation from the bottom might, it was held, be heard, and the depth determined from the rate at which sounds travels through water. But, though the explosion took place many feet below the surface, echo was silent, and no answer was received from the bottom. Ericsson and others constructed deep sea leads having a column of air in them, which, by compression, would show the aqueous pressure to which they might be subjected. This was found to answer well for ordinary purposes; but

in the depths of "blue water," where the pressure would be equal to several hundred atmospheres, the trial was more than this instrument could stand.

Mr. Baur, an ingenious mechanician of New York, constructed, according to a plan I furnished him, a deep sea sounding apparatus. To the lead was attached, on the principle of the screw-propeller, a small piece of clock-work for registering the number of revolutions made by the little screw during the descent; and, it having been ascertained by experiment in shoal water that the apparatus in descending would cause the propeller to make one revolution for every fathom of perpendicular descent; hands provided with the power of self-registration were attached to a dial, and the instrument was complete. It worked beautifully in moderate depths, but failed in blue water, from the difficulty of getting it down if the line used were large enough to give the requisite strength for hauling up.

But, notwithstanding these failures, there was encouragement, for greater difficulties had been overcome in other departments of physical research. Astronomers had measured the volumes and weighed the masses of the most distant planets, and increased thereby the stock of human knowledge. Was it creditable to the age that the depths of the sea should remain in the category of an unsolved problem? Beneath its surface was a sealed volume, abounding in knowledge and instruction that might be both useful and profitable to man. The seal which covered it was of rolling waves many thousand feet in thickness. Could it not be broken? Curiosity had always been great; still, neither the enterprise nor the ingenuity of man had as yet proved itself equal to the task. No one had succeeded in penetrating, and bringing up from beyond the depth of two or three hundred fathoms below the aqueous covering of the earth, any specimens of solid matter for the study of philosophers.

The sea with its myths had suggested attractive themes to all people in all ages. Like the heavens, it affords an almost endless variety of subjects for pleasing and profitable contemplation, and there has remained on the human mind a longing to learn more of its wonders, and to understand its mysteries. The Bible often alludes to them. Are they past finding out? How deep is it? and what is at the bottom of it? Could not the ingenuity and appliances of the age throw some light upon the question?

The government was liberal and enlightened; times seemed propitious; but where or how to begin, after all these failures, with the interesting problem, was one of the difficulties first to be overcome.

It was a common opinion, derived chiefly from a supposed physical relation, that the depths of the sea were about equal to the heights of the mountains. But this conjecture was, at best, only a speculation. Though plausible, it did not satisfy. There were, in the depths of the sea, untold wonders and inexplicable mysteries. Therefore the contemplative mariner, as in mid-ocean he looked down upon the gentle bosom of the sea, continued to experience sentiments akin to those

which fill the mind of the devout astronomer when, in the stillness of the night, he looks out upon the stars wonders.

Nevertheless, the depths of the sea still remained as fathomless and as mysterious as the firmament above. Indeed, telescopes of huge proportions and of vast space-penetrating powers, had been erected here and there by the munificence of individuals, and attempts made with them to guage the heavens and sound out the regions of space. Could it be more difficult to sound out the sea than to guage the blue ether and fathom the vaults of the sky? The result of the astronomical undertakings* lies in the discovery that what, through other instruments of less power, appeared as clusters of stars, were, by those of larger powers, separated into groups; and what had been reported as nebulæ, could now be resolved into clusters; that in certain directions the abyss beyond these faint objects is decked with other nebulæ, which these great instruments may bring to light, but cannot resolve; and that there are still regions and realms beyond, which the rays of the brightest sun in the sky have neither the intensity nor the force to reach, much less to penetrate.

So, too, with the bottom of the sea, and the knowledge-seeking mariner. Though nothing thence had been brought to light, exploration had invested the subject with additional interest, and increased the desire to know more. In this state of the case, the idea of a common twine thread for a sounding line, and a cannon-ball for a sinker, was suggested. It was a beautiful conception; for, besides its simplicity, it had in its favour the greatest of recommendations; it could be readily put into practice.

Well directed attempts to fathom the ocean began now to be made, and the public mind was astonished at the vast depths that were at first reported.

Lieut. Walsh, of the U.S. schooner *Taney*, reported a cast with the deep sea lead at thirty-four thousand feet without bottom. His sounding line was an iron wire more than eleven miles in length. Lieut. Berryman, of the U.S. brig *Dolphin*, reported another unsuccessful attempt to fathom mid-ocean with a line thirty-nine thousand feet in length. Capt. Denham, of H.B.M.S. *Herald*, reported bottom in the South Atlantic at the depth of forty-six thousand feet; and J. P. Parker, of the U.S. frigate *Congress*, afterwards, in attempting to sound near the same region, let go his plummet, and saw a line fifty thousand feet long run after it as though the bottom had never been reached.

The three last named attempts were made with the sounding twine of the American Navy, which has been introduced in conformity with a simple plan for sounding out the depths of the ocean. It involved for each cast only the expenditure of a cannon-ball and twine enough to reach the bottom. This plan was introduced as a part of the researches conducted at the National Observatory, and which have

* See the works of Herschel and Rosse, and their telescopes.

proved so fruitful and beneficial, concerning the winds and currents, and other phenomena of the ocean. These researches had already received the approbation of the Congress of the United States; for that body, in a spirit worthy of the representatives of a free and enlightened people, had authorized the Secretary of the Navy to employ three public vessels to assist in perfecting the discoveries, and in conducting the investigations connected therewith.

The following circular order to the commanders of all vessels of the Navy has been issued, and is now in force.

Circular.

Bureau of Ordnance and Hydrography.

Sir,—Your attention is particularly invited to the accompanying directions relative to deep sea soundings.

You will take care that they be diligently and faithfully carried out on board the vessel under your command.

You will report from time to time, to this Bureau, the latitude, longitude, depth, drift, time, and all the circumstances connected with each cast, whether successful in reaching bottom or not,—stating the kind of sinker used, its weight, and whether the large or small twine was used.

This order is to supersede that of June 1st, 1850, on the same subject, and the directions given at pages 70 and 71 of Maury's third edition of *Sailing Directions*, so far as they may conflict with these.

Respectfully, your obedient servant,

C. MORRIS,
Chief of Bureau.

Instructions for using the Sounding Twine.

The twine for deep sea soundings is of two sizes; the smaller size is intended to be used when no attempt is made to bring up specimens from the bottom. It is calculated to bear sixty pounds weight in the air; it is about seven hundredths of an inch in diameter, and measures 180 fathoms to the pound. It is marked at every hundred fathoms, and furnished on reels containing 10,000 fathoms each.

The larger size is to be used for bringing up specimens. It is calculated to bear a weight in the air of 150 pounds; it is about one tenth of an inch in diameter, and measures about eighty fathoms to the pound. It is furnished on reels of 5,000 fathoms each.

It is desired, as a general rule, to have one deep sea sounding only for every space of five degrees square, on a chart which is constructed with its meridians and parallels drawn only for every five degrees of latitude and longitude respectively.

The spaces in which deep sea soundings have been made in the Atlantic Ocean are shown in plate 14. It is desirable to have the soundings on that plate with a note of interrogation after them, verified.

Attempts should be made to bring up specimens from the bottom whenever practicable; for this purpose the large twine should be bent on to Brooke's deep sea sounding apparatus.

A small stellwagen cup attached to the bolt of Brooke's lead, may be substituted with advantage for the arming.

After a little experience, the officer charged with the making deep sea soundings will, it is thought, acquire skill enough, especially when the sea is not more than 2,000 fathoms deep, to bring up specimens with Brooke's apparatus and the small twine.

When the small twine is used without a Brooke's apparatus, double it for the first 200 fathoms, and use two 32 lb. shot as the sinker; when the shot reaches the bottom, the boat may ride by it, until the surface current shall be determined, when the line should be hauled in until it parts.

The sounding should in all cases be taken from a boat, and not from a vessel. The boat with its oars can be kept over the line, whereas the vessel will drift.

For deep sea temperatures, a self-registering metallic thermometer should be used, especially at great depths. When no metallic thermometer is on board, then a resort to a non-conducting cylinder for bringing up the water should be had.

Approved, C. MORRIS.

Dec. 17th, 1853.

Directions for taking Deep Sea Soundings.

The information acquired from experience upon the subject of deep sea soundings, enables me to say that I now consider it as practicable to fathom the greatest depths of the ocean, whatever they may be, as it is to sound one of our bays or harbours.

Lieut. Walsh's experiments in the *Taney* satisfied me that no reliance could be put upon results obtained by sounding at great depths with wire. His great sounding, therefore, was most valuable and important, for it led the way to the use of twine.

It was thought that, upon the new plan, the common wrapping thread or twine used in the shops would answer for deep sea soundings. For it was supposed that bottom might be reached always and at any depth, especially in calm weather, simply by fastening the end of the twine from such a reel to a common 32 lb. shot, throwing the shot overboard, and then paying out the twine as fast as the shot would take it from the reel. When the shot reached the bottom, it was supposed that the line would stop running out; and then, cutting the thread, and seeing how much was left on the reel, the depth would, it was thought, be ascertained.

This required the loss of the shot and the twine, but they were cheap; for it was supposed that a mere thread, which had strength to hold together, would be strong enough.

But the experiments of Lieut. W. Rogers Taylor, on board the *Albany*, Capt. Platt, (a full account of which is contained in the fifth edition of this work,) proved these notions to be wrong. The casts for deep sea soundings, made on board that vessel, showed that it required twine of a considerable strength for the purpose.

The existence of a physical state of things which bears upon the

question was also suggested by Taylor's experiments; and that is, the probable existence in all parts of the sea of one or more under currents. In other words the deep sea soundings appear to confirm what I have been endeavouring to maintain in the chapter on the "Saltness of the Sea," and elsewhere, viz.: That the ocean has its system of circulation, so ordered that its waters, whether at the surface or in the depths below, are seldom or never at rest; that this circulation is all pervading and perpetual, and is as constant in the horizontal as it is in the vertical direction.

This system of circulation commenced on the third day of creation, with the "gathering together of the waters" which were "called seas," and doubtless will continue as long as sea water shall possess the properties of saltness and fluidity.

The confirmation which the experiments in sounding out the depths of the ocean, seems to afford for this conjecture, is derived from the inference, in the first place, that I draw from the experiments which, in a few cases, have been made in sounding at the same place, first with one and then with two 32 lb. shot as a sinker. The results as to depth have been accordant; but invariably the depth, as given by the *two* shots is a little less than by one. The two shots sink faster than the one, the bight of the line in the former case, therefore, is not exposed so long to the action of the under currents; consequently it is not swept so far out of the perpendicular with the two as it is with the one shot.

In the next place, a degree of confirmation as to the correctness of this conjecture is afforded by the fact that, though the shot may reach the bottom, the line has, in no instance, ceased for any considerable length of time to run out; and, moreover, that after the shot has landed, there is, at very great depths, such a force brought upon the line, if it be held, as always to part it.

Imagine a line two, or three, or four miles long, hanging perpendicularly in the ocean,—that the plummet to which it is attached has reached the bottom,—and that there be one or more under currents moving in opposite or different directions, and operating upon it. They would operate with what sailor's call a "swigging force," and that too with a power which no line would be strong enough to withstand for any considerable length of time.

Thus the importance of strong twine was pointed out; and it was also discovered that, to know when the shot had reached the bottom, it was necessary to time the intervals which were occupied by given lengths of line in going out. The most convenient lengths for this purpose are lengths of 100 fathoms each; and as mark after mark which denotes these 100 fathoms' lengths passes from the sounding reel, the time per watch is as carefully noted by the officer who makes the sounding, as it should be if he were taking sights for the chronometer.

The soundings by the *Albany* and others were made from on board ship. In the first place, it was rarely that an opportunity favourable enough for a good cast from on board occurred. Moreover, the com-

plaint was almost universal throughout the service of bad twine. Attempts to sound from the vessel were so often frustrated by the parting of the line, that officers were very much deterred from the trial. These failures were disheartening.

Furthermore, when the ship was hove to for the purpose, as the *Albany* frequently was, there was not only the drift of the ship to be taken into the account, but the question as to the result still remained to perplex. Had the bottom been reached? And if so, was there any certainty that the depth was what the experiments seemed to indicate? Certainty as to this was greatly impaired by inequalities in in the times of running, caused by the change in the rate of motion of the vessel as she "came up and fell of."

Such was the amount of our experience upon the subject of deep sea soundings when Lieut. S. P. Lee was ordered to the command of the *Dolphin*.

With characteristic energy he set about making preparations for this new service. His first business was to give the twine, furnished for deep sea soundings, a thorough examination. He carefully overhauled, tested, and tried several hundred thousand fathoms. Much of it he found so defective that it had to be rejected, and the vessel detained until better could be procured. It was well he did so; for although the line, with which he proceeded to sea, was better than that which was rejected, nevertheless, experience proved that much of it, though new, was not strong enough. Its average strength was not even then sufficient to bear a weight of fifty-five pounds, nor was it all of the same size, as it should have been.

When he got to sea, he determined not to sound from the vessel at all; but to use a boat for sounding, altogether.

A Boat should always be used.

At first he encountered many unexpected difficulties; but with industry, his ingenuity, and perseverance, these, one after another, were overcome, until the way was made plain, and the operation stripped of a vast amount of the uncertainties which had impaired to a greater or less extent, the value of all the results hitherto obtained.

In the first place, though the small twine, furnished for the deepest soundings, would, much of it, bear a weight of seventy or even eighty pounds, yet, when he came to attach to it a thirty-two pound shot, to throw the shot overboard, and let it take the line from the reel as fast as it would, he found the line would part.

He then resorted to the expedient of doubling and even of trebling the line for the first two or three hundred fathoms. Thus, the parting was prevented. He found, moreover, that the operation was greatly facilitated by watching the trending of the line from the bows of the boat; and with one or two oars of a side, directing the men how to pull, in order to keep the line "up and down."

Accordingly, we find him, when he first put to sea, occupied for more than a month, availing himself of every opportunity for sounding during the interval; and making day after day unsuccessful attempts.

Finally, he succeeded in getting out seventeen hundred fathoms without parting. Bottom was reached at this depth.

Out of the first seventeen casts that were made, this was the only successful one.

He was now in a fair way to get at the secret. The plan is to double or triple the line for the first three hundred fathoms; and, instead of letting the shot take it as fast as it will, and so bring up occasionally with a violent jerk and parting,—and this, as experience abundantly proves, is very liable to be the case, particularly at the first going off, when the shot is sinking rapidly,—Lee also adopted the expedient of keeping a gentle strain on the line at first, and this was accomplished by allowing a little friction to be applied to the reel, so that it would not for the first three hundred fathoms give the line to the shot quite as fast as the shot wanted to take it.

An important part of the plan, also, was that of keeping the boat, by means of a couple or more of oars, perpendicularly over the shot. To be sure that he had reached bottom, he on several occasions repeated the trial, using in this case two instead of one thirty-two pound shot for a sinker. The result was the same agreement as to depth.

Success crowned his efforts so far, and he now began to have such confidence in his results,—for the mark of each successive hundred fathoms, as it went out, was carefully timed,—that, with his shot on the bottom at the depth of three or four miles, he would use it as an anchor, ride by it in his boat out there in mid ocean, while the force and set of the surface current, out upon blue water in the open sea, were accurately determined. This was the first time that such a thing had been done.

Thus, the egg was made to stand upon its end; and the plan of deep sea soundings finally adopted, and now in practice, is this:—Every vessel of the navy, when she is preparing for sea, is, if her commander, or, with his consent, any officer on board, will pledge himself to attend to the deep sea soundings, furnished with a sufficient quantity of sounding twine, carefully marked at every length of one hundred fathoms,—six hundred feet,—and wound on reels of ten thousand fathoms each. It is the duty of the commander to avail himself of every favourable opportunity to try the depth of the ocean whenever he may find himself out upon "blue water." For this purpose he is to use a cannon-ball of thirty-two pounds as a plummet. Having one end of the line attached to it, the cannon-ball is to be thrown overboard from a boat, and suffered to take the twine from the reel as fast as it will; and the reel is made to turn easily.

When Lieut. Berryman took charge of the brig, and went to sea, of course he availed himself of Lee's experience, and commenced where Lee had left off.

But there was still one thing wanting; positive evidence that the plummet had reached the bottom; for, hitherto, the plan had not contemplated bringing up specimens of the bottom, inasmuch as the hauling up of the shot from such great depth was regarded as an impracticability.

In this stage of the matter Passed Midshipman J. M. Brooke, a clever young officer, who was at the time doing duty at the Observatory, proposed to me a contrivance by which he thought the shot might be detached as soon as it touched the bottom, and specimens brought up in its stead.

I was in the habit of consulting him; he often assisted me with his reflections; and I referred him to Mr. Greble, the instrument-maker of the Observatory, that they two might give his idea shape, and construct a model of the machine. The result was Brooke's Deep Sea Sounding Apparatus, as exhibited on plates 7 and 8. It is a simple and beautiful contrivance, which a mere inspection of the plates seems sufficient to explain.

[We find the foregoing remarks on deep sea sounding in Maury's Sailing Directions; and certainly if we have set our friends across the Atlantic the example of making these very interesting experiments, as we certainly have done, they have shown us a more satisfactory way of making them than we had ourselves adopted,—albeit there may attach some little more expense to their improved method. Indeed to sacrifice some thirty or forty miles length of good stout and carefully made fishing line was a worthy offering in such a cause, and leaves our method of expending old junk for the purpose, with a broken pig of ballast at its end, in the far distance of an economical horizon. There is something besides in the certainty of the result, and with such means as appear to have been supplied for the purpose the confidence with which the depths are reported is quite admissible. We have availed ourselves of the polite attention of Mr. Maury to present to our readers, along with the above paper, an impression of the plate, showing the principal deep water casts alluded to by him, and obtained by the U.S. brig *Dolphin*, mentioned in a former number of this volume. It is a grand commencement in a great subject of physical geography—the actual depth of the ocean. The little *Dolphin* has done her work well, as we have previously observed,* and the numerous results which she has brought to light reflect the highest credit on her commander, Lieut. Lee, and his officers. But it appears from the foregoing that these results of the *Dolphin* are likely to be added to by any vessel of the United States Navy whose commander "will pledge himself to attend to the deep sea soundings," so that we anticipate a considerable number of important contributions on this subject from our American friends, of results that may be depended on in more parts of the globe than the Atlantic Ocean.—ED.]

* See *Nautical Magazine* for December last, p. 682.

Depths of the Ocean,—*The Chart.*

Referring to the chart of the Atlantic Ocean in our present number, Lieut. Maury observes,—"To measure the elevation of the mountain top above the sea, and to lay down upon our maps the mountain ridges of the earth, is regarded in geography as an important thing, and rightly so. Equally important is it in bringing the physical geography of the sea regularly within the domains of science, to present its orology, by mapping out the bottom of the ocean so as to show the depressions of the solid parts of the earth's crust there, below the sea-level. * * * It relates exclusively to the bottom of that part of the Atlantic Ocean which lies North of 10° South. It is stippled with four shades: the darkest (that which is nearest the shore-line) shows where the water is less than six thousand feet deep; the next where it is less than twelve thousand feet deep; the third where it is less than eighteen thousand feet; and the fourth, or lightest, where it is not over twenty-four thousand feet deep. The blank space South of Nova Scotia and the Grand Banks includes a district within which very deep water has been reported; but from casts of the deep sea lead, which, upon discussion, do not appear satisfactory.

"The deepest part of the North Atlantic is probably somewhere between the Bermudas and the Grand Banks, but how deep it may be yet remains for the cannon-ball and the sounding twine to determine.

"The waters of the Gulf of Mexico are held in a basin about a mile deep in the deepest part.

"The bottom of the Atlantic, or its depressions below the sea-level, are given perhaps on this plate with as much accuracy as the best geographers have been enabled to show on a map the elevations above the sea-level of the interior of Africa or Australia."

Note.—It appears from Lieut. Maury's valuable work quoted above that the deepest bottom yet brought up, is from 2150 fathoms, in the Coral Sea, lat. 13° S., long. 162° E., by Mr. Brooke's lead.

Another Word about Columbus.

[The Editor of this journal having just performed the difficult task of ascertaining the real Landfall of Columbus on his first voyage to America, and shown not only that but the track which he adopted on his way thence to Cuba, (all of which* appears on the chart now published with the result of his investigations by the Admiralty publisher,) will perhaps be permitted to preserve here the last interesting account of the great navigator, from the pen of that accomplished writer

* See New Books.

Washington Irving, that appeared a short time ago in the volume of Murray's *Family Library* entitled the *Voyages of the Companions of Columbus*. And having no opportunities of learning that any measures have been followed up with the view of preserving his memory at Huelva or its neighbourhood, he will be thankful to any of his readers for information on the subject.]

Seville, 1828.

Since I last wrote to you I have made, what I may term, an American Pilgrimage, to visit the little port of Palos in Andalusia, where Columbus fitted out his ships, and whence he sailed for the discovery of the New World. Need I tell you how deeply interesting and gratifying it has been to me? I had long meditated this excursion, as a kind of pious, and, if I may so say, filial duty of an American, and my intention was quickened when I learnt that many of the edifices, mentioned in the History of Columbus, still remained in nearly the same state in which they existed at the time of his sojourn at Palos, and that the descendants of the intrepid Pinzons, who aided him with ships and money, and sailed with him in the great voyage of discovery, still flourished in the neighbourhood.

The very evening before my departure from Seville on the excursion, I heard that there was a young gentleman of the Pinzon family studying law in the city. I got introduced to him, and found him of most prepossessing appearance and manners. He gave me a letter of introduction to his father, Don Juan Fernandez Pinzon, resident of Moguer, and the present head of the family.

As it was in the middle of August, and the weather intensely hot, I hired a calesa for the journey. This is a two-wheeled carriage, resembling a cabriolet, but of the most primitive and rude construction; the harness is profusely ornamented with brass, and the horse's head decorated with tufts and tassels and dangling bobs of scarlet and yellow worsted. I had, for calasero, a tall, long-legged Andalusian, in short jacket, little round-crowned hat, breeches decorated with buttons from the hip to the knees, and a pair of russet leather bottinas or spatterdashes. He was an active fellow, though uncommonly taciturn for an Andalusian, and strode along beside his horse, rousing him occasionally to greater speed by a loud malediction or a hearty thwack of his cudgel.

In this style, I set off late in the day to avoid the noontide heat, and after ascending the lofty range of hills that borders the great valley of the Guadalquivir, and having a rough ride among their heights, I descended about twilight into one of those vast, silent, melancholy plains, frequent in Spain, where I beheld no other signs of life than a roaming flock of bustards, and a distant herd of cattle, guarded by a solitary herdsman, who, with a long pike planted in the earth, stood motionless in the midst of the dreary landscape, resembling an Arab of the desert. The night had somewhat advanced when we stopped to repose for a few hours at a solitary venta or inn, if it might so be called, being nothing more than a vast low-roofed stable, divided into several compartments for the reception of the troops of mules and

arrieros (or carriers) who carry on the internal trade of Spain. Accommodation for the traveller there was none—not even for a traveller so easily accommodated as myself. The landlord had no food to give me, and as to a bed, he had none but a horse cloth, on which his only child, a boy of eight years old, lay naked on the earthen floor. Indeed the heat of the weather and the fumes from the stables made the interior of the hovel insupportable, so I was fain to bivouac on my cloak on the pavement at the door of the venta, where, on waking after two or three hours of sound sleep, I found a contrabandista (or smuggler) snoring beside me, with his blunderbuss on his arm.

I resumed my journey before break of day, and had made several leagues by ten o'clock, when we stopped to breakfast, and to pass the sultry hours of midday in a large village, from whence we departed about four o'clock, and, after passing through the same kind of solitary country, arrived just after sunset at Moguer. This little city (for at present it is a city) is situated about a league from Palos, of which place it has gradually absorbed all the respectable inhabitants, and, among the number, the whole family of the Pinzons.

So remote is this little place from the stir and bustle of travel, and so destitute of the show and vainglory of this world, that my calesa, as it rattled and jingled along the narrow and ill-paved streets, caused a great sensation; the children shouted and scampered along by its side, admiring its splendid trappings of brass and worsted, and gazing with reverence at the important stranger who came in so gorgeous an equipage.

I drove up to the principal posada, the landlord of which was at the door. He was one of the very civilest men in the world, and disposed to do everything in his power to make me comfortable; there was only one difficulty, he had neither bed nor bedroom in his house. In fact it was a mere venta for muleteers, who are accustomed to sleep on the ground with their mule cloths for beds and pack-saddles for pillows. It was a hard case, but there was no better posada in the place. Few people travel for pleasure or curiosity in these out-of-the-way parts of Spain, and those of any note are generally received into private houses. I had travelled sufficiently in Spain to find out that a bed, after all, is not an article of indispensable necessity, and was about to bespeak some quiet corner where I might spread my cloak, when fortunately the landlord's wife came forth. She could not have a more obliging disposition than her husband, but then—God bless the women!—they always know how to carry their good wishes into effect. In a little while a small room, about ten feet square, that had formed a thoroughfare between the stables and a kind of shop or bar room, was cleared of a variety of lumber, and I was assured that a bed should be put up there for me. From the consultations I saw my hostess holding with some of her neighbour gossips, I fancied the bed was to be a kind of piece-meal contribution among them for the credit of the house.

As soon as I could change my dress, I commenced the historical

researches which were the object of my journey, and inquired for the abode of Don Juan Fernandez Pinzon. My obliging landlord himself volunteered to conduct me thither, and I set off full of animation at the thoughts of meeting with the lineal representative of one of the coadjutors of Columbus.

A short walk brought us to the house, which was most respectable in its appearance, indicating easy, if not affluent circumstances. The door, as is customary in Spanish villages, during summer, stood wide open. We entered with the usual salutation or rather summons, "Ave Maria!" A trim Andalusian handmaid answered to the call, and, on our inquiring for the master of the house, led the way across a little patio or court, in the centre of the edifice, cooled by a fountain surrounded by shrubs and flowers, to a back court or terrace, likewise set out with flowers, where Don Juan Fernandez was seated with his family, enjoying the serene evening in the open air.

I was much pleased with his appearance. He was a venerable old gentleman, tall, and somewhat thin, with fair complexion and grey hair. He received me with great urbanity, and on reading the letter from his son, appeared struck with surprise to find I had come quite to Moguer, merely to visit the scene of the embarkation of Columbus; and still more so on my telling him, that one of my leading objects of curiosity was his own family connection; for it would seem that the worthy cavalier had troubled his head but little about the enterprises of his ancestors.

I now took my seat in the domestic circle, and soon felt myself quite at home, for there is generally a frankness in the hospitality of Spaniards, that soon puts a stranger at his ease beneath their roof. The wife of Don Juan Fernandez was extremely amiable and affable, possessing much of that natural aptness for which the Spanish women are remarkable. In the course of conversation with them I learnt, that Don Juan Fernandez, who is seventy-two years of age, is the eldest of five brothers, all of whom are married, have numerous offspring, and live in Moguer and its vicinity, in nearly the same condition and rank of life as at the time of the discovery. This agreed with what I had previously heard, respecting the families of the discoverers. Of Columbus no lineal and direct descendant exists; his was an exotic stock that never took deep and lasting root in the country; but the race of the Pinzons continues to thrive and multiply in its native soil.

While I was yet conversing, a gentleman entered, who was introduced to me as Don Luis Fernandez Pinzon, the youngest of the brothers. He appeared to be between fifty and sixty years of age, somewhat robust, with fair complexion and grey hair, and a frank and manly deportment. He is the only one of the present generation that has followed the ancient profession of the family; having served with great applause as an officer of the royal navy, from which he retired, on his marriage, about twenty-two years since. He is the one, also, who takes the greatest interest and pride in the historical honours of

his house, carefully preserving all the legends and documents of the achievements and distinctions of his family, a manuscript volume of which he lent to me for my inspection.

Don Juan now expressed a wish that, during my residence in Moguer, I would make his house my home. I endeavoured to excuse myself, alledging that the good people at the posada had been in such extraordinary trouble in preparing quarters for me, that I did not like to disappoint them. The worthy old gentleman undertook to arrange all this, and, while supper was preparing, we walked together to the posada. I found that my obliging host and hostess had indeed exerted themselves to an uncommon degree. An old ricketty table had been spread out in a corner of the little room as a bedstead, on top of which was propped up a grand *cama de luxo*, or state bed, which appeared to be the admiration of the house. I could not, for the soul of me, appear to undervalue what the poor people had prepared with such hearty good will, and considered such a triumph of art and luxury; so I again entreated Don Juan to dispense with my sleeping at his house, promising most faithfully to make my meals there whilst I should stay at Moguer, and as the old gentleman understood my motives for declining his invitation, and felt a good-humoured sympathy in them, we readily arranged the matter. I returned therefore with Don Juan to his house and supped with his family. During the repast a plan was agreed upon for my visit to Palos, and to the convent La Rabida, in which Don Juan volunteered to accompany me and be my guide, and the following day was allotted to the expedition. We were to breakfast at a hacienda, or country seat, which he possessed in the vicinity of Palos, in the midst of his vineyards, and were to dine there on our return from the convent. These arrangements being made, we parted for the night; I returned to the posada highly gratified with my visit, and slept soundly in the extraordinary bed which, I may almost say, had been invented for my accommodation.

On the following morning, bright and early, Don Juan Fernandez and myself set off in the calesa for Palos. I felt apprehensive at first, that the kind-hearted old gentleman, in his anxiety to oblige, had left his bed at too early an hour, and was exposing himself to fatigues unsuited to his age. He laughed at the idea, and assured me that he was an early riser, and accustomed to all kinds of exercise on horse and foot, being a keen sportsman, and frequently passing days together among the mountains on shooting expeditions, taking with him servants, horses, and provisions, and living in a tent. He appeared, in fact, to be of an active habit, and to possess a youthful vivacity of spirit. His cheerful disposition rendered our morning drive extremely agreeable; his urbanity was shown to every one whom we met on the road; even the common peasant was saluted by him with the appellation of *caballero*, a mark of respect ever gratifying to the poor but proud Spaniard, when yielded by a superior.

As the tide was out we drove along the flat grounds bordering the Tinto. The river was on our right, while on our left was a range of hills, jutting out into promontories, one beyond the other, and covered

with vineyards and fig-trees. The weather was serene, the air soft and balmy, and the landscape of that gentle kind calculated to put one in a quiet and happy humour. We passed close by the skirts of Palos, and drove to the hacienda, which is situated at some little distance from the village. between it and the river. The house is a low stone building, well white-washed, and of great length; one end being fitted up as a summer residence, with saloons, bed-rooms, and a domestic chapel; and the other as a bodega or magazine for the reception of the wine produced on the estate.

The house stands on a hill, amidst vineyards, which are supposed to cover a part of the site of the ancient town of Palos, now shrunk to a miserable village. Beyond these vineyards, on the crest of a distant hill, are seen the white walls of the convent of La Rabida rising above a dark wood of pine trees.

Below the hacienda flows the River Tinto, on which Columbus embarked. It is divided by a low tongue of land, or rather the sand bar of Saltes, from the river Odiel, with which it soon mingles its waters, and flows on to the ocean. Beside this sand bar, where the channel of the river runs deep, the squadron of Columbus was anchored, and from hence he made sail on the morning of his departure.

The soft breeze that was blowing scarcely ruffled the surface of this beautiful river; two or three picturesque barks, called mysticks, with long latine sails were gliding down it. A little aid of the imagination might suffice to picture them as the light caravels of Columbus, sallying forth on their eventful expedition, while the distant bells of the town of Huelva, which were ringing melodiously, might be supposed as cheering the voyagers with a farewell peal.

I cannot express to you what were my feelings on treading the shore which had once been animated by the bustle of departure, and whose sands had been printed by the last footstep of Columbus. The solemn and sublime nature of the event that had followed, together with the fate and fortunes of those concerned in it, filled the mind with vague yet melancholy ideas. It was like viewing the silent and empty stage of some great drama when all the actors had departed. The very aspect of the landscape, so tranquilly beautiful, had an effect upon me, and as I paced the deserted shore by the side of a descendant of one of the discoverers, I felt my heart swelling with emotions and my eyes filling with tears.

What surprised me was to find no semblance of a sea-port; there was neither wharf nor landing-place—nothing but a naked river bank, with the hulk of a ferry-boat, which I was told carried passengers to Huelva, lying high and dry on the sands, deserted by the tide. Palos, though it has doubtless dwindled away from its former size, can never have been important as to extent and population. If it possessed warehouses on the beach, they have disappeared. It is at present a mere village of the poorest kind, and lies nearly a quarter of a mile from the river, in a hollow among hills. It contains a few hundred inhabitants, who subsist principally by labouring in the fields and vineyards. Its race of merchants and mariners are extinct. There

are no vessels belonging to the place, nor any show of traffic, excepting at the season of fruit and wine, when a few mysticks and other light barks anchor in the river to collect the produce of the neighbourhood. The people are totally ignorant, and it is probable that the greater part of them scarce know even the name of America. Such is the place from whence sallied forth the enterprise for the discovery of the western world!

We were now summoned to breakfast in a little saloon of the hacienda. The table was covered with natural luxuries produced upon the spot—fine purple and muscatel grapes from the adjacent vineyard, delicious melons from the garden, and generous wines made on the estate. The repast was heightened by the genial manners of my hospitable host, who appeared to possess the most enviable cheerfulness of spirit and simplicity of heart.

After breakfast we set off in the calesa to visit the Convent of La Rabida, which is about half a league distant. The road, for a part of the way, lay throgh the vineyards, and was deep and sandy. The calasero had been at his wit's end to conceive what motive a stranger like myself, apparently travelling for mere amusement, could have in coming so far to see so miserable a place as Palos, which he set down as one of the very poorest places in the whole world; but this additional toil and struggle through deep sand to visit the old Convent of La Rabida, completed his confusion—"Hombre!" exclaimed he, "es una ruina! no hay mas que dos frailes!"—"Zounds! why it's a ruin! there are only two friars there!" Don Juan laughed, and told him that I had come all the way from Seville precisely to see that old ruin and those two friars. The calasero made the Spaniard's last reply when he is perplexed—he shrugged his shoulders and crossed himself.

After ascending a hill and passing through the skirts of a straggling pine wood, we arrived in front of the convent. It stands in a bleak and solitary situation, on the brow of a rocky height or promontory, overlooking to the west a wide range of sea and land, bounded by the frontier mountains of Portugal, about eight leagues distant. The convent is shut out from a view of the vineyard of Palos by the gloomy forest of pines which I have mentioned, which cover the promontory to the east, and darken the whole landscape in that direction.

There is nothing remarkable in the architecture of the convent; part of it is Gothic, but the edifice having been frequently repaired, and being whitewashed, according to a universal custom in Andalusia, inherited from the Moors, it has not that venerable aspect which might be expected from its antiquity.

We alighted at the gate where Columbus, when a poor pedestrian, a stranger in the land, asked bread and water for his child! As long as the convent stands, this must be a spot calculated to awaken the most thrilling interest. The gate remains apparently in nearly the same state as at the time of his visit, but there is no longer a porter at hand to administer to the wants of the wayfarer. The door stood

wide open, and admitted us into a small court-yard. From thence we passed through a Gothic postal into the chapel without seeing a human being. We then traversed two interior cloisters equally vacant and silent, and bearing a look of neglect and dilapidation. From an open window we had a peep at what had once been a garden, but that had also gone to ruin; the walls were broken and thrown down; a few shrubs, and a scattered fig tree or two were all the traces of cultivation that remained. We passed through the long dormitories, but the cells were shut up and abandoned; we saw no living thing except a solitary cat stealing across a distant corridor, which fled in a panic at the unusual sight of strangers. At length, after patrolling nearly the whole of the empty building to the echo of our own footsteps, we came to where the door of a cell, being partly open, gave us the sight of a monk within, seated at a table writing. He rose, and received us with much civility, and conducted us to the superior, who was reading in an adjacent cell. They were both rather young men, and, together with a noviciate and a lay brother, who officiated as cook, formed the whole community of the convent.

Don Juan Fernandez communicated to them the object of my visit, and my desire also to inspect the archives of the convent, to find if there was any record of the sojourn of Columbus. They informed us that the archives had been entirely destroyed by the French. The younger monk, however, who had perused them, had a vague recollection of various particulars concerning the transactions of Columbus at Palos, his visit to the convent, and the sailing of his expedition. From all that he said, however, it appeared to me that all the information on the subject contained in the archives, had been extracted from Herrera and other well known authors. The monk was talkative and eloquent, and soon diverged from the subject of Columbus, to one which he considered of infinitely greater importance—the miraculous image of the Virgin possessed by their convent, and known by the name of "Our Lady of La Rabida." He gave us a history of the wonderful way in which the image had been found buried in the earth, where it had lain hidden for ages, since the time of the conquest of Spain by the Moors; the disputes between the convent and different places in the neighbourhood for the possession of it; the marvellous protection it extended to the adjacent country, especially in preventing all madness, either in man or dog, for this malady was anciently so prevalent in this place as to gain it the appellation of La Rabia, by which it was originally called; a name which, thanks to the beneficent influence of the Virgin, it no longer merited or retained. Such are the legends and reliques with which every convent in Spain is enriched, which are zealously cried up by the monks, and devoutly credited by the populace.

Twice a year on the festival of our Lady of La Rabida, and on that of the patron saint of the order, the solitude and silence of the convent are interrupted by the intrusion of a swarming multitude, composed of the inhabitants of Moguer, of Huelva, and the neighbouring plains and mountains. The open esplanade in front of the edifice re-

sembles a fair, the adjacent forest teems with the motley throng, and the image of our Lady of La Rabida is borne forth in triumphant procession.

While the friar was thus dilating upon the merits and renown of the image, I amused myself with those day dreams or conjurings of the imagination, to which I am a little given. As the internal arrangements of convents are apt to be the same from age to age, I pictured to myself this chamber as the same inhabited by the guardian, Juan Perez de Marchena, at the time of the visit of Columbus. Why might not the old and ponderous table before me be the very one on which he displayed his conjectural maps, and expounded his theory of a western route to India? It required but another stretch of the imagination to assemble the little conclave round the table; Juan Perez the friar, Garci Fernandez the physician, and Martin Alonzo Pinzon the bold navigator, all listening with rapt attention to Columbus, or to the tale of some old seaman of Palos, about islands seen in the western part of the ocean.

The friars, as far as their poor means and scanty knowledge extended, were disposed to do everything to promote the object of my visit. They showed us all parts of the convent, which, however, has little to boast of, excepting the historical associations connected with it. The library was reduced to a few volumes, chiefly on ecclesiastical subjects, piled promiscuously in the corner of a vaulted chamber, and covered with dust. The chamber itself was curious, being the most ancient part of the edifice, and supposed to have formed part of a temple in the time of the Romans.

We ascended to the roof of the convent to enjoy the extensive prospect it commands. Immediately below the promontory on which it is situated, runs a narrow but tolerably deep river, called the Domingo Rubio, which empties itself into the Tinto. It is the opinion of Don Luis Fernandez Pinzon, that the ships of Columbus were careened and fitted out in this river, as it affords better shelter than the Tinto, and its shores are not so shallow. A lonely bark of a fisherman was lying in this stream, and not far off, on a sandy point, were the ruins of an ancient watch-tower. From the roof of the convent, all the windings of the Odiel and the Tinto were to be seen, and their junction into the main stream by which Columbus sallied forth to sea. In fact the convent serves as a landmark, being, from its lofty and solitary situation, visible for a considerable distance to vessels coming on the coast. On the opposite side I looked down upon the lonely road, through the wood of pine trees, by which the zealous guardian of the convent, Fray Juan Perez departed at midnight on his mule when he sought the camp of Ferdinand and Isabella in the Vega of Granada, to plead the project of Columbus before the Queen.

Having finished our inspection of the convent, we prepared to depart, and were accompanied to the outward portal by the two friars. Our calasero brought his rattling and ricketty vehicle for us to mount; at sight of which one of the monks exclaimed, with a smile, "Santa

Maria! only to think! A calesa before the gate of the convent of La Rabida!" And, indeed, so solitary and remote is this ancient edifice, and so simple is the mode of living of the people in this bye-corner of Spain, that the appearance of even a sorry calesa might well cause astonishment. It is only singular that in such a bye-corner the scheme of Columbus should have found intelligent listeners and coadjutors, after it had been discarded, almost with scoffing and contempt, from learned universities and splendid courts.

On our way back to the hacienda, we met Don Rafael, a younger son of Don Juan Fernandez, a fine young man, about twenty-one years of age, and who, his father informed me, was at present studying French and mathematics. He was well mounted on a spirited grey horse, and dressed in the Andalusian style, with the little round hat and jacket. He sat his horse gracefully, and managed him well. I was pleased with the frank and easy terms on which Don Juan appeared to live with his children. This I was inclined to think his favourite son, as I understood he was the only one that partook of the old gentleman's fondness for the chase, and that accompanied him in his hunting excursions.

A dinner had been prepared for us at the hacienda, by the wife of the capitaz, or overseer, who, with her husband, seemed to be well pleased with this visit from Don Juan, and to be confident of receiving a pleasant answer from the good-humoured old gentleman whenever they addressed him. The dinner was served up about two o'clock, and was a most agreeable meal. The fruits and wines were from the estate, and were excellent; the rest of the provisions were from Moguer, for the adjacent village of Palos is too poor to furnish any thing. A gentle breeze from the sea played through the hall, and tempered the summer heat. Indeed I do not know when I have seen a more enviable spot than this country retreat of the Pinzons. Its situation on a breezy hill, at no great distance from the sea, and in a southern climate, produces a happy temperature, neither hot in summer nor cold in winter. It commands a beautiful prospect, and is surrounded by natural luxuries. The country abounds with game, the adjacent river affords abundant sport in fishing, both by day and night, and delightful excursions for those fond of sailing. During the busy seasons of rural life, and especially at the joyous period of vintage, the family pass some time here, accompanied by numerous guests, at which times, Don Juan assured me, there was no lack of amusements, both by land and water.

When we had dined, and taken the siesta, or afternoon nap, according to the Spanish custom in summer time, we set out on our return to Moguer, visiting the village of Palos in the way. Don Rafael had been sent in advance to procure the keys of the village church, and to apprise the curate of our wish to inspect the archives. The village consists principally of two streets of low whitewashed houses. Many of the inhabitants have very dark complexions, betraying a mixture of African blood.

On entering the village, we repaired to the lowly mansion of the curate. I had hoped to find him some such personage as the curate in Don Quixote, possessed of shrewdness and information in his limited sphere, and that I might gain some anecdotes from him concerning his parish, its worthies, its antiquities, and its historical events. Perhaps I might have done so at any other time, but, unfortunately, the curate was something of a sportsman, and had heard of some game among the neighbouring hills. We met him just sallying forth from his house, and, I must confess, his appearance was picturesque. He was a short, broad, sturdy, little man, and had doffed his cassock and broad clerical beaver, for a short jacket and a little round Andalusian hat; he had his gun in hand, and was on the point of mounting a donkey which had been led forth by an ancient withered handmaid. Fearful of being detained from his foray, he accosted my companion the moment he came in sight. "God preserve you, Senor Don Juan! I have received your message, and have but one answer to make. The archives have all been destroyed. We have no trace of any thing you seek for—nothing—nothing. Don Rafael has the keys of the church. You can examine it at your leisure—Adios, caballero!" With these words the galliard little curate mounted his donkey, thumped his ribs with the butt end of his gun, and trotted off to the hills.

In our way to the church we passed by the ruins of what had once been a fair and spacious dwelling, greatly superior to the other houses of the village. This, Don Juan informed me was an old family possession, but since they had removed from Palos it had fallen to decay for want of a tenant. It was probably the family residence of Martin Alonzo or Vicente Yanez Pinzon, in the time of Columbus.

We now arrived at the Church of St. George, in the porch of which Columbus first proclaimed to the inhabitants of Palos the order of the sovereigns, that they should furnish him with ships for his great voyage of discovery. This edifice has lately been thoroughly repaired, and, being of solid mason work, promises to stand for ages, a monument of the discoverers. It stands outside of the village, on the brow of a hill, looking along a little valley toward the river. The remains of a Moorish arch prove it to have been a mosque in former times; just above it, on the crest of the hill, is the ruin of a Moorish castle.

I paused in the porch, and endeavoured to recall the interesting scene that had taken place there, when Columbus, accompanied by the zealous friar Juan Perez, caused the public notary to read the royal order in presence of the astonished alcaldes, regidors, and alguazils; but it is difficult to conceive the consternation that must have been struck into so remote a little community, by this sudden apparition of an entire stranger among them, bearing a command that they should put their persons and ships at his disposal, and sail with him away into the unknown wilderness of the ocean.

The interior of the church has nothing remarkable, excepting a wooden image of St. George vanquishing the Dragon, which is erected

over the high altar, and is the admiration of the good people of Palos, who bear it about the streets in grand procession on the anniversary of the saint. This group existed in the time of Columbus, and now flourishes in renovated youth and splendour, having been newly painted and gilded, and the countenance of the saint rendered peculiarly blooming and lustrous.

Having finished the examination of the church, we resumed our seats in the calesa and returned to Moguer. One thing only remained to fulfil the object of my pilgrimage. This was to visit the chapel of the Convent of Santa Clara. When Columbus was in danger of being lost in a tempest on his way home from his great voyage of discovery, he made a vow, that, should he be spared, he would watch and pray one whole night in this chapel; a vow which he doubtless fulfilled immediately after his arrival.

My kind and attentive friend, Don Juan, conducted me to the convent. It is the wealthiest in Moguer, and belongs to a sisterhood of Franciscan nuns. The chapel is large, and ornamented with some degree of richness, particularly the part about the high altar, which is embellished by magnificent monuments of the brave family of the Puerto Carreros, the ancient lords of Moguer, and renowned in Moorish warfare. The alabaster effigies of distinguished warriors of that house, and of their wives and sisters, lie side by side, with folded hands, on tombs immediately before the altar, while others recline in deep niches on either side. The night had closed in by the time I entered the church, which made the scene more impressive. A few votive lamps shed a dim light about the interior; their beams were feebly reflected by the gilded work of the high altar, and the frames of the surrounding paintings, and rested upon the marble figures of the warriors and dames lying in the monumental repose of ages. The solemn pile must have presented much the same appearance when the pious discoverer perfomed his vigil, kneeling before this very altar, and praying and watching throughout the night, and pouring forth heartfelt praises for having been spared to accomplish his sublime discovery.

I had now completed the main purpose of my journey, having visited the various places connected with the story of Columbus. It was highly gratifying to find some of them so little changed though so great a space of time had intervened; but in this quiet nook of Spain, so far removed from the main thoroughfares, the lapse of time produces but few violent revolutions. Nothing, however, had surprised and gratified me more than the continued stability of the Pinzon family. On the morning after my excursion to Palos, chance gave me an opportunity of seeing something of the interior of most of their households. Having a curiosity to visit the remains of a Moorish castle, once the citadel of Moguer, Don Fernandez undertook to show me a tower which served as a magazine of wine to one of the Pinzon Family. In seeking for the key we were sent from house to house of nearly the whole connection. All appeared to be living in that golden

mean equally removed from the wants and superfluities of life, and all to be happily interwoven by kind and cordial habits of intimacy. We found the females of the family generally seated in the patios, or central courts of their dwellings, beneath the shade of awnings and among shrubs and flowers. Here the Andalusian ladies are accustomed to pass their mornings at work, surrounded by their handmaids, in the primitive, or rather, oriental style. In the porches of some of the houses I observed the coat of arms granted to the family by Charles V. hung up like a picture in a frame. Over the door of Don Luis, the naval officer, it was carved on an escutcheon of stone, and coloured. I had gathered many particulars of the family also from conversation with Don Juan, and from the family legend lent me by Don Luis. From all that I could learn, it would appear that the lapse of nearly three centuries and a half has made but little change in the condition of the Pinzons. From generation to generation they have retained the same fair standing and reputable name throughout the neighbourhood, filling offices of public trust and dignity, and possessing great influence over their fellow citizens by their good sense and good conduct. How rare is it to see such an instance of stability of fortune in this fluctuating world, and how truly honourable is this hereditary respectability, which has been secured by no titles or entails, but perpetuated merely by the innate worth of the race! I declare to you that the most illustrious descents of mere titled rank could never command the sincere respect and cordial regard with which I contemplated this staunch and enduring family, which for three centuries and a half has stood merely upon its virtues.

As I was to set off on my return to Seville before two o'clock, I partook of a farewell repast at the house of Don Juan, between twelve and one, and then took leave of his household with sincere regret. The good old gentleman, with the courtesy, or rather the cordiality of a true Spaniard, accompanied me to the posada, to see me off. I had dispensed but little money in the posada—thanks to the hospitality of the Pinzons—yet the Spanish pride of my host and hostess seemed pleased that I had preferred their humble chamber, and the scanty bed they had provided me, to the spacious mansion of Don Juan; and when I expressed my thanks for their kindness and attention, and regaled mine host with a few choice cigars, the heart of the poor man was overcome. He seized me by both hands and gave me a parting benediction, and then ran after the calasero, to enjoin him to take particular care of me during my journey.

Taking a hearty leave of my excellent friend Don Juan, who had been unremitting in his attentions to me to the last moment, I now set off on my wayfaring, gratified to the utmost with my visit, and full of kind and grateful feelings towards Moguer and its hospitable inhabitants.

The Suez Canal—*and its Effects on Commerce.*

Aperire terram gentibus,—"To open the land to the people,"—is the motto of the scholar and the traveller, the soldier and the sailor, the colonist and the merchant; illustrious or obscure this is the maxim of all, and every day the ancient barriers which shut up many fair portions of our globe, give way before our enterprise and perseverance.

Some little time ago I quoted, at the commencement of one of my works, the sublime motto of Alexander, and devoted some sentences to a commentary on it, firmly convinced of this great principle, that the riches and civilization of the world are in direct accordance with the respective mutual relations of its people. Thus man by himself is rude, the inhabitants of confined cities are little more than barbarous; while those of empires are civilized. Europe has only become great since the rest of the world has been open to her resources. Europe inherited by Rome from time immemorial became one day the imitator of her glory and her wisdom; like a phœnix she rose from her ashes, and was born anew. The intellect of man then became free, was made common to all by the press; the routes to America and India were then discovered by Columbus and by that great captain for whom Camoens speaks:

"Sou da forte Europa bellicosa
Busco as terras do India tão famosa."

Former ages had beheld no such revolution; but since its accomplishment Europe, accelerating her progress until then imperceptible, has advanced with a still increasing rapidity, the law of which may almost be compared with that of falling bodies. Thus steam and electricity have rendered us masters of distance and time, and by means of railroads the continent is again becoming a frequented district of the globe.

On reflection, however, it is perceived that the traveller alone can follow these costly paths, and that commerce, in general restrained by economy, will require always thousands of vessels on the ocean, and is satisfied with the gratuitous impetus afforded by the winds.

To cut through the isthmus of Suez, or Panama, would be to open shorter and less dangerous routes for the navigator, to reduce the expense of trade, and to extend commerce by facilitating it;—to increase the welfare and riches of all, to bring nations together, and thus to contribute the greatness of one to the civilization of another. Such is one of the undertakings reserved for the second half of this century, already so remarkable:—an era which this great work alone would render celebrated.

Of the two projected canals, that of America and that of Suez, the importance is very different. The canal of Suez would unite India and Europe. It would re-establish the commerce and prosperity, the peace and advancement of Europe, Asia, and even Africa;—in a word, of the whole of this hemisphere, the continental superficies of which,

compared with that of the opposite, being in the proportion of 23 to 11. To Mr. Ferdinand de Lesseps was reserved the honour of attaching his name to this great enterprise, authorized and patronized by the viceroy of Egypt, Mohammed Said. Happy in being able to praise one of the chief men of Egypt with regard to this new triumph of civilization, I rejoice still more in being able to devote a few lines to the consideration of the questions presented by the opening of a channel between the two seas.

If we compare the mean distances between the ports of Europe and India, by the Cape of Good Hope on the hand, and by the intended channel between the two seas on the other, we shall find an enormous difference in favour of this latter route. This difference will be still greater if we remember that a straight line on the chart in navigation is far from being the shortest distances from one port to another, and the seaman can only reach the point for which he is steering by following a certain number of successive courses approaching as near as possible the arc of a great circle. Thus, far from making directly for the Cape of Good Hope, vessels leaving Europe or the Atlantic ports of North America, en route for India, must steer for the Canaries or Azores, in order to find the trade winds of the northern hemisphere, to make the coast of Brazil and sight Cape Frio, or put into harbour at Rio Janeiro. This is generally the route for the Cape of Good Hope, more justly perhaps called the Cape of Storms. They then cross the Agulhas Bank, reach Bourbon or Mauritius, and from thence steer for India, following the routes allowed by the monsoons. Vessels in the Mediterranean again have to contend with still greater disadvantages. It often takes them fifteen days to reach the straights of Gibraltar, westerly winds generally prevailing in this quarter, where we also find a rapid flow of the ocean waters into the Mediterranean. Thus the voyages to India take at least five months or five months and a half; the voyages home being rather more direct without being sensibly shorter. Ships can then run nearer to the African shore, by reason of the trade winds of the southern hemisphere; the place of call in this case being St. Helena.

I have myself taken both these routes about ten years since. If we now examine the facilities for navigation in the three seas near the canal of Suez, namely, the Mediterranean, the Red Sea, and the gulf of Oman, we find,—

That in the Mediterranean the winds blow from the North during the greater part of the year, change to S.E. in the spring, and return to the North, passing by the West and N.W.

That nearly the same takes place in the Red Sea, where the North, which is the prevailing wind, heaps the waters in the direction of Babel Mandeb, so that during a calm we observe a current setting Northward, evidently arising from the elevated waters in the South endeavouring to recover their level. Southerly winds generally succeed a calm.

The gulf of Oman has two monsoons, the N.E. monsoon, which generally continues during the winter, and the S.W. monsoon, which

lasts during the summer, and is frequently stormy; the change from one monsoon to the other is there, as elsewhere, accompanied by a series of storms and gales.

It appears to me from the foregoing, that it would be advantageous for vessels to proceed to India (by the canal) during the autumn, and to return by it in the spring.

The considerable reduction of the distance of European ports from those of India, would not be the only advantage to trade from adopting the canal between the two seas; for not only would vessels reach their point of destination much sooner, but they would find places of anchorage throughout the entire route, and also, what is of more importance still, they would meet with good markets. The navigator, after having followed the usual easy routes of the Mediterranean, would dispose of part of his cargo in the canal of Suez or at Djedda, would purchase ivory at Massarva, Souaken, or Berbera, which he would exchange in India for opium, to take to China in exchange for silk and tea. He would complete his home cargo in colonial merchandize from Manila, the isles of Sunda, and Ceylon, in cotton of India or Egypt, in coffee of Abyssinia or Yemen, the gum of Soudan or Hedjaz, the corn of lower Egypt, or rice of Damietta; and these numerous operations, which now require years, would be accomplished rapidly and without danger, with small capital and small vessels. In short, by reducing the time necessary for the operations of commerce, we reduce the general expense. We make a greater number of these changes feasible in a given time, and facilitate them to small traders, who are by far the most numerous. By affording an easier and surer route to navigation we find it may be accomplished by vessels of small tonnage, provided with bills of exchange; in short, it opens the route to India to coasting vessels, and renders commerce and navigation general. Turkey, Russia, Austria, Italy, and southern Spain, might then fit out vessels for India, and these powers would find their maritime resources increase in immense proportion. Marseilles would become more important, and the ports on the ocean, Cadiz, Lisbon, Havre, Rotterdam, Hamburg, would increase their shipping, like England suddenly brought near its powerful colony, like Spain and Holland with respect to Manila and Batavia; in short, the increase of trade competition on the one hand, and the vast diminution of expense on the other, would doubtless tend to lessen the rates of exchange. The produce of Asia would abound in our markets; the Asiatic markets would, in their turn, be rich in ours; and the general good would be the necessary result.

Considering the advantages arising from the opening of the Suez canal, the different countries brought into connection by the means of it, might be divided into six classes, three on the East and three on the West side of it.

In the West:—

1st.—The conntries bordering the Mediterranean.

2nd.—The Atlantic countries of Europe.

3rd.—The Atlantic states of North America.

In the East:—

1st.—The countries bordering the Red Sea.

2nd.—Those countries bordered by the Indian Ocean.

3rd.—Eastern Asia and the isles of the ocean.

It is evident that the ports on the Mediterranean and the Red Sea, are those which would profit most by the opening of the canal.

That Atlantic Europe and Southern Asia, namely, Maskate, Bassora, the whole of India, the Burman empire, as well as Eastern Africa, namely, Zanzibar, Mozambique, and Madagascar, have a great interest in seeing the canal of Suez opened. In fact, that part of North America bordering on the Atlantic and the Gulf of Mexico on the one hand, Cochin China, China, Japan, the Molucca and Sunda Islands, Australia, and New Zealand on the other, would come under the third class. It would be very advantageous to take the canal in the passage from New York, for example, to Canton or Batavia.

All nations would take advantage of the importance of trade with India, China, and the islands of the ocean. Trade with the Red Sea, although less considerable, deserves attention; but as there is scarcely any carried on at present, it is very little known; and could only acquire importance by the opening of a canal between the two seas. The Red Sea, which is so near to us in a straight line, becomes far distant when we have to double the Cape. Babel Mandeb is as far from us as Pondicherry, and Souaken as far as Batavia; Suez, further still, by this route, becomes as near as Beyrout by the canal; in short, the two routes measured from the straits of Gibraltar to Souaken, are in the proportion of one to five.

Very few European vessels are now met with in the Red Sea; every year we see a few belonging to the Parsees of Bombay, and manned by Lascars; the internal trade of this sea is now carried on by Arabian barks, called *dows* or *boutres*, constructed at Suez, Djedda, Kosseir, Souaken, or Mocha, with wood from India or Singapore. These vessels are of very small tonnage, are very sharp, and have a handsome sheer; a heavy poop, which hinders their working, and lowers it at the stern; they carry one mast, rigging a square sail; this sail and its yard are struck to the foot of the mast when they lay to; about thirty men are required to hoist it again, and this operation cannot be performed in less than half an hour; the tacking of these ships is as difficult as it is dangerous. The *dows* only sail in the day time; they get under way about seven o'clock in the morning, sail till about four in sight of the coast, then anchor by a grappling iron, or run aground on the sand.

When they have to cross the Red Sea, the Arabs take the precaution of sailing from a port to windward of the one they are steering for, on the opposite coast; this voyage occupies sixty hours, and is always a time of great anxiety to the masters of these vessels. These masters, called *nakhouda*, (from a Persian word,) pretend to take observations with astrolabes of great antiquity, although this pretension does not appear to me to be proved. I must add, that we rarely find a compass on board these *dows;* the classic compass of the Arabs only

consists of a needle, more or less magnetic, resting on a cork, which floats in some water, and hence we need not be astonished that one fifth of the daos are lost every year.

The sailing of the dows is by no means good. I have myself passed forty-five days in two of these vessels: namely, fifteen days in going from Souaken to Djedda, (about sixty nautical leagues,) and thirty days in going from Djedda to Kosseir (scarcely one hundred and thirty nautical leagues). It is true that the wind was against us, and half of this time was employed in beating to windward, sometimes still less. There is a great difference between these dows and our vessels: thus we may suppose that the introduction of European vessels into the Red Sea by the canal of Suez would cause a complete revolution even in the internal commerce of this sea.

The ports of the Red Sea would carry on commerce in coffee, gum, ivory, and such produce as senna, wax, ostrich feathers, &c., which I quote from memory. At Djedda they would take away a cargo of gum; at Souaken gum and ivory; at Mocha coffee; at Massawa, as well as Tadjuira, Zeyla, Berbera, situated in the gulf of Aden, gum, ivory, and coffee.

If there is not now a considerable trade in the gum, coffee, and ivory of the Red Sea, it must be attributed to the distance that separates us from the Red Sea by the Cape of Good Hope. The great powers whose vessels double the Cape, namely, Great Britain, France, Spain, and Holland, have colonies elsewhere, and do not require to supply themselves from this coast, at least with regard to coffee; but if the canal of Suez were opened, Greece, Turkey, Russia, Austria, and Italy, who have no colonies to supply them, would derive a great advantage, in getting coffee from the Red Sea. Of all countries producing coffee Abyssinia would be the nearest to the Mediterranean, Europe, and particularly to its two eastern peninsulas, Greece and Italy, and the two seas bordering Russia and Austria. The Lesser Antilles are nearly as far from the strait of Gibraltar as from Abyssinia; the Greater Antilles are more distant, as well as Brazil; as for Ceylon and the islands of Sunda, they can only be reached by the Red Sea. The cultivation of sugar also appears throughout most of the colonies to be more and more substituted for that of coffee, less perhaps on account of the privileges granted by some of the states to colonial sugars, than by reason of the enormous increase in the consumption of sugar and alcohols, an increase which is caused by the extension of the metropolitan sugar trade.

Abyssinia, the port of which is Massawa, (a Turkish possession,) might furnish a coffee of a superior quality at a reasonable price, and in great abundance. This coffee, which is little known in Europe, is sold there by the name of Mocha coffee; the port of Mocha, indeed, is scarcely ever visited by European vessels, the coffee being much dearer there than at Masswa. It is true this is of rather a finer quality; Turkey, Egypt, and even Venice, consume it in small quantities. Capt. Jehenne, known as the author of some good hydrographical works, visited the ports of the Red Sea and the gulf of Aden about

twelve years since. M. Pervillé, a distinguished botanist attached to this expedition, published an interesting account of the productions of Yemen, and particularly that of coffee. (This account was inserted in the *Annales Maritimes.)* A few Europeans already resort to Abyssinia, and we have reason to hope that the opening of a canal between the two seas would draw a greater number from this part, and we should find extensive plantations formed there under the protection of the European powers, with the consent of the local authorities, on a fertile soil, the working of which would cost but little, and the produce of which would be very extensive.

Abyssinia, inhabited by a Christian population, would receive emigrants from Europe; she would thus acquire a taste for our produce, the investment of which would possess a certain importance in this part, especially with regard to fabrics, arms, and ammunition, hardware and glass-ware, employed in trade in the interior; I think that an inferior quality of brandy would also find a ready sale in this country.

Every year European vessels would transport a considerable number of pilgrims from Massawa to Jaffa, on their way to Jerusalem. The Abyssinian devotee of the present day braves the greatest danger and undergoes the utmost fatigue to visit the tomb of our Saviour. His pride and fanaticism suffer greatly on board the vessels of the Red Sea, manned by Mussulmen, and the journey from Suez to Jerusalem through the Mussulman countries. This pilgrimage, little frequented at present, would increase considerably if favoured by European vessels, and I even think that it would be advantageous for a company to bring steamers into the Red Sea, which would transport Christian pilgrims to Jerusalem during one part of the year, and Mussulman from Medina and Mecca during the other.

The Mussulman pilgrims might be taken from Constantinople, Smyrna, Beyrout, Tangier, Algiers, Tunis, and Cairo, Yembo, and Djedda. The pilgrims from the Mediterranean amount to at least 30,000 or 40,000 a year; we may calculate that the caravans of Damas and Cairo would contain together about 5000, and the vessels of Suez and Kosseir would transport at a reduced rate an equal number, the remainder would take their passage on board the European vessels, and go by way of the canal between the two seas.

Massawa now consumes but little European produce: and Souaken never receives anything from Europe except ammunition for trading, hardware, English cotton stuffs, and Austrian glass-ware, for exchange on the White River.

Medina, the port of which is Yembo, Djedda, and especially Mecca, are large cities, where we find more refinement and luxury than in most Mussulman towns. The strangers, who resort thither from all parts of the world at the time of pilgrimage, circulate a great deal money. These cities are, however, situated in the centre of an arid country, and are deprived of all industry; and are obliged at these times to obtain their articles of consumption elsewhere. Corn is

sent from Egypt by Suez and Kosseir. A great portion of this corn would pass by the Suez canal. European or Turkish fabrics are also sent, and these would hereafter follow by the canal. This merchandise consists of cottons, linens, silks, ready-made clothing, guns and muskets, of Austrian make, hardware, pottery, oil, potted butter, wax candles, sugar from Egypt, soap from Syria, brandy from Chio or Egypt. In the holy cities there is an immense consumption of this last article. I may here observe, that the people of Medina and Mecca are sadly irreligious, although they live by religion.

The towns in Hedjaz also consume a great quantity of Indian produce.

I have mentioned Souaken as being able to furnish gum and ivory. This port already sends a certain quantity to Djedda, where the merchandise receives its ultimate destination; gum and ivory are sent to Souaken from Kartoum and the Egyptian Soudan. I will now make a few observations on Soudan, and the Egyptian Soudan in particular.

The name of Soudan (Nigritia) is given by the Arabs to a region of Africa South of the 16½° N. latitude, extending from Senegal to Abyssinia, and being larger on the South than on the North side of the equator. The North and South limits of this region are marked by the rains, which fall from May to October in that part of the Soudan situated North of the equator; and from November to May in the other hemisphere. These rains never reach beyond 16½° N. lat.; North of this parallel those arid deserts commence,—the desert of Sahara and the Lybian desert, which, near the Mediterranean, bound those barbarous kingdoms subject to the winter rains, and are intersected on the East by the fertilising course of the Nile.

The Soudan is inhabited between the 16½° and the 10° of North latitude, by bigoted Mussulmans; and South of the 10th parallel by black idolaters, who are often reduced to slavery by the former. Black Arabs inhabit the Northern countries of the Soudan; we find them from all parts from Souaken to Senegal. The same division of climate is found in Arabia as in Africa, so that this peninsula, which is either arid and barren, or covered with poor pasture as far as the 16½°, receives abundant rains and becomes covered with a rich vegetation South of this parallel, namely, in Yemen or Arabia Felix.

The rains of the Soudan feed thousands of streams, and give rise to large rivers, lakes, and marshes, which, like the rivers, are subject to annual overflows. The moist ground, under the influence of a burning sun, becomes covered with a rich vegetation. The scattered and barbarous population cultivate only a portion of it. Immense forests are found in some parts, composed in a great measure of gum trees, amidst which elephants abound.

The trade of the Soudan is now chiefly carried on in gum and ivory; we may also add from memory, senna, ostrich feathers, hippopotamus' teeth, wax, &c. These articles are now brought to Senegal and to all the West coast of Africa, to Zanzibar and some parts of the East coast of Africa. They are brought by the Africans to Mogador

and Tripoli from Barbary; by the Africans and Europeans to Alexandria; they are obtained second hand by the English, Austrians, and Italians.

I have elsewhere shown that the price of these articles was very high at Senegal, on the Gambia, at the Mozambique, and Zanzibar, as well as on the shore of the Mediterranean and at Mogador, where the expense of conveyance by caravan forms another addition to their original price. I also showed, at the same time, that these articles were sold at the lowest possible price in the Egyptian Soudan. The Eastern part of the Soudan, which I visited a few years since, has become very accessible to Europeans. This region was conquered in 1821 by an Egyptian army, commanded by Mohammed Bey Defterdar; it comprises the provinces of Dongolah, Cordofan, Kartoum, Sennar, Fazogl, and Faka: we may also add a new province forming the basin of the Upper Nile.

The Egyptian Soudan is governed by a férik pasha, (a brigade general,) sent from Cairo with the title of Nokmader, (governor,) who resides at Kartoum, and by inspectors or moudhirs, one for each province.

Souaken is no longer dependent on Egypt: this port has been ceded to the Sultan, and forms part of the pachalic of Djedda.

Previous to 1850, the trade of Soudan was monopolized by the Egyptian government, a monopoly founded on the principle that the gratuitous gifts of nature belong to the sovereign; gum and senna not requiring cultivation, were therefore considered similar to the produce of quarries and mines. Since 1850 this trade has become free, and the European merchants, who for a long time only obtained it by smuggling, have been able to extend their operations.

The gum of Cordofan and Sennar is most sought after; that of Cordofan is the finest which we know of; it is found in pieces, the size of one's hand, perfectly clear; the gum of Hedjaz and Senegal is of an inferior quality. During my stay in Cordofan 100 lbs. of gum cost from 27 to 32 Egyptian piasters; it was put into skins sewn together, which were charged at three piasters the hundred weight.

Cordofan has exported nearly 36,000 cwt. in one year; it would supply a hundred times as much if the demand were a hundred times greater, only a small portion of the gum produced being now collected. The greater part of the gum collected at Cairo, is sent to Trieste through Alexandria.

Cordofan and Sennar supply ivory for trading; it is, however, a little further Southward, towards 10°, that elephants are found in great numbers. These animals frequent the vicinity of streams; they live singly or in families during the dry season, and unite in numerous troops, under the guidance of an old male elephant, called by the Arabs khabir, (guide,) during the rainy or winter season.

The people of the Upper Nile can only hunt the elephant during the winter; indeed, hunting it as they do with guns, they can only attack it when alone. The merchants established in Soudan now obtain ivory on the White River; some of these hunt, provided with

good carbines, the great length of their weapons allowing them to hunt even during the winter, when they unite in herds.

Since the travels performed by M. Arnaud and Selim Effendi Bembachi, the White River has been more frequented by the vessels of Khartoum, and although the sources of this river have not yet been discovered, the study of its hydropraphy has made great progress; we have already sailed up the Nile to the 2° N. lat.; it was there that the missionary Angelo Vinco died, two years ago, a martyr both to religion and science.

We are not limited to the study of the river itself, its streams have been partly explored, and new ones discovered, which will be explored in their turn; the Saubat and Keilak (Bahar-egh-ghzal-Misselad) have been known for some years. Three other streams—the Gnok, the Miedjok, and a river not yet named—have been recently discovered on the right bank of the river, a little above the Saubat (perhaps they may be regarded as the three branches of one river). Lastly, on the left bank, above the Keilak, M. Vayssière has recently discovered a considerable stream, called in the country Niebohr, which comes from the South, and enters the Nile by four mouths between the parallels of 7° and 8° N. latitude.

The Saubat, the Niebohr, and especially the Keilak, which receives on its right bank the Kouan or Apabou, are great water courses; the Gnok and Miedjok are navigable for the barks of the natives for some distance from their mouths. All these rivers flowing through a country little cultivated cover immense space when they overflow, while during the dry season they run slowly from the smaller streams through the marshes which they have produced.

Some commercial routes refer the basin of the Nile to more distant countries, such as the route mentioned by M. Vayssière leading from the mouths of the Niebohr to Djoukor in the country of Korek; the population of which appears to be Mussulman, belonging in all probability to Darfour.

The basin of the White Nile forms the largest market for ivory open to commerce throughout the whole of Africa; no region of the idolatrous Soudan is so approachable to Europeans as this. In other parts the merchant is obliged to supply himself second-hand, or else encounter considerable danger and fatigue in exporting the ivory into the interior; thus this lucrative trade is principally given up to the natives. The Europeans of Khartoum enjoy favours and privileges which they do not obtain elsewhere. The people inhabiting the shores of the White River have either already become subject to Egypt or have seen its standard raised. Naturally timid, they respect the Europeans as they do the Egyptians; free from fanaticism, they feel no hatred against them, and if misunderstandings, which are to be lamented, (one of which has cost the life of Vaudey,) have taken place, we must not seek to find their cause in faults committed by merchants, and in the deplorable spirit of rivalry which animates them; the imprudence of the one and the weakness of the other, and the disorder and confusion resulting from them, will terminate in their loss if we do not

find some remedy. It is partly the agents of the European powers in Egypt and partly the government of this country whom we expect to take suitable measures with regard to this.

I think myself that the wisest method would be to give up the exclusive privilege of the White River to a company, admitting those merchants now established at Khartoum, and to confide the care of superintending the operations of the company to a European delegate, with authority to exclude merchants who had just complaints brought against them.

The Viceroy of Egypt, as the legitimate master of the Upper Nile, and acting in place of the sovereign might erect fortified posts at the principal sources of the White River; in each of which might be placed about fifty black soldiers, under the orders of a Captain. These posts might be connected by armed barks, each manned by twenty men, with orders to guard the borders of the river and to protect the vessels of the company.

Within and near the external enclosure of each fortified post the company trading with the natives might establish a counting house and warehouse; a clerk residing there whose business would be to exchange with the natives and receive and store the ivory, which the crafts of Khartoum would take away every year.

The caravans from Darfour take from 1,000 to 1,500 cwt. of ivory every year to Siout. If the port of Souaken were rendered more accessible to European vessels by the opening of a canal between the two seas, this ivory would probably pass through Cordofan and Khartoum, and be taken on board ship at Souaken; the freight would be much less and this route would also be much preferred by pilgrims going to Mecca instead of the one now taken.

The caravan from Siout has of course been stopped by the abolition of the slave trade in the states of Mohammed Said. This caravan transported from 1,000 to 1,500 slaves every year, who were sold at a much higher rate at Siout than in Cordofan. The caravans from Darfour went by way of the desert as far as Siout; they might have ended their journey at Dongolah, on the Nile, but the merchants found they could sell their exhausted camels at greater advantage at Siout, as they did not require so many of these animals on their homeward journey; besides, the Sultan of Darfour, fearing an Egyptian invasion, took care to keep the route from his frontiers to Dongolah closed. This route, like those of the desert, is determined by the positions of wells. The Egyptians, who are unacquainted with these wells and who cannot, in all probability, find guides on whom they might depend, dare not attempt it. Darfour has less to fear with regard to an invasion from Cordofan.

I have shown elsewhere (see *Le Desert et le Soudan*, book v., chap. iii, the routes taken in trading) the route uniting Caubé, the capital of Darfour, with Lobeidh, capital of Cordofan. This route is traversed by caravans in fifteen days. Freights are taken at 75 or 80 Egyptian piasters the rahal or camel load (5 cwt.)

The transport of goods from Lobeidh to Cairo costs 150 piasters

the camel load, and, with the necessary stoppages, occupies two months, namely,

	Piasters per Rahal.	*Days.*
Labeidh to Debbé	80	15 to 18
Debbé to Dongolah, by bark	3 to 4	3
Dongolah to Wadi Nalfa, by caravan, the conveyance being rather dangerous in this part of the Nile	50	12
Wadi Nalfa to Asouan, by bark	5 to 6	8
Release of the camels in order to avoid the cataracts	3	½
Asouan to Cairo, by bark	10 to 12	15 to 20
Total	146 to 150	53½ to 61½

The transport of the same merchandise from Lobeidh to Souaken only costs at most 128 piasters per rahal, and only occupies from thirty to thirty-five days, namely,

	Piasters per Rahal.	*Days.*
Lobeidh to Khartoum	50 to 60	10
Khartoum to Berber, by bark	4 to 8	8 to 10
Berber to Souaken	60	12
Total	114 to 128	30 to 32

Thus the merchant who, instead of taking his gum to Cairo, transports it to Souaken, would economise greatly, and during the latter part of the dry season, the period when the gum is collected, he would be able to make two voyages for gum instead of one.

From Khartoum to Cairo there are two routes, namely,

First.	*Piasters per Rahal.*	*Days.*
Khartoum to Debbé	50 to 60	12
Debbé to Cairo	66 to 70	38½ to 43½

Second.	*Piasters per Rahal.*	*Days.*
Khartoum to Berber	4 to 8	8 to 10
Berber to Korosko, by caravan	160 to 180	15 to 20
Korosko to Asouan, by bark	3 to 4	3
Release of the camels in order to avoid cataracts	3	½
Asouan to Cairo, by bark	10 to 12	15 to 20
Total	180 to 207	41½ to 53½

The first route, for different reasons, is seldom followed.

From Khartoum to Souaken, however, the carriage of a rahal only costs from 64 to 68 piasters, and the voyage occupies twenty or twenty-two days.

From this it appears to me that if the canal between the two seas were open to navigation the whole trade of the Egyptian Soudan would pass through Souaken, and the greater part of this trade would pass through the canal.

I think I have shown that the canal between the two seas would open important markets in the Red Sea to European commerce, and render us masters of the interior of this sea. Thus Europe would behold her commerce and power increase, while countries and people long forgotten would see the barrier melt away which has so long separated them from us.

We have only considered, and that very slightly, the smallest portion of this vast revolution. What would be the result if we were to examine all its consequences? When the canal between the two seas is opened, we may with truth say of Europe

> "All thine shall be the subject main,
> And every shore it circles thine."

Or, again, with the Portuguese poet who was one of the first to sail to India, "The whole of the ocean shall be subject to Europe,"

> "Ser lhe na todo o oceano obediente."

And "The Europeans soon becoming masters of the world, will diffuse better laws,"

> "E por elles em fim de todo senhores
> Serao dadas na terra leis melhores."

Cairo, February 28th, 1855.

THE COMPASS CONQUERED!

Rock Ferry, 21st June, 1856.

Sir,—My allusion, in your last number of the Nautical, to the electric agencies which constitute, in an iron ship, a species of evervarying galvanic arrangement, together with the remark that we must look to the chemist for aid in seeking a remedy for compass vacillations, has doubtless raised in the minds of many of your readers suspicions as to the capability of such remedies (if found) being available by men who are not, as a body, specially prepared either by education or abundant leisure for delicate scientific manipulation. I beg to acquaint you, that experiments, since my last letter, leave no doubt on my mind of the possibility of so nearly insulating a ship's compass, as to render any amount of local attraction imperceptible on the compass card.

From the few words I addressed you, (marked "confidential,") hinting vaguely at the means employed, you will not, I am sure, accuse me of speculative puerility in my belief in this insulation; and as I before promised I shall be happy in a future number of this Magazine to lay before the public the nature of my recent experiments, with

their results, in order that abler hands may pursue the all-important subject with better facilities, if such be desirable; but I must record a belief, that the delicacy and cost of an instrument, which would be necessary to render a compass-needle self-correcting (as I was about to propose,) and the increased scientific attainment which seamen would require to render its use infallibly effective, would rather be altering the nature of existing difficulties than evading them. I speak thus candidly and without hesitation from the only hope to render, in my humble way, some permanent help to the compass question. We have, as an illustration, the Dipping Needle, an instrument of such capabilities and so useful, when it can be used, that no one would dispute its value, in such case, to a commander of a ship; but, unfortunately, here again its delicacy is such that on ship board it is a failure. Precisely so, I fear, would be my expected Insulator, and from like cause. But, sir, I should not have felt justified in raising hopes of effective remedy if I had not had a second string to my bow: like second thoughts second strings often do the most work, and I trust to show that in this case failure with the first establishes, by this very failure, the importance of its successor.

So much of late years has been said and written on the Mariner's Compass, that many are bewildered and disheartened; and it is evident that this feeling would be increased were I to stop here (if it be possible that my very feeble attempts could have much influence). It is, however, highly pleasant to be able to offer at once to your nautical readers something more substantial than a description of a cruise in the wake of an ignis fatuus,—assuming and declaring (fortunately for my credit sake, that on very near approach it bore no resemblance to any of the wildgoose species,—as I am prepared in due time to show. On concluding the above chace, I found leisure to breathe and survey more clearly, from the higher land which I had ascended, the exact present position of what is so widely known as the Compass Question: and in this letter, after briefly showing what it really is, I would define what we really want; and propose what I declare to be a thorough and perfect remedy.

1st.—This really is the compass question :—

Captains of iron ships and of many steamers complain that they cannot depend on their compasses. These compasses, before the ship sails, undergo the best correction that the present state of science, and in the hands, too, of competent men, can devise. Boards and committees of distinguished men are selected and formed, private subscriptions, assisted by the Board of Trade, provide the means, and the energy and direct interest of even the Compass Committee themselves are, together with those of the whole naval and mercantile world, involved in the search of further help. As a proof of the intensity of their zeal, costly fittings are adopted, whereby to lesson, if possible, the evils of local attraction, and, it cannot be denied, that very often these evils are greatly diminished; but there is so little chance of permanence in the efficacy of any present mode of correction, that a venerable and most experienced gentleman (all honour to him!) has

even gone to the antipodes in an iron steamer in order to make further research! And this principally because it is often found, to the dismay of the mariner, that local changes in a ship's position, such as change of hemisphere, immensely affect, even to annihilation, the most careful corrections made at a distance.

The last phase which the compass question has undergone, does infinite credit not only to the promptitude but to the judgment of the Liverpool Committee: they have adopted the valuable suggestion of Sir John Ross, made several years since, and afterwards by Mr. Burdwood, R.N., in 1846, in the pages of your Magazine, and as recommended in principle by my unworthy self in my published address to the Liverpool shipowners in 1852. They have caused to be painted within these few days, in large and conspicuous figures, on the walls of the Liverpool Docks, the compass bearings, in degrees, of a tall prominent chimney, as coinciding with these points, thus enabling a vessel, when at anchor, or as she leaves the Mersey, to correct her compasses by mere comparison with these marks. It is admirably done, and worthy of imitation at other ports, and I hope soon to hear of its adoption at all the principal headlands in the British dominions. But imagine the whole coast of Europe, Asia, Africa, America, and Australia, to be painted thus! Would this prove a perfect remedy? Certainly not, far from it! As an instance,—a few days since, in speaking to a captain of an iron steamer just arrived from foreign service, who appeared still weary and hoarse from two or three nights' exposure on deck, and in only moderate but thickish weather in the channel, his reply to my friendly question, "But could you not get at least some rest on these occasions?" was simply this,—"Yes, but I am always afraid to trust my compasses, and we could not see the land."

Now, sir, devoted as your Magazine has always been to the best interests of naval and mercantile captains and officers, surely I may be borne with while remarking on this state of things. Why, the hard earned reputation of a captain of forty years' experience, who never before damaged a sheet of copper from touching *terra firma*, hangs by a thread, because he can depend so little on his compass! The office of commander of a merchant vessel, is one of immense responsibility, care, and peculiar hardship. I should be ashamed to draw such a conclusion from the circumstance of two or three nights' exposure. Nor would they sanction its mention:—it is their avocation, their lot! and for ages endurance has been the proverbial character of British Seamen, nor have, as all the world know, either sailors or soldiers degenerated. But is it not adding needlessly to the cares of a most honourable and distinguished class of our fellow men, when we permit the slightest hope of amelioration of those evils which press on them through the compass question to go unheeded? For it must be borne in mind, that since the supervision of the Board of Trade adds to the security of commerce, it is at the cost of great personal privation, and increase of danger to the reputations of merchant captains,—through the errors which affect the best regulated compass. Where

no indication on land, like those on the Mersey, are visible, I would ask,

Secondly,—What we really want?

A sailor only wants to know what course to steer by his ship's compass to bring him by the shortest route to his destination. But in the absence of all honest guides, (as his compass deceives him,) it appears to me that at sea, in order to render the compass reliable, there can be but two kinds of remedy or correction: the one would be a perfect or sufficiently approximate insulation of the compass-needle from all but terrestrial magnetism; (and this I have now no hope of ever seeing;) the other would be by instrumental correction. As regards the latter, my object is not to deny any man's attempt, much less would I wish to disparage such corrections as, in the absence of better, have been sanctioned by so high an authority as the Astronomer Royal; but it appears that all corrections by instrument or apparatus may be separated into two classes; namely, the one dependent on magnetism or some modification of it; (but which Compass Committees pronounce to be inadequate;) the other depending on the help of the quadrant or sextant, as used with the heavenly bodies. And here again we are met with hitherto insurmountable difficulties in actual practice. What we really want, then, is (no matter from what source) to be able readily to ascertain the true direction of the cardinal points of the compass; and by a method which requires little or no calculation, available at most times of the day or night, either at sea or near a coast, a method clear and positively efficacious, always to be confidently relied upon. In considering, therefore,

Thirdly,—A thorough and perfect remedy,

I beg leave respectfully to acquaint you, that after much labour I have succeeded in producing an infallible correction of the following general nature; namely, I thus publicly undertake to suspend, in a captain's state room, or to attach to his timepiece, a very sightable and in many of its other applications a highly useful and instructive instrument, (very cheap, even to a few shillings, or expensive, according to the will and means of the possessor,) which will, without reference to books, (or more knowledge than the captain of a ship carries in his head at present,) and by means of a slight mechanical movement, aided by a second act equally simple, which will, I say, give such captain *his true compass error*. He may keep this instrument in his writing-desk, or even in his waistcoat pocket. I speak deliberately when I assure you that it is so ridiculously simple, (alas! *parturiunt montes nascetur ridiculus mus,)* so perfectly unpretending is this instrument, that sailors, with all their professional gravity, must laugh at it;—I only hope it may not from its simplicity be underrated. In itself, as an arrangement, it is so comprehensible, that any master of a vessel of common intelligence, will on once seeing it used clearly comprehend it. I furthermore see no reason why the compass error should not henceforth be entered in the log every watch when practicable.

In apologising for a somewhat enigmatical and apparently selfish style of introduction, I beg to explain that, apart from pecuniary con-

siderations, but from strong advice, I wish to preserve entire control over the manufacture, as great accuracy is required in the construction, although it is not easily damaged or broken when once made; but a full description shall, as soon as possible, if permitted, be given to the public through your Magazine, with many thanks for your condescension in allowing me thus far to trouble your valuable pages.

I have, &c.

S. M. Saxby.

To the Editor of the *Nautical Magazine*.

Memoir of Rear-Admiral Philip Parker King, F.R.S., F.R.A.S., F.L.S., &c., &c., &c.

The life of a public man is to be sought in the history of his public acts; and the character of the lamented subject of this memoir, from an early age, secures the strong interest which arises from high accomplishments and intellectual vigour.

His childhood was spent at Norfolk Island, the place of his birth; his boyhood passed until fourteen years of age, at Sydney, when he entered the Royal Navy, in which he continued actively employed for twenty-three years—seven being spent in the survey of the coasts of Australasia—his mature life connecting itself by many incidents of peculiar interest with the annals of this colony. It is too evident that the excitement which the sudden death of this distinguished officer has created amongst those who have been in constant intercourse with him for years, can scarcely allow the formation of a calm estimate of the nature and extent of his reputation while living, and the probability of its permanently surviving him.

The career afloat, on active service, of the deceased officer, is so faithfully given in O'Byrne's *Naval Biography*, that we have only to supply a few preliminary notes to the subjoined extract from that valuable work, before we proceed to refer to those proceedings of colonial interest in which he took a prominent part since his return to, and settlement in, his native home.

The subject of this memoir was born on the 13th December, 1793, at Norfolk Island, the settlement of which had been effected by his father, Capt. P. G. King, in his capacity of Lieutenant of the frigate *Sirius*, the flag-ship of the "first fleet" under Governor Phillip. The great ability and tact displayed by Capt. King at Norfolk Island, when various unforeseen disasters threatened the perishing by famine of all its inhabitants, secured for him the appointment to the administration of the Government of New South Wales, when Governor Hunter departed for England in September, 1800. His administration lasted for six years, and it demanded all his energy and ancient tact to combat with the manifold difficulties of those troublous times. The only serious outbreak of the convict population since the settlement of the colony took place under his rule. It was termed the "Irish Rebellion." Some hundreds of convicts confined at a penal establishment at Castle Hill, near Sydney, attempted by force to regain their liberty; but, being armed only with pikes, were, after a very brief contest, retaken by the military at Vinegar Hill, on the Windsor-road, about twenty-seven miles from Sydney. Some were shot by the troops, the ringleaders were hanged immediately, and the rest implored mercy and were sent back to Castle Hill. This was not the

only painful incident during Governor King's rule. He had many factious opponents amongst his subordinate officers and the free settlers, in adverting to which Mr. R. Montgomery Martin relates the following anecdote:—

"The Governor preferred charges against an influential gentleman in the colony, and despatches were prepared for being forwarded to the Secretary of State in England. The officer who was to have charge of the despatches imprudently mentioned the circumstance; but when he arrived in Downing Street the box, on being opened before the Secretary for the Colonies, was found to contain only a bundle of newspapers, the ireful despatches having been adroitly picked from the box in Sydney."

It may be well imagined that a youth of fourteen, ardent in the pursuit of knowledge and ambitious to embrace the profession of his father, was but too happy to leave these miserable scenes of convictism on the one hand, and of petty yet malicious faction on the other, and to find himself on board H.M.S. *Diana*, in the capacity of first-class volunteer, with the *prestige* of the name for which his father's career had secured every deserved honour. From the biographical work already referred to we now proceed to extract the most prominent particulars of the naval services of him whose death we record:—

"Philip Parker King entered the Navy in November, 1807, as a first-class volunteer on board the *Diana*, frigate, Capt. Charles Grant, whose First-Lieutenant, the late Capt. R. H. Barclay, he well supported in an attack made by the ship's boats in 1808 upon a French convoy passing between Nantes and Rochefort. On the night of the 2nd December, 1809, he was again noticed for his gallantry in the boats under Lieut. Daniel Miller at the cutting-out of three schuyts moored to the shore of Odenskirk, and provided with heavy ordnance. On the 18th May he obtained the rank of Midshipman, and in 1810 he proceeded as Master's Mate of the *Hibernia*, 110, Capt. John Chambers White, to the Mediterranean, where he followed the latter officer with the *Centaur*, 74; and in August, 1811, joined the *Cumberland*, 74, Captains Robert Walter Otway and Thomas Barker. Towards the close of the same year he was received on board the *Adamant*, 50, flag-ship at Leith, of Admiral William Albany Otway. After he had again served for eighteen months with Capt. Grant, in the *Armada*, 74, on the Mediterranean station, he was thence, in January, 1814, transferred to the *Caledonia*, 120, flag-ship of Sir Edward Pellew, through whom he was promoted, 28th February following, to a Lieutenancy in the *Trident*, 64, guard-ship at Malta, bearing the flag of Rear-Admiral Langhorne. He next, from July, 1814, until July, 1815, served on board the *Elizabeth*, 74, Capt. Edward Leveson Gower, flag-ship, part of the time, of Rear-Admiral Charles Elphinstone Fleming, at Gibraltar, and in February, 1817, he was entrusted with the conduct of an expedition having for its object a survey of the coasts of Australia, a service on which he continued employed in the *Mermaid*, cutter, and *Bathurst*, sloop (to the command whereof he was promoted by commission dated 17th July, 1821,) until his return to England in 1823. The results of the undertaking are contained in a narrative of the survey of the inter-tropical and western coasts of Australia and in an Atlas, both compiled by Capt. King and published, the former by Murray, and the latter by the Hydrographical Office, at the Admiralty. In September, 1825, from the feeling of confidence with which he had impressed the Admiralty, in the discharge of his late duties, he was appointed to the *Adventure*, sloop, and ordered to survey the southern coast of America, from the entrance of the Rio Plata round to Chiloe, and of Tierra del Fuego. He was paid off on his arrival in England, 16th November, 1830, and has not since been employed. His Post-commission bears date, 25th February, 1830.

"In 1832, Capt. King published, as the partial fruit of his recent voyage, a volume entitled *Sailing Directions to the Coasts of Eastern and Western*

Patagonia, including the Straits of Magalhaen and the Sea Coast of Tierra del Fuego. Besides being a F.R.S. and a F.L.S., Capt. King is a Member of the Royal Asiatic Society of London and a Corresponding Member of the Zoological Society."

It was, we believe, about the year 1831 that Capt. King returned to New South Wales with the purpose of settling here. Every honour was paid to one who had achieved in various of the highest scientifical departments that success which his fellow-countryman, William Charles Wentworth, was then striving to obtain, and has since so brilliantly realized, in the difficult field of political and economical science.

Immediately after the publication of his sailing directions to the coasts of Eastern and Western Patagonia, we find Capt. King devoting the leisure he could command from the rural pursuits in which he engaged, to assist in examining every questionable point, and recording every useful fact in respect to the navigation of the coast line of Australasia. The passage within the reefs, or inner route, through Torres Straits had been one to which he had devoted unceasing care; and in a Calendar and Directory published under the conduct of the late Mr. Raymond, then Postmaster-General, Capt. King published, in 1833, his description of the coast, and in 1834 his directions for the inner passage through these, then supposed, dangerous Straits. From that period until the latest moment that his impaired health would permit him to take part in any correspondence which might arise on the subject of this navigation, he readily gave his valuable advice, founded upon his personal knowledge of the practicabilities of the Straits. From among the many instances we might mention of his anxious and continued observation in regard to this important point, we will select one of the latest.

In February, 1852, Capt. Snow, of the barque *Caldew*, performed a most difficult but successful voyage between Torres Straits and Sydney, compelled as he was by stress of weather to attempt the passage through Torres Straits to the westward, a passage up to that time but seldom attempted. His narrative of the voyage was published in these columns upon his arrival in Sydney, and Capt. King immediately expressed the interest with which he had read it, and having highly complimented Capt. Snow upon his seamanlike conduct in extricating his ship from the dangerous situation in which she had been placed, requested him to give in detail the full particulars of the ship's course in passing through the Straits. This request was complied with, and, after an able description of the voyage in the manner suggested by Capt. King, the gratified commander of the *Caldew* thus expressed his grateful sense of the manner in which so eminent an authority had suggested to him the best mode of apprising shipmasters of all nations of certain most important features in the navigation of the Straits:—

"I must repeat the expression of my satisfaction at finding that my account of my recent passage through these groups of islands, reefs, and sandbanks has attracted the attention of the distinguished navigator by whose admirable surveys an almost perfect knowledge not only of their dangers but also of the facilities which their passage offers to our rapidly increasing commerce with the regions of the East, has been imparted to seamen of all nations."

We must now retrace our steps to the year 1839, when Capt. King succeeded Col. Dumaresque as Chief Commissioner of the Australian Agricutural Company. In this responsible post he continued until 1849, when, differing from the London Board of Directors in respect to certain land schemes which he conceived they desired to carry out in the absence of local knowledge, he embarked for England, and after friendly conferences with the Board, whom, however, he failed to convince of what he conscientiously deemed to be an error, he resigned his appointment and returned to Sydney, continuing to maintain the most friendly relations with the company.

It will be remembered that in the Sessions of Council, 1846 and 1847, the subject of the monopoly granted to the Australian Agricultural Company on their first undertaking to work the coal mines at Newcastle was brought before the Legislature by Mr. P. Grant. In the latter session a select committee was appointed to inquire into the nature of the agreement made by the British Government with the Company; but, pending the investigation, Sir Charles Fitz Roy apprised the Council that he had been informed by the Commissioner for managing the affairs of the Company in New South Wales, that an arrangement had been made by the Court of Directors with her Majesty's Principal Secretary of State for the Colonies, by which all existing privileges, both on the part of the Company and the Government, were to be given up, and without entailing any charge upon the Colonial Funds.

To Capt. King must be mainly ascribed the exercise of this tact in mediating successfully in this long and vexed point of dispute between the local legislature, the home authorities, and the company.

We now turn to an important question, in which Capt. King took, from the first, a decided and independent position.

In the early part of 1847, a correspondence took place between Mr. Joseph Hume and Mr. Mark Boyd, in London, and Mr. Benjamin Boyd, in Sydney, on the subject of the total abolition of the Imperial Navigation Laws. Mr. Hume strongly recommended that the complaints of the colonists, in respect to the injurious working of those laws, should be embodied in petitions to Parliament; and his advice, as soon as received in Sydney, was acted upon. At that time, the anomalous provisions and mischievous workings of the Imperial Act, (5 Wm. IV., c. 51,) which professed to regulate the practice and the fees in the Vice Admiralty Courts abroad, and to obviate doubts as to their jurisdiction, were loudly inveighed against by our leading merchants and shipowners. Mr. S. A. Donaldson and Mr. Lamb had taken the initiative, and their exertions to fully expose the iniquitous practices permitted under the sanction of the said Act, were zealously supported by the chief legal practitioners in Sydney.

It was determined that the questions of the total repeal of the Navigation Laws, and the careful revision of the Act under which the jurisdiction of the Vice Admiralty Courts in New South Wales were established, should be embodied in one petition to the House of Commons.

The petition in this shape was signed by the Speaker and every elective member of the Legislative Council then in Sydney, and by the majority of the non-official nominee members; by nearly every merchant, shipowner, and trader of the port. But one name was prominent amongst all these, and that was Capt. King's. From the first initiation of the movement, he took the most active part in its success; and in letters to influential friends in England, he strongly urged the expediency and justice of complying with the prayer of the petitioners, and to assent to the total repeal, revision, or modification of the then existing Navigation and Admiralty Laws. Upon presenting this petition to the Commons, Mr. Hume drew attention to the circumstance of its bearing the signature of Capt. King; and its favourable reception and results are now matters of history.

Capt. King, soon after the arrival of Sir Charles Fitz Roy, was appointed a non elective member of the Legislative Council. At the general election of 1851, he was invited to stand as a candidate for the electoral district of Gloucester and Macquarie, and was returned by a large majority. His career in Council (impeded as it too frequently was by his declining health) was one marked by an earnest desire to advance with zeal and fidelity the best interests of those whom he represented. A devoted supporter of the great cause of education, his best energies were directed to its advancement. He had for some time filled the office of Chairman of the Denominational Board of Di-

rectors: and was a member of the select committee of the Legislative Council appointed on the 12th of July, 1854, to consider and report upon the general subject of establishing a Nautical School in the port of Sydney. In respect to this object, he had expressed his intention to address the public meeting held yesterday, to adopt measures for the formation of such a school in accordance with the recommendations of the Legislature. This, however, was not to be. The gallant officer, whose promotion to the rank of Rear-Admiral was so recently notified to him, dined on Monday evening on board H.M.S. *Juno*. He left early in the evening, and on landing on the North Shore proceeded to his residence, Grantham, St. Leonard's. He had reached the gate, when his falling to the ground was heard by one of his servants, who found him lying under the influence of an apoplectic stroke. His medical attendants were immediately in attendance, but every effort to restore him were unavailing, and he expired at half-past two o'clock on Tuesday morning. Thus has suddenly passed from us one of the most distinguished of Australia's sons; the first who rose to the high rank of Admiral in the Royal Navy of Great Britain.—*Sydney Morning Herald.*

Nautical Notices.

South American Coast—*Pacific—Bay of Caldera—Caution.*

Sunderland, June 6th.

Dear Sir,—I always read with great pleasure any nautical notice or directions in your work, feeling assured that they come from those who have been on the spot, which makes me act with greater confidence than I would do if I read the same from a directory. The directories say little or nothing about the entering of the bay of Caldera, and hearing many masters speak of the difficulty they had to make it out, I made a few remarks when at that port. I send them to you, hoping they may be of benefit to those who may have to discharge or load in it.

When coming from the South sail past the Morro Point at the distance of about four miles; this is a fine land-mark, and may be easily known by its bluff appearance and the three white patches on its side. When bound to Caldera, after passing do not be afraid to go well in, for a stranger will think there is no bay. At a short distance from the shore to the Southward Caldera looks like a ridge of rocks extending from the line of coast. From the point to the other side of the bay, it is about three miles. At Point Caldera there is a remarkable white rock and three small rocks above water at a cable's length from shore. Keep the shore on board at about two and a half cables' length, it being the weather shore, for ships often get to leeward of the town, and give themselves trouble to kedge up to it.

In the South-West corner of the bay, after rounding Point Caldera or first point, the vessels will show at Mr. Allison's copper-works, at the bottom of the bay. After rounding Point Caleta or second point, you will open out the town. In a line from second point you will have from 20 to 25 fathoms; as you proceed the soundings decrease very regularly to 10, 9, 8, 7, 6, and then to 3 fathoms. A small hill on the port shore on entering is worth mentioning; the top is black rock, and the sides are covered with sand two thirds up it,

and it has two little hillocks. On either side Caldera is a fine safe bay, which seldom feels a Norther, and this a good thing, as ships all crowd outside the mole into 4 or 3 fathoms, to forward loading. There is a fine mole or pier about 300 feet long, built out into the sea; it has a tram-road for bringing down the ores and taking away the coals from the ships; four ships can lay at a time, two on each side, but the West side is the best. The end of the mole is in 5 fathoms, and ships of 1000 tons are quite safe, but they must pay strict attention to fenders, or they will get their copper torn by the numerous spike-nails which project from the piles.

The prevailing wind is from the South, and blows hard sometimes after noon, and then dies out with the sun. This causes a strong surf at Calderilla or, as the directory says, the landing-place. I attempted to land several times at this place, but could not; and in November, 1854, ships at Mr. Allison's works were stopped discharging for a month, on account of the surf, occasioned by the Southerly wind. Some moved up the mole to discharge, where the landing-place is excellent. In the mornings light airs from North, then calms, till about 2h. p.m., when it comes from the S.W. till about 4h., when it generally veers to South and blows stiff till sunset.

I wish to caution masters against taking the spring water, if it can be avoided by saving their English or Valparaiso, as I have found the ill effects of it on our home passage; it contains a vast quantity of saltpetre, which brings on scurvy. They now condense the sea water, which is very dear, being sold at a penny per gallon.

There is a very fine Admiralty chart of Caldera, but how few masters even at the present day know of such a thing as an Admiralty chart,—read *Nautical Magazine* for July, 1840, page 502.

Yours truly

A WEST COAST TRADER.

To the Editor of the *Nautical Magazine*.

GROVE ROCKS, PACIFIC OCEAN.—*New Dangers.*

Captain Grove, of the barque *Live Yankee*, at San Francisco from Hong Kong, reports, April 2nd, lat. 31° 58′ N., long. 149° 45′ E., saw a cluster of rocks, the highest of which was about forty feet. They are not laid down on any chart. Saw another island; the North end of which was in lat. 32° 29′ N., long. 130° 49′ E., and the South end in lat. 32° 9′, long. 139° 18′ E., also not mentioned in any chart. At the same time saw South Island."

We find the foregoing in the *Shipping and Mercantile Gazette* of the 14th June, and but for information preserved in these pages in 1852 should have been deceived by it. The cluster of rocks (which we have called the Grove Rocks) appear to be new, but not so the island of which the lat. and long. of the two ends are above given, and from which it would appear that the island is above thirty miles long. In our volume for 1852, however, the account of the barque *Walter* saves us from this conclusion, inasmuch as that the South-West lat. and long. given as the other end of the island is really the position of this vessel at noon of the 18th August, 1852 (see p. 689). We therefore consider the North-East position as that of the island as it is confirmed by the *Walter's* distance of it from her, after running East twenty-six miles (although the position in lat. given by her of it is ten miles too far North to coincide with that distance). The new island (which might be named Walter Island) may

be about ten miles S.W. of Zuyder or South Island. It appears to belong to a submarine ridge extending from Cape King, the South-Eastern part of Niphon, to the southward towards the Bonin Islands—a part which should be navigated with great caution.

AUSTRALIA.

LIGHTHOUSE ON TROUBRIDGE SHOALS.—*Gulf St. Vincent.*

Trinity House, Port Adelaide, South Australia,
17th December, 1855.

A bright flashing light, eighty feet above high water mark, visible from the deck of a moderate-sized vessel at a distance of sixteen miles, will be exhibited on and after the evening of the 1st of February, 1856.

The lighthouse is composed of iron, painted stone colour, and is placed on the centre of the Troubridge Island, in lat. 35° 10′ S., long. 137° 50′ 15″ E., var. 5° E. High water, F. and C. 3h. 30m; the flood sets E.N.E., and then N.N.E. into the Gulf.

Vessels bound through Investigator Straits into the Gulf St. Vincent should make the light bearing N.E.½ N. by compass, and steer N.E.b.E.½ E. to pass it at a distance of seven miles; having brought it to bear W.b.N.½ N. about eight miles, a course of N.E.b.N. may be kept for the light-ship off Port Adelaide, which bears N E.½ E., 36½ miles from the centre of the island. Vessels from the westward and southward should not approach the light within a less distance than four miles, where they will find soundings of fourteen fathoms.

The flood tide, during westerly gales and at the springs, runs with considerable velocity—setting rather on the Shoal until the Gulf is open.

Vessels bound down the Gulf from the Port, meeting with westerly gales, will find excellent anchorage under the lee of Troubridge Island, with the light bearing S.W., distant 1½ miles, in 8 fathoms, on a clear sandy bottom.

B. DOUGLAS, Master Trinity House.

NEW BOOKS.

NARRATIVE OF AN EXPLORING VOYAGE UP THE RIVERS KWORA AND BINUE, (*commonly known as the Niger and Tchadda,*) *in* 1854, *&c., &c.—By W. B. Baikie, M.D., R.N.. &c., &c., and in command of the Expedition.* Murray, London.

Mr. M'Gregor Laird is a good friend of Africa. By establishing the monthly mail and its attendant trade he has secured for his name a place high in the list of her benefactors; and he sealed his claim to the gratitude of her people when, with his own experience of the navigation of her rivers, he facilitated the extension of geographical discovery by lending to it the wings of commerce. The discovery of the Tchadda, (the narrative of which is before us,) is the first result of this creditable proceeding. By these means some three hundred miles of river navigation, extending East from the Quorra into the heart of Africa, have been opened to mercantile enterprise, under the skilful management of Dr. Baikie, a Surgeon of the Royal Navy. We have thus on both sides the Atlantic presented to us instances of more than medical

skill in this branch of naval officers. If Dr. Kane has proved himself the successful guide of American enterprise in the Arctic Seas, Dr. Baikie has been no less happy in directing the energies of British seamen in the waters of Africa, and both have thus acquired imperishable honour.

Dr. Baikie left Plymouth in May, 1854, for the scenes of his exertions, by the *Forerunner*, one of Mr. Laird's packets; and on arriving at Fernando Po, where he was to embark in the *Pleiad*, found that the intelligence he had received of the death of Mr. Beecroft, was too true. This gentleman was to have commanded the expedition, and hence one reason of that command having accidentally fallen into the hands of Dr. Baikie. An enterprising young officer, Mr. D. J. May, volunteered to accompany the expedition there from H.M.S. *Crane*, and Dr. Baikie says, he finds in him "a most willing and able coadjutor," and gladly avails himself of the opportunity of "publicly thanking him for the great assistance he rendered." This addition to the personelle of the *Pleiad*, (the vessel prepared for the expedition by Mr. Laird,) had scarcely been settled, and preparations busily going forward, when she arrived, and on the 8th of July the expedition left Fernando Po for the Quorra. It was the 12th before the bar of the Nun was successfully crossed, and from the light of the blazing sun on the coast, the scene was soon changed for the monotonous channels of the delta of the river. "Nothing could be more gloomy (says Dr. Baikie) than these dreary streams, enclosed between lines of sombre mangroves, forty, fifty, or even sixty feet in height. The only thing left to our sight, was a narrow strip of sky overhead. No dry land was visible, not a canoe, nor a native, was encountered, and the only sign of life was when here and there a solitary kingfisher, startled by such an unwonted appearance, fled lazily from its retreat, but ere a gun could be pointed at, again disappeared amid the dark green foliage."

To a sailor, who, while on his own element, has ever before him the boundless horizon and the uninterrupted light of the glorious sun, this purblind kind of navigation is anything but cheering to the spirits. It did not, however, last long, thanks to the powers of steam, for in a day or two the *Pleiad* had cleared it, and was forcing her way against the stream, provided against accident with leads constantly going, and the most vigilant look out for shoals. Thus, "the pilot sits right in the bows, directing the man at the helm by his hand. One leadsman was stationed in the forechains, and another, the most important one, in the dingy, which was slung under the bowsprit. Mangroves were becoming scarce, palms increasing in number and in size, and though no huts were seen, still in recent clearances along the banks were little plantations of bananas and plantains." The vessel in fact was clearing the dismal swamps and emerging into the light of day and a habitable country. "Every one was in high spirits (says Dr. Baikie) at our progress, little dreaming that a sudden check was in store for us. About eleven o'clock a small islet appeared in mid-channel right a-head of us. The pilot wished to pass to the Westward; but before the master could make up his mind which course to follow, the *Pleiad* was allowed to run right stem on." What could have entitled the master to have considered himself a pilot for the Niger, which perhaps he never saw before, it would be hard to say: but it was clear that such a master was better out of the vessel than in her, and happily his secession from the charge of the *Pleiad* placed all responsibility in the hands of Dr. Baikie, from which time things went on well.

Thus Abo or Eboe, as Lander called it, was passed, and all the known places of the river recognized as far as the junction of the Tchadda, where, excepting a few miles upwards from it, the expedition entered on new ground, and fairly began the duties of exploration.

Most perseveringly were they followed. The duties of the navigator, the geographer, the naturalist, and the historian providing ample employment for

its intelligent leader, who thus relates the effect of one of the first villages they met with. "The situation of Idda is very pleasing, and to our eyes, accustomed as they then were to the low grounds and swampy flats of the lower parts of the stream, was especially reviving. Placed on an eminence overlooking the river, the huts interspersed with lofty trees with finely tinted foliage, and with high land for the back ground, the view was as charming as it was novel and romantic. After inhaling the pestilential miasma of the delta, denied the free enjoyment of the air of heaven by lofty frowning mangroves, and being unable to gaze on any objects but the sky above, the river beneath, and an unbroken line of trees along the banks, all thoughts of sickness or of weariness at once vanished on trending these commanding heights, glancing at the rocky cliffs beneath, and freely breathing the invigorating atmosphere." This was certainly a change for the better, but even this in Africa was not without its alloy. Thus Dr. Baikie soon finds that compared with mosquitoes "sandflies are, perhaps, still even more troublesome pests; minute in the extreme, they almost defy detection, and pass exultingly through the finest gauze; yet, confiding in their number, which is legion, they prove a most pitiless and most unwearying foe. But of all entomological curses, I do not know one which equals a swarm of ordinary flies. Commencing with early dawn, they pursue, surround, and torment you in the most indefatigable manner. They fly into your ears, they crawl over your face, creep up your nose; and if you happen to yawn, you discover that even your mouth is not sacred. They seem, too, to be omniverous, and to have the good taste to try whatever is selected as food for man. Hot or cold, raw or cooked, solid or fluid, sweet or sour, are equally the same, and in the excess of their *sociality*, they often insist upon sharing the very mouthful you are engaged on or drinking from the glass already at your lips. In the whole range of the insect world Moses could not have called forth a species more calculated to worry, to tease, to torment, or really to plague, than that ubiquitous form which we meet with in Refuge Islands."

All this was trying enough, but it was highly satisfactory and must have afforded sufficient recompense for so much endurance, to find the "white man" so heartily welcomed as were those of the *Pleiad*. But there is one portion of Dr. Baikie's duties which seems to have exposed him more than necessary to some of these African plagues, along with the inconvenience of landing on sand-banks or sandy islands to get an astronomical observation,—as his mercury or fluid horizon was useless on board. Thus, about the 11th of August we find him saying, "Polaris was visible for the first time, but unfortunately no landing-place was near," and therefore the observations were lost; and again, after landing, the meridian altitude of the moon was lost, because it was too great to be measured in the artificial horizon. Here is another instance of a landing being effected and with miserable result enough, who, for instance would not have been glad to be saved this treat which the travellers had? "At night Mr. May and I had to land for our observations on a small sand-bank, on which a crocodile also attempted to gain a footing, but was scared by the light of our bull's eye lantern; unpleasant as its company would have been, it could not have proved more annoying, nor could he have left so many marks behind him, as did the myriads of sandflies which drove us, bleeding and nearly vanquished away," p. 90; and again in the next page we read, "Our observations next morning were taken on a little isolated patch of sand, so soft that it would hardly bear the weight of the artificial horizon." How many more were lost from the same causes might have been about as many as were obtained under the inconvenience of landing on a sandy islet at the expense of wet feet, attacks of sandflies, and such uncomfortable exposure, where every possible comfort should be secured to the voyager.

Now we have no hesitation in saying, that all this inconvenience might in

all these cases have been avoided. Many years ago in this journal we described an horizon on the pendulum principle with which astronomical observations have been easily obtained on board; and thus all the trouble, the exposure, the difficulty of landing for them might have been entirely avoided by simply dropping a kedge under foot, and keeping the vessel at anchor while they were being made, and even this might be unnecessary In a river of all places, at anchor especially, there cannot be the smallest difficulty, by night or by day, in using this instrument, even fixed on its own stand, where a vessel is lying quiet in the placid waters of the stream. We have just published such observations, made by others besides ourselves, and only in our April number recorded two observations for the latitude by the altitude of the moon at night, which agreed within a mile. Such an observation can be made as well on an African river as in a vessel in the mouth of the Thames, or in Harwich Harbour, by those who are willing to make them. But in the name of science let those who are not, pursue the old routine, and take their usual course; land and wet their feet, and risk what they like to the inconvenience of all concerned; the dearer and the more difficult the observation is to be obtained, doubtless the more will it be prized, that is, if it be not lost from causes so easily avoided, notwithstanding some people "have a keen eye towards the useful, whether in commerce, in the arts, or in agriculture."

It is highly creditable to Dr. Baikie who had now taken charge of the vessel to have overcome the difficulties of navigation in the off-hand manner in which he has done in the River Tsádda. He quietly says, "Numerous shoals and sand-banks rendered our navigation somewhat intricate; one moment we might be proceeding nearly at full speed along one, carrying four fathoms, and a few minutes afterwards slowly groping our way along the opposite shore, the leadsman heaving incessantly, and singing out 'quarter less two,' or 'half one.'" The vessel was familiar with the bed of the river, and to get aground was merely to get off again and go ahead the right way. But the want of fuel, not the difficulties of the navigation, seems to have been their greatest obstacle, and was picked up as it could be found. Thus, "A small dry tree having been discovered along the shore, the Krumen were dispatched with their hatchets to demolish it; but from the rise of the river and the bank being flooded they had to stand up to their wastes in water to accomplish it. Evidently a sudden rise had lately taken place. Large masses of grass, almost forming small floating islands, were continually passing us, and great quantities got athwart our hawser or foul of the boat alongside. Happening to look a little attentively at one of these heaps, it was discovered to team with animal life, whereupon they were all closely examined, and yielded a most abundant zoological harvest. Lizards, snakes, frogs, and insects, formed the staple, but other occasional denizens from time to time turned up; even mammals were not unrepresented, for I captured a curious shrew mouse, evidently out of its element. Beetles, locusts, and grasshoppers boarded us in vast numbers, but were quickly made prisoners and transferred to my collection: two fine chameleons were detected in the very act of creeping in through a hawshole, seized, tried, and condemned; and a large toad which had contrived to perch itself, puffing and panting, on the top of a fan, only escaped my fatal grasp by diving headlong into the rushing tide. So substantial was this grassy drift across the bows of our iron canoe, that I could stand on it, though up to my ankles in water, bottle in hand, consigning such living things as had escaped the deluge to the world of spirits."

The above is a fair specimen of Dr. Baikie's book,—the matter and the manner in which it is given. The harvest in geography was no less excellent than in natural history, although obtained under difficulties, many of which we have observed might have been avoided. But our space bids us reserve our further extracts for another number.

THE LANDFALL OF COLUMBUS ON HIS FIRST VOYAGE TO AMERICA—*With a Translation of the Baron Bonnefoux's History of his previous Life; also, a Chart showing his track from the Landfall to Cuba, and an Outline of his subsequent Voyages. By A. B. Becher, Captain, R.N., F.R.A.S, &c.* Potter, London.

We shall give here a brief general view of the contents of this little volume. As its title implies, to show the Landfall of Columbus is its real object,—that *vexata questio* in maritime geography, that problem which has remained in its natal obscurity for three and a half centuries. The Author introduces the subject to his readers with an account of the life of the great Admiral previous to his voyage across the Atlantic from the pen of a French naval officer of distinction, the Baron Bonnefoux, who has drawn up a very interesting narrative of the principal events which befel him, and the difficulties he encountered by land and sea,—the various scenes through which he passed till at length Isabella, the excellent and magnanimous Queen of Castile, adopts his cause, and sends him on his voyage. This forms about a third of the narrative. The memorable voyage from Spain to Cuba forms another third of the story, in which part the errors of history are pointed out with the first island which he saw and landed on. The words of Columbus in reference to this very intricate question are thrown together, having been selected from amongst a mass of irrelevant matter in his letters as published by Navarrete, and show the progress of the Admiral from one island to another until he reaches Cuba;—the directions of the islands from each other as he visits them, and the courses and distances given by him being found to agree well with the chart, and thus the landfall and the track to Cuba showing the several islands which were visited by him are all for the first time well established.

The concluding portion contains his exploration of Cuba and St. Domingo, with the loss of his ship, along with the return voyage to Spain, and is followed by an appendix, which goes largely into many of the questions which occur in the voyage. And the part describing the Landfall is illustrated by a chart showing the track. The appendix also contains a brief summary of the subsequent voyages, concluding with the death of the Admiral. As the only true and faithful account of the progress of the Admiral from his Landfall to Cuba, this little volume is likely to become one of standard reference.

ARCTIC.

TESTIMONIAL TO SIR ROBERT M'CLURE.

An elegant and costly testimonial has just been presented to Captain Sir Robert M'Clure, late of H.M. discovery ship *Investigator*, by a number of officers of the Royal Navy, several of them among the most distinguished in their profession, in admiration of his intrepidity and perseverance in penetrating through the Polar Ocean in search of Sir John Franklin, which, as is well known, led to the solution of an important geographical problem in the discovery of the North-West Passage, and has rendered his name illustrious in the naval annals of the British empire. The testimonial consists of a winged figure of Fame standing on tiptoe on the part of a globe representing the Polar Seas, and in the act of blowing a trumpet. It is exquisitely carved in frosted silver, and stands on an ebony pedestal, which bears an appropriate inscription commemorating the services of this gallant Arctic navigator, and the motives in which the testimonial originated.

Captain Sir James C. Ross was delegated by the subscribers to present the

testimonial, and he did so in a letter, in which he felicitously expressed their and his own admiration of the courage, perseverance, and skill displayed by Captain Sir Robert M'Clure, and added that it would remind him of the many arduous and hazardous events of his memorable voyage, and would not fail to keep alive in his heart a deep sense of gratitude to God, who guided and preserved him amid numberless dangers, and, after an absence of nearly five years, restored him in safety and honour to his friends and his country.

Sir Robert M'Clure, in reply, stated that he fully appreciated the feelings which had prompted so flattering a mark of the approbation of his professional friends, who were the best judges of his public conduct, and it should ever be cherished by him with the most grateful recollections. He added that it would be gratifying to them to avail himself of so fitting an opportunity of expressing his admiration of the officers and men associated with him in his enterprise, to whose zeal, exertions, and co-operation he wished to pay that public tribute of his regard. It is but justice to say that the testimonial, which is a beautiful work of art, is from the *atelier* of Messrs. Hunt and Roskell, of Bond-street.

Times.

NEW AND CORRECTED CHARTS, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

	Price	*s.*	*d.*
Ireland, West Coast, Mutton Island and Doonbeg Bay, Capt. G. A. Bedford, R.N., 1850		2	0
Gulf of Finland, South approaches to Sveaborg, by the Officers of the Fleet, 1855		2	6
,, ,, Sibbö Fiärd and Hasten Sound, Mr. Batt, R.N., 1855		2	6
Africa, Rivers Kwara and Binue or Chadda, Mr. Daniel J. May, Second-Master, R.N., 1854		3	6
West Indies, Cartagena Harbour, Mr. J. Parsons, R.N., 1854		3	0
Ex-Meridian Tables, J. T. Towson, 1856 (6th edition)		1	0
For Finding the Longitude by Chronometers at Sunrise or Sunset, Commander H. B. Weston, I. N., 3rd edition		1	0

EDWARD DUNSTERVILLE, Commander, R.N.

Hydrographic Office, Admiralty, June 23rd, 1856.

TO CORRESPONDENTS.

QUERIST.—In reply to your question, the Editor of this Journal frankly states that he has received the sum of a hundred pounds, in recognition of his marine artificial horizon, from the British Government (see vol. 1854, p. 351), —not that he can consider it as a reward, of which that sum would fall very far short,—and that an elegant large diamond ring was presented to him by Prince Constantine of Russia, through the Russian Minister, for the same invention, several years ago; but he is not aware of any other acknowledgment of this contribution to the resources of the seaman and the traveller.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

AUGUST, 1856.

Visit of H.M.S. "Frolic" to Tristan da Cunha.

[The island of Tristan d' Acunha, a solitary volcanic island in the South Atlantic Ocean, has derived some interest of late years by being the residence of several Europeans, of whom Capt. Denham, in H.M.S. *Herald*, gave an interesting account, which appeared in the volume of this work for 1853. On a recent visit of the Bishop of Cape Town, with the charitable intention of seeing to their welfare, Capt. Nolloth, in command of H.M.S. *Frolic*, has drawn up a further report on the condition of the islanders, and added to it some interesting particulars relating to the island, the substance of which is contained in the following.]

Having experienced light or moderate weather with winds between South and West nearly throughout the passage, at noon on Sunday the 16th of March we sighted Tristan da Cunha, about twenty-five miles distant; all but a small portion being enveloped in cloud. Fresh breezes from N.W. and S.E. prevented any attempt to communicate till noon on the 18th, when (accompanied by the bishop) I landed, with a degree of risk to the cutter; some settlers pointing out the exact spot to steer for, and afterwards assisting with bullocks to drag the boat up the steep beach of lava pebbles beyond the reach of all but unusually heavy rollers.

The Rev. Mr. Taylor received us as we landed, and from him we learnt that all was well, and that they were without need of immediate assistance. The object of the *Frolic's* visit,—to inquire after their

welfare and to remove, or take steps for the eventual removal of, such of them as might wish to quit the island,—was fully explained to this gentleman and to the inhabitants, who appeared much pleased with the care thus manifested for them; and due time having been given for the consideration of the nature of the opportunity presented to them in the terms of the letter of his Excellency Sir George Grey, which was supplied for my guidance, and all the information having been imparted which the bishop's knowledge of the Cape Colony enabled him to supply regarding the prospects which would there await them, I received the following information chiefly from Mr. Taylor.

There are, including Mr. Taylor, seventy-one men, women, and children on the island; their numbers having been reduced by the departure, in January last, of Mrs. Glass, wife of the late Corporal Glass, with thirteen children and grandchildren, and her son-in-law, with his family of ten, in all twenty-five persons.

There are probably about 200 head of grown cattle on the island, cows and bullocks in about equal proportions, and perhaps 300 sheep and pigs, besides poultry, &c.

The area of ground fit for tillage is very limited, and the soil is easily exhausted: it is very seldom that an attempt has been made to raise a second crop from the same plot: it requires considerable manuring after having been once used, and it is found more profitable to clear fresh ground each time. The only crop which flourishes here is the potato, but the high winds of spring and a grub which makes its appearance in prodigious numbers during the autumn, are very destructive to this root, on which the islanders chiefly depend for food and for the various necessaries of life which they receive in exchange from American whalers, whose visits would cease with the failure of this supply. The introduction of the potato disease, to prevent which every possible care is taken, would almost reduce them to starvation.

They have at present abundance of wood, but for some years past it has been, by decay, diminishing in quantity and quality, owing to a disease which first showed itself about seven years ago.

The islanders consider that more than 200 persons could scarcely subsist with any degree of comfort on the settlement.

The visits of the whalers are gradually becoming less frequent, which increases the difficulty of bartering as advantageously as formerly for clothing and other absolute necessaries.

The heads of families, without exception, feel greatly the absence of all prospect of providing properly, viz., decently and comfortably, for their children here, and the impossibility of settling them, especially their daughters, in life, and it seems desirable that the young men should be removed to some place where they would have a better chance of training themselves for the ordinary occupations of life.

If the accommodation offered by the *Frolic* had been sufficient for their families, some of the natives would have willingly removed at once from the island, leaving behind their little property: a greater number will gladly quit whenever they may have an opportunity of so doing without this sacrifice.

If it were possible for any of the inhabitants to remove with them a portion of their property, the months of March and April would be about the most convenient time for their departure,—considering the state of their potato crop, that of their animals, the weather, &c.

If it were possible to remove a portion of their stock, salted, every arrangement could be completed in a week at farthest, and, weather permitting, everything which they would wish to remove could be embarked by that time.

Salt and casks would, in the latter case, have to be brought by the vessel; and if it should be thought practicable to take away a few live cows and sheep, (or animals as provision for the ship's crew,) some forage would be required; but the islanders would gladly reimburse the cost of these articles (supposing the casks not to be returned at the Cape) if a portion of their stock could be taken as an equivalent.

Some of the islanders were anxious to obtain from me canvas for potato bags, and if their potato crop, or a portion of it, should be removed, the loan of old canvas or of casks would be very useful.

List of persons who would certainly avail themselves of an opportunity of removing to the Cape supposing that they would be unable to take away any of their property.

Richard Riley, an Englishman, age about 60, originally a fisherman, slightly ruptured but able to do light work.

His wife, a Mulatto, considerably younger, and strong enough to do household work.

Three sons and five daughters, ages from 9 to 23, the eldest being a stout active man of 21, with his wife and infant, and the others boys of 7 and 15 years.

About eight young women (children of Cotton, Swain, and Green, hereafter-mentioned,) would be entrusted to Mr. Taylor's charge by their parents, should they, the parents, themselves decide to remain on the island. Mr. Taylor is most anxious to see these young women provided for elsewhere.

William Daly, an American, age about 45, originally a sailor, an active, intelligent, industrious man, who can turn his hand to almost anything, including masonry.

His wife, a light coloured Mulatto, about 35 years old, strong and active (a daughter of Glass).

Ten children, of ages from 1 to 17, two of them boys of 12 and 15 years, and the rest girls.

Peter Miller, a Dane, age about 56, a quiet industrious man, originally a sailor, but accustomed to ordinary farm work on the island.

His wife, a stout middle aged Mulatto.

Seven stout healthy sons, the eldest of whom is nearly 17, and one little girl.

Persons willing to remove without their property, forty-two.

Of the moral character of all, and of the religious character of some, of the above, Mr. Taylor speaks favourably.

The remaining twenty-eight persons are: Peter Green, a stout-built middle-aged Dutchman, (who speaks English perfectly,) origin-

ally a sailor, who, with his wife, four boys and four girls, of ages from 7 to 18 years, would be glad to remove to the Cape if, by taking some portion of his stock for sale, he could raise a little money to set up with in his new home, and who, if he remained, would send two of his eldest daughters with Mr. Taylor.

Thomas Swain, a healthy old English man-of-war's man, of 81 years, and his middle-aged Negro wife, who appear to have made up their minds to remain with five of their children, and to send the remainder of their family, three grown up daughters, with Mr. Taylor.

Alexander Cotton, a healthy old English man-of-war's man, 67 years old, and his active middle-aged Mulatto wife, who appear to have made up their minds to remain with six of their children, and to send the remainder of their family, three grown up daughters, with Mr. Taylor.

Andrew Hagan, a strong-built, healthy, active American, about 35 years old, who appears to have made up his mind to remain, with his wife (a daughter of Glass) and three young children.

It seems not unlikely that in the event of the first-mentioned forty-two persons leaving the island, the leaders of the remaining twenty-eight would see the necessity of removing also, unless prepared to be satisfied with the most scanty means of subsistance, as, considering ages and sexes, the force left would in all probability be insufficient, by cooperation such as has hitherto taken place, to provide comfortably for their common support. Besides, on the visits of whalers requiring potatoes is their only dependence for some of the necessaries of life, and it would seem that a failure in quantity of this provision must be followed by the cutting off of that source of supply.

When we were about to leave the settlement the first of the above-named four persons informed me that he thought "many more would go when it came to the push than had put down their names for it;" and he stated his apprehension that "when but a handful of them were left on the island they might suffer depredations from lawless whalers unless occasionally visited by a vessel of war."

List of cattle, &c., which the persons whose names are affixed would be willing to sacrifice if they and their families only could be removed.

Names.	Milch Cows.	Bullocks fit for killing.	Sheep.	Remarks.
William Daly.....	12	10	20	
Peter Miller	8	8	12	Besides Poultry, Pigs, &c.
Richard Riley.....	5	4	20	
Peter Green	12	12	20	
Total	37	34	72	

Mr. Taylor is very anxious to see removed at least the unmarried female portion of the inhabitants, who greatly exceed in number the

males, and the disparity is likely to increase from the causes which have produced it; it is but rarely that, as on marriage with a stranger on a few day's visit from a whale-ship, a woman leaves the island, whereas the young men occasionally ship as seamen, or more readily than their sisters migrate to other parts. The number of unmarried females above the age of 12 is at this moment exactly double that of the males; viz., eighteen to nine.

Care was taken to prevent unreasonable expectations, and the impossibility of succeeding at the Cape without industry and sobriety pointed out. It was explained that no decided promise of a vessel of war could be made, nor of the removal of their stock even if one shoud be sent for themselves. And the Bishop having fulfilled the various purposes of his visitation, we returned, on the 22nd of March, to the *Frolic*, which had, since our leaving, stood off and on without anchoring.

The weather was fine during our four days' stay on the island, and there was little swell excepting near the beach, from which, owing to her unwieldiness, we had some difficulty in launching the cutter without damage. After three or four surfs a smooth of several minutes' duration always succeeded, and in the interval the boat was hauled out beyond the heaviest surf to an anchor laid out by the whaler of the islanders, who considered the cutter very unfit for the work, stating that they would not have beckoned to us to beach her had they been aware of her weight. The ordinary ship's whale-boat is too small for the sea which may be expected between the ship and the shore.

As in the event of a vessel being sent to remove stock the state of the weather might not permit communication by boat for several days, I informed Mr. Taylor that in such a case "the vessel would, to prevent delay, very probably stand in, show her ensign at the main, and fire three guns at one minute intervals, to signify that the islanders might at once collect and make every preparation for killing and salting their animals, &c.

Before we quitted the island I received from the settlers a letter of thanks to Sir George Grey for his offer of a home in the Cape Colony, and was requested to express to yourself the sense entertained of your kind regard for their welfare.

When we were about to leave, the heads of families were assembled, and having previously consulted Mr. Taylor regarding the man's eligibility I, in accordance with the desire expressed in the letter of Sir George Grey supplied for my guidance, appointed Alexander Cotton to take charge of the settlement until further orders.

We arrived in Table Bay this afternoon, having had throughout a straight course from Tristan da Cunha, fine weather, with a long but moderate swell from S.W., and winds between North and East till about 900 miles, and between North and West till about 550 miles from the Cape; since then the winds have been between South and West.

I have, &c.

M. S. NOLLOTH, Commander.

To Commodore Henry D. Trotter, Commanding in Chief.

P.S.—As Tristan da Cunha is rarely visited by our ships, I have enclosed a few particulars regarding it which seemed worthy of mention.

Capt. Denham, of H.M. surveying vessel, *Herald*, who visited this island in 1852, states that its N.W. Point is in lat. 37° 2′ 48″ S., and long. 12° 18′ 30″ W., and that its summit is about 8300 feet above the level of the sea. By the Admiralty chart the coast line appears to form very nearly a circle of six and three quarters miles diameter, with the summit of the island exactly at the centre.

The settlement is on the North-West side of the island, and near the North extreme of a level strip of land, about four miles long, which is bounded on the sea side by perpendicular cliffs of lava of an average height of forty or fifty feet: in the rear, the montain rises abruptly to the height of about 4000 feet,—the projections at its foot limiting the plain to breadths of from about 200 yards to nearly three quarters of a mile. Near the middle of the strip of land, and at its narrowest part, are several small extinct volcanoes, the highest of which, about 100 feet, is being encroached upon by the sea, and in the bottom of these are the settlers' "orchards," consisting of peach and apple trees, which, being in a damp soil and protected from heavy winds and scorching suns, yield moderate supplies of fruit. Beyond this, to the westward of these small volcanoes, is the broadest and most fertile portion of the level land, but it is not so well supplied with water as the settlement, which is deeply intersected by the beds of mountain torrents, and it is therefore chiefly used as grazing ground for cattle.

At the top of the above-mentioned steep mountain side of about 4000 feet high, which rises all around the island precipitously from the sea, excepting the flat of the settlement and one or two similar but more limited spots, commences what is called by the settlers the "Base" of the mountain, which constitutes the chief area of the island, and rises very gradually towards the centre, on which is a cone, consisting chiefly of black and deep red lava ashes.

In the interior of the cone is a lake of clear fresh water, said to be nearly circular, and of about a quarter of a mile in diameter: it has never been properly sounded. A depression on one side of the crater is apparently the effects of an eruption in that quarter.

The ascent of the peak is said by the goat-footed islanders to be easy, and an attempt was made by us, but given up on reaching the base,—the summit and the sea horizon having become obscured by clouds, and the appearance of the weather warning us to retrace our steps before rain rendered slippery the narrow ledges three or four thousand feet above the plain along which we had climbed, with occasional warnings from our guides to make sure our steps, as a fall would take us to the bottom. By far the most difficult portion of the ascent to the peak is between the plain and the base. As far as I could ascertain from the settlers, there are no ancient streams of lava visible on any part of the island, nor any signs of former sea-levels: no co-

rals or shells have been found, and there are no thermal waters. On the base are several small craters, some of which contain fresh water, and some lodes of stiff yellow clay, fit for brick-making, which appears to be the only soil without decided marks of igneous origin. Scarcely anything but grasses and mosses are to be found on the base; the cone is without vegetation. In the face of Nun's Bluff is a seam of sulphur, from which the islanders occasionally make matches. Among the specimens brought away by me are a piece of very heavy lava containing sulphur, which emits flame on the application of fire, and from which sparks are obtained when struck by steel: also a porous lava, specifically lighter than water, and some pieces of a "jet," which is only found in very small particles. The only indication of volcanic activity during the residence of the islanders (1817 to 1856) including the experience of the late Corporal Glass, was a slight shock of earthquake about seven years ago, when a portion of rock was precipitated from the mountain side, and motion imparted to articles of furniture, as witnessed by several independent observers: a noise was heard by several persons: the day was fine, and it was not in the season of thunder.

There are many varieties of ferns, of which specimens were collected, and a plant which yields a beverage preferred by some of the islanders to China tea, and which invariably springs up after a crop of potatoes: also a plant, with red berries, somewhat resembling in taste rather insipid cranberries, of which a preserve is made.

There is no poisonous herbage on the island. Nothing is known by the islanders of the origin of any but the useful and obviously imported vegetables, as the potato, apple, peach, cabbage, &c.

I believe there is no animal life excepting that of which the germs might evidently have been imported by man or have found their way across the ocean, such as a slug, two caterpillars—one of which produces a small red butterfly, two small moths, two kinds of spider, a very small centipede, and a woodlouse; the latter two may be found almost under every stone. There are no shell animals (tortoises, &c.), nor lizards, beetles, bees, wasps, toads, or frogs.

The only land birds are said to be a thrush, a kind of partridge, and the "island cock." The latter is a carrion bird about half the size of a fowl,—plumage black, excepting one or two white feathers in the tail; feet green; beak red, with, in its upper part, a red waxy-looking protuberance. This bird is frequently hunted with dogs, and is considered a great delicacy by the islanders.

All the Cape sea birds visit this and the adjacent islands, and flock in great numbers from all parts of the horizon to roost on the heights after dark. Their nests are generally excavations in the soft lava, with a raised border, hardened by pressure and plastering.

The islanders occasionally visit the mountain for eggs, which at times are in great abundance, including those of the albatross and sea-eaglet, a black bird about the size of a pigeon.

The fishes and cetaceæ are a seal, whose fur, according to the islanders, is, in the European markets, superior to that of the seal killed

on the West Coast of Africa, and inferior to that of the Shetland Islands; the sea-elephant; salmon; mackarel; snook; five-fingers; a very large kind of mullet; catfish; a red fish, called here "soldier," somewhat resembling the English bass; a klipfish which is frequently left in pools at low water; sparts; and crayfish. The empty shells of prawns are sometimes worked up on the shore, as also those of a small crab, called "king-crab" from the supposed distinctness of the crown's outline on the back. The very minute crab often met at sea on seaweed occasionally arrives alive on pieces of wood covered with barnacles, but appears not to thrive nor to continue its species on this shore. The only turtle ever seen by the islanders was an individual of the loggerhead species. The only shell fish which I met on the rocks at low water are a small chiton, a small limpet,—both apparently very scarce,—and two dead univalves. This scarcity of mollusca—there are no land shells whatever—may perhaps arise, in some measure, from a deficiency of lime in this purely volcanic region. The sea-washed rocks had, however, the common incrustation of lime on them and some corallines. I observed a few actiniæ.

There are no fresh water fishes on the island.

The blue shark abounds and the islanders do not consider it safe to bathe in the sea. The sperm, the black, and the right whales are occasionally seen all the year round; the height of the season appears to be from September to January, inclusive. The former two seldom come within ten or twelve miles of the shore; the right whale frequently ventures close in.

It is known that from the time of its discovery the island has been occasionally visited, and at different times resided on, for the purpose of procuring the furs and the oil of seals, and the British troops which landed in 1816 found on it an Italian, who possessed a considerable sum of money, and from whom no satisfactory account concerning his companions was ever elicited. At that period all the domestic animals which now run wild were to be found in the same state, but in far greater abundance. For years after the troops left it was not uncommon to meet on the "base" a flock of 100 wild goats; it is seldom that more than a dozen together are now seen. Wild hogs were shot less than ten years ago, but they are now very scarce. Very few of these animals have been destroyed by the islanders. Wild cats, which must thrive on the numerous mice by which house and country are overrun, have probably, by destruction of the young, thinned the number of the goats, with perhaps the assistance of the predaceous island cock, which seizes chickens and attacks young lambs in the plain. While we were resting on the base of the mountain one of these birds hovered over a Newfoundland dog so pertinaciously that we supposed it would have attacked him had it not been scared by our presence. A dog being made to bark, these birds are attracted to the spot and shot. No rat has been seen on the island.

No meteorological register has been kept on the island, but Mr. Taylor informs me that during the day the thermometer generally stands at 68° in the summer and at 58° in the winter, and that at

night he has never happened to see it below 40°. Very thin ice is, however, occasionally found in the morning in winter. Snow and hail are sometimes, but seldom, experienced below. In the depth of winter —June, July, August, and September—the summit of the mountain is almost constantly covered with frozen snow, as also occasionally for days together throughout the year.

The prevailing winds throughout the year are westerly, especially in the summer, viz., in the summer south-westerly, in the winter north-westerly winds prevail. August and September are considered to be generally the worst months; heavy baffling gusts, succeeded by sudden lulls, then play around the island, and occasionally a violent rush of reflected wind from the steep mountain side sweeps across the settlement and reaches to some distance from the shore, where it is met by the true wind outside. The heaviest winter gales generally commence at N.E., backing round to N.W., when it blows for a time with increased violence; afterwards, still veering round against the sun to S.W., the storm reaches its height and blows furiously, sometimes for days, while the opposing swells produced by the various winds cause a confused and heavy sea as far as the eye can reach. The heaviest gale within the experience of the inhabitants occurred in October last, when a few hours' longer duration would, it is said, have reduced their houses to ruins, and it was thought unsafe for a time to pass on the level ground from one abode to another. December, January, February, and March are called the best months in the year in all respects; but the weather is uncertain at all times, especially when the wind is at East. The weather is generally the finest and most reliable when the wind has most westing.

With reference to the "rollers" which on this, as, I believe, on all islands far removed from continents, occasionally set in, the following appears to be a correct statement of the islanders' experience:—

1.—The age of the moon does not seem to have any influence in the matter; they come at all times.

2.—The worst rollers are always at about Christmas, when they sometimes last three and four days, both here and at all the southern islands,—Gough Island and others in the southern hemisphere which some of the Tristan da Cunha people have visited or of which they have heard accounts from whalers.

3.—They come sometimes with wind and sometimes in a calm; they are always heaviest in the latter case.

4.—They do not come from all points of the compass, converging towards the island. When there is wind they come from the same point as the wind, from whichever quarter it may blow. When it is a calm they come sometimes from one quarter and sometimes from another, but on each occasion they all come from the same quarter, viz., without convergence.

5.—The rollers are most frequent in the winter, viz., during the most blowy season; but the worst rollers are in December, one of the finest months.

6.—When heavy rollers have set in during a calm and whalers

have shortly afterwards arrived, it has not been ascertained from them whether or not they have had a gale from the direction whence the rollers reached the island.

7.—They evidently do not take their rise—as is said to be the case with the St. Helena rollers—near the shore, for, from the hill, they are seen on the horizon.

8.—When the shock of earthquake took place about seven or eight years ago the sea was smooth.

9.—According to the islanders, the current generally sets to the N.E., excepting close in shore; but occasionally in the opposite direction. Large trees have now and then lodged on the coasts of this island, and at the time of our visit one, thickly covered with barnacles, was said to be lying on the sea side. Having observed a sofa too cumbrous to have probably found its way in a whaler, I was told that it was made on the island from a tree of Brazil wood which lodged on the western shore some years ago.

10h.—It is high water at full and change at 12h., and the rise and fall of the tide is about four feet. The greatest rise during three days (spring tide) was three feet nine inches. The islanders consider that the greatest rise never exceeds four feet.

I may here mention that, having questioned the settlers with reference to my having seen, about 135 miles westward of the islands, a considerable extent of discoloured water, apparently quite free from the patches of infusoria which frequently cause the resemblance of shoal water, and have probably given rise to some of the "doubtfuls" on our charts, I was informed that a whaling Captain, having met near the same locality a similar appearance, drew some water in a bucket, when that of the surface proved clear, but the water drawn from the depth of a few feet was full of whales' food.

According to the settlers, it is prudent for a sailing vessel not to approach nearer than two miles to any part of the coast, however promising the appearance of the weather, and not to anchor, and a steam-vessel should keep underway at night, or be prepared to 'way at a short notice. When fine, they willingly put off in their whale boat to any vessel four or five miles off which may show a wish to communicate with them.

It is said that, excepting in the very worst weather, a landing with safety to life, and generally to the boat, could always be effected somewhere under the lee of the island, there being, at about a mile from each other, small indentations, with pebbly beaches, in the steep cliffs which surround the island.

The settlers consider that the whale fishery has been becoming less profitable yearly since 1840, when it was in its most flourishing state. Seventy or eighty vessels were then sometimes seen in a day during the height of the season, and thirty or forty boats have been passing to and fro to barter, or looking out for whales while holding on to the long tough seaweed which, to the distance of five or six hundred yards, grows around the island, taking root even in fourteen or fifteen fathoms. These are still spoken of as the palmy days of the island, when the

competing wants of many ships yielded a comparatively rich harvest. Since 1840, none but Americans have been known to fish on the ground; previously, French whalers frequently touched. No English whaler was ever seen. During the last six years there have seldom been more than sixteen whalers in sight at one time. Since the middle of last December twenty vessels have called. During our four days' stay four vessels were seen, one of which communicated with the shore. In the middle of winter six weeks occasionally elapse without even a passer by being seen, and they were once eleven months without a call. Upon the visits of these vessels, which seldom require anything but potatoes or a supply of water, which they procure in their own boats, the islanders depend for clothing and for everything excepting farm produce.

We seldom entered a cottage without seeing the women at knitting or spinning, and we observed no one without stockings. Seals and sea-elephants supply them with mocassins and with oil for their own use. The ordinary dress of the men is blue dungaree or a blue jacket of sailor-fashion,—that of the women the ordinary cotton prints; and at church, when they mustered in their best, their appearance was much the same as that of an English village congregation on Sunday.

As I was accompanied by the Bishop of Cape Town, I think it unnecessary to make any remarks concerning their moral condition; but I may observe, the young islanders, as might be expected from their mode of life, appeared rather apathetic, and that the Rev. Mr. Taylor seems to have taken great interest in the welfare of the people committed to his spiritual charge.

The great salubrity of the island may be inferred from the fact of there having been no death traceable to climatic causes. Since 1817 ninety-seven children—forty-eight males and forty-nine females—have been born. Of the five only deaths which have occurred on the island since 1829 (exclusive of those of a few landed sick by whalers) one was from a fall from the mountain side; one was the case of a boy who was torn from his father's arms by a mountain torrent and swept into the sea; one young woman died of ulcers; an Italian, who was found on the island, died of rupture of a blood-vessel; and the fifth was the case of Corporal Glass. Corporal Glass died of cancer in 1853. Irrespectively of the cancer he had always enjoyed excellent health, and had reared without any loss sixteen children; indeed all the settlers and their wives have, without exception, lived to see large families around them. Cotton has twelve children; Swain, ten; Daly, ten; Riley, ten; Green, eight; Miller, ten; and the youngest of the children of some of the above are still infants. The Surgeon of the *Frolic* tendered his medical services, but was only consulted (for rupture) by one of the old sailors, and asked by one of the wives for some "smelling salts, in case of colds, accompanied by head-ache, which," we were informed, "sometimes attacked the older people in the winter and continued so long as three or four days." No cases of measles, scarlatina, small-pox, nor any of the complaints common to children have occurred on the island; nor has any epidemic disease as yet

reached them, except the hooping-cough, in July last, when, the whale boat having boarded a passenger ship with this complaint, her crew of six men were attacked on the following day, and scarcely one of the islanders eventually escaped.

Corporal Glass brought a Mulatto wife from the Cape, and the other early settlers received Negro wives from St. Helena. Marriages have taken place between their progeny, and the more recent settlers have taken wives from among them. The complexions of the natives vary from quite fair, with light hair, to moderate Mulatto colour; long black or brown hair is the most common. When all were assembled, I saw but about four youths who in this feature betrayed a partially Negro origin. They are, without exception, well-built and good-looking, and I think strikingly exhibit a predominance of their European parents' characteristics.

The cottages of the settlers are rudely but comfortably constructed of large blocks of porous lava. By blasting at the natural separation of the masses a thin layer of baked lava dust, resembling tile, and called "sand-seam" by the natives, a small quantity of powder procures large pieces with two perfectly smooth parallel sides, and the material is easily wrought.

When Glass first landed in 1816 the whole of the flat was thickly covered with stunted evergreens; but to a considerable distance around the settlement the land has since been cleared. This underwood has been attacked by a disease, which shows itself in small white spots, and which the islanders attribute to an invisible parasitic insect; they say that it made its first appearance after a very heavy gale of wind about seven years ago. The disease has overspread the plain and gradually travelled up the mountain side until some time ago it stopped at an apparently perfectly horizontal line about four hundred feet above the level of the sea.

Occasionally, especially during five or six weeks at about August, when the flour received from the whalers has been consumed, and their potatoes—the greater part of which are always bartered to vessels—expended, the settlers are ill-provided with food, and subsist in a great measure on sea birds' eggs, procured from the mountain, and the few wild goats which can be shot.

Wheat was at one time grown in small quantities, but the soil, unless very generously manured, proved too poor, and the wheat generally was affected by the rust.

When discussing the practicabilly of usefully establishing a store, such as a coal depôt on the island, it was by all hands asserted that Seal Bay (Sea Elephant Bay on the chart) would, for such a purpose, be far preferable to the settlement. There is sufficient level space for a store, &c., and inside some outlying rocks an easy landing may be effected, even when it is a lee shore, unless it blows hard. Judging from the necessarily vague statements on the matter, I should suppose that in the six finest months—November to April, inclusive—coals could be shipped from the above spot about four days in the week, and that during the remainder of the year more than two days in the

week could not be reckoned upon. To use the expression of one of the oldest settlers, "you may have the most beautiful weather for three weeks on a stretch, and perhaps for three weeks you would not be able to look at a beach—and this both summer and winter."

Inaccessible and Nightingale Islands, the nearest coasts of which are respectively seventeen and a half and twenty miles distant from Tristan da Cunha, have been occasionally, but rarely, visited by the settlers for seals and sea-elephants which, being undisturbed there, are much more common than at Tristan da Cunha. Both have fresh water lakes in their crater-form summits, that of Inaccessible being larger than the one on Tristan da Cunha. The soil of Nightingale is, by their account, impregnated with alum, or a similar substance, pieces of which have been found, and by which the water, excepting that on the summit, is rendered undrinkable—that of the lake being quite free from any taint whatever. Inaccessible, although, like the other islands, of very forbidding aspect, appears to be less difficult of access than its name implies. In 1821 the *Blenden Hall* was wrecked on it in a fog, and the crew, or the greater portion of them, saved themselves on it, and, being unable to signalize their presence to the settlement, subsisted there on sea birds, their eggs, &c., several months; when, a boat having been very rudely constructed from the remains of the wreck, they arrived in a sinking state at Tristan da Cunha, where they were most kindly received by Corporal Glass. He took immediate measures to save the remainder; in which he succeeded, performing himself, at great risk, a considerable number of trips in the small whale boat of the island; and he afterwards conveyed live stock to Inaccessible (where it is now plentiful) as provision for future disaster.

The late Corporal William Glass, who is still always spoken of as "the Governor," was evidently much respected, not only by the generation, or rather generations, born around him, but by the settlers of various nations who at different periods joined him in his lonely abode. With the ordinary education of a Scotch peasant, he seems to have acquired an ascendancy which was ever exercised for the good of all. By common consent he was the patriarch of the community, being, until the arrival of the Rev. Mr. Taylor, their leader and their priest. He had no absolute authority, having been simply left as a volunteer in charge of the *Julia's* wreck, and of some military stores, when, in 1824, the garrison, under Captain, now Major-General, Sir Josias Cloete, was withdrawn. He was a native of Kelso, and died in November, 1853, at the age of sixty-seven years, having resided on the island thirty-nine years. He is buried in front of the settlement of which he was the founder, and an appropriate inscription on a marble stone, sent by his sons from their new home in the United States, marks the spot.

M. S. Nolloth,
Commander H.M.S. *Frolic.*

Mr. Layard, Curator of the South African Museum, has been good

enough to furnish me with the enclosed note on the few specimens brought by me from Tristan da Cunha.

Note by Mr. Layard.

The specimens of natural history brought from Tristan da Cunha by Captain Nolloth may be thus enumerated.

Two earthworms, *Lumbricus.*

Two specimens of *Oniscus;* one found some distance from the sea, the other on the beach.

A species of *Julus*, very small.

A small brown slug, apparently unprovided with any shield, *Limax.*

A portion of a species of crayfish. Captain Nolloth states that the islanders informed him that living crabs or crayfish were never found on the island; once only has a specimen of the king-crab containing flesh been thrown on the beach.

Two caterpillars. Decomposition has much injured the colours of these, but enough remains to enable me to identify one of them as similar to a specimen I myself took on the island in 1842, and figured. It was undoubtedly the larva of a *Noctua*, probably an *Agrotes.* I found my specimen feeding on wild sorrel. Captain Nolloth states he found one species on the cabbages, the other, in vast quantities, on the ground.

Shells.—Captain Nolloth has brought three species, each differing from those found here, viz:—

A *Chiton* about an inch and a half in length, with spicula along the sides.

A pretty little *Siphonaria*, shaped like a capulus.

And three *Ranellæ* closely resembling the common species of these shores. These are said never to be seen alive, but to be cast up with the remains of the crabs and crayfish. One specimen, however, has not been many days deserted by its proper inhabitant, and still contained a considerable portion of the epidermis.

Birds.—The birds procured are the common albatross *(D. Exulans)* and the smaller species known by the name of the "mollymaw" *(Diomedea melanophrys tern)*, two species of petrel *(Procellaria)*, and two species of tern, *(Sterna stolida)*.

Captain Nolloth also brought the eggs of these birds, and of the king penguin *(Eudyptes chrysocome lath)*, which he likewise saw on the island.

But among the eggs is one of peculiar interest, being the egg of a *Gallimele*, called by the islanders the "island hen." Corporal Glass mentioned to me in 1842 that the only bird they had besides sea-fowl was a water hen. Can this egg belong to the apterous bird, which is known to have existed on the island some years since?

Geological Specimens.—These consist of granite, obsidian, pumice lava—a substance which fuses easily under the blow-pipe, and even catches fire, being composed of sulphur,—and several rounded water-worn red stones, of great hardness, similar to some I have received from the Crozettos. Captain Nolloth was informed there was no

granite on the island, and did not detect the single specimen here enumerated until it had been washed and cleansed from the coating of mud which covered it.

Plants.—Captain Nolloth has brought back a considerable number of species of *Ferns*. There has not been time to ascertain which of them have been described by Carmichael. who visited the island some years ago. They, however, all differ from those in this country, as do also the plants which have reached this alive, and have been sent to the Botanical Gardens.

The fragments of the sofa appear to be mahogany, but they are too small to be properly identified.

E. L. LAYARD,
Curator South African Museum.

THE INDIAN OCEAN CONSIDERED WITH REFERENCE TO THE WANTS OF SEAMEN.

The Indian Ocean is bounded on the North by the South coasts of Asia; on the East it is separated from the Pacific by the islands of the Indian Archipelago; on the West Africa separates it from the Atlantic Ocean, and its Southern boundary is generally considered to be a line drawn from the Cape of Good Hope to Bass Strait.

The peculiar form of the land which surrounds this extensive basin prevents the currents of air and water being so regular as they are in the Atlantic Ocean.

The S.E. Trade Wind.—In the Northern hemisphere of the Indian Ocean, and even in part of the Southern, trade winds are not met with. In this ocean they are only found between the parallels of 10° and 28° S. from the West coast of Australia to within a few degrees East of Madagascar.

Limit of the S.E. Trade Winds.—The Southern limit of the S.E. trade winds is influenced by temperature: it changes to the North or South by two or three degrees according as the sun has North or South declination.

It is the same also with regard to their equatorial limit, which, under the same conditions, approaches the equator more or less, and sometimes even reaches it.

If the sun is in the Northern hemisphere, and at his greatest distance from the equator, the trade winds have a tendency to blow more from South; that is, they vary from S.E. to S.S.E.: on the contrary, when the sun is in the Southern hemisphere, the winds take a more easterly direction, varying from E.S.E. to East, and sometimes to E.N.E.

Variable Winds.—From the parallel of 10° S. lat. to the coast of India, periodical winds are met with in the Indian Ocean. The trade

winds of this sea are only regular at a considerable distance from the land, because the continents and large islands obstruct the regular course of these atmospheric currents.

Variable Winds between 28° *and* 60° *South Latitude.*—South of 28° S. lat. is the zone of the variable winds. In this region, between 28° and 60° S. lat. there is a constant strife between the inferior currents of air flowing from the pole towards the equator and those which are returning from the equator towards the pole. The latter currents, occasioned by the trade winds, have received, as already observed, the name of tropical currents. This opposition, in which the tropical wind generally prevails, produces the variable wind of this zone.

In the Southern hemisphere of the Indian Ocean, Southward of the trade wind, as in the same hemisphere of the Atlantic, the prevailing wind is N.W.; that is, this wind is met with during the greater part of the year.

Prevailing Winds between 60° *and* 70° *South Latitude.*—It may be stated generally, that in the zone comprised between the parallels of 60° and 70° S., the prevailing winds during summer are mostly from South, and in winter from West.

Periodical Winds or Monsoons of the Indian Ocean.—The trade winds which blow fresh in the Atlantic South of the Equator, and sometimes even South of the parallel of 6° N. lat., are, as we have previously stated, interrupted by the peculiar formation of the land forming the basin of the Indian Ocean on N.E., N.W., and East. The influence of these lands combined with the difference constantly existing between the temperature of the continents and that of the adjoining sea, occasions the phenomena known by the name of the *Monsoons.*

Monsoons exist in several quarters of the globe; but in no sea do they blow with such regularity, or are they so well established, as in the Indian Ocean, especially in that part North of the equator. There they extend from the coast of Africa beyond the China Sea, and even penetrate the Pacific Ocean; although in the Northern part of the China Sea and further East they are less regular than in the Indian Ocean.

The monsoons generally blow towards the continents during the summer, and in an opposite direction in the winter. Thus, the S.W. monsoon, which blows in the North part of the Indian Ocean from April to October, corresponds with the season when the sun, having attained a high North declination, has warmed the surface of the countries of India; while during the winter in this hemisphere, when the sun has a South declination, the N.E. monsoon prevails.

Duration of the Monsoons.—The monsoons blow in one direction during one half of the year, or rather from the middle of April to the middle of September; and from the middle of October to the middle of March in the opposite direction.

S.W. and N.E. Monsoons.—In the North Indian Ocean the S.W. monsoon begins in the middle of April and terminates in the middle of September. The N.E. monsoon succeeds, and lasts from the mid-

dle of October to the middle of March. The S.W. monsoon brings rain and bad weather. The wind is stronger during this monsoon than during that from N.E., when the weather is generally fair and serene.

Zone of S.W. and N.E. Monsoons.—The zone comprising the S.W. and N.E. monsoons is included between the equator and the tropic of Cancer. It extends from the East coast of Africa to the coasts of India, China, and the Philippine Islands, and their influence is often found in the Pacific Ocean as far as the Marianne Isles; that is, in 145° E. long. In the North they sometimes extend as far as the Japan Isles. The limits of the monsoons are not everywhere the same, and their change does not always take place at the same period. It must be observed that in the Gulf of Bengal the wind varies more in strength and direction than in the Indian Ocean, where it rarely fails at the expected times, which are generally at the changes of the monsoons.

It is also observed, that in that part of the Indian Ocean where the monsoons are found, the wind has more Southing near the coast of Africa, and more Westing on the coast of India, during the S.W. monsoon.

South of the equator the S.E. monsoon commences in the middle of April and terminates in the middle of September; the N.W. monsoon, varying to W.S.W., replaces it, and commencing in the middle of October terminates in the middle of March. This last monsoon is the time of squalls and bad weather.

In the Indian Ocean the S.E. and N.W. monsoons blow in a zone comprised between the equator and the parallels of 8° or 9° S. lat.; but on the coast of Australia, and in the West part of the Pacific Ocean, this zone extends as far as 12° and 14° S. latitude. It begins in the West near the coast of Africa, and terminates in the East on the meridian of the islands of Pomoutou and Nouka-Hiva, situated in the Pacific Ocean in about 138° W. longitude.

The N.W. monsoon rarely blows either strong or regularly, except in the months of December and January, at which time it occupies in the Indian Ocean a zone comprised between 10° or 12° S. lat., and 2° or 3° N. lat. This monsoon is also subject to many irregularities. In proportion as we approach Sumatra its Northern limit recedes more South from the Equator, and leaves a space between itself and this great circle, to be occupied by calms and variables.

The S.E. monsoon, which is the period of the fine season South of the equator, may be considered as an extension of the S.E. trade winds, which then blow as far as the equator, when the sun is near the tropic of Cancer.

The places where the S.E. and N.W. monsoons are found with the greatest force and regularity, are in the Java Sea, the Sea of Timor, and among the Moluccas, and especially near New Guinea. These monsoons are felt on the North coast of Australia, between Melville Island and Cape York, as well as in Torres Strait, where the N.W.

monsoon begins at the end of October. In these seas they are often called the West and East monsoons.

Change of Monsoons.—The change of monsoons takes place between the latter end of March and September, and the beginning of April and October. In some latitudes it takes place a week or two sooner than in others. The change is gradual, and is generally accompanied by squally and tempestuous weather. However, South of the equator, if the weather is sometimes bad at the change of the monsoon, the wind is never strong. When the monsoon has nearly terminated, the highest clouds are observed taking an opposite direction to that of the wind, and this happens some weeks before the change is sensible in the lower regions. The monsoons penetrate far into the interior of the continents bounding the Indian Ocean on the North, and their direction is then influenced by the form of the coasts and islands, the chains of mountains, or other causes.

Seasons in India.—The direction of the monsoons in India regulates the dry and rainy seasons. The rainy season of the West coasts corresponds with the S.W. monsoon, and that of the East coasts with the N.E. monsoon; in other words, the winds from the sea in general cause rain, while those from the land bring fine weather.

Monsoons on the Coast of Madagascar, East Coast.—It has been already observed that the S.E. trade wind does not extend as far as the coast of Madagascar. On the East coast of this island, and in the channel separating it from the coast of Africa, we find the monsoons regularly established.

N.E. Monsoon varying to N.N.E.—On the East coast of Madagascar the N.E. monsoon varying to N.N.E., blows from November to April, and the S.E. monsoon from April to November. This last period is the time of the fine or dry season. However, in the S.E. part of Madagascar, we generally find N.E. winds, which, veering round the coast, blow as far as Cape St. Mary, and West of this cape and off the S.W. of Madagascar, blow from the S.E. to South during the whole year; but do not reach far to the North along the West coast of this island. Land winds are not known at Madagascar; on all the coasts of this island, the winds above-mentioned prevail throughout the year, and those to which we shall presently allude in the Mozambique Channel. These winds commence about eight or nine o'clock in the morning, freshen up towards noon, when they blow very strong, and continue so till three o'clock, then gradually abating towards sun-set.

Monsoons in the Mozambique Channel.—In the Mozambique Channel, and chiefly between the parallel of the bay of Sofala and the equator, the S.W. monsoon begins in April and terminates in November.

S.W. and S.S.W. Monsoon.—This monsoon forms the period of the fine season. At the entrance of this channel we find the wind generally from South to S.S.W., veering Westward as we go Northward; and they unite at last with the W.S.W. and S.W. winds, blowing at the same time North of the equator. In the North part

of this channel, during the S.W. monsoon, the winds vary from S.W. to S.E. and E.S.E., and near the southern end of Madagascar they are often very fresh, blowing from S.E. and East. Near the coast of Africa the land breezes are frequent. In the middle of the channel the winds are more regular and follow the direction of the channel.

N.E. and N.W. Monsoon.—During the remaining portion of the year, from November to April, we find in this part of the sea, as far as the northern point of Madagascar, strong N.E. winds, accompanied by rain and stormy weather; while between this island and the extremity of Mozambique, and as far South as the tropic of Capricorn, we find during this monsoon winds varying between N.E. and N.W., with bad weather forming, in the Mozambique Channel, the period of the rainy season. When the N.E. monsoon, varying to N.W. in the Mozambique Channel, meets with fresh South and S.E. winds at this period near the South part of Madagascar, and even veer Northward in part of this channel, the meeting occasions violent storms and sometimes rotatory tempests.

The meeting of the North winds with those from S.E., South, and S.W., which blow constantly South of the tropic of Capricorn, sometimes occasions the same effects.

Land and Sea Breezes.—We find, as in other seas, alternate land and sea breezes on some of the coasts of the Indian Ocean. These breezes generally extend only a short distance from the shores. The sea breeze lasts during the day, and the land breeze during the night. They take place principally at the period of the change of the monsoons, and during those months when these changes happen; when the monsoons set in with regularity these alternate winds almost entirely cease.

Nevertheless, on the coast of Malabar, from September to April, the period of the fine season, the East winds blow from the land towards midnight, and last till ten or eleven o'clock in the morning, extending sixty miles out to sea.

On the whole coast of India the land wind, where it is found, rises towards midnight, and the sea breeze blows from noon till night. When it continues after sunset it is generally moderate and often slight.

Having made these general observations, we shall consider more minutely the prevailing winds which we find near the coasts bounding the Indian Ocean. Beginning at the Cape of Good Hope, we shall make the tour of it, and terminate at Bass Strait.

Winds of the African Coast from Cape of Good Hope to Cape Corrientes.—From October to April South and S.E. winds prevail along the coast of Africa from the Cape of Good Hope to Cape Corrientes. They blow strongly at this period, and sometimes reach as far as the equator. From May to October, on the same coast, the prevailing winds are West and N.W. for a distance of thirty leagues at sea. These winds are only felt between the Cape of Good Hope and Cape Corrientes. In May the winds are light and interrupted by

calms. The N.W. winds are the strongest, and bring rain. They are especially violent in June, July, and August.

Near the bank of Agulhas, as well as in the greater part of the Southern hemisphere, the mercury of the barometer rises with Southerly winds and falls with those from the Northward. From the bank of Agulhas as far as the meridian of the Southern end of Madagascar, we find, during the winter, violent winds, accompanied with thunder, lightning, and a great deal of rain.

Winds on the Coast between Cape Corrientes and the Equator.—On the coast between Cape Corrientes and the equator the monsoons are found which we have mentioned as those of the Mozambique Channel. Alternate land and sea breezes are also found. The seasons are very uncertain, the winds variable, and tempestuous weather frequent at all times of the year, especially during the N.E. monsoon varying to N.W., in November to April. The fine season lasts from April till October, the winds from South to S.S.E. and S.S.W. prevailing.

Winds on the Coast between the Equator and Cape Guardafui.—On the coast between the equator and Cape Guardafui the S.W. monsoon, or winds from W.N.W. varying to S.W. according to the portion of the coast, sets in about the beginning of March. The N.E. monsoon succeeds after six months (from October to March.) The monsoons are established near the coasts much sooner than they are felt out at sea. They also begin near the line before they are felt at Cape Guardafui. The N.E. monsoon is seldom strong on this coast.

From October to January the wind is variable, and frequently blows in succession from all points of the horizon. The North is the prevailing wind, bringing rain, and sometimes blows strong.

From January to May it is fresh from N.E. and N.N.E. and brings fine weather. Towards the end of March S.W. winds are found near the coast, which gradually extend out to sea. During this latter month whirlwinds are frequently found near Cape Guardafui.

From May to October the wind is from South, and during July, August, and September there are calms near the coast, while at the distance of 100 leagues a fresh wind is blowing from South. During these months, near Cape Guardafui strong winds are found, which do not extend more than thirty miles out to sea; at which distance the weather is fine and the sea calm.

Alternate Land and Sea Breezes.—Along the East coast of Africa, during the month of February and the first part of March, we find alternate land and sea breezes, ceasing, however, during the S.W. monsoon. When this monsoon loses its force they re-appear, during October, a period when, however, they are not so fresh or so regular as at the end of the preceding monsoon.

Gulf of Aden.—In the Gulf of Aden, that is to say in the sea comprised between the meridian of Ras-Aseir, more generally known by the name of Cape Guardafui, and that of Babel Mandeb, we

generally find, during the months of January, February, and March, winds from East and E.N.E. successively from the promontory of Aden as we near the strait. The weather during these months is fine and generally clear. At this period the trade is carried on by vessels of from fifty to three hundred tons.

In April and May the wind is generally slight, varying from E.N.E. to S.E. and South. Near the coast the weather is fine; sometimes, however, the sky is cloudy, the horizon misty, and land breezes are felt from four o'clock in the morning until eight. In rare instances we have westerly winds, sometimes strong. In April some showers fall, but the rain rarely lasts more than three days. During the night the dew is very heavy.

In June the weather is very uncertain and the wind variable, the sky sometimes clear and sometimes very cloudy. In the morning there is a calm or light winds, sometimes increasing towards noon and even blowing fresh from the South and causing a great swell on the Arabian coast. About the middle of this month, between the Isle of Burnt or Mait and the strait, we generally find strong winds from West, which enable vessels leaving the Red Sea on their voyage to India to reach the monsoon. In July and August we find nearly the same weather. It is almost always cloudy and fine days are very rare; sometimes for two or three consecutive days there is a thick fog.

According to the mean result of six years' observations, in sixty-two days there are twenty-four days of South wind, fresh or moderate during the day and light at night. They occasion a heavy swell on the coast of Arabia. During the remaining thirty-eight days we have fresh winds from West and S.W. During the two months alluded to there were sometimes passing showers in the strait and the dew abundant at night. Sometimes, towards evening, when the South wind is no longer felt, we find a violent storm from the land, which is announced by a thick cloud of sand or very fine dust; this gives vessels time to prepare for it.

In the month of September the West winds cease and are replaced by alternate land and sea breezes. During the night there is often a dead calm.

In the beginning of October the weather is nearly the same, with the exception of a little rain. In the beginning of November the N.E. monsoon, which reaches Makallah about the 5th November, gradually increases, and blows fresh about the time of the syzigies. During these months the winds generally vary from East to E.N.E., and during a period of four years the Captain from whom we borrow these details tells us that from the 27th December to the 3rd January the weather was constantly threatening, and that a storm, accompanied by a great deal of rain took place.

South of the Red Sea the S.W. monsoon of the Indian Ocean blows in a southerly direction. This direction is, however, obstructed by the mountains of the coasts of Arabia. Beyond this strait the monsoon blows from the West, and rarely passes beyond Aden. At Cape

Guardafui it blows freshly from N.N.E. near the coast, and the breeze then enters the Gulf of Aden and reaches as far as Ras-Rhemat, a cape situated S.W. of Makallah. On this parallel vessels from the Red Sea, going eastward, generally take the monsoon.

(To be continued.)

Journal of H.M.S. "Rattlesnake," Commander Henry Trollope, on her Recent Voyage to Behring Strait.

(Continued from page 352.)

The night was nearly fourteen hours and it was not until 9h a.m. on May 10th that Cape Virgins was made out bearing West, fifteen miles. We were seventy-five days from the Eddystone Light, out of which we had been two at St. Vincent. The navigable distance was estimated at 7,300 or 7,400 miles, so that we had averaged a hundred miles a day.

The morning was beautiful and everything tended to make us look upon the scene with interest and gratification. The breeze was fair, the water perfectly smooth, and the Straits of Fernando Magalhaens have, perhaps, more interesting recollections to a sailor than any part of the world. To me this feeling was tempered, and at the same time increased, perhaps, by a natural feeling of anxiety as to how we should succeed in getting through. I had to think of the steam-vessel appointed to meet us, and how, in the event of our not falling in with her, we could best leave information of our proceedings, that she might not be left in doubt. Before daylight a vessel was seen; she hoisted lights, and at first we thought it was the steamer. This little disappointment led us not to expect her at present, and we bent all our attention to the land and to the admirable directions of Captains King and Fitzroy.

At the bearing and distance at which we made it (West, 15 miles) it is not very easy to say which is the cape, from its being seen in line with the land to the northward and the hills running up to Mount Dinero; but drawing in, and getting more to the southward of it, it is as remarkable as the South Foreland, which it somewhat resembles; the cliffs to the North are shut in, and it stands out a steep bluff headland. Mount Dinero also is easily distinguished, and with Captain King's sketch and chart the whole will be recognized.

It was new moon on the 8th, and high-water to-day at 9h. 47m. a.m., but the stream of the flood made until 1h. p.m., setting West (mag.) W.N.W. (true); but as I expected the stream of the ebb would make about the time we cleared the Sarmiento Bank, we kept her well up for Dungeness, so as not to be set to the southward and eastward by it. The least water we had in crossing the bank was ten

fathoms. The straits were spread out before us in one of the most beautiful days I ever remember, and recollection of the many names it called to mind, and expectation on our parts, made up for any deficiency in the scenery, which is neither particularly interesting nor remarkable.

About 11h. a.m. a vessel was seen coming out of the straits. Conjectures were rife as to what she was. At first it was only a sealing schooner, but after many and anxious looks we had the pleasure of descrying SA union, H.M. steam-vessel *Vixen*, and I believe they, on the other hand, had equal pleasure in making out our number, CN union, for Captain Barnard had been waiting our arrival since the 17th of April, and, not having heard of the detention at Portsmouth, on account of the rudder, had thought we must have passed on round the Horn. Cape Virgins is a bad place to give as a rendezvous; it is difficult and dangerous to keep a station off it, which indeed could only be done at great sacrifice of wear and tear. But the anchorage under Mount Aymond in Possession Bay, with the "Ears" just dipping behind it, is a safe and secure anchorage, easy to approach and also to leave, and which has the further advantages of being out of the strength of the tide in a moderate depth of water, and affording a favourable position for passing the first Narrows.

The *Vixen* took us in tow inside Dungeness, which only wanted the lighthouse to make us believe we were off our own point of that name. We went through Possession Bay with all sail set, wind N.N.W., going by the log nine and ten knots; but the tide was against us and we did not reach our anchorage under Mount Aymond until 4h. 30m. p.m., although the actual distance was not more than thirty-five miles. The vessel we had seen in the morning proved to be the ship *James Shepherd*, of New York. She communicated with us off Dungeness, and anchored close to us about 10h. p.m., four or five hours later than we did, without any aid. She kept much closer in shore than we did, thereby avoiding much of the strength of the tide.

We anchored under Mount Aymond: the Ears just dipped behind the Mount, bearing W.b.N.$\frac{1}{4}$N.; Mount Dinero bluff, E.b.N.$\frac{1}{4}$N.; highest part of the bluff abreast N.W.$\frac{1}{2}$W.; about six miles from the shore, in sixteen fathoms, coarse sand. Veered to sixty fathoms. At high-water we had 22$\frac{1}{2}$ fathoms. 9h. p.m.—Ship swung to the flood.

The *James Shepherd* was going round the Horn, but sprung a leak and determined to pass through the straits. He had neither chart nor book of directions, he said. Captain Barnard gave him the former, and he proceeded on his way. I could not but admire his bold and enterprising spirit.

We found our anchorage very much out of the strength of the tide, which in mid-channel runs 4$\frac{1}{2}$ or 5 knots an hour.

On the morning of the 11th May the *Vixen* took us in tow and proceeded through the first Narrows with the first of the flood. The weather was fine and warm but perfectly calm, so that the American remained at anchor. The extreme length of the first narrows is seventeen miles, the breadth two and two and a half miles. There is

particularly interesting in the scene, but the reverse. I have an old edition of *Hawksworth's Voyages* on board, in which is a print of the *Dolphin* and *Tamar*, under Commodore Byron, the natives on the cliffs riding to and fro waving flags, &c. The view would have done for what we saw; every one was struck with the resemblance. The same signals and motions described by Byron in 1764 seemed to be repeated in 1853.

From the first to the second Narrows the distance is twenty miles. The bays of St. Jago and St. Philip form an expanse fifteen or sixteen miles broad. On the northern shore, near the Punta de Valle, stood the unfortunate Ciudad de Jesus. The unfortunate and tragical termination of the Spanish attempts to colonise this desolate region cannot be forgotten.

The second Narrows are nearly four miles in breadth and thirteen in length. We still carried the flood, as the change of tide increases as we go to the westward; the rise and fall is also very much diminished, being only twenty feet at the entrance of the second Narrows, and not more than ten at Elizabeth Island, but they continue very rapid until the shoal called Adventure Bridge is passed.

The cliffs called Sweepstakes Foreland commemorate Sir John Narborough's vessel, as does the harbour opposite his ingenious Lieutenant's name, Nathaniel Pecket. Cape St. Vincent is a perfect model of that in Portugal, wanting only the monastery on the summit. When off the South end of Elizabeth Island we could distinctly trace the snowy summit of Mount Sarmiento, the Roldan's Bell of Magalhaens. It is worthy of notice as being thought sufficiently remarkable by Captain King to insert a column in his meteorological journal for its somewhat rare appearance; at this time it was eighty-five or ninety miles distant. Mount Tarn, Mount Graves, the hills at the back of Port Famine, were all covered with snow, in strange contrast to the mildness and warmth of the day. I could not but think of M. Duclos Guyot, as quoted by Captain King,—"At length, on Saturday, 23rd March, we sailed out of that famous strait, so much dreaded, after having experienced that there, as well as in other places, it was sometimes very fine and very warm and that for three-fourths of the time the sea was perfectly calm."

A favourite line of Wordsworth also came into my mind—

"For all things are less dreadful than they seem."

We accomplished nearly eighty miles to-day. After passing Laredo Bay, about sunset, the *Vixen* cast us off, and we stood on, under topsails, jib, and driver, with a moderate breeze from North, to pick up a berth for the night under Punta Arena, where the Chilians have established their settlement. The night was pitchy dark and we stood on, expecting to find twelve or fourteen fathoms; but, although the lead was going, and we also got occasional casts with the deep sea, we had no bottom with thirty fathoms. I was deceived by the height of the land and the darkness of the night,—not getting soundings also made me feel sure that we were farther off shore than we proved to

be. Our first bottom was twenty-eight, then ten, then five immediately followed. I have since had reason to believe that the mistake was made by the quartermaster in the chains. However, before we could round to we had three fathoms, and her way was hardly checked when she took the ground under the port bilge, in $2\frac{3}{4}$ fathoms, but so gently that it was only by sounding I could persuade myself that she hung there at all. We laid the stream out and made signal to the *Vixen*, but she had already anchored in fourteen fathoms.

In the meantime, as it was within an hour of low water, we struck the topmasts, hove taut on the stream hawser, and, when the *Vixen* had shifted her berth nearer to us and anchored, laid out another hawser to her, hove it taut and awaited the rise of tide. It was low water about 8h. 30m.

About 10h. we hove at the same time with the *Vixen*, and she started at the first heave or almost before it; when the steamer towed us out and we anchored where we ought to have done in the first instance, in fourteen fathoms: extreme of point, N.W.$\frac{1}{2}$W., one mile and a half.

Getting a ship on shore is a mortifying thing at any time; although no injury may result from it, all the wear and tear is of no avail. It gave us a great deal of work and the hands were on deck seven or eight hours after dark. The error in the soundings was the cause of our mishap, although I was deceived by the height of the land and the extreme darkness of the night. Captain Fitzroy says that the shore is lined with kelp for its whole extent, in five or six fathoms water, three quarters of a mile off shore; this we did not find to be the case.

The weather had been beautiful, more like May in England than May (the November) in these regions and, above all, these straits, infamous for gloomy weather. However, we were to have a change and get a little specimen of the truth of the descriptions of Byron, Wallis, and Carteret.

12th.—At daylight, about 8h. a.m., we 'wayed and proceeded, in tow of *Vixen*. The scenery of the strait is now more remarkable, and not by any means devoid of a species of sullen grandeur, and I felt the force of a description of winter by Gawain Douglas more than I ever did before:—"The fern withered on the miry fallows; the brown moors assumed a barren mossy hue; banks, sides of hills, and bottoms grew white and bare; the cattle looked hoary from the dank weather; the wind made the red reed waver on the dyke. From the crags and the foreheads of the yellow rock hung great icicles, in length like a spear. The soil was dusky and gray, bereft of flowers, herbs, and grass. In every hold and forest the woods were stripped of their array."—Warton. This may be winter anywhere, but I never felt its truth more than in a westerly gale with showers of sleet and rain.

About 2h. p.m., we anchored in the Bay of St. Nicholas, a snug and picturesque little cove to the S.W. of Nassau Island. We hauled the seine here and got a few mullet and hake, but not in any plenty, hardly enough for the fishing-party. It was something, however, to touch the shore after our voyage, although only in the tangled woods

and spongy turf of Patagonia. Wood might be procured here and water also, but the latter indifferent. We met a few natives here, as harmless and miserable in outward appearance as Captain Fitzroy describes them. Bearings of anchorage, seventeen fathoms sand:—centre islet, N. 7° E.; Glasscott Point, S. 28° W., half a mile; right extreme of Nassau Island, N. 47° E. High water, full and change, 11h.; rise seven feet. After veering to fifty fathoms, we had twenty-nine fathoms alongside. The bottom is uneven and the bay is much less extensive than it would appear from the deepness of the water outside, and the shoal which lines the shore nearly quarter of a mile off.

The distance we accomplished to-day was only forty-two miles, but the glass was lowering and the weather threatening and the next good anchorage (Fortescue Bay) being forty miles distant, we could not have reached it until long after dark.

On passing Port Famine we could clearly discern the remains of the unfortunate Chilian settlement. It is now wholly deserted, this second trial having proved nearly as unfortunate as the first by Sarmiento.

13th.—The *Vixen* again towed us along bravely in the face of some very fresh squalls from W.N.W. and a tide sometimes two knots against us. About noon appeared the frowning gloomy promontory Cape Froward, the most southern land of the American continent. The scenery here is very fine; the opening of the Magdalen Channel resembles the main strait more than what is commonly termed so. Crooked Reach realises all that one can imagine of an Alpine lake—the distant peaks covered with snow, the fine expanse of water, bounded, and yet spread out, by the numerous channels and indentations made a fine panorama. All was grand except mankind, and here that appears very low in the scale.

We reached Fortescue Bay, Port Gallant, about 3h. p.m., and anchored in seven fathoms: centre of Wigwam Island, S. 59° W.; summit of Mount Santa Cruz, S. 85° W.; Milagro Point, S. 64° E.; about two cables' length off shore.

This is a capital well-sheltered anchorage, easy to quit and to approach. The inner harbour, Port Gallant, is a perfect basin, where a ship might be hove down with the utmost security. High water, full and change, 11h. 3m.; rise, five or six feet; set of flood, East. The weather was gloomy and threatening. During the night we had hard squalls from W.N.W.; but, although in the extreme outer part of the bay, we did not feel them.

14th.—The breeze was very strong to-day from W.N.W.. The narrowness of English Reach caused a ripple, which increased the *Vixen's* work very much. I thought more than once that we should have been obliged to put back. However, we succeeded in reaching Borja Bay, which, although only twenty-five miles from Port Gallant, was more than I thought we should have accomplished. We anchored at 3h. p.m. in twenty-three fathoms, sand, shell, and mud: cross on Borja Island, S. 11° E.; extremes of bay, N. 79° E., S. 48° W.; El Morion, S. 17° W.

Borja Bay is a snug little cove and a very secure anchorage, but very small, and, except in the inner part, the water is very deep. It cost a good deal of time before the *Vixen* could place herself in a favourable position so as to take us in tow and turn round for leaving on the following day. This was partly caused by the *Otter*, H.B. Co's steam-vessel, having taken up the centre of the bay. She was wooding and watering; but it shows what a confined anchorage it is when one vessel could cause inconvenience.*

The remarkable headland El Morion is described by Captain Stokes and Captain King. It is aptly named. As a curious connection of ideas, I thought of the Castle of Otranto, the gigantic helmet and waving plumes in that child's tale, with a greater semblance of reality than it had before possessed.

15th.—Although the weather was threatening and the glass low, the wind was still moderate. We 'wayed at 7h. a.m. and proceeded, the *Vixen* towing us eight knots, by the log, through Crooked Reach into Long Reach. Of course we did not look for the rock reported by Captain Paynter of the *Gorgon*. I could not get the bearings to agree, but as far as they go it would appear the rock is on the northern shore, and more in the way of a vessel going into Borja Bay from the eastward than anything else. This would also agree with the rock of Lieut. Simpson, of the *Dolphin* (1765), only it would not be more than two miles from Cape Quod (see *Sailing Directions*, p. 225–7, notes to articles, 588–90).

We stood over to the southern shore, looking into Butler Bay, of which Wallis gives such a desponding and terrible account during his sojourn there from the 18th February to the 1st March, 1767. The weather grew thick and dirty, but the wind did not increase, although appearances and a falling barometer made it likely that we should have a breeze. It was determined therefore to anchor for the night in Half-port Bay, a very poor place, but of which the following description is given in the directions for Long Reach, p. 234, art. 601:—

"On the South shore there are a few inlets, but the most useful one for the navigator is Half-port Bay, rather more than a league to the Eastward of Cape Monday. It lies immediately round the South side of a deep inlet, and is merely a slight indentation of the coast. The *Beagle* anchored here on two or three occasions, and found it to be an excellent stopping place. The anchorage is within two-thirds of a cable's length of the western point, in sixteen fathoms, muddy bottom. The position of this cove was ascertained by observation to be in 53° 12′ S., 73° 15′ W.; high water, 2h.; rise, six feet; set, easterly (constant).

Long Reach is long and narrow (about thirty miles by two and a half or three) and ill supplied with anchorages for a ship. Swallow

* Borja Bay is the Island Bay of Wallis. The island is called by him Despair. The *Swallow*, Captain Philip Carteret, in which ship Sir Erasmus Gower was a Lieutenant, anchored here on the 17th February, 1767. There is a plan of the bay in Hawksworth, vol. i., p. 395 and 529.

Harbour, Playa Parda Cove, Marian Cove, and Half-port Bay, such as they are, appear to be the best.

We only advanced thirty-six miles to-day, and came to about 3h. p.m. in Half-port Bay, in twenty fathoms. On sounding round the ship, found two and two and a half fathoms within one hundred yards, which was certainly pointed out by the kelp, and therefore it may be said we had no business so near; but there was not much choice, more particularly when a long steamer has to take up an easy berth for turning with a vessel in tow. The *Vixen*, which had a better berth, was obliged to lay out a warp to the shore to ensure turning, and I took the precaution of keeping the towing hawsers fast. We were in twenty fathoms, rocky bottom, with thirty-six fathoms only out. In Wallis's account of Good Luck Bay, on the northern shore in Long Reach he says, "There may be circumstances in which it may be *good luck* to get into this bay, but we thought it very *good luck* to get out of it." I must say I felt this very applicable to Half-port Bay. I give the bearings at our anchorage, although only for the purpose of their being avoided. Anchorage, twenty, twenty-three fathoms, rock; small islet off mouth of bay, N.N.W.$\frac{3}{4}$W.; West point of bay, N.b.W.$\frac{3}{4}$W.; outermost of two islets, E.$\frac{1}{4}$S. I partially sounded the bay and as far as the *Vixen* and ourselves went there did not appear much choice of berths. No doubt one vessel might find shelter here. Wood and water are also abundant.

16th.—The weather was threatening—rain and fresh squalls from West and W.N.W.—but the glass was rising and I was glad to leave Half-port Bay while I could. Misty rain and squalls prevailed throughout the day, so that oftentimes the shores on either side were invisible. On opening Sea Reach both wind and sea increased, and the *Vixen* made very poor work of towing us against it. Notwithstanding, she towed us twenty-eight miles in eight hours, and towards sunset we thought of going into Darby Cove; but the weather was so thick that we could not make it out, and it had all the appearance of being no better than Half-port Bay. The *Vixen* therefore veered a buoy to us, which, after two or three attempts, we succeeded in getting hold of, when we hauled her stream cable to us and, securing it to the capstern, prepared to pass the night underway. The sea and wind both continued to increase and the steamer hardly seemed to move, but she did notwithstanding.

We observed the little *Otter* bear up for Tamar Harbour, where she found shelter for the night; and, soon afterwards, finding we were not able to make head against the wind and were settling down on Point Felix, we wore, in tow of the *Vixen*, and stood N.W.b.N., with the wind at W.S.W., laying up between Cape Philip and Cape Parker. The wind was not steady, veering between W.N.W. and W.S.W., and blowing sometimes in furious gusts or puffs, for they seemed to be over in a minute. The *Vixen*, however, did much better than I expected, or than she seemed to do, for at daylight on Tuesday, 17th May, I was surprised to find that we had advanced as far as Tuesday Cove. During the night we wore four times. Sea Reach is fifty-six

miles long and of various breadths, as far as Cape Tamar six or seven miles, and to the westward of that fourteen or sixteen miles. In wearing, we managed very well with the yards and fore-topmast stay-sail.

The breeze increased very much and the sea with it, as we had now the Pacific open to us. The glass was also lowering, and Captain Barnard decided upon going into the Harbour of Mercy, now only seven miles from us. The weather was very thick; heavy snow showers from time to time shut the coast in on either side and then broke out again to let us see where we were going. The islands named Westminster Hall and St. Paul's Cupola do not bear bad resemblances to the high pitched roof and dome of those famous buildings, and, standing out as they do from the back land, form excellent marks for fixing one's position. But the Harbour of Mercy, or Separation Bay of Wallis and Carteret, can hardly be mistaken; first, as it is only four miles and a half within Cape Pillar, and also because the Observation Isles, N.W. of the anchorage, and a remarkable conical peak (certainly the most remarkable of the many in the neighbourhood) to the S.E., while farther East the remarkable cliff of Tuesday Cove, making like the wall of a house and prominently standing out so as to hide the land beyond it, distinguish this port beyond any other. But the chart is the best guide. I have no words to express the admiration I feel for the labours of Captains King and Fitzroy. I always have had the highest respect for those who conducted that magnificent survey, but just at this moment—after a gale in Sea Reach, in the sheltered Harbour, well named, of Mercy—it may be excused to say what I have.*

At 11h. a.m. we came to in fourteen fathoms, dark clay. We passed many patches of kelp in entering, but had not less than ten or twelve fathoms in any. It is generally considered very objectionable, as hidden rocks often lie under kelp, which we ourselves found, to my

* I do not understand why this Harbour of Mercy, or Puerto della Misericordia, of Sarmiento should be called the Separation Bay of Carteret. As far as I can understand the voyage both of Wallis and Carteret, as given by Hawkesworth, the *Swallow* took refuge in Tuesday Cove when the *Dolphin* left her, or perhaps in Skyring Harbour, which is exactly three leagues from Cape Pillar; and the last time they were at anchor together was in Upright Bay, where they anchored on the 18th March and remained until the 10th April; on which day they sailed with a rare slant of easterly wind. The *Dolphin* managed to clear the straits, but the *Swallow*, from her wretched condition, was nearly lost off Cape Pillar, and obliged to take refuge not, I imagine, in the Harbour of Mercy, but in Skyring Harbour, where she remained until the 15th April, 1767.

Boswell makes Dr. Johnson ask in a scornful manner, Who would read that now? pointing to the three huge quartos of Hawksworth. But, notwithstanding one wishes oftentimes to have had a Cook or a Vancouver to tell the tale, Dr. Hawksworth's volumes are well worth reading, and will add no slight interest to the spot which the voyager may happen to be on. In reading the hardships and privations of those days, one has at all events much reason to feel thankful for the many improvements and comforts of our time.

great anxiety, in Half-port Bay, but I believe there is no danger in the above. Bearings of anchorage, fourteen fathoms clay:—Mercy Head, S. 85° E.; Misericordia Point, N. 78° W.; Conical Peak, S. 40° E. (magnetic); Westminster Hall Island, N. 46° E. (true), twelve miles South.

The gusts were furious during the day, but we did not seem to feel them; they whistled over our heads and struck the water outside us. The glass, which had indicated this breeze, began to rise in the afternoon, too quickly for settled weather however; but the night was fine and in the morning it was quite calm.

The *Otter*, H. B. Co's steam-vessel, arrived from "the useful and excellent anchorage" of Port Tamar the evening of the day we anchored in the Harbour of Mercy, and remained there after we had sailed, taking in wood and water. She left England on the 4th February; crossed the line on March 3rd, and went to the Falklands for water, remaining there from the 14th to the 21st April; and anchored in Possession Bay on 2nd May;—or sixty-nine days to the Falklands, while we were seventy-three to the straits. He appears to have steamed on leaving England, for five or six days through the variables, and for a few hours into Stanley Harbour, Port William. The Master, Mr. Miller, gave a good account of the refreshments to be obtained at Stanley. Beef, of fair quality, twopence a pound, but vegetables were not abundant from the necessity that exists for sheltering the gardens from the fury of the S.W. gales.

The *Otter* was 286 tons, 135 feet long, 22 broad, 225 horse-power. She had 100 tons of coal on board, and uses about 4 cwt. an hour. Screw 9 feet diameter, shaft goes in 22 inches. Engines direct-acting, Maudsley. Mr. Thom, the Engineer, had his wife and family on board. He had been at Vancouver Island for many years, in the H.B.C. service. Considered the coal of Vancouver Island to be of a slaty nature and of a very indifferent quality. Captain Miller said he expected to be seventy days to Vancouver Island. He was eighty-one days at sea from England to Possession Bay, and we left him at anchor in Mercy Harbour, so that he was at least sixteen days in getting through and probably more, as from the furious N.W. gale on the 19th, I doubt his getting away on that day. In the straits, the *Otter* anchored in Possession Bay, Gregory Bay, Port Famine, Port Gallant, Borja Bay, Tamar Bay, and Harbour of Mercy. He obtained not wood and water only, but coal also, having found a supply that had been left at Port Famine, from which he helped himself. I heard afterwards that they had been sent there one or two years before by a merchant of Monte Video or Buenos Ayres, who had hoped some demand might arise for them.

They gave us an account of a curious interview one of his mates had with the natives between the first and second Narrows. Observing some mounted horsemen, he sent a boat on shore to see if they wanted anything. Four of the natives came down, putting their arms aside previously, and behaved very civilly. When the mate wished to go off, the chief detained him, and expressed a wish to go on board.

The mate it seems was desirous of getting off this proffered visit, and gave him to understand he would come for him the next day. But the Patagonian saw through the evasion, and with great indignation said, "—— you, lie you! You bad heart, you!" and seemed at first as if they were inclined to detain him. However, when the rest of the boat's crew came up, they did not attempt any violence. From the account it appeared to me an opportunity had been lost of gaining some further knowledge of these people.

Abstract of our Passage through.

10th May, 1853, made Cape Virgins; West, magnetic, fifteen miles distant. At noon taken in tow by *Vixen*, just inside Dungeness.

Date.	Anchorage.	Miles.	R & F
10th May	6h. p.m.—Under Mount Aymond, Possession Bay, 16, 19, 22 fathoms, c.d.s.	36	42
11th ,,	Under Punta Arena, the Chilian settlement, in 14 fathoms, s.	80	6
12th ,,	St. Nicholas Bay, 17 fathoms, sand . . .	42	
13th ,,	Fortescue Bay, Port Gallant, 7 fathoms . .	40	
14th ,,	Borja Bay, 23 fathoms	24	7
15th ,,	Half-port Bay, 22 fathoms, rock. A very bad, insecure anchorage	36	
16th ,,	At sea, in tow of *Vixen*, in Sea Reach. Very heavy sea and strong breeze	30	
17th ,,	At 11h. a.m. in the Harbour of Mercy, Puerto del Misericordia of Sarmiento, 13 fathoms . .	20	6
	Harbour of Mercy to Cape Pillar . . .	4	
Eight days.	Seven times at anchor.	312	

At 8h. a.m. on Wednesday, the 18th of May, towed by the *Vixen* twenty miles West of Cape Pillar.

(To be continued.)

The Arctic Expeditions.

The pages of this work have preserved for the future historian some of the principal results of the Arctic Expeditions along with some painful reflections on their consequences. They would seem to have been destined in the case of Sir John Franklin to have been unfortunate throughout. The succour which was intended for him and his companions, after following them short of their position, took unhappily a wrong direction, and there is too much reason for believing that while

they were perishing in the South on ground never trodden yet by British seamen, they were vainly sought in the North. How truly has Cowper said,—

> "Reasoning at every step he treads
> Man yet mistakes his way,"

and how thoroughly verified to the letter have these lines been in relation to the search for Sir John Franklin.

In our reflections in a former number we showed the gaps left in the coast line of the islands in the neighbourhood of which there can be no doubt that a party of Franklin's people passed towards the entrance of the Back river, and we understand that an application for a small farewell expedition to explore those gaps as well as to recover if possible some journals or books from their lost recesses has been only set aside by reason of the lateness of the season to prepare it. Geographically there are good reasons for such an expedition,—added to which there is yet the *chance* of recovering some kind of the written documents in question. Let us hope it may yet be sent in the next season. Chance might throw into the hands of a searching party, now that we know where the exertions of that party should be directed, what may compensate for sending it, and should such journals be found, the sympathies of every one will be with those who can recognize such relics as those of their lost relatives.

But we turn from these to those whose exertions have contributed to bring to light what we now know of our lost countrymen; and first is the case of Dr. Rae. The narrative of this gentleman will be found in a former volume. How well he has established his claim to the reward of H.M. Government we need not say, since it has been awarded to him, and any one who enjoys Dr. Rae's acquaintance will, we are certain, rejoice in his success on the grounds of personal friendship. On public grounds, the numerous contributions he has made to Arctic geography, without the comforts of a ship over his head, sleeping either in a snow hut, or with an inch or so of snow on his blanket, and many of those contributions confirmed in their accuracy by naval officers who have gone after Dr. Rae, have well established his reputation as a correct officer, and an excellent specimen of the kind of individuals in the employ of the Hudson Bay Company. He has been well tried and proved himself up to his work, not excepting the work of the sextant and chronometer amid the severities of the arctic climate,—and we rejoice in his success in the case before us. The lot has fallen into worthy hands.

Turn we now to another subject connected with Arctic Expeditions in that of watching their progress and feeling an interest in their success. The following letters will show how completely the well-known zeal of the late Sir John Barrow in promoting Arctic discovery has devolved on his son, and brought with it that cordial cooperation and attention to the comforts and wishes of all who have been employed in these expeditions. Having often witnessed the energy displayed by Mr. Barrow in these matters, and his anxiety to contribute all in his

power to forward to his utmost the humane objects of the several expeditions, and the wishes of those employed, we congratulate him on his services being so properly appreciated as they appear to have been. And although all that has been done has been fruitless in respect of the main object in view,—although a sad and fatal mystery has shed its baneful influence on the unhappy expedition of Franklin, and concealed the path which led to his rescue most effectually from all the repeated attempts of his countrymen to find it, assisted as they were by our enterprising brethren in the United States, while we yield to the will of Providence we can dwell in admiration on the noble exertions of those whose names have been thus brought prominently forward, and sympathize with the less fortunate relatives of those who have unhappily perished in the cause of Arctic discovery.

June 28th, 1856.

Dear Mr. Barrow,—We, whose names are subscribed, and who comprise nearly all the officers recently employed in the search for the missing ships *Erebus* and *Terror*, are desirous to express our grateful thanks for those kind and unwearied attentions which have marked your conduct in furthering the noble object we were engaged in, and feeling that actions like these, which show not only an ardent desire for the welfare of the public service, but an anxiety to promote the individual comfort of us all, are more worthy than passing words ought to convey, we beg your acceptance of the accompanying testimonial, which, while it marks the accomplishment of that great problem which formed a prominent object in the laborious and useful life of your honoured father, will, we trust, convey to yourself and to your family that just appreciation of those estimable qualities which have signalised your connexion with us.

Numerous applications from persons of all ranks and descriptions, (amongst whom none has been more desirous than Lady Franklin,) have been made to join in this our tribute to worth: but feeling that it would lose its characteristic as a token of esteem for acts of kindness personally rendered to those engaged in the search, the subscription list has been confined to those actually employed in the Polar sea, an evidence to posterity that we who were occupied in this our duty to our missing countrymen, are deeply sensible of the value of your assistance.

It remains but for us to tender our congratulations on this anniversary, and with a fervent prayer to the Almighty that it may please him long to preserve you in a career which has gained you the esteem and affection of all who come in contact with you,

We must ever remain your sincere and obliged friends,

Henry Kellett	James Ross	E. Ommanney
Rt. Le. M. M'Clure	T. E. L. Moore	G. H. Richards
F. L. M'Clintock	E. A. Inglefield	G. Cresswell
Rochfort Maguire	Henry Trollope	G. A. Phayre
Sherard Osborn	H. Austin	J. B. Cator
E. J. Bird	C. H. Vernon	W. Pullen

G. F. Mecham	T. Bourchier	W. H. Richards
J. B. Elliott	J. A. Allard	W. Elliott
B. C. T. Pim	C. R. Markham	E. Jago
P. R. Sharpe	R. Anderson	J. Biggs
R. V. Hamilton	J. Rae	T. B. Foster
R. Roche	R. M'Cormick	F. Y. Toms
F. J. Krabbé	John Simpson	Rd. Collinson.

7, *New Street, Spring Gardens,*
June 30th, 1856.

My dear Captain Collinson,—I cannot express the sense of gratitude I feel towards you personally, as well as towards each of the Arctic Officers who have so kindly presented me with a testimonial, beautiful and valuable in itself, but of far higher value as conveying in so marked a manner your approbation of my conduct during a long period of great anxiety, whilst you and they were employed in various parts of the Arctic Seas in search of the discovery ships *Erebus* and *Terror*.

You will readily believe that I, in common with all my countrymen, feel deeply grateful to you and to your brave coadjutors, both officers and men, for your zealous exertions in so noble a cause, and that I shall ever reflect with feelings of pride on the intercourse and friendship to which it has given rise between us.

Few persons perhaps are more acquainted than myself with the severe nature of the service upon which you have been employed, and feeling so assured, I do not hesitate to say that the annals of this country furnish nothing finer than the patient endurance of toil, privation, and suffering you have all so cheerfully undergone in the sacred cause of humanity.

Although your efforts have unhappily not been crowned with the success they deserve, they have nevertheless led to the solution of the great geographical problem which so long engaged the attention of my lamented father, and have thus secured to our country an honourable distinction in the accomplishment of an enterprise, which through successive reigns, and for nearly three centuries, had heretofore baffled every attempt.

For my own part I have only to regret that in my humble position there was so little scope to act as I could have wished, but the will to serve you and to advance the cause was ever present with me, as it ever will be when occasion may call it forth.

Again sincerely thanking you for the kind part you have taken in the matter, and requesting you to convey the expression of my gratitude to your brother officers,

I remain, my dear Captain Collinson,
Your obliged friend,
JOHN BARROW.

Capt. Collinson, C.B.

Inscription.

TO JOHN BARROW, ESQ., F.R.S., F.R.G.S., ETC.,

In grateful remembrance of his kindness and attention, and as an acknowledgement of his valuable exertions in the furtherance of the search for Sir John Franklin and his Companions; an object which he pursued with hereditary ability, energy, and devotion: this token is presented by several of the Officers employed in the Arctic Searching Expeditions, 1848–54.

An Obelisk of Aberdeen granite has been erected in front of the Royal Naval Asylum at Greenwich, to the memory of the gallant Lieut. J. Bellot of the French Royal Navy, on which the following inscription appears:—

TO THE INTREPID YOUNG
BELLOT
WHO IN THE ENDEAVOUR TO RESCUR
FRANKLIN
SHARED THE FATE AND THE GLORY OF THAT
ILLUSTRIOUS NAVIGATOR.

FROM HIS BRITISH ADMIRERS
1853

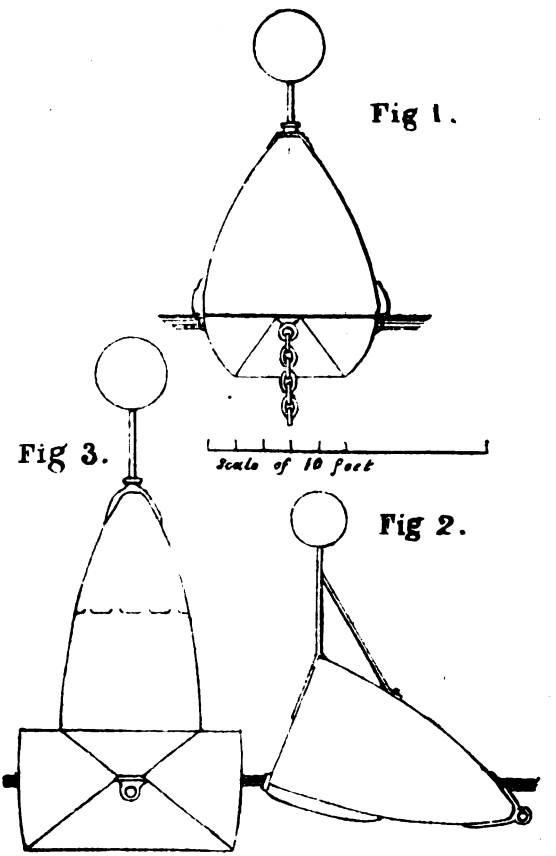
THE SEAMARKS OF OUR COASTS.

"A steady seamark is an inestimable boon to mariners."

A few observations on the very important subject of Seamarks will not be considered out of place in these pages. They are suggested by a recent proposal for improving those valuable guides for seamen by Mr. George Herbert; and with the assistance of this gentleman's views we hope to find our channels hereafter navigated with as much safety as any high road of this or any other country.

In our number for January, 1854, we described the principle of construction then first brought forward by Mr. Herbert; the experience which has since been obtained has fully verified the statements then advanced. This principle is to construct floating bodies, not intended for locomotion, so that they shall be moored from the centre of gravity, which, by a due distribution of weight, is made coincident with the centre of the plane of flotation. In order to attain this condition the bottom of the floating body is hollowed out and raised up, so as to form a hollow cone, to the apex of which the mooring is attached. Many buoys have been constructed on this plan, and unquestioned success has attended their use: they preserve an upright position under all circumstances, whether in a gale of wind, in a heavy sea, in a strong tide, or in all combined. The attainment of this condition is in itself alone a very great step in improvement.

The quotation at the head of these remarks is from some observations made by a high naval authority at the Institution of Civil Engineers, in a discussion of this mode of construction. It was stated by the same high authority as above alluded to, that "The reports he had received of the qualities of the buoys of the new form at the Gunfleet and other places, were most favourable; they remained erect and steady in very heavy whether where those of the ordinary construction were in general buried under the waves, and not unfrequently broke from their moorings."* Indeed the efficiency of these buoys was also fully acknowledged by the Deputy Master of the Trinity House and others, at the same meeting:—"Advantage had been taken of this principle for the construction of buoys, and it was strongly recommended for that purpose." It was admitted by them "that the system was admirable for buoys, it had proved highly successful, and



* See pamphlet, *Herbert on the Construction of Floating Bodies*, p. 12.

it was hoped it would be further tried." The acknowledged utility of these buoys will, we hope, ensure their universal adoption; for the vast amount of property now afloat demands that every means should be employed which will in any manner tend to render navigation secure. We subjoin an outline of the new buoy, fig. 1; one also of that in ordinary use, fig. 2; and of a mode by which the latter may be adapted to the new plan, fig. 3.

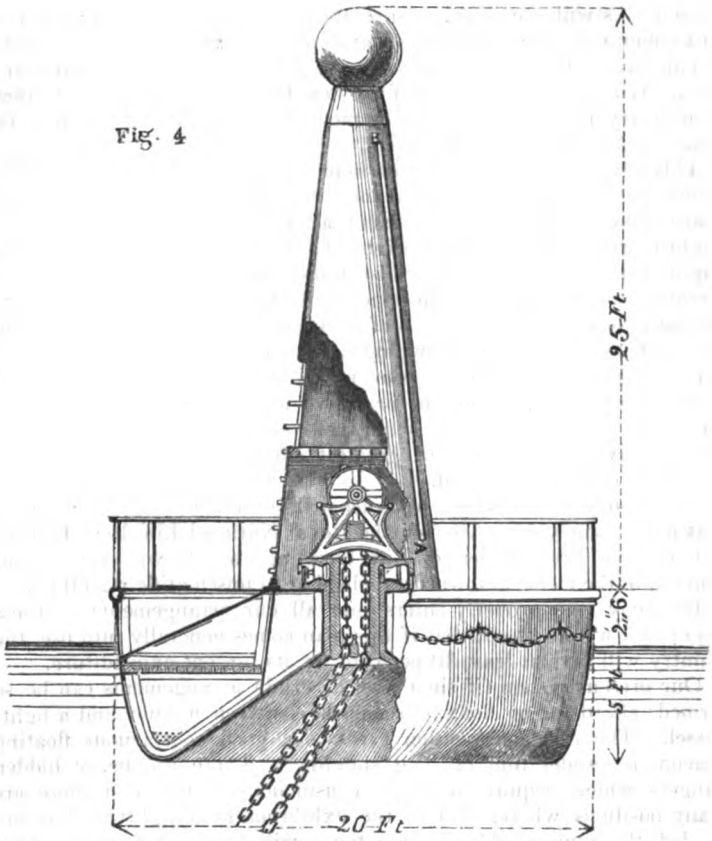
This adaptation consists in first removing the heavy ironwork with which the buoy is encumbered, and then placing its head, as a new floating base. By this arrangement all the buoys around our coasts might be rendered not only upright and plainly visible, but they also might be made *safety buoys*, whilst those now used are wholly unserviceable for saving life. The opportunity thus afforded of giving to mariners the "inestimable boon of a steady seamark," and at the same time of providing for the drowning sailor a floating refuge, surely cannot be neglected. Which of our public maritime bodies can persist now in continuing the present primitive and crude mode of floating the buoys of the old form, laying them on their sides in the sea, and thus depriving them of their greatest efficiency for the real purpose for which they are intended.

It is a subject also which we trust will not escape the attention of that noble society of gentlemen the Royal National Life Boat Institution for the Preservation of Life from Shipwreck, who cannot but contribute their efforts towards abolishing so unscientific a method.

Economy very properly enters into all our arrangements in these days; and we doubt not that if this plan comes generally into use, the country will save at least 30 per cent. of its present expenditure.

Our present system (if such a set of crude arrangements can be so termed) affords us no floating seamarks between a buoy and a lightvessel. The new construction gives us a good conspicuous floating beacon, a desideratum of long standing. There are many hidden dangers which require bold and conspicuous marks, and there are many positions where, though the exhibition of a lightvessel is not needed, the unmistakable floating tower will be the means of saving many lives and much property. We subjoin an outline of this beacon twenty feet in diameter at the water line, and having a tower rising up twenty-five feet in height, surmounted by a ball three feet six inches in diameter, see fig. 4. The body and tower are of plate iron, the interior formed with four bulkheads or partitions, so constructed that if any accident should occur to any one part the structure would not be submerged. The upper part of the tower is fitted with a door and ladder irons, by which access is had to an upper compartment, containing biscuit and water for those who may seek refuge on the beacon. The central chain mooring, which holds it at the centre of gravity of the mass, is connected with a windlass, which, with the central tube or hawse pipe, turns freely as a swivel in the middle of the body; or, in other words, permits the body of the beacon to rotate freely if so disposed without twisting the chain; the links of the chain being held firmly by a stopper close to the mouth of the hawse pipe.

Fig. 4



By this contrivance of a continuous or endless chain, rove through a suitable shackle attached to the mooring anchor, any portion of it may be sighted, examined, and painted periodically, so as materially to lessen the chances of deterioration or failure. The tower is also fitted with a signal line, by which notice may be given if assistance should be required.

A beacon similar to this was built by the Trinity House two years since, and was placed by direction of that board in the overfall of the sea at the South Sand Head of the Goodwin Sand. It was not placed there as a mark, but only to test its qualities, for nothing in the shape of a ship could have retained her position where it was moored. The South Sand Head Lightvessel was about a mile distant from this beacon, and the master and crew were directed to watch it. A description of the manner in which it rode in such disturbed water is important, and we consider it right to preserve here the two following letters

from two veteran seamen; one from the Master of the South Sand Head Lightvessel, the other from our much esteemed correspondent Capt. Martin, the respected Harbour Master at Ramsgate.

The Master of the light-vessel says, "I here give you my opinion, as near as I can, from what I have seen while watching it. The tide does not seem to have any particular effect upon it, to cause it to sheer about, or to give it a list, or to turn it round more than a vessel; the wind cannot affect it to cause it to roll. Its motion is quick and caused by the waves. Its motion depends on the heave of the sea, whether it is a short breaking sea or a long bowling sea: in a short breaking sea its motion is the greatest. The angle made by it is not so great as the waves it rides in. When I was upon it I could not perceive any tugging motion on the mooring. It turns round as a vessel would do with the tide, that is to say it follows the tide round. I could not distinctly see whether the sea washed over the deck, but I should think it did; there was not however any heavy breaking sea against the tower, if so I should have seen it. I should think it rolled out of the perpendicular about five feet, as near as I can guess."

The following is the letter alluded to from Capt. Martin.

Harbour Office, Ramsgate,
November 18th, 1854. *A Heavy Storm.*

My dear Sir,—Your letter found me in a most anxious position, at 7h. 30m. a.m. the Gull light having fired three alarm guns. The harbour steamer, with the life-boat manned all ready for a start, but, although quite clear, nothing can be seen upon or near the sand, and if anything has gone it has instantly gone to pieces. The sea is so heavy over the pier at high tide that it is impossible to tell what damage it may do. Wind E.N.E.

Well! I have felt great interest in the experimental beacon, and, although I have not taken the liberty to inspect it, its principle and merits have been thoroughly explained to me. I have continually inquired of our cruizing luggers as to whether it remained and how it rode, and they have thus far bestowed unqualified praise upon it, as to its shape,—being so different an object to all other buoys or beacons would they imagine be sure to attract the notice of any shipwrecked crew who had taken to their boats and were adrift upon the waters. It is this moment undergoing a heavy ordeal. What must the sea be there when I tell you what it is here? I have great apprehension for our stone parapet unless the storm abates.

When our luggers returned to-day about noon, I put the following questions for your information:—

Have you been near the South Sand Head?—Yes.

Did you see the new experimental beacon?—Yes, we sailed round it.

How near were you to it?—Close, close within hail, if there had been anybody upon it.

Could anybody have been upon it?—Why, yes Sir, it was as upright as a dart.

Well! but there must be a tremendous heavy sea there, how does

it ride?—Oh! rides, why it rides well enough, it is right upon the top of everything and we can see it a precious long way off.

What! can you see it as far as one of the Minster buoys?—Yes, farther.

Why, how can that be?—Why, it doesn't roll about so much, it lifts right up and down, and, don't you know Sir, it looks like a light-house a little way off, &c., &c.

There is, unfortunately, a confusion of ideas in relation to the action of the sea upon a circular float moored from the centre of gravity. We have heard men of sound judgment upon most nautical subjects talk of the difficulty of mooring such a body, and compare it to mooring a ship with its broadside to the sea, and even speak of the "broadside" of the circular body itself. That there is no analogy whatever between the two is evident from the results of the practical trial above stated. The diameter of the beacon was twenty feet, the beam of the South Sand Head light-vessel was twenty feet also;—from the reasoning of these gentlemen,—the light-vessel having a good entrance and the beacon being moored "broadside" on,—the light-vessel ought to ride with greater ease. But what was the fact;—while the light-vessel, tied down by her head to the bed of the sea, was dipping and plunging and splashing the seas over herself, and with her mast vibrating from side to side more than 26° from the perpendicular,—the sea never broke against the beacon, though its deck was only two feet six inches above water, and the tower of the beacon never heeled more than 10° from the perpendicular. This practical result is surely a refutation of the "broadside theory."

The Deputy-Master of the Trinity House very justly observed, in the discussion before alluded to, "that the new buoys were eminently successful and would prove of great service by being placed where light ships could not well be employed." There are many such positions, one or two of which we will venture to name. There is, for instance, the dangerous causeway in Cardigan Bay called Sarn Badrig. The trade some time since applied for a light-vessel to be placed off the western end of these rocks. It was not, however, we believe, considered necessary to incur this expense; at all events the light-vessel is not there, and the spot is simply marked by an ordinary buoy, similar to that shown at fig. 2, which is not discernible in an ordinarily dark night. Were the beacon we have just been describing moored in lieu of the buoy, it would render this danger distinguishable in even the darkest night,—for light, which is always to a certain extent visible above the expanse of the sea, would enable the mariner to readily "pick up" this substantial tower rising, as it would seem, out of the ocean.

There is another even more dangerous reef which is at present without any mark. It extends about two miles and a half off the N.W. end of Guernsey, and is called the Hannois Rocks, and a dismal catalogue of losses associates an unusual degree of sadness with the name

of this dreaded danger. The exhibition of a light to mark these rocks has been long in agitation; while the necessary arrangements are going forward, before this can be done, a beacon placed half a mile outside of the danger might be the means of saving many a vessel, and such beacon, being itself a place of refuge and capable of holding more than 100 men,* and having biscuit and water in the tower, might, in the event of wreck occurring, prove a blessing to the castaway seaman.

We forbear from pointing out any other of the numerous dangers around our coasts, for perhaps sufficient has been said at present to awaken the sympathies of our readers to this very important subject, and induce them to appreciate the great benefits which would result to the good of humanity and the advantage of trade from the general adoption of Mr. Herbert's principle of construction for sea marks. That attention we also hope for to some further observations on this subject reserved for our next.

The Shipwrecked Mariner's Society and the National Life-Boat Institution.

July 21st, 1856.

Sir,—I shall feel greatly obliged by your insertion of the following proposal should you think well of it.

I have had no communication, either directly or indirectly, with the Shipwrecked Mariner's Society or the National Life-boat Institution on the subject, but find that the former have—in half-crown subscriptions—as many as 42,000 members, against 27,000 in 1850. I consider each subscription a testimonial of favourable public opinion.

At their annual meeting of 30th May last the following "confession" was made by the committee, "that both institutions now work together most amicably, and they are happy in having been able to aid the sister (Life-boat) institution with £375, gathered chiefly from sailors in three-pences, and they greatly regret that so excellent an institution should be so feebly supported by the public in comparison with the importance of the work."

I happened some years since, when living on an exposed coast, to be the instrument by which the soothing balm of the benevolence of this Shipwrecked Mariner's Society was conveyed warm to the hearts of poor afflicted widows and orphans. I therefore have seen and felt its great value, as this admirable society not only helps the bereaved but it encourages the brave;—not merely in Great Britain, but its benevolence extends to the colonies, and during the last year £596 was given to colonial seamen for saving 2,366 lives!—while the Royal National Life-boat Institution spent in the same year £3,145 in build-

* The deck around the tower has 260 square feet.

ing and repairing life-boats, which saved on our own coasts 1,388 persons!—for which no more than £300 could be spared to encourage further exertions,—averaging in each case about five shillings for saving a life!—and yet leaving this most noble institution £3,000 in debt!

In the three months between 1st March and 30th May last the relief afforded to widows, orphans, aged parents, and for losses of clothes, boat, damage to boat, &c., as well as relief to shipwrecked crews of all nations is enormous—positively astonishing. It must, however, be evident that calls on the funds of these societies will increase as their benevolence becomes known, and every summer gale swells the list of ready applicants.

It is true the London Assurance Corporation have set a good example in forwarding a second donation of £100; the Royal Mail Steam Packet Company give annually £10! the Royal Yacht Squadron give £5 annually! but I wonder if other assurance corporations would be deaf to an appeal, or if large shipping companies—such as the wealthy Peninsular and Oriental, the Cunard, and other societies—would lend a timely hand? I am confident that more extended and more direct applications made to insurance societies all round the coast, as well as to shipowners, yachtsmen, and others, would largely increase the funds of these two "sister societies"—sisters of mercy indeed to poor sailors!

But who is to make such applications? It is from private influence and individual exertion that we must look for fruits. I happen to have been for many years a yachtsman, and can spare but little; yet this little may stimulate another and another and so on, until some great and permanent help might be rendered.

Leaving, then, to others to act according to their several opportunities, I have taken some pains lately to arrive at the amount of tonnage owned by and sailed by yachtsmen in Great Britain. I can give names and particulars of nearly 1,200 yachts; and of the whole number the following gives the proportions of each rig, viz:—

250 schooner yachts	averaging about	60	tons	15,000 tons.
1000 cutters	,,	17	,,	17,000 ,,
60 yawls	,,	35	,,	2,100 ,,
6 luggers				500 ,,
7 sloops				800 ,,
2 wherries				70 ,,
6 steam-yachts				1,000 ,,
				36,470 tons.

The above enormous amount of yacht tonnage at sixpence a ton would yield £900 for one year, besides additional subscriptions to which the contributions would, when known, give rise. In three or four years the Life-boat Institution might pay off all its debt of £3,000 from this source alone! I propose, therefore, that the sister societies make a joint appeal to yachtsmen. I, as one (and I inclose my card), having a small vessel, will cheerfully subscribe ten times its tonnage in sixpences, *pro rata*, as a beginning, and the proposal comes better

through your respected magazine than through the institutions themselves, and I cannot doubt your willing co-operation. Let other yacht-owners come forward for only one year and the trifles from each will indeed prove a blessing to the coast.

Again, the mercantile tonnage of Great Britain is estimated at 3,637,231 tons! Is it likely that one British shipowner in three would refuse his farthing per ton? or his half farthing? If all subscribed, these farthings would amount to nearly £4,000 for one year! This, with what might reasonably be expected from shipping societies, each contributing its mere trifle, would raise such an amount as would do more real good than the public—ignorant of the actual working of these societies, would believe! and, what is more important, would before the winter enable the whole system to be put in more perfect working order.

You will see from my card that I have some means of assisting beyond mere contributions, if I knew how to set to work. I hope every respectable newspaper in the kingdom will second this proposal. You may freely command my humble services, and your advice will greatly oblige.

I have, &c.,

To the Editor of the *Nautical Magazine*. X.

[The Commodores, Vice-Commodores, and Secretaries of Yacht Clubs might look to this, and all Harbour Masters might open subscription lists at their offices, as is already done by Capt. Martin at Ramsgate; the Custom-houses every where in the country doing the same, and keeping their attention on the subject, would go far to effect the important object of our correspondent. The *Nautical* will always be ready to encourage their proceedings.—Ed.]

The Perplexities of Patentees Prevented.

In our last number we gave insertion to a letter headed "The Compass Conquered." It is to be regretted that on so important and exciting a subject we have so little additional information. We doubt not that Mr. Saxby is meanwhile exercising a proper diligence, and we know he is availing himself of the opinions of the most reputed navigators of the port of Liverpool; indeed, that such opinions are strongly favourable. We would, however, imply no unfriendly censure when we say, that the sooner the public are made acquainted with his plan for correcting the compass, the better; and we trust to be able in our next to describe full particulars of his new instrument. We duly estimate his habitual desire of accuracy, but when so perplexing an evil as the compass question is said to be surmounted, precautions which in other cases entail delays may be overstrained in one

which really requires prompt and fearless public introduction. It only reminds us, however, of the difficulties under which even the most useful improvements of the age progress. Too often do we see inventions of merit impeded by the want of some competent authority to encourage their projectors. Too often patentee and resources are exhausted before the full developements of an invention are even advertised; and, strange to say, the more novel, or in other words the more meritorious the discovery, the more has the patentee to contend with, and the longer he is in reaping his reward. We may even adduce Mr. Saxby's patents as proof that the present system does not work well. This gentleman, who has, from his thoroughly practical knowledge of all nautical matters, furnished through several years communications useful to seamen; and who nearly three years since announced in these pages the important discovery of a means of arresting a ship's refractory cable, by means of a simple deck stopper, is only now beginning to see it generally introduced; and many useful appliances in navigation are under similar disadvantage; indeed, it is somewhat anomalous that the length of time required to introduce a good improvement is no test of its real value.

We refer to the stopper with pleasure, because our opinion, as published in the *Nautical*, has been in so many instances fully corroborated by actual and undeniable experiment on shipboard. The following letter, being one of many, was forwarded to us, not for insertion, but with some complimentary remarks as to our early appreciation, &c.; and it proves that an invention of such value might under a different system have been rendered sooner available.

Liverpool, 22nd May, 1856.

Dear Sir,—With much pleasure I give this testimonial to the value of your patent stopper for ship's chain cables; it was fitted on board the vessel under my command, and on a voyage to Calcutta and back I found it of great value indeed; it had a good trial in the river Hooghly, and on one occasion particularly, at the top of spring tides, in the anchoring creek above James and Mary. And when properly fitted I can confidently recommend it to any one navigating strong tidal rivers, and for all purposes where the anchors may be frequently used.

CLEMENT MOSSOP,
Commander ship *Florence Nightingale*, 1362 tons register.
S. M. Saxby, Esq.

In the case of Mr. Saxby we ought, however, in justice to remark, that much delay necessarily occurred in experiments at the large anchor and cable works at Saltney. His principle was novel, and engineers could give no assistance; likewise the application was one which, if found perfectly available, was to supersede all others in safety to life and property. Hence the inventor's laudable caution in introducing it. But the public know little of the expences of perfecting some patented articles; and it is an argument in favour of

patents in general that they encourage talent in the production of improvements which, without some inherent prospective and personal interests, would often be abandoned. We have been informed that if Messrs. Wood, Brothers, of Saltney, had not with commendable public spirit placed at Mr. Saxby's entire disposal one of their four hydraulic presses, it is probable that the use of his principle of the deck stopper in its highly important applications would have been delayed, if not lost altogether; and if we refer to the enormous cost to individuals of various heavy iron castings, so necessary for full and complete experiment in this and similar instances, it is only to illustrate the probable value to the public of an establishment about to be opened in Liverpool in connection with one to follow it shortly in London, and from our knowledge of the manner in which Mr. Saxby has for years (and even to the detriment of his professional prospects, now entirely abandoned) devoted himself to nautical improvements, we can rely on his ability and energy. We see he has arranged with many of the principal patentees of the kingdom to establish a depository in which shipowners and merchants from the coast or from foreign parts visiting Liverpool may under one roof see working models of all recent improvements as regards shipping: and, indeed, may inform themselves at a glance of all that is acknowledged good and of most recent introduction in anything connected with the building and fitting of a ship. This depository will comprise every department, such as shipwright's, captain's, steward's, carpenter's, boatswain's, &c.; and all this even to complete equipment for sea.

Now we would suggest to Mr. Saxby that much public good might be conferred if he in working such an establishment could devise a method of raising (to quote his own words*) "a small fund to enable patentees to test proposed and well promising improvements for shipping." We heartily wish him success in his useful undertaking.

LANGSTONE AND WEST HARTLEPOOL.

It has been said by a high authority, the late Admi. Sir George Cockburn, and urged in words of warning for the security of this country, that the time has arrived when we should look to our docks, that we should have sufficient to contain our mercantile shipping as well as those of the State; but they should be those docks in which the former would be able to load and unload in perfect security, and could enter and leave at all times. There can be no doubt that England, thanks to her fleets and armies, stands high in the scale of nations. But the higher her position, the more jealous should she be of retaining it. And to do so effectually, she must keep pace with other countries in improvement; she must above all encourage maritime commerce in the time of peace, that the establishments by which that commerce is carried on may strengthen and avail her in time of war. The advice is well worthy of attention. There are many places on our coasts where harbours of refuge and

* *An Address to the Shipowners of Liverpool*, by S. M. Saxby, 1854.

commerce might be constructed. Look at Hartlepool for instance. We are doing much at Portland and Dover, and some other places, but are we dealing with these matters as liberally as their importance claims? They should be encouraged, for small as they may be they expedite commerce and thereby the resources of the state.

Among the various projects of this nature proposed on mercantile views is that of Langstone, near Portsmouth, an account of which appeared in our last year's volume. The advantages of this situation, both with reference to immediate communication by rail with the very heart of the country, as well as its proximity to sea, and the entire freedom of the trade from the dangerous narrow navigation of the Channel we then alluded to, as being offered by no other similar project in the kingdom. The principal requirement we then admitted was the removal of a bar, and we are glad to find that a celebrated engineer has satisfied himself that even this obstacle is capable of removal. We are anxious to place this on record in these pages, as we hope soon to see Hayling emerging from its primitive obscurity, and gradually becoming another Liverpool without its dangerous entrance and its dangerous circuitous navigation. This gentleman says,—

"With regard to the probability of deepening the bar at the entrance of Langstone harbour, I examined that bar in September, 1851, and am of opinion, that it can be removed so as to give a depth at low water of about 18 feet, (spring tides,) and at high water from 25 to 26 feet. I am clearly of opinion that this depth of water may be obtained over the bar going into Langstone harbour, and maintained by the tidal scour if the works be properly constructed.

"I am not aware of any harbour affording more favourable facilities to the formation of docks than Langstone harbour, or where better shelter can be afforded to such works."

This should be guarantee sufficient for capitalists to go to work in earnest at Langstone, and, as we have already observed, uninterested spectators as we should be in a mercantile view, we could not but feel the deepest interest in its success, as it would contribute in no trifling degree to the general prosperity of our favoured land.

While on this subject we may take the opportunity of referring to what has been done in the way of making harbours at Hartlepool. The enterprising and sound views of R. W. Jackson, Esq., on the subject, have excited the following observations, which we find in a Sunderland paper.

"A new port sprang up beside us. We laughed at it at first. Half the world of the North laughed at Hartlepool as a sham. It was very well to make docks, but where was their trade? And where is it? A quarter of a century has passed over, and Hartlepool, in the month of April, has shipped 64,064 tons of coals to our 52,719. We are not more above little Seaham than she is below Newcastle with her numberless collieries. They have found the trade; one energetic mind, one strong will, has made her trade. But Hartlepool is doing more than this. She has beaten us in the coal trade, and she has other trades too, which we might have but have not. . . . We say, 'Men of Sunderland, do as the men of Hartlepool do.' She is building ships too; she may rival us there soon. She has already done what we should have done. She has set up a line of steamers running to Holland. She is shipping cloths from the looms of Leeds for the burghers of Rotterdam and Amsterdam. We thought of doing that once; we met, we talked, we dined, and there it ended. *Our* Foreign trade is nothing; we buy timber, but all other foreign trade is done by our ships with the port of London. *Our* shipowners will not trade here; we have no warehouses; no one comes here to buy. We have no inland trade; our railway is a dawdling concern that keeps changing its carriages every two or three miles; a sort of carrier's van from here to

Durham. . . We are quite in the background,—and for lack of energy George Hudson made our docks almost in spite of us. Honour, we say, to the draper of York who built our docks, who built the great high level bridge, and who would have built one for us if we would but have helped him. Oh, that we even had a Ward Jackson! Would that even George Elliot was linked with our interest. There are men that make the wealth of a town: but, alas! we have none of them."

But here is what has produced these remarks. We quote from a speech of Mr. Jackson himself at the opening of the harbour in question on the first of June last.

I am enabled to state to you that this locality,—I am speaking of the town of West Hartlepool,—before any docks were opened on this side the bay, had 226 houses, but at the present day there are 1,400. I am enabled to state that the place upon which we now stand was a meadow, and that we can now publish to the world that we have, in docks and in staiths, accommodation of 86 acres. I am enabled also to state that, within a ring fence, we have accommodation for trade, wholly unfettered by any public ways, of 145 acres. I think, therefore, gentlemen, that what we have accomplished in the short space of eight years is quite enough to be satisfied with for the present; and it remains to us now to endeavonr to bring out the resources of the district by means of the works at West Hartlepool, which the undertaking was originated to produce, and which we shall assuredly see realized. In the short space of eight years we have entered and sailed out of the West Harbour and the two docks, 30,566 ships. In the first six months after the opening of the small dock that you see down there to the north-east, we had 460 ships; in the next four years, ending 1851, 11,659 ships entered; in the year 1855, just closed, (the second four years,) there were 18,447; and in the last year we had 4,816 ships in that very place. In 1854, the value of the merchandise goods exported from West Hartlepool to Hamburg amounted to £267,709, and in 1855, to £782,739, or an increase of above half a million in one year. Gentlemen, it must be manifest to you that works of this character must have cost a great deal of attention and some considerable capital. This has been very liberally supplied, as you must all have observed; and I am gratified at being able to state that, by a comparison with a noble port on the west coast, namely, Liverpool, that the docks at West Hartlepool had not exceeded in cost one third the cost of the Liverpool docks per acre. I believe that in point of completeness they would bear comparison with any docks in the kingdom. The port of Hartlepool, which, before this West Hartlepool was established, had an income from its customs of £4,368, in the last year has increased 360 per cent., owing entirely to the labour of West Hartlepool. I have also to state that from the vessels inwards with foreign cargoes, as well as English exports, the customs have averaged 474 per cent. increase; and outwards, with foreign cargoes of English goods, about 264 per cent. Gentlemen, these are little facts that speak far more than a few "spits" of rain can do. I will now only return my sincere thanks for the compliment you have paid me, and for the honour you have done me this day.

The foregoing facts we need scarcely add were received by a large assembly with unmistakeable expressions of approbation, and all we need add is, our desire to see Langstone doing the same with another Ward Jackson as its leader.

The Projected Suez Ship Canal.

The European Commission of Engineers assembled in Paris to discuss the details of the plan for cutting a canal across the isthmus of Suez have brought their labours to a close. The following is a summary statement of the resolutions agreed upon at the various sittings:—

1.—The commission have rejected the system of indirect trade across Egypt, and have adopted the principle of a direct cutting from Suez to the Mediterranean.

2.—They have rejected the system of supplying the maritime canal from the fresh water of the Nile, and have adopted that which supplies it with sea water.

3.—They have discussed the advantages and inconveniences of a canal with continuous embankments from one sea to the other, and at the close of their discussion it was decided that the canal should not be embanked in its passage across the bitter lakes.

4.—The effect of the interposition of the bitter lakes, thus left open to the waters of the canal, being to neutralise the tidal current, the commission have considered that the locks proposed at each end of the canal, at Suez and Pelusium, would not be indispensable. They have left it open to establish these locks, however, at a future period, should they be judged necessary.

5.—They have confirmed the breadth of 100 metres (328 feet) at the water line, and 66 metres (270 feet) at the bottom, throughout the main course of the canal; for the portion 20 kilometres (12½ miles) in length, between Suez and the bitter lakes, which is to be lined with stone, the breadth is reduced to 80 metres at the water line (262 feet), and 48 metres (156 feet) at the bottom.

6.—The section of the precursory scheme drawn out by the Viceroy's engineers is in other respects maintained.

7.—As regards the entrance into the Mediterranean, to be called Port Saïd, the commission adopt the plan of jetties proposed by those of its members who proceeded to Egypt, with the exception that the breadth of the channel will be 400 metres (1,312 feet) instead of 500 (1,640 feet), and an inner basin will be added.

8.—As regards the port of Suez, on the Red Sea, the commission adopt the situation and direction given to the channel. The breadth will be 300 metres (984 feet) instead of 400 and an inner basin will be added. The jetties will terminate at a depth of 6 metres (19 feet 8 inches), low water, and a broad channel in the direction of the jetties will be dredged to a depth of 9 metres (29½ feet).

9.—The commission declare that beacon lights of the first order will have to be established to point out shoals on the Egyptian coast and on the shores of the Red Sea as a necessary consequence of opening the canal.

10.—A port for taking in stores, refitting, and repairing, will be created in Lake Meuzaleh.

11.—As regards the auxiliary canals supplied with fresh water from the Nile, while the commission prefer, in a technical point of view, the plan of a canal from Zagaziz, near Belbeis, they leave the choice of the best mode of executing it to the judgment of the engineers to whom the works will be entrusted.

12.—Lastly, from the detailed information given by the naval officers, members of the commission, it is established that the navigation of the Red Sea is as favourable as that of the Mediterranean and the Adriatic. This was the substance of the opinion delivered to the commission by Captain Harris, who has performed seventy voyages from Suez to India.—*Daily News.*

Nautical Notices.

Archipelago.—*Position of the Falcon Rock off Cape Vurkos, Myteline.*

The following report of Captain Spratt, R.N., to the Hydrographer of the Admiralty gives the correct position of this rock:—

H.M.S. *Medina*, Dardanelles, 12th June, 1856.

Sir,—With reference to a memorandum from Rear-Admiral Sir H. Stewart, K.C.B., dated the 14th March, last, I have the honour to acquaint you for his information, and for the interests of navigation between Constantinople and Smyrna, that I have recently examined the position three miles off Cape Vurkos (Mitylene), where the *Falcon*, steam transport, is reported to have struck upon a rock, said "not to be placed in the Admiralty charts."

The result of the examination proves the correctness of the Admiralty chart resulting from surveys of Captains Copeland and Graves, and that no rock exists at a greater distance from Cape Vurkos than one-third of a mile, as shown upon that chart.

This rock is the outer one of three, and lies about 700 yards S.E.b.S. from the western point of the cape, and has only eight feet of water over it, with ten fathoms at a boat's length distance.

To clear it by day the cliffs at the entrance of Port Kalloni should be kept *well* open to the southward of the islet off Cape Vurkos.

At three miles off the cape there is a depth of 350 fathoms in the position given for the Falcon Rock, which makes the existence of a danger there an impossibility. The ignorance of the natives of the island in respect to sea distances has led them to state the Falcon Rock to be at one mile and even two miles off the cape, when in reality it is not half a mile.

The publication of this information will, I trust, remove for ever all apprehension respecting the false position of the Falcon Rock, supposed by the Master of that vessel to lie in the direct route between the West end of Mitylene and the entrance to Smyrna.

I have, &c.,

T. A. B. Spratt, Captain.

Rear-Admiral Hon. F. W. Grey, C.B.

Ice in the Southern Indian Ocean.

Union Dock, May 5th, 1856.

Sir,—I enclose extracts of a a letter received from Captain Cass, of the ship *Caduceus*, which, if you think of sufficient importance, Captain Cass wishes you to insert in the *Nautical Magazine*.

I am, &c.,

John Neagle.

Captain Cass's letter is dated Sydney, February 5th, 1856.

To the Editor of the *Nautical Magazine*.

In lat. 49½° S., long. 6° E., on the 31st December, we fell in with ice—numerous large icebergs and small broken pieces—the weather dirty and fog dense; compelled to shorten sail during the few hours of night. We continued

to fall in with it the two following days, edging to the northward again of the Crozet Islands to get clear. On the 8th January, in lat. 45½° S., long. 45½° E., in another dense fog, we fell in with icebergs and were compelled to go easy. At night again on the 21st January, in lat. 50½° S., long. 113° E., we fell in with icebergs, but the weather being clear, were not detained. Altogether fifty-five large ice islands seen and much small ice.

Perhaps you will be good enough to report the ice, as from the new sailing directions one may infer that the months of December and January are free from it, for the southern route. The danger is from the fog which generally accompanies it.

SAILING DIRECTIONS—*for the Navigation of the Yang-tze-kiang to Wúsung and Shanghai. By Lieut. Preble, U.S.N.*

U.S.S. Macedonia, Angier Island, Java, April 16th, 1856.

Sir,—Herewith I enclose my Sailing Directions for Shanghai, containing my latest corrections and revised at Singapore a fortnight since. As you are publishing the newest sailing directions for these seas, I presume you will be glad to have them. If you print them please send me a copy directed to Portland, Maine, U.S., care of any of your American correspondents either in Boston or New York. Dr. Williams, of Canton, is publishing this year a new edition of his "Chinese Commanders' Guide," which will contain several new sailing directions for China, Formosa, and Japan, valuable to you as an hydrographer.

Believe me, &c.,

GEO. HENRY PREBLE, Lieut. U.S.N.

Sir,—Agreeably to an order from Commodore Joel Abbot, Commander-in-chief of the U.S. naval forces in the East India and China Seas, &c., to me directed, under date July 25th, 1855, to co-operate with you in carrying out an agreement entered into between yourself and Excellency Chaou, with reference to the marking and buoying the Yang-tse-kiang, dated July 21st, 1855, I have the honour to report that the following marks, &c., for improving the navigation of the Yang-tse-kiang up to Wusung, have been decided upon, and are now being placed and erected at the expense of the Chinese Authorities.

1st.—A lightvessel of 131 tons burthen has been moored with heavy chains and anchors in four fathoms water at low water spring tides near the South-western extremity of the South-eastern part of the North Tung-sha Banks. This vessel is placed in lat., by observation, 31° 9′ 15″ N., long., by the mean of several observations by the three chronometers of the U.S.S. *Macedonian*, 121° 59′ E., and bears by compass from the centre of Gutzlaff N.N.W., from which she is distant twenty-five miles. This position places her on the inner edge of the outer bar marked on Collinson's chart of the river, and well up towards the North bank. In working in, she should never be brought to the Westward of W.b.N. in a ship of heavy draft, or to the Southward of West with a smaller vessel. The lightship will be readily distinguished from ordinary cruising vessels by having her two lower mast and topmasts only aloft, and by her hull and masts being painted a bright red, also from having inverted cones of basket work six feet in diameter placed over each of her topmast heads. For the present at night she will hoist an ordinary ship's light until a better one can be provided. She is provided with a set of Marryat's signals in order to communicate when requisite with vessels in the offing. She has on board a European captain and

Chinese crew to attend her, and it is hoped will prove a rendezvous for the European pilots, whence they can board in-bound vessels. It is proposed that when from her a vessel is observed to be running into any danger, she first fires a gun to attract attention, and then hoists Marryat's signal in part V. No. 1680, "Vessel is running into danger," followed by the compass signal of the course to be steered to avoid it.

2nd.—Contracts have been entered into for building a beacon tower of masonry to be twenty feet square at its base, and fifty feet high, and tapering to ten feet square at that altitude, this again surmounted by a mast or spar fifty additional feet—thus making its whole height one hundred feet. This beacon will be erected on the South shore, near what is known to pilots and others as the Three Trees. When completed, the beacon is to be white-washed, and the masts painted black to afford the most distinguishable contrasts, and will be seen in an ordinarily clear day before losing sight of the hull of the lightship.

3rd.—A large nun buoy, painted red, has been placed on the South-Eastern extremity of the Wusung North spit, in three fathoms water at lowest spring tides.

4th.—A large nun buoy, painted black, has been placed on the North-Eastern extremity of the Wusung South spit, in three and a half fathoms water at lowest spring tides.

5th.—The three poles on the inner angle of the stone fortification on the right or Northernmost bank at Wusung, used as leading marks for the entrance of Wusung river, have been replaced by three new ones, each sixty feet high. The two rear ones have crows-nests built around them, and are painted red. The pole in front is shorter than the other two, and has on its top a bull's eye or target, and is painted white. The white pole between the two red poles is the leading mark for entering the Wusung river.

6th.—Eight iron first class buoys have been ordered from England. When received, I recommend their being placed in equal numbers alternately along the inner edge of the North bank, on its most projecting points, to be hereafter determined by soundings, and on the Northernmost projecting points of the South shore bank. It may be well to place one of these buoys, or the refuge buoy beacon invented by Captain George Peacock, R.N., which is admirably adapted to this position, as a channel buoy, Gutzlaff bearing South fifteen miles, also one or more small buoys to mark the middle ground in the Wusung river: cask buoys would be all-sufficient for this last purpose. I recommend that all these buoys be numbered and painted according to the following rules, which are those adopted for all buoys on the coast of the United States, by law of Congress, and are I believe recognized and sactioned by the universal usage of all the principal maritime nations, viz.—"In entering a harbour from seaward channel buoys with black and white perpendicular stripes may be passed close on either hand. Buoys with red and black horizontal stripes are on obstructions, with channels on either side of them, and may be left on either hand in passing. Red buoys with even numbers should be left on the starboard hand; black buoys with odd numbers should be left on the port hand."

I have, &c.,

GEO. HENRY PREBLE, Lieut. U.S.N.

To Robt. C. Murphy, Esq., U.S. Consul, Shanghai.

Sailing Directions.

Recommended to make Saddle Islands in the N.W. Monsoon.—Vessels bound to Shanghai from the West coast of America or the Pacific, and all who are unacquainted with the navigation of the Chinese coast, are recommended

in the northerly monsoons to make the Saddle group of islands, as being the most weatherly landfall.

Recommended to make Video in the South Monsoon.—During the S.W. monsoon for the same reason they are advised to steer for the high dome-shaped island of Video, called by the Chinese Wong-shin-shan, which is the highest island to the Southward, and in a clear day can be seen fifty or sixty miles. This island has a bold precipitous appearance, and is nearly square. It has also a remarkable white cliff, which, when near, shows distinctly when the island bears N.W.b.N. The summit of Video is in lat. 30° 8′ N., long. 122° 46′ E. of Greenwich.

The Four Sisters and the Brothers.—N. 74° E. from Video, and five miles distant, are seven rocks, called the Four Sisters; and N. 78° E., nine miles, are two rocks, called the Brothers. Between these rocks and Video, and between the two groups of rocks themselves, there are safe passages, the depths varying from thirty to forty fathoms.

Leuconna—N. 24° E. and nineteen and three quarters miles from Video, is Leuconna, which appears, when seen from the South at that distance, three abrupt and round-topped hummocks.

Beehive Rock.—N. 17° W., fourteen and a half miles from Video, is the Beehive Rock, thirty-five feet high, with a rock awash three cables to the Eastward of it, otherwise the depth of water around it is from 14 to 17 fathoms.

Childers Rock.—Between Leuconna and the East Saddle, is Childers Rock, which is a rock awash, and which does not always show. When on it, the peak of East Saddle bears N. 9° W., the Barren Islands N. 70° E., and Leuconna S. 15° E. The lead gives no warning of it, the depth being 24 fathoms close to. This is the only hidden danger in the passage up to and beyond the Saddles. It is therefore needless to mention the appearance of any of the other land beyond and to the Westward, the charts being a sufficient guide.

Saddle Islands.—The Saddle Islands form the Northern boundary of the Chusan Archipelago, and comprise a group of five large islands, called North, South, East, False, and Side Saddles, with numerous smaller islets and rocks included between the latitudes of 30° 40′ and 30° 50′ N., and longitudes 122° 35′ and 122° 49′ E. The two largest of the group are saddle-shaped, about 800 feet high, and of similar appearance when seen from the Eastward. The Northernmost point of the North Saddle Island is in lat. 30° 50′ N., and its Easternmost point in long. 122° 42′ E.

The Barren Islands.—East by South from the North Saddle, and to the Eastward of the East Saddle, in lat. 30° 43′ N., long. 128° 9′ E., are the Barren Islands, which are three rocks about fifty feet high, nearly East and West from each other. To the South-Eastward of the Eastern rock is a rock awash, distant from it about two cables. In some of the former directions, navigators have been recommended to make these islands, probably as a caution in coming from the Eastward, as they are the most Eastern rocks on the Chinese coast belonging to China.

From Saddle Islands.—Leaving the Saddle Islands: keep the North Saddle bearing about S.E.b.E., and bring Gutzlaff Island to bear South fifteen or sixteen miles distance, when the Amherst rocks if in sight will bear N.E. ½ E., twelve miles.

Gutzlaff Island.—Gutzlaff Island is 210 feet high, and in a clear day can be seen twenty-seven miles. It appears a small round lump, and has a small rock or islet off its North-Eastern point.

It is to be hoped that at no very distant day a lighthouse will be established on this island, which, standing as it does in the gateway to the Yang-tse-kiang, affords the best possible position for one.

The light should be a first-class light, of the flashing or revolving kind, which can be seen thirty miles or more.

As the island is more than high enough, a tower of sufficient size to contain the lighting apparatus and keeper's dwelling would only be required; its cost therefore would be inconsiderable. The yearly expense of keeping would be much less than is now required for keeping up the lightship, for which a beacon of some kind might then be substituted.

Amherst Rocks.—The Amherst rocks are a small cluster of ragged rocks, of which one is larger than the rest, and elevated twenty feet above low water. Including the surrounding reef they occupy an area of half a mile in extent, and mark the Easternmost extent of the North banks. In the old sailing directions it was recommended to make them; but it is now considered best, for reasons which are obvious, to make Gutzlaff as above. It may be well here to remark, that no vessel should attempt to pass up the river without first sighting Gutzlaff or the lightvessel. The Amherst rocks are in lat. 31° 9′ 3″ N., long. 122° 23′ 6″ E., and bear from the North Saddle N. 42° E., distant twenty-four miles.

Ariadne Rocks.—W. 14° S. from the Amherst rocks are the Ariadne rocks, on which several vessels have struck. These are all under water, and seldom seen, and therefore to be avoided. In heavy weather the sea is said to break on them; but several of the most experienced pilots say they have never seen them.

Shaweishan.—North of the Ariadne rocks sixteen miles, and about N.b.W. from the Amhersts, is the island of Shaweishan, about the size or a little larger than Gutzlaff, and one hundred and ninety-six feet high. It is not often seen when a ship is in the right position for approaching the North bank. Vessels approaching the river are therefore cautioned, that when it shows plainer than Gutzlaff (which is the same height) that they are too far to the Northward and in danger of entering the False Channel to the Northward of the North bank.

Gutzlaff to the Lightship.—After bringing Gutzlaff on the before mentioned distance and bearing, if a clear day, the lightship under the North bank will be seen, when steer for her to cross the outer bar. If the day is not clear, steer North-west until she is seen, when steer for her as before directed and pass her at any convenient distance, leaving her on your starboard hand. If working in, be careful not to bring the lightship to bear to the Westward of W.b.N., if in a ship of large draft; or to the Southward of West if in a small vessel, as the bank shoals suddenly from four or five fathoms to two according to position, and the Ariadne rocks bear E. 11° S. from the lightship, thirteen miles distant.

Lightship to the South Shore Beacon.—Using this caution, you may, when up with, pass the lightship close to, as most convenient, though strangers are not recommended to go inside of her. Thence steer W.N.W. until you sight the beacon erected on the South shore at the Three trees. When the South shore beacon or the Three Trees bears about W.S.W., your ship will be in six fathoms at low water, and the South shore will be plain in sight.

Beacon to Block House Island.—Continue now a N.W.b.W. course, and pass the South shore beacon at two or more miles distance, when you will in all probability see the dry North bank, which is only covered at the highest spring tides, on your starboard hand. You will soon rise Block House Island, which at first has the appearance of a cluster of fishing boats, gradually showing itself a low island covered with bushy trees. When the large house on the island bears N.E.b.E. you are in the narrowest part of the channel, which at this point is only one mile and a quarter wide.

Block House to Wusung.—After passing Block House on the starboard

hand, you should gradually close with the South shore to about a mile, and keep it at that distance until the marks and buoys for Wusung spit are seen. As the South shore bank is steep to, that shore should not be approached nearer than three quarters of a mile. The second clump of large bushy trees on the low point, open half a point of the square and well-defined outer point of Paushan, will clear you of the Wusung South spit if the buoy should at any time be removed.

Vessels of Light Draught may use more freedom.—The foregoing directions apply to vessels of heavy draught, say eighteen feet; small craft may use much more freedom, closing with the South bank when Gutlaff is twelve or fifteen miles to the Southward, and working up with the lead for a guide. The Southern shore is not to be depended on all the way, however, as after passing the beacon the bank is very steep, and should not be approached under three quarters of a mile.

Wusung to Shanghai.—After passing Wusung marks, keep the Western shore well on board until after passing Wusung village, and up to the first point on the Eastern side, or until you open the second creek on the Eastern shore, which will be about a mile above the village, then cross over and keep the Eastern shore close on board until up to the head of this reach, where a fleet of junks is usually moored opposite the village, which course will also take you over the bar above Wusung, the channel over which bar in some places is scarcely a cable wide. Through the next reach the course is nearly South, and keep in mid-channel; when up with Half-way Point, close with the Eastern bank again, and keep it close on board until the foreign settlement of Shangai is in sight, when cross over and keep nearest to the right or Western shore.

Depth of Water on the Inner and Outer Bar.—The depth of water on the outer bar at the lowest spring tides is twenty-one feet, and on the bar above Wusung it is about twelve feet. The greatest draught of water ever brought up to Shangai has been between twenty-one and twenty-two feet, and a ship drawing that much water will have to wait for the spring tides to pass up or down the Wusung river.

Working in after leaving the Lightship.—In working up after passing the Lightship, you should not in standing towards the North bank bring her to bear to Southward of S.E.b.E. ¼ E., and on the South bank side should go about when in 3½ fathoms of water. The deepest water is near and along the South edge of the North bank. Generally the inner edge of the North bank is lined with heavy fishing stakes close to, which are planted in four and five fathoms of water. A ship's length inside of them there is but a few feet water.

Can Anchor off Entrance in usual water.—It will be generally safe for a vessel to anchor off the entrance of the river, outside of Gutzlaff in four, five, or six fathoms water; and I would not recommend an anchorage being sought under the islands at night unless there are appearances of bad weather, as it will frequently take all the daylight of the next day to work up from the islands.

Anchor under the Islands, a Gale approaching.—In the summer time, if bad weather is approaching, which the barometer will usually foretell, an anchorage should be sought under the islands, or the vessel kept to sea, as it is dangerous to enter the river when a gale is coming on without a prospect of getting in. It is, I think, preferable to anchor rather than stand to sea, as the weather is sometimes thick or foggy; the tides are strong and uncertain, and the ship's position may be lost.

The Tides.—All the compass courses given in these directions must be varied according to the stages and strength of the tides. The use of a ground log for

both course and distance is therefore recommended, the ship's course being materially affected both by the strength and set of the tide.

It is high water at the full and change of the moon in the neighbourhood and to the Eastward of Gutzlaff, between 11 and 12 o'clock.

In the river of Wusung, high water occurs at the full and change about 1.30. The rise is uncertain, but ranges from one fathom to fifteen feet. Its velocity is from $1\frac{1}{2}$ to $4\frac{1}{2}$ knots, but it is affected both in velocity and direction by the prevailing wind.

From the Saddle Islands to Wusung the tide generally sets N.W.b.W., and S.E.b.E., when fully made, if no such cause as N.E. gales or heavy rains interfere. The flood makes first to the Southward, then S.W., and gradually round to N.W. at half-flood, which is its direction at strength of the tide.

The first of the ebb sets to the Northward over the North bank, and in like manner changes round to the Eastward, gradually running the strongest when S.E.

It is at the turn of both tides that most caution is necessary to avoid being set out of the channel. Round the S.E. edges of the South bank the flood sets W.S.W., and the ebb the contrary way. Leaving the position of Gutzlaff at a quarter ebb, a vessel will carry the flood to Wusung if there is any wind.

The Winds.—By a meteorological register kept at Shanghai, the prevailing winds for the last seven years appear to have been in—

January.....	N.E. to N.W., and generally N.N.W.
February.....	N.E. to N.W., and generally N.W.
March	N.E. to S.E. and variable.
April	E.N.E. to S.E., chiefly S.S.E. and variable.
May.....	E.S.E. to S.S.E.
June.....	S.E. to S.S.E.
July and August...	S.S.E.
September	N.E. to E.
October	N.E. to N.W.
November	N.W. and variable.
December	North to N.W.

From this table it appears that at Shanghai during what is called the N.E. monsoon winds with Westing prevail, and in the contrary monsoon the winds generally have Easting in there. I therefore recommend captains to notice and report the direction of the winds experienced outside of Gutlaff.

Temperature at Shanghai.—The temperature by day and night, taken by a self-registering Fahrenheit's thermometer in the open air in the shade, at Shanghai from 1848 to 1854, gives the following as the extreme ranges, and the average mean temperature of each of the months for those seven years:—

	Max.	*Min.*	*Mean.*		*Max.*	*Min.*	*Mean.*
January	56°	18°	41°	July	100°	64°	85°
February....	65	19	42	August	100	63	$84\frac{1}{2}$
March.....	75	28	50	September ..	92	51	$77\frac{1}{2}$
April	79	33	59	October	90	37	67
May	87	37	69	November ..	80	25	56
June.....	99	58	75	December ..	77	19	46

The Barometer.—The mean average height in the spring and winter months is above 30 inches, and in the summer months below it, viz, from January to April, 30·25 in. From October to December, 30·34 in. From May to September, 29·83 in., ranging lowest with southerly winds and during the N.E. monsoon season.

The Weather.—January is generally fine. In February thick fogs occur. March is damp and disagreeable. April has more rainy days than any other

month. In May there is but little rain, and that little occurs in heavy showers. July is hot, dry, scorching, with considerable rain in the form of evening thunder showers. July and August are the hottest months. In September the S.W. monsoon is wholly broken up, and the temperature is very changeable. In November the winter fairly sets in, the first frost appearing from the 12th to the 20th. December is the driest month of the year, and the weather clear and freezing, though fogs are of occasional occurrence. In May, June, and July, fogs also occur.

The summer gales are strongest from the S.E., and generally give good notice, the barometer beginning to fall sometimes as much as twenty-four hours previous. The rules for judging the barometer on the Chinese coast generally, hold good for the neighbourhood of Shanghai. A rapid fall of the barometer betokens a gale, and a high range the continuance of Northerly winds.

Captains can deposit their chronometers and have them rated by transits at the observatory of Messrs. Kupferschmid and Date, Shangai. Their observatory, in Church Street, is in lat. 31° 14′ 8·9″ N., long. 8h. 6m. 2s. E. of Gr.

Pilots, &c.—Competent foreign pilots (English and American) will be found cruizing in the neighbourhood of the Saddle Islands during the summer months, and at the entrance of the river outside of Gutzlaff in the winter. No Sailing Directions can do away with their usefulness to the stranger, where the safety of the ship depends so much upon a correct knowledge of the tides. The signal of the authorized pilots is a flag, half red and white horizontal, with the number of the boat in black. Every licensed pilot on boarding a ship must when required produce his licence as a pilot.

The rates of pilotage are regulated by the ship's draft, viz., from Gutzlaff 5 dollars per foot; from the Beacon Ship 4 dol. per foot; from any point outside Wusung but inside Beacon Ship 3½ dol. per foot; from Wusung to Shangai 3 dol. per foot. The same rates of pilotage are allowed for vessels outward bound.

Sailing Instructions for Entering the River Mutlah from Sea.

East India-House, June 4th, 1856.

The Court of Directors of the East India Company have lately received from the Government of Bengal the following notification, which is published for general information:—

The channels leading from sea into the River Mutlah having been buoyed off, the following notice is published for general information:—

The Western (or Ward) Channel is bounded on the West by the Balchery Reef, or Sand, extending southwardly from the island of that name, and on the East by the Roymutlah Sand, part of which dries at low water. This channel is from two to five miles wide, and is marked off by six buoys, four red, or western, and two black, or eastern.

The outermost, or Reef Buoy, is a first-class spire buoy, with two baskets on it; it is painted red, and marked with the letter M; it lies in 4½ fathoms low water spring tides, lat. 21° 11′ N., long. 88° 42′ 45″ E., and bears from the Eastern Channel floating-light buoy E.b.N.½N., distant 32 miles.

The centre Balchery Buoy is a second-class spire buoy, with one basket on it; it is painted red, and marked "Mutlah" in full; it lies in 4 fathoms low water, about 7 miles N.N.W. from the outer, or Reef Buoy.

The Balchery Spit Buoy is also a spire buoy, painted red; it lies in 4 fathoms low water, on a spit of the sand, about 9 miles N.¼W. of the centre buoy.

The upper Balchery Buoy is also a spire buoy, painted red; it lies in ¼ less 4 fathoms, about 6 miles N.b.W. from the Spit Buoy, and W.b.S.¾S. of the flagstaff on Dalhousie Point.

The outer easternmost buoy of this channel is a second class spire buoy, painted black, with one basket on it; it lies in 4¼ fathoms low water on the S.W. verge of the Roymutlah Sand N.E.b.N. of the Reef Buoy, distant about 5½ miles.

The Roymutlah Western Spit Buoy is a second-class spire buoy, painted black; it lies in 4 fathoms low water, N.W.¼N. from the outer black buoy, distant about 10 miles, and North about 6 miles from the centre Balchery Buoy.

The mid-channel course from sea to abreast of the above Spit Buoy is N.N.W.¼W., 15 miles. From that point North 15 miles will carry a vessel up to Halliday Island.

The Eastern, or Roymutlah Channel, is bounded by the Roymutlah Sand to the westward, and the Bangadoonee Sand, or Reef, to the eastward, and is marked off with four buoys: three red, or western; one black, or eastern.

The outermost buoy is a second-class spire buoy, with one basket upon it; it is painted red, marked "R. MUTLAH"; it lies in 5 fathoms low water on the S.E. verge of the Roymutlah Sand, N.E.b.E., about 10 miles from the Balchery Reef Buoy.

The Roymutlah Eastern Spit Buoy is painted red; it lies in 5 fathoms low water N.N.W.¼W., about 6 miles from the outer buoy.

The upper Roymutlah Buoy is painted red; it lies in 4¾ fathoms low water, N.W. of the Spit Buoy, distant about 5½ miles.

The innermost buoy of this channel is painted black; it lies in 5 fathoms low water, on the South verge of a flat extending from Dalhousie Point to the S.S.E.; it bears from the upper Roymutlah Buoy N.b.W. distant about 4 miles.

The mid-channel course in the Roymutlah Channel is N.W.¼N. to the black buoy, and from that point N.N.W. to N.b.W. to Halliday Island.

Vessels resorting to the River Mutlah during the S.W. monsoon should adopt a similar route, and conform to the directions for making the pilot station at the entrance to the River Hooghly, taking their departure from the Eastern Channel floating light, steering E.b.N.¼N. to cross the tail of the eastern prong of Saugor Sand in 5 fathoms, off which they would deepen into 7 fathoms, shoaling again on the Lighthouse Sand to 5½ or 6 fathoms, deepening off into 6½ or 7, and crossing the Balchery Reef in 4½ to 5 fathoms a little South of the Reef Buoy.

Commanders of vessels doubtful about crossing the tails of sands in a heavy swell could steer more to the southward, and keep in 8 or 9 fathoms soft ground; but great care would be requisite not to overrun the distance.

During the N.E. monsoon, Commanders of vessels confident of the correctness of their reckoning should work up direct for the Balchery Reef Buoy; but during cloudy or thick weather, crossing the Swatch of No Ground in about the latitude of the buoy, and running down upon it, would be advisable.

It is high water, full and change, about 9h. 15m. At the Balchery Reef Buoy the tides set round, as in the channels to the Hooghly, the floods making to the West, the ebbs to the eastward, having a velocity during the springs from 2½ to 3 miles per hour, and a rise of 9 feet.

The bottom throughout the channels is mud, the sands exceedingly hard, and the lead an excellent and safe guide towards them. The least water in the Western or Ward Channel is 4 fathoms, in the Roymutlah 5 fathoms, low water springs.

From Halliday Island the course continues North up to the "Cattalee," where the river takes a sharp turn to the westward and the channel contracts. Up to this point a stranger, with Ward's chart and ordinary care, could, without a pilot, conduct his ship with safety, attending to the set of the tides, leaving the red buoys to the westward, and black buoys East of his course.

THOMAS HILL, 2nd Assistant Master Attendant.

Published by order of the Superintendent of Marine,

JAMES SUTHERLAND, Officiating Secretary.

Fort William, Marine Superintendent's office, 8th March, 1856.

Published by order of the Court of Directors of the East India Company,

JAMES C. MELVILL, Secretary.

LOWERING SHIPS' BOATS.

The difficulties and dangers attending the lowering of boats in rough weather at sea are very well known to seamen, and the accidents which have occurred to the most careful management are of so serious a nature as to render the impossibility of their occurrence a fact greatly desired. A method has been proposed by Mr. C. Clifford, in a pamphlet published by Messrs. Simpkin and Marshall, a model of which has been explained to us by the inventor himself, which, to our view of it, seems to meet every possible objection and to secure a celerity of lowering, even to dropping a boat in the water if required and of checking her at pleasure, that fulfills this very important object. We shall not attempt to describe it, having satisfied ourselves that where proper attention is paid to the size of the pendants from the davits and their due arrangement all that the inventor proposes can be accomplished. We shall therefore refer our readers to Mr. Clifford's pamphlet, where he quotes a passage from the late Act of Parliament relating to merchant seamen in regard to ships carrying boats in such a manner as to be "most available for immediate service," that it would be well for our seamen to look to.

PASSAGE OF THE "ROYAL CHARTER" TO MELBOURNE, AUSTRALIA.

The following extract from the *Times* gives the remarkably quick passage of the *Royal Charter* to Melbourne.

The *Royal Charter* arrived in Hobson Bay on Wednesday, the 16th of April, having sailed from Plymouth on the 17th of February, and thus made the voyage in 59 days, being the shortest passage yet made.

The principle upon which the *Royal Charter* is built and equipped seems to me to be that which is most likely to reduce the voyage from England to Australia to as near an approach to a certainty as is possible. She is, in the first place, a fully rigged clipper ship, capable of the greatest speed which has yet been attained by clippers of the first class and best construction. She is built of iron, and of 3,000 tons burden. Her greatest day's run under canvas was 352 miles, being an average of 14¾ knots per hour. The best run of the *Lightning* on her first voyage was 336 miles, or 14 knots per hour. The *Lightning* also ran 2,086 nautical miles in seven days, or nearly 300 miles a-day.

During the voyage of the *Royal Charter* steam was resorted to on 14 days. Her best day's run under steam was 252 miles, with a consumption of only

10¼ tons of coal; her worst day's run under steam was 166 miles, with a consumption of 14 tons and 8 cwt. of coal. Her total consumption of coals was only 193 tons 17 cwt. The pressure of steam was 11lb.

Thus her remarkable voyage was made principally by means of her extraordinary sailing powers, and her screw propeller was emphatically *auxiliary*.

Her engines are only of 200 horse-power, and, with all the fuel that she can possibly require, occupy but a moderate proportion of her tonnage, thus leaving ample space for cargo as well as passengers. Contrast this with the *Great Britain*, the first great experiment of the same enterprising firm. She was under-rigged as a sailing vessel, and her screw, which could not be unshipped, was always in requisition. Her consumption of coal was from 35 to 50 tons per diem. She consumed about 1,200 tons from Melbourne to the Cape, and must have consumed about 2,500 on the homeward voyage. She had to seek for and take in coal at Algoa Bay, at Simons Bay, at St. Michael, (Azores,) and at Vigo Bay in Spain. Large as she was, she had little room for cargo, and although she had plenty of passengers, her voyages must have entailed loss on her owners.

After the failure of their first great experiment one cannot but admire the thorough English pluck of the owners of the *Royal Charter* in thus trying a new venture. I firmly believe they will succeed. The ship is "booked full" for the homeward voyage already. She will have a full cargo, and will most likely carry home every ounce of gold accumulated for shipping up to the date of her sailing—namely, the 22nd of May.

NEW BOOKS.

NARRATIVE OF THE EXPEDITION *of an American Squadron to the China Seas and Japan, performed in the years* 1852, 1853, *and* 1854, *under the command of Commodore M. C. Perry, United States Navy, &c., &c. By Francis L. Hawks, D.D., L.L.D.* New York, Appleton: London, Trubner. 1856.

Aperire terram gentibus would be the fitting motto for this Expedition to the exclusive land of the Japanese, now likely, through American enterprise, to be visited as other exclusive lands are in the same remote portion of the globe. We say American enterprise, for although we have likewise concluded a treaty of commercial intercourse, it may be a question whether we should have done it now.

The narrative before us opens with a lucid and extended introduction, setting forth the reasons for the expedition, and the advantages of opening the country, the early history and origin of the Japanese, their government, their singular manners, customs, and religion, which introduces the subject of the past relations of the empire with the Western civilized nations, and first and earliest the Portuguese, followed by the Dutch, our own countrymen, and the Russians, who, as might be expected, from being the last in civilization and naval strength, have made the least impression among these interesting people. The best progress in comparative intervals of time, has evidently been made by the United States, whose numerous vessels in the Pacific are more likely to profit in larger numbers than ours by the proximity of these islands to their shores.

A closer view is then taken of the Japanese character,—in their arts and civilization, agriculture and mineral wealth, with their resources for trade,

which then brings us to the treaties that have been just concluded. A view is also taken of the part which Dr. Von Siebold, in the service of the Dutch, has taken in reference to the present expedition, and his extraordinary patronizing proceedings regarding it. On the whole, in the space of something less than a hundred pages, we have in this introduction as interesting an account of the Japanese in all the foregoing points of view as could be condensed into so small a space. The expedition, consisting of the U.S.S. *Mississipi*, joined afterwards by the *Powatan*, the *Susquehana*, and the *Saratoga*, sailed on the 24th of November, 1852, from the Chesapeake for Japan, taking en route Madeira, St. Helena, the Cape, Mauritius, Point de Galle, and Singapore. Afterwards Hong Kong, Nagasaki of Loo Choo as Basil Hall left it, (but as Lew Chew we suppose it is to be Americanised,) and leaves Yedo Bay, after delivering the President's letter, on the 17th of July, proceeds to Lew Chew, where they arrived on the 25th, and proceeded from thence to the Bonin Islands, of which group possession seems to have taken by right of prediscovery, in the circumstance of an American whaling captain, Coffin, in 1823, having visited Peel Island previous to the *Blossom*, when possession had been formerly taken, but too late. With this, however, we have nothing to do—the Bonins will promote the civilization of their quarter of the globe as well in the hands of the Americans as in ours, and perhaps sooner. From thence the *Mississipi* proceeds to Macao and Hong Kong, where she is in December, 1853; and in January following departs for Lew Chew, en route to Japan to receive the answer to the President's letter.

The expedition entered the outer bay of Yedo on the 11th of February; and after an obstinate manœuvring on both sides, the Japanese to prevent, and the Americans to effect it, the expedition was received in Yoku-hane Bay, when the reply of the Japanese emperor was delivered, a long list of presents interchanged, all the preliminaries settled, and the important treaty was concluded, and sent home by Commander Adams in the *Saratoga*, and followed afterwards by the *Mississipi*, the expedition being concluded at New York on the 23rd of April, 1855.

The foregoing is necessarily a brief view of the proceedings of this important expedition, which will have obtained for us in almost every point of view more information than we ever possessed regarding Japan. The work before us, from which it is taken, abounds with interesting information to the general reader as a history of the country as well as all expeditions connected with it, and the seaman, thanks to the imperturbable steadiness of the American officers charged with the surveying operations, will find a goodly collection of hydrographical matter, along with charts, which will be of great importance to him. By the way, it is to be hoped they will appear on a larger scale than than those given in the book, to which we shall find ample occasion to return hereafter, as abounding with matter of high interest to nautical readers.

THE MATE AND HIS DUTIES—*containing Remarks on Discipline, Causes of Mutiny, &c., &c. 3rd Edition.* Rockliff, Castle Street, Liverpool.

It is but a few months since we welcomed the first appearance of this little brochure, on one of the most important subjects connected with our mercantile marine, viz., "the duties of the mate," and here we have it in a third edition. No better proof can there be, not only of how much it was wanted, but also of how much it is appreciated.

Among the additions to this edition, we find the following trite remarks on the neglect of the compass on board merchant ships generally, for which as we have already proposed a remedy in these pages, we shall here repeat them. Among the duties of the mate it is here very properly said, that "It should

be insisted upon, as one of the duties of the morning watch, to observe the sun's amplitude when rising, (if visible,) and enter it in the log slate in the place *engraved* for it. If this observation was taken as regularly as the meridian altitude, we should have less mistakes in variation and deviation, and the compass would not be so often blamed for misleading the mariner as it has been of late years."

"There is some excuse for neglecting the amplitude at sunset, for there are many things to divert the attention of the mate of the watch about that time: but in the morning the sun's appearance is watched and waited for as a signal to 'turn to,' and such a simple and at the same time important aid to the navigator should never be neglected."

Now this is excellent advice to the mate, and no one differs from it,—that too much attention cannot be given to obtain the variation on all such and even other occasions. But we are met with difficulties, The author is not insensible of them, and alludes as follows to the obstacles in the way of this very "simple and at the same time important process." He very properly observes as follows:—"Here it may not be out of place to remark, that notwithstanding the many improvements in binnacles, there is room for another that seems to have escaped the attention of the manufacturers. The difficulty of taking *exact* bearings by the binnacle compass is felt by every seaman when a light or headland is suddenly reported, and very often not till after the bearings are pencilled off on the chart, is it found that they were not taken correctly; and bearings taken by two persons at the binnacle compass seldom agree to half a point, scarcely ever to a quarter,—an important difference in cross bearings. An amplitude or standard compass on deck will remove this difficulty; but it is useless to talk of these to many coasters, who like to take bearings by the compass they steer by, and who have no room on their decks for extra ones, nor in their brains for difference of variation, this space being already occupied by the variation marked on the charts: therefore, if some addition or change of form was made to supply this desideratum, it would be a valuable one."

The worthy author of the foregoing is not aware, perhaps, that this is already done even for coasters. For should these important little craft not have room on their decks for the tripod stand carrying Becher's Repeating Compass Card,* it may as effectually be placed over their binnacles, and there equally serve the purpose for which it was intended (that of enabling any ship to use her binnacle compass for the magnetic work of the ship), as it will do on the deck of any larger vessel. No doubt the brains of these coasting commanders are troubled sufficiently without having the deviation of an additional compass to consider, and why should they not use their binnacle compasses as if they were azimuth or standard compasses. This has already been done on board that splendid ship the *Royal Charter*, the binnacle compasses of which have thus been employed for the observations of azimuths and amplitudes, and those immediate bearings required suddenly so well known to seamen. The coasting captains are quite right in their desire to work their binnacle compasses, without being troubled with others; and we promise them that what is very properly expected of them as stated by the author of the "*Mate and his Duties*" will be obtained without any additional calculations by the "Repeating Compass Card" above-mentioned. It is well known to be impossible to use the binnacle compass alone for these purposes, and yet it is *the* compass of the ship, and therefore ought to be so employed in its own legitimate work. We

* See "*The Binnacle Compass corrected by itself, or the Deviation found with one Compass by both Methods:* arts. 9 and 10, also p. 44. Published by Potter, 81, Poultry. Reprinted from the *Nautical Magazine*, 1855."

hope yet to see this important auxiliary to the compass as successfully used in that portion of our mercantile shipping in which no additional compasses known as standard or azimuth compasses appear to have yet found their way, or are likely to do so, as it has been on board the *Royal Charter*, when important bearings, amplitudes, &c., will certainly be more commonly observed than they have hitherto been.

NEGLECT OF THE WARNINGS GIVEN BY THE BAROMETER.

The *Bombay Times* of the 9th inst., has a long article on the cyclone which has just committed such fearful ravages on their town and shipping, for which we regret we cannot afford space; but the following observations are of too great importance to the lives of many brave men to be passed over:—

"The ships *Forfarshire*, the *Hastings*, the *Palinurus*, and steamers *George Russel Clerk*, *Sir Jamsetjee Jejeebhoy*, *Phlox*, and *Snake*, furnish the sacrifice required at the shrine of slighted science. When just a fortnight before one of the most extensive and varied collections of meteorological instruments ever brought together between the tropics, was exhibited and explained in a state of integrity and dissection, in the rooms of the Geographical Society, the whole European assemblage that could be mustered numbered five not one of these, save the President, being connected in any way with marine or mercantile affairs. A fine of £40,000 is perhaps not too much to pay for an exhibition of apathy unparalleled in any civilized shipping port in the world save in India; the only pity is that the loss should not fall exclusively on the shoulders of those who have occasioned it, and it may be as well to remember that similar instalments will from time to time be demanded so long as a state of matters such as this endures. The *Feroze* either had no barometer on board, or, while making straight for the hurricane track, did not think it worth while to consult it, or at all events to report the results; and amidst the trivialities written out for the use of the Marine Office, this momentous piece of nautical intelligence finds no place.

"In saying this we beg to be understood that we are not casting the slightest blame on the Observatory, where the work of observation, that properly belonging to them, seems to have been admirably performed. Until of late years meteorological science has been treated with open and avowed contempt under the marine department,—our ships used never to be possessed of any thing like decent instruments, or in the majority of instances any meteorological instruments at all. In 1849 the most beautiful set of barometers ever manufactured was brought to Bombay chiefly for the use of the Indian Navy, only one of them was ever taken out of store, and if a few of their ships are sunk now and then in consequence of their obstinate persistence in ignorance, it is exactly what might be expected. The Observatory was, we presume, never asked for information, and did not probably like to intrude it where it might be supposed unwished for. If Sir Henry Leeke is not sufficiently alive to these things, he only errs as his predecessors did before him, and is, we believe, more desirous of enlightenment than they."

Very truly does the Editor remark here that a fine of £40,000 or four lakhs of rupees, which we suppose to be the amount of damage done to the shipping, has been the just penalty paid for the apathy of the majority of the Bombay mercantile public to the warning voices which, both there and here, have so long laboured to advise them of how to understand the "cloud no bigger than a man's hand," which betokens the coming danger of these fearful visitations; but when he further tells us that "either the *Feroze* had no

barometer on board, or while making straight for the hurricane track did not think it worth while to consult it, or at all events to register it," we think it a public duty to drew attention to this astounding and incredible fact, for the presumption arising here is distinctly that she had no barometer, or did not know the use of it, as she certainly did not understand her position if she was "making right for the hurricane track." This fact is incredible to all but ourselves, who know, certainly, of one of the large Bombay steamers, which was carrying troops from Madras at the commencement of the Burmese war, which certainly had then no barometer on board, and no secret was made of the fact! We believe, moreover, that it was never distinctly known if the *Cleopatra* steamer, which foundered in the Buckinghamshire Cyclone on the Malabar coast in April, 1847, was furnished with one.

We say that it is a public duty to draw attention to such disgraceful facts, and we do so upon the plain ground that if there are such wretched and contemptible wrongheads who thus show themselves so plainly ignorant of what every sailor of the commonest acquirements in the present day is acquainted with, and so stolidly determined not to learn their professional duties, such men are not perilling their own useless and perhaps mischievous lives,—mischievous in the position they unfortunately hold and in the example they set: they peril by their contempt of science the public property and the lives of their crews, and sometimes of two or three hundred brave soldiers who with their officers are passengers on board. Let our readers suppose what would be their feelings if they could look a little into futurity and read side by side such passages the following:—

Bombay, 15th April, 1856.

The gallant 42nd Highlanders, the last of whose laurels were, as our readers recollect, gathered in their noble charge at the battle of the Alma, and whose war shout at the storming of Sebastopol was the counterpart of that at Seringapatam in the last century, landed yesterday in fine health and spirits at the Apllo Bunder, and are to march to Poonah in a day or two. We learn with pleasure that it is contemplated to invite the officers to an entertainment, at which we doubt not to see the proud ensigns of this indomitable corps with all their hard earned trophies blazoned so thick upon them attracting every eye and thrilling every English heart.

Bombay, 15th April, 1858.

We announce, with seelings of the deepest regret, the mournful fact that the fate of the 300 men of the gallant 42nd, embarked on the H.C. steamer *Goolmal*, is but too certain. Letters have been received in town from an Engineer officer, who was a passenger on board, and who with three men are the sole survivors, from which we learn the following details.

Our readers will recollect that this wing of the regiment was hurried down from Poonah and embarked for Cochin in consequence of the great rising in Travancore, and that we remarked at the time that the weather was somewhat suspicious, and that we trusted due attention would be paid to the indicatives of the barometer, lest a cyclone should be met with on the coast. The Engineer officer who writes, and who is well known to have been a sailor in his boyhood and as a firstrate man of science perfectly understanding the use of the barometer and the Law of Storms, states that, finding a heavy N.E. gale coming on, and that there was no barometer on board, the appearances all being those of a cyclone, he had warned the captain of his danger, showing him the indications of an aneroid which he had with him. This advice was rudely scouted by Captain Wrongham; the vessel steamed on till she met the awful centre and the shift of wind from the Westward, which carried away the funnel, masts, and rudder, and finally drifted the ship, already swamped and in a sinking state, into the breakers about Cassergode between Mangalore and Cannanore, where no au-

chors could hold her, and upwards of four hundred souls including the crew have been swept into eternity by this hideous and criminal ignorance! &c.

We are not so much writing romance here as our readers may suppose. The catastrophe which we have here figured out has been rehearsed at our own doors and in our own times. The head-quarters and 350 men of the Madras 37th N. I. we have no doubt embarked at Madras in 1840 full of spirits and looking forward with soldierly exultation to their China campaign, but they were sacrificed, in all human probability, much as we have written above, for the loss of their transport, the *Golconda*, has been most carefully and clearly investigated. It is true that they were *only* Sepoys, but even this single catastrophe must have cost the Government some four or five lacs of rupees. The interest on this sum would pay examiners and instruments for ever. Are our readers prepared to hear of a fleet conveying ten thousand men to Egypt or Persia being dispersed and half the ships lost? We think not! Well! they have only to turn to Colonel Reid's account of the dispersion of the Spanish fleet under Admiral Solano in 1780, or the history of the siege of Madras, to know that such things occur, though long ago forgotten; and to show them the other side of the picture, before we conclude, and what mastery skill and science can give to man with the aid of the barometer, we will remind them that Nelson's wonderful blockade of Toulon, where he always contrived to reappear, after being blown off in a gale, without having damaged a rope-yarn, was effected by the aid of the barometer; and within the last three years H.M. steamers *Sphinx* and *Hermes*, carrying crowded deck-loads of 400 or more European troops on urgent service from the Mauritius to the Cape, and being in a most dangerous state from this great weight above, twice avoided cyclones off the South end of Madagascar and coast of Natal (where they blow with terrific violence) by the use of the barometer and attention to the law of storms. We state this fact from the best authority. The barometer-despising gentlemen of the Bombay marine, if there really be still any such, would do well to take a leaf out of Captain Shadwell's and Captain Fishbourne's books. When some frightful catastrophe *has* occurred like that we have shadowed out, we may hope to see some preventive remedy thought of against these dreadful and useless risks.

NEW AND CORRECTED CHARTS, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

	Price	*s.*	*d.*
England, South Coast, Lizard Point, Captain G. Williams, R.N., 1854		1	0
,, ,, ,, Portsmouth to Beechy Head, Captain Bullock, R.N., 1853		2	0
,, ,, , Beachy Head to Dungeness, Captan Bullock, R.N., 1853		2	0
,, West Coast, Firth of Solway, corrected to 1855		3	0
North Sea, Helgoland Island, Commander Cudlip, R.N., 1855		2	6
Loo-choo Islands, Port Oonting, French officers, 1846		1	0

EDWARD DUNSTERVILLE, Commander, R.N.

Hydrographic Office, Admiralty, July 23rd, 1856.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

SEPTEMBER, 1856.

JOURNAL OF H.M.S. "RATTLESNAKE," COMMANDER HENRY TROLLOPE, ON HER RECENT VOYAGE TO BEHRING STRAIT.

(Continued from page 431.)

H.M.S. *Fisgard*, 42 guns, Capt. A. I. Duntze, passed through the straits in October, 1843. Edmund P. Cole, Master. The following abstract is taken from the *Nautical Magazine*, volume for 1849, pp. 507—512.

They first saw the land on October 13th, 1843. At daylight on the following day Cape Virgins eight leagues distant. Anchored with the kedge at noon (calm). At 3h. p.m. wayed and anchored near Cape Possession. Mount Aymond and the Ears easily distinguished; Direction hill not so plain. Entrance of the First Narrows not easily distinguished; but with a fair wind and flood tide they rushed along. Got on shore on the Triton bank; but off again without damage, and anchored for the night in 20 fathoms.

On the 16th of October worked through the Second Narrows: the weather had hitherto been fine, but squalls from S.W. with hail and snow came on; the land much obscured. Kept over on the Fuegian shore to avoid the shoal, in doing which the hummock North of Susannah cove is a useful object. In the afternoon the wind freshened, and finally settled at West; the clouds cleared and the sunset was delightful. Anchored in Royal roads.

17th of October.—Passed through the kelp close in with the eastern side of Elizabeth island, contrary to Capt. King's caution. Passed Point St. Anne and Port Famine, with an easterly gale, ten or eleven knots; wind suddenly fell light and shifted to the westward; obliged to anchor in Woods bay, a mere nook.

18th of October.—Port Gallant, Fortescue Bay, four days from

Cape Virgins. Remained there four days, and left it October 23rd. Made *thirty-four* tacks to get to Elizabeth bay, not ten miles distance; anchored there.

October 24th.—Made *thirty-nine* tacks to reach Borja bay; anchored there, having accomplished fifteen miles; remained there one day. Made *forty-four* tacks in Long reach on October 26th, and reached Swallow bay. Anchored, a bad anchorage, lost an anchor here. This day they advanced sixteen miles. Remained there two days.

October 29th.—Left with a fair wind, but it soon veered round to the westward: being moonlight, worked out.

On October 30th. 7h. p.m., were to the westward of Cape Pillar, having been nine times at anchor, six or seven days in harbour, sixteen days from Cape Virgins to the westward of Cape Pillar. It will be remarked that they were only four days to Port Gallant, so that had they been favoured with another slant, the passage might have been accomplished in five or six days.

With this account before me, I cannot agree with Commodore Byron in thinking that a fleet ought to prefer the straits to the passage round the cape. The anchorages are small and confined, and the number of tacks detailed above seem to prove that no large ship but a man-of-war could ever succeed in accomplishing the passage in anything like a moderate space of time. With a small fore and aft-rigged vessel the case is very different. And setting aside the saving in wear and tear, the men having all night in, in such a climate, would be no slight advantage.

Various Passages through the Straits of Magalhaens.

Names, &c.	Dates.	No. of Days.
Fernando Magalhaens.....	28th Oct., 1520, 27th Nov., 1520	30
Francis Drake	20th Aug., 1578, 6th Sept., 1578	17
Thomas Cavendish.....	6th Jan., 1587, 8th Feb., 1587	33
Sir John Narborough, Lieut. Nat. Pecket, H.M.S. *Sweepstakes*, 36 guns, *Bachelor*, *Pink*	1670	
Com. Hon. John Byron, H.M.S. *Dolphin*, 20 guns; H.M.S. *Tamar*, Capt. Mouat.....	17th Feb., 1764, 9th April, 1764	51
Captain Samuel Wallis, H.M.S. *Dolphin*, 20 guns.....	17th Dec. 1766, 17th April, 1767	121
Capt. Philip Carteret, Lieut. Erasmus Gower, H.M.S. *Swallow*, 8 guns.....	17th Dec., 1766, 15th April, 1767	119
M. Louis Antoine de Bougainville, French frigate, *La Boudeuse*, 40 guns; M. de la Giraudais, second in command, frigate, *L'Etoile*, armed *en flûte*.	7th Dec., 1767, 27th Jan., 1768	52
Capt. J. A. Duntze, H.M.S. *Fisgard*, 42 guns; E. P. Cole, Master	14th Oct., 1843, 30th Oct., 1843	16

Strait of Magalhaens.

True Courses, &c., between various Points.		Length.	Breadth.
		Miles.	Miles.
Cape Virgins to Dungeness	S. 35° W.	5	
Dungeness to Point Catherine	S. 54 W.		13·5
Dungeness to Fairway, First Narrows	N. 87 W.	35·5	
First Narrows	S. 45 W.	17	2·2
St. Philip bay and St. Jago bay	S. 70 W.	20	
Second Narrows	S. 61 W.	11	3·3
Laredo bay	S. 42 W.	15·5	
Punta Arena (Chilian settlement)	S. 6 W.	13·5	14
Port Famine	S. 4 W.	28	
Abreast of Port Famine, but useless bay with an opening of 13 miles, has an expanse of 50 miles, opening out into Admiralty Inlet, 100 miles long, and 8 to 10 broad.		....	7·5
Port Famine to Cape San Isidro	S. 9 W.	10	
Cape San Isidro to San Nicolas bay	S. 55 W.	6·5	5·5
San Nicolas bay to Cape Froward	S. 68 W.	8	
Opens out to Magdalen Channel and Cockburn Channel (110 miles).			
Cape Froward to Port Gallant	N. 64 W.	28	2·5
English Reach	N. 48 W.	16	2
Crooked Reach		9	
Borja bay in the middle; Ortizo island, El Murion on the Tierra del Fuego shore		....	1·5
		....	1
Borja bay to Playa Parda Cove		18	2·5
Playa Parda Cove to Half Port bay		14	
Half Port bay to Tamar harbour	N. 50 W.	25	7·5
Tamar harbour to harbour of Mercy	N. 70 W.	34	10
Harbour of Mercy to Cape Pillar	N. 50 W.	5	
Harbour of Mercy to Westminster Hall	N. 44 E.	....	12
Cape Pillar to Cape Victory	N. 10 W.	....	19
Cape Pillar to Evangelistas	N. 40 W.	....	23
Length of Magelhaens Strait		317·0	
By the Magdalen and Cockburn Channels		260·0	

Variation of the compass, 22° 30′ E., Cape Virgins; 23° 40′ E., Port Famine; and 23° 48′ E., Harbour of Mercy.

Wednesday, May 18th.—In the morning it was quite calm; the *Vixen* took us in tow for the eighth and last time, towing us past Cape Pillar, against a very heavy rolling swell, the result of the gale.

Cape Pillar is a most remarkable point, it is aptly named, for it appears a sort of Stonehenge. We stood out W.S.W., (magnetic,) *Vixen* towing us five knots. The glass continued to rise until 10h. a.m., and then began to fall slowly.

The day of our leaving the Straits, like that of our arrival, was beautiful. About noon a breeze sprung up from East and E.N.E.; we cast off and made all sail. The *Vixen* gave us three cheers on

parting company, which we returned with hearty goodwill; and I cannot take leave of Capt. Barnard without saying how much I admired the able manner in which he managed the business,—or, as I felt and expressed at the time by signal to him, that I hoped he would return our grateful thanks to the Admiral for the efficient assistance of the *Vixen*.

Almost to an hour we were eight days in the Straits, anchoring seven times; having our run of fine weather, and our full share of foul, although not by any means what I anticipated from former accounts of these far-famed straits. We made all sail to royals, and port studding sails, the easterly breeze carrying us away from the inhospitable desperate looking coast North and South of the Straits.

We took a departure from Cape Deseada and the Evangelistas, the name, characteristic of the Spanish spirit of devotion, given to the islets or rocks called by our old navigator, Sir John Narborough, the Direction Isles. Direction Isles they certainly are, but it was a happy thought to call four such islets, so well placed to point out the entrance to a difficult and intricate passage, by such a name; although all that nomenclature indulged in by the Spaniards and Portuguese had little of true religion in it, indeed with many was but little better than debasing heathenish superstition, sanctioning every outrage; still I could not bring myself to call the islets by any other name than the Evangelistas.

Talking of names, I could not imagine the meaning of such names as Cape Quod, Sweepstakes Foreland, Bachelor's Delight, until I remembered that Sir John Narborough and his "ingenious lieutenant," Nathaniel Pecket, were fresh from London in the days of King Charles II., and that such names were familiar and popular enough in his time.

I was most thankful for the easterly wind; it was a God-send to take us away from the frowning fantastic peaks of the Duke of York's or Sir John Narborough's land,—more particularly as we had no business there.

Capt. Fitz Roy particularly recommends standing into 80° West before attempting to make Northing. The result in this instance proved the excellence of the advice. We made a fair wind out of what would otherwise have been against us. The wind still favoured us, but the weather was overcast, and the barometer continued to fall rapidly. We gradually reduced sail, and before noon on the following day she was under close reefed topsails. In eighteen hours, or between 6h. p.m. on the 18th, and noon on the 19th, the barometer fell 1·35 inch. About 1h. p.m., after a lull, almost a calm, for half an hour, the wind changed suddenly with a furious squall from N.E. and E.N.E. to N.W., and blew as hard as I ever remember having experienced. We were, however, forewarned, and had only the fore-topsail to furl, and under the main-topsail and fore-staysail, she laid to very well with her head to the S.W.

The barometer began to rise an hour afterwards, and the fury of

the storm seemed to be over in the first burst, although it still blew very hard, and continued to do so for ten or twelve hours. I felt very much indebted to the barometer for being forewarned as to this breeze, for although the weather was thick and unpleasant, I did not anticipate a gale, except from the rapid falling of the mercury.

A succession of gales came on, with a turbulent cross sea, chiefly W.N.W. and West; these, had we been closer in shore, would have been against us, whereas we now made a fair wind, and stood to the Northward, indifferent as to Easting, until we arrived in 36° S. and 75° W. we hardly had anything but gales and squalls, and heavy turbulent sea,—those who had not been in the Pacific before thought it strangely mis-named.

In approaching Valparaiso we very nearly over-ran the port, although we hove to when we were, as we thought, ten or twelve miles to the southward of Coroumilla Point.

At daylight on the 31st of May a beautiful meridian altitude of the moon gave us a latitude two miles North of Valparaiso Point, and two hours afterwards we made the lighthouse E.b.S.½S. seven or eight miles. We stood over towards Con-con, and, contrary to my expectation, got becalmed there, for from the freshness of the southerly breeze outside, which had obliged us to reef during the night, I did not anticipate want of wind, but the reverse. However, we were becalmed, and fortunately half a dozen shore boats came out; which, with our own and a light air from the northward, carried us into the bay at 2h. p.m. These boats are in the habit of towing vessels in and out, for it is a peculiarity in this bay that outside a line between Con-con and Valparaiso a fresh breeze may be blowing while inside it is provokingly calm. We experienced this both in coming in to the bay and also in leaving it. We anchored in 31 fathoms, mud:—Bell of Quillota, N. 62° E.; Point San Antonio, S. 49° W.; Valparaiso lighthouse, N. 71° W.; Church of San Matriz, S. 42° W.

Valparaiso is crowded with shipping, among which little order seems to be observed—I mean as to their berthing. It is, in fact, a bad and indifferent anchorage, particularly at this season, when the northerly winds prevail, tumbling in such a swell that nothing can be done. We had engaged caulkers and on two days they would not come off on account of the swell, which they said would make them sick; it was also difficult to get our provisions off on two or three days.

The depth of water is also a serious drawback. There is little less than twenty fathoms anywhere, and from the vast increase of trade it is rare now to come into less than thirty fathoms.

But, in spite of all disadvantages it is wonderfully on the increase and is decidedly the first trading town on the coast. It is unmistakeably dirty. Winifred Jenkins' account of Edinburgh would hardly do justice to it. There is no fear of hysterics I should say to the people here, nevertheless it thrives and grows rich. Among other proofs an immense building is erecting on entirely new ground, where Fort S. Antonio formerly stood, only that the cliff has been blown up and the soil thrown into the water—so that the coast-line has been

considerably altered, as a custom-house or bonded store-house in which all goods are to be placed.

I believe the Government are paying £20,000 sterling per annum for the building, for which of course the custom dues reimburse them; it is plain but regular, and from its massiveness and extent not by any means devoid of a certain air of grandeur; certainly there is not much to compete with it, therefore it is saying little that it is the finest building in Valparaiso; in fact, it is the only feature in an architectural point of view that at all strikes the eye.

We found H.M.S. *Dædalus*, Capt. G. G. Wellesley, here, just arrived from San Blas, with nearly a million of dollars freight for England. She sailed on the 3rd of June for the Falkland Islands, Rio, and England, getting the *Nueva Grenada* steam vessel, going for the first time to Valdivia, to give her a tow out. It was rather delicate work, as packets are not fitted for it; but the captain was very civil and obliging, and did it very well.

By getting out on this day Capt. Wellesley took advantage of a northerly wind, which continued for the next three or four days: had he delayed I do not think he could have got out at all. It is surprising they do not get a tug-vessel here; it would I imagine soon repay the outlay.

The Chilian squadron was lying here, making a very respectable show, taking apparently considerable pride in their appearance.

I hoped to leave Valparaiso on Monday, 6th of June, but instead of sailing was obliged to let go another anchor and veer to 160 fathoms, on account of a northerly gale; in much anxiety also of being fouled by merchant ships, which, after the breeze was done, were shifting in or trying to get out.

On Tuesday and Wednesday we were equally unfortunate, and on Thursday, 9th of June, wayed in a calm, and got our shore boats to tow us out. The line of breeze was distinctly defined; it sprung up about one o'clock, and vessels outside a line between Con Con and the lighthouse point, St. Angeles or Valparaiso point, were healing over to the breeze, while we were becalmed, or the little air there was from the northward. The boats towed us out steadily but slowly, and we should not have done it I think without their assistance. They are five oared American whaleboats, and pull very tolerably, making a great row with it. When we crossed the above line we got the breeze fresh from S.W., and we stood N.W.b.W., going eight knots.

The caulkers at Valparaiso appear to do their work efficiently, but are very slow; and if there is any swell in the bay will not come off, on account of sea-sickness.

We stood to the northward with a steady breeze from S.W. and S.S.W., and on Monday, 13th of June, sighted the island of St. Ambrose; by a curious omission it is not put down in Capt. Fitz Roy's chart of South America, neither is Malpelo or Cocos; perhaps they were forgotten because not visited by the *Beagle*. We sighted St. Ambrose before daylight, almost bearing W.b.N. ¼ N., thirty miles distant. It has been described by Colnett and by Morrell, an Ame-

rican Captain, who gave rather flowery descriptions of places he visits; he says, there is good water on it, and so placed as to be useful for supplying a ship.

Capt. Bruce, in the *Imogene*, passed by it in 1807, and from its resemblance to the rock off Haddingtonshire called one of the rocky islets off the extreme East the Bass rock, which it certainly resembles. We made the longitude of the Western extreme rock 79° 59′ W. of Greenwich, or by five chronometers, 33 minutes 8 seconds ·5 West of Valparaiso, 71° 41′ 5″ W., Raper. Its height, i.e., the highest summit of the isle itself, is 1512 feet, by three observations. I took some angles in passing, and protracted the position of the islets, which will show better than any description can how they lie from each other. The latitude of the West extreme rock we made to be 26° 21′ S. We did not approach within eight or nine miles, and can therefore give but little information about them. St. Felix Isles at first sight make like two, which in fact they are, only divided or joined by a low reef, which is at times I believe passable; at all times the sea breaks on it. They are curiously formed with two hills or rugged peaks at each extremity. Somebody compares it to a double-headed shot, which in fact it does in some measure, only one of the shot ought to have been severed from the bar.

To the westward lies a very remarkable steep rock, sometimes called a sail rock, to me the resemblance seemed perfect to the West front of Peterborough cathedral! It is most desolate and barren in appearance, and it is so described by Colnett. We had swarms of flies off, which was remarked also by Colnett as the only living thing on the island.

The channel between St. Ambrose and St. Felix we made nine miles and a half broad, W.b.N. and E.b.S., true. Variation, 14° 20′ East. Height of S.E. St. Felix, 400 feet. Height of West St. Felix, 472 feet.

I consider we got the trade wind on the following day, the 14th of June, and I never saw more uninterrupted fine weather. The studding sails were set both sides for ten or twelve days.

We painted ship inside, although we had fifty casks of beef and pork on the upper deck, besides a deck load of plank and spars for the *Plover*. There was more rolling than was pleasant, but still it was remarkably fine and the newcomers ceased to wonder at Magalhaen's name for the vast ocean he first traversed.

30th.—Crossed the line of no dip in 2° 11′ S. and 110° 57′ W. This of course is only approximate for, never having had the ship swung, we do not know the deviation, and in fact I have great reason to believe it is farther South, as on trying it on another point of the compass soon afterwards I found considerable difference.

July 2nd.—We crossed the equator in 115° W.

6th.—Lost the trade in 7° 30′ N., 118° 30′ W.; westerly, S.W., and variable winds; heavy rain in showers and calm for four or five hours.

10th.—Got the N.E. trade in 13° 50′ N., having been in the dol-

drums for four or five days and about 380 miles. The trade was very different to the S.E. one—strong and fiery—fresh squalls—extraordinary dampness in the atmosphere, everything was fairly growing with mildew.

On the 15th we had heavy drizzling mist and rain, strong breeze from the northward, and considerable swell, which in fact we have had all along. This was in lat. 18° 20′ N., long. 136° W. Birds came and went, and we saw nothing of the five islands said to exist under the names of New Isle, Roccaperda, &c., and as we passed three times over that region in the *Herald* and Captain Belcher, in the *Sulphur*, also searched for them, and we have now again tracked nearly the same route, I should think they do not exist.

16th.—The wind, which had been from the northward, hauled round East and E.N.E.; the weather became finer and drier, but was still cloudy, so much so that we had difficulty in getting latitudes; the sun was now in the zenith.

On the 19th of July we crossed the path of the sun for the second time during the voyage, the meridian altitude being 89° 26′ zenith North.

On the 21st of July, at sunset we sighted Mowee, Mount Haleakala, according to Captain Wilkes, 10,200 feet high. It must have been at least sixty miles distant. During the night we ran along Mowee and Morotoi with a fresh easterly breeze.

Sighted Oahu about 8h. a.m. on the 22nd, about ten or eleven leagues distant, and, with a fiery breeze from N.E., ran between it and Morotoi, and anchored in the outer road of Honolulu in twenty-six fathoms, sand and coral, veered to eighty fathoms: Fairway Buoy, N. 28° W.; highest part of Diamond Point, right hand summit, S. 78° E.

We found the small pox had been, and indeed still is prevalent. Many deaths had occurred, chiefly among the natives, who had not been vaccinated. There was an outcry among the foreign residents against the government for not having introduced vaccination, which might have been done throughout the island for ten cents a head. Whether it was practicable or not I have not heard, party spirit runs as high here as in other quarters, perhaps higher, from the community being smaller.

There was not a ship in the roads or in the harbour. When I was here in the *Herald* in May and November the harbour was a forest of masts; there were then eighty or ninety sail in the harbour alone, besides half a dozen in the roads.

Sunday, 24th.—A Danish vessel, the *Cecrops*, arrived in thirteen days from San Francisco, but bringing us no particular news. She was bound to Hong Kong and had 114 Chinese passengers on board returning from California, not having found the speculation profitable. It is a sign of the times, showing at all events that labourers are not required in that part of the world so much as heretofore.

(To be continued.)

The Pacific Ocean considered with Reference to the Wants of Seamen.

General Winds.—This vast expanse of ocean, bounded on one side by Asia, the Philippine Islands, and New Holland, and on the other by the western coast of America, extends from the Arctic to the Antarctic circle, over a space of 133 degrees of latitude. It was unknown to Europeans until the year 1513, and was first seen by Vasco Nunez de Balboa, from the summit of one of the mountains of the isthmus of Panama.

Magalhaens, more generally known by the name of Magellan, crossed this sea from America to the Philippines, and named it the Pacific Ocean, in consequence of the constant fine weather that he met with during his voyage.

The Pacific Ocean, to which perhaps the name of the Great Ocean might have been more applicable, is the largest sea of our globe. It is less occupied by land than any other, and in general we only find in it small islands, either singly or in groups.

On considering the outline of its coasts, we find these widely apart in the southern portion of it, a feature which it preserves as far northward as the tropic of Cancer, near which circle only the coasts of Asia and America converge previous to uniting at Behring Strait, in the latitude of 65° North.

The formation of the coasts of the Pacific Ocean resembles in several remarkable features those of the Atlantic. The Western coast of South America projects much in the same manner as that of the same coast of Africa to the South of the equator. The gulf of Panama and the coast of Mexico are situated like the gulf of Guinea and the promontory of Africa. The Carribbean Sea, which engulfs itself in the eastern coast of Mexico, assimilates to that between the North coast of Australia and the coast of China, in which we find the Molucca and the Philippine Islands, &c. Nevertheless, these two seas in their other parts, whether North or South of the line, differ much in the contour of their shores.

The Pacific Ocean is commonly divided into two parts by the equator; but to facilitate our consideration of it, we shall divide it into three parts, viz., first, being the most important, the equatorial Pacific Ocean, shall be comprised between the tropics; secondly, the North Pacific, will be bounded by Behring Straits and the tropic of Cancer; thirdly, the South Pacific, will be comprehended between the tropic of Capricorn and the Antarctic circle.

Equatorial Pacific Trade Winds.—It was formerly considered that throughout the space occupied by the Pacific Ocean the trade winds blew with as much and even more regularity than in the Atlantic Ocean. But numerous recent observations have shown that probably not one half of this sea is subject to the influence of the trade wind, and we are all but assured that the S.E. trade wind only blows over that portion comprised between the meridian of the Gallapagos (150

or 200 leagues from the coast of America) and the meridian of the Marquesas, or Archipelago of Nouka-Hiva; and that the N.E. trade wind, which, commencing at about 100 leagues from the coast of America, extends to about the neighbourhood of the Marianne Islands.

Deviation in the Trade Wind.—The numerous groups of islands Westward of the islands of Nouka-Hiva, and near the Australian coast, as well as those situated North of the equator in the same latitude, appear to effect a modification of the trade winds of the Western Pacific into periodical winds or monsoons, and also variable winds. Thus we find that in these groups, in the zone situated North of the equator, the trade wind only prevails from October to May; from March to October in that situated South of the equator, and that Westerly winds, storms, and rain occur during the rest of the year. We shall refer again to this important fact, and adduce some undoubted proofs of this from amongst numerous observations in the voyages of circumnavigators.

Zone of the Trade Winds.—The zone in which the trade winds of the Pacific prevail, where, as above observed, they blow with regularity, is comprised between the equator and the parallels of 30° North and 30° South latitude.

On consulting a large number of authorities, we have constructed the following table from voyages in the Pacific Ocean of ninety-two vessels which have crossed the equator between the meridians of 106° and of 147° West longitude. Incomplete as it is, it yet shows some important facts, although they should only be considered as approximations, having been deduced but from comparatively few observations.

The following table shows the limits of the trade winds every month, and the breadth of the zone of the variables of the equator.

Month.	Polar Limits of the Trade Winds.		Equatorial Limits of the Trade Winds.		Breadth of the Zone of the Variables North of the Equator.
	From N.E. Lat. N.	From S.E. Lat. S.	From N.E. Lat. N.	From S.E. Lat. N.	
	° ′	° ′	° ′	° ′	° ′
January.....	21 0	33 25	6 30	3 0	3 30
Febuary....	26 28	28 51	4 1	2 0	2 1
March.....	29 0	31 10	8 15	5 50	2 25
April.....	30 0	27 25	4 45	2 0	2 45
May.....	29 5	28 24	7 52	3 36	4 16
June.....	27 41	25 0	9 58	2 30	7 28
July.....	31 43	25 28	12 5	5 4	7 1
August.....	29 30	24 18	15 0	2 30	12 30
September ..	24 20	24 51	13 56	8 11	5 45
October.....	26 6	23 27	12 20	3 32	8 48
November...	25 0	28 39	,,	,,	,,
December...	24 0	22 30	5 12	1 56	3 16

Polar Limit of the Trade Winds.—From this table it is evident that the polar limits of the trade winds are variable, and that they are found most to the Northward and Southward according as the sun has a North or South declination.

Equatorial Limit of the Trade Winds.—It is also evident that the equatorial limits of the trade winds is equally variable, according to the season, and leads to the conclusion that the zone of the variable winds, which separates these limits, is not so broad in the winter as in the summer of the Northern hemisphere.

Zone of the Variable Winds of the Equator.—It shows also that the equatorial zone of the variables moves as much to the North of this circle as far as the results can do which we have collected. This zone also assimilates much with that of the Atlantic Ocean. It is larger on the meridians of 90° to 100° than on those further to the West, as 120° to 130° of West longitude. Hence the breadth of the zone decreases in proportion as it is Westward. There in fact calms and light airs, varying from N.W. to South by the West, are found, and frequently stormy weather.

The Northern limit of this zone is about the parallel of 8° North latitude. Its Southern limit is in 3° N. Nevertheless it sometimes happens that the N.E. and S.E. trade winds reach each other, and vessels pass from one to the other without experiencing calms.

The S.E. Trade.—Between the parallels of 30° S. and 4° S. lat., at 150 or 200 leagues off the coast of America, bad weather is not generally found. The trade wind, varying between East and S.E., blows constantly to the middle of this zone. In the summer the direction of the wind varies from E.S.E. to S.S.E., and never veers Northward. When the sun is in the Northern hemisphere, the trade winds of the Southern hemisphere blow directly from the S.S.E., and on the contrary they blow more from the East when the sun is in the Southern hemisphere.

In examining the foregoing table we see that the polar limit of the S.E. trade seldom attains the parallel of 30° South latitude. Its equatorial limit, on the contrary, often reaches to the North of the equator, as already observed. The result is, that the zone of the S.E. trade wind is generally larger than that of the N.E. The S.E. trade winds are more certain and less variable than those of the N.E. In the zone occupied by the former, calms and storms are much less frequent; lastly, we may observe, that in this zone the temperature has been found lower than in that of the N.E. trade, a fact which is confirmed by observations collected during recent voyages.

N.E. Trade.—The foregoing table, compared with that drawn up for the Atlantic Ocean, proves a fact asserted long ago, that the polar limit of the N.E. trade winds of the Pacific Ocean is nearly the same as that of the same wind in the Atlantic Ocean; at least it differs from it very little.

In the northern hemisphere, when the sun has North declination, the N.E. trade comes more directly from the East, but varies to E.N.E.

and sometimes to the southward of it, but accompanied then by squally weather.

On the contrary, when the sun is in the southern hemisphere, the trade wind takes a more northerly direction, varying from E.N.E. even to N.N.E. In this case the equatorial limit of these winds approaches nearer to the equator than in any other season, but it never passes to the South of this circle.

The N.E. trade wind is always constant, and blows fresh towards the middle of the zone above-mentioned from October to May, and it extends to the Philippine islands. In which season a ship crossing the Pacific from the Eastward should keep between the parallels of 13° and 14° North latitude.

The N.E. trades are, however, generally less constant, and therefore less to be depended on than the S.E. trades. In their variations they sometimes come from the South, as already observed, and they blow as frequently from E.S.E. Calms and storms are also more frequent in the zone where they are found than in that of the S.E. trades.

Monsoons of the Pacific Ocean in the Zone of the Trade Winds.—It has been shown above that the S.E. trade winds are only regularly established in the space comprised between the eastern meridian of the Galapagos and that of the Nouka-Hiva group, and the N.E. trades in that which commencing at 100 leagues from the coast of America, extends to the Marianne islands. But in adducing this fact as a general law, it is not pretended that it is so in every part of it in the same manner, and precisely the same time.

We have said that to the North of the equator the N.E. trade wind blows over the whole of the Pacific Ocean from October to May, or nearly so; and South of the equator the S.E. trade wind blows from March to October, although we often find variations among the islands situated South of the equator.

We have added that these winds are replaced in the West part of the Pacific Ocean, during the rest of the year by variable winds or monsoons, contrary to the opinion which has been long established in this respect, and the following justifies our remark.

The Pomoutou and Nouka-Hiva Groups.—In the month of July, 1838, the corvette *Astrolabe*, in the latitude of the Pomoutou group, met with the S.E. trade wind in 19° 50′ South latitude. From the 15th of July, the time when she was in this latitude, and in 114° W. longitude, to the 28th of July, she experienced less regular winds, varying from N.N.E. to S.S.E., most often light, and intersected by winds from N.W. to S.W.b.W., blowing fresh.

From the 28th of July to the 5th of August, being in sight of the islands of Manga Reva, she experienced nine days of N.W. wind, varying to S.W. by the West, the N.W. wind bringing strong breezes with fine weather in general, although cloudy. To the 15th of August the prevailing winds were those from N.W. to S.S.W., the weather cloudy and sometimes rainy. The winds from W.S.W. were the

strongest. These winds were interrupted by light breezes from N.N.E. to S.E.b.E.

From the 15th of August to the 20th of the same month, the period when the *Astrolabe* was in sight of the island of Clermont Tonnerre, she had the same variable winds that she experienced in the archipelago of Nouka-Hiva. At the end of August and the beginning of September winds varying from W.N.W. to S.S.W. by the West.

M. Duperrey, in the same latitudes, experienced in April South winds varying from West to W.N.W. by the West. It thus appears by these observations that near these two archipelagos the S.E. trade wind is not the most frequent. They also confirm this remark of Cook, to the effect that, in the neighbourhood of islands the trade is not a regular wind, and that it does not extend beyond the parallel of 20° S.; that further South in these latitudes the winds blow from the West, and the trade wind is hemmed into so narrow a space that it blows with greater violence. Near these limits the trade wind is much lighter.

In the archipelago of Nouka Hiva, Krusenstern also mentions S.W. winds, which are tolerably constant.

Tahiti Group.—In the Tahiti Group the winds during part of the year vary from E.S.E., E.N.E., and sometimes (especially in July) East to S.S.E. The trade wind blows strongly in this archipelago; the weather is then cloudy and we sometimes have rain. In October, November, December, and part of January the winds blow from West to S.W. They are interrupted by calms and light breezes from the East and sometimes by storms and rain. In December and January, when the sun is in these latitudes, the wind and weather are very changeable. It is then that moderate winds from W.N.W. to N.W. last five or six days. With these winds the sky is cloudy, often with rain. If they pass to the North they are much slackened and replaced by winds from W.S.W. to S.W. If they take a more southerly direction they become strong. The S.W. and W.S.W. winds are more frequent than those from the North.

A second but all important observation presents itself in the circumstance that this archipelago is very close to that part of the Pacific Ocean where the trade winds are regularly established throughout the year.

We might adduce a similar observation in respect of the Tonga or Friendly Islands. In September we find S.E. winds there, followed in October by S.W. to S.S.W. winds, and even by those from N.N.W. The same observation has been made in regard to New Caledonia. In December, 1838, the *Astrolabe* experienced, near the Solomon Islands, winds from W.S.W. to S.S.W., sometimes blowing very strong, with cloudy and rainy weather.

Solomon Islands.—Among the Solomon Islands the N.W. monsoon commences in December or January. Sometimes these two months are tolerably fine. In February and March fresh breezes, with heavy squalls and abundance of rain, may be expected. April is generally a

fine month. The winds are then variable until May; during which the weather is often fine.

In June the S.E. monsoon is very strong, with frequent rain squalls; and bad weather, interrupted by a series of fine days, lasts until the end of August. In September the monsoon begins to slacken, and from this time to the return of the N.W. monsoon the breezes are moderate.

Eastward of these islands the N.W. monsoon is not so constant. It commences later, towards the end of January, and blows fresh during sixteen or eighteen days, when it is followed by the wind from East, which blows during the same number of days. The West wind then sets in with a little bad weather and continues, with storms and rain, constantly blowing hard. These winds from East and West last alternately until the end of March, the time when the regular S.E. winds commence. The further to the East the more irregular is the N.W. monsoon, and it is not found beyond the Nouka Hiva Group.

New Britain and New Ireland.—At New Britain and at New Ireland the S.E. trade wind is found to prevail only from March to October. When the sun has South declination the West winds, varying from N.W. to S.W., replace it during the rest of the year.

New Guinea.—At New Guinea two monsoons are found, which seem to be the continuation of those from the China Sea. One is the N.W., the other the S.E. The S.E. monsoon prevails from the middle of May or June until October; that from N.W. from November until May. In December we generally find the wind varying from N.N.W. to N.E.

Eastward of New Guinea the wind is from the S.E. during the time that the S.W. monsoon is blowing North of the line.

Torres Strait.—In Torres Strait the N.W. monsoon commences towards the end of October and lasts till the middle of March. The S.E. trade blows in April and strengthens till June, being sometimes very strong in this latter month and also in July; they then slacken and gradually moderate.

Marianne Isles.—In the Marianne Islands we find a monsoon from West, beginning from the middle of June and continuing to the middle of October. The rainy season lasts during the months of July and August, but often only known by a succession of heavy showers. During the westerly monsoon the wind varies very much to the time of the syzygies, and then blows hard from all points of the compass. The typhoons and hurricanes met with in the China Sea occur in the latitude of these islands at the time of the changes of the monsoons. The East limit of these storms is near their meridian. From the 15th of October to the 15th of June the weather is fine and the Easterly monsoon prevails throughout this interval.

From these facts, which if we were to quote more of them would oblige us to exceed our general observations, it appears that with regard to the S.E. trade winds the zone where they in a manner permanently prevail is bounded on the West by the meridian of the

Nouka Hiva Group, and that with regard to the N.E. winds the zone where they blow without interruption does not extend to the West of the Marianne Islands.

Some further general observations on the monsoons are added here: That from the West in the Pacific, as in the Indian, Ocean is generally accompanied by a cloudy sky, squalls, and heavy rains; and sometimes the squalls are so violent that all sail must be taken in, even when the wind is aft. They are generally heralded by a strong W.S.W. wind which lasts about an hour, and, shifting to N.W., continues to blow very strong for five or six hours more.

Hurricanes of the South Pacific Ocean.—In the Pacific Ocean, between the parallel of lat. 10° S. and the tropic of Capricorn, hurricanes occur principally from November to April, and this is another particular in which this sea assimilates to the Indian Ocean. Hurricanes are more frequent in the latitudes of the New Hebrides and New Caledonia than anywhere else. They are often met with near the islands of Viti and Tonga. Generally speaking, where the S.W. monsoon extends we meet with hurricanes, or, rather, the S.W. monsoon and hurricanes are found within the same meridians, without reference to any limit in latitude. In fact, while the S.W. monsoon scarcely attains the parallel of lat. 13° S., and rarely passes those of 17° or 18°, the hurricane extends as far as the tropic.

The hurricanes of the Pacific are not so terrific as those of the Indian or Atlantic Oceans. They are more frequent and violent near the islands than off the coasts. In the South Pacific, however, they are rare, and several years pass without one.

The hurricanes of the southern hemisphere, like those of the Indian Ocean, have a giratory movement in the same direction as the hands of a watch, and also a general progressive motion on a line like a parabolic curve, the bend of which is in about lat. 26° S., and such that a North and South line is a tangent to it, the curve being open towards the East, the line of track next to the equator being directed towards the S.W., while that furthest from it points towards the S.E.

Regular Storms of the South Pacific Ocean.—Near the Tonga Islands, and perhaps in other parts of the zone of which we are speaking, very violent squalls are met sometimes, and always blowing in the same direction. Their effects are nearly as bad as those of hurricanes, and are peculiar to the southern hemisphere.

Storms in the North Pacific Ocean.—The Marianne Islands are sometimes desolated by hurricanes. In the months of June, July, August, December, and January they are the most frequent. These hurricanes sometimes occur further to the East, and Captain Hunter mentions one experienced by him in 1882, in the ship *Japan*, on the parallel of lat. 13° N. and long. 150° W., about the meridian of the Sandwich Islands.

In the zone of the South Pacific Ocean, where, as observed, the S.E. trade winds are constant, not a single hurricane has been yet noticed. But in the same zone where the N.E. trade blows they are sometimes met with. These facts confirm our observation on this

trade that it is less regular and less certain than the S.E. trade, as squalls and storms are more frequent in the zone which it occupies than in that of the S.E. trade.

Several remarks still present themselves on the strong winds that are found East of the Sandwich Islands, in the zone of the N.E. trade and near its northern limit. The *Superb*, on her way from Valparaiso to San Francisco, was, on the 16th of September, in lat. 15° N. and long. 120° 10′ W. The wind was light from N.N.E., but squalls were very heavy, with rain. At 4h. p.m. the weather assumed a more threatening appearance, and as night came on the wind increased. At 11h. p.m. it suddenly attained such violence that the after sails were got in with much difficulty. For an hour the most vivid lightning filled the whole horizon, succeeded by deafening thunder. The storm only lasted five hours, when the wind abated and, shifting to South, became moderate. The next day at noon the weather was quite serene, and the breeze moderate from East.

On the 3rd October, 1854, the brig *Giffard*, in lat. 25° 32′ N. and long. 140° W., had a fresh breeze from N.E., the weather cloudy and gloomy. A heavy bank of clouds was observed in the East. The barometer varied from 29·70 to 29·80. At midnight the breeze freshened with sudden gusts, accompanied by rain. The *Giffard* was steering N.W.b.W. On the 4th October the wind became stronger and rain heavier. At noon they were in the latitude of 27° 40′ N. and long. 136° 30′ W. The barometer 29·60; at one o'clock it had fallen to 29·35, and the wind increased at the same time that the rain became incessant. The Captain, conjecturing that they were gradually entering a typhoon or a rotatory storm—the wind being from E.S.E. and they steering W.N.W., which showed that the ship was in the North part of the zone occupied by the hurricane,—decided on laying to to let the storm pass. The wind being from East he laid her head N.N.E. At four in the afternoon the barometer marked 29·30; at midnight, 29·25, the wind still blowing from E.S.E.

On the 5th October the wind was very violent and the rain incessant. They continued to steer for the cape. At 4h. a.m. the barometer was at 29·20, the wind, S.E.; 8h. a.m., bar. 29·15, wind S.S.E.; noon, bar. 29·05, wind S.S.E.; 2h. p.m., bar. 29·00, wind S.b.E. The wind then attained an excessive degree of violence, the rain was incessant and the sea a sheet of foam. At 4h. p.m., bar. 28·80, wind South; 8h. p.m., bar. 28·70, wind S.S.W.

At this time the ship was struck by a sea on her starboard side so severely that with the combined effect of the sea and wind, which had attained its greatest force, she was partly dismasted and lay on her port side. At midnight the barometer was 28·70, and the wind unabated in force.

On the 6th October, at eleven o'clock, the barometer began to rise. At 2h. it was 28·90, wind W.S.W. and moderated a little. The rain still fell incessantly. At 4h. a.m. bar. 29·00, wind S.b.W.; 8h. a.m., bar. 29·10, wind S.b.W.; noon, bar. 29·30, wind West.

The wind at this time had moderated, although blowing at intervals

in strong gusts. The opinion of Captain Briard, of the *Giffard*, was that the storm was moving towards the N.W., but on the 5th it took a more northerly direction, as the wind was more violent when the focus of the storm bore N.W.

The *Giffard* was skilfully managed, and, especially on the 4th and 5th, was near that part of the storm where, after travelling from East to West, it curved towards the North, to follow its N.E. course.

This observation is important because we know very little of the hurricanes of the Pacific Ocean.

(To be continued.)

The Compass Conquered, Great Circle Sailing, etc.

Sir,—Fully appreciating the honour you did me in the last number of the *Nautical*, in attributing my silence to precautionary motives, and assuring you that without a single exception both navigators and astronomers approve and encourage my attempt to simplify the working of nautical problems, I proceed to describe a new instrument, designed, perfected, and constructed by me, and which from its usefulness in projecting and measuring spheric angles, I call a Spherograph.

It is composed of merely two hemispheres, the upper one being transparent, and traversing concentrically the one beneath. Certain lines are drawn on each, and the intersections produced by merely turning the one upon the other, correctly measure angles to such an extent, that the labour of calculation is almost annihilated. One Spherograph might be so constructed as to suit all purposes of navigation; but to avoid confusion I prefer having separate instruments for particular uses, such as one for azimuths, one for great circle sailing, another for finding latitude from a single altitude at any time of the twenty-four hours, &c. I have, during upwards of a quarter of a century's experience as a nautical tutor, studied both the work of navigation and the men who use it, and it cannot be doubted that most valuable hints to navigators are lost to that class of persons through want of simplicity in arrangement; nor can the man of science who has been prepared by a progressive acquaintance with the beautiful properties of the line of the sphere, easily estimate the perplexity of an imperfectly educated sailor, when he first looks at a diagram on which lines are neither plain arcs of circles nor straight lines. Parabolic and hyperbolic curves convey to him even at sight some notion of a means employed which he at once mentally condemns as beyond his comprehension: but if you present to him right lines, and great or small circles, or evident arcs of such, a faint hope of the possibility of comprehending such combinations will cling to him, till at all events some attempt has been made to master them.

On this supposition, and having succeeded in arranging an instru-

ment, without confusion of lines or parts, but using such only as are familiar to every seaman, such as meridians and parallels of latitude as seen upon common globes, I believe I can profitably abridge the labour of calculation, while at the same time is presented to sailors in a familiar form a means of more thoroughly understanding what they do, and an interesting and simple conspectus of the whole science of nautical astronomy is offered to those inclined to extend their acquaintance with the doctrine of spheres.

It is true I am met at the very onset by the remark of a well reputed clever man, an astronomer, who, without any depreciation of my invention, expressed to me his scruples at the so great change which such an extremely simple instrument may cause: said he,—"By and bye we shall have a class of men to conduct our ships, who, from want of practice, will become unable to calculate at all." This being the only stated doubt of the value of my plan, I must candidly propose it for public consideration, and trust some of your correspondents will kindly offer opinions upon it,—contenting myself meanwhile with an entire disapproval of burdening the mind of a ship captain with unnecessary and often prejudicial exercise. I say prejudicial, as referring to the time often occupied in calculation, which is demanded for his other urgent responsibilities.

Before explaining the use of the spherograph in correcting a ship's compass, I must assume that the Compass Question continues a source of difficulty. Those who doubt this should visit a large iron steamer while being, like many another culprit, *swung* for her errors. It is at such times almost painful to see the anxiety of captain and officers in their eagerness to thoroughly understand a refractory compass. Were it not of importance, the golden moments of our merchant princes would be spared attendance at Compass Committees.

The importance will be best illustrated by my putting a case. Your ship, an iron one, whether steam or sailing, was regularly examined and swung by a competent person before leaving port, and corrections given and adjustments made with, for instance, Gray's patent and excellent method by soft iron and magnets. After being at sea, you find (no matter from what cause) that the magnetic condition of the ship is changing. Your ship, with its valuable cargo, and perhaps large number of passengers, is approaching a coast with probably outlying dangers, and threatening thick weather. At present your azimuth or amplitude is your only remedy by which your compass can be corrected; but in attempting an altitude for this purpose you are distressed to find the horizon, so indistinct from haze, that, having no such valuable addition to your sextant as Becher's Artificial Horizon,* you cannot get an altitude. An azimuth therefore is impossible! Unless you are a man of some knowledge of spheric calculations, no resource is left but to avail yourself of formulæ and diagrams, of which

* I do not select this, for no other means of obtaining an altitude at sea in a haze is *known*, and to my certain knowledge it is a most valuable addition to a sextant.

you know little, and therefore your deductions are possibly unsatisfactory. You must consequently, in your clipper ship, being out of available soundings, grope your way, and all this with a bold coast and obstructed vision to contend with, as what obscures your horizon may hide the land! What would you give at such moments for an azimuth procured with all confidence! What for an undisputably correct one!

I have the happiness and the honour of proffering at such times my humble spherograph. You, as captain of a vessel, always when at sea know, or ought to know, your latitude to one degree, your declination to a degree, and your time to three or four minutes. If you obtain an azimuth to less than a quarter point, you cannot steer to it; then if I give it you to a single degree, I furnish you with even more than you can require.

Take then the spherograph, move the under sphere upon its centre till the North or South pole stands above the horizon of the instrument a number of degrees equal to the latitude of the ship,—select the hour circle, corresponding to the apparent time at ship,—run your finger down it towards the equator till you reach where the parallel of your declination crosses it, and the azimuth circle which meets this is your true azimuth *to a degree*, it is plainly marked on the horizon. I have worked many questions publicly with the spherograph; and a few days since, when showing it to Capt. Walker at the Board of Trade, (I trust he will not disapprove my reference to a fact,) on his giving me a test question from an epitome purposely concealing from me the answer, I gave him in immediate reply, "between S. 75° and 76° E." Whereas, the answer by calculation in the book was N. 104° E. Thus my answer was correct within half a degree; while had it been even within three degrees, it would have been sufficient for all purposes of navigation.

Whether the difference between the instrument and the compass bearing of the celestial object be from local attraction or from terrestrial deviation, need not at such times concern you. The spherograph requires no help from dividers or calculation of any sort. With the prospect of bad and continued thick weather, a prudent captain will readjust for local attraction by his means of compensation as often as convenient. I would not lessen the means of security on shipboard; but surely a common, well made, steady binnacle compass, with a ready means of taking an azimuth or bearing, (such as Becher's Repeating Card offers, which may be used on the capstan head, or any part of the vessel,) surely, I say, an ordinary compass may dispense with all aid from those unsightly excrescences called standard compasses, placed so high above the deck! I could mention a noted steamer which has no less than twenty-eight compasses on board! Have we not then need of some reform in our compass system even as a guarantee to common safety, to say nothing of expense, and the distrust and confusion which all these arrangements or derangements entail?

If not presuming too much on your indulgence, may I suggest an-

other improvement. When I ask old and experienced navigators, why we should not have the compass card to traverse on its needle, so that after taking an azimuth it may be set and kept to the true North? The usual reply is,—"Why, indeed!" I can see no reason why masters of vessels should not daily as punctually set their compass cards to the true North as they do their clocks to apparent time. And the more especially as all charts are constructed on the pole of the world. At present a compass bearing (and most absurdly we can take no other) has to be reduced to the true bearing before it can be laid off on any chart; there may be a shrivelled skeleton imp of a compass card placed at hand upon the chart, but there is no reason for its continuance, since what was once compass bearing, is no longer so; a correction being, under the present system, necessary before we can in general so dispose of local attraction as to arrive even at terrestrial deviation.

In proposing therefore my remedy for this and other difficulties of the compass, may I not be permitted to affirm that by the spherograph the compass is conquered? I have long and anxiously considered the evils which beset the whole study and practice of navigation, and having in my own humble way brought such considerations to bear on the interests of this great commercial country, I am resolved to prepare a few practical and methodical hints on the study of navigation. The great changes which a few years have introduced, place the question of naval education in a state of transition. Gratified should I be, (I cannot say *proud* from a conviction of my own inability to do justice to such a subject,) but pleased should I be could I ultimately succeed in rendering permanent assistance to navigators.

With this strong feeling, I may possibly be allowed to state without delay that the spherograph greatly simplifies great circle sailing. At present this sailing is confined to a few of the most intelligent ship captains of clippers, which less need acceleration, and these are almost the only vessels benefitted by it. Nay: I have been assured by more than one ship master, that in general practice it is found of little utility, from the difficulty attending its use. The difficulty I have found to exist in the systems at present recommended. Terms are used, which, however appropriate in themselves, are not understood by seamen. And men dislike working generally as it were blindfold, neither knowing the "why" nor the "wherefore."

And as to composite sailing, I have had difficulty in convincing some captains that Towson's admirable method is so really meritorious. But does not this furnish a proof that nautical education generally is defective? A little more light, and the value of composite sailing would be manifest to every man who crosses the equator; and voyages might be shortened, and vast expences to the British merchant saved, if captains of ships had facilities for study such as the spherograph offers.

It has long been obvious that great circle sailing was only denied to the multitude from an inability in them to project the great circle

course. As in azimuth formulæ have been proposed, and highly ingenious tables constructed, yet it remained inherently a sphere question; and want of spherical knowledge rendered these means obscure. To use them really was not difficult; but, even in this age of progression, ignorance of the principles was often a bar to their use. Now, without a shadow of unfriendly or depreciating feeling towards those who have really done so much and so disinterestedly for the mariner, I may be allowed to say that by my spherograph the whole question of great circle and composite sailing is so simplified that not only "passed Captains" but the merest tyro in navigation may in it see the whole "why and wherefore." Independent of its being a system in itself, it fully explains, in terms known to all who study navigation, the groundwork of all that has been written on the subject. I have intruded, however, so far on the limits prescribed me that I must beg the favour of being allowed to defer to your next number an explanation of my most simple system of great circle and composite sailings.

I have, &c.,
S. M. Saxby.

THE ABORIGINES OF AUSTRALIA.—*By James Browne, Toronto. Read before the Canadian Institute, February 16th*, 1856.

In the following paper I purpose attempting to give an account of the aborigines of Australia, a subject not without interest to us as relating to a people situated in a remote portion of the British Empire, but on whom its civilisation has produced no beneficent influences. On them it is effecting, even more rapidly than on the aborigines of this continent, the fatal effects which appear inevitably to flow from the contact of savage with highly civilized life, and these notes accordingly refer to a people who are fast disappearing from the earth. Imperfect as they are, they may possess some value from the fact that they are in no degree derived from books, but embody the results of personal observations of the natives of Australia, concerning whom few among the numerous writers on the great southern region of British colonization appear to feel the slightest interest, or to have thought their habits and characteristics worthy of remark.

It was my fortune to pass the greater part of my boyhood at King George Sound, a settlement on the western coast of Australia. There the aborigines were my companions and playfellows, and thus the following account embodies facts which came under my own observation, or were related to me by the natives themselves. It narrates principally the result of my observations on those with whom I sojourned; but it may be added that the manners and customs of the aborigines of the western, southern, and eastern coasts of Australia vary so little that a description of one may answer for all. Of those inhabiting the

northern coast I could speak only from report. They are a still more savage race, with whom little intercourse has hitherto been held, and they appear to present a striking contrast in some respects to the natives of other regions of the Australian continent.

Referring as I do to a people rapidly becoming extinct, it will not detract from any value these notes may possess, that they do not embody a description of Australia of the present time, with its wonderful gold fields, and its vast and multifarious population gathered seemingly from nearly every country of the known world; but they refer to Australia as it was twenty years since, when Melbourne and Port Phillip were inhabited only by the savage, when South Australia, as a colony, was unknown, and Western Australia was only beginning to be settled by the white man.

The entrance to the noble basin of Princess Royal Harbour, on which the town of Albany in Western Australia stands, is formed by two high and rocky hills about half a mile apart, and here, some twenty years since, on a bright morning in the month of May (which be it remembered is the depth of an Australian winter,) I obtained my first sight of the aborigines of the southern continent. The first impression produced by a sight of the grinning native in the bow of the harbour master's boat—black as coal, but with a pair of keen sparkling eyes, and a row of teeth disproportionately prominent from the large size of his gaping mouth,—was that we were looking on a baboon or some strange creature of that new world, rather than on a human being. A short cloak of kangaroo skins, the invariable costume of the natives, as we afterwards found, was his only garment, reaching about half way down his thighs, and exposing the lower limbs, which were disproportionately small and shapeless. His arms were sinewy though lean, but as is invariably the case with the Australian savage, larger and better developed in proportion to his general figure, than the meagre shapeless lower limbs. He was, as I ascertained, about thirty years of age, but looked much older, of low stature and slight figure. His hair, which was thick and curly, grew far down over a low and poorly developed forehead. His eyes were small, deep-set and lively; his nose delicate though somewhat flattened, and his mouth large and protruding. Such was Wan-e-war, the first of the aborigines of Australia it was my fortune to see, and no unmeet type of his degraded and doomed race. We soon had further opportunities for observing the aboriginal owners of the land in which we proposed to sojourn.

Towards dark on the day of our landing, we heard a great shouting and jabbering amongst the natives, from which we were led to believe that they were preparing for some special festivities. The men were collected round their fires very busy in "getting themselves up,"—plastering their locks plentifully with a pomatum made of grease and red ochre, and beautifying their persons in a variety of other ways. All this preparation was for a corroberry or native dance, which they intended to have in honour of the arrival of the strangers. Accordingly, soon after dark, they assembled round the large fire kindled for

the purpose near our dwelling, and the proceedings of the evening commenced. The cloaks of the dancers, instead of being thrown over the shoulders, as usually worn by them, were fastened round their middles, leaving their bodies completely bare, which, with their faces, were painted in the most grotesque manner with red ochre, and shining with grease. Some had bunches of feathers or flowers stuck in their hair, while others completed their head-dress with the tail of the wild dog. One or two had a small bone of the kangaroo passed through a hole in the cartilage of the nose; all carried their spears and wameras; and as they thus stood gathered round the fire, which threw a vivid glare on their greasy and shining bodies, the effect was truly picturesque and savage.

Those who intended to take a part in the dance ranged themselves on one side of the fire; on the other side sat the old men and the women and children. The corroberry commenced by the dancers breaking out into a sort of mournful chant, in which the old men and the women occasionally joined. The whole burden of the song consisted in the words "Yunger a bia, mati, mati," which they repeated over and over again, beginning in a loud and shrill tone, the voice gradually dying away as they proceeded, until at last so low and soft was it, as to be hardly distinguishable from the breeze which rustled amongst the bushes.

Whilst thus chanting, the dancers remained in a bending posture, and kept time to their voices by lifting their feet with a sort of jerking step from the ground, and at the same time pulling the two long ends of their beards through their hands. Suddenly they would change their music into a loud "Haugh heigh, haugh heigh, haugh heigh," whilst they clashed their spears and wameras together, and stamped their feet with full force against the ground; then drawing themselves up with a sudden jerk, a loud and startling "Garra-wai" was shouted. Then again they would resume their first movement, but in double quick time, the whole rank now moving quickly up and down side-ways, shoulder to shoulder, now going round in a circle, and all to the same music, and with the same stamping steps.

Tiring of this, the sport was changed to the "Kangaroo dance." This dance is very similar to that already described, but with the difference—that, in the midst of the uproar, one of the men came bounding and jumping like a kangaroo between the dancers and the fire; this movement put a sudden stop to the dancing, and one of the party started off as if in pursuit of the game, the two then went through the whole proceeding of hunting down and spearing the kangaroo, which being at length accomplished they all once more joined in the dance, and in the midst of the uproar, the stamping of feet, the clashing together of spear and wamera, and their shouting and yelling, the fire died away, darkness covered the scene, and the entertainments of the evening were brought to a close. And thus also closed the first day of my sojourn in Western Australia.

The country in the immediate vicinity of King George Sound—an arm of the sea on the western coast of Australia—is inhabited by four

tribes of the aborigines. These are the Murray, the Weal, the Cockatoo and the Kincannup. In saying, however, that this part of Australia is inhabited but by four tribes, it may be necessary to explain that this distinction of people is altogether that of the natives themselves, and the four divisions here mentioned are applied to the relative position of that portion of the country occupied. Thus, for instance, all those natives inhabiting the country to the westward of Albany are called Murray men; those to the northward, Weal men; and those to the eastward, Cockatoo men. Each, therefore, although a distinct division, can hardly be looked upon as one single tribe, but rather as a combination of many small tribes, inhabiting a territory lying in a certain position.

The Murray tribe, the most numerous of all, occupies a territory exceeding in extent that of any of the rest: that is, the whole of the coast running some 300 miles from King George Sound westward to the Murray River in the Swan River Colony.

The natives belonging to the Weal tribe wander over the country to the northward of Albany. They are, perhaps, not so numerous as the Murray tribe, but they are, I think, physically stronger, and of greater importance in the estimation of the aborigines generally.

The district of the Cockatoo tribe extends a considerable distance along the sea-coast to the eastward of Albany, and runs also from the coast far back into the interior.

The Kincannup tribe inhabits the country in the immediate vicinity of Albany. It is a small and weak tribe, and, in comparison with the others, can hardly be looked upon as a distinct one. Kincannup is the native name for that district upon which the town of Albany stands. The natives who generally stayed in and about that settlement, style themselves, therefore, Kincannup men; but they may be regarded, I think, as merely a branch or family of the Weal tribe, those inhabiting the country to the northward of the Sound. Be this as it may, many causes have combined to extirpate the Kincannup people. The white man has driven the kangaroo from the native's grounds; he has therefore to depend principally upon the colonists for a scanty means of existence. These and other causes, which I shall notice hereafter, have rendered this tribe nearly extinct. When we left the colony, they could not probably muster more than from twenty to thirty souls.

Although of the same stock and possessing the same characteristics as a people, it is not difficult to distinguish the individuals of the different tribes by their general appearance, which corresponds in some measure with the nature of the country they inhabit. The men of the Murray tribe, for instance, are short, strong, and hardy looking fellows. Their country, lying on the coast, is scarcely more than a barren waste, with little shelter from the violent storms that sweep over the exposed shores of this part of Australia. From this cause, the kangaroo, which is almost the only animal food these people have, is not so plentiful in the district as farther in the interior, and thus from the insufficient supply of animal food, the people of this tribe do not present so

robust an appearance as others more favourably located. This deficiency of animal food, however, is made up in a great measure, by the immense quantities of fish they are enabled to procure in the innumerable bays and inlets on their coast.

The Weal men again are a much finer and stronger race than those inhabiting the coast. They have the advantage of possessing a country lying deep in the interior,—for the most part thickly wooded,—well protected from the cold winds of winter,—and abounding in kangaroo and game of every description. Not being stinted, therefore, in their supply of animal food, they appear to be proportionably stronger and more robust.

Again, the Cockatoo men are markedly distinct from either of those mentioned. They are generally tall and large-boned men, with high foreheads and aquiline noses. Their appearance indicates, indeed, a higher degree of intellect than their neighbours, over whom they have contrived to gain a strange and mysterious influence, which will be explained hereafter when referring to their superstitions.

As each tribe is distinct in appearance, so too is it noted for some one article or weapon, in the manufacture or use of which it is famous. The Murray man possesses the best wood for spears;—the Weal man is envied for his long, full, and beautiful kangaroo skin cloak, and also for his hammer of stone;—whilst the Cockatoo man excels in making and throwing that most eccentric and wonderful of all weapons, the boomerang or kilee.

I have already stated that each tribe occupies its own separate division of territory. The district thus occupied is again subdivided into vaguely defined portions, every family or individual of the tribe having its or his recognised tract of country. This property descends in the family, from one to another, and is considered in every way private property, and the proprietors of such are boastful and proud of their hunting grounds in proportion to their extent and nature.

But although thus appropriated, it is difficult to say in what the rights of ownership consist,—for agriculture is altogether unknown amongst them, and the various members of the tribe hunt indiscriminately over each other's grounds. The case, however, is somewhat different in regard to strangers, for should an enemy, or one of another tribe wilfully trespass on these grounds, such a liberty would be immediately noticed, and would in all probability lead to acts of violence and retaliation on both sides. And in this right of taking umbrage when convenient, and in making the subject a matter of quarrel, consist, I think, the sole advantages of proprietorship.

Although thus divided into tribes and families, yet nothing resembling a set form of government exists among the Australian aborigines; nor have they either chief or ruler to guide or advise them. Occasionally, however, they might be heard talking of some one great and distinguished individual, who, to judge from their manner of describing him, held a high and influential position in the tribe; and this has induced many to believe that a sort of chieftainship was recognised amongst them. It was always found, however, when the

subject became thoroughly sifted, that this great personage had acquired his influence over his fellows, as perhaps an expert and ready spearsman, solely from being more bloodthirsty and domineering than his neighbours, and from having killed all—men, women, and children—who were unfortunate enough to fall under his anger. And thus, knowing from bitter experience that to contradict so dangerous a character would be anything but prudent, the respect paid to him by the rest of the tribe was altogether a matter of policy on their part induced by fear, and not from his having any distinct right to dictate or command.

I have already stated that each tribe is celebrated for the manufacture of some weapon or other article. In order to exchange these different articles, as well as to have a sort of jollification and grand kangaroo hunt, the different tribes assemble by appointment at a given spot at certain seasons of the year. The scenes here enacted are exciting and varied; they generally begin in harmony and good fellowship, and end in quarrels and an angry dispersion.

The place of rendezvous is usually in a part of the country where the kangaroo is plentiful, and in the vicinity of a small lake. When all are collected, operations commence by the tribes forming an immense circle, having the lake for its centre. The hunters at first are a considerable distance from each other, and extend over a large tract of country. At a preconcerted time, they all gradually draw in towards the lake, shouting and striking their spears and wameras together. The kangaroos are thus driven from all quarters into the centre, where they find themselves blocked in and completely surrounded by the natives. The kangaroos now make a general rush to escape, and a scene of confusion and noise ensues which baffles description. Spears, kilees, and other weapons are thrown in from all sides, and immense numbers of the game are killed in their vain efforts to clear the boundary. Some in desperation take to the water, but these, being out of their element, are soon despatched. The natives return to their bivouac laden with spoil, and do nothing but eat, drink, dance, and sleep until hunger again drives them forth for a further supply.

All would appear to be going off smoothly and amicably enough at these general assemblies of the various tribes, nevertheless something most frequently occurs to put an unpleasant stop to these jovial proceedings. There is some old quarrel to be settled, some old sore to be healed, and thus the evil disposed contrive to get up disputes, or to recal wrongs still unsettled and unrevenged. Each party has his friends and relatives about him, who feel themselves called upon to take a part in the matter, and thus the whole camp gets involved in a general quarrel. From wrangling, matters proceed to blows,—the wamera is seen to flourish in the air,—spears begin to fly about; pierced legs and broken heads are the consequence, and the parties separate vowing vengeance against each other.

These fights, however, rarely prove fatal to any one, for the belligerent parties generally contrive to make a great noise without doing

much damage, beyond perhaps one or two wounded legs and a broken head or so, which are looked upon as mere trifles. It is absurd indeed to witness an affair of this kind. It commences by one of the men jumping up and throwing down his spear somewhere near his opponent, who immediately springs to his feet to revenge the insult. The encampment is immediately in an uproar, and the friends of both rush to hold the combatants. Thus secured, the foaming warriors tug and struggle away at a fearful rate, and show great indignation at being prevented by their unkind friends from totally exterminating each other; they are careful, however, not to exert themselves to such an extent as to prevent their being held without much difficulty. But other relatives or friends soon appear for the purpose of taking part with the combatants; these in like manner are held by other friends, until at last the whole party are either holding or being held. And thus, giving vent to their feelings in abuse and threats, they gradually calm down from pure exhaustion, and having arrived at this stage, they promise to lay aside their weapons for the time being; they are then released, and return sulkily to their huts, to repeat, probably, the same farce the next day.

The reader must not come to the conclusion, however, from the description of such a scene, that the natives of this part of the world never kill each other. Far from it. When one of the tribe dies, either from natural causes or otherwise, the nearest relation of the deceased is expected to take the life of one of another tribe; they, in their turn, retaliate in the same manner; they are, therefore, in a continual state of dread and warfare. But it is not open warfare; by treachery alone is it carried on, and often does the Australian meet his death from the hands of him he receives as a friend at his fire. Cunningly disguising his base intention, and watching until slumber seals the eyes of all around, the enemy will drive his spear deep into the breast of his victim and then, plunging into the woods, return to his tribe, proudly boasting of his crafty deed. Or, silently prowling about in search of an opportunity of revenge, he will, probably, come upon the wigwam at a time when the husband is away hunting, and the wives and children are dozing around the fire, unconscious of all danger. Silently and serpent-like, the blood-seeker nears his prey, then springing into their midst, drives his spear deep into all that are unable to escape.

The principal, if not indeed the only, food of the Australian, is that procured in the chase. His life, therefore, is necessarily a wandering one, ever moving as the scarcity of food, or other circumstances may dictate. Policy has also no inconsiderable share in producing these frequent changes. For in thus roving over the country the nomades render it a more difficult matter for their prowling enemies to mark their encampment, and to take advantage of an unguarded moment to wreak their vengeance. These changes also tend to free them from smaller but hardly less disagreeable neighbours, which always increase at a prodigious rate around a spot inhabited for any length of time by a people totally void of everything like cleanliness. Thus influenced

by the exigencies of the moment, on breaking up the establishment they may, perhaps, move off for miles from the old position, or they may erect their new wigwams within sight of the old ones. As these huts, however, are of the most simple description, and can be finished in a workmanlike manner in a very short time,—their household furniture, too, being of the smallest quantity known in the economy of housekeeping,—no very great inconvenience is experienced in these constant movements. Their huts are chiefly formed of long grass, rushes, the bark and branches of trees. Each one is sufficiently large to admit of two or three persons curling themselves up inside like so many hedgehogs. Their shape is that of an arch, the highest part of them being about three feet from the ground, with the front completely open, and sloping down gradually in the rear. To give a better idea of one of these establishments, imagine a bowl or tea cup turned with the bottom upwards and then cut down through the centre, each half will be a miniature model of an Australian mansion. At all seasons, summer and winter, this is their only shelter; with but a small fire in front, men, women, and children, each one coiled up in the cloak of kangaroo skins, sleep through storm and tempest, and set all weather at defiance. In their ordinary mode of living, and when in their own district, the tribe is usually broken up into small parties or families, each party forming an encampment of some six or eight of these wigwams. It is seldom that the tribe musters except when about to leave its own territory for a distant part of the country, or when some mighty question, having reference perhaps to a general expedition against another tribe, has to be discussed and planned.

During the summer months the tribes of the interior generally make towards the sea coast for the purpose of enjoying a feast on the various kinds of fish which are there to be obtained. They have several methods of proceeding in this sport, but that usually adopted is for the whole of the natives in the neighbourhood to assemble together near some shoal or sandbank which at low water is left covered with but a few inches of water. Early in the fine mornings of summer, just as the sun breaks forth, these sandbanks may be seen sparkling with innumerable fish, which seem to frolic about in sportive glee, now darting along and chasing each other with the speed of an arrow, now flinging themselves far out of the water as if to exhibit their bright armour in the shining rays of the sun. But man, the universal enemy of creation, has to satisfy the cravings of nature; he also is up and stirring, and cannot permit so tempting an opportunity to pass, and so, calling to his companions, they all pull armfuls of branches from the trees and then hurry to the beach intent upon the sport. The attack is commenced by erecting a sort of weir with the branches and twigs; this is made in a semicircular form with one end touching the beach and the other towards the edge of the shoal. The whole party now wade into the water and spread themselves over the shoal at some distance apart from each other, then gradually drawing in toward the open side of the weir, their splashing and noise cause the fish to rush into the snare laid for them. Thus entrapped, spears

pour in from every point, each man trying to outdo his neighbour in shrieking, kicking, and splashing; here some may be seen probing right and left with their spears within the weir, there others are skipping through the shoal water in chase of runaways who have managed to dart through or over the bounds, and thus in a short space of time an immense supply of food is secured. It is astonishing, indeed, to see the quantities of fish taken in this manner. These fishing parties may number perhaps some forty or fifty men, and it is no unusual thing to see each one come off with as many fish as he can well stagger under. When I add, however, that it is not uncommon to see upwards of five hundredweight of a fish called the skipjack taken in a single haul of the seine, what I have related will excite less surprise.

(To be continued.)

The Indian Ocean considered with Reference to the Wants of Seamen.

(Continued from p. 422.)

The Red Sea.—The following details concerning the Red Sea are borrowed from Capt. Rogers, and form part of the considerations on this sea drawn up by Capts. Moresby and Elwon.

From the beginning of October to April, called there the winter season, we may say that the wind blows constantly from South, between the Straits of Babel-Mandeb and Jibbel-Teer, situated in lat. 15° 30′; at the time of the syzygies they are interrupted for two or three days by North winds. There are, however, two whole months without any change in this monsoon.

From Jibbel-Teer to the parallel of 19° or 20° N. lat., the winds are variable during this season, and blow as often from the North as from the South. Each of these prevails respectively in proportion as we approach either of these limits.

From the parallel of 21° to 27° N. lat. the North wind prevails during the season we are speaking of. However, it is rarely that half a lunar month passes without a day or two of South wind, especially from the end of November to the beginning of March.

From the parallel of 27° N. lat., as far as Suez, the wind is generally from North, and is rarely interrupted by the South except during the months of December, January, and February. The N.W. wind rarely blows strongly for more than twelve or fifteen hours, and it is more violent in winter than in summer.

From June to September the North winds blow without interruption, and with more or less force over the whole extent of the Red Sea from Suez to the Straits of Babel-Mandeb. There are some variations from the land principally in August and September. During

these months a merchant vessel can gain to windward thirty-five miles a day in working up between Mocha and Suez.

In the Red Sea during June, July, and August the wind is stronger at night than in the day.

In that portion of the sea called the Sea of Suez a misty horizon is generally the forerunner of wind, however this does not always follow. The same remark applies to the little fleecy clouds observed over the mountains of Toor or Sinai seen at the South entrance of the Strait of Jubal.

During the winter months the northerly winds bring dry weather throughout the whole extent of the Red Sea, and the southerly winds wet weather. A change of wind is found thus previous to any change being observed. During the summer months the atmosphere is generally moist over the whole extent of the Red Sea. The sky is, however, very clear in the zenith. The wind rarely blows in sudden gusts in this sea; sometimes, however, it is strong from the North.

Each monsoon takes a month before it becomes completely established. At Mocha, from September to May, the wind varies from E.S.E. to S.E.b.E., and from the beginning of April to the end of August it frequently blows from S.S.W. to S.W. In November and December, along the coast between Mocha and Aden, the breeze is very strong; in June and July it is variable and moderate.

The rainy season in the Red Sea lasts from April to September. When the N.E. monsoon penetrates into the Red Sea, it assumes the direction from S.E. And enclosed as it is by the high lands of Africa, in a narrow strait, it gains considerable force, inclining slightly towards the coast of Arabia. Indeed it is probably stronger on this coast than on that of Abyssinia, even in the lower part of the Red Sea. It begins to diminish in force towards the parallel of 14° N. lat., and in proportion as it reaches the widest part of this sea, it gradually becomes a light breeze, turning west of the shores and islands of the coast of Africa, and meeting the Northerly winds of these parts.

South Coast of Arabia.—On the South coast of Arabia beyond the gulf of Aden, that is, West of the meridian of Cape Guardafui, as far as Ras-el-Gat, in December, January, February, and the first fifteen days of March, the N.E. monsoon prevails along the coast, its direction depending on the formation of the shore. At sea, it varies from N.E. to E.b.S., with fine clear weather, without any squalls or rain.

Bay of Koorya-Moorya.—The same winds prevail on the whole extent of this coast, excepting between Ras-Seger and Ras-Karwan; and in the great bay of Koorya-Moorya, where the weather differs greatly from that of the rest of the coast. Sudden changes in the wind are often found there, and its violence is occasionally dangerous, especially as there are no indications of it. A cloud appears over the mountains of the bay, the fine clear weather becomes suddenly cloudy, five minutes afterwards it blows heavily from the Northward. The Arabs call these winds *belaats*, and dread them very much.

Belaats.—During the *belaats* one breeze follows another at intervals of eight or ten days, blowing heavily, sometimes in gusts and squalls,

varying from N.N.E. to N.N.W. These winds never last less than three days, and sometimes continue for seven and even ten days. They are equally dangerous to vessels near the coast. Sometimes towards evening the wind falls entirely, and a calm lasts for an hour or two; then down come heavy gusts from the mountains, at intervals of several minutes between, without any other warning than the whistling of the wind and the noise of the sea made by them. These breezes are heavy enough to blow the sails away from the yards, and even to carry away masts and all. They last for five or six hours, and follow each other at greater or less intervals. The belaat is often followed by strong winds from S.E., producing a heavy sea. At other times, in the same bay, gusts of wind from S.S.W. are found, often lasting for five days together, but are not dangerous, because they blow along the coast.

Northerly winds are not felt at any great distance out at sea, and appear to prevail on that part of the South coast of Arabia only above-mentioned. After passing the bay of Koorya-Moorya, they follow the direction of the coast, yielding to the influence of the high mountain chain of the Subban. The South winds only appear to blow on this portion of the Arabian coast, rarely extending over the Southern part; and the S.W. monsoon only reaches Socotra from the 1st to the 10th of May. Heavy rains then occur; but the S.S.W. winds, which blow in February and March, must not be confounded with the S.W. monsoon.

From the middle of March to April the winds are weak and variable over the whole of the coast under consideration, and have a tendency to draw to the Southward. Alternate land and sea breezes are then found. The sky is generally clear at this time, and during the night a heavy dew.

In May the weather is uncertain, and when the monsoon is strong it comes from S.W., with fine weather.

In June, July, and August, the S.W. monsoon is in full force; it is especially violent in July, at least it is then most frequent. In the beginning of June the passage is made from the Red Sea or Persian Gulf; but the end of August is preferred, as then the height of the monsoon is over.

In September the wind is moderate, varying from West to South. The Arabs call these *damauro*. These winds continue from the 1st of September to the establishment of the N.E. monsoon.

In October light and variable winds prevail, with frequent calms. The land breeze is found near the coast, and sometimes alternately with the sea breeze. During the night the sky is cloudy, sometimes with rain.

From the 18th to the 20th of November the N.E. monsoon generally blows on the South coast of Arabia. After this period, the winds, taking the direction of the coast, prevail between North and East. Previous to the monsoon the weather is the same as during the preceding month, and is also rainy.

On the South coast of Arabia the regularity of the seasons must

not be depended on, for sometimes at the same period in one year the winds will be quite opposite to those of another. Besides, on the whole of this coast, especially where the land is low, the wind is subject to the sun's influence, and hence atmospheric variations, an influence even which operates on strong winds. Thus to the N.E. of Ras-Fartak the N.E. monsoon frequently lasts only three months (during a part of November, December, January, and part of February). The S.W. monsoon generally terminates in the middle or towards the end of August, and merchant ships sail for the Red Sea in the beginning of September. In March Southerly winds sometimes blow fresh E.N.E. off Ras-Fartak, especially in the bay of Koorya-Moorya. April and May are considered by the Arabs as a separate season, which they call *bayn el autern*. The wind is then changeable and principally blows from Southward, so that vessels come from all parts. Almost all those which go down the coast at the commencement of the N.E. monsoon, return during these months. In August, when it blows fresh from S.W. to the Southward of Ras-el-Gat, to the Northward of it this wind gradually changes, and becomes S.E. From this cape to Muskat we find variable winds and alternate land and sea breezes. Sometimes a N.W. wind, coming from the Persian Gulf, extends as far as Muskat, and occasionally S.E. winds lasting a few days.

In September and onwards to the end of March, the prevailing wind is East and moderate. The wind is seldom strong at this season, but when alternate land and sea breezes prevail, they are tolerably fresh.

The S.W. monsoon begins at the end of March, and lasts till the middle of September.

Persian Gulf.—N.W. winds prevail during nearly all the year in the Persian Gulf, and a Southerly wind is only met with in December, January, and February, but even then does not last.

With the exception of these three months, when heavy squalls from S.S.W. and S.W. occur, Southerly winds are only occasionally met with in the Persian Gulf. When they freshen up and last two or three days, it is pretty nearly certain that the N.W. winds will then return with more violence than before. It will even happen that in those months, when Southerly winds generally prevail, vessels will suddenly encounter heavy squalls from the Northward, and perhaps become disabled. It has also been observed, that the N.W. winds which follow these Southern breezes, are generally stronger and last longer than the former.

Shemaal.—The North winds are called *shemaal*. Those which occur once in a year, in about June or July, and last forty days, interrupted only by intervals of calm and light airs, are called the great shemaal, at which time it is useless to attempt beating up the gulf from the Southward.

In March and April there is also a little shemaal, which sometimes lasts for twenty days without any change in its force or direction. About four or five days before it sets in, the currents of the Persian

Gulf set rapidly to the Northward, so that vessels beating to windward make about twenty miles a day. The winds in the gulf are neither so regular nor contiuue so long as those in the Red Sea. They frequently interrupt each other, the land breeze or a strong S.W. wind, principally at the entrance of the gulf.

The N.W. and S.E. winds are those which last; all others are always weak and variable.

During the winter months, southerly winds are accompanied by rain.

The following observations apply more especially to the Southern part of the Persian Gulf. In October the winds are variable; sometimes from West and South, accompanied with fine weather.

In November the winds vary from N.E. to S.E. and S.W. At the time of new moon there is generally a strong N.E. wind continuing for three days, with a cloudy sky, after which it becomes very fine.

In December moderate Northerly winds are found, freshening only at the time of the new moon. At which time it blows fresh from N.E., and the weather is fine and pleasant.

In January the wind varies between N.E. and West; prevailing mostly from North and East, and blowing fresh. At the time of the new moon from N E. Snow appears then on the mountains.

In February the winds generally vary from N.N.E. to S.W., perhaps to N.W. Occasionally there is stormy weather and strong land breezes from the coast of Arabia. There is little rain on this coast, but on the coast of Persia it falls in abundance.

During the month of March, strong breezes prevail from North and West, accompanied with rain, particularly about the time of new moon.

In April, moderate westerly winds prevail, but attended with squalls, which at the time of new moon become stormy. Towards the end of this month we sometimes find Easterly winds, lasting for two or three days.

During the month of May we find the winds from the West and South, bringing fine weather. At the end of this months fogs are very thick. The atmosphere is then loaded with sand, which is kept at a great height by reason of its rarity, a phenomenon which especially occurs in the Northern part of the gulf, and along the coasts bordering the desert.

In the months of June and July we have the great shemaal, blowing strongly from N.W.

In August and September the wind is variable, with a tendency to West.

(To be continued.)

Compass Experiments and Observations on Magnetic Changes in the "Royal Charter."—*By the Rev. Dr. Scoresby.*

At a special meeting of the Liverpool Compass Committee, held in their rooms, on Saturday the 16th of August, the Rev. Dr. Scoresby gave a comprehensive account of his magnetic researches during the voyage of the *Royal Charter* to Australia, and round the world. The *Royal Charter*, it should be noted, is an iron ship, of the clipper class, with auxiliary steam power, belonging to the Liverpool and Australian Navigation Company, and commanded by Capt. F. Boyce. She is 324 feet in length on deck, and 42 feet in breadth, and 2,780 tons measurement.

The compasses of the *Royal Charter*, observations on which was one important object of Dr. Scoresby's inquiries, were four in number; the steering compass, adjusted by magnets on Mr. Airy's principles, 68 feet from the stern; another adjusted compass, called the "companion compass," 89 feet; a standard compass on the deck house, unadjusted, 181 feet from the stern, and a compass aloft, 42 feet above the poop deck. The leading objects contemplated by Dr. Scoresby in his recent undertaking, were to verify or test his theoretic views and results of inductive magnetism, with relation to the compass, especially as to the "retentive quality" so highly developed in iron ships, in the process of construction, with the changes in such magnetism,—views which he had first placed before the public at the meeting of the British Association at Oxford, in 1847, and since then, in his "Magnetical Investigations," published in 1852, and in various other forms; and to test also his plan of a compass aloft, first proposed in his account of discoveries on the eastern coast of Greenland, in 1822, for the avoidance of the ship's attraction, and for obtaining correct compass guidance, so essential to safety in navigation.

Four plans or processes were adopted by Dr. Scoresby for the determination of the facts, as to the nature and changes of the ship's magnetic condition, viz.:—comparisons almost daily. of the four compasses described; experiments on the ship's external magnetism, as indicated by her deviating action on a compass, placed first near the upper edge of the top plating, and then gradually let down towards the water's edge,—such experiments being made in different parts of the ship's length, on the poop, and forecastle; the determination, from time to time, of the polarity of iron bars, standards, &c., having an upright position; and, finally, the ascertaining the position taken by a Foxe's dipping needle in different stations about the deck, and comparing the results with the known terrestrial dip. By these several applications, the whole of the objects contemplated in the voyage were satisfactorily and completely attained, and to Dr. Scoresby it was necessarily most gratifying to find that not one of the conclusions he had been led to by inductive researches was in any measure controverted; bat, on the contrary, all the leading propositions he had been urging

for years on the attention of navigators and men of science, were distinctly verified,—thus, just as he had predicted, the ship retained her original magnetic condition, and the adjusted compasses preserved very nearly their original state, so long as the ship was on courses not very remote from the direction of the ship's head when building; but when she came into a south-easterly direction, the reverse of that on the stocks, under a heavy sea, just as had been predicted, the compasses changed, and there was an error, temporarily, in the steering compass of a point or more.

On reaching a position of considerable southern dip, the adjusted compasses went wrong—one of them to the extent of a point and three-quarters—a moderate change only in comparison with many ships, due, no doubt, to the favourable position of the *Royal Charter's* compasses in being removed so far from the stern, and entirely above the iron plating of the sides. On swinging the ship at Melbourne, the standard compass was found to have lost nearly one-half of its original errors, and the two adjusted compasses to have attained considerable deviations, whilst the compass aloft was to all practical ends quite correct. But the most striking change, exactly consistent with theoretic deductions, was the complete inversion of the ship's magnetic polarity. The whole of the top sides having changed from southern to northern externally, and every standard, stanchion, davit, or other mass of iron about the deck, including also four iron capstans, had attained at the upper parts northern polarity, which, northward of the equator, had been tested as having their southern poles upward. Approaching the magnetic equator on the homeward passage the two ends of the ship, as had also been predicted, attained polarities corresponding with the action of terrestrial induction, the stern aloft, as well as below, changing to southern polarity, and the head becoming more intensely magnetic with the contrary polarity.

The gradual travelling of the southern polarity from the stern forward, as the ship advanced northward towards the line, was a fact which Dr. Scoresby watched with great attention and interest until after reaching some distance within the northern tropic, whereas the whole of the ship's sides had changed again their polarity, so that from stem to stern, as when the ship had first set out, the upper plating had all acquired the southern polarity. Finally, as to the corroborating fact of previous deductions, it was mentioned that though the upper polarity of the ship had changed, yet some general influence derived from the previous inversion of polarity, or more particularly from the earth's inductive power, while the ship's head was continually directed northward from the passing of Cape Horn, had been received or retained. Hence, on swinging the ship at Liverpool, immediately on her return to port, the adjusted compasses were found not merely to have retained their southern errors, but that the maximum of the steering compass had increased up to about two points, while, correspondently, in a theoretic view, the standard compass had become still more correct than when at Melbourne, its errors on a large number of points being now trifling and unimportant.

In reference to this operation, Dr. Scoresby remarked that it was but justice to the Liverpool Compass Committee, and their active secretary, Mr. Rundell, and to the well bestowed confidence and liberality of the Dock Committee. to state that but for their recent arrangements for determining, in the case of ships in the river, the true magnetic direction by the marks on the dock walls referable to a lofty chimney in Vauxhall Road, this second prompt swinging of the *Royal Charter*,—without which his (Dr. Scoresby's) series of experiments would have been essentially defective,—could not have been accomplished; and for facilitating the important object of determinining the compass errors in iron ships, this plan Dr. Scoresby considered deserved the highest commendation. The results of the dipping needle experiments, which were in no small degree interesting and instructive, were described, in the course of Dr. Scoresby's statement, and illustrated by diagrams; but they do not admit of such condensation as this notice requires.

One most important fact remains to be noticed, viz., that such was the general accuracy of the compass aloft, in this case of the *Royal Charter*, and such the instruction derived from the repeated swinging of the ship, that the course actually made good on every occasion during the voyage, was accurately known—that is, far within the limits of the defects of steering. And that numerous determinations, by azimuths and amplitudes, of the variation of the compass in the Pacific and North and South Atlantic were obtained with, perhaps, as much accuracy as had ever been had in ships built with timber. At the conclusion of his statement, the reverend Doctor received the congratulations of the members on the successful issue of his voyage, and a vote of thanks was unanimously accorded to him, on the motion of Mr. W. Potter, Chairman of the Underwriters' Association, for the instructive report with which they had been favoured, and which contained so many important facts relating to the management of iron ships. Mr. J. P. Palmer, in seconding the vote of thanks, bore testimony to the importance of the investigation to underwriters and shipowners, as well as to passengers. The chairman, Mr. T. Brocklebank, in conveying the thanks of the meeting to Dr. Scoresby, said, he only expressed the sentiments of all present, when he said, he had listened with much pleasure to the statement which had been then made. Those who best understood the subject would appreciate it the most. Dr. Scoresby, in reply, expressed the pleasure he felt in receiving the acknowledgments of the committee, stating that he was not forgetful of the liberal spirit in which the Compass Committee, and other Liverpool associations, had seconded his views when he first proposed his voyage to Australia.—*Northern Times.*

[The remarkable passages of this ship to and from Australia are stated in our last number.—Ed.]

The Treaty between Great Britain and Siam.

On the 21st May, Mr. Parkes, charged with exchanging the ratified treaty with his Majesty the King of Siam, returned to Singapore from Bangkok in the H.C. steam-vessel *Auckland*. The following is an outline of his proceedings from the *Straits Times*:—

The *Auckland* arrived off the bar of the Chow Phya River, or Menam, as it is commonly but erroneously termed, on the 12th March. As the water on the bar would not then admit of the passage of the steamer for some time, Mr. Parkes went up to Bangkok in the small steam-yacht of the First King, which was sent down to receive him. He met with a very friendly welcome from those Ministers with whom the treaty had been negociated, as also from both their Majesties, the First and Second Kings, who expressed the greatest satisfaction at hearing that Mr. Parkes was bearer of autograph letters and presents to them from her Britannic Majesty, and evinced no distrust or displeasure on learning of the losses sustained by the latter on the occasion of their transhipment at Singapore. The First King was also particularly gratified at finding that her Majesty had highly approved of the treaty and of the letters and presents which had been forwarded to her Majesty in the first instance from Siam.

The *Auckland* crossed the bar on the evening of the 23rd and anchored at Bangkok on the following day—Mr. Parkes having previously rejoined her to bring up the Queen's letter, which remained on board. A royal salute was fired in honour of those on board by every battery or fortification that the steamer passed,—the compliment being in each instance returned by the *Auckland*, and the King being also saluted by the steamer as she anchored opposite the city.

After some days spent in settling the mode of delivering the Queen's letters, the public audience for this purpose with the First King came off on the 30th March. All the arrangements made by his Majesty were of the most satisfactory kind. The Queen's letter was borne in his own state barge, amid salutes and other manifestations of pleasure, to the landing-place,—where it was placed on the same throne from which his Majesty's letter had been conducted last year to the place of embarkation,—and, passing under a triumphal arch, which bore the inscription, in English, of "Welcome her Britannic Majesty," was escorted through files of troops and handsomely caparisoned elephants to a hall which is esteemed by his Majesty as the most honourable one in his palace, and is otherwise commendable for the beauty of its architecture, without any of the delay that is usual in the reception of Ministers or other foreign officials. The letter was conducted at once into the presence of the First King, who was seated on his throne and waiting to receive it, with the whole court, of several hundred dignitaries, assembled on their knees before him. Mr. Parkes, advancing to the foot of the throne, as had been previously arranged, delivered her Majesty's letter into the hands of the King, who proceeded to open it on the spot and to read it aloud, first in English, with

an accuracy that did the utmost credit to his Majesty's scholarship, and afterwards in Siamese for the information of the court. Many very friendly and appropriate compliments were exchanged between his Majesty and Mr. Parkes; and after the audience the foreign visitors—who numbered in all sixteen officers—were shown over the palace and served with an entertainment, at which the health of the King was drunk with cheers so heartily rung out as to leave no doubt as to the sentiments of the guests, and to afford the King—who heard them from a distance and begged that they might be repeated on another occasion—no inconsiderable gratification.

Similar ceremonies and the same cordial welcome attended the delivery of the Queen's letter to the Second King on the 2nd April.

The exchange of the ratifications, which took place on the 5th April, was also conducted at the palace of the First King by the King's Plenipotentiaries and Mr. Parkes. The business being concluded, the King celebrated this important event with a brilliant theatrical fête in the grand court of the palace; at which the ladies of the mission attended by special invitation and had the honour of an introduction to the Queen consort and some of the principal Princesses.

To give full effect to the treaty various measures were required on the part of the Siamese Government, the arrangement of which had been deferred until the arrival of her Majesty's ratification. These now occupied the attention of Mr. Parkes and his Majesty's Ministers, amid many other calls upon the time of the latter by the ceremonies of the new year and other festivals which at this period intervened. Several of the details contemplated by the treaty which had now to be taken up, owing to their novel character and other circumstances, did not admit of adjustment without ample time being afforded for their careful consideration; and as the Siamese usually pursue in such cases a very deliberate course, it becomes scarcely a matter of surprise that another month should have been occupied in effecting all that was desired.

In a circular issued by Mr. Parkes on the 13th May, the day before his departure from Bangkok, he gave some information as to the arrangements which have been concluded. These consist, as far as we have gathered, in the establishment of a custom house, an institution previously unknown to the Siamese, but now essentially required in room of the old system of farms, no less for the interests of his Majesty's revenue than for those of the foreign trade. It has been agreed that the port clearances for ships, passes for cargo boats, a passport for travellers in the interior shall be issued with suitable despatch, instead of being subjected, as has hitherto been the case, to vexatious and unnecessary delays. Gold-leaf, it appears, may be imported free as bullion, a concession which may prove of value in a trade which so frequently calls for cash remittances. The limits within which British subjects may purchase lands have now been defined by actual distance —the twenty-four hours' journey spoken of in the treaty having received from the Siamese a liberal interpretation, which gives to fo-

reigners the right of settlement within distances situated, in some instances, more than one hundred miles from Bangkok, and including some of the richest and most conveniently situate tracts that the country possesses. The taxes to which the foreign settlers, in common with Siamese subjects, will, according to the treaty, be liable have also assumed a definitive shape. And, besides the printing and publication of the treaty under the seal of the King, separate proclamations have been issued, some in the King's own name and others in that of his Ministers, making known to the people the freedom they now have of either selling or renting their houses or lands to foreigners within the prescribed limits, and informing them of the remissions and reductions in the various taxes or duties; also the precise amount of the single payment to which it is intended that all productions should henceforth be subject.

The United States Mission had arrived in the steam-frigate *San Jacinto*, which vessel anchored off the bar on the 13th April, and proceeded up to Bangkok on the 21st. An audience was granted to the United States Minister, the Hon. Mr. Harris, by the First King on May 1st and the Second King on May 2nd, both of which were strictly of a formal character. The presents from the United States had been delivered. The Siamese Plenipotentiaries to treat with the United States Mission had been nominated, but had not received their powers up to May 15th, the date of the *Auckland's* departure, so that it is probable the Mission will not be able to finish the negociations for some weeks. We may remark that the United States Mission was received not only with due solemnity and respect, but with the courtesy characteristic of the First and Second Kings.—*Straits Times.*

THE SEAMARKS OF OUR COASTS.

"A steady seamark is an inestimable boon to mariners."

(Continued from page 440.)

Our last number contains some observations on Mr. Herbert's new system of construction for our floating sea marks, with a description of his buoy and floating beacon. Let us now introduce to our readers a description of his floating lighthouse, proposed to be constructed on the same principle, confining ourselves chiefly to the method by which it is proposed to be practically carried out.

The great importance of the subject will doubtless secure for it, at least, the attention of the seaman; and when we do not withold our opinion that the proposal is worthy of practical experiment on a limited scale, and is calculated in its future development to lessen the dangers which beset the navigation of our coasts, the subject will perhaps obtain serious consideration. It is an old established custom to depre-

ciate any change or imagined improvement proposed in existing arrangements, a course perhaps not without some good effect. But, setting aside this time-honoured practice at present, and disclaiming any disparagement of our present system, our only object will be to encourage any means that may appear to us more effective in rendering the navigation of our channels more secure.

That some improvement is imperatively called for is beyond question;—the increasing number of wrecks upon our coasts—in excess of the increase in the number of our shipping—demonstrate this necessity. It is a fearful reflection that a wreck, accompanied in too many instances with loss of life, occurs on some part of our coasts, on an average once in every eight hours,—not that all are the result of our present imperfect means of leading vessels into safety, but many undoubtedly arise from this cause. There are upwards of 11,000 vessels trading to foreign parts that annually navigate only the English Channel, and there are not less than that number also which navigate the St. George Channel. It will be no inconsiderable benefit to lighten the anxieties of the 20,000 Masters of these vessels in approaching and departing from our coasts, and we anticipate that by the adoption of the floating lighthouse these anxieties will be reduced to the minimum.

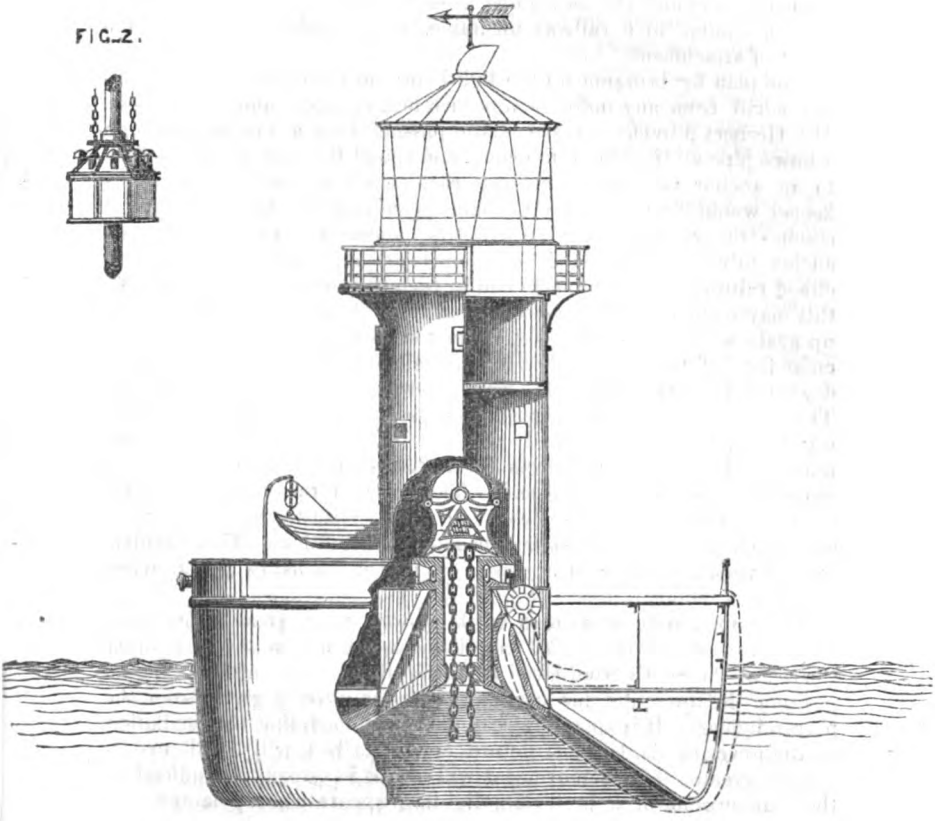
Let us briefly glance at the prominent features of the proposed lighthouse a section of which is represented at fig. 1. This is intended for a position where a range of light of more than eleven miles is not required. The elevation of the light is forty feet* above the sea, the displacement of the whole structure being about 325 tons, or double that of an ordinary light-ship. The diameter of the base is forty-five feet, and the draft of water eleven feet. It is proposed to be constructed wholly of iron, the arrangement of which it is evident must ensure very great strength and durability.

The most essential point of attention in any floating sea mark, is its mooring, for unless that present a reasonable certainty of the mark maintaining its position, any other advantages it may possess are but of little avail. Mr. Herbert has wisely adopted the suggestions offered at the Institution of Civil Engineers, by Capt. Halsted, R.N., for obtaining an effective mode of mooring. The chain cable, hanging from the centre of the plane of flotation, and from the centre of gravity of the lighthouse, can evidently have no strain, in excess of its weight, upon the structure, and whatever the weight of it may be, it will only necessitate a corresponding diminution of ballast in the floating base. Thus chains of the largest size and strength may be employed, such as it would be impossible to use in a ship of the like displacement. In this structure of 325 tons, it is proposed to use 3-inch diameter chain cable, which, in accordance with Capt. Halsted's suggestion, after taking a turn round the windlass at the top of the hawsepipe, will pass down to and through a mooring ring, attached to the ground chains, and return up again to the windlass, thus forming an endless or

* The present floating lights are thirty-eight feet above water.

FIG. 1.

FIG. 2.



continuous cable,—to be previously tested by a power ten times greater than it can be subjected to afloat. The strain to which the cable will be liable, may be referred to with some degree of confidence in comparison with that to which it would be subject if used in a ship. This indeed there are no means of ascertaining; but such is not the case in the present instance, for the form of the construction of the floating body enables us for the first time to estimate correctly the strain to which a cable would be liable at sea.

The arrangement of an endless chain, proposed by Mr. Herbert, affords facilities for overhauling and inspecting it. One fathom may be sighted daily, or the whole periodically, thus giving an opportunity for coating over each link to protect it from the action of the salt

water, for removing any doubtful link, or for readily changing the whole chain whenever it may be necessary. To remedy the inconvenience of any twisting of the endless chain, the windlass is to be supported by a cylindrical hawsepipe, as shown in the woodcut, on friction rollers, similar to a railway turntable, thus forming a swivel at the point of attachment.

The plan for bringing up the lighthouse, in the event of her breaking adrift from any unforeseen occurrence, is novel and very simple. Mr. Herbert provides a spare chain, passing from a windlass through a hawsepipe at the top of the cone, and round the outside of the base to an anchor kept on a tramway cart near the tower. The lightkeeper would first permit the chain to run off the windlass until it reaches the ground, when he will then allow the cart (carrying the anchor to which the end of the chain is attached) to run down an inclined railway to the bulwark, and to cast the anchor overboard. All this may be managed by one man, and the lighthouse be thus brought up again without a strain,—for it must be borne in mind, that the circular form of the base renders it impossible for it to attain any high degree of velocity through the water, however violent the gale may be. This is certainly an advantage it possesses over any ship-formed floating body; for however greatly we may love the form of the ship, we must not be blind to its defects for stationary purposes, as in truth it never was designed for that end. The form of the ship is evidently such as to enable it to pass through the water with the least hindrance, and when at anchor is in an exceptional condition. The circular-formed vessel, on the contrary, is in its proper normal condition when moored.

The comparative steadiness of the tower, is of great importance. In the floating beacon, of 20 feet diameter, placed in the overfall of the sea at the South Sand Head of the Goodwin Sands, a most exposed position, the tower did not oscillate more than ten degrees from the perpendicular. It is therefore reasonably assumed, that the oscillation of the tower of the large structure now described, will at all events not be greater. This movement will prove in no way prejudicial to the employment of a first class lighting apparatus, the lantern for which will be as large as that of a land lighthouse, and the light exhibited will be quite as powerful. Fig. 2 represents the floating light lantern now in use, the limited dimensions of which necessarily preclude the exhibition of a first class light from it. The oscillation of the lanterns of many of the lightships now afloat is upwards of forty degrees from the perpendicular, yet revolving and other distinguishing lights are constantly exhibited from them, so that any apprehension of difficulty in the use of similar lights, in a lantern oscillating ten degrees only, is obviously groundless.

It is generally found, that the most economical methods are the most simple, and the most simple are the most efficacious. In the case of the lighthouse under consideration, efficiency, simplicity, and economy, will be found hand in hand: for though the first cost of the lighthouse

is greater than that of the lightship, (it having double the displacement,) the saving in the annual maintenance of it will be upwards of one half, or about £600. This arises principally from the additional number of hands required to navigate the lightship when it breaks adrift; while the lighthouse, because it cannot be navigated, requires a less number. The one has eleven men attached to it, the other would not need more than four. It is not, however, economy alone that induces us to notice the subject; but the interests of humanity and of commerce that prompts us to direct the attention of the maritime community to a proposition which we believe to be fraught with great benefit to them.

It will be observed, that an unquestionable superiority over the lightship is claimed by Mr. Herbert for the floating lighthouse; and the grounds upon which this claim is founded appear so sound, and the resulting advantages so great, that we shall be glad to learn that the practical experiment of a floating lighthouse, even on a limited scale, is to be carried into effect.

In another number, the subject, which is now open to the discussion of our readers, may claim from us some further attention.

The Riff Pirates.

By the arrival of H.M. ships *Assistance* and *Resolute* (the latter bearing the flag of Rear-Admiral the Hon. William F. Grey) at Portsmouth, we have intelligence of an outrage on the part of the Riff pirates, quite of a crowning character to all former outrages. It appears his Royal Highness Prince Adalbert, Lord High Admiral of the Prussian Navy, was anxious to inspect personally the scene, on the Riff coast, of an outrage some time since on a Prussian ship, whose crew was massacred by these ferocious and blood-thirsty hordes, and accordingly proceeded in his barge to the scene of the encounter a few days antecedent to the 10th August, when his landing was not only opposed, but he was fired upon. This roused the spirit of the gallant royal sailor, who returned to his frigate, manned and armed her boats, and then again sought the scene of his latent opposition.

This time vast numbers of the pirates had collected and made a formidable demonstration; but the Prince Admiral, nothing daunted, but the rather having his valour whetted by the force of the opposing army, dashed ashore, charged the Riffians up a steep hill, and, sword in hand, made a bold and valiant front. The result, however, is disastrous to describe; the gallant Prince was speedily struck down with a ball in his thigh, his Aide-de-camp (Flag-Lieutenant) was mortally wounded, the Mate of the party shot in the arm, seven men were killed, and seventeen wounded; these were left in the field, being unable to get them off. In fact, the whole of the Prince's party were nearly cut off. The survivors were ultimately got on board the frigate, and subsequently to Gibraltar Hospital. The killed were interred with full military honours, and the Prince Admiral's wound was doing well at the date of our advices.

H.M.S. *Vesuvius* was despatched immediately to the Morocco authorities to demand an explanation and satisfaction. The event caused the utmost indignation and excitement at Gibraltar.

A letter from Berlin thus treats the subject:—

Berlin, August 18th.

The news of the skirmish that the Prussian corvette *Danzig* has had with the Riff pirates is exciting deep emotion here. So heavy a loss (twenty men wounded and eight killed out of a landing party of seventy-five), Prince Adalbert wounded in the thigh and his Adjutant mortally wounded at his side, and all this happening on the very same spot where three years before a Prussian vessel was plundered by the same pirates! The spot where this most unexpected and impromptu affair came off is described to me as a few miles to the East of the town of Melilla, in the direction of the frontier of Algiers, where the beach is rocky and steep, and the country very hilly. From what I can learn of the affair at present, there had been no attempt made to land by the boats of the *Danzig* when they were fired upon by the Riffs. They had put off from the ship for the purpose of viewing the spot already so ominous to the Prussian naval force. On meeting with this reception, they were ordered back to the ship, under cover of her guns, and all the boats manned and armed for the purpose of resenting this insult. The whole crew of the *Danzig* consists of eighty marines, about forty seamen, and from twenty to thirty boys. Of this force seventy-five put off, and succeeded in effecting a landing in the face of several hundred Riffs. They drove the enemy, who were advantageously posted on a declivity, up and over the hill, only to find themselves surrounded by an overpowering multitude, so that there was nothing left them but to retreat to their boats, which they succeeded in reaching, but with the excessive loss mentioned above. The Prince is wounded in the fleshy part of the thigh, about six inches above the knee, but it is expected that in a few weeks he will be able to travel. His Adjutant, Nieseman, who subsequently died on board from the wound he received on the occasion, is extremely regretted by all who knew him for his many attractive and endearing qualities, and he had engaged himself to be married only a few days before he received orders to join the *Danzig* for her distant duty. She is a steam corvette of twelve guns, built at Dantzic, and was destined, after landing Prince Adalbert at Constantinople, to take up her station with other vessels of the great powers, off the mouth of the Sulina.

Prince Adalbert is a brother of the Prince Waldemar, of whom it will be recollected in England that he visited our camp while travelling in the East Indies during the campaign against the Sikhs, and that it was at one of the battles there, under Lord Hardinge, that the Prince's Physician was killed at his side. Our government subsequently presented two beautiful field pieces that were taken in that battle to the King, in token of his cousin having been present at it. They are now in the *zeug-haus* or arsenal at Berlin.

After this repetition of a piratical outrage on a Prussian ship, it seems more than probable that the expedition against these lawless subjects of the Emperor of Morocco, which was postponed two years ago on account of the oriental conflict, will be fitted out afresh with increased vigour.

We have further intelligence relative to the barque *Hymen*, which was plundered by the Riffian pirates. The following are the details:—The barque *Hymen* sailed from Liverpool with a cargo of 600 tons of coals, bound to Ancona, the crew consisting of fourteen men in all. On the 14th May, having been becalmed the two previous days, the vessel was forced by the current to within fifteen miles of the land, and about the same distance West of Cape Tres Forcas, when eleven boats put off from the shore at 11h. a.m., each boat containing from seventeen to twenty-five men, armed with muskets, pistols, and dirks. They boarded the barque at 1h. 30m. p.m., and immediately commenced plundering her of every moveable article they could lay their

hands on; after which the owner and crew were taken ashore and detained in the hands of the pirates twenty days. The crew were in a wretched condition until relieved by H.M. steamers *Ariel* and *Retribution*, from the officers and crews of which they received the greatest kindness. The *Hymen* drove ashore within two days of her being abandoned; and, after efforts made by the Spanish authorities to get her afloat, in which they were unsuccessful, she broke up, and the fragments were carried by the Moors inland.—*Daily News*

NAUTICAL NOTICES.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from p. 287.)

Name.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
17. Gunfleet	East Swin, R. Thames	R.	48	7	Est. 1st May, '56. A red light every half minute. On piles. Clacton church, N.W.¼W.; Walton Naze tower, N.½E; Sunk light, E.¼S., 4½ miles. Vessels are not to approach the light within a quarter of a mile, and not to pass northward of it. Gunfleet light-vessel removed.
18. Ahorcados, Balearic I.	Lat. 38° 48·7′ N, long. 1° 29′ E.	F.	82	10	Est. 1st May, '56. To show the Freo Grande Channel.
19. Gallipoli	Dardanelles	F.	93	10	Temporary. Will be replaced by a revolving light.
19. Skutari	Fanar Bakcheh	F.	84	10	A mile and a half southward of Skutari town.
19. Anadoli	Bosphorus Entr. Asiat. shore	R.	250	18	A red light succeeded by two naturnl lights, all of which are separated by intervals of two minutes and never entirely eclipsed, but each in its turn increasing to and decreasing from a strong light.
19. Rumili	Bosphorus Ent. European shore	F.	190	18	
19. Fidonisi or Serpent I.	Lat. 45° 15·6′ N., long. 30° 14·9′ E.	F.	195	10	Temporary. Visible from West to E.N.E. It is 24 miles E.¼N. from Sulina mouth of Danube.
20. Castle Pinckney	Charleston	F.	55	10	Est. 15th May, '56. Red. On Shute Folly Isld.
20. Fort Sumter	Charleston	F.	60		Est. 15th May, '56. South Carolina.
20. Wade Point		F.	30	8	Est. 20th June, '56 North Carolina.
21. Pointaillac	Gironde		177	15	Est. 10th July, '56. Alternately red and the natura light. Stands in 45° 38·2′ N., 1° 3·7′ W.
22. Mt. Navidad	Cartagena	F.	125	10	Est. 15th July, '56. On West side of entrance of the port. In 37° 35·5′ N., 0° 58·6′ W. When bound to eastern side of harbour keep the light just open of Point Navidad. When bound to the western keep close to Navidad.
22. Cape Huertas	Alicante	F.	124	10	Est. 15th May, '56. In 38° 20·5′ N. and 0° 22·6′ W.
23. Port Patrick	Inner Pier	F.	44	8	Est. 15th Oct., '56. In 54° 50·5′, and 5·7° W.
24. Rathlin	N.E. Point of Ireland	R.	243	21	Est. 1st Nov., '56. In 55° 18·2′ and 6° 10·7′ W. Visible when bearing from seaward from S.E.¼S. round by eastward to N.E.b.N.; and in channel West of Rathlin from E.N.E.½N. to E.¼N., in which it is red on line with Carrickvaan Rock
Ditto	Ditto	F	182	10	Est. 1st Nov., '56. In the same tower. Visible from seaward from S.E.b.S. to N.N.E.½E. only.

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

NOTES THROUGH THE INNER PASSAGE OF TORRES STRAIT—*in the Glendaragh of Singapore, from Port Phillip to Booby Island.—By Capt. E. M. Smith.*

July 13th, 1855 cleared the heads of Port Phillip in company with the *Launceston*, Capt. Betts. Had fine S.W. wind through Bass Strait; passed to southward of Curteis Island and Kent Group on the 14th, by which we obtained a good offing in the event of a S.E. gale. Steered E.N.E. (true) to keep clear of the coast, and at noon on the 16th, with light West and N.W. winds, had Cape Howe bearing West forty miles.

Got an offing of sixty miles, and carried the same fine weather and S.W. winds, hauling at times to S.S.E.; the barometer rising, as the wind hauled easterly, from 30·05 to 30·20.

On the 19th, after twelve hours heavy rain, with wind at South, the weather cleared up, the wind at S.E. Barometer at 30·30, and we had a fine monsoon in the latitude of 30° South.

On the morning of the 22nd made Indian Head, at sunset on the same day rounded Break Sea Spit. During the last four days had a current of a mile an hour to the southward.

Kept under easy sail all night, running five and six knots, steering by compass W.b.N. At daylight on the 23rd were abreast of Port Curtis, distant about six miles. At 10h. a.m. saw Masthead Island from aloft, bearing E.N.E. and at sunset had passed Cape Capricorn, and sighted First Lamp. The wind which hitherto had been light from S.S.E., now hauled to North, varying from N.N.E. to N.W., with a strong current to Southward.

At 8h. a.m. on the 24th, sent a boat ashore to First Lamp, and got plenty of rock oysters, perywinkles, and caught a turtle asleep on the water. At sunset stood into North Rock, and all night worked two hour tacks with wind at North, and fine clear weather, the moon being now past the first quarter.

At daylight 25th saw Flat Island, ten miles North, wind and weather the same. Observed numerous native fires on Keppel Island while passing. Stood thirty miles off Flat Island into lat. 22° 39′ at noon, and sounded in 17 fathoms. Tacked and still fetched to leeward of Flat Island in consequence of the strong southerly current.

On the 26th, at noon, were ten miles distant off Port Bowen, the wind that morning having hauled round to S.E., very light, with fine weather; and in the afternoon of same day it went back to N.N.E. again, so that being unable to weather the four islands, passed between them and Island head. Passed Cape Townshend, and at 10h. p.m., with light N.E. wind, weathered the third Northumberland Isle. At this time the weather was fine, but a good deal of sheet lightning about. At midnight were becalmed off the Low Rock, and drifted with the tide setting to S.E. close to it; then a westerly breeze came on, which was succeeded by a sudden brush of wind from South, increasing in an instant to a hard gale, throwing the *Launceston* on her beam ends, she, as well as ourselves, being taken quite unawares, as there was no warning given either by the barometer or by the appearance of the clouds. This gale was accompanied by heavy rain. I ran for an hour, and then hove to, having, by estimation, Pine Island of the Percy Group N.N.W. six miles, and kept a good light for *Launceston*.

At daylight, on the 27th, kept away, and ran before the wind, which had now hauled to S.E., under single reefs. Passed the Percy Isles, and at noon had K. 1 bearing East four miles, wind still a fresh gale, but the weather becoming fine; made all sail, passed between K. 2 and the three rocks, and at midnight hauled close round the Northern Cumberland Islands; steered W.b.N. by compass, and at 3h. a.m. passed close to the small islet South of Holborn Island. Observed numerous fires on the main.

Daylight, 28th, were off Cape Upstart, and at 9.30 suddenly shoaled our water from 11 to 5 fathoms, with a grove of Scrub trees on the pitch of Cape Bowling Green, bearing S.W. by compass, and fully three miles from the shore. Hauled out N.N.W. for a few minutes, and then got 11 fathoms again, so that too much caution cannot be used in passing this cape. At a little distance the edge of the bank was plainly discernable, but I had not noticed it before. At 1h. p.m., with

Cape Cleveland, by compass	.....	S.W. ¼ W.
Magnetic Island „	.....	W.b.S. ¾ S.
Peak of Mount Elliot „	.....	S.b.W. ¾ W.
Centre of Palm Island „	.....	W.N.W.

passed within half a mile to the southward of an apparently shoal patch, but am not sure that it is at all dangerous, as it may have been a patch of sand on a muddy bottom; but we had 11 fathoms in passing, being much shoaler than the soundings laid down in the chart in that vicinity. At 10h. p.m. were up to the Palm Isles, and hauled within a mile along their western side, sounding over a level bottom of 16 fathoms. At midnight had passed them all and steered for Cape Sandwich, which we were abreast of at daylight.

29th, passed outside Brooke Isles, and at noon were up to Frankland Isles, passing to eastward of them; and at 4.30 passed between Fitzroy Island and Cape Grafton, and anchored under the latter at sunset, in 4 fathoms water; we found the soundings much shoaler than those laid down in the chart, we being fully half a mile off shore, with the extreme of the cape bearing E.S.E.

Next morning, the 30th, wayed at 3h. a.m., at 6h. passed the Low Islands, and at noon were up to the Hope Islands, which are nothing more than sand-banks with a few bushes on them. Passed as recommended inside of them, and at 2h. p.m. were up to Capt. Cook's Turtle Reef, where we saw a shoal patch with probably not more than 2 fathoms water, and about the size of a small vessel. When the shoal bore East one and a half cables' length distant, I took the following bearings (true), viz.:

Sand-bank on Turtle Reef	N.E.b.E. ½ E.
Cape Grafton	N.b.W.
Mount Cook	W.b.S. ¾ S.

which places the shoal about a mile outside Capt. King's outer track. I have no doubt this shoal is dangerous, as I looked at it from the fore yard and saw it distinctly from the deck, and being long accustomed to navigation among the shoals of the Eastern Archipelago, am not likely to be mistaken.

At sunset brought up under the lee of the three isles in lat. 15° 7′, in 7 fathoms water. Landed, and found the natives had been before us, recent marks of fires being found in several places, and in one a turtle back with the fat still moist after cooking, while the heads of a great number of turtle were strung on trees near the fire-places. Found a native hut here, apparently more ingeniously made than those of the natives farther South. Shot a brace of quail, and returned to the ship, after, by the bye, collecting a quantity of rock oysters, a dozen of which made me very sick all night and all the next day.

At 4h. a.m. on the 31st, wayed, and at daylight were up to Cape Flattery; passed it, and made the shoal marked on the chart dry at low water about two miles E.b.S. ½ S. from Look-out Point, which plainly showed above water; passed a large mile to the northward of it, being myself on the topsail-yard, with the morning sun well on the quarter, but could see nothing of the shoal also marked dry at low water on the chart, two miles to the northward of the one above mentioned, nor was it perceived by the *Launceston*, which ship followed us close throughout the whole passage. Made sail, and by noon had passed the Howick Group, after passing to the southward of the Turtle Isles.

Here I may remark, that No. 4 of Howick Group is laid down in the chart as a sand-bank, whereas it is in reality now larger and higher than Nos. 2 or 3 of the same group, which are properly laid down as low islands. Here we first found the current to westward strong, having previously experienced barely enough to be noticed. Massey's log giving the distance from island to island nearly correct up to this time. At 4h. p.m. rounded Cape Melville, and at 6.30 anchored under Cape Flinders, in 7 fathoms water; saw numerous fires along the whole coast. Found the tides set at the anchorage two knots N.E. and S.W., it being now full moon.

Wayed at 5h. a.m., Aug. 1st, and followed Capt. King's track, sighting all the islands, sand-banks, and reefs, as in the chart, and at 5h. p.m. anchored off the N.W. point of Night Island, in six fathoms water. Went on shore, but the tide being out, found it difficult to get the boat through the coral reef which surrounds the island. Found numerous turtle bones, and marks of the native feasts, but no tracks of turtle. During the night, hard squalls from S.E., with much rain, so that it was not till 8h. a.m. that the weather was sufficiently clear to run; wayed then, and followed exactly the track on the chart. At 3.30 anchored under the Piper Islands, within a cable's length of a beautiful landing beach on the N.W. side of the westernmost of the Two Layer Isles. The water was so smooth here that the ladies of both ships went on shore for a picnic. Found plenty of turtle bones and shells, as well as fire places, but still saw no natives. Obtained a large quantity of fine oysters, lying in patches on the reef.

Next morning, Aug. 3rd, as the *Launceston* was very crank, she hauled alongside, and we gave her thirty tons of ballast. During which time made an excursion in a sailing boat to the other islands of the group. Saw a large turtle, but did not succeed in spearing it. Shot a landrail and got a sufficient quantity of fine oysters to ballast the boat. Found a broken "dug out" canoe on the beach. Planted some cocoa-nuts a little above high water mark on the island near which we anchored. At noon this day wayed; passed Young Island, which is nothing more than a sandbank awash. At 3h. passed close to Haggerstoue Island, rounded the Home Islands, and at 7.30 anchored under the Bird Isles in Torres Straits.

Daylight, 4th, wayed, and following the usual route, anchored at 3.30 under the large Adolphus Islands, but could see nothing of Blackwood Bank of the chart by the discoloration of the water, so that this anchorage requires the lead to be kept going while approaching it. Went ashore, and were met by a few native men in a complete state of nudity, who were very friendly, parting with their spears, bows, and arrows readily in exchange for some clothes furnished by the *Launceston's* crew; but a few pieces of tortoiseshell they would only sell for tobacco, for which they were unceasing in their demands. We accompanied them by a well trod path towards the bank of the island, as far as the top of the highest hill on the island, when they showed us their village or encampment on the beach at the S.E. side of the island, a full mile from the hill we stood on, and it being by this time nearly sundown, we determined to return. The natives, seeing us hesitate, renewed their solicitations to us to go with them, but finding we intended returning, they walked on quite unconcernedly and left us to retrace our steps to the boats alone. I need hardly remark that on landing we were always well armed in case of hostilities from the natives.

August 5th, wayed, and ran through Wednesday Island Passage. Saw a steamer, which proved to be the *Phœnix* from Sydney, ashore on the extreme outer edge of the small detached reef to northward of Goode Island. Ran in close to her, and anchored; but the bottom being rocks could only bring up with 70 fathoms chain. Visited the wreck, and found she had been boarded fourteen days before by two Dutch and one English vessels, as appeared by

some pencil writing in the cabin, and cleared of every thing but her engines and anchors; there was no appearance of natives having visited her, as some small brass bolts and plenty of iron ones were lying about the deck. But while we were on board we saw several canoes full of men sailing from the northward to Hamond Isle, so that doubtless they would soon be on board after we left.

At 3h. p.m., wayed, but did not get abreast of Booby Island till after dark, although, had there been any one on it they must have seen us before dark, as we saw the island by 5h. p.m. Fired a gun and sent up a rocket, but seeing no signal of any kind, made from the island, and not liking to lose the whole night, relinquished my intention of landing water and biscuit, and stood on. The *Launceston* here parting company, bound for China.

Thus we had made the run from Port Phillip to Booby Island, in a remarkably dull ship, by the inner passage, in twenty-three days, anchoring six times, the deepest water being 12 fathoms, at the Adolphus Islands. For I do not count anchoring at the *Phœnix*, as that was quite unnecessary. Had the *Glendaragh* sailed as well as the *Launceston*, I have no doubt we should have made the passage in eighteen days, for she never set studding-sails, and frequently had to haul her courses up to keep astern of us. I have made five voyages through the Barriers by Stead and Raine Island Passages, but should never do so again, as I unhesitatingly give the preference to this inner passage, as being safer and pleasanter, for in thick or unsettled weather making the Barrier is any thing but pleasant.

All the dangers show so distinctly that I could always see everything from the poop in sufficient time to avoid them, although of course I always had a mast-head look out.

In the foregoing account I have said little about the wind, but, with the exceptions I have mentioned, it was invariably between South and E.S.E., and generally fresh, with fine weather.

Cape of Good Hope.—*Instructions to Mariners.*

The following instructions to mariners are of importance to the shipping interest, and cannot be too widely circulated:—

Cape Receife.—No vessel should approach the cape four miles to the westward of Receife, or Receife itself, nearer than two miles, and then only with a commanding breeze or in a steamer, as the reefs extend nearly a mile and a half from the shore, and because there is a very decided and dangerous indraught towards them. When the height of the lighthouse subtends an angle of 23′ the distance from it will be two miles and a half—therefore no greater angle should be got. Neither should any one be tempted, by the absence of break, nearer the East side of Receife lighthouse, as it often occurs that it does not break upon a seven-foot patch a mile from the lighthouse and yet it will, without previous warning, break in seven, and even ten fathoms. It is seldom prudent to get less than thirteen fathoms water while still outside of Receife. Latitude of lighthouse, 34° 1′ S.; longitude, East of Greenwich, 25° 40′ 7″; longitude, East of Cape Observatory, 0° 20′ 46″. The lighthouse will show alternate horizontal bands of white and red, two of each. The light is fixed, with brilliant flashes at intervals of a minute.

Bird Islands.—A wooden lighthouse has been erected on the eastern extreme of the Bird Islands in Algoa Bay, showing two white lights, eighteen feet apart, from sunset every evening till sunrise on each following morning.

Latitude of the easternmost island, 33° 52′ S.; longitude, East of Greenwich, 26° 18′ 30″.

St. Croix Islands.—In Algoa Bay, and at about ten miles N.E.b.E. from the anchorage off Port Elizabeth, are the St. Croix Islands, under which there is a good anchorage for all winds. Latitude of the large island, 33° 47′ 30″ S.; longitude, East of Greenwich, 25° 47′.

Entering Algoa Bay at Night.—In coming from the westward no vessel should make the light on a bearing to the southward of East; and should she from any cause have fallen to the northward, and have thus brought the light to the southward, she must without fail, before she arrives within five miles of the light, haul out till the light bears East, or if in doubt about the amount of deviation of her compass, to E.¼N.; after which she may steer E.S.E. till the light bears N.b.W.; then E.N.E., till it bears N.W.; after which she may alter course to N.N.E. Until the light is brought on the latter bearing, viz. N.W., she should not get less than twelve fathoms water, and she should go sufficiently slow to obtain soundings.

Signals.—Attention should at once be paid to the following signals when made from the Port Office:—Union jack over white pierced blue, "Veer to a whole cable." Union jack over blue; white, blue, horizontal, "Strike lower yards and topmasts and rig in jibbooms." In stormy weather, vessels can make known their wants to their agents through the Port Office by Maryatt's code of signals, and such as do not possess the code can make the following requests with their ensigns:—Ensign in the foretopmast rigging, "I am in want of an anchor." Ensign in the fore rigging, "I have parted a bower cable." Ensign in the main rigging, "I am in want of an anchor and cable." Whift, where best seen, "Send off a boat." Whenever a red flag may be hoisted at the port office it denotes that it is unsafe for any boat to land.

Eastern Province (Cape) Herald.

LABOUAN—*Rock in Channel between Labouan and Kuraman Islands. Extract of a Letter from Comm. Bate. H.M.S. Bittern. dated June*, 1856.

"The Commander of the P. & O. steamer, *Formosa* told me he struck on a rock going into Labuan. It is situated in the *centre* (? middle) of the channel between Kuraman Island and Kiamsan Point, with the latter bearing N.N.E. ½ E., and Burong Island East. He made no further examination of it, but considers there is ten feet water over it at low water springs."

We caution vessels against the above important danger, recommending their commanders to insert it in their charts.

THE LOG OF THE "PERSIA."

The following is an abstract of the log of the Cunard steam ship *Persia* in her late unprecedented run of 8 days 23 hours and 30 minutes from New York to the Mersey:—

August 6th.—10h. 45m. a.m.: set on full speed; 0h. 25m. a.m.: stopped to land pilot; 0h. 45m. a.m.. pilot left; 3h. p.m.: passed screw steamer *Glasgow*. Wind N.W.

7th.—Light breezes and clear. Wind S.W. Lat. 41° 7′, long. 67° 41′. Distance run 289 miles.

8th.—Light breezes and cloudy. 7h. 30m. p.m.: passed American steamer *Arago*. Wind S.E. Lat. 48° 3′, long. 61° 39′. Distance 293 miles.

9th.—Light breezes and cloudy. Wind S.W. Lat. 45° 31′, long. 55° 21′. Distance 308 miles.

10th.—Light breezes and foggy. Wind N.N.W. Lat. 48° 38′, long. 48° 35′. Distance 333 miles.

11th.—Light breezes and cloudy. Wind N.E. Lat. 51° 18′, long. 40° 30′. Distance 348 miles.

12th.—Fresh breezes and cloudy. Wind North. Lat. 51° 18′, long. 31° 42′. Distance 331 miles.

13th.—Fresh breezes and cloudy. Wind N.N.W. Lat. 51° 15′, long. 22° 27′. Distance 344 miles.

14th.—Fresh breezes and heavy beam sea. 10h. 26h. p.m.: abreast of Cape Clear. Wind N.W. Lat. 51° 6′, long. 13° 22′. Distance 342 miles.

15th.—Arrived at the bar at 5h. 15m. p.m. Wind N.W.

THE CROZETS.—In a former number we stated our opinion on the non-existence of an island reported by the Captain of the ship *Ben Nevis* to the N.W. of these islands. In the *Shipping Gazette* of the 14th of August, we find the following paragraph, which establishes the correctness of the view we took of the subject.

"Capt. Jarvis, of the barque *Irene*, recently arrived at Hobart Town from England, makes the following communication to the *Colonial Times*:—Seeing in a London publication, shortly before leaving home, that Capt. Herron, of the White Star Liner *Ben Nevis*, had fallen in with an island 110 miles to the Northward of the Crozets, I noted the same in my chart, and, when in that parallel of latitude, had a good look-out kept for it, when, North of the supposed island, instead of seeing land on the starboard hand, to my great astonishment I perceived what appeared to be land on the port beam about twenty miles distant, and apparently extending about thirty miles in length. Not satisfied, and the water being perfectly smooth, I hauled the ship up, and stood towards it; shortly afterwards, what appeared to us mountains covered with snow changed their form, and formed themselves into a straight line, tinged with white clouds, which all on board imagined was snow. Keeping the ship still nearer, we plainly perceived it to be nothing but a fog-bank; kept the vessel still in her course, and in about half an hour afterwards she was enveloped in a dense fog, which lasted three days and a half. Had Capt. Herron's statement respecting the position of the supposed land been correct, I must have fallen in with it. I merely make this communication, being of opinion that no such island exists in the position as stated."

Captain Jarvis of the *Irene* has rendered a service to his brother seamen by his spirited behaviour on this subject. The original account of the *Ben Nevis* was most unsatisfactory; but Capt. Jarvis has settled the question.

ON FINDING A FAIR WIND IN A HURRICANE.

Sir,—Knowing that you are ever ready to give publicity to whatever may aid science, perhaps the following particulars relative to a rotary gale, experienced in the South Pacific, may not be unworthy your notice.

Barque *Lady Peel*, from Geelong to Callao, Saturday, April 8th, 1854.—A.M. commences with calm amd foggy, with faint N.E. airs; at daylight, same weather. At 8h. a.m. the wind suddenly freshened up from the S.E., wore ship to the E.N.E., and shortened sail to double reefed topsails. Noon, strong gale at S.S.E., with thick rainy weather and heavy confused sea. Lat. by D.R. 43° 31′ S., long. by D.R. 161° 13′ W. Bar. 29·46. Therm. 53°. Aner. 59 4·. Therm. 60°. Variation one point East. At 1 30 p m. gale rapidly increasing, furled all sail, and hove to under close reefed main topsail, head to the E.N.E. Midnight, blowing a severe gale from S.S.E., with a very high sea, and thick gloomy weather, with incessant small rain. Bar. 29·45, therm. 59°, Aner. 29·34, therm. 62°, very low glass for a southerly gale.

9th.—A.M. continues same wind and weather, without the least appearance of a change. From 8h. to noon it brightened up a little, and enabled me to get observations for double altitudes, and reduction to the meridian. Lat. obs. 42° 13′ S., long. chron. 159° 59′ W. Bar. 29·56, aner. 22·48. At 3·30 p.m. having been hove to upwards of twenty-four hours, and still not the least appearance of a change, I began seriously to think whether it might not be possible to find a fair wind by running up to the Northward.

Having been of opinion for some years that all heavy gales are rotary, I considered this a good opportunity of ascertaining if this gale were so or not, as by running up to the Northward and getting on the N.W. quadrant, the wind would veer to the S.W., and enable me to prosecute my voyage. It is at all times very un-atisfactory and annoying to a commander of a ship, who is striving to do his utmost for the interests of his owners, to be lying to. I therefore, Mr. Editor, resolved to try my luck, gave her the two close reefed topsails, and the reefed foresail, and away off North, running at the rate of seven and a half miles per hour: with what success you will perceive as I proceed to lay before you the particulars as they transpired. At 9h. p.m. the gale had sensibly abated, although still at S.S.E. Barometer inclined to rise. At midnight, bar. 29·62, aner. 29·54. The sea running very high.

10th.—A.M. the gale decreasing as we advance to the Northward. At 6h. the weather more settled and the wind now at South; shook a reef out of the topsails, set the reefed mainsail, and hauled up N.E. Noon, fresh gale; having veered to S.S.W., with passing squalls and rain at times; clear overhead, with very remarkable bright sunshine.

Course and distance made good, N.N.E. 165 miles. Bar. 29·65, aner. 29·54. At 6h. p.m. wind S.W., at 9h. more moderate, shook out reef of the courses, and steered E.b.N. Midnight, wind W.S.W., fresh gale.

11th.—A.M. continues fresh gale at W.b.S. At 4h. observed the barometer to be falling; at 5h. gale increasing; at 6h. thick weather with small rain, and a very threatening appearance; bar. 29·23, having fallen ·27 since four o'clock. Wind now at W.N.W. Shortened sail at once to two close reefed topsails, and steered N.E.b.E.; the centre was bearing at this time S.S.W. of me. At 8h. a.m the wind was back to West, and as the barometer was still falling, I felt satisfied the centre was nearing me; steered more to the Northward. At noon strong gale at West, with a very dismal looking sky to the Southward and S.W. At times the sun would show out, with a remarkable brassy appearance. My marine barometer (which is a very good one) was now standing at 29·135, I felt confident, from the wild look of the sky, and from the fall of the barometer, that it was blowing furiously not far from me. Course and distance made good, N. 85° E., 196 miles. Lat. D.R. 39° 16′ S., long. D.R. 154° 53′ W. The centre of this cyclone passed very rapidly, for at 2 p.m. the wind had veered S.W., and the barometer jumped up to 29·30. Agreeable to the rotary nature of revolving storms, the centre was now bear-

ing S.E., and as it had got before me, I hauled up E.N.E., set the reefed foresail, shook the third reef out of the main topsail, and gave chase. Blowing a strong gale, with smart squalls and rain at intervals. At 7h. the gale at S.W. but moderating; made more sail. Midnight, fresh gale, with an exceedingly high sea, and much confused; the ship tumbling about terribly. Barometer 29·50. As the gale advanced to the Eastward, the wind gradually hauled to the Soothward.

I think, Mr. Editor, there is no doubt that this was a revolving gale, and in all probability blowing near its centre with terrific fury. You will observe how suddenly the gale struck me from S.S.E. I opine the storm was then generating to the Eastward of my position; and that it did not commence travelling to the Eastward till my barometers indicated a rise, which was not till twenty hours after its commencement; and then only at a slow rate at first; but when it passed me on the 11th, it must have been going onward with great velocity. Another remarkable feature was the peculiar brightness of the sun, and also the dense heavy masses of clouds which appeared to be touching the water: you could actually see the whole body of it, driving on furiously to the Eastward.

I assure you, Mr. Editor, I felt myself very fortunate in being well to the Northward of it, and anxiously watched for the change of wind, that would, without the least doubt in my own mind, proclaim my enemy in advance of me. I knew then I might chase him with every degree of confidence.

I doubt not that at the centre of this cyclone it was blowing hard enough to dismast a ship, or even worse consequences than that; for although their fury does not at times last more than half an hour, yet during that time many a noble ship has foundered; and if they have been fortunate enough to escape, it has not been without being severely handled. I speak from experience, and can testify that the fury of these rotary storms near the centre is awful beyond the power of description.

One word, Mr. Editor, and I have done; it was not my intention ever to make public the particulars of this gale, or I should have sent to you before; but several commanders of ships that I mentioned it to said that I ought to send it to you, as it was something worth recording. Should you be of the same opinion, and think it of any service to others placed in similar circumstances, whereby they might find a fair wind and escape from the dreaded centre, I shall consider my time not mispent in sending you the particulars of this rotary gale.

I am, &c.,

E. G. P. MARCH,
Late Commander of the *Lady Peel*.

To the Editor of the *Nautical Magazine*.

[The Commander of the *Lady Peel* was perfectly right in standing to the Northward when he knew by the direction of the wind that the focus of the hurricane must be well to the Eastward of him, (in this case it was E.N.E.,) although he might thus risk standing across its path,—he was sure of a fair wind in gaining his object,—and when once in the Northward he was right in his conclusion also of having always a wind from some Westerly point. When he had the wind at S.W., (6h. p.m. on the 10th,) it might have been advisable to have got rather more to the Northward, until he had brought the wind to West, which he would have done. On the whole we congratulate him on his good management, although he lost some time before he adopted his northerly run. It would seem that the whole meteor was tra-

velling to the S.E., but if these South Pacific hurricanes are like those of the Indian Ocean the place of their commencement, the length of their S.W. course, and the place of their curving round to the southward and following their S.E. course, is yet unknown. The *Nautical Magazine* is acknowledged to have done much in bringing forward the hurricane theory, and we shall be thankful to any of our readers for accounts of these hurricanes, and especially of that which occurred at the Society Islands on the 21st of January last, in which H.M.S. *Dido* was dismasted.

We commend to our correspondent the little inexpensive treatise on this subject called the *Storm Compass*, in which he will find the subject divested of all difficulty and made intelligible to every seaman.—Ed. *N. M.*]

Meteorological Register kept on board the barque "Lady Peel" from Geelong to Callao.

Date.	Lat. S at Noon	Long W at Noon.	Noon.				Midnight.				Wind.				Force				Weather.			
			M.Bar.	Ther.	Aner.	Ther.	M.Bar.	Ther	Aner.	Ther.	Noon.	3 p.m.	Midnt.	6 a.m.	Nn.	6pm	Mdt.	6am	Noon.	6 p m.	Midnt	6 a m.
April 5th	° ′ 46 5	° ′ 166 36	30·01	56	29·88	57	30·01	61	29·90	62	S.W.	S.S.W.	S.	S S.E.	3	6	6	6	bm	bv	bv	bv
,, 6th	45 10	162 58	30·02	55	29·92	56	29·90	53	29·81	58	S.E.	S.E.	SE.b.E	E.S.E.	6	7	8	8	bv	o	o	gpd
,, 7th	43 49	161 25	29·66	56	29·62	59	29·50	62	29·50	64	E S.E.	E.	E.N.E.	N.E.	8	4	3	0	gpd	o	om	gmf
,, 8th	43 31	161 13	29·46	53	29·45	60	29·45	59	29·44	62	S.S.E.	S.S.E.	S.S.E.	S.S.E	8	10	10	10	omd	gr	grq	gmf
,, 9th	42 12	159 57	29·56	55	29·48	59	29·62	57	29·54	60	S.S E.	S.S.E.	S.S.E.	S.	10	9	9	8	gqr	gr	qrg	boqr
,, 10th	39 34	158 35	29·65	56	29·54	58	29·54	58	29·48	60	S.S.W.	S.W.	W.S.W	WNW	8	8	9	9	bcqr		bcqr	
,, 11th	39 16	154 23	29·13	59	29·17	61	29·50	62	29·49	63	WNW	W S.W	S.W.	S.W.	9	8	8	7	gqrw	bc	bcv	bgp
,, 12th	38 15	150 53	29·65	62	29·60	64	29·68	60	29·62	63	S.W.	S.S.W.	S.	S.b.E.	6	6	5	5	bgp		bcv	pg
,, 13th	37 26	147 20	29·72	59	29·63	60					S.S.E.				4				pd			

New Books.

A Catechism of the Steam Engine *in its various applications to Mines, Mills, Steam Navigation, &c., by John Bourne, C.E.* Longman.

Mr. Bourne tells the reader that his design in the little book before us is "to take a young lad who knows nothing of steam engines, and to lead him by easy advances up to the highest point of information" that he has himself attained. No one could set out with a better, and, to our mind, this is exactly the little work we should place in the youngster's hand. We heartily commend it to our readers.

Formulæ of Nautical Astronomy *by Captain Shadwell, R.N.*, 1856. Potter, 31, Poultry.

With a becoming zeal for the welfare of his brother officers, and with the view no doubt of encouraging them to look into principles on which rules are established, Captain Shadwell has collected the principal formulæ on which the calculations of navigation and nautical astronomy are made to obtain results in latitude and longitude and such information necessary to them depends, and arranged them in a series of cards twelve in number. Thus the workman has at his hand the method in which he is to handle his tools, when he has prepared them for work, without seeking rules or examples. Such doctrine is very well in its way, but has, unfortunately, one tendency—which is to acquire rules parrot-fashion without knowing why they are so, and therefore setting all the reasoning on the subject aside. It is a kind of royal road to navigation, leaving a workman as wise as he was without it in respect of the why and wherefore of his work. Let us hope, however, since he is thus kindly provided by Captain Shadwell with the means of obtaining readily the results he requires, and which he will doubtless be too glad to obtain, that he will consult the old masters whom Captain Shadwell has thus made to supply him with their very best ware, and be able to explain at any time the spherical figure and those mathematical truths on which they depend.

Esquimaux Indian.—The *Neptune*, Penny, just arrived from Davis Strait, has brought an interesting and intelligent Esquimaux Indian. He is twenty years of age, about five feet high, and very stout. His appearance is altogether agreeable, and his disposition exceedingly pleasing. He is the very picture of good nature, and has evinced a great deal of anxiety to form acquaintance with Europeans. He is evidently possessed of excellent natural abilities; but he seems to have no idea of the existence of a Supreme Being. This remark, Capt. Penny says, is applicable to the tribe to which he belongs, with the exception that, when any of ther party die in warlike strife, or in the field when hunting, they console themselves with the thought that they had gone upwards. The Esquimaux has come over by his own request, and with the full consent of his parents; and, from the information which Capt. Penny received from him, he is strongly convinced that he will be able to trace out new and important discoveries in regard to the fishing grounds on the West coast. The only object Capt. Penny has in view in bringing him over, is to get him educated, that he may be able to instruct his friends and others when he returns to his native country.—*Aberdeen Herald.*

The Esquimaux named Erasmus Kallihirua, who joined Capt. Erasmus Ommanney, in H.M.S. *Assistance*, in the year 1850, near Wolstenholm Sound, in Baffins Bay, when proceeding in search of Franklin's Expedition, died at the College, St. John's Newfoundland, on the 14th ult. after a short illness.

He belonged to a small tribe located at Wolstenholme Sound, where Capt. Ommanney found a number of them dead and unburied, having been carried off by some epidemic previous to the arrival of Capt. Ommanney. This lad volunteered to join the *Assistance*, and after passing the winter on board, expressed a longing to see England. On return from the Arctic seas, Capt. Ommanney placed him at St. Augustine's College, Canterbury, to be educated, where he was baptized. Last autumn he was sent to St. John's College, Newfoundland, to be prepared as a missionary for Labrador. He was remarkable for natural good manners and address, and esteemed for his amiable character, which gained him many friends. His funeral was attended by the Bishop and clergy at St. John's. He was about twenty-five years of age. The tribe or family to which he belonged never moved to any great distance from Wolstenholme Sound, therefore he had but little information on the geography of the Arctic coast. He was a great favourite in Capt. Austin's Expedition.

There is some probability that a statue to the great navigator, Vasco da Gama, will be erected near the Jeronymite Convent; whilst another to Camoens will be set up in Belem Square, and a third of the discoverer of Brazil, Nunho Albes Cabral, will be erected in the Rocio Square.—*Daily News.*

NEW AND CORRECTED CHARTS, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, *Poultry, and* 11, *King Street, Tower Hill.*

	Price	*s.*	*d.*
Scotland, West Coast, West Loch Tarbert, Captain Robinson, R.N., 1849		1	6
,, ,, Lochs Swen, Killisport, &c., Captain Robinson, R.N., 1849		2	0
,, ,, Islay Sound, Commander Bedford, R.N., 1853		3	6
,, ,, Loch Crinan and Cuan Sound, Captain Robinson and Commander Bedford, R.N., 1850–55		2	0
Nova Scotia, Shut-in Island to Pope Harbour, Captain Bayfield, R.N., 1854		4	0
Australia, South Coast, Port Elliot, Mr. B. Douglass, Harbour Master, 1856		0	6
New Zealand Pilot, Edited by Captain G. H. Richards and Mr. F. J. Evans, Master, R.N., 1856		3	6

EDWARD DUNSTERVILLE, Commander, R.N.

Hydrographic Office, Admiralty, August 22nd, 1856.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

OCTOBER, 1856.

NOTES ON A VOYAGE FROM ENGLAND TO BALACLAVA *in the "Gilbert Munro," late Store-ship at Hyder Pacha,—By C. R. Maclean, Master.*

On the 1st of December, 1855, left the Downs with a light favourable breeze from the northward, which in three days enabled us to clear the English Channel, and which continued with little interruption till we made Cape St. Vincent. Here it fell calm, and we were delayed with light baffling airs for several days looking at this celebrated headland until, on the 11th, a breeze favoured us, and on the evening of the 14th we made the Strait of Gibraltar. As all my previous voyaging and salt water experience had been in the southern trades, and this being my first trip to the Mediterranean, I looked with more than ordinary interest on that narrow gap between stupendous mountains through which the great Atlantic is ever flowing into this inland sea, and yet this is never full.

Having entered the strait with a light westerly breeze in a fine starlight night, we soon found ourselves under the influence of the easterly current. The wind about 9h. a.m. suddenly shifted to the S.E., which obliged us to brace up on the starboard tack, and while thus standing to the N.E., about ten at night, a light was reported right ahead. At first, this light puzzled me very much, for, although I was in expectation of seeing Tarifa light, that seen was evidently a fixed light, whereas Tarifa should show a revolving light,—so said the book of Mediterranean lights, published by authority, for 1853. However,

on referring to the volumes of the *Nautical Magazine* from that year forward, and, turning over the numbers for 1855, my mind was set at rest on finding in No. 9, page 504, in the table entitled "Particulars of lights recently established," the following remarks:—"Tarifa, Gibraltar Straits, South point of island, fixed light, height 132 feet, seen twenty miles; established 1st September, 1855, in lieu of the revolving light; lat. 36° N., long. 5° 36′ 37″ W."

Now, this was an immense relief to my anxiety, though in this case there could be no doubt of our whereabouts, yet to a stranger working in the night through a narrow passage it is very perplexing to find the beacons that are to guide and warn you of danger so different to those you look for. In the case of Tarifa light, as there are some dangerous shoals to the N.W. of it—the Cabezas, on which it is said many ships have been lost, and few that have touched on them have ever been got off—rendered it at the time still more unpleasant to find this discrepancy. Here I think it right to observe that it is not the first time I have found myself indebted to the large and valuable stock of information on hydrography and nautical subjects in the pages of the *Nautical Magazine*, and but another instance in proof of its value and usefulness to all wanderers on the deep.

By noon the following day, though the wind freshened up strong against us from the East, the current had swept us rapidly to windward through the strait. We had left the Pillars of Hercules far behind and were now fairly floating—

"Our thoughts as boundless and our hearts as free"—

on the deep blue waters of the Mediterranean, the sea on which it is presumed in history the first sail was ever spread to the "passing gale."

Our easterly wind by the 14th had increased to a strong levanter, and had reduced our canvas to double-reefed topsails. Notwithstanding this, we were making as fair a progress to the eastward as could be expected with a heavy dull-sailing ship no doubt under the influence of a strong easterly current. When reaching to the southward to-day we sighted Cape Tres Forcas on the Barbary Coast; near which in May last the pirates made an attack on the brig *Conference* and destroyed her, while the crew escaped in their boats. On the 15th the levanter began to moderate and in the evening it fell calm with a most beautiful cloudless sky, showing the lofty snow clad summits of the Sierra Nevada in majestic grandeur high above the white curtain of clouds hanging over the less elevated land about the coast.

The 16th brought us a light breeze from the W.S.W., with a clear sky and a sea smooth as a lake. At noon we saw the little island of Alboran, a barren solitary spot in the ocean, barely half a league in circumference and nearly in the middle of the sea between the opposite coasts of Barbary and Spain. This little islet, celebrated by Marryat in his writings, is moderately high, and on this occasion, the horizon being clear, we saw it at the distance of fourteen miles from

us. A strong current in its vicinity set us to the E.S.E. The wind was now freshening from the W.S.W. and the sky began to wear a threatening appearance, though the barometers gave no indication of bad weather. Indeed, I have observed the range of the barometer to be very little in the Mediterranean, consequently it is not so valuable in giving notice of a change as it is in the Atlantic. The greatest variation I have noted from December to March, both in the Mediterranean and Black Sea, did not exceed two and a half tenths of an inch. The aneroid, on one occasion having fallen as low as three tenths, is the most valuable of the two for indicating the changes of weather in these seas, as the smallest variation may be more easily observed by it than it can by the mercurial barometer.

On the 18th the wind had increased to a strong gale, veering to W.N.W. and N.W., and which may account in a measure for the barometers keeping up so high under it. Notwithstanding the weather had assumed a very threatening appearance, on the 20th the wind backed again to the W.S.W., and now the barometers were on the fall. It came on to blow hard from W.S.W., with thunder, lightning, and rain; in which direction it continued to blow till noon. We were now in the channel between the island of Sardinia and the coast of Algeria, and nearly over the spot where the telegraphic cable is laid by which Europe speaks with Africa. The sky began to clear up and the wind to moderate. At sunset, however, the wind again freshened up and by ten o'clock at night it blew a strong gale, when we unexpectedly sighted the island of Galita on the lee beam, although I had considered we were twenty-five miles to the northward of it. But it was evident we could not be more than ten, so that we had been set fully fifteen miles to the southward of our reckoning near this island. A little to the S.W. of us were those Sorrelli rocks (the Sisters) that have derived a painful interest among seamen from having been fatal to the unfortunate steam-ship *Avenger*, and hurrying into eternity in a few minutes of a dark night all on board of her saving only some two or three hands. It is strongly to be recommended when steering along this coast to make good allowance for a southerly current, especially with a N.W. wind. I found the ship set more or less to the southward every day, and it was this southerly set no doubt that led to the melancholy loss of H.M.S. *Avenger*.

In reaching through the strait between Sicily and the coast of Tunis, we had a heavy and destructive sea quite disproportioned to the force of the wind, presenting more the appearance of breakers throughout than a regular sea, and which must be very trying and dangerous to heavy laden vessels lying to or reaching in this position. It may no doubt be owing to the shoal ground, called the Adventure Bank, that stretches off from Sicily quite across the strait to the coast of Tunis. At daylight the following morning the wind had gone down, leaving us a clear sky and a smooth sea. The Island of Zembra and Cape Bon were distinctly seen, and at noon we had the wind West and all studding sails set to a fine steady breeze that by sun down brought us in sight of Pantallaria.

At midnight we found ourselves abreast of that island and our fair wind began to fail, so that from thence to Malta we had a very tedious passage with light and variable wind. Christmas day passed dull and heavily while we lay helpless and becalmed, with the sails flapping idly against the masts, within a league of Gozo; and from that time we had to work to windward with light breezes from the E.N.E. dead against us. As some compensation, however, the weather was beautifully clear, enabling us to see the snowy summits of Mount Etna in Sicily from the deck though nearly one hundred miles distant.

On New Year's day 1856 we had also the satisfaction of feasting our eyes on the far famed peak of Mount Parnassus, which stood revealed before us in a mantle of snow; but our reverie was summarily ended by finding ourselves obliged to tack ship near Sapienza, a little island to the S.E. of Navarino, and, like all the neighbouring coast, as far as we could observe, presenting a barren and sterile aspect. Yet this is a classic land and, associated as it is with the momentous events of history, who can look on it without interest. The noble poet Byron may have said, "'tis living Greece no more," but it lives in history as the land from which the light of civilization beamed upon the world; the land in which infant Christianity was cherished for the diffusion of light over adjacent regions of barbarism; the land which gave birth to the profoundest philosophers, the greatest poets and warriors the world has yet produced;—how can it then be viewed but with emotions of reverence, as well as sympathy for its present fallen condition.

Again, the contemplation of this subject suggests reflections whether human knowledge and the power which it confers, like that of empires, shall be permitted to attain only a certain approach to perfection and then to be swept away. The tower of Babel was a type of this progress in its time, by which presumptuous and ignorant man imagined he would climb into heaven. When every vestige of railroad and electric wire—those modern wonders—shall have been lost will this or that generation leave a pyramid on which the height of their attainments shall be engraven,—a monument that shall outlive their very history and stand the wonder and puzzle of succeeding ages.

Here, again, Navarino, unhappy name, reminds us too of the wonderful changes that occur in the ever changing scenes of this world's stage. Here it was that on the 20th of October, 1827, the British navy assisted in destroying a Turkish fleet, and raised a Christian kingdom; and but a few miles from this, in 1854, another Turkish fleet met the same fate at Sinope, the pretended reason being the emancipation of the remaining portion of Christianity from the degradation inflicted by the Infidel, but the real one being the ambitious designs of a powerful but now powerless neighbour. Happily, Turkey has been saved by the allied arms of France and England, and atonement made by the destruction of another fleet for the contemptible massacre of Sinope. And yet we cannot but see the gradual triumph of the cross, and how inscrutable are the ways of Providence in appointing the instruments of its will: however opposite their aims or

intentions, in the end they meet to work out the infinite will, as in the contest of the Greek and Latin churches for the holy places; associated as they are with the very depth of depravity, meekness and love are dragged forward to sanctify a relentless strife, and a bloody war is waged over the shrine of Him who was the very Prince of Peace. Whether the Pope or the Patriarch shall have the exclusive right to offer up the sacrifice at the holy shrines in Jerusalem matters little to those who worship their God and Saviour in the spirit of sincerity and truth. But when we contemplate what the zeal and fanaticism of another class of worshipers have done in times past, the dispute for these holy places that were but the scenes of those momentous events in the history of Christianity may yet change the face of the world.

The Turk is a remarkable character. A belief in predestination is his misfortune; his religion enjoins it and he dies quite happy rather than forsake that or his political tenets. Even his house he will not repair; he will build it substantially and perhaps elegantly, but he will never repair it. "If it is the will of God," he says, "that my house shall last my life-time it will do so, if not, all my time and money spent in repairing it is lost." When attacked with bodily infirmities he cares as little to seek or apply their remedies. "It is the will of God," he says again and cannot be prevented. In this consolatory belief he beholds with stoical indifference the ruin of his property, the loss of friends, and every calamity that overtakes him, as proceeding directly from the will of God, and it never enters his mind —and it would be very difficult to persuade him—that any exertion or foresight of his own might have alleviated or warded off the evil.

Here is the 5th January, and since New Year's Day we have been beating to windward against a strong levanter, between Navarino and Cape Matapan. This cape, which is the southernmost point of Europe, has nothing particular to recommend it to notice, except its bold and elevated ground, which renders it easy to be seen in clear weather at great distances. The levanter terminated in a hard gale, which we managed in a measure to dodge, with our topsails close-reefed, under the lee of Cerigo till it moderated on the 7th, and we had a change of wind to the S.S.W. that enabled us to steer for the Cervi Passage—so named from the little island of Cervi; between which and the larger island of Cerigo a ship should pass.

After sailing through this somewhat narrow but clear channel, we entered what is justly termed the Greek Archipelago, and so thickly is this sea studded with islands that at first sight it is difficult to say whether land or water predominates. Islands ahead, islands astern, and in which ever direction you look islands rise from the bosom of the deep blue sea in every variety of size and configuration. They are the same as in those days when, on the little island of Patmos, that great and momentous revelation was made from God to man! The features of nature are the same, but the great and mighty who have given such lasting celebrity to this land have passed away. And who has succeeded them? Alas! a race of degenerate, crouching slaves! Such are the reflections which force themselves on the mind

when passing through the Grecian Archipelago, surrounded as you are by scenery that cannot be other than most interesting.

Favoured as we were with a fair wind and fine weather, as well as a clear blue sky overhead, the passage among these islands is not only interesting but beautiful, and though we were in the month of January the weather was more like an English June.

On the 8th we passed between Thermia and Zea. This latter has a good harbour on the N.W. side called Nicholao. We steered thence for the Doro Channel with a strong breeze from the S.S.W. and a clear sky. At 11h. a.m. on the morning of the 9th we were abreast the N.W. end of Andros; between which island and Cape Doro is the passage or channel of that name separating the Island of Andros from the Negropont. It is six miles wide, free from dangers, and we found a strong current setting to the southward against us. Having a strong commanding breeze, however, we hauled close to within a cable's length of Andros with a press of sail and soon made our way through the Doro Passage.

The aspect of this island, as well as that of the neighbouring ones, when viewed from the sea presents a dreary and desolate barrenness; land entirely destitute of vegetation. The sea coast affords nothing to relieve the eye or cheer the scene, but everywhere a dry rocky desolation. An enormous collection of stones that, from the top of the highest mountain to the wash of the sea shore, are heaped up in masses, forming an endless series of dykes or dry walls, parceling out the barren land in plots of every conceivable shape and size, and indicating an amount of labour that appears to a passer by to have been uselessly spent, unless it be supposed that at some period of its history a great struggle had been made by a numerous population for subsistence. These relics of human industry but add to the desolation of the scene, and impart to it a sort of melancholy reminiscence of a land blighted and deserted. Such are the impressions imparted by a first glimpse of this portion of the old world; but, possessing, as it does, so much interest, we could not pass it heedlessly by.

We had not long been through the Doro Channel when the wind began to increase, veering from S.W. to South, and the weather assumed a wild and threatening character, the barometers also falling. On this occasion the aneroid fell three-tenths, and by four o'clock in the afternoon we were under double-reefed topsails. A very heavy sea had grown up in an incredibly short time, a circumstance that I have remarked to be invariably the case in the Mediterranean, and it as suddenly goes down as the wind moderates. Taking a vessel broadside on it is a short, unpleasant, and mischievous description of sea. By six o'clock it blew very hard and obliged us still further to shorten sail to close-reefed fore-topsail and furled mainsail and jib, and having reduced this much we were thereby pretty snug, as we thought, for the night. But not so,—as night drew on the gale became more furious, and by 10h. p.m. we had to close-reef. Just as the daylight was going we had a glimpse of the island of Parsa; and at midnight, when dashing rapidly along under double-reefed topsails, through a

break in the wild looking haze of the storm we sighted the N.E. end of Mitylene.

At 2h. a.m. on the morning of the 10th the gale continued to blow very hard, and the ship rapidly nearing Tenedos, I deemed it prudent at half past twelve to bring her to the wind, with her head to the E.S.E., and wait for daylight. We had not been long in this condition before the sea around us became, as it were, illuminated; light after light in rapid succession seemed to drop on the sea, and, hopping from wave to wave like will-o'-the-wisps, presented a curious spectacle in the stormy darkness of the night. It appeared a large fleet had been astern of us, and, reaching up thus far, had, like ourselves, determined on lying by, or moozling by the wind as the old seamen had it, until daylight. Each ship as she was rounded to hoisted a light, indicating to others that she was brought to a deep sea anchor.

Daylight on the morning of the 10th showed the Island of Tenedos under our lee, and a large fleet of ships, brigs, and schooners around us, all apparently busy and bound for the Dardanelles. We were the first to bear away before the gale, but as the day advanced the whole were soon observed making sail to follow, the wind having lulled a little towards daylight. We also made sail and by 8h. a.m. were up to Tenedos, and nearing fast the coast of Troy—the celebrated plains of Troy seen in the distance in which are laid the scenes of that unexampled siege immortalized by Homer. On these plains once trod the aged Priam and the proud warlike Ajax. On this little island to the left of us (Tenedos) it is said the warriors retired for relaxation from the siege. The whole appears now to be but the tomb on which the Poet's imagination has engraven the Iliad as an immortal epitaph.

The wind being far to the southward, I determined on the Tenedos Channel as being so much to windward. This Tenedos Channel has depth of water sufficient for any sized ship but is much contracted by the Gadaro Islands, the Youk-Yeri Shoals, and the Ocean Rock. Full and clear directions, however, for its navigation and the Dardanelles, Sea of Marmora, and Bosphorous, translated from the French of M. Legras, Lieutenant de Vaisseau, are published by order of the Lords Commissioners of the Admiralty. These, with ordinary attention, render the navigation of this channel perfectly safe and simple.

At 10h. a.m. we were abreast of Cape Eski Stamboul, on the coast of Anatolia, where the Tenedos Channel begins. Cape Eski Stamboul is a sand hill of middling height, but easily made out by the Turkish village of that name on the western side of it. The latter is said to stand on the ruins of the ancient Alexandria Troas, where a great many antiquities are yet to be seen, the most remarkable being the remains of a theatre, the ruins of a palace, aqueducts, mineral baths, and a massive wall, the remains of a town founded by Alexander the Great. Steering between the coast of Anatolia on the starboard and the Rabbit Islands and Tenedos on the port hand, passing about two cables' length to the eastward of the great Gadovo Island, we gave the Ocean Rock a good berth, though from a recent survey by Captain Graves, R.N., it is found to have not less than seventeen feet water.

Passing Baseca Bay, in which the allied fleet lay so long pending negociations for the maintenance of peace, but ready to advance up the Bosphorus in the event of war, we hauled up for the Kaumkaleshi, old castle of Asia, which, with the opposite castles of Seddul Babor and Raum Kalill on the European side (the latter being on Cape Hellas) defend the entrance of the strait. When abreast of these formidable obstacles, the blood-red flag with the star and crescent floating on these castles indicates to the visitor that he has entered the Hellespont, and is within the Turkish dominion.

We had not advanced more than a mile up the strait when the wind began to blow furiously, sweeping down from the hills and valleys in heavy gusts, threatening every moment to send the masts over the side. To prevent this state of things we had to close-reef the topsails and reef the foresail. That, with a fore-topmast staysail and the foot of the mizen hauled out, was as much sail as we could safely show to these breezes, to which the winding channel of the strait occasionally exposed us by having to haul close by the wind. A good many vessels under steam and sail were seen lying at the several anchorages; some of our companions from the archipelago were also observed to anchor, but I determined to push through for the Sea of Marmora. One vessel had just driven from her anchors and lay broadside on to the shore with the little sea that was up dashing against her side; but one can hardly conceive that a strong and sound vessel could sustain any serious injury from any sea that could possibly get up in this narrow strip of water. Nevertheless, two or three large vessels were on shore in different parts for several weeks, and abandoned. This strong southerly gale was found to have completely changed the down current in the Dardanelles, for we found little or none even between the new castles, where the strait becomes most contracted; so that our progress was rapid towards Gallipoli, which we had the good fortune to reach by 4h. 30m. p.m., and by dark we had cleared the Dardanelles and were fairly in the Sea of Marmora.

The bay and town of Gallipoli we had just passed has become well known of late, and is familiar to a large portion of our countrymen as the first Turkish ground occupied by the allied armies on their way to the seat of war. It is situated on a promontory at the N.E. or European side of the entrance to the Dardanelles. On the highest point of this promontory is the lighthouse, showing a fixed light (a very bad one) as a guide to the entrance of the strait from the Sea of Marmora. Gallipoli, although the largest and most important town in the Dardanelles, like most other Turkish towns has little to recommend it but its exterior appearance, which vanishes on landing. There is, however, good anchorage in the bay, but the water is deep; to find seventeen fathoms you have to go close in shore. I had to anchor here on my passage down from Constantinople, and had this depth about two-thirds or three-fourths of a cable's length from the shore on the West side of the bay, where, it is said, is the best anchorage.

The great traffic through this strait since the war has made the navigation of the Dardanelles better known than heretofore to a large

portion of our mercantile marine, and it is easily conceived that unless favoured with a fair and commanding breeze, owing to the force of the current almost constantly sweeping through towards the archipelago, that it will be not only tedious but difficult for a sailing vessel to make any way up towards the Sea of Marmora. Here the application of steam-power is seen to the greatest advantage, and in the whole Mediterranean navigation its advantages will no doubt ere long cause it to supersede sailing vessels.

In contemplating the straits of the Dardanelles one cannot but be struck with a feeling of wonder and admiration of this magnificent canal, by which the great Architect of all nature has joined the Mediterranean and Marmora Seas, and that all human attempts in works of a similar description are but miniature attempts at imitation and sink into insignificance when compared with this stupendous work.

The change was rapid and astonishing from the heavy gale, with dark threatening clouds, that hung over the land of Asia, to a moderate breeze and serene sky over the Sea of Marmora, where the gale had not reached. Before midnight we had all the reefs out, with topgallant sails set, and had reached Marmora Island. The sea was smooth and the night so clear that the land on either side was perfectly distinct—the coast of Roumelia on the port side and Marmora Island and Artaki Peninsula on the starboard.

(To be continued.)

JOURNAL OF H.M.S. "RATTLESNAKE," COMMANDER HENRY TROLLOPE, ON HER RECENT VOYAGE TO BEHRING STRAIT.

(Continued from page 472.)

During our stay at Honolulu the trade was generally fresh, particularly in the middle of the day; but in the morning it is fine and calm, and therefore the best time for bringing off provisions, live stock, and water.

We did not go inside the reefs because I thought it would detain us, and also because the small-pox, which had been for some months on the island, was still very prevalent. But if supplies are wanted in any quantity I would strongly recommend a vessel to go into the harbour, for the trade occasionally blows so fresh that communication is very tedious.* We had a distressing proof of this:—our bullocks and pigs, four of the former and twenty-four of the latter, came out to us in an iron skaw and, what with the heat of the sun and the state of

* Between April and May perhaps and October or November this is pretty good advice; but a ship may often be delayed from sailing out again by southerly winds at the other parts of the year. In the morning communication is generally easy.

the animals, I was grieved to find two bullocks and two pigs were dead. We were obliged to veer nearly three hundred fathoms of line and warp her alongside as the breeze was so fresh that three boats could not pull her up. I was much pleased with the conduct of the Contractor, Mr. Maxwell, for his exertions and prompt endeavours to remedy the misfortune as far as might be by replacing the bullocks; but the whole thing was extremely painful and convinced me how much better it would be to go inside the reefs.

We might have had any amount of potatoes;—a native vessel, on finding the quantity we wanted, came out to us and we might have had twenty tons if we had wished. This vessel was from Mowee, but the island potatoes are not by any means equal to the English or those of Chili; they are a waxy, watery sort and will not keep long nor well; nevertheless I am told the whalers manage to keep them two or three months. The most likely plan is to stow them in small casks—cocoa casks will do best,—bore holes through the head so as to permit the air to blow through them, and above everything to endeavour to keep them dry. We did not succeed very well with ours, but as we had so many pigs on board we picked them and so they were not wholly wasted. We paid two dollars a barrel for them.

There was hardly a ship in the harbour. One arrived during our stay—the *Cecrops*, a Danish vessel—from San Francisco (in thirteen days) bound to Hong Kong, with 120 Chinese passengers on board who had found California a losing speculation and were on their return. When I was here last—in October, 1850,—the harbour was like a forest, ninety sail of whalers had put in for refreshments after their northern cruise—the different aspect of the place was in consequence extraordinary.

Fruit and vegetables did not appear particularly plentiful. The small-pox appeared to have paralysed trade; numbers of houses were shut up and the place seemed deserted.

We might have had a better berth, I think, and gone nearer the buoy of the entrance of the harbour's mouth, but there is not a great deal of choice. Bearings of anchorage:—Punch-bowl Flagstaff, N. 24° E.; Fairway Buoy, N. 34° W.; low point of Diamond Point, S. 72° E.

On the morning of July 26th, we hoisted the pinnace and cutter out and went in for two bullocks. It was now quite calm and we brought them off quietly and well. On the previous day it was late in the afternoon ere they came off, and too much was done at once; the skaw was an awkward unwieldy thing to manage against a head sea and fresh breeze.

We sailed at 10h. a.m. with the trade fresh at E.N.E., but it soon died away. At sunset it was quite calm, but in the first watch the breeze sprung up fresh from N.E. and we stood N.N.W. It is always desirable to keep away from the land among islands, although Oahu, from its size, can hardly affect or intercept the trade as Owyhee is said to do.

At noon on the 28th Atooi was indistinctly seen to the southward.

We stood N.W.b.N. and were not much favoured by wind. The trade seemed scant, and on the 29th and 30th, in 20° N., and 160° 30′ W., we only made nineteen miles. It freshened up again on the next day and carried us into 35° N. and 163° 30′ W. on the 3rd of August, when we lost the trade, the wind hauling round to S.E., S.W., and N.W.

Between the 9th and 11th August the water was remarkably smooth. I think I never was so long a time with so little perceptible motion, and we were going at the rate of 160 miles a day. On the 11th, in 40° N. and 170° W., we entered the fogs; with the intermission of occasional gleams of sunshine, they continued, I may say, till we reached Port Clarence. We were almost always in a wet mist, but were fortunate, nevertheless, in getting observations, more particularly on the day before and the day we cut the Aleutian Islands, which we did on the 16th, between Segonam and Amoutka, but without seeing land. We passed several pieces of drift-wood, shoals of barnacles, a few blackfish, the dusky albatross, and other birds.

The currents are given for each day in the tables, but the general set was not of much consequence, only two miles a day—in twenty-seven days 2,800 miles. Although there is said to be no race in the Amoutka Channel, I think I never saw such a confused, broken, tumbling sea. It washed one of the gangways away and came on board several times, washed a cask with a hide soaking in it clean out of the head, and was altogether as unpleasant as can well be imagined. The ship's course, however, was not, or at all events we did not perceive it was, at all influenced by it.

With strong westerly breezes we stood to the northward, but could not weather the Prylieloff Islands. I did not like bearing up and getting on the shoal coast of America and Naniwak, but stood on in thick weather, and was fortunate in getting a sight of St. George. I think the fog always does lift as you near the land, if one is only on the look-out for it, for it is oftentimes only momentary; in this case it was almost as good as the sun to us.

We stood on and at 2h. p.m. the South extreme of St. Paul bore W.$\frac{1}{4}$N., and soon afterwards we saw Bohooi or Sea Otter Island, a high island more distinguishable than St. Paul. We stood to the eastward, sounding in twenty-five fathoms, and rose the long, low, level island of Moyooi, on which a boiling surf was breaking. Altogether, it seemed an ugly place. From the appearance of the water, I imagine a ship ought not needlessly to go within four or five miles, for there was every appearance of shoals and overfalls. The fog was still thick, although it cleared and lightened up a little as we stood away from the land. The little we did see did not give us much opinion of its capabilities for comfort; in fact, it is only visited as the resort of the walrus, the morse, and the sea otter.

We were now in soundings. The wind hauled round from W.S.W. to South and S.E., but the weather continued as thick as ever. The wind hauled round from S.E. to East and E.N.E., and I felt glad that I had not gone much towards the coast of America, as the wind would

now have been against us, whereas we made on Sunday, 21st August, our last day's run, 220 miles in the twenty-four hours.

At noon, Point Spencer bore N. 25° E., forty-one miles, and in the afternoon we made Cape Rodney, but did not succeed in getting into Port Clarence, although I believe we might have done so had we kept a close luff since noon. The weather was still thick and foggy and we could not make sure of the land until 3h. p.m., when King Island bore W.b.S.¼S. During the last twenty-four hours a current had set us N. 21° W., twenty miles, and we were evidently still under its influence. The wind hauled round more to the northward, so that we got under Cape York and found ourselves, at sunset, off that bold coast, about fifteen miles from Cape Spencer.

During the night we worked up under easy sail, and at daylight the following morning—viz, Monday, August 22nd,—saw a sail coming out of Grantley; which, to our great satisfaction, after much doubt, we found to be the *Plover*. A boat soon afterwards pulled out, and I had the pleasure of welcoming Captain Maguire, Dr. Simpson, and Mr. Jago. They were truly glad to see us, for we brought them many things—letters, things from home, etc.,—besides the supplies, of which they were greatly in want, for they were going but ill-provided, the *Amphitrite* having trusted to us to bring everything.

By sending the bullocks on the lower-deck, where they were not felt to be any great inconvenience, we had two kept alive; these were now killed, and would give her people meat for eleven or twelve days. We had, besides, sixteen pigs and vegetables in greater proportion. But our appearance cheered them up and did their minds good, for they were going away somewhat depressed to their dreary winter quarters. The Master of the *Amphitrite*, who saw them just before they started from Grantley and came down with the launch after our arrival to assist in transferring the stores and provisions, said the difference was great, everybody's countenance was beaming with pleasure.

The *Amphitrite* was lying off Grantley Harbour, having met the *Plover* off Cape Lisburne on August 10th. At 8h. p.m. on August 7th the *Plover* got away from Point Barrow, where they had been for eleven months and four days. They had sustained some severe but unavoidable shocks in pushing through the ice, and did not get into open water till 10h. a.m. on the 9th of August, close in shore in Peard Bay. The very fineness of the season—a curious thing to complain of in this climate—was the cause of the ice continuing to be packed for so long on Point Barrow and the coast between it and Cape Smyth. But Captain Maguire's journal enters so fully into the subject that I can only refer to it and say that I am sure it will be found most interesting to any one employed in these seas.

After supplying the *Plover* with all she could or would take, she sailed for Point Barrow at 3h. a.m. on Wednesday, 24th August—only three days later than she did last year. I am in great hopes that her arrival will be equally satisfactory.

We remained one day at Point Spencer to collect drift wood, of

which we brought up a deck cargo, and then went off Grantley Harbour to lighten the ship and carry her inside. This I very much regret to say we were unable to do. After carefully buoying and sounding the channel, and finding, as we though seventeen feet and sixteen feet six inches in every part of the narrow and intricate channel, we made our first attempt on Saturday, 27th August. The wind was from N.N.W., moderate and fine. The water was still rising, but just at the narrowest part of the channel we took the ground in fifteen feet; and after trying in vain, and lightening her of a chain cable, to force her over the ridge on which she appeared to be, found it was useless to make any more endeavours in that direction at present, and therefore furled sails and laid two anchors out astern—a bower and a 20cwt.—and brought a taut strain on the cables. We then commenced lightening the ship, and after taking out eighty tons, at 1h. p.m. on the following day, she came off almost of her own accord—in fact she floated off and we merely had to warp her into deep water.

The ebb tide sets in the channel with considerable strength—upwards of two knots an hour—but the rise and fall is not in comparison; it is, in fact, very irregular. South and S.W. winds bodily raise the water, and North and N.E. the reverse. The bottom of the channel goes in ridges, so that it might be possible to carry a line of soundings in of seventeen feet and sixteen feet six inches, and then come out again over the same ground and have only fifteen or fourteen; and I feel sure so narrow is the channel that unless extreme caution was used thirteen feet might be found where seventeen were supposed to be.

We kept the ship light and continued to get more out of her, intending to make a fresh attempt; but it came on to blow very fresh from S.W., which soon raised a bubble of a sea, preventing our landing on the Grantley South spit, and also rendering it unadvisable to get any more dry provisions out.

This southerly wind had the effect of raising the water considerably, so that on Thursday, 1st September, after again sounding the channel, I felt sanguine we should be able to carry her in. We used more caution than on the previous occasion and determined to do it by warping, and also had hawsers ahead and astern. But, although there was certainly more water than on the 27th of August, we again stuck fast in less than fourteen feet six inches, and were obliged to haul her off. The tide beginning to fall rendered it impossible to attempt it again—for that day at all events. Since then a continual drain of ebb has gone past the ship.

By watching the tide on shore I find the rise to be about fifteen inches in a tide; but this is so much influenced by the winds that it can hardly be any criterion. There was certainly more water in the harbour when we made the last attempt—in fact, this was evident to the eye, the water coming much nearer to some native houses on the spit.

In sounding the channel, which I did many times, being anxious to get the ship in, I have come to the conclusion that, although the sheet

of water called Grantley Harbour looks very well on paper, it is not adapted for any vessel drawing more than thirteen feet six inches or fourteen feet;—a ship even of this draught might get on shore going in. It might indeed be possible to get everything out of the ship and so get her in, but it would be at great risk of exposure to the stores and provisions. With the least wind from South such a bubble of a sea gets up that landing anything like bread, flour, or slops is out of the question. In fact, although we did not attempt the bread, I felt considerable anxiety even with the powerful assistance of the *Amphitrite's* boats; and with only our own two boats in the spring, when of course we should require the ship equally light, I think it unnecessary risking our departure for Point Barrow, to approach as near as we can with safety to which may be essential to the preservation of the crew of the *Plover*.

From all I can learn about the matter, the ice in Port Clarence is not of the formidable nature that will hurt a ship. It would be more convenient to be in Grantley Harbour, particularly at this time of year and when the ice is gone again, but we have to collect wood to build the house, which can be done with greater advantage by the ship being outside, as we can go in her to Point Jackson and do more in one day than the boats could do in three.

THE ABORIGINES OF AUSTRALIA.—*By James Browne, Toronto Read before the Canadian Institute, February 16th*, 1856.

(Continued from p. 493.)

On the approach of winter the tribes draw off from the coast into the interior of the country, where, encamped in the depth of the forest, they lie sheltered from the severe storms with which the Australian shores are then visited. The fact of the kangaroo, their principal source of sustenance also seeking the shelter of the interior at this season, has, of course, great influence in attracting them from the coast. I have already endeavored to describe their mode of capturing this animal when the tribes are mustered in force. When hunting individually, which is the ordinary method, the hunter sallies forth alone, without even a dog, and armed with only one or two spears and his wamera. He is not long in coming upon the track of the game he is seeking. This he follows up, sometimes for miles, with a sharpness of vision and noiselessness of movement which to the white observer is extraordinary; but he is now gaining on the prize, and symptoms of its close vicinity are evident; with breathless caution and with spear poised, he gradually advances upon his victim, taking advantage of every stump or bush to cover his approach; at length a glimpse of the game is gained, which may be quietly grazing, or perchance enjoying a siesta under cover of some thicket unconscious of danger; a

sharp and whizzing sound in the air is all the notice it gets, and the next moment it lies transfixed with the spear.

The clothing of these people consists of but one garment, a cloak made of the skins of the kangaroo. This cloak, which is worn by both sexes, they contrive to make serve for all weathers and seasons. The usual manner of wearing it is with the fur next to the body; but when exposed to heavy rains it is reversed and the fur turned outside in order to allow the wet to run off without penetrating the skin. During the warmer summer months and when roving in the woods away from the settlements, even this is generally dispensed with; they then wander about unencumbered and free of all restraint as far as artificial covering is concerned, and but seldom use their cloak except merely to wrap about them when sleeping around their fires, to protect them from the dew and cold night air.

The men also wear round their waists, under the cloak, a fine string made of the fur of the opossum, about as thick as common grey worsted, which it much resembles in appearance. This is wound about them in innumerable folds, until it forms a belt about as thick as a man's wrist. When suffering from want of food, which is often the case, this belt is drawn tightly round the body, and by thus compressing the stomach, it tends to alleviate, for a time, the cravings of hunger. It also serves as a depot for their kilies, stone tomakawks, knives, or anything else that they may wish to carry about them.

On my first landing amongst the savages of Australia on the beach at Albany, I observed that some of the men had small bones, or pieces of wood, passed through a hole in the cartilage of the nose. These I afterwards learned were persons of some consideration in the tribe, men of distinction, who sported this conspicuous badge with no small degree of ostentation. The hole is pierced through the nose when the individual is young, and for the following purpose. The tribe wish to communicate with the neighbouring tribes on some particular subject, or to send a complimentary message of peace and goodwill to those around them. The chosen messenger is a boy between twelve and fifteen years of age; but before starting on his embassage, it is necessary that the individual thus honoured undergo the operation of having his nose bored. This is performed with a small bone of the kangaroo, sharpened and made almost red hot, which being forced through the cartilage just below the nostrils, is there allowed to remain until the wound heals. But in the meantime the boy proceeds on his mission, and as long as the wound remains unhealed, his person is held sacred, and he is treated with the greatest friendship and respect wherever he makes his appearance. On starting he is accompanied by one or two of his relatives or friends as far as the next tribe, in whose charge he is left;—remaining some short time with these, he is passed on to the next tribe in the same way; and so on until all the tribes have been visited, when he is returned to his people in like manner from tribe to tribe. By this time the hole in the nose is pretty well healed, but the bone, or something else of the kind, continues to be worn by way of ornament and as a mark of distinguished services. The same descrip-

tion of ornament is mentioned by Cook as existing among the South Sea Islanders, and to it our sailors gave the not inappropriate designation of "spritsail-yard." It would appear, indeed, that this barbarous fashion of disfiguring the body, in order to decorate it in some such way, is common to many nations. The aborigines of Australia, and the South Sea Islanders have their "spritsail-yard," others have their nose-ring, while the negress of Africa, and the refined and intellectual female of Europe, have their ears pierced to receive the not less becoming and useful ear-ring. But whether it be the bone in the nose of the Australian, or the ring in the ear of the Englishwoman, the custom is the same, and equally civilized or equally barbarous.

In speaking of ornamentation I have to mention another and no less barbarous method of the Australians for beautifying their persons. I allude to the custom amongst the men of lacerating their bodies in order to produce long welts or protusions of the skin. This is done with a sharp stone or flint, and the incisions are made on the breast, shoulders, and upper part of the arms; they vary in length and thickness, some being about an inch long and raised the thickness of a straw, others perhaps three inches in length and as thick as one's finger. The operation to produce these marks consists simply in cutting the part quickly but slightly with the sharp point of the stone; the blood is allowed to dry on the wound, but the welts soon appear, and never diminish in size through life.

From the scantiness of an Australian's wardrobe, he is prevented from exhibiting his taste or expending his vanity in a variety of custume, he consequently falls back to the one course left open to him, that of painting his body and decorating his head. The greater part of the time he devotes to his toilet is altogether taken up in plastering his uncut hair with a thick cement made of red ocre and grease. A diversity of style is adopted in its dressing; some have the head covered with quantities of small and shining red ringlets, some have it bound around with cord, and then covered with a solid mass of stiff and clay-like pomatum, giving the head quite an Asiatic appearance; this is generally surmounted by a bunch of feathers from the emu or cockatoo, or by the tail of the wild dog, and sometimes encircled with a wreath of flowers. Others, again, have innumerable small lumps of clay appended to the ends of the hair, which keep up a rattling accompaniment to the movements of the wearer.

But of all outward adornments the beard is the one most coveted and prized. Indeed, this appendage to the visage appears to be a youthful Australian's highest ambition, and its primary symptoms are regarded by each stripling much in the same light as, amongst us, the schoolboy looks on his assumed induction to the honours and privileges of manhood. To the Australian, throughout life, the beard is an object of great pride and care, and the affectionate manner in which it is ever caressed and stroked, evinces the satisfaction felt in its bushy charms. Nor is it merely as an adornment to the outward man that a beard is so much an object of solicitude; there are also certain rights attached to it, not the least important of which is, that no man can get

married until in the possession of one, nor is he allowed to kill an emu. In their combats, too, no inconsiderable part is assigned to the beard in producing an effect, and it is next to impessible to make an impression in an affair of this kind without such an accompaniment; then, with its long ends gathered up into the mouth, and there held firmly between the lips—with feet stamping, eyes starting from the sockets, and every muscle of the body quivering with savage rage, it may easily be imagined that the whole appearance of the Australian warrior is ferocious in the extreme.

Thus far I have attempted to give some slight idea of the men of this race. It is now time that something were said of the other sex; and I wish much it were in my power to draw a more pleasing picture of this portion of the Australian population. No where else is it possible to meet with more miserable and degraded specimens of humanity than the women of Australia. Naturally small in stature, from starvation their bodies and limbs appear shrunken to a degree sometimes frightful to contemplate; and were it not for the glare of the eye, the generality of them would look more like mummied skeletons, from which the soul had parted company for months, than beings possessed of life.

Every bone in the frame is visible—the shapeless arms and legs seemingly destitute of muscle—the sunken eye and hollow cheek—all tend to form a picture of wretchedness which beggars description. And, as if their natural unsightliness were not sufficiently startling, their faces, and heads, from which the hair is cut quite close, are generally covered with scars and scratches, either the tokens of the chastisement of an enraged spouse, or the effects of violence committed on themselves in manifestation of their sorrow for the untimely departure of a child, or some one of their numerous relations or friends; and when, upon these still bleeding wounds, chalk and charcoal are smeared, it can readily be imagined how revolting is the spectacle presented to view.

The dress of the female, like that of the men, consists solely of a kangaroo skin cloak; but to this is added a large bag, made of the same material, and which hangs at the back by a strap crossing the shoulders. In this bag is generally deposited the smallest child, along with any other portable articles it can hold. For the purpose of digging up roots, upon which they in great measure subsist, the women are armed with a long stout stick, formed into a blunt point at one end. Whatever labour has to be performed in their domestic arrangements devolves entirely upon them. They are the architects and artificers in erecting the family mansion. In their journeyings they carry the extra spears and other weapons of the men, in addition generally to one or two children, and perhaps also a young dog. In this plight they are to be seen toiling along under a load seemingly sufficient to bring the frail bodies of the unfortunate creatures to the ground.

Polygamy to the fullest extent is an Australian institution; the man is allowed to have as many wives as he can manage to take care of, or can possibly beg, steal, or otherwise obtain. There is nothing like a

marriage ceremony in any case, a simple bestowal on the part of the girl's father, or other guardian, concludes the transaction. As soon as a female child is born, nay, sometimes for years before that event, she is promised to some one of the tribe, without reference to his age, although his years may exceed those of her own father. She remains with her parents until old enough to be able, in some manner, to shift for herself, when she is transferred to the care of her future husband, under whose protection she is then brought up. But as this, in most cases, is too long a process to go through, the method usually adopted by the Australian native to obtain wives is that of seizing the first favourable opportunity of running off with those of another. It is absolutely necessary to the Australian that the stock of wives on hand should always be considerable, as the whole domestic labour devolves on them, and consequently on their number depend the comforts of his wigwam and fire. The practice of eloping with each other's wives, is so much a matter of course that it furnishes an additional reason for maintaining a large female establishment in order to provide against these frequent contingencies, so that one or two of the number can abscond without any great degree of anxiety or discomfort being experienced by the deserted one, until the number can again be completed by his helping himself in like manner from the establishment of some of his neighbours.

But although the women are treated by the men with savage brutality, although from the birth to the grave theirs is a life of misery and privation, they, nevertheless, are not deficient in those keen feelings which are the characteristics of the sex in all lands. Their affections for their offspring is strikingly evident on all occasions, and it is sometimes painful to hear the wailings of the bereaved mother as through the long night she sorrows over the loss of her infant. Nor are these feelings less intense in other respects. One might imagine, to judge at least from the manner in which the poor wretches are neglected by their lords, that if anything like feeling existed on their parts for their partners, it would be that of supreme indifference. The reverse, however, is the case, and in those general mêlées, which so often disturb the peace of the encampment, they are not slow in entering into the spirit of the affair, and raising their voices to vindicate the honour of their belligerent spouses. Absurd to a degree is a scene of this kind. Sitting around their fires, within sight of the combatants, they gradually join in the excitement around them; tauntingly and sneeringly they speak of the insignificant deeds, and contemptible efforts of the opponents of their respective husbands. Suddenly one will spring to her feet, and begin to strut up and down, flourishing her long stick over her head, her cloak thrown back and fluttering out like the tail of an angry cat; in this belligerent state she continues to move about, singing at the same time some sarcastic and insulting words. Irritated and excited by such proceedings, another now starts up with a bound, and in like manner commences to strut, sing, and flourish her stick,—and thus working themselves up to the required pitch of anger, they gradually approach each other until

within striking range, when the war of woods being changed for a more forcible one of sticks, the engagement becomes warm, and broken heads and bloody faces are the result.

Such is the Australian in life, let us now reverse the picture and view him in death.

In the midst of a tall forest, some four or five wigwams are clustered together, the thread-like wreaths of smoke ascending from the small fires alone indicating the spot. In one of these huts lies the emaciated form of a savage, the limbs drawn up to the smallest possible compass under the scanty cloak. Sitting around are the wives and children of the dying man, watching in silence for death to take possession of his prize. Other women belonging to the camp are also sitting about. One or two men alone remain; these are perhaps sleeping, or quietly sharpening their spears. All is silent, the hard breathing and the convulsive sounds in the throat of the dying man are alone audible, even these gradually cease and the soul has fled.

As soon as the fact is known the wives and children and all those gathered round the body set up a dreadful and startling cry. The women in particular send up a most piteous lamentation, and tear their heads and faces until they are frightfully smeared and disfigured with blood. The male relatives of the deceased also scratch their noses, but do not mutilate themselves to the same extent as the women. But no time is lost in making preparations for the interment of the corpse. On the spot where he drew his last breath is the grave sunk, a shallow and circular hole scooped out, barely deep enough to keep the body below the level of the earth; into this the still warm corpse, wrapped in its cloak, and with the knees bent up to the mouth, is placed, lying on its side; the earth is then thrown lightly and scantily over it; that thrown over the corpse, however, is not the earth which has been scooped out of the grave, for that is allowed to remain in a heap on one side, but is cut away from the opposite side. The spear, wamera, and other weapons lately used by the deceased, are now placed upon the grave, and after making a small fire near the feet, the grave and camp are deserted by all, and, far removed from the spot, a new encampment is formed, from which the mournful wailings of the women may be heard floating down on the wind night after night.

On the evening of the death, the wives and relatives of the deceased smear the scars on their heads and faces with white chalk, and on the following day with charcoal, after that again with white chalk, which is allowed to remain on until the wounds are healed. After death the name of the departed is never uttered, and should there be another native of the same name, he immediately assumes a new one.

It would appear, however, that the mode of interment differs in some cases; for being on one occasion with an exploring party some ninety miles from the settlement, we came upon three or four native graves, in which it was evident that the bodies had been laid at full length as the graves were long and narrow, presenting indeed much the appearance of our own.

In a letter received from a brother at Perth on the Swan River, in describing the aborigines of that part of the country, he gives the following account of a death scene:—

"Understanding that the native Wattup had died from the effects of a spear wound in the thigh, which he had received about five weeks before, I went up to see the body. I was directed to the spot by the cries of the women, and the scene that presented itself there was very striking, and differing from any that you ever witnessed at King George Sound. The corpse was stretched out under a large gum tree, and closely around it, an old man and a number of women were crouched on their heels. At times they bent over the body, uttering a mournful chant, and addressing it, apparently, in affectionate terms; then again they would burst forth in loud lamentations, tearing their faces and hair, and exhibiting every token of the most violent sorrow; maintaining, however, throughout a regular cadence. Three or four yards from these, sat an old man, probably the father of the deceased, resting his head on his knees in silence. His wife sat beside him with her arms thrown over his shoulders, crying most piteously, and calling (as I understood it) on the dead man to return to her. One or two elderly men stood at a short distance leaning on their spears, attentively watching the proceedings. No other men were present but those I have mentioned; the rest appeared to be collected at the foot of Mount Eliza, where they were holding a noisy deliberation, concerning, I suppose some scheme of revenge. I had not time to remain until the termination of the ceremony, but just as I was leaving, two men came up from Mount Eliza, armed with their spears, and evidently prepared for some conflict,—after exchanging a few words, the mourning party broke up—the men going off to the council of war, leaving the corpse in charge of the females. In the evening a number of the natives bivouacked on our premises, where they had a Corroberry."

Of the many strange facts that come before us in studying this people, perhaps none is more extraordinary than the paucity of weapons and implements in use amongst them; and still more so is the fact that they are probably the only savages on the face of the earth, inhabiting the sea coasts, who have no means of aquatic transport, and are unacquainted with the art of swimming. When we examine their coast and find it dotted with innumerable islands or indented with inlets swarming with fish, we are more struck with this peculiar feature in the habits of the aborigines of the western, southern, and eastern coasts of Australia. Turn in what direction we will, we find all other savage people excelling in these arts. The New Zealander and the South Sea Islander are noted for the beauty and size of their war canoes; and men, women, and children, appear as much at home when diving and swimming about in the sea as any seal or walrus. Again, the Indians of this vast continent, from the Arctic Regions to Florida, are skilful and daring navigators in their bark and other canoes. Let us even visit the northern coast of Australia itself, and we find the aborigines,

much more savage it is true than those I am describing, but at the same time furnished with canoes and catamarans, or sallying forth even upon rough logs of wood, and quite indifferent whether their bark carries them through the surf, or parts company with them in the attempt, so fearless and expert are they in the water. How is it, then, that those inhabiting the opposite coasts should be so deficient in arts that instinct itself should force them to acquire? This peculiar feature in their economy, strange as it may appear, will help us, I think, to trace their origin, and that too to a people eminently maritime in their habits. I allude to the Malays.

The proximity of the Malay Islands, and the fact of immense fleets of Malay prows having visited the Northern coast of Australia annually from time immemorial, in search of the Trepang for the Chinese market, will go far to bear out this opinion. It may not be improbable, therefore, that some of these people were thrown by shipwreck, or other accident, on this coast, or upon one of the islands on the other side of Torres Straits, and that thus the North was the first portion of Australia peopled. The race, gradually increasing, spread through the interior of this vast continent. In their approach to the western and southern shores they necessarily passed over an extensive inland region, without doubt perfectly destitute of rivers or lakes of any magnitude. When, therefore, ages after, they had extended to the opposite coasts, they had lost the knowledge of every art connected with water, and were unable to make use of or appreciate the advantages which lay before them on the sea shore. Whilst upon this subject I may mention that I have seen, in the settlement of Albany, natives who had never before gazed on the sea. In thus treating the subject, however, I am merely venturing an opinion; it may be correct, or the reverse.

The extent of the knowledge of the arts and sciences existing amongst the Australians may be guaged by their weapons and implements. These are the spear, the wamera or throwing stick, and the kilee or boomerang; a stone hammer or tomahawk, a short and heavy club or stick, and a rude description of stone-edged knife.

The spear is merely a straight rod some nine feet in length, as thick as an ordinary walking-stick, rather smaller at one end than the other. The sharp and needle-like point, at the heaviest end, is hardened in the fire. Rather more than an inch from the point of some is fixed a neat wooden barb of about two inches in length. Others again have small and sharp pieces of quartz, fastened in gum, extending some six or eight inches from the point. This latter description of spear is dreaded by the natives much more than the barbed one, as its sharp and uneven edge lacerates the flesh desperately, besides leaving pieces of the stone in the wound. The wound inflicted by the barbed spear is hardly less severe, and, unless the spear-head be driven directly through the part struck, is dangerous in the extreme, for the barb once getting buried in the flesh, it is impossible to withdraw it, and the only chance of extrication is to force the whole through the limb: a process, however painful, by no means uncommon.

The trees from which the spears are made, seldom exceed the thickness required, and are found growing in great abundance in the swamps and marshy grounds; the wood is of a hard and dark description, and after being in use for some time assumes the appearance of mahogany.

The spear is thrown by means of the wamera or throwing-stick, which is a flat piece of wood hardly thicker than the cover of a book, some two feet in length, about four inches in breadth in the centre, and gradually decreasing in width, and running to a point at either extremity. At the end held in the hand is a lump of hard resinous substance, obtained from the grass-tree, which prevents the wamera slipping from the grasp when throwing from it the spear; at the other point is fixed a little piece of stick, about an inch in length, forming a sort of hook, and which fits into a shallow hole at the small end of the spear. When fixed for throwing, the spear runs along the length of the wamera, and passes through the fore-finger and thumb, which, from the manner in which the wamera is held, are left free for that purpose. The spear is therefore hurled from the wamera somewhat on the same principle as a stone from a sling, and is sent with much greater force than if merely thrown from the hand. In the use of these weapons the natives exhibit surprising dexterity; it is seldom indeed they fail to transfix their object within a distance of fifty or sixty yards. The wamera is made of a very hard wood, a coarse grained and heavy mahogany, which generally obtains a good polish after being a short time in use.

The wamera never leaves the hand of the native; when his spears are exhausted he makes use of it in close combat, as a sword or battle-axe, and its sharp and hard edges lay open gashes in the heads of the combatants hardly less severe than those produced by the sabre of a heavy dragoon.

But of all weapons the Australian kilee or boomerang is the most wonderful. Its form is nearly that of a crescent. It is made from the crooked limb of a tree curved naturally in the form required,—this is nicely scraped down, and made flat on one side and slightly convex on the other; its size is about fifteen inches from point to point, and nearly two inches in width. Its course through the air is eccentric and very varied, greatly depending upon the skill with which it is thrown. Some have more command over the weapon than others, and an experienced thrower can almost make it take any direction he may please. He will throw it with all his force against the ground, some ten or twelve feet in front of him, when it will rebound, and taking a circular course, will fall at an immense distance to his right or left. Again, he will dash it to the earth in the same manner, and it will ascend from it with the speed of an arrow, until almost out of sight, when, remaining poised some instants in the air, it will return with fearful velocity and fall probably some distance behind the thrower. It is used thus in killing birds. For instance; a flight of cockatoos is seen approaching; the native waits patiently until the birds are nearly over his head, he throws the kilee in the way I have described in

front of the flight; the kilee returning, after having risen to a certain height, meets the birds in their course and thus knocks several of them down.

The boomerang is the most dangerous weapon used by the Australian. Its course through the air is so swift that it is with difficulty one can follow it with the eye, and its ever varying movements render it nearly impossible to get out of its way;—it is the only weapon that the natives themselves find a difficulty in avoiding; those who fancy themselves quite safe, and clear of its manœuvres, are not unfrequently the ones hit, and it is no unusual thing to see the native, from whose hands the weapon has sped, obliged to throw himself on the ground to avoid being struck by it on its return.

The tomahawk or hammer is a rude and shapeless piece of stone, fastened on in the centre with the gum of the grass-tree to a slight wooden handle; its principal use is to notch the smooth trunks of trees, just sufficient to insert the great toe in, to enable the native to ascend after the opossum and other small animals.

The only other article is a short heavy stick, rather thicker at one end than the other, and about eighteen inches in length; it is used for throwing at short distances, and it also forms a weapon by no means contemptible when wielded in the hand as a club.

The quickness of vision and dexterity exhibited by the Australian savage in avoiding the different weapons, are truly astonishing. This is particularly the case as regards the spear; so much so, indeed, that it seldom occurs that one is struck by it, if he be at all prepared for the assault. Five or six spears will be thrown at a man in rapid succession, and, without moving from the spot, he will escape them all by a slight bend of the body. From his childhood, practising with the spear and boomerang is the principal pastime of the Australian, and for hours together mere infants may be seen amusing themselves by throwing their tiny weapons at each other.

The Pacific Ocean Considered with Reference to the Wants of Seamen.

(Continued from page 481.)

In concluding our observations on the zone of the trade winds in the Pacific, some remarks appear necessary on the climate of the Sandwich Islands, and particularly an abstract of those made by the learned Dr. Rooke on the winds of the year 1837, and parts of 1838 and 1839, at Honolulu. This place is very important from its solitary position in the midst of the Pacific Ocean and its vicinity to the polar limit of the N.E. trade.

The climate of these islands much resembles that of the Antilles. The N.E. trade winds generally prevail there. In December the

thermometer falls to 22° cent; in August and September it rises to 26·7°; the mean temperature for 1838 was 25° cent. Cook says that in December the summits of the mountains are covered with snow. Towards the end of November and December the land breezes blow for several days and then abundance of rain falls. In 1838 the quantity of rain measured was 0·52 metres.

From December to March, in the interior, the rains are more abundant than in the Antilles all the time, yet the weather is fine on the coast. The wind is constantly then between E.S.E. and North, varying a short time a few points to the northward and southward. During these same months the land and sea breezes succeed without interruption day and night.

These islands, unlike the Antilles, are free from winter or stormy season with hard gales.

The following table is deduced from Dr. Rooke's observations:—

Year.	Days of Trade Wind.	Days of Southrly Winds.	Days of Variable Winds.	Fine Days.	Days of Changbl. Weather.	Remarks.
1837	295	44	26	285	43	March winds most variable.
1838 Jan. to June	137	24	20			Ditto.
1839 Jan. to July	159	38	15	168	20	Jan. winds most variable.

North Pacific Ocean.—The region that we have named the North Pacific Ocean is comprised, as already said, between Behring Strait and the tropic of Cancer. Two zones must be recognized in this region—the temperate and the frigid zones, and we will now refer to the temperate zone.

Temperate Zone.—In the temperate zone of the North Pacific Ocean, comprised between the parallel of 50° N. lat. and that of 30°, the wind in all the seasons blows from every quarter. It is observed, however, that from the month of May to October, that is during the summer months, the prevailing winds are from West to S.W.; and that from November to April the prevailing winds are from West to N.W. Thus in the course of the year West winds, varying from N.W. to S.W. are the prevailing winds of this zone.

Some navigators still assert that from the coasts of Asia to the middle of Behring Strait the winds are generally from W.S.W., and that they become W.N.W. and N.W. in the eastern part of this strait. However this may be, we find an incontestible proof of the prevalence of West winds in this zone in the voyages from Manila to Acapulco, made every year at the same time by the Spanish galleons. These vessels sailed regularly from the Philippines in the month of

July, taking the route between the parallels of 34° and 37° N.,—their passage being from ninety to a hundred days over a space of 2,400 leagues.

Further to the northward, on the parallel of 40° N., N.E. gales are common. However, Anson said that between this last parallel and that of 50° N., during the summer months westerly winds are more regular than between those of 30° and 40°, and much more so than the trade winds in the adjoining zone. The winds to which we are alluding assume nothing of the characters of monsoons, but blow at any period. The S.E. winds blow also very frequently during the winter. Sometimes N.W. winds mostly prevail during the summer.

In this region S.E. winds in all seasons are always accompanied by bad weather, rain, or fog. N.W. winds, on the contrary, bring fine weather, generally dry and fresh. With the wind from W.S.W., the weather is generally gloomy and rainy. The winds from South to East are in general very hard; and with the wind at East on the N.W. coast of America, for instance, it often freshens up to a gale; during which it changes to E.S.E. and S.E., hauling round to West, but bringing fine weather.

Frigid Zone.—The frigid zone of the North Pacific Ocean, has been little visited and the remarks consequently are few. Northward of the parallel of 60° N. the breadth of the ocean diminishes rapidly and it terminates in a basin of small extent. It is only during the fine season that these latitudes have been explored. In Behring Strait the wind is generally either from North or South, at once accounted for by the formation of the coast, for in all straits bounded on both sides by elevated ground the current of the wind generally assumes the direction of the channel.

South of this strait the winds are very variable, and it has been found that southerly winds were the most frequent. These variations are easily explained. The basin of this sea is inclosed by two continents, the mountains of which are always covered with snow, and therefore it must be subject to constant changes of temperature, which necessarily act on the currents of air. Observations nevertheless prove that South and S.W. winds prevail about the Aleutian Islands. We shall return to this subject in referring to the prevailing winds along the coast of the Pacific Ocean as we make the tour of this great sea.

The region that we have considered the South Pacific Ocean extends from the tropic of Capricorn to the Antarctic circle. Let us divide this, like the former, into two zones: the one temperate, from the tropic to the parallel of 50° S., the other the frigid, between the last parallel and the antarctic circle.

In the temperate zone of the South Pacific Ocean, the winds, during all seasons, blow from every quarter. Nevertheless, in this region, as in the corresponding one of the Northern Pacific, the prevailing winds are those from West, varying to N.W. and S.W. These winds sometimes extend to the tropic, and reach as far as the parallel of 20° S. principally in the western part of the Pacific Ocean. The westerly

winds, varying to N.W., prevail during the summer; and those from West to W.S.W. and S.W. during the winter. The N.W. winds are generally fresh and sometimes very strong. The S.W. winds shift suddenly to the southward and blow quite as strongly, bringing rain. Sometimes, again, we find easterly winds, varying to S.E. and becoming steady, especially in June and July.

N.W. winds, even when they blow hard, are accompanied by fine weather. The rule, however, is subject to exceptions, particularly near the islands of this region. In their neighbourhood S.W. and S.E. winds are found; the former violent and accompanied by rain, the latter in general moderate but yet with rain. Thus, in the vicinity of New Zealand, where N.W. winds prevail, they sometimes bring storms, particularly in February; in March and April the weather is very rainy; in May, westerly winds with rain; in October, strong breezes from South; and in November N.W. winds prevail, accompanied by squalls.

In the frigid zone, which can only be explored during the summer, it is not easy to say which are the prevailing winds. From November to March N.W. winds were those that Cook principally found between the parallels of 35° and 67° S. But in his exploration of the antarctic regions he tarried long in the temperate region just alluded to. His observation therefore is not conclusive. He remarks that in November and December he had no stormy weather, nor any strong wind.

In the voyage to the South Pole made by the *Astrolabe*, under the command of Admiral Dumont D'Urville, we find that during the time she was near the parallel of 60° S. the winds varied much during the months of December and January in the following proportion:—Westerly winds, varying from W.N.W. to S.S.W., twelve days; easterly winds, varying from N.E. to S.S.E., twelve days; winds from South to S.S.W., two days. The S.E. winds are those that bring stormy weather, and generally these winds are very strong. The others were moderate, except those from N.E., which were also strong.

To the northward of the parallel of 60° S., the prevailing winds were principally from West, varying from N.W. to S.W., during the time that the *Astrolabe* was in these latitudes, in January, February, and March 1838 and in December and January 1840. In the two surveys of these regions that were made in 1839 and 1840 by the American Captain Wilkes, the following tabular statement of the winds was made:—North winds, seven days; South winds, five days; East winds, varying from N.E. to S.E., thirty-eight days; West winds, varying from N.W. to S.W., forty days. These observations were made in the months of January, February, March, and April.

To the observations of Admiral Dumont D'Urville and Captain Wilkes we may add those of Sir James Ross, who went as far in the frigid zone of the Pacific Ocean as the meridian of 160° 15′ W., and to the parallel of 77° 49′ S. These observations comprise an interval of three months and seventeen days. December, 1841:—East winds,

varying from N.N.E. to S.S.E., twelve days; West winds, two days; North winds, two days; only light or moderate breezes. January, 1842:—Easterly or N.N.E. to S.S.E. fifteen and a half days; westerly or N.N.W. to S.S.W. twelve and a half days; South winds, two days; North winds, one day. Squalls from N.W., one day; strong breezes from South, two days; the others fresh or moderate. February:—Easterly or N.N.E. to S.S.E., fourteen days; westerly or N.N.W. to S.S.W., eleven and a half days; North winds, two days; South winds half a day. Strong breezes from N.N.E. half a day; fresh breezes from S.W., one day; the others fresh or moderate. March:—Easterly or N.N.E. to S.S.E., five days; westerly or N.N.W. to S.S.W., twenty and a half days; North winds, one day; South winds four and a half days. Strong breezes from N.N.E., half a day; fresh breezes from S.W., one day; the other winds strong and fresh, sometimes moderate.

These observations point to the conclusion that in the frigid zone of the South Pacific Ocean, during the summer, the East and West winds blow in nearly equal proportion, but it must not be forgotten that as yet very few observations have been made.

To complete our view of the winds of the Pacific Ocean it remains for us to add the observations made on those blowing along the coasts —winds that are very important to navigation; and thus, although generalizing as much as possible, it will be still necessary to go into details in certain localities. We will commence with the western coast of America.

South Shetland Islands.—The most dangerous winds in the South Shetland Group are those from East, which blow with great violence and are accompanied by snow. In 1820—22, four-fifths of the squalls in these islands were from East. In the fine weather the N.E. and S.W. winds were about equal, remaining steady but a short time. The S.W. winds brought a clear sky, they dispersed fogs or snow that came with N.W. winds. Squalls from N.W. are rare, but are sometimes very heavy. Robert Fildes says that land winds are very rare, and I have observed that these winds are generally light and accompanied by cloudy weather. He also says that in doubling Cape Horn from the eastward, on finding contrary winds, instead of beating to windward with whatever sail can be carried, a ship should stand to the southward and will be certain of soon finding easterly winds, with which she may make westing enough to double the Cape, or at least to take her into S.W. winds and clear to the westward of Terra del Fuego.

Winds in the Latitude of Cape Horn.—Near Cape Horn westerly winds prevail during the greater part of the year. Those from the eastward only blow during winter months, when they are sometimes very strong, but they are rarely to be found during the summer. December, January, and February, which are the summer months, have some fine days, but the westerly winds which then prevail are heavy and attended by much rain. March is the worst month of the year,

as the equinoxial months generally are throughout the world, and brings tempestuous weather, but without so much rain as in the summer months. April, May, and June are the finest months, although then the weather is sometimes disturbed by breezes. In these months the East winds are most frequent, attended with fine weather. June and July are much alike, but in July easterly winds are most frequent. August, September, and October are nearly the worst months in the year, excepting March; westerly winds prevail, nearly always blowing hard, and accompanied by rain, snow, and perhaps cold, frosty weather. The following observations supply the character of these winds.

Those from North always commence with a moderate breeze and gloomy weather, the sky is overcast, and the wind East. These northerly winds are generally accompanied by slight rain. In proportion as they freshen, they gradually take a westerly direction, and blow with great force between North and N.W. The sky is then laden with heavy clouds, the weather dark and gloomy, and rain falls in great abundance. When the violence of the westerly wind is over, which is after an interval of twelve or fifteen hours—and even then it may be blowing fresh from this quarter,—the wind changes to S.W. and blows with as much force as before. This wind drives away all clouds, and a few hours after it has commenced the weather becomes quite clear, with occasional squalls. This S.W. wind lasts generally for several days, blowing hard, but it then moderates and is followed by two or three days of fine weather.

Northerly winds are those of summer, and it always happens that these northerly winds shift to the southward by westerly winds during this season, which would not merit the name of summer if the days were not longer and the temperature somewhat higher than at any other time of year. At this season the rains are heavier and the winds stronger than in the winter. Easterly winds are always light and bring fine weather as soon as they set in; but as they gradually increase in force, the weather becomes cloudy. They gradually go down, sometimes after having blown strong, and at other times they suddenly change and blow from another quarter. It has been observed that bad weather never comes on suddenly from the eastward, and that S.W. and South winds never shift suddenly to northward; but southerly and S.W. winds, on the contrary, get up on a sudden and blow hard.

(To be continued.)

The Spherograph and Great Circle Sailing.

Sir,—In kindly permitted continuation, I beg to place before your nautical readers, as concisely as possible, my views on the present state

of the practice of great circle sailing, and to leave with them and the heads of departments connected with nautical astronomy a few hints —offered with all deference—which may, in abler hands than mine, influence favourably much that is important in the consideration of the difficulties which now embarrass certain points in the study of navigation.

The expressed and unqualified approval not only of talented and greatly experienced naval officers, but of such able commanders as Captains Judkins, of the *Persia*, Clarke, of the *Marco Polo*, Comstock, of the *Baltic*, Hyne, of the *Agamemnon* (Mr. Green's), Gray, of the *Great Britain*, Petrie, of the *City of Manchester*, and numbers of the same class, will, I trust, protect me from the charge of presumption in thus pushing forward the subject, for it is enough that valuable cargoes are traversing the ocean surface, subject to delays as unnecessary as they are ruinous to many who are engaged in British commerce; for the rapidity of transit essential to full success in mercantile enterprise is prevented by the present general apathy felt towards great circle sailing and by wide prevailing ignorance of its real value, and wealth is thus distributed with a partial hand. The fickle Goddess who rules these favours is, *à propos*, still the blind daughter of Oceanus, fitly drawn by the ancients as standing on a ship's prow with a rudder in her hand, and having also her wheel—fit emblem of inconstancy!

It would appear from a mere glance at the subject—and I touched upon this in my last letter—that one class of ships has an unfair advantage over the more staid and steady trader. We would not, however, withhold from the fleet and superior Australian clipper the reward due to its spirited and liberal owner. By all means let speed have its reward;—let the yacht-like liner, of whatever "star" or "ball" or device, swiftly bear its living and golden freight on the wings of the wind;—let all the skill of the mechanic and engineer and the seaman embody in one splendid frame the collective wisdom of their long tried experience, and then let them confide this to the guidance of the great circle navigator;—but why should less pretending craft be conducted by a longer route? The answer readily suggests itself. Clippers are commanded by the few—and this few are essentially those of superior and advanced education. Then mercantile success is really, we begin to find, dependent on education—nautical education! The educated would find, therefore, a quicker route irrespective of the class of ships! Give, then, your young sailors a better training or one more befitting their position as depending on astronomical and geographical science, and you at once advance the general interest of the ship owner,—you encourage the building of a higher class of vessels than even we have at present,—you increase friendly but useful competition among Commanders,—you render mercantile adventure more rapidly and more equably remunerating,—and exalt into a condition of unalloyed self-respect a class of men who now (I speak of them as a body) complain that, willing as they are to

rise to the standard required by advancing science, the shallowness of their early training in the art of navigation keeps them in anxieties, toils, and perplexities not to be easily surmounted.

Nor am I so unfeeling as to probe a wound without having the means of cure at hand. The young sailor of the present day deserves all the disappointment he may hereafter meet with if he feels not the influence of the bright examples now in active service, or if he neglects the various means which recent researches into science have provided for his advance and encouragement. Yet there is a baneful system in applying these researches of which I loudly complain. The young sailor works first for a Mate's certificate, and leaves a preparation for higher examination until it is positively called for. Then his main object is to "pass examination!" Time scarcely allows a proper and reasonable digest of the crude matter thrown before him for consumption. He treats his mind as he does his ship—"victuals for the voyage"—and postpones his pursuit of sound knowledge to a time always distant ahead or astern! I would leave him to his merits or demerits, but in so doing the whole community would suffer and, moreover, the fault is not altogether his. It is the system of the present period which ties him to its fallacies;—like an unfortunate animal tethered to the stake, of necessity he can only crop the provender placed within his reach!

If I am exaggerating, perhaps some of your readers will kindly reprove me. If wrong, I would wish to be set right. But in doing so, let my friendly monitor, whoever he may be, explain the difficulties I find in even convincing some captains that great circle sailing is on a sound principle. As regards even the spherograph,—"Yes," says a very intelligent commander, "it seems all very simple to you, perhaps, and easy to work it really is, but how is it possible that we can, even when we comprehend the use of it, how can we, I say, depend for accuracy on this or any other system, when, take Towson for instance, no sooner does one get some practice in it than out comes Russell's ingenious work, and tells us that Towson's is wrong as to measuring distances. Now I should like to know what faith any but thorough mathematicians can put in any of your plans." Suppose I had attempted to explain that in Towson's first edition some little obscuracy did exist, (and he himself, with his characteristic candour, was the first to point it out,) but that it arose from the circumstance of his having used the latitude as an argument when the ship's station was too near the latitude of vertex, (corrected and obviated in a subsequent edition,) what information should I have conveyed? Absence of all knowledge of spheric trigonometry and construction, fetters this fine and noble seaman and really clever and estimable commander in the meshes of unnecessary ignorance!

It is, then, to place before commanders of every age and station, and as well before the younger aspirants for nautical fame, a simple resource, not as merely affecting the question of great circle sailing, but as presenting a clear and explicit conspectus of the science of

spheres, that I presume on your valuable pages; for of such a clear and explicit nature is my very humble spherograph.

I fear, sir, the very strong desire I have long felt to improve on the present defective method of nautical education, especially as regards the merchant service, will have already led me to trespass on the space kindly allowed me in your Magazine; but may I proceed further to remark briefly, that the main defect in every system of great circle sailing yet propounded, consists in either the impossibility of a captain's *seeing* his true great circle track, or from his seeing it drawn in a greatly distorted and exaggerated form. The spherograph, however, while it projects any spheric angle with ease, does so with apparent and obvious correctness. And no sailor can by my system see it near a straight line, as on Mercator's chart (when he knows these straight lines give true bearings) or be confused by the comparison. And again, as regards the terms employed to designate his work,—in the course of his present training a sailor becomes acquainted with certain words, such as latitude and longitude, equator, declination, &c., all which greet him unexpectedly in my spherograph as old friends having sole dominion! With these advantages I proceed cheerfully and hopefully to explain my practice of great circle sailing. And to avoid confusion, divide it into the following steps, each of which will be amply explained, and most plainly illustrated, on the back of each instrument.

1.—*Draw the Great Circle Track.*—This is easily done by marking off the two places on the upper sphere, which is transparent, and then turning one upon its centre until a meridian of the under sphere cuts the two places. I can then with a pencil draw the great circle track.

2.—*Find the Pole of the Great Circle Track.*—A point on the equator of the under sphere 90° from the meridian which forms the track, is the pole of the great circle track.

3.—*Measure the Ship's Course.*—In any spheric angle the distance of the poles (of the oblique circle which form the angle) produced to the primitive, is the measure of the angle. In this case the ship's meridian and great circle track, form the two oblique circles. A thread or straight-edge laid therefore on the ship's place and then on each pole to the primitive, gives easily the ship's intended course as read off upon the primitive.

4.—*Measure Distances accurately on the Great Circle Track.*—A thread on the pole of the great circle track, laid over the two points of the track to be measured, and produced to the primitive, gives accurately the distance in degrees of sixty geographical miles, as read when produced to the primitive.

No calculation whatever enters into the above.

When the difference of longitudes is greater than a semicircle, a slight additional trouble is required, but it is entirely without complication; and so readily apparent by means of a simple spheric diagram, that to describe it here would be encroaching unnecessarily on valuable space. I can only declare that now great circle and composite sailing

are brought into so simple a method as to require much less knowledge than even to work plain sailing.

On the back of each spherograph I add a few initiary hints, with diagrams on spheric geometry.

I have, &c.,

S. M. SAXBY.

To the Editor of the *Nautical Magazine*.

THE INDIAN OCEAN CONSIDERED WITH REFERENCE TO THE WANTS OF SEAMEN.

(Continued from p. 497.)

Bay of Arabia or Gulf of Osman.—In the Gulf of Osman, or as it is called by seamen the Arabian Gulf, between the coast of Arabia on the West, those of Scinde, Guzerat, Concon, &c., on the East, and the coast of Persia on the North, the S.W. and N.E. monsoons are found. The former with more strength and constancy than the latter. The S.W. monsoon sets in about the beginning of March on the coast of Africa North of the equator. Towards the end of this month it prevails on the coast of Arabia, and in the entrance of the Red Sea, and as far as Ras-el-Gat. In the beginning of April it is found on the coast of Persia, and beyond that gulf; towards the middle of April at Cape Guadel, on the coasts of Scinde, Guzerat, and as far as Cape St. Jean. At Cape Comorin the S.W. monsoon prevails about the middle of April or the end of May, and in the gulf generally about the 15th of June at the latest, and it begins and ends near the coast sooner than out at sea.

From November to December off the coast of Bombay, fresh N.E. winds are found, increasing in strength to the Westward. During these two months, as in those of January and February, they veer a good deal to the Northward, and bring fine weather.

In January and February the wind is more moderate than in the preceding months; if it becomes N.E. it is interrupted by sudden squalls from South to West, and from which the seaman must be guarded.

During the months of March and April, these N.E. winds are not so regular as in the preceding months; they are sometimes interrupted by N.W. winds and calms. But generally speaking in February and March strong breezes, varying from North to W.N.W., particularly in April, are found, and announce a change of monsoon.

Off the coast of Bombay and near this port in March, April, and May, the winds vary from N.W. to S.W., and in the offing to about 6° or 7° West of the coast of Hindostan they incline much to West.

Coasts of Concon, Canara, and Malabar, or the Coast of Hindos-

tan.—On the coast of Concon, Canara, and Malabar, the West coast of India or Hindostan, the S.W. monsoon prevails at Cape Comorin between the end of April and the middle of May. This monsoon does not reach Bombay till a month later. The N.E. monsoon follows it, and is found on the coast sooner than at sea.

On the coast of Hindostan the N.E. monsoon is neither constant in force nor direction. It prevails at Bombay and on the coast to the Northward, about the beginning or middle of November. It soon reaches Cape Comorin, Cochin, Calicut, and Mangalore, attended with fine weather. The change of monsoon on this coast is generally accompanied by bad weather: the wind sets in from S.E., blowing for some hours with a great deal of rain, and after shifting to all points of the compass, inclines towards S.W. This kind of weather, attended by squalls, is generally found about the end of October or beginning of November, and if it does not take place with the return of the N.E. monsoon, it may be looked for in December. In October and during a great part of November, the navigation of this coast is difficult either way, for the wind does not become settled till the end of November or beginning of December.

From November to March, when the N.E. monsoon is well established, splendid weather is found on the West coast of Hindostan, with moderate or fresh winds varying from N.E. to N.W. During these four months alternate land and sea breezes are found along the coast. The first are strong in December and January, and South of Calicut they extend to a tolerable distance in the offing, and sometimes last for twenty-four hours without interruption; but in November and the first part of December they become light. From the middle to the end of February, the land breeze loses force, and ceases in regularity. When these alternate breezes are well established, the land breeze begins at six or eight o'clock in the evening, sometimes at ten o'clock, blowing from N.E. to E.S.E. The sea breezes begin about eleven or twelve o'clock in the morning, varying from W.S.W. to West and N.W. They are moderate, and at the time of their change there is always a calm.

These winds prevail along the coast from Cape Comorin as far as Surate, and cease in the month of March; and in April are succeeded by winds varying from N.N.W. to W.N.W., which continue till the return of the S.W. monsoon.

In March and April the land breezes are very light, and of short duration, from N.N.E. to N.E.b.N. In fact, during these two months on the West coast of India there are in reality no land breezes, but only winds varying from N.N.W. to W.N.W., which beginning towards noon continue through the first part of the night, falling towards the morning. Sometimes, however, a light land wind springs up, although more generally from midnight till noon light breezes from N.E. and North prevail. At the time of the syzygies the N.W. winds are very strong, and cause a heavy sea.

The weather is uncertain and threatening during May, frequently with rain. The wind is South and S.W., and sometimes strong, es-

pecially near Cape Comorin, where the monsoons are found sooner than on any other part of the coast. When the wind veers to N.W., which is the prevailing wind during this month, it brings fine weather. In the nights of May and June the coast is visited by heavy squalls from the high lands. At the end of May, and about the time of the syzygies, or the first part of June, the S.W. monsoon almost generally returns. Its advent is announced by heavy clouds, with a squall from S.E. varying to S.W. and stormy weather for several days. After this the monsoon sets in from South to S.W. On the northern parts of the coast of Hindostan during this monsoon the wind varies from W.S.W. to S.W. The monsoon commences sooner at Cape Comorin than at Bombay, where it is not established till fifteen or twenty days later. During this monsoon squalls and rain with a very heavy sea are found on this coast, and May is one of the worst months for navigation. In June and July there is some improvement, and by the end of July it is still better.

In August the weather is rather finer, the monsoon not so strong as in the preceding month, and there are bright sunny intervals. The bad weather comes from W.N.W., chiefly on the South part of the coast, as well as N.W., which is the prevailing wind at this period near Cape Comorin.

In September the weather brightens and some fine days occur with the winds from West and W.N.W. This month, however, is not free from squally weather, the wind is not so violent, but the weather is mostly rainy and stormy, with winds varying from S.W. to W.N.W. There is a heavy swell from W.S.W., principally in the intervals of calm between the squalls.

In October the weather is much the same as in September, till the time of the syzygy, when it becomes uncertain on account of the change of monsoon.

At the end of October and November, when the S.W. monsoon is light, near the coast as above observed alternate land and sea breezes are found.

The Laccadives.—The Laccadives are subject to the influence of the monsoons prevailing on the adjoining coast. It has been observed that between the South coast of Ceylon and these islands, during the S.W. monsoon, the winds are almost constant from this direction, that they only vary from W.S.W. to S.S.W., and rarely veer to South. These winds are tolerably fresh: they increase in force, and stormy weather is found, as these islands are approached. We must, however except the end of September and beginning of November, periods when the winds are light but interrupted by storms and rain near those islands.

From the beginning of November to the end of February, a time when along the coast of Hindostan land and sea breezes alternately prevail about these islands and even to a distance of sixty or eighty leagues from their western shore, the wind is continually from North to N.E., varying three or four points in the twenty-four hours, and even veering to East in the night.

In March and April we find at the same distance from the shore the wind from North and N.N.W., varying from two to four points in the twenty-four hours, but generally coming from N.N.W.

In May these winds are variable, and sometimes come from West, when the S.W. monsoon is about setting in. When this monsoon is established, S.W. and West winds are found off the coast, with a heavy sea. This weather, however, is not so bad as that near the coast. The storms are less violent and the rains not so heavy.

In September, when the S.W. monsoon slackens, calms prevail near the islands, and off the coast N.W. winds are found, which last till the N.E. monsoon is established. This latter sometimes does not begin till November.

The Maldives.—In February, March, and April, and especially in these two last months, among the Maldive Islands we find N.W. winds varying to W.N.W. The dry season is from October to April, though rain sometimes falls in October. During this season East winds prevail, and are very steady; but according to some seamen in the N.E. monsoon they are only light.

In March winds from N.N.E. and S.W. currents are often found well to the westward of the Maldives.

Island of Ceylon.—The island of Ceylon, at the southern extremity of Hindostan, with its West coast following the same direction as that of Malabar, and its Eastern coast that of Coromandel, may be considered each as an extension of the other, and sharing the same wind and weather as are found on the coasts of Malabar and Coromandel. The two monsoons succeed each other and last about six months. At the end of October the N.E. monsoon takes the place of that from S.W., the seasons change at the same time. On the West coast of Ceylon the N.E. monsoon brings the fine season; while on the East coast it is accompanied with storms and a heavy sea, and either continual rain, or dark cloudy and foggy weather. Such weather prevails at this time of the year between the Basses and Point Palmyras, while fine weather is found between Galle and Jaffnapatam, a town situated in the bay of Palk.

At the end of December and in January variable winds are found throughout a space of fifteen leagues round Ceylon.

On the West coast of this island, and as far as the point de Galle, strong West and S.W. winds are found about the end of March or beginning of April, and last till the month of October. They are generally stronger on the North than on the South part of this coast. The N.E. monsoon follows with fine weather.

On the South coast of the island West winds prevail more or less throughout the year, for even when the N.E. monsoon is in full force, we find alternate breezes regularly established here. Those from the land during the morning blow from East to N.E., and towards noon those from the sea blowing from West or S.W. Then North of Cape Basses we find a N.E. wind, which is generally pretty strong, on the East coast of Ceylon.

On the South coast in October and November, strong Westerly

varying to N.N.W. winds are found. Heavy stormy weather, interrupted by calms and light winds, or fresh sea breezes, also is found here. In December N.N.E. winds prevail at point de Galle, varying to E.N.E. Off the coast they incline to East, and at this time the monsoon is in full force.

The S.W. monsoon begins on the East coast of Ceylon in February or March; it does not, however, reach to the northward of this island before the beginning of April or May. About the end of March at Trincomalee and the promontory of Palmyras, the weather is then squally with rain. Storms from N.W. are felt at the end of April, and they happen at intervals during the monsoon. In April over all the East coast of Ceylon the winds are generally variable and moderate. They come from East to S.E. during the day, and incline South towards evening; during the first part of the night, the land breeze is from S.W. and West, and these blow alternately. The S.W. monsoon prevails on the N.E. coast of this island about the middle or towards the end of this month, about fifteen days sooner than on the coast of Coromandel. In May we find nearly the same winds as those of April, being from S.E. to South during the day, and from S.W. at night. After the middle of May the sea breeze is at an end, but fresh and sometimes very strong winds blow constantly between S.W.b.W. and S.W.b.S., bringing fine weather.

In June, July, and August, and even to the middle of September, Westerly winds blow without interruption. In the month of August, however, on the N.E. coast, a sea breeze, varying from East to S.E., sets in towards noon. It ceases at night, and the West winds then take its place.

Bay of Palk.—In Palk Bay, during May, June, and July, S.S.W. winds are violent, and at the change of monsoon on the East coast of this island, as before stated, alternate land and sea breezes are found.

On the East coast of Ceylon in September and October the same winds are found as on the coast of Coromandel, which will be hereafter stated. In October, November, and December, rain falls only in the North part of this island. The other months are attended by fogs and very heavy dews.

During the N.E. monsoon on this coast the weather is fine, with fresh breezes from North and N.b.E. In December and January it blows fresh from the northward.

Gulf of Manar.—The N.E. monsoon only extends as far as Point de Galle. At the same time, in the Gulf of Manar the wind is constantly from N.E., and sometimes very strong. In this gulf during the monsoon it is said that at about thirty miles South of Cape Comorin the atmosphere is free from cloud or mist, a condition which indicates the limit of rain and bad weather. But this is doubted, and it is considered that on the West coast of Ceylon the same weather is experienced as on the Malabar coast.

(To be continued.)

New Mode of Bending Timber.

Among the novelties of the day—the changes which circling seasons introduce year after year—is the very extraordinary one of bending huge pieces of timber to the curves required in the forms of ships. It is very well known in ship-building that where the frame of the ship, so remarkable for peculiar and graceful lines, as they are called, requires curved timber to be adapted to those lines the hard woods are generally used, frequently requiring first to be cut at a considerable loss, and hence an additional expense is incurred to that inherent to them from their very nature. In fact, straight timber is common enough and cheap enough, but curved timber—or bent timber as it is more generally termed—is altogether another article, and one of much greater value, owing to its nature and scarceness. But our ships require it, at least those which form England's wooden walls—for iron will never become a substitute for them, being left to our merchant princes—and therefore bent timber must be had.

This fact seems to have been as well known to our friends across the Atlantic, and hence, among other productions of their ingenuity, we have imported the astounding art of making our straight timber answer the purpose of curved by simply bending it to the required form. Those who know what the timbers of a ship are in point of size will no doubt marvel, as we ourselves did when witnessing the process by which this extraordinary fact is accomplished.

Still, fact it is, and we will briefly state what we witnessed. A piece of ash timber, seven and a half inches thick by thirteen broad and about twelve feet long, was securely fixed in a huge iron frame, consisting of two arms, we might say, and so completely wedged in to them as to be immovable. The part of it where the bend was to be formed was compelled to take the curve of a huge circular central iron, round which one of the legs of the iron frame was made to turn, the pressure on the timber being still maintained by a series of jointed chain which kept it firmly in its grasp. In this condition the leverage of the iron frame was exerted by means of a rope passing through a block at the end of the arm and gradually drawing the arm to the required angle, thus obliging the timber to take the curve given to it by the central iron. A small steam-engine of three or four horse-power performed this operation in something less than half an hour; and when in its required form the specimen operated on lies in the state to which it has been rendered for a day. An iron brace then secures the two ends and it is cast aside to dry from a slight process of steaming to which it has been submitted before the grand operation. While this was going forward we observed the superintendent watching it and directing an occasional small release in the rigid fastness with which it had been secured lengthwise in the frame, and which we attributed to its stretching in that direction from the mere force of pressure.

After this, to say that we also saw a good thick piece of plank

(straight it was too) obliged by a similar process of pressure to assume the form of a complete circle, the two ends actually butting against each other, would excite no surprise; or that it was actually turned by the same process inside out, or reversed—that is, what had been the outer surface of this once straight plank, but now circular one, was by the same process made the inner one will occasion no great surprise, otherwise than the fibres of the wood quietly submitting to so much torture, and we thought that, although, as it is said, one good turn deserves another, they did not accommodate themselves to their new places so readily or with that yielding disposition as in the first turn.

Another experiment which we witnessed—highly illustrative of the strength acquired by timber which has undergone this process—was this:—A piece of bent plank, not two feet long, lay on the ground, and as it stood like a small arch not all the force applied with a heavy iron maul beating on it could either break it or alter its form.

Several large specimens of this kind of bent timber lay about—among them was one converted to form a knee, the use of which is well known to our readers—and abundance of small specimens; one of which consisted of a wheel, the tyre of which was made of two pieces of bent wood, which looked as perfect a piece of workmanship as another of the usual construction by the side of it, but much more expensive, although said not to be so strong as its newly-born neighbour. Altogether we came from the scene of operation highly gratified with what we had witnessed. But we shall now allow this extraordinary process to be referred to by its proprietors, adding our opinion that in point of strength the timber gains by the powerful action to which it is subjected:—

"The importance of the invention to which the directors of the Patent Timber Bending Company desire to call the attention of the public, can hardly be over-estimated, for it is well known that wood, from the vast range of its employment, ranks next to cotton and iron in the amount of capital it engages, and the variety of purposes for which it is used.

"After the most careful investigation, and after obtaining opinions upon the subject from scientific and practical men, the directors believe the invention to be one of the most valuable of modern times, and one which must have a beneficial effect upon all trades which involve the use of curved timber. The following statement will sufficiently prove to all persons acquainted with the working of wood, that the directors do not attach an undue value to the patent.

"By the Report of Capt. John Ford, O.N.:—"All woods, whether English or foreign, can be bent to any form, angle, or curve, by machinery so simple and cheap that it can be obtained by persons of the most moderate means."

"Dr. Hooker's Report also says:—"The strength of the wood is increased by the operation at least seventy-five per cent., at the very point most required; the fibres are not in any way injured; no action can disturb the form given; the wood becomes almost impervious to

damp and insect, whilst its increased density renders it less liable to take fire."

"The present expensive method of cutting and shaping timber will be superseded, and a positive saving of from one to three-fourths of the material will be gained by employing this invention."

"Report of George Rennie, Esq., says,—in which Charles Mayhew, Esq., agrees:—"It is a matter of no consequence whether the wood be cross-grained or knotty, seasoned or new; the cross-grains, by the action, are thrown into right angles, the knots are compelled to follow the impulse of the bending; the juices are forced out of the cells of the wood, and the cavities filled up by the interlacing fibres. This last fact is not less important than curious: for as seasoning goes on hand-in-hand with condensation, it will do away with the necessity of keeping capital locked up, as at present, while timber is undergoing the necessary changes."

"Time will be saved, as much labour is now wasted in searching for suitable woods to carry out certain designs. Stack after stack of timber is now hunted over for woods whose grains may adapt them for special purposes; whereas, under the action of the machine, cross-grained and ugly pieces of wood are rendered equally valuable with those of the most perfect description.

"The above results are obtained by *end-pressure;* and the great superiority of the process over the one now in use, is clearly established by the following facts: viz.,—The present power of bending timber is exceedingly limited, expensive, and the proceeds very unsatisfactory; while those parts of the wood where the curvature is greatest, are rendered invariably the weakest; whereas, by the new system, timber of any description, and of almost any size can be bent inexpensively, with the most perfect and conclusive results, and with an additional strength of seventy-five per cent. at the very point where that strength is most required.

"It is impossible to detail the numerous purposes to which the invention may be applied; but the benefits which cannot fail to accrue from its adoption are important and numerous; viz.—strength and durability; together with economy of material, labour, and capital. This must be evident to all trades in which curved wood or timbers are required: for instance, ship-builders, (for ship-timbers, futtocks, &c.), carriage-builders and wheelwrights, house-builders, manufacturers of agricultural implements, furniture-makers, coopers, modellers, &c.; while the invention will be invaluable in the construction of public and private buildings, more particularly in the erection of ecclesiastical edifices, facilitating, as it will, the formation of domes, arched roofs, &c.

"In fact, the process must have an enormous and immediate influence over the whole of the timber trade, and is destined to effect a total and beneficial revolution in every branch of manufacture in which timber is used."

North Pacific, China Seas, and Behring Strait U. S. Exploring Expedition.

This expedition consisted of the sloop of war *Vincennes*, brig *Porpoise*, steamer *John Hancock*, schooner *Fennimore Cooper*, and store-ship *John P. Kennedy*, the latter intended to carry coal and provisions to Behring Straits, that the surveying vessels might not be interrupted in their labours by want of supplies.

It was proposed to take advantage of the facilities that would be afforded by the voyage, not only to increase hydrographical knowledge, but to make investigations in the several departments of natural science. For this purpose several gentlemen of attainments were attached to the expedition. They were supplied with the means necessary to a profitable application of their time and labour. The navy itself furnished officers who had prepared themselves for any duty that they could be called upon to execute in connexion with the hydrographical and most important part of the work; and it is not to be inferred that the practical knowledge requisite to the production of creditable results is to be obtained without long and laborious application. The command of the expedition was entrusted to Commander Ringgold.

The expedition, with the exception of the *Kennedy*, sailed from Norfolk on the 11th of June, 1853, for the Cape of Good Hope. Touching at Madeira and the Cape Verd Islands, it arrived at Simons Bay, an English naval station near the Cape of Good Hope. The *Kennedy* joined, and it was found that she as well as the *Porpoise* required extensive repairs, resulting in a detention of several months. Leaving Simons Bay, the *Hancock*, *Cooper*, and *Kennedy* sailed for Batavia, in the island of Java. The *Vincennes* and *Porpoise*, seeking the strong winds of the Southern Indian Ocean, experienced tempestuous weather, and the former performed a considerable portion of her voyage under a close-reefed maintop-sail. Touching at Sydney, she threaded the reefs of the coral sea, and, passing through the Caroline Islands, arrived at Hong-Kong. The *Porpoise*, following a route nearer the coast of Australia, touched at New Ireland, and soon after joined the *Vincennes*.

Meanwhile the *John Hancock*, *Cooper*, and *Kennedy*, surveyed Gaspar Straits, locating many islands and shoals,—a work of the utmost importance to ships sailing from the Cape of Good Hope to China by the most direct route. The singularly dangerous character of these straits, filled with hidden dangers, rendered the careful survey which was made exceedingly difficult, and both officers and crew were much exposed and suffered many hardships before its satisfactory completion.

The vessels of the expedition were again united at Hong Kong. It was there discovered that the *Porpoise* required repairs, and that from the decayed condition of her timbers the *Kennedy* was unseaworthy. She was therefore surveyed and condemned.

At this time the rebellion in China was at its height, and unfortunately there were no vessels of the East India squadron in that vicinity. Urgent appeals on the part of the American residents prevailed upon the commander to remain there for their necessary protection until the arrival of some one of the vessels to which that duty properly belonged. The interval was employed in making astronomical observations for the purpose of establishing the position of Hong Kong as a primary station with reference to the survey of the North Pacific. The position of that place was not sufficiently well determined for the purpose, and, as nearly all the surveys of China and the adjacent islands are based upon chronometrical measurements from Hong Kong, it was of the first importance to establish this point. It was while thus detained that the brig *Porpoise* was despatched to the relief of the unfortunate Chinese

wrecked upon the Pratas Shoal. She returned with no less than five hundred and twenty of those people, who, without timely assistance, would have perished on that barren rock.

On the arrival of Commodore Perry at Hong Kong, Commander Ringgold, whose health had failed, was invalided, and the command of the expedition devolved upon Lieut. Rodgers. The *John Hancock* and *Fennimore Cooper* were sent to the Peiho river in connexion with the visit and negociations of the Commissioner, Mr. M'Lane. The performance of this duty did not divert them from the main object of the expedition; for while so engaged important surveys were made in that locality. When their presence was no longer required by Mr. M'Lane, these vessels surveyed the West coast of Formosa.

The *Vincennes* and *Porpoise* sailed from Hong Kong in the month of September, the time of the equinox. The exigency of the case admitted of no delay, and it was presumed that both vessels would succeed in reaching the Pacific. Successive gales were encountered. Finally the two vessels found themselves, during a heavy gale, between the island of Formosa and the Main, struggling to maintain a position near mid-channel. On the morning of the 21st of September the *Vincennes* bore up, and it was supposed that the *Porpoise* would follow, unless her commander deemed it imprudent. The *Vincennes* again attempted to pass out into the Pacific. After a struggle of nineteen days in all, during which, it was subsequently ascertained, seven ships were wrecked in that sea within a circle of a few hundred miles, she passed out into the Pacific and shaped a course for the Bonin Islands, determining in her way the positions of the islands Borodino and Rosario. At the Bonins the *Porpoise* was expected; and not until she failed to make her appearance was there a doubt of her safety expressed. Passing between and around the Bonins, search was made for islands indicated by the chart, and their existence in that locality disproved.

Running towards Loo-Choo, other important corrections were made. In one instance an unmistakeable rock was found a hundred and twenty miles from the place of its location on the chart. At Loo-Choo astronomical observations similar to those obtained at Hong Kong, and for the same purpose, were made. It was then the winter season, and it is well known that the seas in the neighbourhood of Japan are at that season of the most tempestuous character. Notwithstanding the inclement season, the survey was continued, and examination made of the various passes between the islands that lay to the south of Japan. It is probable that no vessel of the United States has ever encountered such a succession of typhons and gales as did the *Vincennes* during that winter's cruise south of Japan. She surveyed the southern extremity of Japan, (Kiu-Siu,) anchoring in the great bay of Kago-Sima. By considerate management this portion of the survey was accomplished without serious opposition on the part of the Japanese. Returning to Hong-Kong, taking in her way the long chain of islands to the south, the *Vincennes* rejoined the *Hancock* and *Cooper*. Search was made by the *Hancock* and by English vessels for traces of the missing brig *Porpoise*, but no vestige of her was discovered. Her fate is involved in impenetrable mystery. It is probable that she was lost in a terrific typhon which swept by and over the Bonin Islands while the *Vincennes* was waiting there for her,—a storm of such fury as to cause the *Vincennes* to drag with four anchors down, lower yards and topmasts struck, in a contracted harbour, nearly surrounded by high mountains.

A third set of astronomical observations was obtained at Hong Kong. They were moon calculations. The results of the three sets were combined, and there does not appear to be anything more required in that connexion; the results are perfectly satisfactory. The determinations of positions during this voyage may be relied on with confidence, for the chronometers on which the longitudes depend, performed with extraordinary precision. During a period

of more than five months their accumulated error amounted to little more than a single second of time, a precision that was verified by subsequent measurements made to points determined by them. It is probably due to the fact that they were placed near the centre of motion, screened from currents of air, while by means of lamps an equable temperature was maintained. In addition to the astronomical observations, experiments to determine the intensity of the magnetic forces at Hong Kong and Loo-Choo were made.

As soon as the vessels were refitted they again sailed. In order to extend the sphere of operations, they were assigned different routes. The *Hancock* and *Cooper* surveyed the west coast of Formosa, the *Vincennes* proceeded to Loo-Choo, where the three vessels together commenced the survey of all the islands between that island and Japan. This portion of the survey is of the utmost importance. It is where numerous islands, hitherto unexplored, incorrectly described and located, lie right in the path from China to California; the shortest route between these countries passes through them. One of the results of this exploration was the survey of Ow-Sima, a magnificent island, presenting deep and sheltered harbours to every quarter,—an island so perfectly adapted that had it been purposely provided as a shelter, a refuge, or a simple stopping-place, it could not have presented more advantages to the navigator. This island seems a happy coincidence in connexion with the route between China and California. Passing on to Simoda, in Japan, the surveys were continued. The *Cooper* surveyed the west coast of Nyphon, the *Vincennes* and *Hancock* explored the sea in the path of vessels near the east coast; and it may be mentioned here, as an evidence of the zeal of both officers and men, that the coast of Nyphon, from Simoda to Hakodadi, a distance of nearly five hundred miles, was explored and surveyed by a detachment of sixteen volunteers in an open boat,—the launch of the *Vincennes*. She was twenty-one days on the coast, and in constant peril.

From Hokodadi the *Hancock* proceeded to survey the Okhotsk sea, the resort of American whalers, the *Cooper* to survey the northern Japanese, the Fox, and Aleutian Islands. The *Vincennes* sailed for Kamskatka, visited Petropaulowski, thence along the coast of Asia to Behring Straits. On the west shore a party was landed for the purpose of making astronomical and magnetic observations, and to investigate the fauna and flora of that country. A temporary fortification was hastily erected, and the *Vincennes*, with but three months' wood and provisions, pushed into the Arctic. She penetrated to the lat. 72° 5′, a higher parallel than was ever reached north of Eastern Asia. She *ran off the chart*, and additional paper was added upon which to mark her position. She visited "Herald Island," and a party climbed to its summit, a height of about nine hundred feet. She sailed over the position assigned to land said to have been discovered and seen by "an hundred and twenty pairs of eyes" on board H.M.S. *Herald*; disproved the existence of Plover Island; reached the position assigned "Wrangle Land," clearly disproving its existence in that locality. Her further progress was barred by impenetrable barriers of ice. After this dash at the north, she ran for the Straits. An obstinate east wind prevailed for several days, and while shut in by the fog, and scarcely holding their own, the seamen heard the distant thunder of the crushing ice. A favorable wind released them from this trying situation, and, having surveyed all that portion of the Arctic Sea which is navigable, they reached the harbour of Seniavine. The shore party was embarked, and, with a large proportion of her crew down with the scurvy, she sailed for San Francisco, where she arrived on the 13th of October, 1855. The *Cooper* was already there, and the *Hancock* came in soon after.

At San Francisco the *Hancock* and *Cooper* were detached from the expedition. A portion of the officers were ordered to the United States; those remaining joined the *Vincennes*.

On the 2nd of February she sailed, still prosecuting the survey. An island said to have been discovered north of Sandwich Islands was searched for, but not found in or near the locality assigned it. She then touched at the Sandwich Islands and Tahiti. From the latter port, following the track pointed out in Maury's charts, she made the passage to New York in seventy-four days, although a dull sailer.

The tempestuous character of the weather to which the *Vincennes* has been exposed, afforded opportunities of investigating the character of storms. The cyclone theory was tested, and many important observations were made. The botanist and the naturalist, with the zeal and enthusiasm characteristic of those of like pursuits, have added largely to their respective departments. The artists return with fine collections of sketches characteristic of countries and races. The results of this expedition will be acceptable not only to commercial men and navigators, but to the geographer and the meteorologist, and incidentally to all that class who are interested in the diffusion of knowledge.

U. S. Daily National Intelligencer.

The Royal Observatory, Greenwich.

[A description of the various instruments of the Royal Observatory from the Astronomer Royal is so valuable a document that we cannot forego the opportunity of preserving the following in the pages of the *Nautical*, as we find it in the *Athenæum*. Of the occasion of it we know nothing,—but in depreciating the instrumental staff of our National Observatory the writer has met his reward, and the highly talented leader of that establishment has given our readers a treat, for which we are quite sure they will be very much obliged to him.—Ed. *N. M.*]

The *Morning Chronicle* of August 20 has devoted its leading article, of one column and a quarter, to a disparaging statement of the instrumental equipment of the Royal Observatory, and to a series of remarks inculpatory of the Queen's Ministers and the Board of Visitors for permitting the Observatory to remain in its inefficient and discreditable condition. To myself, personally, the article in question is complimentary. It is no business of mine to discuss the propriety of the acts of the public bodies with whom I am officially connected, nor would it become me to exchange compliments with the Editor of the *Morning Chronicle*, or to accept the doctrine that the flattering expressions applying to myself are to bind me to silence when the character of the Royal Observatory is attacked. For the statistics of British science, it is indispensable that the truth, as regards the matters treated in the newspaper referred to, be fully explained; and as no person is so familiar with the facts as myself, I think that the duty falls upon me of stating all that appears necessary to acquaint the public with the actual condition of the Observatory, and of selecting the proper channel through which to convey that statement. In the exercise of my judgment on the last point, I request you to permit the insertion of my remarks in the *Athenæum*. My statements apply to science only, not to politics, and I appeal, therefore, from the political press to the scientific press.

The Editor of the *Morning Chronicle*, professing to extract his materials from a Report addressed by myself to the Board of Visitors, has put forth the following statement:—"Most of the instruments in the National Observatory . . . . are old ones."

Let me now place before your readers the facts. The whole of the dates,

and probably all the other particulars, may be verified from the successive Reports of the Astronomer Royal to the Board of Visitors. I confine myself (as the Editor of the *Morning Chronicle* has done) to the Astronomical Department, omitting the Magnetical and Meteorological.

Ninety-nine hundredths of the observations made at the Royal Observatory are made with the following instruments:—the Transit-Circle; the Chronographic or Galvanic Register; the Altazimuth; the Reflex Zenith Tube; the Galvanic Apparatus of other kinds (excluding the Chronographic system).

The dates of the construction of these instruments are as follows:—The want of a Transit-Circle was suggested by me to the Board of Visitors on 1847, June 5. Plans and models of a detailed kind were submitted to them and discussed by them on 1847, December 20, and 1848, June 2. The assent of Her Majesty's Government was immediately given, the work proceeded on my plans, and on the first day of 1851 the instrument was brought into use. The Apparatus for Chronographic Register was commenced in the beginning of 1850, and was brought into use in the spring of 1854. The proposal for an Altazimuth was first laid before the Board of Visitors on 1843, November 10; the first observation was made with it on 1847, May 16. The first suggestion of the Reflex Zenith Tube was made by me to the Board of Visitors on 1848, May 12; further details were given on 1849, June 2; and observations commenced in the autumn of 1851. The Galvanic Apparatus generally was commenced in 1852; and additions and changes are still made to it from time to time. "Most of the instruments in the National Observatory . . . . are old ones," says the Editor of the *Morning Chronicle*.

I must now, however, give a more detailed excerpt from the Editor's leading article:—"Most of the instruments in the National Observatory, with which the Astronomer Royal has to perform his arduous and highly-important duties, are old ones, entirely unsuited to the present state of science, and to the requirements of the age! The cultivators and lovers of astronomy have *given* some good and useful instruments to the institution; but the National Instruments, the tools that it puts into the hands of its servant to perform his duties, are mere rattletraps, such as might be picked up amongst the old metal curiosities in a marine-store dealer's shop."

On the "National Instruments," whose names I have given above, I have to make the following remarks:—Every person who is acquainted with the Transit-Circle allows that it is without doubt the finest instrument of its class in Europe. There is only one instrument in the world which can be compared with it,—namely the Transit-Circle of the Cape of Good Hope, which was copied from it, and in which one improvement was introduced. The Chronographic Register is a splendid apparatus. Its principle was introduced from America; I believe that it is not efficiently employed at any Observatory of Europe, except that of Greenwich. The Altazimuth is without a rival. It is usually considered a model of firmness and general excellence. The Reflex Zenith Tube is an instrument of singular principle, adapted to peculiar circumstances of the Greenwich Observatory. The Galvanic Apparatus is very far more complete and more extensive at the Royal Observatory than at any other observatory. It is not known at observatories in general. These are the "mere rattletraps" of the Editor of the *Morning Chronicle*.

It is true that an object-glass (unmounted, the expense of mounting it equatoreally being defrayed by the Government) was presented by Mr. Sheepshanks to the Observatory. The focal length of this object-glass coincided conveniently with the dimensions of a vacant room, and my valued friend scorned the idea of selling an instrument to an institution with which (as Visitor) he was officially connected. Under these circumstances, the Government accepted the object-glass as a present.

I will continue my extracts from the *Morning Chronicle*:—"At some of

the private observatories, such as Sir James South's, Mr. Bishop's, Dr. Lee's, and numerous others, are the finest instruments of the most approved construction, fitted up without any regard to expense," &c. I think it likely that the expense of the Greenwich Transit-Circle alone, with its mountings, greatly exceeds the entire expense of Sir James South's Observatory (excluding his 20-feet telescope, a subject of expensive litigation), or Mr. Bishop's Observatory, or Dr. Lee's Observatory, or any other of the "numerous observatories" to which the Editor of the *Morning Chronicle* refers. There has never been a limitation of expense in the instrumental fitting-up of the Royal Observatory. In some few instances I have applied on my sole judgment to the Government; in others I have applied after discussion with the Board of Visitors; in no one instance has the Government (through all the successive administrations from 1835 to the present time) refused to grant the funds required. If the Editor of the *Morning Chronicle* will refer to the Navy Estimates sanctioned by Parliament in the present year, he will find that £4,000 is there provided for a single instrument.

"But," says the Editor of the *Morning Chronicle*, after adverting to the circumstance that no search was made at the Royal Observatory for the expected planet since called Neptune, "it now appears that the Astronomer Royal has no instruments under his control at all capable of effectually making such examination!" The class of instrumenfs applicable to this examination is the Equatoreal; and the general policy of observatories, and the reason why the Equatoreal has not been encouraged at the Royal Observatory, may now properly be stated to your readers.

The subject of Astronomy is so vast that it is impossible at one observatory to attend to every part of it; and in order to make any observatory really efficient, it must be confined to one well-marked division of its science. From the earliest time, the Royal Observatory of Greenwich has been devoted to meridional and lunar astronomy; and these subjects have been followed up with a steadiness of attention to which, perhaps, science presents no parallel. In consequence of this, the Greenwich Observatory has been recognized, in all ages, as having done more for the benefit of astronomy than all the other observatories of the world put together. It would be very easy, but very invidious, to point out observatories where money has never been spared, where buildings and instruments have been supplied without stint, and where talent has never been wanting, but which from the want of limitation of object have produced little effect on science.

It was the consideration of the success attending the definiteness of object of the Greenwich Observatory that induced M. Struve to suggest a distinct limitation for the objects of the Pulkowa Observatory. And, in framing new regulations for the Observatory at Paris, M. Leverrier has always appealed to the success of the regulations of the Observatory of Greenwich.

In estimating the enormous value of this definiteness, and the danger of infringing on it by devoting any great portion of the attention of the Observatory to instruments and observations of a different class, with a knowledge also of the powers of surrounding observatories, I have always been unwilling to encourage the erection of a large Equatoreal at this Observatory. This I have frequently expressed to the Board of Visitors, and I believe that the Board generally concur with me. Thus, in 1846, (Report)—"The only instrument which, as I think, may possibly be called for by the demands of the astronomer or the astronomical public, is a telescope of the largest size for the observation of faint nebulæ and minute double stars. Whether the addition of such an instrument to our apparatus would be an advantage, is, in my opinion, not free from doubt . . . . Any addition whatever to our powers or our instrumental luxuries which should tend to withdraw our energies from

these objects [meridional and lunar observations] would be a misfortune to the Observatory." In 1847, when a large object-glass was offered by M. Lerebours, I repeated this sentiment. In 1849, "Little attention has been given to the Equatoreals, as I consider the branch of astronomy to which they apply to be so well followed up in other observatories, public and private, that in general it is impolitic for us to devote much time to it." In 1852, I have repeated this, expressing also my sense of the importance of thus encouraging the division of labour. In 1855, "The general policy of the Astronomical Observatory has been the same as during the last twenty years,—to leave the Equatoreal and Scrutinizing Departments of Astronomy to other observatories; but to spare no expense in instruments, no pains in observation, and no labour in reduction, on standard meridional observations generally, and on meridional and extra-meridional observations of the moon in particular." At the end of 1855, for the first time, on the failure of the small Equatoreals which we possess, as some distinct step was necessary, I recommended a larger Equatoreal.

"The Observatory," says the *Morning Chronicle*, "ought to excel all others in point of completeness and efficiency, whereas it is surpassed in these particulars by most private ones." In the spirit in which it is uttered, and in which it must be understood by the public, this sentence is grossly inaccurate. The Greenwich Observatory, in reference to that extensive department which it has taken up as its own, very far excels all others. Its instruments are the newest, and far the best, of all in the European observatories, indeed, in all the observatories in the world, that of the Cape of Good Hope only excepted. In the equatoreal department it has been almost intentionally kept below others, and is inferior for instance to that of Liverpool (erected under my superintendence); and in this respect I hope that it will never, under any circumstances, be brought into competition with them.

The character of our public press stands so high in general, that we little expect to see a combination of the most ridiculous want of information and the most astounding inaccuracy of expression in the leading article of a London daily newspaper. In the instance which has called for these remarks, they have been fully exhibited. The Editor, taking hold (as I imagine) of a depreciating expression applied by me to some ancient instruments, of a class very rarely used and never likely to be much used in the Observatory, has thought himself justified in applying the terms "old," "mere rattletraps," to the newest, the best, and the most efficient instruments in Europe; and has hazarded the assertion "The nation does not supply the astronomer with instruments," when every demand for funds, however large, for the mounting of instruments, has been honoured without a moment's delay. "Truths," says the Editor, "must occasionally be spoken, though they are damaging and unpalatable." Let the Editor bear his own dictum in mind, when he hears what must be the conclusion of every person competently acquainted with these subjects; that, by his unfounded and reckless statements, the scientific character of the *Morning Chronicle* is ruined, and that of every London journal is imperilled.

I am, &c.,

G. B. AIRY.

Royal Observatory, Greenwich, August 26.

The Shipping Docks of Sydney.

[In our December number for 1854, we inserted an account of the intended Fitzroy dock at Sydney. On that occasion we congratulated our Sydney friends on the grand prospect which it opened for them. We are indebted to a friendly hand for a Sydney paper, from which we quote the following account of the completion of this very important undertaking.]

For many years past the utter want of means to repair and refit sailing and steam ships of heavy tonnage in the harbour of Port Jackson, has been universally complained of as a very serious impediment to the progress of the chief port of the South Pacific; and, of late, the construction of two dry or graving docks, and a patent slip, each of capacity to receive and thoroughly repair the largest ships afloat, has been earnestly acknowledged by the maritime and mercantile interests, not only of Sydney, but of every other port in this and the neighbouring seas, as the most important and valuable achievements which either public or private enterprise has yet effected in Australasia. We need not say that we are adverting to the Waterview Dry Dock; the Australasian Steam Navigation Company's Patent Slip (both finished and opened); and the Fitz Roy Dry Dock (rapidly approaching to completion).

Through these columns the attention of owners and masters of vessels sailing from all ports of the world to the South Seas, has been for some time past directed to the unrivalled facilities for the repair and refitting of ships which the Port of Sydney now possesses; and the constant press of business which has attended the Waterview Dry Dock and the A. S. N. Company's Patent Slip since their opening, is the best proof of their importance and value to the shipping interests. We have also, from time to time, adverted to the extensive and comprehensive design presented by the Government in the construction of the Fitz Roy Dry Dock; and, generally echoed as have been our congratulations at the certainty of Sydney becoming, at once, the only great docking port in the Southern Hemisphere; the debate which ensued some evenings ago in the Legislative Council (in Committee of Supply) when a vote of £14,517 3s. 6d. was asked towards the completion of the Fitz Roy Dock, the construction of a dockyard, the erection of workshops, and the purchase of machinery, has been regarded with considerable surprise and pain amongst all parties interested in the large shipping and commercial transactions of this port. Those feelings of jealousy in respect to the noble public and private graving establishments in the harbour, which the Governor-General has frequently expressed his hope might not be called forth, (as it was his intention to provide equitably and fully against all complaints as to public and private competition,) were, however, exhibited very palpably on both sides of the House—Mr. Cowper, for example, declaring that if he could be surprised at anything the Government had done or could do, he should be surprised at their asking for more money for the Fitz Roy Dock, in the completion of which he had no faith, and lauding in warm terms the Waterview Dry Dock, and the A. S. N. Company's Patent Slip. On the other hand, the Colonial Secretary, in maintaining the superiority of the Fitz Roy Dock, decried that at Waterview as "a mere quarry with a gate to it." A rambling and angry discussion ensued, in which it was clear that, with the single exception of the Deputy-Master of the Mint, not one of the speakers had the slightest practical knowledge of the highly important question under discussion. Mr. Martin "would vote for the item, because he thought too much money had been already expended on the work, and if the vote did not pass, the money already expended would be of no avail to the public." Mr. Samuel thought that although the Fitz Roy Dock was a splendid piece of work, it would be a saving to the public if it was discontinued; notwithstanding the large amount of money which had already been expended,

for the abolition of the penal settlement at Cockatoo Island would involve the expense of the formation of another. Mr. Campbell "thought there were already sufficient docks in the colony; the Fitz Roy Dock would only be required for ships of the Royal Navy." The Colonial Secretary observed, that "all would depend upon the increase of commerce." And thus, in this incoherent manner, was a question of the utmost importance discussed by our legislators.

On the eve of making up the mails for Europe by the *Vimiera*, which sails on Thursday, it appears desirable to refer, somewhat in detail, to the chief points in reference to the Port of Sydney's docking capacities, upon which both elective and non-elective members displayed such want of information when the additional estimate for the Fitz Roy Dry Dock was brought before them.

In the *Sydney Morning Herald* of the 27th of September, which was transmitted to England by the mail packet *Donald M'Kay*, a description of the Waterview Dry Dock was published, and attention invited to a letter which had appeared on the previous day from Capt. Mailler, commander of the Sydney and Auckland royal mail steam-ship *William Denny*, expressing in the highest terms his approbation of the highly satisfactory manner in which his fine vessel had been thoroughly refitted, her screw adjusted, and every necessary repair, together with painting, gilding, and other works of decoration excellently performed. We also mentioned the speedy refitting of the Chilian registered ship *Mercedes*, which, on her voyage from Valparaiso to Melbourne, was entirely dismasted off our coast, and sought refuge and repairs in our harbour. And we further described the valuable engineering and mechanical appliances in every department of ship-building and refitting which is at the command of Capt. Rountree and Co. Since that date, we have to record the ingress into, and the egress from, the "mere quarry with the gate to it," (as the Colonial Secretary has been pleased to designate the extensive establishment at Waterview, of the ship *Prince of the Seas*, of 2,500 tons burthen, which fine vessel, sold at Melbourne by reason of the impossibility of the extensive repairs she required being executed at Hobson Bay, was brought on to Sydney, and thoroughly overhauled, repaired, re-coppered, all her cabin arrangements readjusted, and every other refitment performed, in fifteen days under the superintendence of Capt. Rountree; and is now nearly ready with a full cargo for London. All the steamships belonging to the Hunter River Steam Navigation Company, have also been overhauled in this dock since the above date; and the fine American registered steamship *Kit Carson*, is now going to Waterview for the purpose of refitment. The ship *Duke of Cornwall*, which by accident sank in Woolloomooloo Bay some short time ago, is now being raised under the superintendence of Capt. Rountree, and will be taken to Waterview for thorough repair.

The Colonial Secretary may, from these and some other illustrations of the value of capacious dry docks in these seas, understand that it is not exclusively to the "increase of the commerce of the colony," but to the value of possessing the means of docking the largest ships afloat, that Sydney must look for a return of the funds (whether disbursed from public or private reources) expended on the formation of the establishments we are now considering. And when he spoke of the superiority of the Fitz Roy over the Waterview Dock, he should have remembered that the latter possesses advantages on two most material points for a ship-refitting establishment to which the former will never be able to lay claim.

In the first place, the Waterview Dock commands an unlimited supply of fresh water; whilst at Cockatoo Island its sole dependence for this essential element is upon the rains, to receive which several ranges of massive stone tanks have been constructed, but which, when dry, as is often the case, cannot,

from the porous natnre of the stone, be refilled, unless by a continuation of *very heavy* showers. *Light* rains, even of long and uninterrupted succession, make no impression upon the receiving powers of the tanks, and the consequence has been that the purchase of fresh water for the supply of between four and five hundred persons on the island, is an item of large expenditure in seasons of drought.

In the second place, the Waterview Dock commands unlimited facilities for the transmission thither, *by land carriage*, of the valuable timber, fit for every purpose of ship-building or refitting, which abounds in immense quantities within but a comparatively small circuit. After her refitting, the *Prince of the Seas* took in a large cargo of New South Wales timber for the English market, and thus time in seeking for cargo whilst the ship was under repair, was saved.

We may add, that a letter has been received in Sydney, from one of the leading officers in the P. and O. S. N. Company, to the effect that in arranging with the Home Government for the resumption of ocean steam communication between the United Kingdom and the Australian colonies, the knowledge that the Waterview Dry Dock is ready to receive steam-ships of the largest tonnage belonging to the company's fleet, had the greatest influence in satisfactorily adjusting their negociations with the Government. Looking at the immense loss they had sustained by the long detention of the ill-fated *Crœsus* in this harbour, the company would not have entertained any proposal for the renewal of their mail contract with the Government, had they not received advices of the completion and opening of the Waterview Dock.

We believe that it is unnecessary to advert further to our private graving works; and in turning to the Government Dock at Cockatoo Island, and to the animadversions of honourable members in Council in respect to it, we may observe that, with the exception of Mr. Murray, not one representative member of Council has visited the Fitz Roy Dock during the last two years, at all events, and that the opinions expressed by the speakers as to its immense cost, small value, or problematical prospects of speedy completion, were all founded on data of no authority whatever.

To the following particulars in connexion with the work, derived from careful personal inspection, we would therefore request attention.

The Fitzroy Dry Dock is situated on the south-east of Cockatoo Island, to the westward of the harbour of Sydney, at the commencement of the Paramatta River. The area of the island is about twenty-eight acres, with an average depth of twenty-five feet of water close in to the land; its shores forming an uninterrupted site for a line of wharfage a mile in length, approachable by the largest class of vessels afloat. The progress of the works may be thus stated:—

The basin of the dock has been excavated out of compact sandstone and hard shale. The original surface of the island at the point selected for this work, had 40 feet of sandstone above high water mark; which had first to be cleared away; thus involving an immense amount of labour. Some idea may be formed of the magnitude of this work when we mention that 3,000,000 cubic feet of stone have been removed, of a weight equal to 200,000 tons. Of this, 200,000 cubic feet have been quarried, and about 100,000 set. A considerable portion has been cut and employed to line the lower portion of the dock; which is excavated out of hard shale. This would not have been required had the sandstone continued to the full depth proposed; as, we may observe, was the case at the Waterview Dry Dock. Hard as was the shale upon its first exposure, and seemingly equal to the purposes of paving and lining the lower portions of the dock, experience has shown that it crumbles under atmospheric influences: and hence the necessity of resorting to the valuable accessory we have just named.

The floor of the dock is formed by massive blocks of stone, each three to six

tons in weight. They are so cut as to form an inverted arch of 72 feet radius. The altar stones, or steps along the sides of the dock, are of the same massive description; each stone forming two steps, of a foot tread.

The piers between which the caisson rests have two sills, 20 feet apart, to which are bolted, with 1½ inch copper bolts, the timbers, 12 by 12 to form a surface against which the caisson presses when the water is pumped out of the dock—the pressure caused by the water outside being calculated to be equal to about 400 tons distributed over the surface.

Before we proceed to the principal dimensions, &c., of the Fitz Roy Dock, we must recur to a remark made by the Colonial Secretary on the evening when the estimate towards its completion was under consideration in Council. He said that "a dock had been recently completed at Portsmouth of nearly similar dimensions, which had occupied ten years, and cost £120,000." As this is a most important feature, and as the hon. gentleman did not go into detail in reference thereto, we will supply the omission.

During the past year, the Admiralty, although in possession of many large sailing and steam vessels, had not sufficient means to dock them. The great length of the *Himalaya* rendered it necessary to send her to Southampton to be docked in a private establishment; and H.M. screw yacht *Victoria and Albert* was waiting to be docked for some months until the 12th of June last, when the South Inlet Graving Dock in Portsmouth Yard was formally opened in the presence of the chief officers of the various departments, and an immense assemblage of spectators, who, says an eye-witness, "appeared highly gratified to see the completion of so important an undertaking, and so valuable an addition to our national resources."

This is the dock to which the Colonial Secretary alluded. Let us compare its capacity and cost with those of the Fitz Roy Dock, which was so disparagingly spoken of by hon. members the other evening.

Dimensions.

	South Inlet Gov. Dock, Portsmouth. ft.	in.		Fitz Roy Gov. Dock, Sydney. ft.	in.
Extreme length	335	0	.....	336	0
Length of the floor	302	0	.....	300	0
Extreme breadth	80	9	.....	79	0
Extreme depth.....	29	0	.....	27	0
Depth of water at spring tides .	23	0	.....	21	9
Width at entrance	70	0	.....	60	0

The dimensions of the two docks, it will thus be seen, are of no very great difference. The South Inlet was completed in ten years at a cost of £120,000. The Fitz Roy will have taken about eight years, when finished, at a cost to the colony of say £55 000; although the real value of the work done, up to the present time, has been (after careful allowance for the difference between forced and free labour) estimated at £100,000.

We now continue the description of the works *already completed* on Cockatoo Island:—

Two twenty-horse power condensing engines have been erected for the purpose of working the pumps for emptying the dock; and at the same time giving motion to the shafting for driving the machinery in the line of workshops. They are on the direct-acting principle, with cylinders 24½ inches in diameter, the piston rods working on the same crank-shafts, and being continued through the bottom of the cylinders, and working a pair of double action 19-inch pumps, which are fixed in the well immediately under the engines, without the aid of beams, bell cranks, &c. They are fitted with the necessary apparatus for working the steam expansively—the steam being supplied by

two large cylindrical bodies adjoining the engine house. The valves and condensers are all of the most improved description.

The engines will make about 26 revolutions a minute, causing the pumps to discharge about 400 cubic feet of water in the same time. The fly wheel, weighing five tons, is in two pieces, and fixed to the crank-shaft by means of keys and wrought-iron collars "shrank off." The total weight of these engines is about forty tons, and they are from the well known house of Messrs. Rennie.

The boilers are 17 feet long, and 6 feet in diameter; and a flue conveys the products of combustion from the fires, underground, to a circular chimney shaft, 80 feet in height, built of brick upon a square base, and with stone cap and plinth.

The caisson is constructed of sheet iron, from nine-sixteenths to a quarter of an inch in thickness. The beams are of angle iron, with two 18-inch sluices, and the necessary pumps for discharging it of water. The wooden keel and stern pieces are firmly bolted to the caisson, which will be ballasted with pig iron.

We may observe, that this caisson is from the manufacture of Messrs. Mare and Co., of Blackwall, who constructed the caisson for the South Inlet Dock at Portsmouth, already referred to. It came out here in pieces, and has been put together in the dock—25,000 rivets having been employed in the work. It is now completely ready for floating.

A tide drain has been constructed to assist the engines in the discharge of the dock—the tide having a fall of five feet.

A tunnel, six feet in height, four feet in width, for conveying the water from the dock to the engine-well has been cut through hard shale. Its length is 250 feet, and its lining with brick and cement is rapidly proceeding with. In this tunnel is fixed a large cast-iron sluice, manufactured at the foundry of Messrs P. N. Russell and Co., of Sydney.

The water, after being pumped up by the engines, is conveyed into the harbour by means of a culvert.

The greater proportion of the lime which has been used on these extensive works, was brought from Norfolk Island, and is of very superior quality. It is procurable in large quantities at that locale. From New California and from Portland, quantities of excellent lime have also been brought, and used at the dock. Roman cement has likewise been abundantly employed. All the lime has been burnt on the island, for which purpose two large kilns have been built.

In quarrying the large blocks of stone, blasting has not been adopted, owing to that process being liable to shake and destroy the stone; but a series of holes are made in the rock by means of "jumpers," and they are then wedged open.

With respect to the line of workshops (an important feature in the general design) we may state, that it its elevation, in its total length, will be 300 feet. Two large divisions in the centre 100 feet by 40 feet, will contain the lathes and other accessories for the construction of machinery, and at either end will be the engine and boiler houses and offices. At the rear of the building it is in contemplation to erect a foundry; the whole being connected with the dock by means of tramways. The interior of the workshops will have an overhead travelling crane, running the entire length of the building. Each of the two centre workshops will be lighted by twelve large circular-top windows.

In the temporary workshops, where active operations are now progressing, we see a small engine of six horse-power serving to keep the dock clear of water during the excavation, and, at the same time, driving a large and small lathe, and a very fine punching and shearing machine. The lathes are from the works of Messrs. Whitforth and Sons; the punching and shearing machine from Messrs. Fairburn and Co. (both Manchester firms).

There are also other smithies, a small brass foundry, and carpenters' shops, in full work. Varieties of valuable tools have been and contine to be manufactured in the various workshops; so that whatever may be the design of the Government with respect to the disposal of the dock when completed, every requisite for carrying out the most extensive arrangements will he found immediately available, whether they refer to the dock or the dockyard. Already, we may observe, many works peculiar to such an establishment have been performed at the Fitz Roy Dock; as, for example, the repairs of H.M.S. *Fantome* and *Acheron*. the manufacture of blocks for the Middle Head, sixteen gun-carriage wheels, &c.

Having thus described what has already been done at the Fitz Roy, and what is steadily advancing to completion, the value of the suggestions put forth by a few members of the Legislature in respect to the abandonment of the works at the dock, which will rank as second only in the list of Government undertakings of the kind, will be easily appreciated.

To Capt. K. Gother Mann, and to Mr. James Henry Thomas, (the latter officer having prepared the designs for the whole of the extensive plant of machinery, and for the additional buildings, &c., now in course of completion,) the highest credit must be given, not only for the ability displayed by them in carrying out so important a work, but for the tact they have displayed in overcoming those obstacles which will ever be met with when forced labour, and that, in most respects, of the worst kind, is employed.

Sydney Morning Herald.

SERPENTS ISLAND LIGHTHOUSE—*Solicitude for the Light!*

Constantinople, Aug. 21st.

The question of the Serpents Island seems to complicate itself more than could be expected in the first instance. Circumstances have transpired which plainly show that the Russian occupation was not due, as might have been supposed, to misunderstood instructions or over zeal of the authorities at Odessa, but rather to positive instructions from St. Petersburg. In this stage of the question it will, therefore, not be amiss to give an *exposé* of the whole affair up to this moment. The first news of the occupation was very vague. The Porte received an intimation from the officer cammanding the Turkish party of 50 men sent to the island to restore the lighthouse, that a Russian detachment had landed on the island. Neither the number of the Russian detachment, the manner of their arrival, nor the explanation made by them, was given in the first instance.

In order to ascertain all the details, which was necessary in order to judge of the nature of the Russian occupation, Lord Lyons dispatched H.M.S. *Gladiator*, Capt. Hillyar, to the spot, while the Turkish government sent a commissioner there for the same object. The news which they brought back was, that seven Russian marines, with a lieutenant, had come to the island, giving as the object of their arrival the restoring of the lighthouse. As the officer commanding the Turkish detachment had no instructions to prevent their landing—which he could easily have done, considering that his force was not only superior in numbers but was armed, which the Russians were not—the Russians landed without opposition, and were quartered in the only house which exists on the island, where they were living on the hospitality of the Turks, who treated them as their guests.

Before these details arrived, which showed that the Turks were actually in possession of the island, and not the Russians, and that the Turkish flag alone

was waving over the lighthouse as a symbol of their occupation, the simple fact of the Russian occupation was sent to England, the answer to which was the order to Lord Lyons to remove the Russians from the island. By the time this answer arrived the *Gladiator* had likewise arrived, bringing the above-mentioned details, which modified considerably the first impression that prevailed when the occupation became known, and under which impression the order to remove the Russians had evidently been given.

The gallant Admiral followed, therefore, more the spirit than the letter of this order, and sent back Capt. Hillyar, of the *Gladiator*, with instructions to offer to the Russian lieutenant commanding the detachment on the Serpents Island to give him and his men a passage to Odessa; and if they did not consent to this, to proceed to Odessa and ask for their removal by the authorities there. Capt. Hillyar proceeded accordingly to the island and made his offer, which, as might be expected, was not accepted by the lieutenant, who excused himself by his orders to remain on the island until further instructions from his superiors. So Capt. Hillyar went to Odessa, and asked, according to his instructions, for the removal of the Russian detachment on the Serpents Island. The Governor asked for forty-eight hours' delay, to telegraph to St. Petersburg for instructions. The answer from there was that the Russians could not be removed until the question of the Serpents Island was settled by the Conference at Paris.

This answer gives a key to the view the Russians have taken upon this question. They consider the Serpents Island as part of the territory of Bessarabia to be annexed to Moldavia, and they will not give up their pretensions to this part until the whole frontier question be settled and the matter finally arranged by the Conference of Paris, which is to meet after the labours of the Commission in the Principalities had been brought to a close.

According to the letter of the treaty the Russians are, of course, not obliged to give up, before the whole frontier question is settled, any part of the Bessarabian territory which they actually possess; but it may be questioned whether they can be allowed to stretch the letter of the treaty so far as to re-occupy a place about the cession of which there ought surely to be no doubt, and which they had abandoned.

When Capt. Hillyar received the answer at Odessa he returned to the Serpents Island and stationed himself there, sending down the gunboat which had been put at his disposal with the news to the Admiral, who sent back instructions to him to remain there in observation and prevent any attempts the Russians might make to increase their force. This precaution was not useless, as the sequel showed, for on Friday last, the 15th inst., a Russian steamer made her appearance before the island, having on board M. Botianoff, Conselier d'Etat and Gentilhomme de la Cour, and a staff for the re-establishment of the lighthouse. The Conselier d'Etat, when he made the Turkish commander acquainted with his mission, which was to see the lighthouse restored, was told that the thing had been done, and that the commander of the Turkish detachment had no orders to receive any further reinforcement of Russians on the island. Seeing that his intention of landing an additional force on the island had been foiled by the precautions taken by Admiral Lyons and the Turkish government, M. Botianoff left in the evening in the direction of the mouths of the Danube. Capt. Hillyar, suspecting that this was done with the view of taking the superior commanding Turkish officers by surprise, and gain an order of admission through him to the island, sent the *Snake* gunboat, which overtook and passed her, so that when the Russian steamer arrived M. Botianoff found the Turkish commander *au fait* to what had passed and on his guard, so that his object was foiled there just as well as at the island. Thus the question rests for the moment.

It seems that if the Allies forgot to mention the Serpents Island in the trea-

ty, the Russians have forgotten to re-occupy in time, and they are now trying to repair the omission, in which intention they have been, however, hitherto foiled by the rapidity with which the Turks restored the lighthouse, and by the vigilance of Lord Lyons. The actual occupation and the keeping up of the lighthouse by the Turks give these latter the benefit of possession, which, in politics, may be said to be more than nine points of the law. The Russian detachment cannot be said to be in possession of the island, for they have nothing to do with the lighthouse, and it is the Turkish flag which is waving there.—*Shipping Gazette.*

NAUTICAL NOTICES.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from p. 509.)

Name.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
25. Black Buoy	Mother Bank				To mark channel to Pitt Coal Depot.
26. St. Croix River	Big Island	F.	40	11	Est. 2nd Feb., '57.
26. Boston Harbour	Spit of the Narrows	F.	35		Est. 1st Aug., 56. *Red.* On screw piles of iron.
26. Martha's Vineyard	Gay Head	R.	191	20	Est. 1st Dec , '56. Interval ten seconds in which bright flash appears.
26. Calibogue Vessel	Sound		30		Est. 1st Aug., '56. Between Grenadier Shoals and eastern breakers off Hilton Head.
27. Dardanelles	Cape Hellas	R.			Est. July, '56.
27. Gallipoli	West Point	R.			Est. July, '56.
28. Fog Bell	Mt. Desert Rock				Est. Aug., '56. Fifty feet above the sea, strikes seven times a minute.
28. Fog Bell	Matinicus Rock				Est. Aug., '56. Fifty feet above the sea, strikes ten times a minute.
29. Buoy, Delaware Bay	Cross Ledge Shore				To indicate foundation of a lighthouse.
29. Chandeleur Island	near former	F.	50	13	Est. 15th Aug., '56.
* Cape Race	Newfoundland	F.	180	17	Est. 15th Dec, '56. In 46° 39·2′ N., 53° 2·6′ W. Visible bearing from S.W.b.W. to East, and in any northerly direction between them by compass.

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

* Advertised by Board of Trade.

PORT OF LIVERPOOL.—*Northern Channels.*

Crosby Lighthouse—A light will be exhibited at Crosby Lighthouse at sunset on Monday, the 6th of October next, and be continued every night from sunset to sunrise. The light will be stationary, of a red colour, elevated 96 feet above the level of the sea at half-tide, and be visible between the bearings of S.S.E.¼ E. and East, which limits will indicate respectively when a ship is westward of Formby Spit or to the southward of the Crosby Lightship.

Formby Old Lighthouse.—The light in this tower will be discontinued on the evening of the above date.

Formby Lightship will be moved from her present berth, S.E.b.S.$\frac{1}{2}$ S., half a mile into 33 feet at low water. Crosby Lighthouse bearing E.b.S.$\frac{1}{2}$ S. southerly; N.W. mark N.E.b.E.$\frac{1}{2}$ E. Crosby Lightship S E., distance 1$\frac{1}{8}$ mile.

Crosby Lightship will be moved from her present berth N.b.W.$\frac{1}{2}$ W., 330 fathoms, in 46 feet at low water. Crosby Lighthouse E.$\frac{1}{4}$ S.; N.W. mark N.E.$\frac{1}{4}$ N.

The Bell Beacon will be moved from her present berth, North, 200 fathoms, into 25 feet at low water. N.W. lightship S.W.$\frac{1}{4}$ W., distance 3$\frac{1}{8}$ miles; Formby Lightship E.b.S.$\frac{1}{4}$ S. southerly 3$\frac{1}{8}$ miles.

Sailing Directions.

Victoria Channel.—A ship coming from seaward, by bringing the Formby Floating Light to bear E.b.S.$\frac{1}{4}$S., southerly, will have that object, the Bell Beacon, and the Crosby Shore Light in one; and after passing the Bell Beacon, by keeping the lights in one, may steer on that bearing up the Victoria Channel until abreast of V. 3, black, or until Leasowe Light bears S.$\frac{1}{4}$ W. and Rock Light bears S.S.E.$\frac{1}{4}$ E.; then haul up N.E. until the Crosby Lightship opens eastward of the Formby Lightship, when you will be in the fairway, and may steer for the Crosby Lightship. Should there be sufficient water, instead of hauling up as above, she may continue her course with the Formby Lightship and Crosby Shore Light in one, and so pass in the best water (8 feet at low water, the same as in the Queen Channel), over the West Middle into the Crosby Channel. The navigation of this part of the channel by day will be facilitated by the placing of the Nun and Can Buoys, S.V. 1., by passing between which the shoal parts of the West Middle will be avoided.

Queen Channel.—Having sighted the Bell Beacon, a course from it N.E.b.E.$\frac{1}{4}$ E. 1 mile, will bring you to the Fairway Buoy of the Queen Channel (black, with perch and ball,) from which Crosby Lighthouse bears S.E.b.E.$\frac{1}{4}$ E.; with this bearing for a course, steer till the Crosby Lightship comes well open eastward of the Formby Ship, when you may shape your course for the Crosby Ship, observing to keep well to eastward of the Formby Ship, to give a wide berth to the shoal elbow of the West Middle.

Zebra Channel.—A course from the Bell Beacon N.E.b.E.$\frac{1}{4}$ E. 2$\frac{1}{2}$ miles, brings you to the Zebra Fairway Buoy, from which a S.S.E. course will carry you in the deepest water through this channel to the Formby Ship. This channel is very narrow.

Observe.—That in sailing upon any of the bearings abovenamed, the set of the tide must be considered, and due allowance be made in the course steered.

The Late Sir John Franklin.

These are days of retrospect, when memory fondly dwells on the past and recalls before her those who have played a noble part on this world's stage. How many gallant heroes has the late war numbered whose loss is recorded in "monumental pride," and others whose noble deeds, that endeared them to the friends they have left, will be mourned by them to life's latest hour—unhonoured in marble yet more honoured in love. Now that war and the elements have concluded their work the vacant place is left, and he who filled it is yet among us in memory's fondest picture.

Among these a proposal has been sent to us for circulation to raise a monument to the late Sir John Franklin. It will be seen by the following letter that the proposal has originated in his native county, and that it is intended that whatever success may attend it the memorial shall be placed in Lincoln.

Anything of the kind exclusively naval might be claimed perhaps for Greenwich; but native soil has strong claims, and when backed by native friends will probably establish those claims in possession. The proposal to establish a Franklin memorial is good—nothing in this way has yet been done to perpetuate his memory and now is the time. The subject appears to have been discussed in the Lincoln papers, in one of which we find the following proposal to ornament the cathedral with an arctic window. Of this it is observed in the *Lincoln Times* of the 2nd September:—

"We can conceive no design more appropriate, or more graceful, than that which Sir Charles Anderson has sent to the Mayor. The plan of the suggested window is this: at the top a representation of the arms of the late Sir John Franklin; below, the representation of an Arctic scene—ice-mountains, a ship stuck fast, and the aurora-borealis playing over the whole; then this text of Scripture—Job 38th chap., and 30th verse—"The waters are hid as with a stone, the face of the deep is frozen." In the lower compartment there is a representation of an angel with a laurel pointing upwards, and room for an appropriate commemorative inscription. Whatever comes of the project for a Franklin memorial, we trust this beautiful design will not be lost sight of. Sir Charles Anderson deserves all credit for the handsome manner in which he has placed it at the service of the Committee."

The surviving Arctic companions of Sir John Franklin would delight in this, and there are many besides by whom they would be well seconded. But, having stated the subject, we leave it for their discussion, assuring them that we shall be glad to give them the assistance of the *Nautical* in promoting an object which will not only coincide with their feelings, but leave to posterity a becoming mark of respect for the memory of Sir John Franklin.

Town Clerk's Office, Lincoln, July 16th, 1856.

I am requested to solicit your good will and sympathy on behalf of a movement originating with the Town Council of this city, and which is not only particularly interesting to the county of Lincoln, but to the nation generally. It is thought desirable to commemorate Sir John Franklin's devotion to science, and his courage in attempting a discovery of a North-West Passage, as well as to record his country's gratitude and the loss sustained by the sacrifice of his noble life and the lives of his brave companions.

At a meeting of the Town Council held a short time since the subject was brought forward and it was resolved:—That a public monument should be erected in honour of Sir John Franklin, and that, as he was born in Lincolnshire, such monument should be erected in the City of Lincoln (being the county town). The Mayor, Mr. J. S. Wilkinson, Mr. Brogden, Mr. Carline, Mr. W. Marshall, and Mr. Penistan were appointed a Committee for carrying into effect the desired object.

The Committee are desirous in the first place of associating with their endeavours the names and services of the Nobility, Gentry, Members of Parliament, and scientific men connected with Lincolnshire. I have therefore to request you to lend us your name, and to give us your aid in any way you deem best to serve the object.

Communications are being addressed to all the noblemen belonging to the county, and to the different scientific and learned societies of the principal cities in the kingdom, on the continent, and in America, to obtain their assent to become members of the Committee. Several influential names have already been received; a list of which and the subscriptions will shortly be advertised.

A favourable reply will oblige

Your obedient servant,

JNO. THOS. TWEED.

THE

SUNKEN VESSELS RECOVERY COMPANY.

(Limited).

Capital £60,000, in 6,000 shares of £10. With power to increase the capital to £500,000, such capital to be offered to the original shareholders pro rata.

Trustees—George Henry Barnett, Esq.; John W. Miles, Esq.

DIRECTORS.

Allix, Wager Townley, Esq.	Jackson, Thomas, Esq.
Berkeley, the Hon. F. H. F., M.P.	Laing, Charles, Esq.
Claxton, Christopher, Capt., R.N.	Patterson, William, Esq.
Dyer, Samuel, Esq.	Richardson, George, Esq.
Ford, Robert, Esq.	Shepherd, W. G., Esq.
Goddard, Leonard Morse, Esq.	Trotman, John, Esq.

(With power to add to their number.)

BANKERS.

London—Messrs Barnetts, Hoare, and Co.
Bristol—Messrs Miles and Co.
Manchester—Messrs Loyd, Entwistle, and Co.
Liverpool—Messrs A. Heywood, Sons, and Co.

Auditors—James Joshua Carr, Esq.; James Protheroe, Esq.

Solicitor—Walter Upward, Esq., 3, Copthall-court, London.

Secretary—James Walter, Esq.

Marine Superintendent—Captain Stephen Randoll Smith, the Patentee.

Offices, 9, Cornhill.

This Company is being formed under the recent Joint Stock Companies Act 1856, with Limitied Liability, to work the Patent of Captain Stephen Randoll Smith for recovering Sunken Vessels and for other Submarine purposes.

The amount of property annually lost around the coasts of the United Kingdom is shown by the Report of the Surveyor-General to the Board of Trade of the Wrecks and Casualties for the year 1855. The number is 1141; of these 385 are sunken (there being no existing means for raising them), the remainder stranded and partially recovered by inadequate means, which the Plan of the Company (shown by the accompanying Sketch) proposes to supersede.

As a means of finding the Wreck when in deep water the Submarine Surveying Apparatus will be used in addition to the ordinary mode of sweeping.—the stages (with the Divers down the chain-ladders on their platforms) being drawn by a screw steamer about half a mile the hour, there being on either side of the chain ladders the ordinary means of communication of air and for speaking.

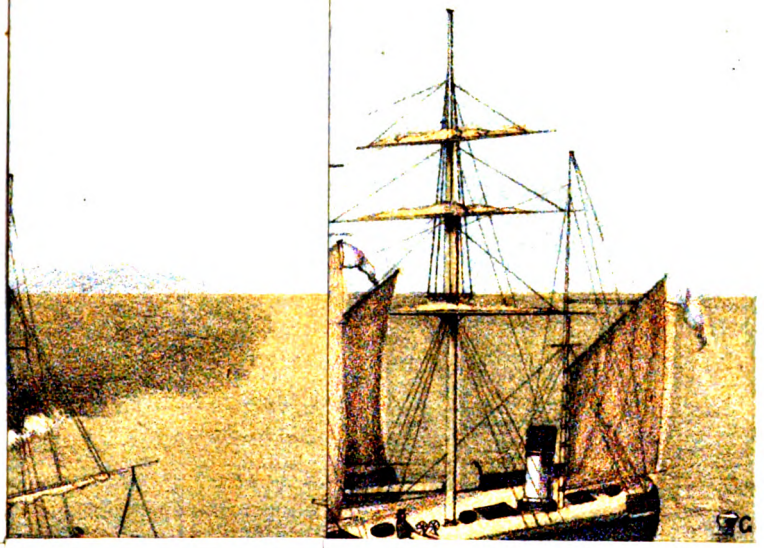
The Ship-Lifting Apparatus consists of two flat-bottomed iron vessels (with separating shores fore and aft, so as to admit the wreck coming up between them) each having a deck, on which the machinery is placed and the lifting operations performed; a series of iron tubes are arranged in the central line of the same, passing from the deck to the bottom, and through these the chains are worked by powerful machinery, so that the Lifting Power is applied from the centre of the vessels without lurching or disturbing their vertical position and having the advantage of direct action, it being a dead pull upon the Wreck or subject to be lifted.

The encircling chain or chains are carried by the tug boat which is fitted on purpose to work those chains round the Wreck, the divers pinning and shackling all the chains below water—the Wreck when raised to a sufficient elevation and secured by chains passed under it, is then bodily carried to the beach or other required destination by aid of the propelling power of the screw attached to each Lifting Apparatus; or, if it is desired to float the Wreck, or to lift it when stranded, it is then raised between the two Lifting Apparatus by operations also from their centre brought to bear over their inner sides, a proportionate counter balance of water (confined within the fore and aft compartment) being let in to the Lifting Vessels on their opposite or outer sides during this inner sidal strain.

The Company which is constituted with Limited Liability is fast approaching completion in the disposal of the shares, having Engineers of the first class with nautical and practical men of great experience among the shareholders: and the Directors have great satisfaction in stating that Captain Smith's remuneration for the sale of his rights is entirely dependent on the profits of the Company, he receiving nothing until the Company pays a Dividend of £10 per cent.

For detailed Prospectus and for shares application to be made in London at the Company's Offices: to WALTER UPWARD, Esq., Solicitor; to B. STOCK, Esq. Share Broker, Bristol; to THOMAS KNIGHT, Esq. Share Broker, Manchester; and to Messrs. D. and J. NEILSON, Share Brokers, Liverpool.

SUBMARINE



THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

NOVEMBER, 1856.

The Late Melancholy Loss of the Emigrant Ship "Ocean Home" by Collision.

"With fixed attention, pondering in my mind
The dark distresses on each side combined,
While here we linger in the pass of fate
We see no moment left for sad debate."

The British public are feelingly alive to any and every thing passing under their immediate eye, and, whether for good or evil, there are no bounds to the expression of their sympathies! Thus a morbid curiosity may lead them to witness the execution of a malefactor—to ascertain his penitence or hardihood, and to pronounce an opinion on the awful future which awaits the immortal spirit when all that was mortal has paid the penalty of crime. Or if an isolated case of drowning or accidental death occurs, how difficult it is to restrain the crowd of eager inquirers, each and all too readily anticipating the Coroner's verdict and pronouncing with self-complacency their own decision, and becoming in many instances perverters of the truth! Yet it is with regret that we cannot help observing that the record of unparalleled disasters at sea—because they occur in the dim perspective—are read only to excite a moment of pity and to be forgotten; Or, if remembered, it is only to elicit the usual apathetic ejaculations, "Indeed, how awful!" "Poor fellows!" and "What a fine ship and valuable cargo, but then, no doubt she was well insured!" Can there be no

awakening to the awful truth that many helpless souls are hurried into eternity with all their imperfections on their heads, and consequent upon causes which, in a strictly religious and moral sense, must hold the abettors of a bad system as little better than guilty of their destruction or, in legal terms, accessories before the fact? Severe as this may seem upon the determined worshipper of Mammon, it is time that some one of influence obtained attention to the fact and warned the commercial marine (not only of this country, but of the world) that there is a Providence watching us all, that "The sea is His, and He made it,"—but not for the wanton sacrifice of His creatures—and the time may come when, among the multitude of sufferers rising from it to judgment, thousands may point with unerring finger to those who recklessly sent them forth upon it in ships badly constructed, badly manned, and worse officered!

Who can dwell for a moment on the instantaneous destruction of an emigrant ship and not feel for the relatives thus doomed to mourn the severance of the dearest earthly ties. Thus we read in a paper a crushing announcement under the head of

MERCANTILE MARINE.

The Late Collision in the Channel.

On Saturday last the American ship *Cherubim*, which caused the terrible catastrophe to the *Ocean Home*, emigrant ship, off the Lizard, on the 5th September, arrived in the river off Gravesend; but no investigation will take place by the Board of Trade, both ships coming within the category of "foreign" vessels, and therefore do not come within the operation of the Merchant Shipping Act. Some of the poor survivors, emigrants, reached London on Friday from Plymouth, and received every kindness from Mr. May, the Consul. The poor creatures gave a harrowing tale of their sufferings. One poor man, a carpenter, named Wynveen, rather advanced in years, lost his wife, his mother, and five children, and about one hundred pounds' worth of property, the result of several years' hard earned savings. Another emigrant, G. Wensink, apparently a young farm-labourer, lost his mother, four brothers, and three sisters. They had clubbed together for the purpose of purchasing land in the United States. A third survivor, a young man, whose mind seemed to have been almost turned by the calamity which had befallen him, lost his wife and three young children. A fourth survivor had been deprived of three of his children. The Consul made provision for their return to Rotterdam.

And so it was, alas, with many more. They are gone!—Gone in a moment!—No reckoning made!—A midnight crash!—and "Sleep, Death's counterfeit, awoke to Death itself!" There sunk the father, husband, brother in smothered agonies, along with the weaker sex clinging to their helpless progeny—sacrificed to the heartless cupidity of the employer or the neglect and imbecility of the employed!

It is indeed common to the most casual observer that in the majority

of cases of collision the cause of the accident originates in a system which every seaman of the olden time denounces as an innovation calculated to produce, and is continually producing, the most appalling and disastrous results. It may be summed up in a few words—the helmsman is no longer the safeguard of the ship, because to everything but the binnacle he is blindfold! Before his nose are deck cabins, which, extending aft on each side, coop him up in a sentry-box and leave only a small aperture; through which, if sailing close-hauled, he may just watch the weather leach of the topsail, and this is all he has to guide him in the discretionary power upon which mainly depends the safety of the ship and all that she contains! As to any sudden shift of the helm to avoid approaching danger, the helmsman must trust entirely to some one else,—the ocean field is hidden from his view and the most fatal collisions are the consequence! I could detail many instances and give names and dates, but it is not my purpose to recriminate the past, I would rather warn the future.

Nine out of ten cases of collision with vessels of different flags that have sought this harbour of refuge in distress might, and probably would have been avoided if their respective helmsmen could have seen the approaching danger! Nay, this extends also in a degree to many distressed vessels rescued and brought in from the Goodwin Sands. It is hardly credible? of three vessels under repair at the same time in this harbour—one an American and two English—that the Masters in charge in their account of the disaster stated, that they mistook the Gull Light for those on the South Foreland! Doubting the possibility of this, I make inquiry and the following colloquy ensues with the foreign Captain:—

Are you an American?—No, there are very few native-born Americans in the European trades except in the liners (packets). The only real American on board my ship is the black fellow (steward). We are mostly Germans, Belgians, and Dutchmen. I am a native of Holland and the Mate is of Antwerp.

Are you well acquainted with this coast?—Yes, I have been in this navigation all my time.

How, then, could you take a departure from the Scheldt with a fair wind, see Ostend spires, and yet run your ship under all sail upon the Goodwin Sand?—Well, Sir, the truth of the matter is this.—I had a good man at the helm and the lead going occasionally, but I have a stupid chief officer, who only joined six days before we left Antwerp and who pretended to be quite a pilot in these seas. I had kept the deck myself till we came into proper soundings and had all the floating lights clear and plain before us. I then gave the Mate the watch, with instructions how to keep the two lights on the South Foreland in one to clear the sandhead and haul up to the weather shore for Dover Roads, but the thick-head went to sleep on the windlass-end. The helmsman had heard my directions. He could only see through a small opening before him right ahead and only one light at a time, and that, unfortunately for us, he had mistaken for the two lights to which I had

alluded upon the South Foreland. The lead had given no warning, the outer edge of the shoal being very steep to. The tide also set over the sand, and we were fixed fast enough till assistance came from a shore lugger and carried out a bower anchor, and upon the next flood we were rescued from our perilous position and brought safely into harbour,—and here is the voyage ruined by one man's stupidity and neglect!

But, I observed, if the helmsman had all the horizon within view—the three light-vessels stationed as they are, and which from the position of the ship were all visible—a triple, a double, and a single light—all on the same level as the ship—can you believe it possible the mistake would have been made?—Perhaps not, probably not, certainly they (the deck cabins) are a very great inconvenience in every respect as to working the ship.

This was a candid admission, and I forbear the recital of excuses which were made by my own countrymen—such excuses were too ridiculous for repetition. That any Master Mariner with the printed instructions called the *Channel Pilot* on board could mistake two lights in a small light-vessel for the high and low powerful lights upon the lofty promontory of the South Foreland is incredible. Yet such was the deponents' assertion, and in all three of these casualties we could not fail to observe that the man at the helm might as well have been below deck for anything that he could see around and about the ship, or else even the surf and the tide setting over the shoal would have attracted his attention. No, he must depend entirely for his directions on a sleepy watchmate;—and, be it observed, the officer may be drowsy, muzzy, or careless,—the watch may be "a' nodding,"—but the helmsman cannot shut his eyes. His are the best pair upon deck, kept wide awake by attention to the course and the exercise necessary at the steering-wheel. He is also in the very best position for any sudden and necessary evolution to avoid danger. He, as a skilful seaman, sees that a collision is inevitable, and thus, seeing the impulse is instantaneous, up flies the helm, or down, as urgent necessity prompts, and the sleepy-headed officer of the deck rouses himself up in his muffled up brains to owe his preservation to sharp eyes and a ready hand.

"Lead and look-out! lead and look-out!" were the old panacea for half our evils. "Lead and look-out," disarmed the sea of half its terrors. Where now will you find a crack leadsman? And as for the look-out, what with topgallant bulwarks and booby houses upon deck, it is next to impossible to exert that vigilance in the management of our merchant ships which constituted and created for our predecessors their far famed maritime supremacy. The man at the helm should have a clear and unobstructed view on all sides of anything which can approach the ship in any direction, more especially since the introduction of the steam engine as a propelling power, urging the rapid bark headlong upon her course independent of wind and weather. The officer in charge of the deck, it is possible may be suddenly

aroused to a sense of approaching danger and give a mistaken order—such as, Port, port the helm, hard a port! starboard I mean! The skilful helmsman, when he can see around him, disobeys the first injunction and intuitively saves the ship by anticipating what was meant, and not what was said; and this originated a favourite saying of the immortal Nelson, "Give me the man that knows when to disobey his orders!"

One is naturally disposed to ask, Is this destructive system to be tolerated or not? Are life and property to be thus wantonly jeopardised to increase the freight? Humanity moved the British legislature to institute an Act of Parliament, restricting deck loads during certain periods of the year in a particular navigation; and it is evaded by bringing the officers and passengers into a booby house upon deck, and the crew, in too many instances, packed away in a hole, more like a dog kennel than any thing else, in the fore-peak, certainly ill calculated for the comfort of human beings or the preservation of their health. Then the object is gained,—all under the deck beams is filled up with cargo, the wretched bark is fearfully overloaded, and if overtaken by a storm is as fearfully distressed.

The recklessness of this system (which is increasing) must be seen to be believed. In every port of refuge the proofs of what I have stated are continual. Ships arriving for repairs with bowsprit gone, bows stove! and it is useless in many cases to ask how or where! The partner in suffering is gone and of course "It was all their fault!" In one instance in particular the helmsman could not see over the deck-house without raising himself on tiptoe, and in another a man at the steering-wheel is continually on the bend, stooping to his work; but here, in one of the present instances, were two of the ship's boats lashed athwart ship on its roof, bottom upwards! I contrived to find the man who was steering at the time of the accident and questioned him thus—

How did you manage to run into a ship, you having a fair breeze and he plying to windward?—Why, said he, yer honner d'y' see, I coudn't help it. The officer of the watch is obliged to be on the forecastle in this 'ere ship. He can't see nothing anyvere else. He swears he sung out to me, but I can't see him and coudn't hear him—coudn't hear what it was he was singing out!

Good heavens! I exclaimed, is there no where else to stow those boats, I would put them over the side and lash them there?—Ye might throw 'em overboard, said he for any good they be to us, for neither of 'em would swim!

This is no exaggeration. Government may make laws, but there is nothing but a conscientious and proper sense of moral and religious responsibility which can or will establish respect for them, and I regret to add that that same moral feeling seems to be universally scouted.

This was not a British ship. The flag shall be nameless. The Captain was one of those reckless fast men (too well known) of the modern school. But, ere we criticise the mote in our brother's eye,

let us, as Britons, pluck out the beam which is in our own eye. Our first-class ships are like "cities set upon a hill," but our smaller fry are, in too many instances, a discredit to all who may be concerned in their equipment.

K. B. MARTIN,
Harbour-Master, Ramsgate.

To the Editor of the *Nautical Magazine.*

NOTES ON A VOYAGE FROM ENGLAND TO BALACLAVA *in the "Gilbert Munro," late Store-ship at Hyder Pacha,—By C. R. Maclean, Master.*

(Continued from page 529.)

Daylight on the morning of the 11th of January dawned upon us in the Sea of Marmora mild and serene as an English morning in June, with a fine steady breeze from the S.S.W., and the sea remarkably smooth. The high mountains of Maltpha, and those known by the name of the Two Brothers, were first seen like a dark cloud on the horizon about a point on the starboard bow, and as the daylight advanced the lofty chimneys of the numerous factories between Stephano Point and Constantinople became visible. By 6.30 a.m. we were abreast of the Castle of the Seven Towers, a huge building used as a state prison. This and the Sultan's country palace were very conspicuous objects. The whole extent of four miles and a half from Stephano Point to Stamboul appears to be one great manufactoring district, the space being covered with factories and other outbuildings, most of which are painted red, apparently a favourite colour with the Turks.

As the limits of our vision became extended by the dawning day, sailing vessels and steamers in all directions met the eye, indicating an extraordinary commercial and warlike activity in the vicinity of the Turkish capital, which had hitherto been concealed from our view by Stephano Point. A fine mist that hung over Constantinople as the sun rose, was now clearing away. As we kept our course, and hauling up gradually for the shore, by 7.30 we found ourselves abreast of Stephano Point, and the ancient eastern city of Stamboul became gradually displayed to our view. It was an imposing and interesting sight, one of those that affords an ample recompense to the intelligent and curious traveller for all his trying days of sea-sickness and discomfort on board ship. The first view he has of the lofty towers, the palaces, mosques, and gilded minarets of the renowned city, banishes all such recollections, and he is lost in contemplation of the imposing scene before him. A more splendid and gratifying scene is not to be found than that presented by Constantinople when approached from the Sea of Marmora.

And yet this same city of Stamboul, as it lay before us, was not the only object of our attention. Prominently in front of us stood the great square barracks, with a tower at each angle, and in close proximity to these there stood another large building of more recent date, no less than the general hospital of Scutari, where hundreds of our brave countrymen lay wounded, some alas too severely ever to recover. But associated with the thought of much pain and human suffering, came the pleasing reflection that a carefully selected number of British ladies were there also, ministering relief to their suffering countrymen. A noble impulse of humanity had induced them to leave all the comforts of home on their mission of mercy to soften the agony or cheer the dying hour of the soldier. Respected and revered be their names! all honour to such hearts! who shall estimate the comfort, the peace, conveyed by their presence, when, in that hour of agony, through the dim light of life's expiring taper, the dying patient fancies he sees, in that form standing by his couch, the image of a blessed mother, a beloved wife, or a dear sister, far, far away; mercifully, it may be, spared the pang of witnessing the closing scene of a beloved relative. Who shall estimate the worth of that tender, silent, watchful care (they only can minister) at the couch of him who in such extremity, far separated from all by whom he was dearly beloved, has, in all the vigour of manhood, been thus suddenly stricken down. That clergymen have come out to read, and a Member of Parliament to write, at the bed-side of the sick and wounded soldier, are bright lights in the sad scenes of misery and suffering which those walls revealed. They are glorious facts, incontestible proofs that the type of humanity is progressing. Though it may in some places appear to stand still or even to retrograde, it is in others advancing higher and higher towards that state of perfection to which it is destined by a perfect Creator. Such were the thoughts that passed through my mind when contemplating the celebrated Hospital of Scutari.

The wind being light on reaching abreast of Seraglio Point, we hauled over to the Scutari side to prevent being swept by the current on the point. Moreover, when leaving England, I was under the impression that a firman was to be obtained at Constantinople to entitle us to pass through the Bosphorus, and my intention was to anchor at Scutari in a convenient berth till this firman was secured. But a phenomenon which we met with most unexpectedly set all this aside, and caused me to relinquish my intention of anchoring. The current of the Bosphorus had changed, and was now running into the Black Sea at the rate of fully three knots an hour. And therefore considering it possible that the speedy arrival of the stores I had on board might be important to the public service, I determined on taking advantage of this favourable circumstance for prosecuting my voyage by continuing on. In this determination I was also encouraged by the crowded state of the Bosphorus with shipping, besides the force of the current rendering it dangerous to let go an anchor in the vicinity of Constantinople. A clear berth was hardly to be obtained. Should the

anchor fail to bring the ship up short, she would inevitably fall foul of some others at anchor, these showing by their loss of bowsprits, head, and cutwater, the heavy collisions which they had undergone. Under these circumstances I considered it my duty neither to run the risk of collision nor lose the favourable opportunity of wind and current for prosecuting my voyage.

The strength of the current and the light wind that was blowing as we traced our way through the immense fleet anchored in every direction around, thick as vessels in the Pool of the Thames, but without that order or attention to a free passage for the safety of navigation, made the passage through to the Black Sea under the circumstances an anxious one; and I was very glad when, about 10.30 a.m. the wind began to freshen, and at the moment we were approaching the Roumilli and Anadoli Hissars, (Forts of Europe and Asia,) where the strait is the narrowest and the current the strongest, we obtained full command of the ship over the tide. Certainly it is to be regretted that no attention seemed to be given to any order in ships taking up a berth off Constantinople, each as they arrived dropping their anchors any where and any how, according as each commander's judgment suggested. But, again, it is an ill wind that blows no one good. The consequence was the shipwrights of Constantinople were reaping a continual harvest for repairs.

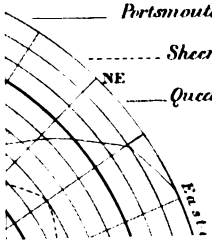
We passed these forts, which are within hail on opposite sides of the Bosphorus, with colours flying and without interruption; and favoured as we were with the freshening breeze and strong current, at 11.30 a.m. we were abreast of Roumilli Kalessi and Anadoli, the two last forts at the Black Sea entrance, and the last we had to pass. Neither of these offered us any opposition, so, after saluting them for their indulgence, we passed them by, and by noon were fairly in the Black Sea, having passed, it is said, batteries which contain as many as three hundred pieces of cannon.

The channel of the Bosphorus is a magnificent specimen of nature's own handiwork, commenced at the Dardanelles to effect the junction of three seas by two magnificent canals, each presenting at every turn a series of the most imposing views to be seen in the world. Two lighthouses, Roumilli on the European and Anadoli on the Asiatic side, exhibiting fixed lights, mark the entrance from the Black Sea. They are now not bad lights or badly kept. I lay on and off the Bosphorus a whole winter's night, getting soundings, by which I kept my position, but never saw either. It is not therefore either prudent or safe to run for the Bosphorus in the night, depending on seeing the lights, unless the weather be very clear; as by trusting to them a vessel would find herself on shore, and the lighthouses not far off, when daylight revealed her position.

The breeze that had freshened while we were running through the Bosphorus, on reaching the Black Sea again fell light, but continued from the S.W. point, occasionally veering to S.S.W.; it appeared to have been gradually coming up with us since entering the Archipelago, but losing much of its strength as it advanced to the N.E. The

at the Cape of Good Hope 1854.

N° 1.



month of June could not have given us finer weather than that which we had; and this, too, in the Black Sea, in the month of January, led us to believe that the Euxine had been grossly libelled by navigators. Still we could not but remember the 14th of November, 1854, and kept well on the watch lest under its present smiling aspect there might be lurking such another storm as then occurred. The wind in the afternoon had fallen light, with hardly a ripple on the surface of the water, which had a pond-like stillness, and continued thus till midnight.

On the morning of the 11th, at 2h. a.m. a breeze freshened up from W.S.W.; and by daylight we had it steady, filling our studding sails set low and aloft, and were rapidly nearing the coast of the Krimea, surprised at the mildness of the weather. As yet not a cloud had been observed to obscure the sky, until the morning of the 12th, when the wind became light and veered to West and W.N.W. At 8h. a.m. a sail was seen astern, the first since leaving the Bosphorus, apparently with more wind than we had, as she was overhauling us very fast. We spoke her at noon, and she proved to be the *Semiramis*, from Genoa bound to Kamish, with hay for the French army.

At noon we found ourselves by observation thirty-two miles S.W. of Cape Aia, and that for a day we had been under the influence of a strong easterly current, having been set twenty miles to the eastward. On the previous day I had also detected a slight easterly set in the afternoon. The wind now had fallen very light from N.W., the sky was overcast, the thermometer down, but the barometers keeping high, with little or no change. At 10h. p.m., the breeze increasing from N.W., I hauled up for Cape Khersonese, and at midnight struck soundings in seventy-five fathoms. The weather now becoming dark and gloomy, with a light drizzling rain, we shortened sail to our two topsails, jib, and mizen. On the morning of the 13th, at 4h. a.m., Cape Khersonese light was seen, for which the ship was steered, and at daylight we found ourselves about half a league off shore.

Cape Khersonese is a low projecting sandy point, being a remarkable contrast to the rugged steepness of the coast from which it projects to the sea, and on its extremity stands the lighthouse. In the possession of the Russians it showed a revolving light, but in their reverses they of course extinguished it. British seamen, however, wanted it,—the lantern was found buried and was speedily replaced, and it is now a fixed light; which, although it cannot be seen at any great distance, served our purpose admirably. As the morning brightened up, further off in the distance we observed Sebastopol; between which and Cape Khersonese were Kamiesh and Kasach Bays, in which we perceived a large fleet of ships lying at anchor Here, then, within the short range of our vision was the little spot in this remote corner of the world where the energies of the two greatest powers in Europe were directed, and on which the eyes of the whole civilized world were fixed,—all exciting our interest and prompting us to mark its features with more than ordinary earnestness and attention.

At 7.30 a.m. the wind was freshening from the North and the

weather becoming cold and raw. We kept away to S.E. for Balaclava. The coast, after passing the low peninsula of Khersonese, suddenly rises to high rocky precipices of barren and inhospitable aspect, presenting truly a huge rocky wall, that appeared to terminate in a steep abrupt cliff, something similar in appearance to the South Foreland, but considerably higher.

Steering to the southward for about three leagues from Cape Khersonese, the ruins of an ancient Genoese fort on one side and a remarkable peaked hill on the other mark a narrow gap in this wall of rock; which gap is the entrance to Balaclava Harbour and off which we arrived at 10.30 a.m.

Here one is forcibly reminded of being on an enemy's shore, and a stranger is left in perplexing doubt whether Balaclava is in the possession of friend or foe. No friendly boat comes to communicate with you—no boarding-officer comes off to inquire the business that brought you here, or to give you any information. The first intimation (certainly not a friendly one) you have of being noticed is that, coming within a prescribed line, you are fired at from an invisible gun mounted somewhere in the fastnesses of the rock, and whether by the English or Russians you are left to conjecture. In either case you take the hint and get out of range of this growling dog as fast as you can, and clear of his felon bite. Although a flag-staff was discovered on the old Genoese ruin no national ensign was displayed there; and so secret and closely shut up is the diminutive creek of Balaclava from all intrusion from the sea that, but for this ill-natured gun, a visitor might imagine the place was abandoned. The day was Sunday, and this might have rendered Balaclava still more exclusive. However, after lying on and off for about two hours and a half, and seeing it likely that I might be all day without finding out who were in possession of the place, at noon I dispatched my Chief Officer with a note to the Consignee (the Ordnance Storekeeper) informing him of my arrival and the nature of my cargo. As the wind was increasing, with rain, and threatening to blow, being off the land and the water smooth, I brought the ship to anchor in the bay in twenty-six fathoms water, and veered out forty-five fathoms of cable to await the result of my communication.

At about half past three in the afternoon the Chief Officer returned, bringing me intelligence that the place really was occupied by our own countrymen. He had seen Captain Gordon, the Ordnance Storekeeper, but we could not then be admitted into the harbour. This was anything but pleasing intelligence. We were anchored less than half a mile from the shore—a very wild and inhospitable-looking one too, that in the event of a change of wind to the S.W. would be a fearful one for us; and should it blow a gale such as it can blow from that quarter nothing could save us from destruction. At 4h. p.m. the wind had increased from the N.E., accompanied with sleet and snow. Several other vessels made their appearance off the harbour; some, more fortunate than ourselves, were taken inside, others came to anchor. At 6h. p.m. it blew a strong gale and snowing heavier; veered

cable to sixty-five fathoms. Midnight, the gale seemed to increase, with a heavy fall of snow; veered out cable to seventy-five fathoms.

Daylight of the 14th dawned with a wild and wintry look—the hills around Balaclava covered with snow and the thermometer down twenty degrees below the freezing point, with the gale increasing and coming in very heavy gusts off the land. The cable was veered out to ninety-five fathoms, top-gallant yards sent down, and the masts struck. In this operation two men at the mast-head were disabled by the cold. One lost the use of his fingers for ten days from the effects of frost. By 10h. a.m. it almost blew a hurricane, and several vessels were seen driving. The wind swept over us with fearful gusts, to which the ship lay over on her broadside, and I expected every moment she would start her anchor or part the chain; both however held well. But this was not so with some of our less fortunate companions, for during the heaviest of the gale, which was between ten and eleven o'clock, a deeply-laden brig was seen driving so fast to sea that we soon entirely lost sight of her. At noon the gale appeared to have attained its height, and the frost had become more intense, the thermometer down to zero, barometer 29·2. From this intensity of cold the surface of the sea presented the appearance of a boiling cauldron, steaming with cold misty exhalations. The only parallel within my experience to this state of things from sudden changes in temperature occurred at Halifax, Nova Scotia; when, after a fine mild day, the thermometer at 30°, a change of wind in the evening from the North and East brought on a frost so intense that in the course of the night the harbour got so completely frozen over that loaded waggons could be brought across on it from Dartmouth on the opposite side. Certainly, from what we experienced in the Crimea, the climate is very similar to that of Nova Scotia in the sudden changes of its temperature.

In this extremity of cold our thoughts turned to the shore with sympathy for those poor fellows with nothing but a roof of canvas over their heads. Our own position was far from enviable; but, although it was blowing a heavy gale, we had smooth water, and while our ship held on we could at least keep ourselves warm and comfortable, as long as circumstances admitted of having a watch below. But all communication with the shore was impracticable, and even this wore a still more desolate and forbidding appearance. The very face of nature seemed frozen up in this intense cold, and even that forlorn gun, we began to think, would have refused to go off on such a day as this.

The gale continued without intermission all day till about four in the afternoon, when the sky gave signs of relenting and assumed a milder appearance and the wind somewhat moderated, still the cold was intense and everything that had become damp or wet from the previous day's rain was as hard as a stone. The ropes that had been exposed to the wet could no more be hauled through the blocks than if they had been iron rods; and had a staysail been wanted to cast the ship it would have been impossible, the sail, in its frozen condition,

would have crumbled to pieces like biscuit. All this change had taken place in the course of twenty-four hours, the thermometer falling from 50° to zero, the effect of a change of wind,—such is the climate of the Krimea. After sunset the wind moderated fast, and by midnight we had no more than a gentle breeze, with a fine clear sky overhead, nor was the air so keen as it had been in the height of the gale, as was shown in the rise of the thermometer, now standing at 10°.

Daylight of the 15th brought us fine weather, and we shortened in twenty-five fathoms of chain before breakfast, and got the ship in readiness to be taken into harbour when our permission came. About half an hour afterwards I landed at Balaclava, and in an interview with Captain Gordon requested to be allowed the earliest opportunity of admission to a place of security. Captain Gordon referred me to Major —— of the Royal Engineers, whose office I discovered after much difficulty. It was a limited apartment, but served the purpose of drawing-room, dining-room, bed-room, parlour, and office for business. The Major was busy at breakfast, but the urgency of my business was my apology for intruding. He soon set aside my apologies and with the true hospitality of a British soldier invited me to do as he did. But having already disposed of that duty the real object of my visit and other matters soon placed us in friendly discussion. It would not only be unfair but ungenerous after the Major's hospitality to remark on the arrangements of his domestic establishment. But it was quite evident that whiteness of the table-linen was not absolutely essential, or that the furniture, though not of a common description, should be elegant or costly for the use of an officer at the seat of war. My attention was more immediately attracted by the goodnatured Major seated on a ricketty deal box enjoying his breakfast. A guest or companion of the Major's was also with him, a handsome youth, about twenty years of age, in the uniform of an Artillery or Engineer officer, so scrupulously neat in his dress and his linen so purely white that he must have been a rare phenomenon at Balaclava. His fair and delicate complexion too was yet unblanched by exposure, and his *tout ensemble* formed a good contrast to his companion the Major and the general appearance of his apartment. He might be well taken for some warm-hearted benevolent philanthropist just come from a drawing room who had but ridden out to a bog settlement to see for himself the wretchedness of poverty in the miserable mud cabin of some poor Irish peasant. Sincerely do I hope the Major is now in better quarters, and that if ever I have the pleasure to meet him again it may be under a warmer sky and a more substantial roof; but wherever that piece of good-fortune may occur to me, his attention and courteous kindness have left in my mind those expressions of respect and esteem which time will never efface.

The Major immediately gave me a note to the Admiral's Secretary; with which I repaired to H.M.S. *Leander* and delivered it to Mr. Pritchard, who, after perusing it, gave me a line to Mr. Paul, the Harbour-Master. Mr. Paul informed me he could not take my ship into the harbour until the following day, a heavy disappointment to

be thus obliged to pass another anxious day and night in the wild inhospitable bay of Balaclava, in which one is surprised not that so many vessels were lost in the gale of November, 1854, but that a single ship or soul was saved.

Leaving the *Leander*, as I returned on board I could not get the name of that ship out of my head, and then came the reflection on the odd things which time brings to pass in history's chequered page. The *Leander* in hostile occupation (in conjunction with our present ally) of a Russian port, suggested that in 1799, through the generosity of a Russian emperor, the *Leander* of 50 guns, captured by our present friends, was restored to the British service. It is truly said, time brings strange things to pass. Who would have imagined in those dark days so glorious an alliance of the two great European powers, leagued with each other to oblige that same Russia to keep the peace with a weaker neighbour. Happy alliance to see two such countries thus asserting the cause of liberty; to see the two first states of Europe upholding the cause of persecuted weakness; may their efforts be crowned with success, and may their success perpetuate their friendship, and in that friendship may Turkey find her regeneration. The Emperor of the French showed his good sense when he said, the two first countries of Europe should find something better to do than to tear each other to pieces. Let them rival each other in the arts of peace. The days of aggrandizement in Europe by conquest are happily over. Such sentiments as these are worthy of a Christian Emperor; and had they been those of the late Russian Emperor, who made the appearance of Christianity the cloak of designs, how much blood, how many valuable lives, how many widows and orphans would have been saved.

Early on Wednesday morning, the 16th, our attention was called to a sudden change of wind to the Southward. It continued veering to the S.W. till 6h. a.m., when it began to blow fresh in squalls, the barometer falling, and the sky assuming a threatening appearance. The wind continued gradually and steadily on the increase, when at 7h. the French brig *Alert*, that had dragged her anchors in the gale of the 14th and 15th, fell on board of us right athwart hawse, doing considerable damage to herself, and starting our starboard cathead, besides carrying away two timberheads, and injuring our bulwark. After veering out about half of our cable she swung clear. At 8h. a.m. the wind blowing harder and the sea rising, the ship began to pitch heavily with her stern now only about a cable's length from the towering precipice of the shore, the unpleasant look of which was anything but comforting.

At half-past ten, however, our hearts were gladdened by the approach of the *Sultana* steam-tug, the commander of which soon after hailed us, to say he had orders to tow us in. We should not have required much towing, the wind being right in, but there was a very proper law that no vessels should enter under sail, for fear of damaging others. The windlass was immediately manned, and the chain soon hove short, but more could not be effected, as our anchor had

either hooked another or the web of chains that crossed the bay in all directions, giving employment to the boatswain and a boat's crew from the *Leander*, in smooth weather, to recover the anchors and cables. The gale continuing to increase and the sea rising higher and higher, the ship plunging heavily, all the efforts of our crew, aided by the steam-tug, failed to lift the anchor. Our position was thus every moment becoming more perilous, and it was therefore deemed expedient for the general safety of the ship to slip the cable. Having unshakled at forty-five fathoms, and attached a good buoy rope with a buoy at the end of it, the chain was slipped, and the vessel, under tow of the *Sultana*, entered the harbour, where she was moored at two o'clock in the afternoon, with her stern to the shore.

The activity, attention, and sociability that reigned throughout the harbour of Balaclava, was a happy contrast to the dismal solitude and apparent neglect in the bay outside. Here we were at once received and acknowledged as members of a vigorous active community, admitted at once to all its privileges, and expected to participate in all its duties. The best arrangement and order appeared to exist in the berthing of the numerous ships; and the onerous duties of Mr. Paul, the harbour-master, were evidently conducted in a most effective and masterly manner. There was nothing of that low ungentlemanly bullying that report had assigned to the discharge of this duty by naval officers at Balaclava. However such a manner may operate on the fears of mankind, it will never command their respect. We may agree that "zeal for the service," as Capt. Wilson defined it to Mr. Easy, leads many of our officers in the Royal Navy to command in a rude and arbitrary manner, offensive alike to the feelings, and humiliating to those who cannot resent it. This fact alone, if fairly considered, renders such a manner the more unwarrantable, as no man of any honourable feelings or courage would willingly avail himself of his short-lived authority to hurt the feelings or offer insult where he knew it could not be resented. No doubt such is the aspect, that a haughty, rude, and bullying mode of conducting duty and directing men wears. It moreover has a tendency to brutalize all who come under its influence. The subject might be enlarged upon, but I shall only say with Mr. Easy, that "such zeal appears to be a very unpleasant thing in the service," and moreover I think the service could very well spare it, with equal advantage to itself and less outrage to the feelings of others, and I will merely remark, that I have always observed that the manner of giving an order marks the character of the officer. An order should be always as short and laconic as possible, without any tail of ugly words, and smartness in its delivery will inspire alertness and rapidity in its execution.

As many of our brother seamen have not seen, and may never have the opportunity of seeing the curious little creek of Balaclava, that has recently been brought into such interesting and prominent notice, a word or two about it may not be unwelcome. Even those who may have visited it under a summer sun would not possibly form any idea of its miserable aspect in winter. For such, I venture to jot down

the following description, imperfect as it necessarily is from my want of power to do it justice.

It has already been remarked, that the coast, after passing Cape Khersonese, and steering Southward for Balaclava, presents a steep wall of gigantic rocks, that rise perpendicularly from the sea, presenting to the mariner as he sails along a barren and inhospitable appearance, and that the ancient ruins of a Genoese fort on the starboard, and a remarkable hill with a conical top on the port hand, mark the gap in the rocky wall, which gap is the entrance to Balaclava. The first object that comes in sight on opening its narrow entrance, is H.M.S. *Leander*, the guardian of the port, on board of which the flag of Rear-Admi. Freemantle is hoisted; and thither the master of a ship must repair to seek permission for entering this duck-pond. Advancing a little further to turn an angle, a forest of masts suddenly appears before you, and in a space not so large as the West India import dock lies a fleet of vessels of different kinds, from a little fore and aft schooner to the most gigantic steamer, packed like herrings in a barrel, the largest of which appear no more than a dark spot alongside and beneath the stupendous mountains that wall in this natural dock. The depth of water in Balaclava is from ten to seven fathoms, and its extent may be in length about 1,000 yards, from the entrance to the very end; and in breadth from one hundred to one hundred and fifty yards in the widest parts. In others it is much less, and it is further circumscribed by the head of the basin terminating in a mud flat of not more than two to three feet water. As he advances into this extraordinary place, the stranger looks for a town; but all in vain; for heaps of coal, and little mountains of forage and firewood prevent him from seeing the few dilapidated miserable looking huts that remain of the original town, and the endless variety of sheds, shanties, wigwams and log cabins got up by the present occupants. All these, which form the town of Balaclava, at first sight appear to be literally floating on a stagnant river of mud, and an endless variety of animals, biped and quadruped, are seen splashing and floundering through this turbid stream.

In the midst of this motley collection of the ways and means adopted for the land transport service, the stranger is all at once startled by the unexpected appearance of a railroad, the rails of which must be laid at the bottom of this muddy river, and its locomotive he might imagine realizes a dream of some amphibious monster of antediluvian days. A railroad! in an enemy's country too! What a happy idea. This was indeed a help of Hercules to the beseigers for the reduction of the defences! One of the phenomena of the nineteenth century, that would be astounding to the heroes of the last. It did its work well, and though not recognized in military tactics, shortened the siege of Sebastopol, and contributed by its powers of transit of those ordnance stores that made short work of the bombardment, and produced that "Feu d'Enfer" of which the Russian general bitterly complained when he evacuated the southern part of the city. A few very good wharfs are constructed on the brink of this basin, in

which there is abundant depth of water for the largest ships to haul alongside. Among these the Commissariat Wharf is remarkable for its excellence, and does great credit to its constructors.

When it is considered that Balaclava was the source from whence all supplies were drawn for every camp and division of the British army in the Krimea, the extent of traffic, activity, and bustle concentrated at this little hole in the rocks will be more easily imagined than described. Vehicles of almost every description, dragged through the mud by horses, mules, and oxen, buffaloes and dromedaries, were passing in a continual stream, almost without intermission, by day and by night, between Balaclava and the camp; and to turn from these to the amphibious steam-emgine, with a train of waggons, puffing and hissing as if in mockery of the slow and tardy motions of its rivals, was a scene as yet unrivalled in the world's history, and a picture of no small interest. The roads that during the two or three severe cold days had been hardened by frost, were good and passable, but now that a thaw had taken place, their condition was beyond description; and although great labour is constantly employed in keeping them in repair, nothing can enable them to withstand the wear and tear of the incessant traffic that passes over them.

The town of Balaclava, when discovered from behind the huge collection of material already alluded to, will be found to consist of one main street, lying parallel to the creek, on the starboard or eastern side, along which are ranged the different offices and quarters appropriated to the men of business of this military colony, of which circumstance the stranger is unmistakeably reminded at every glance by seeing over the door in characters not always very neatly or elegantly formed, such notices as these:—1st Division Store,—2nd Division Store,—Quarter-Master General's Office,—Head Quarters,—Main Guard, &c., &c. At right angles to the main street are a series of alleys ascending the face of the hill, where the erections seem to have a more solid foundation than their neighbours below.

One of the old buildings of the Greek town, with some addition (the church or court-house, I now forget which) has been converted into an hospital; and, standing well up the face of the hill, one would suppose it to be in a healthy situation, well adapted for its present purpose. It is speedily recognized by the stranger looking in that direction as he cannot fail to see about it one or two female forms (the only residents of the kind in the town) with clean white aprons and tippets of snow over deep sable garments, an uniform that indicates them to be Sisters of Mercy, a most appropriate name and well adapted to their humane employment. Their presence must indeed be comforting to the maimed and afflicted, and their assistance as nurses invaluable within these walls. The motives that moved these courageous women to brave the fatigue and danger of a campaigning life (apart from bigotry) command both our admiration and respect, and it was gratifying to see that their comfort had been studied. A neat little cottage contiguous to the hospital was pointed out to me as having been got up expressly for their accommodation.

The population of Balaclava was great in comparison with its size, and consequently accommodation for strangers was scarce, so much so that ships were retained as store-houses for goods and offices. We found a fine ship of six or seven hundred tons, called the *Camperdown*, doing duty as a transport-office; where board and lodging was also provided for the officials connected with the department. No doubt such was very profitable employment for her owner,—at any rate there would be little wear and tear in such employment. I was told this ship belonged to a wealthy wine and beer merchant of Wapping or Limehouse, who, being also a large ship-owner, since the commencement of the war had been in receipt of some £10,000 per month of the public money for tonnage employed by Government in the transport service,—the profit on which would be a nice little sum to reconcile him to a continuance of the Russian war. As the old saw says, It's an ill wind that blows nobody any good. But he was not singular in his good fortune.

The inhabitants of Balaclava are of a very mixed description, but I observed a decided improvement in the English character. The military in particular were remarkably courteous and civil, and, I must reluctantly admit, far more so than their brethren of the Royal Navy, with a few exceptions—marked from their being *few*. Why or wherefore it is not in my power to account, but such was the impression made on my mind as a looker-on, who, it is said, often sees the game better than the players.

I also noted, after a careful observation of what was passing around, that a great change must have taken place in the morals of Balaclava or that it has been grossly libelled by newspaper correspondents, who were over careful to set forth the fearful extent of drunkenness and depravity of the place. In my observation nothing was more wide of the truth. During my stay amidst this large concourse of men—and I had many opportunities afforded me by going a good deal among them—I did not see even so many as three in a drunken condition.

Let it be observed that the moment a person enters the harbour or sets foot on the shore at Balaclava he is under martial law. Here, the Provost-Marshal, with a drummer attending him, adjusts in a very summary manner all disputes and differences among the refractory. His administration of justice might a little shock misplaced humanity now and then; but it would gladden the heart of Mr. Yardley and his colleagues to see the salutary effect of his decisions in the prevention of crime, particularly in those classified as night cases, when the blood is warm and spirits overflowing. Were such a course of justice as that of the Provost and Co.'s regimen admitted in our Police Courts, in cases of drunkenness and its attendant crimes, it would in a short time, I apprehend, relieve the Metropolis from many shameful and degrading spectacles and release the worthy Magistrates from a good deal of disagreeable duty, besides being more efficacious in suppressing the beastly vice of drunkenness than all the Temperance Societies and Maine Liquor Laws will ever effect. Humanity has nothing to do with drunkenness; the drunkard is a brute of the worst descrip-

tion, and the whip is the proper instrument for brute chastisement. Their case, if any sympathy can be enlisted on their behalf, belongs properly to the Society for the Prevention of Cruelty to Animals, though animals are far more deserving of our sympathy, never abusing or depriving themselves of the little reason they have by any excess or indulgence.

(To be continued.)

A VISIT TO CAMBODIA.—*By a Madras Officer.*

My brother being agent for a Singapore mercantile firm in the trade they carry on with Cambodia, and having resided there for some years, and made himself acquainted with the language, &c., I thought I could not have a better opportunity of seeing something of a country so little known to Europeans than by accompanying him on one of his trading expeditions thither. The following are a few notes taken during my trip and sojourn of three months in the land of "Srok Kumai," as Cambodia is termed by its inhabitants.

On Saturday the 8th of April, 1854, three of us embarked on board the barque *Polka*, Captain Welch, bound to Campoot. The vessel belongs to a Chinese firm in Singapore, who for the last few years have regularly traded with Cambodia. Our party consisted of a Chinese Interpreter, called Baba Kee, and two servants, one a Madras boy and the other a Malacca Portuguese. We tripped our anchor at 11h. a.m., and, aided by a light fair breeze, soon sighted Johore Hill, which bore from us N.b.E., and Bantam Point S.S.E. At 8h. on Sunday morning we had Pedro Branca, distant from us about eight miles, bearing E.b.S., and at 12h. p.m. Romania Island bearing W.S.W. On Monday, at daybreak, we sighted Pulo Aor, bearing N.N.W. and distant about sixteen miles; and at noon Pulo Timaon bore West, the latititude by observation being 2° 50′ N. From this time till we sighted the Brother and Sister, which we did on Saturday afternoon, nothing occurred to break the monotony of our voyage except passing a steamer, steering South, on the evening of Tuesday the 11th. On Sunday the 16th, at 7h. a.m., we sighted Pulo Obi and the large island of Kuthrall, and at noon dropped anchor in Campoot Roads, having run 550 miles in nine days.

A stranger anchoring in the harbour for the first time, would never imagine that a town was anywhere in its immediate vicinity, as no signs of life are perceptible from the sea. The harbour itself is a good one, and capable of accommodating any number of vessels. It is in lat. 10° 30′ N., and long. 6° 56′ 45″ E. of Greenwich, being land-locked on both sides; the large island of Kuthrall or Khodud, extending on the left, its extreme northern headland (called Gu-

nong Kwalla) bearing from the anchorage S. 70° 55′ W., and several small islets on the right, including Temple Island—bearing S. 66° 15′ E. and which is as near as possible 100 feet in height.

Immediately opposite the anchorage, bearing due North from it, frown two singularly shaped mountains called Gunong Susu or the Paps, which are covered with vegetation to the very top and form a striking object from the sea, their elevation being about 480 feet. At the back of these hills, trending north-westerly, are a range of mountains similarly clothed with the most luxuriant vegetation to their summits, their ridges being serrated, but their peaks not differing much in apparent height. These mountains the Cambodians call Teglian, ôr the "Abode of the Destroyer." They have many traditions connected with them, and sacrifices are from time to time offered to the spirits who are believed to inhabit them. In modern charts, these series of mountains have been styled the Elephant Range. Kep Mountains, a similar group on the right, bear from the anchorage S. 78° 45′ E.

It is a pity the water shoals so much on approaching the harbour, the navigation in consequence being rendered very intricate. From three to three and a half fathoms being about the soundings for a considerable distance before the anchorage is reached, vessels of the least draught of water are obliged to anchor upwards of two miles and a half from the mouth of the river. Midway between the anchoring ground and the shore is a bar, on which, at low tide, there is not more than two feet of water. This makes the loading of vessels very slow, as cargo boats can only come out of the river at high tide. The river itself is deep and tolerably broad; it is edged with mangrove swamps on both sides till very near the town of Kampot or Campoot, which stands on the left bank, about two miles from its mouth. The shore of the country, as far as the eye can reach, is also fringed with Rhizophoræ or mangrove scrub, and at low tide an extensive mud flat is the only apology for a beach.

Soon after we anchored, the Chinese Supercargo of the vessel, accompanied by his family, consisting of five ladies, went on shore. His wife, mother, and sisters-in-law composed the five; they were all of true Chinese descent and had very lately arrived from China, being induced to leave their native country in consequence of the disturbances which had arisen there. The ladies were great curiosities in Singapore when they arrived, as they were among the first of the small-feeted gentry that had hitherto honoured Singapore with their presence. These celestial charmers had stowed themselves away in the long boat during our voyage, and they seemed to have a great objection to show themselves to the Europeans on board, as they never stirred from their snug domicile from the day they entered it till they prepared to get into the boat alongside to take them ashore at Campoot; a work, by the bye, of no small danger and difficulty to them, as their small feet, or "golden lilies," as they are termed by the Chinese, being only about three inches in length, and encased in a shoe with a heel nearly as long as the foot, seemed scarcely sufficient to

support them when standing. However, by the assistance of a few men they managed to get dropped into the boat, more like bags of rice than anything else. These ladies were all most beautifully dressed, being clothed in silks of the richest colours, and their hair arranged with the help of pins and artificial flowers about a foot high and spread out like a fan. Our Interpreter, Baba Kee, accompanied the Chinese Supercago on shore to get for us a large boat for ourselves and luggage.

At seven o'clock the next morning (Monday), Baba Kee returned to the ship with two boats; which, after breakfast, we loaded with our things, and started for Campoot. We had much trouble in getting over the bar, as the tide was then low and our boats heavy. However, by all getting out, taking off shoes and stockings, and tucking up our trousers, we succeeded, by dint of pushing and dragging, in getting our crafts into deeper water. Once into the river we had no further trouble, as the current was setting upwards, and we soon reached our destination. We landed on the right side of the river, immediately opposite the town of Campoot. Here the King of Cambodia had ordered a house, or rather two houses, to be constructed for Europeans. This he had done by special request of a gentleman who had had mercantile transactions with his Majesty for some years previously, and who had represented to the King the inconveniences his agent (my brother) had sustained by having no place to live in or godowns to store produce, &c.

These houses are situated on the brink of the river, at right angles with it, the two being immediately opposite one another, at a distance of about twenty-five paces, and between them, at the sides furthest off from the river, a cook-room or kitchen is built, so that the whole forms three sides of a square. Each house is in the shape of a parallellogram or rectangle (dimensions eighty feet in length by twenty-five in breadth) divided into three rooms above, with the same number of godowns below; the habitable part is elevated about ten feet from the ground. A long verandah, about eight feet in breadth, stretches along the front of the upper rooms in each house. At one end of the verandahs are stairs, or rather substantial ladders, and there is a communication between both houses by means of a gallery supported on posts from the end of one verandah to that of the opposite building. The rooms themselves are lofty, and well lighted by means of two windows in each apartment.

These houses rest on brick walls. The upper part is solely composed of lath and plaster, but the weight of the roof is supported by immense posts and cross beams, at an interval of about ten feet from each other. The roofs are tiled and calculated to last for at least fifty years, for each tile is separately fastened down with mortar before another is laid over it, the whole thus forming a solid mass. The only roof in the Straits of Malacca I have ever seen similarly constructed is that of the stadt-house at Malacca. The floors of these buildings are planked, roughly it is true, as the planks are not planed and joined by bevelled edges together; but at the same time they are very sub-

stantial, each plank being about two inches thick and forty feet in length, so that a couple extend the whole length of the buildings.

The carpenter's, sawyer's, and bricklayer's tools used in the erection of these houses, were commissioned by the King from Singapore, and their uses, &c., taught to the Cambodians by a couple of Chinese who had resided for some time in the Straits. The tiles also were sent from Singapore at the expense of the King. The houses are certainly the best in Cambodia. The King himself at Oodong, the capital, does not live in such a good one. When we arrived they were not quite completed. We were told it took a year to erect them, the whole having been done by means of forced labour. The Governor of Campoot having been compelled to furnish a body of men, these poor fellows got no remuneration, and had even to provide their own food. The King sent a Minister from Oodong to reside at Campoot to superintend the work and to see it properly done. This man rejoices in the euphonious title of Andron Sennaar; he lives in a small hut close to the house, and seems to have great authority. Much respect is paid to him by the people of the town, being always addressed as Lok, or My Lord.

As soon as we had arranged our things in our new abode, we crossed the river, and paid a ceremonial visit to Sinky, the Lieutenant-Governor, who is styled Bandar Thoam. This person is of Chinese descent, and has all the features and characteristics of the Mongolian race, wearing his hair in a tail wound round his head, differing in this respect from the majority of his nation who are born and brought up in Cambodia, and who, like the true Cambodians, shave their heads, only leaving a short tuft on the top of the skull, the hair being jet-black, stiff, and coarse, almost bristly.

Sinky does not keep up much state; he lives in a very poor house, built you may say on the river, and elevated on piles a foot or two above it. We found him squatting, half-naked, on a large wooden platform, with several men sitting below him on the floor, which is composed of split nibongs. His house appeared to be divided into two parts, that in front being appropriated to business and receiving people, and that behind for his women, of whom he has about a dozen. He received us very graciously, and immediately recognized my brother, who, of course, was well known to him; he offered us tea, and after a short conversation carried on between him and our interpreter, we took our leave, and then proceeded to Bombai, a village about a mile and a half up the river, the place where the Governor resides.

Bombai is a much smaller town than Campoot; though I have been informed that since the last few years, in consequence of the great increase of trade at Campoot, many Chinese have settled at Bombai, which is now rapidly rising into importance, having two or three rows of streets, and a bazaar, &c. Like Campoot, it is situated immediately on the river. On landing we went to the Governor's house, but were disappointed to find he was out. We took a cursory glimpse of the inside of this functionary's abode. It could not boast of much, but was apparently better constructed and more commodious than that of

his subordinate Sinky, having lamps hung up to the ceilings, and various articles of Japan and Chinese manufacture scattered about; the part appropriated to business, &c., had a large platform raised about two feet from the ground, and extending the whole length of the back of the room. This platform was evidently the seat of honour, being covered with mats, &c. Having left word with the Governor's people to inform him when he arrived of our visit, we proceeded to the residence of a Chinese merchant, called Chinchoo Choow, with whom our trader had some business.

In passing through the bazaar, we were informed that the Governor was in a house close by, and wished to see us. To our great astonishment we found him in a barber's shop, undergoing that very necessary tonsorial operation in Cambodia of shaving the head. He did not seem to care much for our having caught him in such an undignified position, but conversed with us, with the aid of our interpreter, for a few minutes; asked who our friend and myself were, the object of our visit to the country, &c., and finally invited us to his house the next evening. We told him we wanted to go up to Oodong to see the King, to whom we wished first to write to inform him of our arrival, and to request he would send down elephants for us. The Governor replied, very well, he would send over to our house one of his clerks to write what we would dictate; and that he would forward it without delay to the King.

Having made our salams to his excellency, who, by the bye, is styled, according to Cambodian etiquette, "Chuwei Srok," literally, "head of the country," we proceeded on our way to Chinchoo Choow, already mentioned. This individual is one of the principal Chinese merchants of the place, and is son-in-law to the Governor, and of course a person of importance; he received us very civilly, offered sweatmeats and tea, and promised to come and see us the next morning. It being now late in the evening, we wished him good bye, got into our boat, and returned to our house.

The next morning, according to his promise, Chinchoo Choow, accompanied by Sinky, the Lieutenant-Governor, paid us a visit; but it seemed the astute followers of Confucius came to make a double job of it, and had an eye to business as well as politeness, as after a little preliminary chit chat, they commenced by asking what our trader's merchandize consisted of, and by proposing to purchase between them his whole stock. Chinese bargains are never completed without a great deal of chattering and finesse. However, the celestials found our trader inflexible in his prices, and after three or four hours incessant talking, they finally agreed to his terms, and carried off the goods; first signing and affixing their chops with all due formality to a paper promising to deliver the produce of the country in barter for the goods within forty-five days, under penalty of defraying the demurrage of the chartered vessel, should the above time be exceeded.

As soon as these worthies went away, the Governor's clerk came to write the letter to the King. Letter writing in Cambodia is a work that requires much consideration, even forming the characters of one

page takes up as much time amongst them as would suffice with us to write six. Our Cambodian scribe first produced his common-place book, which seemed to be made of a very coarse thick kind of paper, smeared over with some substance like black paint, which, when dry, was written on with a pencil formed of a kind of white earth not unlike French chalk; the marks made by this pencil could be easily rubbed out with the finger, so that this prepared paper with care would last any length of time, and answers all the purposes of a slate. In this common-place book the clerk first entered down word for word what our interpreter told him.

When our dictation was over, he began to embellish the style, &c., according to the most approved forms of Cambodian correspondence. This done, he read over his composition, and asked the interpreter if what he had written included the substance of what he wished to say; our approval having been obtained, he then asked for a large sheet of European paper, which we gave him. This he folded lengthways, so that the whole two pages were divided into equal folds or creases of about an inch from each other. These folds served as lines for him to write on. His pen was made of a piece of tin plate doubled up; its shape was exactly that of a small table knife, cut off to an angle at the point. The Cambodians always use Indian Ink, which is rubbed down with water on a stone. When the tin pen described above is worked about in the semifluid composition till a sufficient quantity is collected, they then begin writing with the point of the angle, the part corresponding with the edge of the knife being uppermost. Our scribe having finished his fair copy, it only remained to affix our trader's signature and chop, which the King had previously presented him with. The letter was then inserted into an envelope directed in Cambodian to the King's Prime Minister, who is called Lok Chunda, and sent to the Governor to be forwarded without delay. We were told it would take about twelve days before the elephants we had asked for in the letter to the King could arrive from Oodong. This business over and the trader's merchandize disposed of, we had plenty of leisure time on our hands.

Flocks of wild ducks having been observed continually flying about and swimming on the river, we determined to go out and have a day's sport. We found lots of birds, and soon returned with several brace of widgeon and teal. On exploring the country at the back of our house, we found the two mountains already mentioned as being called the "Paps," to be about three miles from the house and close to the river. We found a small lake at the foot of these hills swarming with large grey duck, but could not succeed in getting a shot at them, as they were very wild, and always kept at the opposite side. Returning, we met a Cambodian going to a small village near the foot of the Paps, from whom we asked our way back, as we were afraid we should miss the same track we had come by. This man very civilly volunteered to be our guide. I was surprised at his good nature, as he stipulated for no reward, and he had at least two miles and a half to go back

with us, and then to return the same distance to the spot where we first met him.

I could not help contrasting the politeness of this untutored child of nature with the incivility and sordid disposition generally met with amongst the natives of the Malayan Peninsula, where the first question is always, "What will you give?" Half way back we met with another Cambodian, with three or four bamboos of palm toddy. Being very thirsty after our long walk, we asked for some, telling him if he would call at our house any day he would get paid, as we had nothing with us at the time. He very readily proffered his toddy, and said he wanted no payment. We returned to our house about midday, very tired, but much better pleased with our day's sport. Of course we did not allow our guide to return to his village without duly recompensing him for his trouble. He was profuse in his acknowledgements, and did not seem as if he expected anything.

The next day we received a visit from a very intelligent Malay, called Tuanku Tay, well known to our trader, with whom he was a great favourite. This man trades largely in raw silk, ivory, gambouge, and sticklac; he is much respected in Cambodia for his probity, and is always employed by the King as his supercargo, when his Majesty's junks are sent down to Singapore to sell the produce of the country which the King yearly receives as tribute. This Malay informed our trader that the King had stored up a quantity of rice in his godowns at Campoot, which was intended to be very soon sent to Singapore, and that he was only waiting for final instructions from the King to be off. He recommended him to go up to Oodong as soon as possible and make an offer to purchase the whole, saying, he thought it very likely the King would be glad to sell it at once, as several reports had reached Campoot that many pirates had been seen hovering about Pulo Obi and its vicinity, and that three or four trading junks had been taken by them, that these reports would be sure to reach the King, who would naturally be afraid to send his junks this year. This intelligence induced our trader not to wait for the elephants we had written for to the King, but to start at once in carts for Oodong, so as to lose no time, thinking it probable we should meet the elephants on the road. Our friend and myself agreed to the trader's proposal that we should accompany him, and we all set out the same evening for Bombai to see the Governor, and to request him to furnish us with carts and men.

We reached Bombai at dusk, and were lucky enough to find his Excellency at home, who received us with much politeness, and offered us tea, &c. Having informed him of the purport of our visit, he seemed to be much surprised at our anxiety to be off so soon; but after starting many objections, we at last made him promise to have the requisite number of carts and men ready at Bombai on the morning of the second day.

Having taken leave of the Governor, we prepared to return to Campoot; but found this was a task of no small difficulty, as it was

pitch dark, so that nothing could be perceived in the river, added to which, the current being against us, our progress was very slow. Indeed we were obliged to row the boat ourselves, as we could not get men at Bombai to take us back. After many laughable mishaps, such as running foul of other boats and occasionally sticking on the banks on each side of us, we got home much fatigued. However, a good night's rest soon put us to rights, and the following day was spent in packing and preparing for our journey.

The next morning, Monday the 24th, at 10h. a.m., we left our house at Campoot for Bombai. Unfortunately our boat was too small for ourselves and luggage, but as no other was to be had we were obliged to take great care in loading it and in perching ourselves on the top of our boxes, &c. The least motion in any one invariably made our crank bark heel over so much that it was no easy task to use the oars. I shall never forget the terror of our interpreter, Baka Kee, who fully expected we should go to the bottom. The heat was most intense, and not a breath of air stirring. However, at about a quarter past eleven a.m., we reached Bombai, and proceeded at once to a group of houses enclosed within a high bamboo fence. These had been built about a year previously for the King and his Court, orders having been received from Oodong to erect them, the King's intention being to pay Campoot a visit. His Majesty, however, altered his mind, being afraid if he left the capital the Cochin Chinese would come up the river and attack it. In fact, as soon as the King's intention of going to Campoot was publicly known, a large body of Cochin Chinese, well armed, were observed near Oodong, and on being asked what their intentions were in congregating in such numbers within the boundaries of the kingdom of Cambodia, they gave a very unsatisfactory account of themselves, saying, they wanted to go up the river to attack Laos, an independent state above Cambodia. Their true intention was doubtless to take advantage of the King's absence, and ravage Oodong as they had done some fifteen years previously.

The houses built for the King at Bombai were now used only to store rice in, and as a depot for carts and bullocks belonging to his Majesty. The Governor had told us the preceding evening to stay here till he had collected a sufficient number of coolies to carry our goods. On our arrival we found seven carts ready for us, and half the number of men we required, and were obliged to wait till three o'clock p.m. for the rest. At that hour the Governor came with the coolies, and a paper was written in Cambodian, with a peculiar chop affixed to it, called a "Sumbot Say-Haw," being addressed to the Prime Minister at Oodong, mentioning who we were, the object of our visit, and the number of boxes and packages we were taking with us. This document was to be shown to the Mykoë or head of each station we stopped at; who, on reading it, would be obliged to furnish us with relays of the same number of carts and men we had brought from Bombai.

The carts we used were most curious vehicles, made entirely of wood and bamboo, not a particle of iron about them, even the axletree being made of some hard heavy wood, working loosely in the

socket or nave of the wheel, which had no tire, and was fastened in a peculiar manner to a frame-work all round the body of the cart. The axletree, instead of beeing one solid piece passing under the body of the machine, was in two parts, one end of each fixed to the side of the frame-work, then passed through the socket of the wheel, and finally inserted in a round hole in a block of wood, composing the lower part of the cart. This was shaped like a cradle, the sides being about nine inches high, curving outwards, and made of split bamboos very neatly plaited together, the corners of the frame-work being firmly tied with strips of rattan, so that the whole affair was in reality much stronger than it appeared to be, and well adapted for use in rough ground. These queer conveyances were very low, and covered over with an arched top of bamboo work and attap. When lying down inside it appeared to me as if I was immured in a coffin, only not quite so comfortable as that last resting place generally is.

At half past three o'clock p.m., each of our party having ensconced himself as snugly as he could in one of these vehicles, with the aid of pillows, mattrass, &c., we started for Tricoal, the first station from Bombai, and distant 250 sens, or about six English miles. (The sen is a Cambodian measure, equal to forty yards. There are twenty peüms in a sen, each peüm equal to two cubits, or six feet exactly of our measurement. The whole distance between Bombay and Oodong is divided into equal portions of 100 sens each.) A thick post at each side of the road, cut into a peculiar shape at the top, marks these divisions, and at every fifty sens, or exactly half way between these posts, smaller poles with rounded tops are erected. Every 100 sens, or the distance between the large posts, is, as near as possible, two statute miles and two furlongs, so that it is easy to calculate the distance traversed on a journey by simply reckoning the number of large posts.

At half past five p.m. we arrived at Tricoal, and informed the Mykoë or head of the station of our intention to sleep here for the night and proceed very early the next morning. We showed him out Sumbot Say-Haw, or paper we had received from the Governor, on seeing which he promised to have fresh carts and men ready whenever we should require them. The station itself was a very good one and the people civil. The next morning at five o'clock, we started for the second stage, Tripong Lobok, distant 500 sens, or about eleven miles and three furlongs. We found this to be a very long and fatiguing march, what with the jolting, dust, and heat, and we were glad enough to arrive at our destimation, which we did at eleven o'clock a.m. This station we found to be much smaller than the last and filled with people. However they vacated one side of the house for us, and the Mykoë, who was an old man, and, what was singular for a Cambodian, wearing a moustache, did all he could to make us comfortable, sending for mats, &c., to lay over the split nibong floors, and making his men fetch water for us from the tank, which was at some distance.

On inquiring the reason of so many men, women, and children being collected together at this place, we were told that there was some reli-

gious ceremony to be held there, and that sacrifices were to be offered to the guardian spirits of the place, after which they were to have a feast; that the people had collected together from all directions, and most of them having come from villages many miles off. We noticed several Talapoins or priests among the crowd, being easily distinguished by their heads being closely shaved, and by their being clothed entirely in yellow, the sacred colour in Siam and Cambodia. This festival was to last two days, and the Mykoë informed us, much to our disgust, that we should be obliged to stop at the station till it was over, as he could get no men. We however frightened him, by saying we were determined to start in the evening, and that he must furnish carts and men at once, agreeably to the King's positive orders, whenever travellers were provided with a Sumbot Say-Haw from the Governor of Campoot. We threatened that if we were delayed here we would report him at Oodong.

The poor fellow thus pressed tried hard to persuade the men from the neighbouring villages to go with us, so as to spare his own people as much as possible; but the strangers stoutly refused, and said they belonged to other districts, and were not under his orders. The Mykoë then threatened to put them all in the stocks if they refused to go on the King's service. We did not interfere in the quarrel, but let them settle it amongst themselves, and after a great deal of noisy discussion we were informed they had done so, and that the Mykoë was to furnish as many men as he could possibly spare, and that the villagers would make up the deficiency amongst them.

(To be continued.)

The Indian Ocean considered with Reference to the Wants of Seamen.

(Continued from p. 556.)

Gulf of Bengal.—The Gulf of Bengal is that sea which is bounded on one side by the coast extending from Ceylon to Calcutta, and on the other by that comprised between the mouth of the Ganges and the Strait of Malacca. The Bay of Bengal is considered the Northern part of this gulf. On this extent of sea the winds vary much; and their importance renders it necessary to consider them minutely. Before referring to those of its coasts, the following general observations may be made on the Western and Eastern shores.

The two monsoons from S.W. and N.E. succeed each other regularly in the Gulf of Bengal after lasting six months.

S.W. Monsoon.—The S.W. monsoon commences in the Northern sooner than in the Southern part of the gulf; it prevails near the coast of Orixa in the beginning of March, and fifteen or twenty days later on that of Golconda; it does not reach the coast of Coromandel

till the end of this month. On the N.E. coast of Ceylon it prevails, as already stated, between the middle and end of April. But in the end of May the S.W. monsoon prevails throughout the gulf, and is even found as far as the equator.

N.E. Monsoon.—After six months the N.E. monsoon takes its place, and prevails within the same limits by a similar progression; for the S.W. monsoon ceases sooner where it is later in becoming established.

Change of Monsoon.—At the change of the monsoon in March and October, the wind is variable; however, in the Gulf of Bengal, as as well as in the Bay, it is more frequently from N.E. than from any other quarter. Violent storms take place at this period, and are stronger near the coasts of Bengal, Orixa, Golconda, and Coromandel, than on those of Chittagong, Aracan, Ava, Pegu, Martaban, &c., forming the Eastern coast of the gulf. They are also more frequent and more formidable in October and November than in April, May, or June.

Storms in the Gulf of Bengal.—In that part of the gulf between the coast of Coromandel and the Andaman Isles, storms in October and November come from W.S.W., varying to W.N.W. and even to N.W.; they sometimes come from S.E., but mostly from N.E. They occur in January from N.E., but are not so heavy.

The storms met with from April to June always begin from N.N.W. or N.N.E., the wind shifting to N.E. and East, and falling when it veers Southward of East, blowing hardest from about E.N.E. These storms are accompanied by much rain. Sometimes the wind changes suddenly to S.E. or South, and ceases after blowing hard from S.W., from which quarter it also blows hardest. These however seldom occur. Near the coasts the storms are announced by a heavy swell about twelve hours before they take place.

In the middle of the Gulf of Bengal, and near its Eastern coasts, towards the Strait of Malacca, calms are frequent, especially in February, March, and April.

Bay of Bengal.—In the Bay of Bengal, and especially in the northern part of it, the regularity of the monsoons is lost, and the winds are very unsteady. The change takes place in April and October. Sometimes the S.W. monsoon changes in the end of September; and sometimes not till the beginning of November.

Storms in the Bay of Bengal.—The squalls of October and November are heavier than those of May or June, the months following the change of the other monsoon. They are also stronger on the western side of the bay than on the eastern, and occur frequently in June. In April, May, and June they are indicated by the S.W. wind falling, and the wind successively coming from all points of the compass, interrupted by calms; the sky near the horizon is clearer than usual; a hollow sound is heard in the rigging, a light wailing sound, well known to seamen, and the gossamer thread is seen about it as in the West Indies, the sea all the time perfectly smooth. The wind is strongest from W.S.W., changing to W.N.W. and N.W., where the

wind becomes steady and blows very hard. These storms last ten or twelve hours.

Off Cape Palmyras these storms generally commence as above described; sometimes however the wind changes from N.W. to North to N.N.E. and to N.E.; a calm then ensues, lasting a quarter or half an hour, followed by a S.W. wind as violent as the former. This wind goes down after lasting about an hour, and is followed by the wind from E.S.E., varying to East and N.E.; it then falls and commences again from S.W. as before. These latter storms are much less violent than those in which the wind is from S.W., but they are always attended by a deluge of rain.

The storms of October and November are heavier than those in the months we have mentioned. They are preceded by a slight rain and the wind from E.S.E., which gradually increases in force, changing to East, E.N.E., N.E., and North, at which point it subsides. Sometimes in very violent storms the wind changes to N.N.W. and N.W., attended by heavy rain. In these months storms also occur from East and E.N.E., varying to North, and lasting one or two days. They are followed by a calm of some minutes, and the wind then returns with violence to S.S.W., subsiding in about half an hour.

Lateness of the N.E. Monsoon in the Gulf of Bengal.—The N.E. monsoon should begin in October in the Gulf of Bengal, but it is rarely found in this month in the southern part of the gulf. Between Ceylon and the Strait of Malacca, from the equator to the parallels of 8° and 10° N. latitude, in October and November strong Westerly winds are found to last several days. Near the equator the wind is generally from N.W. and N.N.W.; on a line from Ceylon to Cape Achem they vary from W.S.W. to W.N.W., while in the North part of the gulf they are from S.W. to S.S.W. In October and November these winds most frequently prevail near the islands of Nicobar, and in the space separating these islands from Ceylon. In making for this island or the coast of Coromandel during these two months, a ship must not approach Cape Achem.

We will now conclude these general observations on the gulf and bay of Bengal with a statement of the winds observed there during each month.

During the N.E. monsoon, in the Gulf of Bengal, the wind varies from N.N.E. to E.N.E. During the S.W. monsoon it comes principally from South. This monsoon ceases sooner out at sea than on the coasts.

S.W. Monsoon in the Gulf of Bengal.—In March the monsoon varies from S.W. to South, inclining to Eastward, and even to N.E. Southerly winds prevail near the coast; while out at sea the wind is N.E., varying sometimes to S.E., but rarely to S.W.

In April and May the wind in the middle of the gulf is from S.S.W. to S.W., but in May is changing to W.S.W. Sometimes in April it is moderate and variable, with occasional calms, dropping from N.E., varying to East and S.E.

In June, July, and August, the monsoon is at its height, and steady

between S.W. and West, especially in the two former months. About the end of the latter, and in August, it often veers to W.N.W. and even to N.W.

N.E. Monsoon.—In September, October, and sometimes even from the middle of August, the wind is from west, veering to S.S.W., accompanied by heavy rains, which last until the beginning of October. After the 15th of September, and in October, the S.W. monsoon becomes weaker, the wind variable, and frequently from N.E. and N.N.W.

In November the wind varies from N.N.E. to E.N.E., as well as in December and January, months when the monsoon is well established in the gulf. October and November, however, are stormy months, as already stated, and bring an abundance of rain. From the middle of December to the end of January, the N.E. wind is not so strong as in the preceding months.

February is the finest month of the year, with a fresh breeze from N.N.E. to N.E. At the end of this month the N.E. monsoon is failing, and Southerly winds are more frequent than those from the Northward. About the end of February, in the southern part of the gulf, they are from South and S.S.W.

In January, February, and March, the N.E. winds often veer to S.E., but seldom to S.W.

From the foregoing general remarks on the winds of the gulf and bay of Bengal, we will refer to those of their coasts in detail: we will then consider the western coast of the gulf, making the tour of it to the eastward.

Coast of Coromandel.—On the Coromandel coast, in the S.W. monsoon, which prevails from the middle of April to the middle of May, is the fine season. The N.E. monsoon, which succeeds it, is accompanied with rain and stormy weather. The storms, however, are not so frequent or formidable as on the Malabar coast.

In March the weather is fine, storms seldom take place, and are of short duration. In the fine weather of this month, which is about nine tenths of it the winds are moderate, varying from S.W. to S.E. In the afternoons, the S.E. wind prevails, inclining sometimes to East and even although seldom to N.E. After midnight the wind will be from N.E., varying by N.W. to S.W., sometimes followed by a calm; but when fresh, it lasts till nine or ten o'clock in the morning.

In April the N.E. monsoon ends. The alternate land and sea breezes, however, still prevail at times during this month. Those from the sea rise towards noon and last during a greater part of the night; they then change to S.S.W. and S.W., blowing fresh. The S.S.E. winds are also strong, and often begin about nine or ten o'clock in the morning, sometimes lasting all night. Towards the middle of the month the winds become variable, the weather uncertain and sometimes rainy. The southerly winds, changing from S.W. to S.E., still prevail; these last often blow strong. When, towards evening, they incline to the southward and S.W. they become weak, occasionally falling calm. This, however, is not often, and they are generally followed

by a squall or the return of the N.E. monsoon. In this month no leewardly ship can make southing on the Coromandel coast on account of the strong current setting to N.E. In the month of April about twenty-four fine days are reckoned on and storms come seldom, although the weather frequently assumes a stormy aspect and lightning is seen in the West. Still, fresh breezes, accompanied with rain, do occur and last two or three days. A time when a ship should give the coast a good berth, not standing into less than fifteen fathoms on account of the heavy sea on. At the end of April westerly winds prevail and continue some days. At sea the winds are light, variable, and interrupted by calms.

In May the wind varies between E.S.E. and S.W. on the Coromandel coast. The sea breeze rises at noon and blows fresh from S.E.; it sometimes lasts till midnight and changes to South and West, blowing till morning. Sometimes one wind follows the other, blowing equally fresh, but at other times there is an interval of calm between them. From the middle of April to the middle of May storms sometimes occur.

Storms on the Coromandel Coast.—The stormy weather on the Coromandel coast generally begins from N.W., the wind changing to North, N.E., East, or E.b.S., at which point it goes down. In these storms the wind is very heavy from N.E., but when it veers to S.W. by the South it is much more so. These tempests are generally preceded by a heavy swell rolling towards land. Some storms are merely attended with rain and little wind. Such storms as the foregoing are not of common occurrence, and when such a one is at hand a ship should get to sea while the wind is from N.N.W., before it veers to the eastward, from whence it blows hardest. About two thirds of this month is fine with a clear sky. In the evening, however, it often clouds over from the West, and when the wind is fresh during the day the weather becomes foggy and the horizon misty.

In June, July, and August the S.W. monsoon is in full force, the wind varying only from W.S.W. to West. If it is moderate, the sea breeze, which is light and very uncertain, blows from S.E. to South, taking the latter direction during the evening. It begins at 1h. p.m. and falls about nine or ten in the evening, sometimes not before midnight. In the morning the wind shifts to S.W., sometimes to West, and blows strong. The West and S.W. winds, says M. D'Apres, in these three months are sometimes hot and parching—indeed almost insupportable. They often blow with such violence as to darken the sky with the dust and sand which they raise. These clouds of dust are sometimes carried far out to sea, especially during the dry season. In August the frequent rains prevent the wind from producing this effect. In this season, while the weather is fine on the Coromandel coast, heavy rain is falling in the Bay of Bengal, as well as on all the East coast of the Gulf. At Balassore, even, the W.S.W. winds are very strong and disagreeable.

In the month of August the steadiness of the S.W. wind is not so evident as in the preceding months. The land and sea breezes are

more regular; the latter coming from S.E. and towards evening shifting to South and S.W. In this month squalls occur from S.W., with rain, and are sometimes heavy. Towards the end of this month the wind is from W.N.W., hankering to N.W. It happens sometimes in August that a strong N.E. wind springs up for one or two hours, bringing rain in abundance. It afterwards veers to E.S.E. and South, blowing strong all the while, and then shifts back to East in squalls, still accompanied by rain. But when these winds shift to S.W. the weather again becomes fine.

In June there are about eight days fine weather, eleven days cloudy, and eleven overcast. July has about eight fine days; the others are generally overcast or cloudy. In August lightning occurs without thunder, and, as in June, there are not more than eight fine days.

In September both wind and weather are variable; sometimes stormy and rainy, West being the prevailing wind. This varies between W.S.W. and West, but sometimes as far as N.E. In the day the wind is from N.E. and, perhaps more frequently, from S.E. to S.S.E. During this month the wind is generally very moderate, from whatever quarter it comes, and if a storm or two does occur in the latter part of it, when they come off the land they are very brief. The sea breeze gets up about two or three o'clock in the afternoon, and lasts till eight or ten at night. There is much lightning, especially in the evening, but seldom thunder. The weather of August is very similar to that of September.

N.E. Monsoon.—The N.E. monsoon generally commences between the middle of October and the 1st November. In October the clouds become heavier than in the preceding months. Calms, lightning, and rain are frequent till towards the 9th of the month, the winds being variable, with frequent squalls. Sometimes in the morning the wind is East. At other times it is very fresh from N.N.W. for several days; it then comes in squalls with rain, in the afternoon shifting to N.E. or E.N.E., in which case it brings rain. However threatening the appearance of the weather, storms of any violence seldom occur. It is not right, however, to remain on the Coromandel coast beyond the 15th or 20th of October. Towards the end of this month the weather is generally bad and squally, attended with heavy rains, thunder, and lightning.

In November the wind in the morning is generally N.E. to N.N.E., varying to N.N.W. and N.W. After noon it becomes N.N.E. or N.E., sometimes shifting to S.E., and even to S.W., for several days, a circumstance, however, which is very rare. Calms last several days in this month followed by storm and rain. The N.E. monsoon may be introduced by a heavy breeze from N.W., which changes to North and N.E. and ends at East; but this monsoon sometimes begins from N.E. In the middle of the Gulf of Bengal it blows from S.W. and West. From the beginning of October to that of December stormy weather is common. In these storms when the wind shifts to the southward of East it falls and the weather clears up. If, on the contrary, after blowing hard from N.E. it falls calm, it afterwards

shifts to S.E., to South, and S.W., and again blows hard. Nearly the whole month of November is dark and gloomy.

In December the N.E. monsoon is well established, and the rain not so heavy. In the morning the wind gets up from N.N.W. and N.W., veering in the afternoon to N.N.E. and even to E.N.E. When it continues at N.E. it becomes strong and blows for several following days. The weather is finer and more settled than in the preceding months, and about thirteen really fine days are looked for in December.

In January and February the weather is fine, the sky serene, and the sea smooth. N.E. squalls are rare, and, if any, of short duration. In the day the wind is generally from E.N.E. to N.E., and at night it becomes N.N.W. or N.W. In February the N.E. monsoon weakens; it lasts, however, till the middle of the month. Calms then succeed, and frequently S.E. winds. The monsoon lasts longer out at sea than on the coast. Some years the North winds last till the beginning, and even throughout the month of March. While N.E. winds are prevailing in the Gulf of Bengal, on the Coromandel coast the wind is South, and while the wind is South in the Gulf it is N.E. on the Coromandel coast. In January the weather is very calm, and twenty days of fine weather may be reckoned on. But February is considered the finest month in the year, and in this month rain and lightning are most rare.

Coasts of Golconda and Orixa.—On the coast of Golconda, from the middle to the 20th of March, the S.W. monsoon, which brings fine weather, is found on the coast of Dioy, near Masulipatam. It prevails on the coast of Orixa about the beginning of that month, and therefore this monsoon begins in the head of the Gulf sooner than in the southern part. The N.E. monsoon follows it at an interval of six months, commencing at corresponding periods. This is the bad season, especially in November and December.

On the coasts of Golconda and Orixa, in the end of February the wind is from N.E., sometimes fresh and sometimes light. The land and sea breezes generally begin in the early part of March, those from W.N.W. varying to S.W. In March the wind is from S.E., hauling to E.S.E., during the day, and from S.S.W. to S.W. during the night. Sometimes strong winds from N.W. are found on these coasts, and also at Balasore, West of the mouth of the Ganges. These are most common in the end of March.

In April and May the wind is frequently strong from South, especially on the coast of Orixa. It varies from South to S.E., bringing cloudy and misty weather. In May it changes from S.S.E. to S.W., and sometimes to W.S.W., on the coast of Orixa and Balasore. In May it is sometimes strong from S.S.W. to S.W. with cloudy weather; a season of the year which is very bad and stormy, especially in June. From the end of May till the end of June, it is dangerous to go to Balasore, and also between the end of September and the end of October, at the change of the monsoon.

In June and July rainy squalls are frequent. In June, July, and

August the S.W. monsoon is in full force on the coast of Orixa, the sky overcast.

At Balasore the S.W. monsoon blows fresh from the West. In April and May it is often South and S.E. If it shifs from S.S.E. to S.W., and blows hard, it brings rain, while the weather is fine on the southern part of the coast. In June, as well as July, it blows from South, veering to S.E. In August the weather is uncertain; the wind also varying from S.S.W. to W.N.W., and sometimes coming from S.S.E., attended with heavy rains and squalls near the coast of Balasore.

(To be continued.)

Rear-Admiral Sir John Ross, C.B.

There are few officers in the Navy who were more generally known than Sir John Ross, who attained to the advanced age of eighty, after having seen much active service during the war (when he was severely wounded) and, subsequently, in the Arctic Regions, with which portion of the globe his name has been of late years so much associated.

His voyages to the North were made on three different occasions. The first was in the year 1818, and was the commencement of the voyages into the Polar Seas in the present century for the discovery of a North-West Passage. On this occasion he commanded the *Isabella*, while the late Sir Edward Parry was Lieut.-Commander of the *Alexander*. The expedition proceeded up Baffin Bay, on the East side, and, rounding what was supposed to be the head of the bay, returned down the West side, without discovering any opening—thick cloud banks probably assuming the shape of mountains being seen at the entrance of Lancaster Sound. These barriers—which have deceived many a skilful navigator here and elsewhere—were found by Sir Edward Parry the following year to have been but the "baseless fabric of a vision"

Sir John Ross published an interesting account of that voyage, the general accuracy of which, even to the crimson snow—at first something doubted on account of the colour, which is greatly exaggerated, —has since been proved.

His second voyage to the Arctic Regions was undertaken in 1829, when he was accompanied by his nephew, the present Sir James Clarke Ross. This expedition was fitted out at the expense of Sir Felix Booth, and consisted of a steam-vessel called the *Victory*, which had once been employed as a packet between Liverpool and the Isle of Man. She was the first steam-vessel that ever crossed the Arctic Circle, and was fitted with some patent engine—which, as might be

expected, broke down—and with paddle-wheels so constructed as to be lifted out of the water in a minute.

This expedition proceeeded down Prince Regent Inlet, discovered the Gulf of Boothia, and established the Magnetic Pole. It was frozen up for four winters, and, abandoning the ship, the crew were saved by proceeding to Fury Beach and thence into Barrow Strait; where they were picked up in the year 1833 by the *Isabella* whaler, which was the same ship Sir John Ross had commanded on his first voyage.

Sir John Ross's third voyage was in search of his old friend Sir John Franklin in the year 1850, when he had turned his three score years and ten—being then seventy-three years of age.

He went out in a small schooner called the *Felix*, accompanied by Captain Phillipps, and wintered at Cornwallis Island. There was little he could do there, as there were visitors enough in Barrow Strait that year to scour the whole country—but unhappily they had all got huddled together. There were Captain Austin's four ships; the American two; Captain Penny's two; Lady Franklin's one; and Sir John Ross's two, reckoning his little tender the *Mary*.

A journey across Cornwallis Island was all that his expedition was able to accomplish, but it was a noble and gallant act on the part of this brave old man to go out on the search and pass a winter in the Arctic Seas at a period of life when few men move from the fireside.

Sir John Ross has published other works besides his voyages, and amongst his literary productions is a clever treatise on the steam-engine. His "Life of Admiral Lord de Saumarez" was published a few years ago, and the last work with which his name is connected is a "Memoir of Admiral de Krusenstern," a small book of some eighty pages, which he edited and published in the spring of this year for the benefit of some members of the family of Krusenstern who stood in need of assistance. His last act was then an act of charity.

In private life Sir John Ross was of a most amiable and social turn of mind, and many will long remember his good humoured mirth, while the service at large will not, we are sure, fail to pay a passing tribute of respect to the memory of a brave old man whose indomitable "pluck" led him forth, at the age of seventy-three, to pass a winter in the Arctic Seas in the humane endeavour to save the lives of his friend Sir John Franklin and his missing crews.

Sir John Ross, amongst other accomplishments, was no mean poet, as may be gathered by the following lines, which the old veteran sent to Mr. Barrow from Port Leopold, the winter quarters of Sir James Ross.

"The following lines were written by Captain Sir John Ross, and left in a tin case at a cairn on Leopold Island, September, 1832.

Far as the eye can reach, and all around
Is one vast icy solitude profound!
On snow-clad ground in silent stillness sleep
The weary crew; no soothing vapours steep

The rocks with freshness, not an herb is there,
Nor shrub, nor brush, but desolate and bare,
It seems as if these regions were by the will
Of Heaven transfixed and all at once stood still,
And the proud waves, beneath the fatal blow,
Had spread into a field of lifeless snow!

JOHN ROSS.

The *Enterprise* and *Investigator* wintered at Leopold Harbour, and although both crews were on the mountain during eleven months the above had not been found in 1848–49.

24th November, 1852. JOHN ROSS.

THE PACIFIC OCEAN CONSIDERED WITH REFERENCE TO THE WANTS OF SEAMEN.

(Continued from page 548.)

We have just observed that southerly and S.W. winds get up suddenly and blow hard. This is therefore a circumstance which deserves attention in order to be prepared for them at all times.

These squally southerly and S.W. winds are indicated by thick white clouds; the edges of which are well defined and themselves large and massive. Before northerly and N.W. winds the clouds are low, the sky is dark and other clouds appear at a higher elevation, and the sun being scarcely seen through them assumes a reddish appearance. For some hours, even sometimes a day, before a North or West wind an observation of the sun cannot be had, although it may be visible, the mist in the upper part of the atmosphere preventing the edge of the disc from being seen. Sometimes with a light breeze varying from N.N.W. to N.N.E. there may be some days of fine weather. These winds are then succeeded by southerly winds and abundance of rain.

The prevailing character of the weather in these latitudes is a fresh N.W. wind, varying to S.W., at the same time the sky being cloudy. Thunder and lightning seldom occur in these parts, The seaman is warned of the heavy squalls from South and S.W. by large masses of clouds, and frequently by snow or large hailstones, rendering them still more formidable.

Lastly, it has been observed that on the western coast of the promontory of Cape Horn southerly winds prevail, while at the same time at sea off the pitch of the cape the wind is from West. This remark equally applies to the Cape of Good Hope and Cape Van Diemen.

Winds in the Strait of Magellan.—What we have just said with regard to the winds near Cape Horn may be also applied to all the Magellan lands. Westerly winds prevail during the greater part of

the year at the entrance of Magellan Strait in the Pacific. They are particularly strong in March, so much so at times as to become stormy. They bring rain and sometimes snow, and a very high sea According to many navigators westerly winds prevail chiefly during summer on the whole of the Magellan coasts, and also during the greater part of the year,—namely, from July to March. In the winter they are sometimes interrupted by easterly winds, which last some time and bring fine weather.

In December, January, and February these westerly winds vary from N.W. to S.W. and sometimes blow fresh. In March, as already stated, the weather is always bad. In April the prevailing winds are from E.N.E. to E.S.E., interrupted by occasional fresh westerly breezes. In the strait, as in all narrow channels, the wind is very variable. According to Anson, the most favourable month to pass it from East to West is December, because, he says, that at this period the winds are generally moderate, especially in the first part of the month.

Periodical Winds or Monsoons on the Coast of Chili.—It has been long considered that the winds along the West coast of America, from the Strait of Magellan to Panama, had almost always a constant tendency to blow from the southward to the northward, with modifications according to the formation of the coast. But this rule, although applying to a certain extent of coast, does not reach the coast of Chili.

On this coast there are two monsoons, which, although not so regular as those of the Indian Ocean, are nevertheless well established. Thus, northerly and N.W. winds prevail there in winter, that is from May to September; and from the middle of September to May southerly and S.E. winds are found, sometimes blowing very hard. The northerly and southerly names by which we here distinguish the monsoons are intended to signify the directions that the winds blow most frequently from, inclining more or less to the eastward or westward, and therefore it might be better to designate these winds by the name of alternate periodical winds than by that of monsoon.

The bad season lasts from the end of May to September. During these three months calms and light breezes are found with occasional West and S.W. winds and very bad weather. In the commencement and throughout this season also northerly gales, with much rain, are experienced not only near the coast but also for some distance out at sea. The gales, however, are not very violent.

The fine season lasts from September to May, that is for about nine months. The sky is then generally clear, and comparatively little rain falls. In the summer, however, although not often strong, northerly winds are occasionally found, and now and then two or three days of constant heavy rain. These changes in the fine season are neither so common nor so severe to the northward of the parallel of 31° S. lat. as they are to the southward of it.

A fresh southerly breeze generally gets up a little before noon (an hour, or perhaps less) and lasts till sunset, sometimes even till midnight. In the middle of summer it sometimes blows so fresh as to

prevent vessels from reaching a harbour. Valparaiso, amongst other harbours, sometimes cannot be gained in spite of every care being taken to do so. The ordinary strength of this sea breeze (which, although it blows along the coast, is so termed) is such that even well-found vessels are frequently obliged, if working to windward, to double-reef.

It is the same with the southerly wind off the coast between the parallels of 35° and 25° S. lat., although this is not so strong in the offing during the day as near the coast, and it does not go down at night. In the offing the wind is fresher, but it is little felt in the harbours, where it is mostly calm at night until an easterly wind rises. This is a light breeze from the Cordilleras, quite harmless and lasting only for a few hours, and nearly always with a clear sky. In the summer time, when attended with fog, it is a sure indication of there being no wind at sea, besides showing the probability of rain. In winter when the sky is overcast it foretells of northerly wind and rain.

On the coast of Chili, as in the whole of the southern hemisphere, the course of the winter winds is from North changing to Westward. The strongest winds and those which bring the worst sea, are those from West of North. A vessel when anchoring ought, therefore, as much as possible to seek shelter from points which project Westward, and not under those which only shelter them from northerly winds. In summer vessels anchor near the land, so as not to be blown out to sea by southerly winds. In winter it is necessary to keep further off it (without being too far,) for near the coast the wind is not so strong, and advantage may always be taken of the lull which prevails there.

Northerly Winds.—The Northers, as they are called, are generally well characterised; the sky is very overcast, there is little or no wind except from East, the swell comes from the Northward, the tide is stronger than usual, the neighbouring land is remarkably distinct and elevated by refraction, and the falling of the barometer are some of the surest indications of these winds. Northerly winds are not always squally, and sometimes several years pass without any that deserve that character. Nevertheless it is seldom that many pass without several vessels being cast away by them.

Thunder and lightning are rare; and on the coast of Chili we never find an Easterly wind so strong as to distress shipping. Westerly winds are only felt when the northerly wind changes before the sky clears, and the wind becomes less. The Northers never last longer than a day and night, and generally not so long.

The strength of the Southerly winds is only for a few hours. Some seamen are of opinion that the Northers are not felt North of Coquimbo. There are, however, numerous instances of squalls and heavy seas at Copiapo.

Chiloé.—At Chiloé it rains constantly during the whole year, and the Southerly monsoon lasts longer there than at Valparaiso.

Valdivia.—At Valdivia Westerly winds are frequent and very strong.

La Concepcion, Valparaiso.—At Concepcion the periodical winds

above mentioned are as well established as at Valparaiso. At this latter place the winter and its Northers frequently do not set in until the middle of May, and last till September, gradually losing force. But sometimes northerly winds blow strong from the month of April. The northerly monsoon lasts about four months.

The fine or dry season, accompanied by southerly winds, succeeds the northerly winds and lasts till May. These winds, varying from S.W. to S.E.b.S. are sometimes very fresh, and ships at Valparaiso often drag their anchors. The monsoons above mentioned reach to seventy or eighty leagues out at sea.

(To be continued.)

MAGNETIC DEVIATION ON COMPASS DIAGRAMS.—*By Capt. M. S. Nolloth, R.N.*

Dear Sir,—I send you two diagrams representing the deviations of ships' compasses, for which, with these few remarks, you may at some time find room in your useful publication.

No. 1 Diagram shows the deviation of the *Frolic's* standard compass found by me when she was swung at the Cape of Good Hope in 1854, the Easterly deviation being traced on the right, and Westerly deviation on the left of the *northerly point of no deviation*, as shown when the ship's head was on the several compass points on which it is marked. A scale is adopted for this by a series of concentric circles, considering them always a degree apart from each other—the inner one being zero. Thus on a compass card itself may be represented any amount of Easterly or Westerly deviation, and *on those points* also on which it is found.

This diagram may be drawn on transparent paper and placed on the compass card after "swinging" ship. A glance at the compass,—without reference to a table of figures,—then shows whether or not the ship's head is on a point requiring great attention to the deviation, and also the amount to be applied to the course that is to be steered.

The number of circles and their distances apart will depend on the greatest amount of deviation that is required to be indicated, and on the smallest amount which in practice it may be thought useful to indicate.

No. 2 Diagram represents in like manner the deviation of three vessels swung in England by the officers authorised by the Admiralty; the amount of deviation being shown to the nearest 30 minutes, and its nature.—*i. e.*, Easterly or Westerly.

Were the deviation of a number of vessels of different classes thus laid down in one large diagram, results both interesting and useful might be obtained, as the method affords, by its plain appeal to the eye, a far easier means of comparison by curves than a number of separate tables of figures. Some elucidation of the regulating law might also possibly be obtained from the facility which the method

affords of observing the symmetry or the reverse of the curves in the opposite semicircles,—the directions of the maxima and minima,—the conformity or non-conformity with each other of the configurations, and the anomalies which sometimes present themselves in connexion with the peculiarities of the vessels in which such particulars appear.

It might also be useful if every ship were to lay down in one diagram her deviations in different geographic positions when under the same circumstances of stowage, &c.

Might not some hints also be afforded (with little extra trouble and expense) towards determining, among other matters, the centre of effort of the local attraction by using three (carefully compared) compasses when swinging ship,—viz., one in the usual place, another at the fore end of the ship, and the third somewhere between them, and then comparing their curves of deviation?

I leave this for the consideration of any of your readers, and am

Yours,

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

Ship's Head by Compass.	*Frolic.*	*Ajax.*	*Retribution.*	*Amethyst.*
	° ′	° ′	° ′	° ′
North	3 20 E.	4 50 E.	4 10 E.	0 11 W.
N.b.E	3 40 ,,	6 40 ,,	6 20 ,,	0 53 E.
N.N.E.	3 50 ,,	9 10 ,,	8 0 ,,	1 40 ,,
N.E.b.N.	4 20 ,,	10 30 ,,	9 20 ,,	2 37 ,,
N.E.	4 0 ,,	13 40 ,,	10 40 ,,	3 37 ,,
N.E.b.E.	3 30 ,,	16 50 ,,	12 0 ,,	4 27 ,,
E.N.E.	2 40 ,,	18 0 ,,	11 15 ,,	5 22 ,,
E.b.N.	2 0 ,,	18 0 ,,	10 30 ,,	5 50 ,,
East	1 10 ,,	17 30 ,,	9 0 ,,	5 22 ,,
E.b.S.	0 30 ,,	17 40 ,,	8 0 ,,	4 57 ,,
E.S.E.	0 0 ,,	17 40 ,,	6 30 ,,	4 34 ,,
S.E.b.E.	1 20 W.	14 40 ,,	4 20 ,,	3 50 ,,
S.E.	1 40 ,,	11 40 ,,	2 0 ,,	3 9 ,,
S.E.b.S.	2 0 ,,	8 40 ,,	0 30 W.	2 30 ,,
S.S.E.	2 10 ,,	5 0 ,,	1 20 ,,	1 42 ,,
S.b.E.	2 20 ,,	3 20 ,,	3 40 ,,	0 51 ,,
South	2 20 ,,	2 0 ,,	5 0 ,,	0 8 ,,
S.b.W.	1 50 ,,	0 20 W.	6 40 ,,	0 55 W.
S.S.W.	1 40 ,,	5 20 ,,	7 30 ,,	1 38 ,,
S.W.b.S.	1 30 ,,	7 0 ,,	8 40 ,,	2 24 ,,
S.W.	1 20 ,,	12 40 ,,	9 50 ,,	3 8 ,,
S.W.b.W.	1 20 ,,	14 40 ,,	10 50 ,,	3 50 ,,
W.S.W.	0 50 ,,	15 40 ,,	11 10 ,,	4 39 ,,
W.b.S.	0 50 ,,	16 40 ,,	11 40 ,,	5 17 ,,
West	0 40 ,,	16 0 ,,	11 0 ,,	5 55 ,,
W.b.N.	0 40 ,,	16 0 ,,	10 30 ,,	5 35 ,,
W.N.W.	0 20 ,,	16 0 ,,	9 40 ,,	5 8 ,,
N.W.b.W.	0 10 E.	14 10 ,,	8 20 ,,	4 39 ,,
N.W.	1 0 ,,	12 30 ,,	6 40 ,,	3 56 ,,
N.W.b.N.	2 0 ,,	9 20 ,,	4 30 ,,	3 9 ,,
N.N.W.	2 30 ,,	5 30 ,,	2 20 ,,	2 31 ,,
N.b.W.	2 40 ,,	2 0 ,,	1 50 ,,	1 35 ,,

The foregoing is a table of the deviations displayed in the diagrams herewith. Those of the *Frolic* in the first column in diagram No. 1; and those of the other three consisting of the *Ajax*, *Retribution*, and *Amethyst* in diagram No. 2, the latter ships being swung in England at different periods, and the *Frolic* at the Cape.

Referring to the accompanying Diagrams, it is obvious that the spaces between the circles representing the degrees of deviation might be redivided into some convenient portions of minutes, as 30, 20, or 10, according to their distance apart; but it is preferred here, for the sake of uniformity, to leave this to the reader; those spaces in these diagrams being so very different. In diagram No. 2, the circle representing each fifth degree of deviation is made stronger than the others for the sake of clearness.

M. S. N.

[The foregoing ingenious and simple method of showing deviation is well entitled to attention, not only on account of being at once intelligible to the eye, but because it possesses the advantage of showing the amount of the deviation when the ship's head is on the point of the compass *on which it is marked;*—and thence the points of maximum and minimum, and in fact the curious anomalies which the subject presents, are all at once made evident,—ready to assist at once in any theoretical reasoning of which it is capable. It also shows at once the quantity to be applied, not only to any point, but also any half point on which it may not have been observed. It is right we should add, that on our own suggestion the inner circle has been made zero, instead of the centre; and this we did to avoid the difficulty that would have arisen in expressing the deviation when less than one degree on *adjacent* points; and indeed the utter impossibility of doing so when showing the deviation of several ships on one diagram, as in the case of No. 2. But this may be adopted or not according to opinion, and in no way affects the *originality* of the *principle*, which is readily applicable in practice.—Ed. *N.M.*]

Astronomical Expedition to Tenerife.

The following documents have been forwarded to us by the Secretary of the Admiralty:—

Yacht Titania, off Southampton, Oct. 14th.

My Lord,—I have the honour to inform your Lordship of my return from Tenerife, after accomplishing the astronomical expedition to that place in accordance with the sanction and the several lists of suggestions which you were pleased to send me in April, May, and June last. A large mass of remarkable observations has been thereby procured, and the whole has been managed without accident or trouble of any material character.

The Spanish authorities in Tenerife were most obliging during all my stay, offering every assistance in their power, and any of the inhabitants with whom I had to do, whether high or low, were greatly interested in the success of the operations, and expressed their earnest wish to see them tried again another year by a larger expedition or by the establishment of a permanent observatory.

This kindly feeling is but the reflex of that which, I am happy to say, was so abundantly extended towards the expedition before it sailed by the friends of science in England, who, while appreciating the difficulties to be encountered by reason of the extreme novelty of the undertaking, were yet impressed with the important results to science that must more or less follow from its being boldly and efficiently carried through. Seconding their good wishes by material services, especially by the loan of valuable instruments, they have enabled me to accomplish far more than could otherwise have been anticipated. I should therefore at once mention the names of the Astronomer Royal, Mr. Pattinson of Newcastle, Professor Stokes, Mr. Gassiot, Mr. Nasmyth, Capt. Fitzroy, Dr. Lee, and Admls. Beechey, Manners, and W. H. Smyth, as those who have been greatly instrumental in bringing about a favourable result.

But most of all are thanks due to Robert Stephenson, M.P., who, in his earnest appreciation of this grand experiment in astronomy, gave up to me the entire use of his fine yacht the *Titania* and its crew of sixteen men for the whole period of the expedition. Hence I was enabled to leave England the moment that the instruments were prepared, to make important observations on the way out, to have our apparatus landed at Orotava in place of Santa Cruz, (the port of the steamers, but at an impracticable distance from the Peak,) to take picked men from the crew to serve as assistants on the mountain, and to have, through the agency of the intelligent and scientific captain, (Mr. L. Cocke,) accurate and continued meteorological observations made at the level of the sea during all the time of my residence on the Peak.

In concluding, I have the honour to subjoin a condensed account of my proceedings, and to state that the reduction of the observations is in progress, and, with further particulars, will shortly be placed at their Lordships' disposal.

I have, &c.,

C. Piazzi Smyth,
Astronomer Royal for Scotland.

Notes of Proceedings during the Astronomical Expedition to Tenerife.

Appendix to Letter of October 14th.

From the date of the sanctioning of the expedition by their Lordships I was closely occupied in preparing the necessary instruments, signally assisted in some of the more difficult parts by the Astronomer Royal, until the 20th of June, when I embarkedon board the yacht *Titania*, at Southampton, with about seventy cases of instruments and materials.

After a prosperous voyage, during which we were enabled to accomplish by novel mechanical and optical contrivances,—viz., my "free revolver stand" and "spontaneous horizon point"—two important desiderata of nautical astronomy noted in the *Admiralty Manual of Scientific Inquiry*, and to ascertain the necessity of a new but large correction for marine barometers, we cast anchor in the road of Santa Cruz on the morning of the 8th of July. Landing immediately, I called, with the consul, on the Spanish authorities in the town, and found them all most favourably disposed towards the undertaking. The Captain-General himself was absent in a different part of the country,

but on hearing of my arrival he most courteously sent the chief of his Etat Major to offer his compliments and services.

Fortunate in procuring the advice and agency in Santa Cruz of Mr. Hamilton, an eminent merchant, long resident in the island; and in Orotava of Mr. Goodall, the acting vice-consul, I proceeded on the 10th overland to the last named town, the real port of the Peak, while the yacht went round by sea to the same place, and landed all the packages, as well as her carpenter and second mate, who were to serve as assistants on the mountain.

Now the moment had arrived for beginning the first, and all along and still the prevailing idea of the whole expedition,—viz., how much can astronomical observation be improved by the elevation of telescopes into the higher regions of the atmosphere. To determine this neatly and definitively in the style of a problem in pure mathematics, three stations should have been chosen; one at the base, the second half way up, and the third at the summit of the Peak; and such had in fact been recommended. I was prepared therefore to set up our instruments at Orotava, as the first station; but, finding that this town and all that part of the country were under a constant cloud, so thick, so dense, and so determinedly constant as to leave no hope of our procuring, except by a stay of some months, sufficient observations for determining the astronomical qualities of the atmosphere there, I soon turned my attention to a higher station. After considering the form of the mountain, the height of the local clouds about it, and the directions of the prevailing winds; being also assisted by the local and scientific experience of Mr. Charles Smith, of Orotava, I gave the preference to Guajara, a mountain 8,870 feet high, on the South of the Peak, and on the 14th of July we started for this place with twenty seven horses and mules and nearly all our baggage.

Not the whole of it, for the very untoward circumstance had just been discovered, that the form, size, and weight of the boxes of the great Pattinson equatorial were entirely unsuited to the means of transport in the country. Mr. Goodall had brought all the muleteers and carriers of the place to see what could be done; but they all declared the taking of such boxes up the mountain to be impossible, either for horses or for men, and that I should find it to be so on going up. We were therefore compelled to leave them behind, provisionally we hoped, while we were acquiring experience of the country and of the astronomical qualities of the atmosphere with the smaller and more portable Sheepshanks equatorial of the Edinburgh Observatory.

Travelling, then, with our cavalcade, we began to ascend the long slope above Orotava, on what appeared to be a densely clouded day; but, after pushing on for some hours, we had penetrated and finally risen above all those clouds, the cumuloni of the N.E. trade wind, at the height of above 5,000 feet. This was immediately a realization of one of the astronomical advantages of elevation; for the sun now shone out hot and clear from a dark blue sky, unspecked by a particle of vapour—a state of things, too, which the characteristics of the plants and the dryness of the soil we were entering on proved to be the rule and not the exception of that upper region.

Still ascending the slope, the ancient valley of Tavro, we entered by the portal through which its tumultuous lava streams once escaped, the great retama dotted basin of the old crater, at an elevation of 7,100 feet. Under the eastern and southern walls of this we skirted along for several miles, leaving the cone of the Peak on the West and North; and, finally, ascending through a pass in the southern wall, we climbed the hill of Guajara, encamping that night among the trachyte and pumice blocks with which its level is strewed.

The morning showed that we were on the highest point of land in the island, except the Peak itself, which rose about three miles to the North of us, leaving the horizon clear East and West where some of our observations were to be made. But, the site being open and exposed to every wind, and with a

deep precipice, part of the old crater wall, running along the northern side, our first exertions were directed to securing the station by building stone walls about the tents. To this end we procured native assistance, and erected also an optical room, a meteorological shed, and a telescope enclosure. At the same time our friend, Mr. Goodall, in Orotava, attended so untiringly and effectively to all our wants in the way of horses, men, provisions, &c., that we were soon enabled to turn all our attention to scientific employments.

In astronomy, the admirable purity of the atmosphere and the advantage of an ascent of 8,870 feet, were night after night proved by the limit of vision of the Sheepshanks telescope being extended from stars of the tenth degree of magnitude to those of the fourteenth degree at Guajara, and not only the brightness of the stars, but their definition also was much improved, for, while in Edinburgh I had never seen good images of stars in that instrument, on Guajara it almost always exhibited such clean and perfect stellar discs and rings as I have never seen in any other telescope at or near the level of the sea; and while we were still on the mountain, with almost every night perfectly clear, and in general with such enchantingly fine definition, the perception of these advantages was intensified by the arrival of a letter from the first assistant-astronomer of the Edinburgh Observatory, saying that there had hardly been a single clear night there during all the time that I had been away.

The conclusions derivable from the purely astronomical observations are confirmed by many of a different character, and especially by the observed intensity of the radiation of the heavenly bodies. Thus, the first radiation thermometer we exposed was broken in a few minutes by the power of the sun proving to be so much greater than had been anticipated by the maker in England. Two other thermometers were then brought out that had been prepared according to M. Arago's ideas and the greater strength of the sun in France, but, though marking as high as 180°, they were soon proved to be insufficient to register the extraordinary intensity of the sun's rays here; for by ten o'clock in the morning the mercury had not only reached the top of the scale, (180°,) but was filling the upper bulb to an unknown extent.

This excessive radiation abundantly proved that Guajara was precisely the place for the normal series of actinometer observations required by Sir John Herschell. For this purpose two actinometers at least were necessary but up to the time of leaving England neither my friends nor myself could hear of the existence of more than one. That one belonged to Mr. Airey, and he not only lent it to me, but ordered a second one to be made and sent out to Tenerife as soon possible. Unhappily, it only arrived as I was leaving the island, on the 26th of September, and then in a damaged condition, while the other one, when opened on the mountain, was found to have been injured in its most essential part—the internal thermometer—as well as to have leaked. Means, however, of getting over these difficulties were extemporized, and observations were begun in that region so promising for solar radiation; but on the second day the gradual shrinking of the wooden parts of the apparatus split the glass parts—the end of too many of our instruments in that climate, where, besides the direct radiation, there reigned a continual dryness, with a severity unmitigated, beyond any precedent known to the opticians at home.

Happier was the inquiry into the radiation of the moon by means of the Admiralty delicate thermomultiplier, lent by Mr. Gassiot. The position of the moon was by no means favourable, being on the night of the full, 19° South of the equator; but the air was perfectly calm, and the rare atmosphere so favourable to radiation that a very sensible amount of heat was found both on this and the following night. The absolute amount was small, being about one-third of that radiated by a candle at a distance of fifteen feet; but the perfect capacity of the instrument to measure smaller quantities still, and the

confirmatory result of groups of several hundred observations, leave no doubt of the fact of our having been enabled to measure here a quantity which is so small as to be altogether inappreciable at lower altitudes.

Closely connected with radiation is the quantity of the light emitted by the heavenly bodies, and this was examined frequently in the case of the sun and moon and different parts of the sky by observations of Trauenhofer's lines in the spectrum. Stoke's spectrum was also examined, as recommended by the Royal Society, and was found to be traceable beyond the furthest point previously ascertained elsewhere. Means of photographing this spectrum were also prepared and some pictures of it on glass obtained, showing many of the dark lines beyond H, the usual limit of vision.

Several hundred measures of the polarization of the sky light were likewise obtained, and the zodiacal light, and twilight were frequently made the subject of numerical observation; continual registers of the barometer, dry and wet bulb thermometer, and the electrometer, being kept up during the whole of the time.

The geology of the Peak could be well examined from this point and offered much of exceeding interest, as did also the magnetism and botany of the neighbourhood, while the remarkable moderation of the wind, considering that it was a mountain top, allowed researches to be carried on without let or hindrance throughout the twenty-four hours.

On the whole, therefore, Guajara approved itself admirably as a station for ascertainining the astronomical qualities of the atmosphere at the height of 8,870 feet; but still, however great the improvement there, above experiences at the level of the sea, we could easily see that we had by no means reached the *ne plus ultrà*, and might evidently effect even far greater improvement by rising yet higher above the atmospheric impurities that linger about the surface of the earth. Raised we were far above the level of the actual cloud of the N.E. wind, but we were not always above the wind itself; and even, as this rose and predominated over the station, so did telescopic definition become bad. We were also more frequently than otherwise enveloped in a dusty, smoky sort of medium, whose vast strata, piled one on the other and stretching out to the distant horizon, rose some thousands of feet above our heads, and only the Peak itself seemed high enough to be fairly above these upper mists. To the Peak, therefore, it was evident we must go to reap all the astronomical advantages which Tenerife is capable of yielding.

The Peak, however, was not so simple a matter as our first station, for the top is not accessible on account of the constant evolution of sulphurous vapours, while a considerable portion of the slope below it is impracticable on account of the broken lava streams by which it is covered.

The time also being short, I sent men, while I was still observing at Guajara, to explore the ascent, to ascertain the highest available station, and, finally, to build the walls of a scientific encampment, according to a plan furnished them. Then, on the 28th of August we moved over with all the instruments mounted on a train of twenty-seven horses and mules, and after a hard day's work travelling through the pumicestone soil and rugged lavas of the old crater, and after a long steep climb, we occupied before night our new position of the Alta Vista.

Perched on the top of a ridge of pumice and red lava on the S.E. slope of the Peak, at an elevation of 10,900 feet, the Alta Vista forms a comfortable little shelf, tolerably level, and is the highest point accessible to mules. On no other side can they ascend so high by reason of the torrents of black lava blocks, which there cover the flanks of the mountain, but which have in this case curiously divided, and left a narrow and steep roadway of the older rock between two embankments of the newer scoria. These ridges, rising to the

height of about 30°, served admirably to protect us from the winds towards the S.W. and North, and, if they did interfere with the ruder eye observations of some phenomenon near the horizon, they contributed to the advantage of telescopic observation with high magnifying powers directed to the zenith. Here, therefore, was the place where the great Pattinson equatorial must be erected, if at all.

Schemes for carrying this up the mountain had been devising all the time by our friends below, who were much interested in the realization of this marked feature of the expedition, and Mr. Goodall had at one time nearly organized relays of men for the transport to Guajara, but when they heard of the Alta Vista they one and all declined to have anything to do with the matter. But it must be accomplished; so on the 25th of August, leaving the men to roof in the newly-built walls, I descended the mountain to see what could be done in the now re-affirmed impossibility of carrying up the great telescope.

This instrument, with an object glass of 7¼ inches aperture and 12 feet focus, and with an equatorial mounting entirely in metal, and of the first class of finish and perfection, in accordance with the requirements of modern astronomy, had been taken to pieces by its maker in England, as far, I presume, as he had thought safe or practicable for its re-erection on a mountain side, far from the resources of workshops. But as he had not reduced it to its primitive elementary parts, the unwieldier masses could still be subdivided and packed up into smaller parcels. To this, therefore, I applied myself, and assisted by an ingenious mechanic of the place, we separated, and finally packed in thirteen boxes what had been arranged by the maker in three. Then starting from the town at daylight on the 30th of August, with eleven horses and men, the whole of the cases were brought up to the Alta Vista by sunset the same evening.

The next day, Sunday, there was a storm of wind and sand; and, though it had not subsided, on the Monday we began the erection of the wooden pier, filling it with lava blocks, after it had been duly *orienté* on its foundational beams fixed into the ground with lime. Then came the unpacking of the boxes, and the recomposition of the instrument, and on the second day the complete equatorial, with clock motion, axes well adjusted, and verniers reading off accurate places on finely divided circles, was in full operation, the first time that such a thing had ever taken place so high above the level of the sea.

But now only a fortnight of our prescribed time remained, and there were marked indications of a premature breaking up of the fine season. I set to work, therefore, without loss of time, to determine, in the first place, the degree of definition in the atmosphere; for very grave doubts had been thrown out that the hot vapours from the Peak would be utterly fatal to telescopic vision. The definition, however, proved admirable; so much so, that not only once, but every night for a week, I could see that difficult test B and C of γ Andromeda as two distinct stars; nor could I find any object in the lists of the "Cycle" that were not separated by the telescope and with ease.

Equally with regard to the range of visibility, did the atmosphere approve itself; for the very faintest star to the practised eye and powerful telescope of the observer of the "Cycle" proved easy to even an inexperienced person in the Pattinson equatorial.

Directing them to planetary bodies, the fine division of Saturn's ring—a much contested matter—came out unmistakeably, and revelations of clouds appeared on Jupiter's surface which were eminently similar in form, and as continually interesting in their changes as those of the sea of lower clouds brought about Tenerife daily under our eyes by the N.E. trade wind. Of the moon some extraordinary views were obtained, notwithstanding its unfortu-

nately low altitude at that time; and the sun was observed both optically and photographically.

Daily, however, the weather, which had been in a manner disjointed by the storm on the 1st, was becoming worse; and the wind, continually increasing, now began to shake the telescope so as to prevent the employment of high magnifying powers. Then the sky became cloudy, and, at last, on the 14th of September, the storm broke in earnest, beginning with a rattling fall of hail.

That night above two inches of rain fell, and the climate altered so much that the natives would no longer remain with us. But the temperature was by no means unbearable to Northern men, and the sailors from Mr. Stephenson's yacht, proving good men and true (William Neal, the carpenter, most ingenious and able with his tools in every variety of work, and William Corke, the Second Mate, with much capacity for observation), I still hoped to be able to see out the last of the clouds and to finish several series of observations which had been interfered with by them. The break up of the summer weather had, however, been too complete, and though we stayed till the last possible day we never saw the clear sky again; so, on the 19th, we dismantled the buildings, made a *caché (sic*, in orig.) of such materials as might be useful in a future year, and went down to Orotava with the instruments and baggage.

During the Alta Vista period of our labours the smaller instruments before employed at Guajara were again in action; an improved method of observing the black lines in the spectrum was devised; some meteorological ascents and descents of the mountain were made, according to the suggestions of the Royal Society; and Humboldt's horizontal fluctuation of the stars, and the nature of the ice cavern, as recommended by Sir J. Herschel, were examined into. The crater of the Peak, the Montana Blanca, and various places remarkable for their geology or botany, were visited with hypsometric instruments, and with a photographic camera, by the aid of which about 200 pictures were obtained.

Finally, in concert with a Spanish gentleman of great local knowledge (Don Martin Rodriguez of Cegas) I examined the upper part of the mountain, and found a station that with a little expense might be made available for another year, and, besides greater height, would possess some other advantages over either the Alta Vista or Guajara.

Arrived in Orotava I employed myself for a week in settling the accounts, in examining the zeros of our meteorological instruments, and in photographing and measuring some remarkable volcanic features in the neighbourhood, and also the great dragon tree, as recommended by Sir John Herschel.

Then on the 26th of September I rode over to Santa Cruz, and having examined the tide guage which, with the assistance of Mr. Hamilton and the warm co-operation of the Spanish engineers, I had had constructed on the mole to meet the wishes of the Master of Trinity College, Cambridge, I embarked on board the yacht *Titania* the same evening.

The Captain immediately set sail, called off Orotava the next day, September 27, for the instruments and baggage, and has now safely brought them back to England after an absence of 117 days. Of these, 36 have been spent at sea, 18 in the low lands of Tenerife, 37 at the height of 8,870 feet, and 26 at the height of 10,900 feet.

C. Piazzi Smyth, *Astronomer Royal for Scotland.*

UNITED STATES SCREW STEAM-SHIPS.

Our scientific contemporary, the *Mechanics' Magazine*, supplies in the last number some very important particulars respecting the new class of steam-frigates, the introduction of which it is supposed by some will furnish a new era in war ships. It is the custom—and one not to be despised—of our Trans-atlantic cousins, whenever they have anything particularly striking belonging to them, to send it across to the old country to be admired. If we remember aright, they did this in 1810, or thereabouts, with their, at that time, monster frigate the *Constitution*. So proud, however, and flushed with victory were the Britishers, that they disdained the new creation of their humble relatives. Eighteen-pounder frigates of 1,000 tons were then looked upon, on this side of the water, as the *ne plus ultra* of single-decked ships; and the long 24-pounders mounted on a deck near seven feet in height, were deemed unworthy of imitation. Experience proved otherwise. The thick-sided Yankee frigates encountered our comparatively fragile craft, and soon demonstrated their superiority. John Bull profited by the humiliating lesson, and has by degrees endeavoured to keep in advance rather than upon the heels of improvement in naval architecture. The rod has, however, had to be applied occasionally, but it has had a good effect, and the schoolmaster ought not to be condemned.

Three years ago the maximum dimensions of our frigates was 2,400 tons; and their extreme length about 220 feet. The screw propeller, however, soon proved that additional length was required, and ships were lengthened, first at the bow, then in midships, and of late the architectural department seems to have come to the determination of going the entire animal. Jonathan, not to be outdone, has rivalled, if he has not surpassed, British ideas on this head; and having completed one out of five frigates has, according to his wont, sent her hither to astonish our weak minds.

The *Merrimac* has been for some time at Southampton, and her Captain and officers, with the accustomed courtesy of American gentlemen, have done all in their power to display their ship to all who have had the curiosity to go on board. Among the visitors may be reckoned a contributor to the *Mechanics' Magazine*, and we have much pleasure in availing ourselves of the details he has supplied respecting this new ship:—

The principal dimensions of the five frigates [*Merrimac*, *Wabash*, *Minnesota*, *Roanoke*, and *Colorado*] are nearly alike, and may be taken as follows: Length on keel, 250 feet; length on load water line, 260 feet; length over all, 300 feet; breadth extreme, 51 ft. 4 in.; breadth moulded, 50 ft. 2 in.; depth of hold (to gun deck), 26 ft. 4 in.; draught of water forward, 23 ft. 6 in.; draught of water aft, 24 ft. When the vessel is at her load line, the heights of the gun deck ports above the water are, amidships, 9 ft., and forward and aft, 12 ft. or thereabouts. The height from her gun deck to the lower side of her spar deck beams, is 6 ft. The height of her bulwarks when the hammocks are stowed, is 8 ft. 8 in. Her gun deck ports are 3 ft. 8 in. long, and nearly 8 ft. 6 in. apart. Her load displacement is estimated at 4,000 tons.

The *Merrimac* was designed by Mr. Lenthall, and built by Mr. Delano, the master shipwright of the Navy-yard at Boston. Her frame is of live oak, crossed on the inside with two sets of diagonal iron plates. She is also strengthened by similar plates on the outside at bow and stern. Her planking is of oak, and decks fir. The large wooden knees to some extent interfere with the beauty of her appearance inboard. But she is a very roomy and handsome ship, and the appearance of her main deck is unsurpassed. The

Merrimac is ship rigged, and spreads 56,629 yards of canvas, or about the quantity of our own first-class frigates.

The armament of this frigate is thus described:

She is pierced for sixty guns, but if she were actually to carry that number, they would have to be of a lighter calibre than those now on board of her. Her present armament is as follows:—On her upper deck there two pivot guns, each weighing nearly 5½ tons, and of 10 inches bore, and fourteen 8-inch guns, each weighing rather more than 3 tons; on her gun deck there are twenty-four 9-inch guns, each weighing nearly 4½ tons. The whole of these guns, forty in all, are primarily intended to be served with hollow shot or shell. She might carry a few additional 9-inch guns on the main deck with perfect convenience. Her gun carriages on the main deck are similar to those used in the French Navy. They have, however, but two trucks each, at the ship's side end of the carriage.

So far the American frigate presents very formidable features, and, without doubt, such a ship would prove an awkward customer to any of our sailing line-of-battle ships; but that she would be terrible to a screw ship is very questionable. Our contemporary goes on to say,—

She has two cylinders, 72 inches in diameter, and 3 feet stroke. These are placed close to the shaft, on opposite sides of it, leaving room only for the crank. She is fitted with four of the vertical tubular boilers patented by Mr. Martin, Engineer-in-Chief of the United States Navy. The boilers are of iron with brass tubes. The greatest speed ever attained by the *Merrimac* under steam alone was *seven knots per hour*, and this was under very favourable circumstances. Her average steaming speed is much less than this.

Now it cannot be doubted that the armament and great bulk of this frigate, of near 3,500 tons, would sink into insignificance before the well plied raking broadsides or occasional plumping shot from such ships as the *Imperieuse*, *Euryalus*, or any other of our large class screw frigates, all of whom steam with ease from ten to twelve knots an hour. They would go round the *Merrimac* as a cooper would round a cask, and plant a shot here and there with great effect, and with impunity to themselves. Speed is as needful as heavy metal; and unless a ship is cased with impenetrable plates, her success in action must principally depend upon the celerity of her evolutions. We shall see how far the engineering abilities of our cousins are likely to vie with those of the Watts on this side the ocean, by their further attempts at improvement; but hitherto we do not find them in the ascendency in that particular branch.

But the prowess of the United States Navy is not to depend upon the large frigates. A new class of corvettes is in course of construction, one of which, the *Niagara*, is in an advanced stage. This, the first of the race, is constructed by Mr. Steers, the naval architect, who astonished the yachting world by his *America*. Without wishing to detract from Mr. Steers' admitted merits we may say, by the way, that we consider the stunning success of the schooner to have been occasioned by other elements than the designer's art. The sailmaker and the sailors had quite as much to do with the victory obtained by the *America* as Mr. Steers had—the proof of which has since been made apparent by the great falling off in his vessel's performances under less skilled management. The *Niagara* may, however, be a fresh and more convincing instance of his skill. Our contemporary says,—

The principal dimensions of the *Niagara* are as follows:—Length on load water line, 328 ft. 10 in.; over all, 345 ft.; breadth extreme, 55 ft.; moulded, 53 ft. 8 in.; depth of hold to spar deck, 51 ft. 3 in.; draught of water 26 ft. Her ports are 15 *feet above the load water line*. Her height between decks, is 7 ft. 3 in. to the under side of beams. Her displacement at 23 ft. draught, is 5,440 tons. Her frame is of live oak, and crossed on the outside with two sets of diagonal iron plates. Having a very fine run, she is, of course, weak

at her quarters, in consequence of which, Mr. Steers has fitted on each side a large 2-inch iron stay or brace, which lies along the upper deck beams, and passing through the deck below, steps upon the stern post. It may as well be added, that when she is docked, it is thought necessary by Mr. Steers to brace her two sides together at about the turn of the bilge, by means of a chain, which passes over a frame or saddle, which is set up by wedges. She is rigged like the *Merrimac* and others.

The *Niagara* carries 12 guns, 5 of a side, and two pivot guns, each of them 11 inches in the bore, and weighing upwards of 7 tons. All the guns are mounted on pivoted carriages, and the broadside ports have consequently to be very large—9 ft. long and 4 ft. high. The *Niagara* is intended to be fast, and, being furnished with longe range guns, is supposed to have the power of annoying and injuring an enemy while she herself keeps out of the range of her enemy's guns. The engines, built by Messrs. Pease and Murphy, New York, are similar to those of the *Merrimac*, but she has three cylinders, each 72 inches diameter. The boilers are four in number, 11½ feet long, 21 feet wide, and 15 feet high. Like those of the frigate, they are Mr. Martin's vertical tubular.

Without in the least wishing to indulge in braggadocio we cannot avoid saying that these additions to the United States Navy do not in the least repress any warlike desires we might have before entertained. The fleetness of our new corvettes—such as *Pearl*, *Pylades*, *Satellite*, and some others— would, should they ever chance to come into collision with the *Niagara*, go far towards neutralising the heavy armament of that ship ; and if the fighting deck of the *Niagara* should be as stated "15 feet above the water line," we have considerable doubts as to the amount of steadiness she would evince if encountered in a sea way. At the same time we freely award to our neighbours, whose amicable feelings we value much more than we dread their wrath, the highest praise for that Anglo-Saxon zeal which stimulates their very laudible endeavours to hold their own in the scale of nations, and we hope to see the same commendable attributes manifested on this side of the Atlantic.

United Service Gazette.

NAUTICAL NOTICES.

VIGIA MAKING.

The Report of a rock above water to the S.W. of the Cape Verds seems so "very like a whale," that it is entitled to be classed under the head of "Vigia Making."

Lloyds', 23rd September, 1856.

Sir,—I am instructed, on the part of the Committee for managing the affairs of Lloyd's, to transmit to you, for the information of the Lords Commissioners of the Admiralty, the accompanying copy of a letter, and its inclosure, received from the Agents to this Establishment at Scilly, relative to a rock passed in lat. 14° 29′ N. and long. 26° 30′ W. by the barque *Mandarin*, Tregarthen, from Liverpool to San Francisco, reported not to be marked in the chart.

I have, &c.,

G. HALSTED, *Secretary.*

The Secretary of the Admiralty.

Lloyd's Agency, Scilly, 19th September, 1856.

Sir,—The enclosed extract we deem it right to send to you to make such use of as you think proper. The Master of the *Mandarin*, Tregarthen, is a very respectable man, and we think information from him may be depended upon.

We are, &c.,

FRAS. BANFIELD & SONS.

Captain G. A. Halsted, R.N., Secretary Lloyd's.

Extract of a letter received by the owners of the barque *Mandarin*, of this port, Captain James Tregarthen,—which vessel left Liverpool on the April for San Francisco:—

At sea, 19th May, 1856.

We made St. Antonio on the 18th inst (yesterday), and found the chronometers not many mile outs. We passed along close by a rock yesterday not marked in the chart—I wish you would report it. It is in lat. 14° 29′ N. and long. 26° 30′ W., was four feet high and eight feet long, quite round on the top, steep on all sides. We saw it yesterday at half past nine in the morning. We had good sights of the chronometers at that time and a good observation at noon. We passed it within thirty yards. There is a rock to the westward of this marked doubtful, but there is no doubt about this one.

I send this letter by a brig bound to Rio de Janeiro.

[We have given much careful attention to this reported danger and believe that Captain Tregarthen, the Commander of the *Mandarin*, has been deceived, and this conclusion is founded on the following reasons:—

1.—The place of the reported danger is one commonly passed over. Had there been such a danger there it must have been well known before these days.

2.—For although the place of it is somewhat doubtful there are some old vigias to the S.W. of it which seem to have assisted the Commander of the *Mandarin* in forming his conclusion. But that given by him is 100 miles from the Cape Verd Group,—at which distance to the S.E. of it no bottom has been found with a depth of nearly two miles.

3.—There was no attempt on the part of the *Mandarin* to verify the truth of the danger, either in approaching it, with the lead, or by firing a musket at the supposed rock; and the description of its rounded and steep sides, unmarked by any weed or break of the wave against them, throw much suspicion on his conclusion, and seem to show that he allowed himself to be easily deceived.

In fact, this appears to be a mere eye report, in which nothing whatever has been done, and the Navigator has in it nothing for which to thank him, but would more likely receive his account with incredulity.—ED.]

THE POLLOCK REEF.—*Western Australia.*

Government-House, Perth, June 28th, 1856.

Sir,—I have the honour to transmit a letter from the Surveyor-General of this Colony, Lieutenant Roe, R.N., relative to the position of a dangerous reef of rocks on the Australian Coast, with a view to its being brought under the notice of the proper department.

I have, &c.,

A. E. KENNEDY, *Governor.*

Rt. Hon. Henry Labouchere, &c.

Surveyor-General's Office, Perth, 14th May, 1856.

Sir,—In my recent voyage from South Australia to this Colony, in the brigantine *Robert Clive*, I had an excellent opportunity of fixing the true position of the Pollock Reef, and by good observations ascertained that it lies fourteen miles S.¼ E. by compass from the nearest part of the S.E. isles of the Recherche Archipelago.

While passing 3½ miles to the southward of this dangerous reef, the weather being fine and a long swell rolling in from the S.W., the shoal water upon it was observed from aloft to extend about one mile in an East and West direction, and to be 200 yards in width; but breakers extended over only one third of that space, in probably two or three fathoms water, the shallowest part being near the centre, where the sea broke abruptly against a small rock with apparently only six or eight feet water over it. The soundings seemed deep close up to the reef.

As the existing charts do not show this danger with sufficient accuracy, I would suggest, for the benefit of navigation, this account should be published.

I have, &c.,

J. S. Roe, *Surveyor-General.*

Hon. the Colonial Secretary, &c.

[The charts published by the Admiralty give sufficient indication of this danger.—Ed.]

Approaches to Smyrna.

Constantinople, Sept. 29th, 1856.

The following is a copy of a notice recently issued to the fleet by the Commander-in-Chief:—

In consequence of the extension of the spit off the western mouth of the Hermes, in the approach to Smyrna, the marks upon the Admiralty chart to clear it—viz, the large tree to the South of the Saujak castle on with the North end of the old castle of Smyrna—are no longer available. But that the large tree should be kept more than the castle's breadth to the northward of it.

T. Spratt, *Captain H.M.S. Medina.*

Currents of the Northern Seas.

We find the following letter from His Imperial Highness the Prince Napoleon on the subject of currents of the ocean in the "Transactions of the Imperial Institute of France," addressed to the Secretary, M. Elie de Beaumont:

Reine Hortense, 20 Aug., Lerwick Roads, Shetland.

In the bays of the northern lands of Spitzbergen, Iceland, and Greenland much drift wood is found, which after having been carried about by currents is cast ashore. It consists generally of fir, but there is nothing to indicate from whence it came.

Being anxious that my voyage to the Northern Seas should contribute towards a knowledge of the final disposal of these currents, already better known in their principal directions than in their several ultimate ramifications, I have caused to be thrown overboard from the *Reine Hortense*, in different parts, a

great number of cylinders (50) bearing a notice of the place where this was done. These cylinders are composed of fir, about nine inches long and the same in diameter. In the direction of the axis of the cylinder a hole is pierced to contain a little glass bottle, corked, and containing a note, as follows:—

"Voyage de S. A. I. le Prince Napoleon, à bord de la corvette *la Reine Hortense*, commandée par M. de la Ronciere, Capitaine de Vaisseau.

"Billet jeté à la mer le 1856.

"Latitude

"Longitude des meridien de Paris

"Celui qui trouverait ce billet est prié de la remettre au Consul français le plus voisin."

The above is translated into English, Latin, and Russian.

The bottles are sealed in the cylinders by means of pitch, which secures them entirely, and over them is a leaden plate, bearing the name *Reine Hortense*, with the date when they are thrown overboard; and lastly, with the view of more readily attracting attention to them and preventing them from being mistaken for other floating pieces of wood, strong pins are passed through the cylinders at right angles to each other and continued a few inches outside, thus forming a cross.

I shall be obliged if you will have the goodness to write to the various learned Societies of Europe and America and notify this information to them, requesting them to inform the Academy of Sciences of France the places where any of these cylinders may be found.

Accept, M. le Secretaire, the assurance of my most distinguished consideration.

NAPOLEON.

[In our next we hope to muster a collection of these messengers, which have been accumulating in our hands, mostly confirming those of the Bottle Chart in our volume for 1852. We hope to have an opportunity of adding some of the above mentioned fifty to it. At the same time the instances of such being found in the eastern portion of the Northern Seas are by no means common; and it is remarkable that of those of Franklin, in the West, one only has been found, although we have reason to believe that he threw over some hundreds. Among other difficulties they had to contend with was ice, which we have no doubt would account for their non-appearance, along with the unfrequented coasts on which they might also be drifted.—ED.]

WRECK OF THE RUSSIAN SHIP "AHTI."

The *Ahti* sailed from Liverpool on the 9th September, the crew consisting of the Captain, Mate, and five seamen, one of whom was an Englishman who joined the ship in Liverpool, in lieu of two others who deserted there. The Captain had also his wife on board. The cargo consisted of salt, three casks of molasses, a small quantity of cotton yarn, anchors, chain cables, and chain running rigging for a new ship.

From the day she sailed the wind was fair up to the 15th, when they passed Holborn Head, descrying in the distance the light of Dunnet. After passing the latter headland in the night, the wind being at the time westerly, and blowing very hard, a heavy sea broke over her, carrying away the cabin skylight, filling the cabin, and throwing all into confusion. Indeed, so heavy had the sea been, that on sounding the pumps, the crew found the ship had sprung a leak, which gained upon them fast, though they wrought hard for some time.

The Captain then directed the ship to be run on shore, and about 4h. a.m. she struck the rocks, where she lay, after they had cut away the foremast, for about an hour, when a sea broke over and drew her off into deep water, where she went down by the stern, all hands escaping by safely reaching the bow. While in this position a second wave of extreme force struck her and carried all hands into the sea. The Mate, three of the seamen and the Captain's wife, became entangled in the wreck of the foremast, and thus got again upon the ship, and, though partly immersed, they held on for some time. The Captain and three of the crew did not re-appear.

Although the ship had taken the shore near the harbour of Ham, the sailors failed to see the masts of the vessels lying there, and no one on the shore discovered her until about 5h. a.m., when Mr. David Banks, of Corsbank, who had been anxious for the safety of a small craft he had in the harbour, left his home and observed the unfortunate vessel lying three parts dry, and with five or six persons clinging to her bowsprit. Instantly arousing the people of Ham, they were soon out, and going towards the wreck, when, as already stated, a heavy sea drew her off and left her in deep water, where there was no possibility of rendering her assistance, even had a suitable boat been at hand. It appears that no one had seen the vessel either coming on shore or after, before Mr. Banks; therefore the report that such had been the case is incorrect. When Mr. Banks and the others got upon the cliff they saw only four men and the woman clinging to the wreck. About 8h. a.m. one man and the female gave up nearly at the same time, perishing from cold and constant immersion in the sea. The Mate was held for a while by John Lundstrom, but at last finding him dead, the latter was obliged, for his own safety, to let him go. The remaining two got to the taffrail, Lundstrom assisting Bauckmann, and there they lashed themselves.

The spectators were driven to despair at thus seeing their fellow-creatures perishing in their sight, and with, apparently, no possibility of rendering them help. But help there was. About six o'clock Donald Thomson and four of the Scarsfkerry fishermen launched a boat from their narrow and dangerous goe, but on nearing the entrance the sea was so terrific that the hearts of the rowers failed, and Thomson could not persuade them to proceed further. They accordingly returned, hauled up the boat, and went towards the wreck. Thomson, however, on seeing the poor creatures perishing before their view, went in front of the crowd with tears in his eyes, and begged of four to come forward to assist him, when Donald Lyell and John Murray, who were with him in the first attempt, with John Dunnet and John Nicholson, volunteered, and they immediately proceeded and again launched the little yawl, only 13 feet on the keel, one of those well-adapted boats for the terrible Pentland. This time all had resolved to do their best, stimulated by the bold and determined behaviour of Thomson, and from witnessing the painful scene, they bent all their energies to their work, when after a doubtful and difficult struggle, they got through the boiling surf into the ocean, and dead in the wind's eye they rowed over the agitated sea.

There was now a great commotion on the shore, for, in addition to the expressed fears of the crowd, the low wail of wives, mothers, and sisters, might be heard; there were other lives in jeopardy, and anxiety had taken possession of all. Onwards, though slowly, sped the brave crew, and when they got opposite the ship the boat was carefully backed towards the wreck, a rope thrown with corks attached, was caught by John Lundstrom and tied round his body, and by this he was pulled to the stern of the boat. There he hung for some time until the boat was rowed further off to prevent its being dashed to pieces on the wreck. One of the rowers then left his oar and assisted the steersman to get in the almost exhausted mariner. The boat by this time had drifted near the wreck, when, after she was righted, the line was thrown again, unsuc-

cessfully three or four times, until it was caught by the second man, who was, by a strong pull, got into the boat. This done, the head of the boat was turned towards Scarfskerry, in the face of a very strong ebb tide, against which they had to pull a mile.

On their arrival a great crowd had assembled, and after the boat had safely got through the heavy surf at the entrance, before she could touch the shore, a rush was made and boat and men were carried high and dry amidst the shouts of the throng for the deliverers and for the rescued, mingled with tears and prayers of gratitude for their safety, and heartfelt pity for the poor sailors' forlorn condition. All vied with each other to see who should have the shipwrecked men. Everybody's house was nearest, most convenient, all appeared to have the best accommodation, and be best prepared. Among the women, whose tender offices are best seen on these occasions, there were, we are thankful to say, many Miss Nightingales to be found. Being much exhausted, the poor men were led up, the one by Thomson and the other by Murray, who had the greatest right to them. With these men they have ever since been well cared for, still wearing the clothes and partaking of the hospitality of these, their preservers and shelterers.

Thomson's conduct is beyond praise. Donald Lyell and James Murray, the first 57, and the other 67 years of age, are also highly deserving. They have done nobly; twice did they venture, showing the goodness of their hearts and the confidence they had in the nerve and judgment of Thomson. John Dunnet and John Nicholson are younger men, and it is pleasing to find that they did so well, and felt determined not to be behind when the lives of their fellow creatures were at stake.

On Wednesday the ship was thrown high on the rocks, and had not one of the chains caught on the upper part of the anchor at her bow, she would have been tossed on the grass opposite Ratter. As it is, she is so far up that no tide has moved her since. She is a total wreck, and although only five years old, every timber, from her stem to about midships, is broken, while the bottom is torn to rags. Every exertion was made to save as much of the material as possible by Mr. Spence, who is appointed agent, and who exerted himself well. From the nature of the cargo very little is left. At present all is in charge of the Customs, as receivers of wreck. There is much pleasure in thus seeing that so much has been done which reflects credit on these parts, first by the noble exertions of the fishermen in saving life, and then by the many who endeavoured to save property, to which we may add the praiseworthy consideration of Mr. Traill, who, though unable to leave his house through ill-health, was constantly sending directions and placing all help in his power to secure the property and add to the comfort of the rescued seamen. While thus, however, giving praise where praise is due, we are sorry to say that there is that which is grievous, though happily not to a great extent. There is, unfortunately, a tendency on the part of some to appropriate to their own use all that they possibly can. We need not remind them, that although washed in before the sea, and thrown on shore, every portion of wreck belongs to some one, and that it will be well for all parties on such occasions to have a care as to what they do. The new law of wreck which has lately come into operation is very stringent indeed, and should this warning be unheeded, they may depend upon it that the law will be enforced.

Another correspondent mentions that nothing more belonging to the wrecked vessel had come ashore, neither had any of the bodies been found, though the different goes have been diligently searched. Last week, Mr. Gunn, Ratter, accompanied by Mr. Peach, at the desire of Mr. Traill, proceeded to Castlehill with the two Russians, where they were most hospitably treated. Since then Mr. Traill has received word from the Consul at Leith, where they will be immediately sent. In the meantime they are receiving every kindness, and

are to be each supplied with a new suit of warm clothing before they leave. Mr. Peach, who visited the scene of the wreck in his capacity of Comptroller of Customs, was most indefatigable in his exertions to ascertain the correct particulars of the disaster, in seeing to the protection of the property, and in interesting himself (we hope not without some good results) in the cause of the brave fellows who risked their lives in saving the survivors of the wreck.

John o' Groat's Journal.

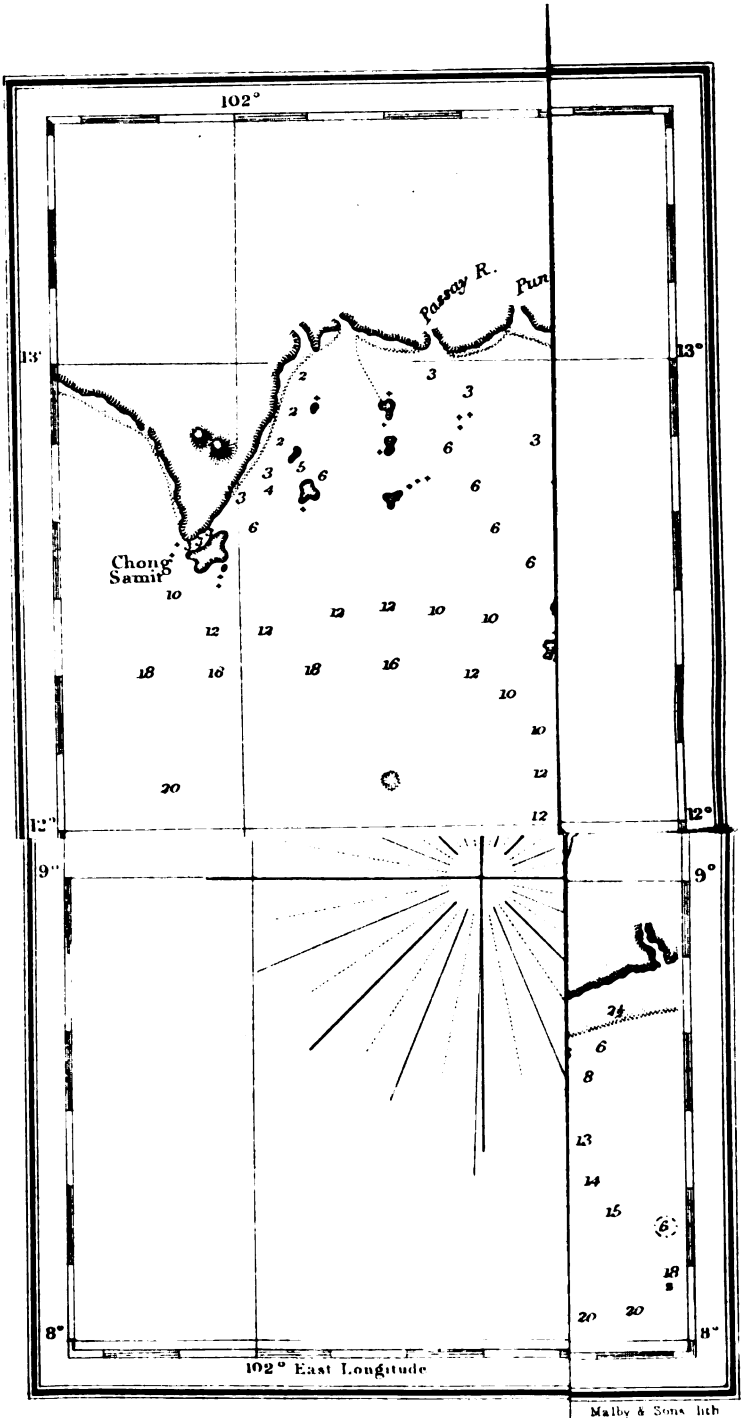
New and Corrected Charts, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

	Price	s.	d.
Scotland, West Coast, Sound of Seil to the Sound of Mull, Captains Robinson and Bedford, R.N., 1855		3	6
,, ,, ,, Sheet 4, Islay, Jura, and Colonsay Islands, Captain Robinson and Commander Bedford, R.N., 1855		2	0
,, ,, ,, Kyle Rhea, Commander T. Smith, 1856		2	0
Baltic Sea, Sheet 2, Gulf of Bothnia, corrected to 1856		3	0
Labrador Coast, Mistanoque Harbour, Captain Bayfield, R.N., 1853		0	6
Mediterranean, Alexandria Harbour, corrected by Commander Mansell, R.N., 1856		2	0
Black Sea, Danube River, St. George Mouth, Captain T. Spratt, R.N., C.B., 1856		2	6
West Indies, Barbados Island, 1856, various authorities		2	0
Africa, West Coast, Cameroon River, corrected to 1855		2	0
,, South Coast, Port Natal and Views, Lieut. Dayman, R.N., 1854		3	6
Central America, Sheet 3, corrected		1	6
North America, West Coast, Vancouver Island to Cordova Bay, corrected by Mr. Inskip, R.N., 1855		1	6
China, Gulf of Siam, corrected by Mr. Richards, R.N., 1856		2	0
,, Gulf of Pechilli, corrected by Captain Vansittart, R.N., 1855		2	0
Australia, South Coast, Lady Bay, Mr. J. Barrow, 1853		0	6
,, ,, ,, Portland Bay, Mr. J. Barrow, 1854		1	0
,, ,, ,, Port Fairy, Mr. Barrow, 1854		1	0
England, South Coast, Manacle Rocks, Runnelstone, and Longships, Captain G. Williams, R.N., 1852		2	0
Wales, Burry Navigation, corrected to 1856		0	6
Remarks on the Bay of Fundy, by Captain Shortland, R.N., 1856		0	6
Siam, Gulf, Sailing Directions, Mr. J. Richards, Master, R.N., 1856		0	6
Appendix to African Pilot, No. 1, Mr. V. F. Johnson, R.N., 1856		0	3
Mediterranean Lights, corrected to September, 1856		1	0
British North American Lights, Ditto		0	6
West India Lights, Ditto		0	6
South American and West Coast of North America Lights, corrected to October, 1856		6	0
United States, republished and corrected to October, 1856		1	6

Edward Dunsterville, Commander, R.N.

Hydrographic Office, Admiralty, October 22nd, 1856.



THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

DECEMBER, 1856.

Port Elizabeth, Algoa Bay.

[It is highly gratifying, and as much as we have always desired, to see this journal made the medium of diffusing valuable information among seamen from all parts of the world. And receiving, as our pages testify, such information from the highest authorities, both at home and abroad, we have always gladly assisted in spreading it among those by whom it is required. It has generally, however, been addressed to us by the authors in their own handwriting, but the following comes to us printed on a fair sheet, rendered thus even more acceptable from the publicity which it is thereby sure to gain. But whether fresh from the hand of the writer or from a press within his reach, it is equally welcome, and we invite our Harbour-Masters every where abroad to follow the example of M. Chabaud either way, assuring them that such communications will be immediately attended to —as others always have been—and that by promulgating such information, they will be forwarding the interests of navigation and commerce, which cannot fail to benefit the several places where they reside. The following is a verbatim copy of this paper.—Ed.]

Port Elizabeth, Cape of Good Hope, September, 1856.

Sir,—Believing that you are at all times willing to give publicity to any information which may benefit the shipping interest, I have determined upon giving you all the particulars I can gather touching the capabilities, as well as the trade, of a port which appears to be so

little known to the Masters of vessels trading to the East Indies, China, &c.

I am the more induced to do this from having observed that Horsburgh, in giving the sailing instructions with reference to this bay, in his valuable *Directory*, only treats of the place in a state of infancy,—in fact his description of it is altogether a very meagre and imperfect one, no mention being made of our splendid lighthouse on Receif and Bird Island, one at the eastern and the other at the western entrance. It is also incorrect in many instances, as you will observe on reference to the accompanying sailing instructions framed by Captain E. Gardiner Fishbourne, after a most minute and careful survey of the entire bay. Horsburgh states that there is no doubt as to the existence of a rock called the Redwing, and as to the accuracy of its position,—while on the other hand Captain Fishbourne and two other able Surveyors, who have lately completed a most elaborate survey of the bay, deny the existence of any such rock. After rounding the Roman Rock, the entrance into this port is perfectly easy and free from danger.

In 1820, Port Elizabeth, or Algoa Bay, as it is better known by seamen, could only boast of a small fort, barracks, mess-house, and Commandant's quarters, with a population scarcely exceeding thirty-five souls. Its trade at that time was limited to an occasional visit from a coaster, bringing a few articles of merchandize in exchange for a little butter and a few hides,—but in 1856 it can boast of having flourished more than any other part of the colony, that its imports and exports during the last quarter exceed those of Table Bay by thousands,—that it at present numbers about 550 houses and stores—many, especially of the latter, very well built—the value of which is taken at £600,000, with an estimated rental of £72,000,—and its population at 8,000 souls. Very little trade is now done with Table Bay, as the merchants of the place do a large import trade direct with Europe and America.

The exports from this port last year—consisting of wool, hides, horns, aloes, tallow, wax, ivory, and skins—exceeded £750,000, the principal article being wool, of which about 50,000 bales will be exported in the present year. The yearly increase in wool at this end of the colony is estimated at thirty per cent. The Eastern Province of the Cape of Good Hope—of which Port Elizabeth is the seaport—has made rapid strides in advance of its sister Province (the Western), of which Table Bay is the capital. This is no doubt owing to the great extent of back country in the former and the immense increase in sheep. To give an idea of the increase of the trade of the one port over that of the other, it will only be necessary to place the arrivals of ships at each port during the last three months in juxta-position, and to state that two or three years since the shipping of Table Bay exceeded that of Algoa Bay by at least four to one. We have gradually reduced that excess until the present year, when the following comparison will speak for itself:—

Arrivals.

Table Bay.						*Algoa Bay*					
Month.	Ships.	Barqs.	Brigs.	Schs.	Total.	Month.	Ships.	Barqs.	Brigs.	Schs.	Total.
June ...	0	6	0	3	9	June ...	2	13	5	3	23
July ...	4	5	4	5	18	July ...	6	9	7	3	25
August .	4	10	1	3	18	August .	6	11	10	1	28
	8	21	5	11	45		14	33	22	7	76

I merely give these statistics to prove the correctness of my remarks with reference to the increased trade of this port.

In addressing you, however, I have another and more important object in view, viz., that of pointing out to all Masters of merchant vessels the advantages of this port as a Harbour of Refuge, in the hope that it may induce them to lay aside old and absurd prejudices, which have prevented them from availing themselves of so sure and safe a harbour as that of Algoa Bay in the winter months. They, it is to be regretted, have too often persevered in their onward course in heavy north-westerly gales until their vessels have become quite disabled, their crews exhausted and unfit for the slightest work. The result of such obstinacy is too obvious.

This was the case in 1850, and more particularly in the present year. In June, 1850, we experienced a very severe gale from the W.N.W., which lasted for three days; during which period the destruction of property as well as life was something awful. Two vessels—one a Frenchman of 600 tons, called *L'Aigle*, and the other an English ship of 1,000, called the *Queen of the West*—after beating about for several days in a disabled state trying to round L'Agulhas, were wrecked near St. Francis Bay at a moment when they considered themselves thirty-five miles off shore; all hands were lost in the latter. These vessels were lost in the night, owing to their having fallen into an error as to their exact position. The current on this part of the coast sets in upon the land. In the same gale the ship *Grindlays*, laden with a cargo of tea from Singapore, was abandoned about twelve miles to the westward of this port, when she might the day previous have made for it, where she would have seen sixteen or seventeen vessels loading cargoes in perfect safety. Three other vessels—the *Asiatic*, *Anna Robertson*, and *India*—put into this port in distress at the same time. Two of these were repaired and subsequently proceeded on their voyage. The *Ville d'Oleron*, a French barque, was run on shore near Receif in October, 1854—the Captain not knowing that there was such a place as Port Elizabeth.

The present year has even been more calamitous than that of 1850. No less than seven large vessels have already visited us in a leaky and

otherwise disabled state, viz., the *Collingwood*, *Star of Empire* (American), *Themis*, *Nepaul*, *Sara Lydia*, *Dalesford*, and a Spanish vessel,—the latter was supplied with a new rudder and necessaries and dispatched in seventeen days; while a great many more, it is feared, have either foundered or been abandoned at sea not many miles off this;—the barque *Augusta*, *Sunny South*, *Sheridan Knowles*, a fine ship, and the brig *Usk*, loaded with rice from Akyab, being amongst the number of the latter. The Captain of the *Usk* reported having seen a large barque founder to the eastward of the Fish River.

I give you these particulars to show the importance, nay, absolute necessity, of making the capabilities of this port known to Masters of vessels trading to the eastward,—and having said thus much, I think I cannot conclude this letter in a better way than by giving your readers the benfit of a report published in our local papers by one of the most intelligent and experienced Master Mariners on this coast, Captain E. Salmond. It is as follows:—

Cape Coast.—In the winter season vessels from India should endeavour to make the land in the neighbourhood of St. John River, in 31° 34′ S., and 29° 29′ E. The land on this part of the coast is mountainous, and the hills appear covered with bush and grass, which distinguishes it from the land further westward, where it assumes a more barren appearance, with sand hills near the sea. From St. John to the Cowie the current runs with the line of coast, nearly West, from fifty to eighty miles in twenty-four hours. After passing the Cowie, or Point Padrone, the current sets off S.W.,—and in strong westerly winds due South, right off the land. In beating along this part of the coast, a ship may safely stand in six hours and four hours off, and should keep within thirty miles of the land. Below Algoa Bay there is no harbour or safe anchorage.

Algoa Bay.—Formed by Cape Receif, in lat. 34° 2′ S., long. 25° 42′ E., on the western side, and Point Padrone on the eastern side. This bay is decidedly the best and safest roadstead on the Cape Coast during the winter months. The following directions will be found pretty accurate:—From the westward, ships may run boldly down, about four miles off shore, for Cape Receife; which will be known by the lighthouse, particularly prominent from the low point on which it is built, and may now be seen distinctly twelve or fourteen miles. This splendid building is ninety feet high, and exhibits a most brilliant revolving light.

After rounding Cape Receife at a fair distance, say two miles, a course may be steered N.N.E. until abreast of Beacon Point, which will easily be distinguished by two beacons with crosses on them; which, when in one, mark the position of the Roman Rock. This rock has eight feet water on it, and lies one mile and a quarter from the shore. The above course will carry a vessel far outside this danger. When abreast of Beacon Point the town of Port Elizabeth will be seen to the N.W., distant about five miles. There are no other dangers, and a vessel will, with the wind at West, soon work

up. The shore may be approached to any part of the bay within half a mile, or into six fathoms.

Vessels calling merely through stress of weather or for supplies should anchor with the town bearing West, in about seven fathoms. The holding ground is excellent. During the writer's knowledge of the bay—some sixteen years—no vessel was ever known to drag her anchor with common caution. Here a vessel may ride out the most violent gales from the westward in perfect safety. The only wind that endangers the shipping is the E.S.E., which rarely blows during the winter months, from May to August. The barometer always gives sufficient warning of a S.E. wind; which never comes on suddenly, but gradually increases, giving ample time for a vessel to get under way and put to sea. The worst time in Port Elizabeth is in October and March, at the changing of the monsoon or season, when accidents occasionally happen through vessels being unprepared. Ships lading with wool are too light to go to sea and are obliged to ride it out, and if not well found frequently part their chains.

In Port Elizabeth every facility is offered to vessels wanting supplies or repairs. A shore boat waits upon the ships three times a day at the rate of two shillings per diem. Water is led to the beach in pipes, which is supplied to the vessels at eight shillings a ton, including boat hire; beef and mutton threepence per pound; vegetables abundant and cheap; ship chandlery, carpenters, caulkers, and blacksmiths always to be obtained. Several vessels have been hove down here and caulked; cargoes are landed and shipped in efficient surf boats; and should a stranger require a pilot, one will be sent off on the customary signal being made.

There are no port charges of any description.

St. Francis Bay, about forty-eight miles West of Algoa Bay, affords excellent shelter to vessels in a westerly gale. There are no dangers and a vessel may be at sea in an hour. From Cape St. Francis to Cape Delgado the coast is rocky and dangerous, and should be avoided at night, the current having a strong tendency towards land on this part of the coast.

Plettenburg Bay, *Mossel Bay*, and *Struys Bay* are all excellent harbours with westerly winds. From the latter the semaphore on Cape L'Agulhas is within signal distance. From this point a communication is kept up with Cape Town. Vessels making their name, &c., here are published weekly in the *Shipping List*, and forwarded to all parts of the world.

In conclusion, I would recommend Masters of vessels rounding the Cape in the winter months, with the barometer low, not to keep at sea when they can get into any of the above-named ports. A few days in harbour may prevent a deal of damage, and a vessel goes to sea again with a recruited crew, and in a position to encounter bad weather should it again come on.

E. H. SALMOND.

Since Captain Salmond wrote the above Report a full and complete

survey has been made of this bay by two competent Naval Officers; which survey, it is hoped, will shortly be published in London.

A breakwater is also in course of construction and well advanced; which it is expected will, in the course of eighteen months, prove of infinite service to the shipping interest.

Since writing the above we have received intelligence of some twenty-seven vessels having put into Mauritius disabled, and you will scarcely credit it when I tell you that several of these have reported that they were westward of Agulhas; from which point they might, if they had been better acquainted with this port, reached it in two or three days, instead of going to Mauritius, a voyage of at least twenty days.

I have, &c.,

GUSTAVUS CHABAUD.

To the Editor of the *Nautical Magazine.*

[The foregoing information will be both useful and instructive to seamen, and will also contribute much to render Port Elizabeth better known than it has been. But the following account of the Redwing Rock by Captain Frederick Hunn, who commanded H.M.S. *Redwing* in 1819, appears in the nautical information from that officer:—

"In approaching this bay from the westward, according to Mr. Horsburgh's directions, a vessel is in the most imminent danger of running upon a rock with only four feet (low water spring tides) water upon it, and which lies immediately in the channel pointed out as that to be followed. I narrowly escaped this rock on the night of the 23rd of July (1819), having hauled round Cape Receif in the evening, blowing strong from N.W. and very dark. I sounded this rock very frequently and carefully during my stay in this bay, having 7, 5, 6, 9, 11, and on North side ¼4 fathoms high water.

I should describe this rock as very like a large pile of shot, about eight fathoms in length and two or three in breadth. When upon it the following compass bearings were taken:—Extremity of breakers of Cape Receif, S. 8° E.; Cape Receif, S. 2° E.; Bird Rock, off Beacon Point, South; Fort Frederick, W.½S.; and St. Croix, northernmost island, N.E.b.E.½E.;—off shore about one mile and three quarters."

It is difficult to doubt the existence of the Redwing Rock with the foregoing before us, and yet we are informed above that there is no such thing, and also by Lieut. Dayman that he has reported his opinion that it does not exist. But we yet hope that Mr. Chabaud will *convince* seamen of the non-existence of this reported danger by inducing some zealous persons to sweep the bay for it with a hawser and boats.

While on this subject we will add some further information from Captain Hunn's notes. He says,

"'Tis said by all the old inhabitants of this place that there is a bank or reef about five or six miles E.S.E. of the above dangerous

rock; in which direction *breakers* were distinctly seen from this ship during a strong S.E. gale I rode out in this bay. I have sounded the supposed spot frequently, and although the water certainly was shoaler, there never was less than ½17 and 19 fathoms. It is on this last reef or bank the Indian merchant ship *William Pitt* is said by the above persons to have been lost a few years since. Certain it is that the last time this unfortunate ship was seen she was standing, to all appearance, from Fort Frederick directly on for this supposed bank or reef. The following Tuesday morning (Saturday night being the above period) her wreck was picked up, some under the St. Croix Islands and some to the westward of Cape Receif, round which there is always a current to W.N.W."

Unlike the former danger this bank has been carefully examined by Lieut. Dayman, although *far to the southward of the above bearings*, and his chart will place Masters of ships on their guard against it.

Our correspondent will find Lieut. Dayman's *survey*, which does him great credit, has been copied and sent to his Excellency the Governor at the Cape; and he will be glad to know also that a reduction of it for the use of ships has been published.—ED.]

A TRIP FROM PORT CLARENCE TO KING-A-GHEE,—*By Commander Henry Trollope, H.M.S. Rattlesnake, January*, 1854.

Monday, January 9th.—At 1h. p.m. I left the ship with a heavily laden sledge, eight dogs, and Tootarshik, a native (well known to us) generally living at Toksook, or Tup-kukt-a-tang. Mr. C. W. Stephenson, Master's-Assistant, was the only person who accompanied me from the ship, as I started with the hope of being able to reach Asia by way of Ik-maak-litt or Ratmanoff, the largest of the Diomede Islands. The natives do not know the islands by any other name than Ik-maak-litt and Ignalitke. We had sixteen days' provisions, and I arranged that Mr. Gilpin should follow us on the 14th with an additional supply, in the event of our being detained longer than we anticipated. He went with us as far as Sin-na-ra-mute, the native village about four or five miles distant. As we started so late we made this our first stage for the night, and we did not arrive till after dark. The whole population—about fifty or eighty—turned out to receive us, and allowed us to go into the Poa-valley-tupul, that is, the dancing-house, where we laid down our buffalo robes and fearnought sleeping bags for the night.

These dancing-houses, as they are termed, are peculiar features in the domestic arrangement of these people. They are not by any means applied to dancing only, but are made use of generally as workshops and lounging-places throughout the day; we found two sledges

in it at this time. The entrance is through a burrow-like hole;—through which we are obliged to go on our hands and knees, and then to rise up through a large hole in the floor. It is also occasionally made use of as a sweating room. They remove the boards and light a fire in the middle; when they strip and sit over it as long as they can bear it, sweating, rubbing, and scratching themselves for hours together. It is not by any means an agreeable process to witness, although doubtless very beneficial to them, for they are dreadfully dirty people, and this village is as miserable and poor as any I have seen.

We had a very animated dance at night in honour of our arrival,—great action with both arms and legs, but little grace exhibited. As they get animated and excited they accompany the dance with a monotonous kind of chant—yah, yah, yah, yah, yah, yaw, yah, yah, yaw, yaw, yah,—something like the negroes carrying burdens at Rio Janeiro, only not so loud. After some time they get very warm, and invariably slip their skin frocks or coats off and dance in their breeches, which just come up round their hips. They appeared to enjoy themselves very much, and did not attempt to steal anything, although all our things were more or less much exposed; they assured us they would not when we first arrived. They were much annoyed at not receiving a present; but I had arranged for Mr. Gilpin to make it when he came to meet me. I was sorry when I heard it, but Mr. Gilpin made it up to them on his way to join me.

10th.—An unpromising day. From the dogs not having been properly fastened up, they had gone back to the ship, and we were obliged to send for them. This delayed us until it was too late; and then it came on to blow so fresh from S.E., with a heavy snow drift, that we could not stir outside the tupuc. I never understood what a snow drift really was before, and how perfectly helpless a man becomes if exposed to it.

The two following days were nearly as bad, and here we were within five miles of the ship, in a native tupuc, hardly able to stir outside the place, thankful for the miserable shelter it afforded us. The last day we witnessed the sweating bath, and a most disagreeable sight it was. They are certainly terribly dirty, and I never thought I could have endured close contact with such filth before. One boy was abominably strong in odour, and he took a great fancy to us and not only stayed with us all day, but would persist in nestling up to us at night, sleeping in the dancing-house when all the others went away.

While remaining in this village the smell from one of the tupucs was so offensive that, without exaggeration, I was afraid to pass to leeward of it. The first time I did so it was almost too much. God help them! the climate is much excuse for them, and I fear we should be nearly as bad in like circumstances, with the few means and appliances they have. As it is, I have certainly read of (and even seen) people living even in greater filth and wretchedness in London and Paris than these poor people do.

13th.—Before daylight, although it was nearly nine o'clock, we started on our road. I could not have endured another day, although the weather was very bad. But what with the boy close to us and the dogs underneath us, almost as near and hardly separated from us by the miserable boarding of the floor, the smells and stinks during the night were something uncommon, and urged us on our road. On looking more closely to our team, I found one of our dogs is only a pup belonging to the guide, requiring to be fed but not able to draw much. A native sledge accompanied us, with a man, his wife, and child—a little girl six or seven years old. They had only two dogs, but they kept ahead of us always; but their sledge was very light compared to ours. We had fourteen days' provisions, candles, lantern, cooking utensils, spirits of wine, spade, hatchets, tobacco for bartering and presents, and all sorts of comforts; while they had nothing but a skin or two for sleeping under at night, a few wooden utensils for cooking in (very light and few in number), and the child, who always got out and walked when the road was unusually heavy. The day was so thick that we could hardly see a hundred yards around, sleeting and snowing, thawing as it fell, for the thermometer was only +24°. When we got beyond Point Jackson the ice became very hummocky, ten or fourteen feet high. Within Port Clarence it was perfectly smooth.

It was after dark when we stopped for the night, having got as far as the end of the lagoon that skirts the North shore of Port Clarence. The water of the stream near it was flowing and partially fresh. The native woman got a fire up in no time with a little charcoal, which they never travel without, and their own strike-a-light—a thing we rarely meet now-a-days, lucifers having put them out of vogue, but they are most useful and sometimes indispensable as a stand by. The man got the skin tent ready, the child sang and laughed, and as she was a good humoured little thing, she did good in her way by cheering us all up. We unpacked our sledge and commenced rigging the tupuc or hut. These tupucs are made with flexible rods or poles stuck into the ground and secured at the top, so as to form an oval about seven feet by six; over these is thrown the sledge skin, as it is called, that is five or six deer skins sewn together; the fur is inside and the skin out. This forms a tolerably warm protection against the cold. It is but small for three people, particularly as a lantern is to be hung in the middle, and some of the provisions, &c., which cannot safely be left outside are handed in; but it is a shelter, and at the end of the day we are well prepared to welcome it. So here, on the desolate shores of Bhering Strait, were two families located with many comforts and all the necessaries of life around them.

The first thing is to select a good site for the tupuc; the next to clear away the snow for a foot or more outside the intended size of the hut, so that the poles can be placed in the ground and the snow piled up round the sledge-skin when it is thrown over, to keep the wind from blowing underneath. One, generally, in the meantime undertakes the fire, collects wood, and puts some snow in the kettle to melt,

taking care not to put it on too fierce a fire at first, or until there is a little water melted, for fear of burning it, a most serious misfortune, which one of our party experienced to our great discomfort.

We found an abundance of driftwood here, a great thing for the fire. We had some hot tea, preserved meat, biscuit, and grog; and, although the sleet had wet everything, we passed a very comfortable night. The skin dresses we had on were very effectual in keeping out the cold, more so than any amount of woollen clothing, but they, like the people, stink abominably. We were travelling to-day about eight hours; estimated distance twelve miles.

14th.—Temperature +25°. Up at seven o'clock, an hour and a half before daylight. Packed up and prepared for starting, but did not do so after all until near eleven, on account of a heavy snow drift. Found the ice very heavy travelling, at times great care requisite ere we could move the sledge down between the hummocks. Ice much more heavily packed after leaving the sandy flat between Point Jackson and the rugged cliffs forming Cape York. Getting dark ere we could find a place with driftwood. Mr. Stephenson told me the natives had pointed out a gull, but I rather doubt it myself at this season; I neither saw it nor heard it, although I did hear some ravens, the only living things we met on the road, which is most desolate,—the aspect of the country chills the spirit almost as much as the cold does the body. We did not accomplish more than six miles to-day, having started so late.

The pleasure, not of pitching the tupuc, but of getting it pitched is great. The first blaze of the fire is cheering beyond measure; and hanging the light up in the tent, and passing a dish of hot pemmican fried with Edwards' preserved potato into it, after having arranged the buffalo skins, is a well earned pleasure. I do not think a gill of rum of the usual strength too much on these excursions. Something in the middle of the day is almost necessary, and it is not always convenient or possible to stop and make tea, and at night one feels very glad of a glass of grog. I only had the half gill and a bottle of brandy, and had not taken any for the guide; but we soon found we could hardly take it ourselves and not give him a taste, particularly in the middle of the day, as he worked hard at the sledge;—one thing to be considered is that as he had never been accustomed to it, it was not so necessary to him.

15th.—Second Sunday after Epiphany. Read the prayers and psalms. Temperature +25°. Started about 9h. a.m. New moon, but no change in the weather,—frequent snow storms. Very heavy travelling on the sea ice, sinking deeper than the ancles with the snow-shoes on, and up to the knees without them. The steep cliffs came down to the sea without, apparently, any beach whatever, and, consequently not a particle of driftwood. The packed ice was very heavy in some parts. The clefts in the rocks are for three or four miles inaccessible. At last we came to a small ravine or valley in which we thought was a tupuc; but we were mistaken, neither was there any wood for a fire. We therefore went on, and, guided by the native,

came to a tupuc which we were told existed about this part. It was not inhabited and appears to have been built for wayfarers, as there is a constant communication between Sin-e-ra-mute and King-a-ghee. It was not very dirty and we found some wood. The native family took one side and Mr. Stephenson, myself, and our native took the other. The fire was made in the tupuc, which very nearly smoked us out; altogether, I would rather have had our skin tent, with the fire outside.

We were very late in getting in to-night, being nearly eight when we got the water boiled and tea made. We took pork with us, boiled on board, so that it was ready at once, and I think every one relished it more than the cold preserved meat, although the latter was very good fried with pemmican.

16th.—Temperature +2°. Yesterday we estimated the distance at nine miles. At 8.30 a.m. left the tupuc and descended the valley, which we had not seen on the previous night. It has frowning cliffs, and is very narrow and ravine-like. Our last night's shelter is on the right of it, looking N.E., the direction in which it trends. There is little to point out its situation, and unless it was well known it would in all probability be missed, as in fact the snow all but covers it.

Our road lay again along the sea ice, which was very rugged immediately outside but smooth where we travelled, close to the rocks; whether we were on a beach or not I could hardly say,—I think not. The natives still in company, but mostly ahead of us, but, as I have said before, they have much fewer wants; on the other hand, they were always glad to come and have some of our supper, and the child came in regularly for some biscuit.

To-day we saw the sun for the first time for a month or five weeks; but it came on to blow very fresh and the cold was very severe (thermometer +2°). Dogs making very good work of it, although the travelling was heavy,—snow shoes indispensable. A water sky showed to the S.W., but the weather was too thick to speak decidedly. After a walk of five miles came to the flat beach off Cape York, dogs going very well. Stopped for a quarter of an hour at three tupucs, called King-a-wic or King-how-common, immediately under the conical hill with a broad valley to the westward. Through this valley a considerable river runs; which most probably unites with a stream from Schismareff Inlet, thus forming the promontory of Cape Prince of Wales into an island. The mountain appears detached altogether from the range to the eastward, but seen from seaward they make very much the same range.

These tupucs form a sort of outlying station for the Sin-e-ra-mute people. They come here to catch seal, and also to get fish through the holes in the ice. We understand that when the wind comes fresh from the N.E.—to which the open valley behind them entirely exposes them—they go to the tupuc we slept in last night for greater shelter. We saw Cape Prince of Wales indistinctly, for the weather continued very thick,—the sunshine was but a passing gleam.

The ice was very rugged, but, though the sledge was on its broad-

side more than once, we righted it without causing much delay. They are packed and secured with reference to these casualties. After going about two miles on this rugged ice, we turned on to the cliffs and had comparatively smooth ground to travel over. Finding a good place for the tent, and hearing from Innavaya, the native who was in company, that there was no wood for some distance, we halted and pitched our tent an hour before sunset, making amends for last night, when we were three hours after sunset before we reached the tupuc. The night was fine but cold: temperature +9°. We estimated the distance to-day at eight miles.

17th.—Temperature +4°. Got up at six. Considered we were about ten miles from King-a-ghee,—we found out afterwards that we were fifteen. The peaked mountain over the cape was in sight sometimes, but it was still too thick to see objects distinctly. Got our snow shoes off as we travelled along the stony beach or cliff above the beach, where there was little snow. It was a great relief to get them off when it was practicable, but it would be impossible to get on without them; it would be nearly as bad as walking in water.

On the shore passed three very prominent graves and four or five deserted tupucs; snow drift very high against these places; very thick mist. Passed the base of a very steep hill forming like a square shoulder, apparently rising up to the conical hill of Cape Prince of Wales, which occasionally showed out. After some rough travelling, and turning once or twice off the beach, we came out on a flat level plain. We understood from the natives—for we soon found out that the man we had engaged as a guide had never been here before—that King-a-ghee was at the end of this beach; we soon found out our mistake. The drift-wood was now abundant. Several large casks thrown overboard from some whaler were seen, also the jaw-bone of a whale, the head of a porpoise, and quantities of blubber, on which our dogs cast longing eyes.

We now approached the foot of the cliffs I have mentioned before as a square, steep, and rugged shoulder. Our farther progress along the land was impossible, and the sea ice was so very rugged and hummocky that we found, with only an hour more of daylight, we should have every prospect of passing the night on the ice, where we could neither get fuel nor pitch a tent. We therefore determined to defer our further progress until the morning, more particularly as we thought proceeding in the dark would endanger the sledge. It was most fortunate that we adopted this resolution, for from what we saw on the following day we should most certainly have met with an accident. We estimated our travelling distance to-day about nine miles.

We were in great want of dogs' food. These poor ceatures are always half starved by the natives, and I am afraid we did not treat them too well. They eat the most revolting food; it is beyond description. We now found some walrus hide, which we cut up in strips; they devoured it as if it had been horse-flesh. They always eat the harness, the snow shoes, or belts for dragging the sledge if they are not stowed away. To-night one found his way into the tent

and rummaged out a piece of pork, which he began to yaffle with great good will. Some one going in he ran off with it, but we were also sharp set and gave chase and rescued it. It was our last piece, and I am not sure the fear of losing it did not give it a keener relish, in spite of the dog's teeth.

18th.—Temperature +11°. Up very early. Started before daylight, but were obliged to stop when we got on the sea ice; it was so rugged that we could not go on. The dogs had got hold of some blubber during the night and eaten too much of it, so that they could hardly move. We made very slow work from this and from the extreme ruggedness of the ice. The actual distance perhaps was not five miles, but I am sure we went eleven or twelve. We mounted a hill while we stopped to rest the dogs, and soon saw that our hopes of visiting Asia this season were at an end; we could distinctly see the ice slowly drifting to the northward, certainly not more than two miles distant. The cliffs here are extraordinarily broken, jagged pinnacles, coming down perpendicularly to the water's edge, the square shoulder forming its eastern termination still very prominent as a wall-like cliff. It is, I think, the rounding point of the cape that is the extreme West of America.

The weather was unpromising, but as we approached King-a-ghee cleared up, becoming at the same time much colder, but the sun shone out and cheered us up. It gave us much pleasure to meet several sledges to the southward for wood. It was like approaching a town, when the vehicles and traffic become more numerous. The child had been dressed and adorned by its mother in anticipation of arriving, and I was quite amused by the eagerness with which the woman beckoned and hastened me forward to be the first to show me King-a-Ghee, while endeavouring to explain all its glories. The place is a sort of capital in these parts and has four dancing-houses, which is a very expressive manner of estimating the extent and population of a place. The ice had been very rugged to the southward of the cape, so much so that we had much difficulty in getting on at all, and the sledge was capsized more than once; in fact the passes were so narrow and difficult that I was surprised that the sledges, heavily-laden as they were, were not broken, which mishap did indeed occur on our return.

On one occasion our only passage was between the cliff and an immense boulder or detached mass. It was so narrow that we narrowly escaped being jammed. But on rounding the cape the change was great. The ice was as smooth as in Port Clarence, studded with innumerable holes, each surrounded by a snow wall, within which people were fishing. Our arrival seemed to attract a good deal of attention, and as we neared the village the whole population turned out to meet us—men, women, and children, the latter shrieking and shouting, wrestling, and tumbling one over another with great glee. The anglers left their rods and lines, which they very dexterously haul up and wind on a short rod about two feet long, and accompanied us up to the steep bank on which the upper village stands. We afterwards

procured from them a few fish, which appeared to me a species of capoline; they were very delicate, good eating.

The people clustered round us, as an English crowd would have done round an Esquimaux, although we were fully clad in the native dress. We had a sort of introduction from a man well known to us who lives in Grantley Harbour, Kai-mou-ky, and our guide on inquiry for him found he was away for seal; but his wife, a very nice-looking woman, invited us in. I was quite pleased with the neat, tidy, and even clean aspect of the interior—the floor smooth, clean swept, and polished, two cheerful rows of lamps or lights, burning almost with the brilliancy of gas, gave the place a most comfortable and warm feel, most grateful to us, cold and wet as we were; still I must say the odour was very intolerable, a mingled smell of urine and burning seal blubber. As the master of the house was absent I determined not to take up my abode at present, but to have a look through the village. The crowd around us was as great, but they assured us, "pesak-tig-a-eeg," that they did not steal, but that their neighbours in the lower village were "anghee-roo-rak-tig-a-lig," that is great thieves. I suppose that they observed that we were keeping a watchful eye over our sledge, and wished to set our minds at ease; and I must do them the justice to say that we lost nothing, nor did they offer to pilfer anything that I am aware of.

King-a-ghee consists of two villages,—between which there seems to be some little rivalry. The one we took up our abode in is the upper one, situated a hundred feet or so up the hill; while the other is on a low spit extending to the N.W. and N.N.W. I estimated the number of inhabitants at about 200 or 250 in each. There were from twenty-five to thirty tupucs in each, and in a tupuc there are at least six or eight people, and in many eight or ten, but these sort of estimates must be very vague.

We were followed by at least a hundred and fifty people, and very civilly invited into the dancing-houses, "poa-ually-tupucs," as we came to them. These were very far superior to those at Sin-e-ra-meute where we were detained so long. The passage or entrance was higher and broader, so that it was sufficient to stoop low instead of going down on hands and knees. The interior was really clean and cheerful;—a spacious room, twenty feet square, with brilliant lights in troughs of seal oil, the wicks formed of moss placed in a row at the edge and fed by a piece of blubber hung within reach of the flame. The light was excellent. I was reminded of the jets of gas often seen in shop windows, and the heat was far more than I could have believed,—outside the temperature was $-25°$ and within it was $+36°$. They were exceedingly civil, seating us down on the raised dresser or bench which went all round, bringing some excellent water—which in this country is as great a civility as offering a glass of wine would be in England—and also some seal stew, which I tasted and found very good, leaving no disagreeable taste or flavour—I was not hungry or I should have had no objection to have eaten more. There were eight or ten people in the place, making snow shoes, fitting spears,

arrows, &c. We went into two others, which were not quite so large but equally comfortable.

I could not but admire the arrangement; it seemed to me a sort of club room, and I really think it would be very desirable could we have in our towns and villages places of this sort, where people might go and read, supported by all and open to all. Certainly these people are a lounging race with many idle hours on their hands, while in England every man's time is generally occupied, still I think it might be adopted with advantage.

(To be continued.)

A VISIT TO CAMBODIA.—*By a Madras Officer.*

(Continued from page 603.)

The arrangements being amicably effected, we started at 4h. p.m. for the third station, Tripong Tripah, distant 550 sens or twelve and a half English miles. This was the longest march we had yet made,—luckily the greatest part of it was gone over in the cool of the evening, but the confinement for so many hours in a very cramped and constrained position was exceedingly irksome. We arrived at the station at 10h. 30m. p.m., and as we had not dined before we left Tripong Lobok, our servants, poor fellows, had to cook at this late hour; so it was past midnight before all forgot their fatigues in refreshing sleep.

The next morning at daybreak we found fresh relays of both carts and men ready for us. We therefore lost no time in pushing on, knowing another march of 550 sens was before us. We left Tripong Tripah at 5h. 30m. a.m., and arrived at Tros, the fourth or middle station, at 12h. 30m. p.m., parched with thirst and half choked with dust.

This station is situated in the very heart of the jungle, and being surrounded by large trees on every side, we found it delightfully cool and pleasant. We exchanged here three or four empty beer bottles—called in the Cambodian language "sluk perduks"—for the same number of fowls. It was most remarkable to see the eagerness displayed by all the Cambodians to possess themselves of an empty bottle. I am sure we could have got any number of fowls or ducks for a bottle, or at most two bottles each.

We only remained here for a few hours, leaving at 4h. p.m. for the fifth station, Bungsuran, distant 550 sens; where we arrived at 11h. p.m., and started again the next morning at 5h. 30m. a.m. for the sixth stage, Sting, also distant 550 sens. Here we arrived at noon, and found much difficulty in procuring carts and men, all but two or three of the men in charge of the station having left it for a few days

and gone to the nearest village, fully eight miles off. The Mykoe said he did not think they could arrive till the next morning, but promised to send a man off at once to bring carts, &c. This delay was very annoying; however, we had no help for it. Close to the station was a river with a rapid current running down, but, being the dry season, there was no more than four feet of water in it. In the cool of the evening we had a delicious bath, a luxury we had had no opportunity of indulging in since leaving Campoot. The next morning we found that neither carts nor men had arrived and that the Mykoe proposed going himself to the village to hasten his men. Of course we were very sulky at this long stoppage, but in the hope that the night would be spent at the next station, we were fain to put up with our disappointment.

Wandering about in the jungle close to the station, I noticed some beautiful specimens of *Tectona grandis*, or the teak tree, also *Dammara orientalis*, furnishing the resin called dammar, *Hebradendron gambogioides*, and *Garcinia Cambogia*, from which the gambouge of commerce is extracted. I also noticed some enormous trees of *Clusia flava*, or the wild mango, and a few varieties of *Erythrina monosperma*, or the trees on which the gumlac insects generally abound. *Quercus tinctoria*, the bark of which is called quercitron, yielding a yellow dye, seemed also to be abundant, as well as several species of *Coniferæ*. I looked in all directions for *Isonandra gutta*, or the tree from which gutta percha is extracted, but did not perceive a single specimen; it is, however, my belief that in the jungles and dense forests of Cambodia gutta percha is to be found, as several species of the same natural order (*Sapotaceæ*) came under my observation during my stay in the country.

At about 3h. 30m. p.m., the Mykoe returned with some carts and men. He could not, however, get sufficient coolies to carry the things, and four cart drivers were obliged to be employed for that purpose,—our servants and Baba Kee acting *pro tem* as drivers. The carts that were supplied for us at this station were most ricketty affairs, and all so short that the person inside, when lying down, was obliged to have his knees nearly touching his chin. Such as they were, however, we were glad enough to get them, and we started at 6h. p.m. for the seventh stage, Oontong Kurweong, distant 500 sens, or about eleven miles and a half.

We had not left the station an hour and a half when the whole line of carts was brought to a standstill by the hindmost one, which happened to be Baba Kee's, breaking down, the axle-tree having snapped in two. The night was dark as Erebus and not a glimpse of a star could be seen. Our perplexity can be easily imagined, stuck as we were in the heart of the jungle, the few Cambodian drivers we had with us having all, with the exception of one old man, left and gone back a couple of miles to a hut we had passed on the road, there to cut a new axle-tree for the broken cart.

We waited in vain fully an hour for them to come up, and then, not liking the idea of passing the night where we were, determined to

push on and leave Baba Kee to shift for himself as well as he could. The old Cambodian that was left with us being driver of my cart, we were made to head the line and act as pioneer for the others. My old Jehu had only one eye, and that one was rather dimmed through age. The poor fellow was every now and then driving into the ditch, and sometimes got off the road altogether and was working his way in the jungle. On these occasions it was really laughable to hear the objurgations he bestowed on his buffaloes, putting all the blame on them.

At 12h. 30m. a.m. we arrived at Oontong Kurweong. This station was a small one, with very poor accommodation. The Mykoe and his wife were a venerable couple,—each had hair as white as snow. The man said his age was seventy and his wife's sixty-five. About seven o'clock the next morning Baba Kee came up with his cart mended, but as the coolies carrying our things had not yet made their appearance, we were obliged to wait for them, but sent back some of the Mykoe's people to hurry them on. At about noon they arrived and we prepared to start, when five elephants came to the station with two French Priests, who said that they had just come from Oodong and were *en route* to Campoot—that the elephants they had were intended for us, but that they had received permission from the King to have the use of them till they arrived at Campoot, when they were to be given over to us.

These poor clergymen looked the very picture of death. They said they had come from Laos and Champa, a narrow mountainous tract between Cambodia and Cochin-China, inhabited by an independent half savage race. Here they had lost their health and were obliged to go to Singapore for a change and also for medical treatment. One poor fellow looked as if he was past all medical aid; I really would not have insured his life to Singapore, so haggard and cadaverous was his appearance. They described with painful pathos the recent loss of one of their number by jungle fever, high up in the interior of Champa, and the hardships and privations they had endured.

It is impossible not to admire the spirit of self-denial which those faithful followers of the Cross, the French Missionaries in the East, display in denying themselves, as they constantly do, all the comforts and enjoyments of the civilized world in order to spend their whole lives in privation and distress amongst half-savage tribes, in places full of miasmatic influences, and where the foot of a European had never trod,—and all this for the purpose of imparting the light of Christianity to the poor benighted heathen and the benefits of civilisation to the savage. Though a Protestant myself, and dissenting in many points from the general spirit of Roman Catholicism, I yet admire sincerity whenever I meet with it, and am always disposed to respect and reverence the motives which impel the French Missionaries attached to the Propaganda to forsake all for the dissemination of the tenets of their religion, and humbly follow in the footsteps of those holy men of old who had received our Saviour's divine command to preach the gospel to the Gentiles and spread the glad tidings of salvation in the world.

But, to return to my narrative, as the Priests and ourselves were going in opposite directions, it was agreed upon between us that they should take two elephants and complete their journey to Campoot, and the other three we were to have to take with us. To this arrangement, however, the elephant drivers, unfortunately, did not agree. They said they had received orders from the King to proceed to Campoot for us, and that if they met our party on the road they were then to return to Oodong with us;—also that the French Priests had permission to have the use of the elephants till we were met with, and no longer. Such being the case, and all the drivers refusing to go on to Bombai without fresh orders from the King, the Priests were obliged to remain at the station. We however promised directly we arrived at Oodong to represent their case to the King, and ask for a couple of fresh elephants to be sent to them without delay. This would only involve a stoppage of two days for the Priests, as our next stage was Oodong, distant only 450 sens or ten miles.

We started from Oontong Kurweong at 3h. 30m. p.m. All of our party but our trader and Baba Kee, who were well accustomed to it, had much difficulty in climbing up into the seats on the backs of the elephants. It really appeared to a novice to be a very formidable undertaking, for the brutes are not taught, as they are in India, to kneel down, and you have no assistance from a ladder, or other easy way of climbing up. A loose rope is passed round the animal's neck; by grasping this and then its ear, at the same time stepping on the elephant's fore foot, which he raises a little on the word "choon" being repeated, you gradually hoist yourself into your place in the howdah or seat on the elephant's back. This is all made of bamboo-work, the body being shaped like a child's cradle, about four feet and a half in length by two in breadth, covered over with a frame-work of fine split bamboos, interlaced and plaited together. This machine is hollowed out at the bottom, so as to sit well on the bony ridge of the elephant's spine. Several layers of soft bark are first arranged on the animal's back On this is laid a piece of buffalo hide denuded of hair, and the howdah over all is well secured in its position by a stout twisted rattan cable passing round the body of the elephant and through holes in the bottom of the howdah, where the ends are secured inside. If there is sufficient bark, and it is well and equally arranged, the howdah sits very firm in its place, and is in reality much more secure than it appears to be, though it sways from side to side at every step the beast takes, thus causing a very unpleasant motion, something similar to the rolling motion of a ship in a chopping sea.

After leaving Oontong Kurweong about five or six miles the country appeared to be much more clear and open with, here and there, patches of cultivation, showing unmistakeably that a large town was not far off. Where the soil was turned up for the purpose of cultivation in the small patches mentioned above, its quality appeared to be excellent, being a rich friable loam. Indeed both the climate and soil of the whole of Cambodia appear to be most favourable for the growth of vegetation, the fruits indigenous to the country being of very large

sizes and of the finest flavour. The following list comprises a few which I particularly noticed as being of excellent quality:—*Anona squamosa*, or the custard apple, and *A. reticulata*, the soursop, *Ananassa sativa*, or the pine-apple, *Artocarpus integrifolia*, the jack fruit, *Musa paradisiaca*, the plantain and banana, *Mangifera indica*, or the mango—this last fruit grows to a large size and is most delicious. There are three or four varieties, the best of which are equal in flavour to the famed Mazagong or Goa mango. They are exceedingly cheap too, a hundred being procurable for about a dollar.

The tobacco grown in Cambodia is also of good quality. The plant is rather of a dwarf size, averaging about three feet in height; the variety appears to be peculiar to the country, the corolla being shorter and less expanded at the apex than in the ordinary varietes of *Nicotiana tabacum*. Various species of *Amomum cardamomum* or the cardamums of commerce, including *A. repens*, *A. angustifolium*, and *Elettaria major* are cultivated in Cambodia, and form one of the chief articles of revenue to the King. *Piper nigrum*, or the pepper vine, is also cultivated extensively; a great proportion of this finds its way to the Singapore market, where it fetches a good price.

We soon arrived at a new road the King had ordered to be made near Oodong. It begins about four miles from the town, and crosses a very swampy patch which extends for some way near it. The road itself is raised about six feet and is perfectly straight and level from end to end, edged with young trees on both sides, and really a much better affair than one could expect to see in an uncivilised country. The construction of this road shows great skill and ingenuity on the part of the Cambodians. It is well macadamized, the edges being faced with blocks of stone, and the sides sloped off to just the proper angle requisite to prevent them from being washed away by heavy rains. If the King would construct a road of this description from his capital to Campoot, he would confer a great benefit on his people and the trade of his country. The present one, though far superior to the track in existence some four years ago, which made the distance from Oodong to Campoot just double what it is now, is yet a very poor affair, being in fact no road at all, merely an open space cleared through the jungle in as direct a line as it is possible to be. Thus the ground is of course very rugged and uneven, with every here and there a swamp, &c., and following all the undulations of the country.

The environs of Oodong are much scattered; in fact they begin about two miles from the town, which is surrounded with two walls, the outer one being distant from the inner about a mile. The inner wall is the highest and strongest, being nearly fifteen feet in height by two in thickness, well supported on the inside with a row of palisades reaching to within four feet of the height of the wall, and distant from it a fathom, the intervening space being filled up with clay and rubble well rammed down, the level surface at top thus forming a low banquette running all round. There are two gates to the inner wall, both made very substantially of double planks, each three inches thick, fastened and rivetted together with massive flat-headed iron bolts.

The gates have on each side, on the top of the wall, small watch towers for the accomodation of a few men. These gates are always shut at 9h. p.m., only a small wicket being kept open till midnight for the accommodation of travellers and the townspeople.

The King's palace, which includes a large space, is likewise surrounded with a third wall of brick about ten feet high. This has also two gates, which are regularly closed at sunset and not opened on any pretence till sunrise the next morning. Guards are placed inside each of these gates, who remain on duty the whole night.

Our elephant drivers first stopped at a Minister's house who is styled Kuball Temerai, or head of the elephants, to report our having arrived, and the completion of the duty on which they were sent. We then went to the Prime Minister, whose title is Lok Chundah, to report ourselves and to ask for permission to occupy the rooms generally set apart in the King's palace for the accommodation of Europeans. But unfortunately it was past seven o'clock when we arrived, and we were told by the Prime Minister that the gates of the palace had been already closed, and that no one dared now to ask to go in and report our arrival to the King, without whose permission we could not occupy the said apartments. He said, however, he would point out a place where we might pass the night.

On our accepting his offer, he was polite enough to show us the way himself, and went on in front carrying a flambeau. He took us to a brick building, not very far from his own house, which he said was used by day as a court of justice. The interior of this was very spacious and lofty, being all one room; the flooring planked, with a raised platform, some three feet from the ground and about eight feet in breadth, extending lengthways from one side of the apartment to the other. This platform was railed in, and at the further end of it, close to the wall, were some six or eight square raised seats or dais, all of the same size, except the centre one, which was larger and raised higher than the others. These were for the accommodation of the Judges, the central seat being for the one highest in rank, who is styled Lok Chuckruw. The complainants, defendants, witnesses, &c., are arranged in front of the platform, outside the railing, when cases are tried. This building has a tiled roof, and every here and there small oval openings in the walls instead of windows.

We arranged our mattrasses on the platform and esteemed ourselves lucky in getting into such comfortable quarters. Soon after we had unloaded the elephants, and before our friend the Minister had gone away, one of the King's sons came to pay us a visit. He appeared to be a lad of about ten years of age. He told us he was the King's second son, his eldest brother, the heir to the crown, being now in Siam, where he had been residing for many years. We were told that the Crown Prince's age was thirty, and that the young Prince who came to see us, together with a younger brother, were to be sent very soon to Siam for their education; at least this was the ostensible motive for their going, but we learnt shortly afterwards that the policy of the Siamese Government compels the Princes of Cambodia to reside at

Bangkok as hostages for the good conduct of the reigning King, and to insure the regular payment of the yearly tribute. The young lad who honoured us with a visit was a good-looking boy, and seemed to be very shrewd and not at all shy. He brought with him a whole retinue of attendants, some thirty in number, youths of about his own age, who paid him great respect, all in fact, including the Prime Minister himself, bending the knee when addressing him.

As soon as this young scion of royalty and the Prime Minister had taken their departure, our Interpreter, Baba Kee, who had been to the bazaar to see his friends, returned with an invitation from a Siamese living in the town for us to go to his house and dine with him. As we had had nothing to eat since the morning, and it would have been very inconvenient for our servants to cook where we now were, we gladly accepted the offer of the Siamese to give us a dinner, and sent Baba Kee on in front to show the way.

Our host lived at the other end of the bazaar, which was a pretty long one, so we had a good opportunity of seeing Oodong by torch light. Its appearance is not at all calculated to produce a pleasing impression on a stranger viewing it for the first time. The houses in general are composed of fragile materials, consisting of cadjans and attaps erected on piles. Others, again, are constructed of clay, having flat roofs, likewise of tempered clay plastered over split bamboos laid like rafters very close together, the walls having here and there small oval openings instead of windows; these generally look into the court-yard, round which a clay wall is always raised.

The town appears to be very thickly populated, but as no census is ever taken it is impossible to tell with certainty what number of souls there may be. Of course the greatest part of the inhabitants of Oodong are true Cambodians, but there are many mixed races, such as Siamese, Cochin-Chinese, and true Chinese, living in the town, and about two thousand Malays occupy a large village called Campong Oolong, situated on the river May-Kuang, and about six miles from Oodong; which last lies in a northerly direction from Campoot, distant from it about ninety miles, and is in lat. 11° 55′ N. and long. 104° 11′ 30″ E.

On our arrival at the house of our friend the Siamese, he received us with great civility and ushered us inside, where we found dinner ready spread out on the floor, and low bamboo seats arranged for each guest. The dinner really was not bad and consisted of two sorts of stew made something like the Chinese chow-chow, composed of fowls, ducks, pork, and vegetables, roasted salt fish and preserved onions being in separate dishes, and of course an immense bowl of boiled rice forming the principal *pièce de résistance*. After dinner small cups of scalding hot samshoo were handed round, to assist probably the digestion of the rich aliment we had been treated with. At any rate we verified the old adage of hunger making the best sauce, for though, on ordinary occasions, I think none of us would have found his dinner very palatable, yet in the present instance we did full justice to our host's specimen of Siamese cookery. Having thanked him for his

kindness, we returned to our quarters, and soon forgot our fatigues in Nature's sweet refresher—sleep.

The next morning we were much incommoded by the curiosity of the people, who, having heard of our arrival, flocked in crowds to see the "Parangs," as Europeans are called in Cambodia. The lower orders contented themselves by staring at us outside the railing I have spoken of before, but the Priest and people of any consideration squatted themselves down immediately in front of us, making the place insufferably hot, and redolent of the fumes of tobacco, for in this country every one—man, woman, and child—smokes, and that too from morning till night. Their curiosity seemed to be insatiable, for there they stuck for at least a couple of hours—when gradually the crowd dispersed and each individual betook himself to his daily avocations, much to our satisfaction and self-congratulation, for we found the fragrance emitted from the persons of the gazers not to be that of Araby the blest, or of the most delicious or balmiest description.

At about eight o'clock a.m. we sent Baba Kee in to the King to inform him of our arrival, and to request that better accommodation might be given us. In an hour after Baba Kee returned, having had an audience of his Majesty, who had invited us to occupy rooms in a suite of apartments immediately contiguous to his palace, and we gladly took advantage of the King's offer, and removed to the place assigned to us. This was part of a long oblong building constructed very like our house at Campoot, but not near so comfortable or substantial, being divided (native fashion) into a great many very small rooms, having no communication with each other except by the doors opening into the verandah, common to all, and just reversing our ideas of comfort, as the godowns below, used for storing goods, &c., were very lofty, and the rooms immediately above, where the people live in, are low, and of course exceedingly hot. A long narrow verandah, with ladders at the ends, extended all along the front of the apartments upstairs. We had four rooms given us in this building, and a godown down stairs as a kitchen.

The remaining eight apartments were occupied by a lot of women, who we were told were the mothers-in-law of the crown prince and their attendants. These fair ladies took good care to isolate themselves from us, as when we took possession of our side, we found workmen putting up a temporary partition in the verandah, thus separating their rooms entirely from ours.

At about 10h. a.m. we received a message from the King to come over and see him. We, however, excused ourselves for the present, as the boxes containing our wearing apparel had not yet arrived from the last stage; but we promised his Majesty that directly our things came up, we would lose no time in paying our respects to him.

At noon we received our boxes, and then prepared to dress for the audience. Our trader and my friend put on plain civilian clothes, black coat, &c.; and I donned my full dress regimentals, which I had brought from Singapore purposely for the occasion, having heard from my brother that the King particularly wished to see a British officer's

uniform. Having sent Baba Kee on a little before hand to inform his Majesty of our being in readiness for an interview, we were ushered into his hall of audience, and sat down on chairs at the lower end of the room, awaiting the King, who they told us was inside his Zenana, or women's apartment. In the mean time we amused ourselves by looking at and taking notes of the place and its furniture.

The Durbar or Hall of Audience appeared to be a spacious and lofty apartment, about forty feet square, entirely open at one end, looking into a paved passage, separating it from another small room, likewise open at the side facing the passage. This small room was used as an office for the King's "simeons" or clerks, of whom we saw some six or seven busily engaged in writing letters and casting up accounts. Two sides of the hall communicated with suites of apartments, at the back and right of it; those at the back of the Durbar leading into a large paved courtyard half roofed over. This was the place where the King retired to of an evening, to enjoy the *dolce far niente*, and to amuse himself by seeing his women dance, and hearing other performances on various musical instruments. The rooms on the right are appropriated for the use of his women, of whom he has about three hundred, besides four married wives. At the furthest end of these rooms is the King's private sleeping apartment.

Various articles of European, Japan, and Chinese manufacture were ranged round the sides of the Durbar; daubs of pictures in gilt frames, by Chinese artists, were placed side by side with line engravings, and large mirrors, and antique glass tumblers and decanters of various uncouth shapes, together with large glass jars with ground stoppers, such as preserved fruits are generally sent from Europe in, were considered worthy of a place close to some magnificent specimens of Japan ware, similar to those exposed for sale in the European shops at Singapore. A common Chinese bamboo couch, was placed near a beautiful marble table, with massive carved pedestal and feet. This, we were told, was a present to the King. Ship's signal lanterns hung from the ceiling in juxta-position with handsome large globe lamps, and huge Chinese lanterns with glass chandeliers, A more motley collection of things valuable and articles not worth the picking up, was perhaps never brought together. The King evidently thought everything equally precious, for a common glass phial and sand hour-glass, were taken as much care of as a fine Japan cabinet or a Dresden porcelain vase.

On the marble table was laid a very handsome desk of Chinese Japanned work, a part of which was only appropriated to its legitimate purpose of holding papers, &c. The various partitions for wafers, wax, ink, sand, &c., were deemed by the King as admirable places for tobacco, betel, cardamoms, &c., and stuffed full accordingly of these delicious and necessary condiments. Five or six watches were hung up on the wall close to the King's seat at the marble table, the whole lot would perhaps have realized at a fashionable pawnbroker's five or six dollars. These extraordinary horological specimens must have dated their existence from the good old times of our great grandfathers,

being very heavy, and almost as large and thick as warming-pans, with works inside of corresponding dimensions.

After making us wait upwards of a quarter of an hour, his Majesty walked or rather waddled in, attended by a host of young women, and seated himself on the arm-chair near the marble table, immediately opposite to us. A couple of ladies stationed themselves at each side of the King, and commenced fanning him with great vigour; an operation he seemed to stand much in need of in hot weather, for he is enormously fat, and his whole body appeared to glisten with an oily perspiration. His appearance is not at all King-like or imposing, being dull-looking, with a heavy stolid air about him, and his face and breast much pitted with small pox. His age is apparently fifty, but he himself told us he was upwards of sixty. He wears very little clothing, only a sarong round the lower part of the body, leaving the upper part down to the waist quite naked; in fact, were it not for a gold band with a diamond and ruby clasp fastening the sarong round his middle, he could not be distinguished from a common cooly. His head, according to the Cambodian fashion, was closely shaved, with the exception of a small tuft of very short bristly hair at the top of the skull.

All his women, except the two who were fanning him, remained in a body, crouching on the ground, at the further end of the room. They all appeared to be very young, and were doubtless the best-looking girls we had seen in the country. Many of them had soft and regular features, and were it not for the disgusting habit of blackening the teeth and shaving the head, only leaving the short tuft of hair I have mentioned before, might really be called pretty, as all had most elegant figures, with those gracefully curved flowing outlines and plump development sculptors love so well to delineate, as forming the chief grace of feminine beauty. These Odalisques were very thinly clad, wearing salendangs, and a long silk scarf thrown loosely over one shoulder and across the body. This piece of dress seemed to be used more as an ornament than as a necessary covering, for it was often allowed to slip off the shoulder, and had to be every now and then re-adjusted. We were told the greater portion of the King's women were the daughters of his ministers and other men of high rank, who all vie with one another for the honour of furnishing a fresh inmate for the royal harem. They not only consider it an honour to the family, but a possible source of future aggrandizement to the father and brothers of the girl, should she captivate the affections of the King, for petticoat influence is as powerful in Cambodia as elsewhere in more civilised places.

It was amusing to see the constrained and uncomfortable crouching posture into which all the ministers and others allowed the entré to the Durbar threw themselves directly the King appeared in sight. Even our interpreter, Baba Kee, was obliged to imitate their example of going down on their knees, supporting the weight of the upper part of the body on the elbows, with the palms joined and raised above the

head, which they dared not to lift up, but kept constantly looking on the ground. If any one had to approach the royal person to give him anything or to obey a call, however far the distance Cambodian etiquette prescribed a crawling progressive motion on knees and elbows.

Our interview began by that indispensable custom in oriental countries, of presenting Nuzzers or offerings to the King. Knowing this to be expected, we had bought a few trifling articles in Singapore for this purpose. Our present consisted of two yards of very gaudily painted oil-cloth, two skins of black patent leather, and a couple of skins of yellow morocco, a one hour and a half hour glass, a couple of large toilet bottles of essence, with a dozen pairs of white cotton socks.

His Cambodian Majesty appeared to be much pleased with the things, and after minutely examining each article, gave them in charge to one of his women. He then asked our names, and who and what we, that is my friend and myself, were, and our object in coming to his country. He appeared to be much gratified when he was told that I had come purposely to see him, having heard he wished much to see a British officer. He admired my uniform greatly, and actually condescended to get off his chair and walk up to where I was seated for the purpose of more minutely inspecting each separate article of accoutrement. He was particularly pleased with the epaulettes, which he thought were of gold, and of course of great value. The texture of the red cloth in the coatee next excited his admiration; and I do believe that if I had weighed 18 st. instead of 8 st. 6 lb., so that my habiliments would have fitted the portly figure of royalty, the King would not have been satisfied without purchasing or trying to get as a present my whole military outfit.

We told him we had brought with us various philosophical instruments, such as galvanic batteries, electro-magnetic machines, a still for spirits of wine, oil and spirit lamps, spirit blowpipe, and a complete set of gilding and silvering apparatus on a large scale, with chemicals, &c.; these instruments we offered to show him, as well as to plate and gild something in his presence.

He inquired particularly about the use of the electro-magnetic machine and galvanic battery, which he said he had heard of in Siam, and was most curious to try the shock. He named the next day for our exhibition, and then began talking about his coining machine, which he had lately received from Europe, through Messrs A. & Co., at Singapore. This he said he had put up, with the assistance of a Siamese from Bangkok, and that he had begun coining silver money; but that there was something the matter with the machine, it would not work so quick or stamp as many blanks in a day as he had been informed the maker had said it could do, added to which, he thought the machine was not complete, as the blanks had to be made by hand, which was very tedious work. He therefore requested us to examine the machinery, and if we knew what was wanting, to inform him, that

he might commission it from Europe. We readily assented to his request, and getting off his chair, his Majesty waddled before us to show the way to the strong room in which he kept this valuable specimen of European engineering skill. On examination, we found the machine itself in good order and properly fitted up, but several pieces of the auxiliary apparatus wanting to complete a regular coining press; such as a rolling and flatting mill, and a punching machine to cut out the blanks; a hopper or feeder to be supplied with blanks was also not forthcoming. The King complained of these deficiences, and said he had paid a great deal of money, thinking he was to have a perfect engine for coining purposes. He complained also of no diagram or plan being sent out by the maker to assist his people in putting the press up; and said, had it not been for the Siamese from Bangkok, who understood a little of engineering, it would have been impossible for him or any of his people to have done anything with it. As it was, the King said, the press lay in pieces for nearly a year, no one, not even the French priests, being able to assist him, or give him the least hint as to putting it up. The coining machine was of beautiful workmanship, J. Ingram & Co., Birmingham, being the makers. It was intended to be worked by bullocks, but when it was finally put up the King preferred working it by manual power. Unfortunately, one of the dies was cracked and of course useless. The King took a note of the deficient machinery, and said he would write to Messrs. A. & Co. to have them ordered from the same maker, together with a complete set of fresh dies.

We had now been talking to the King for three hours, and I think, had we not intimated our wish to retire, he would have kept us another three hours; but it was no joke in such hot weather to sit buttoned up to the throat in ball-room dress as we were. As soon as we had gone to our apartments, the King sent us presents, in return I suppose for ours. The royal gifts excited our mirth greatly; they consisted of half a pig, a picul of white rice, and thirty choo-choos. This last is the currency of the country, and a very inconvenient one it is. The only coin current in Cambodia, besides the silver bar, worth fifteen Spanish dollars, and the Siamese "kop," worth about half a dollar, is the *petis*. This is made of an alloy of zinc and tin, very thin, and so brittle as to be easily broken between the fingers. It has Chinese characters on one side, and a square hole in the middle for the purpose of a number being strung on a cord, like the Chinese cash. The coin itself is Cochin-Chinese, but is current over a great extent of country, including Cochin-China, Tonquin, Laos, Champa, and Cambodia. Six hundred petis go to a choo-choo, seven of which are equivalent to a dollar; the choo-choo is again divided into ten *teans* of sixty petis each: so that the comparative values of the Straits and Cambodian currency are as follows:—

Petis.	*Tean.*	*Choo-choo.*	*Spanish Dollars and Cents.*
60	1		1¾ Cents.
600	10	1	14¾ Do.
4,200	70	7	One Spanish Dollar.

Ten choo-choos are generally tied together in a bundle for convenience of carriage, &c. The weight of these bundles is enormous, four of them weighing a picul. We received from the King three bundles, their equivalent value in Straits money being the magnificent sum of four dollars and twenty-eight cents, or thereabouts. It certainly looked a great deal, and was just about as much as a man could carry.

(To be continued.)

The Indian Ocean considered with Reference to the Wants of Seamen.

(Continued from p. 610.)

About the 21st of September on the coasts in questions we have strong easterly winds, and the end of the S.W. monsoon is signalized by tempestuous weather.

In October and November the N.E. monsoon is established. In the former month, however, the N.E. winds are variable. November and December are two months of bad weather, coming in sudden squalls.

Towards the middle of January the N.E. wind falls, and towards the end of it the rain ceases. Land and sea breezes then set in, the former W.N.W., the latter E.N.E.

Bay of Bengal.—The Bay of Bengal, as already said, may be considered the portion of sea to the Southward of the gulf of that name. It is bounded on the West by the coast of Orixa, which we have just been considering; on the North by Bengal, and on the East by the coasts of Chittagong, Aracan, Ava, and Pegu.

The S.W. monsoon, with the wind from South and abundance of rain, prevails in the bay during the first part of March; the N.E. monsoon prevails six months afterwards. During the latter it varies from N.N.E. to E.N.E., and according to some from N.E. to N.N.W.

Besides the squalls already mentioned as met with near the coasts from April to August, when the S.W. monsoon is in full force, there are others of less duration, which intervene at different periods of the year, principally off the coast of Bengal. The squalls during the

S.W. monsoon sometimes come from S.S.E. but more frequently from South to S.W., and sometimes from West. In September, October, November, and even the beginning of December, squalls from the Southward are found, but they seldom occur in the latter month.

In March and October, when the monsoon changes, the wind is most variable, blowing more frequently from N.E. than from any other quarter. This is the stormy season. When the monsoons become weak, land and sea breezes are regular, but those of the end of the S.W. monsoon are not so strong nor so regular as those about the end of the N.E. monsoon.

The change of monsoon at the entrance of the River Hoogly, is often indicated by a N.W. wind, coming in gusts; winds which are announced by thick clouds rising suddenly, and sometimes accompanied by lightning. But they are sometimes very violent.

Towards the end of March or beginning of April the S.W. wind becomes fresh and regular, varying to S.S.W. and W.S.W. The weather is then cloudy, dull, and rainy. But during the last half of May storms are rare. Sometimes in March the wind varies from S.W. to S.E. and even to N.E.

April and May, according to some seamen, are the most dangerous months in the Bay of Bengal. In this last month we have storms from North; generally, however, we find June and July the worst months for navigation. From April to June the wind generally varies from South to S.E., in June, July, and August, from S.W. to West, and sometimes in this latter month from W.N.W. to N.W. In August, notwithstanding bad weather may be expected, there are some days of fine weather.

In September the S.W. monsoon begins to fail, the wind is moderate from N.W., and rain continues to fall abundantly. The winds in this month are changeable, the weather sometimes fine but at other times rainy and stormy. After the 15th of September, in crossing the Bay of Bengal for the coasts East of Balassore, the wind is found varying from N.E. to N.N.W. Towards the equinox the wind is strong from East in the environs of Balassore, and after this period in the middle of the bay N.W. winds are found. Before the change of the monsoon a short but strong gale of wind prevails over the whole extent of the bay.

In October the rains cease, after falling in abundance on the coasts of Bengal, Chittagong, Aracan, Ava, and Pegu. In the beginning of this month we still have Southerly winds, interrupted by variable and strong breezes from N.E. to East. As a general rule it may be considered that during this month the wind varies from N.E. to S.W.

In November the wind is strong from N.E. From this month, and sometimes from October to March, the prevailing winds are from N.N.E. to N.E. In December and January the winds are nearly the same as in November. In February, which is the finest month on the eastern coasts, the wind is nearly always between North and East, while on the West coast land and sea breezes are regularly established,

as well as fresh breezes, varying from W.N.W. to S.W. The land breezes are less regular at a distance off shore. Lastly, it may be observed that the N.E. monsoon commences in the early part of October on the coasts forming the head of the Bay of Bengal, and continues to a later period in the middle and South part of the bay and between the islands of Nicobar and Ceylon. In these latter parts the wind from S.W. and West often lasts during the whole of October, and sometimes only terminates in November.

North of the parallels of 17° and 18° the wind is often light during the N.E. monsoon. It is sometimes from this quarter, but generally varies from N.N.E. to N.N.W. In the Bay of Bengal calms and light breezes are frequent during the N.E. monsoon, particularly on the North coast and the coasts of Aracan and Ava, and we also find there strong southerly winds. It may however be observed that during this monsoon the prevailing wind in the day is from N.W. to W.N.W., and during the night from North, rarely varying to N.E.

Coasts of Martaban and Tanasserim, Andaman and Nicobar Isles.—On the coasts of Martaban and Tanasserim the S.W. monsoon begins between the middle and the end of May. The N.E. monsoon succeeds it six months afterwards. During this latter monsoon, among the Andaman and Nicobar Islands northerly winds are found, while at sea the wind is N.E.b.E. and E.N.E. The S.W. monsoon is not found to be regular from twenty-five to thirty leagues East of the Nicobar islands. The wind there varies from West to North, sometimes even from S.E. to S.W.b.S., but most frequently it is from N.W. and is attended with squalls and heavy rains. It is sometimes light and variable, with calms, a smooth sea, and a cloudy sky. Near the Nicobar Islands at the time of the change of monsoon tornadoes of an hour or so are found.

The N.E. monsoon begins in November and brings the fine season. About the Nicobar Islands the wind is light during this monsoon, and often interrupted by land and sea breezes. Here, also, the wind is from the northward, while at sea it is from N.E. to E.N.E. Northerly winds especially prevail to the northward of these islands during December and January. Sometimes at the end of April there are sudden westerly winds. The S.W. monsoon begins, as we have said, in May; the winds at that time near the Andaman and Nicobar Isles being strong from South.

In the islands near the coast of Tanasserim the winds are light in July and August, and shift from North to West. The strong winds which prevail at this time in the Bay of Bengal do not reach these islands till they have lost much of their force. On the coast East of Cape Negrais, in the Gulf of Martaban, the same fact is observed, and calms are found on this coast chiefly from February to April, but are seldom of long duration.

On the coast of Martaban and Tanasserim, from November to January the N.E. monsoon constantly prevails. In October and November sudden winds are met, commencing from E.S.E. and shifting to

E.N.E. and North, where they cease, and are attended by heavy rain. In the middle of February, and in March and April, the period when the N.E. monsoon weakens, land and sea breezes prevail on these two coasts; they are moderate, blowing from East to N.W. chiefly in February. On the coast of Tanasserim, nevertheless, the wind is oftener from the southward than the northward. In these three months calms are common on these coasts, but of short duration.

The S.W. monsoon, on the coast of Martaban and Tanasserim is a strong wind and sometimes even violent. During the months of May, June, and July, the wind varies very little, its direction being from West to W.S.W. The monsoon is in full force from August to the middle of September, when it decreases, becomes variable, and is interrupted by calms and light breezes.

In the beginning of October, the month when the S.W. monsoon ends, the land and sea breezes again prevail on these coasts, a condition common to almost all the coasts of India in the intervals between the monsoons. These breezes are not so strong as those which follow the end of the N.E. monsoon.

Strait of Malacca.—In the Strait of Malacca, although it is within the limits of the monsoons, the wind is very variable; but land and sea breezes are found regular on the West coast of Malacca, as well as on the N.E. of Sumatra; and in the strait the monsoons are only regular when they are at their height, in the surrounding seas. Even then, however, the wind is moderate in the channel and only lasts during a part of the day. The N.E. monsoon brings the fine weather, and this season lasts from November to May. That from S.W. generally begins towards the end of April or beginning of May and ceases in October. In November, however, westerly winds are still found, and during this monsoon the weather is generally cloudy and stormy, with rain, especially when it is at its height.

In October and November the wind often changes from N.W. to West; sometimes, however, when from N.E., it blows regularly, in November. It is tolerably strong till the month of March, especially in December and January, sometimes varying to North and N.W.; and during the N.E. monsoon, in every month, one or two days of westerly winds occur. During the N.E. monsoon the wind generally varies between N.N.E. and E.N.E. Towards the end of February, in March, and sometimes early in April, the N.E. wind will veer northwards, becoming light and variable. We then find alternate breezes, interrupted by calms about noon, while through the night, and at sunrise, the wind is fresh. The coast of Malacca is less subject to calms in this monsoon than that of Sumatra.

The S.W. monsoon is at its height in June and July. From May to September the winds in the strait are chiefly from S.W. to South, —that is at the period when, out at sea, the monsoon is at its greatest height. In the course of this monsoon calms are found on the N.E. coast of Sumatra, but by no means so frequently nor so long as on the promontory of Malacca. The middle of the day is generally calm,

and a fresh breeze is blowing at night until sunrise. It is only in the northern part of the Strait of Malacca that the monsoon is ever well established.

During the S.W. monsoon, in the vicinity of Mount Parcelar and Cape Rechado the S.E. wind will incline to S.S.E., and about the middle of the night the "Sumatras" will come on from S.W. to South —a fresh breeze from the coast of this island. They are strong winds descending from the mountainous parts of that island, attended by rain and thunder; they generally set in heavily and last for two or three hours. Though the Sumatra is met with in all parts of the strait it is mostly found near the coast of Pedir and between the mountains of Parcelar and the islands of Carimon. Here they commence in a heavy squall and last from six to eight hours, blowing very hard in successive squalls with intervals of moderate breezes between. In Malacca Roads, where these storms occur between seven o'clock and midnight, great precaution is necessary.

Storms from N.W. are not so frequent as the Sumatras. They are most common in the northern part of the strait, but are sometimes met with near the Carimon Isles and in the Strait of Singapore. They commence with a sudden violent gust, which soon slackens, and are announced by a black arched cloud rising rapidly, scarcely giving time to reduce sail, and, like the Sumatras, are accompanied by rain and storm. A vessel, bound to the southward, waiting the tide at anchor in this part of the strait, and observing indications of a storm from N.W., should lose no time in getting under way before it comes, in order to take advantage of it and run with it while it lasts, more especially as, if she has it at anchor, she would find it more difficult then to do so, and would thereby lose a favourable opportunity of proceeding down the strait.

On the West coast of Sumatra, which is divided into two almost equal parts by the equator, we find at the same time different monsoons, according as we are North or South of that great circle. Thus, from October to April, while the N.E. monsoon prevails, on the part of that coast which lies North of that line, the N.W. monsoon (which in the South hemisphere also prevails from October to April) is blowing on that part of the West coast situated South of it; and again, while the S.W. monsoon (from April to October) is established on the N.W. coast of the island, the S.E. monsoon (from April to October), which is only a continuation of the trade winds of the southern hemisphere, prevails on the S.W. coast. This latter mousoon is always free from storms which are only met with along this coast during the N.W. monsoon. During this latter, which is generally more violent than the S.E. monsoon, heavy winds, with rain, are met with; while from May to September the weather is always fine on the S.W. coast of Sumatra.

West Coast of Sumatra, North of the Equator.—On the West coast of Sumatra, North of the Equator, the S.W. monsoon sets in without difficulty. The wind is strong from April to November.

Towards the end of August it veers to South till the middle of September, varying to S.S.W. near the coast, while at sea it is from W.S.W. to S.W. Near Pulo-Way it is from S.S.W. to South about the middle of September. During the S.W. monsoon the weather is uncertain to the North of Sumatra.

These observations on the winds apply especially to Achem, for when the S.W. winds, which blow in the Gulf of Bengal, reach the N.W. part of Sumatra, they seem to be checked by the high lands of this island, and to take a direction along the coast from N.W. to S.E. They bring rain and bad weather; and are, besides, only well established when the S.W. monsoon is in all its force, namely, in June, July, and August. At Achem the rainy season is that of hot weather. It begins in April, and ends in August.

The N.E. monsoon, which, on the N.W. coast, follows the S.W. monsoon, brings fine weather, and the wind is less violent than in the preceding monsoon. The N.E. wind, which is very fresh on the Eastern coast of the island, is interrupted by the high lands, and is only felt out at sea, at a tolerable distance from the N.W. coast of Sumatra, about thirty or forty leagues North of it, or even sixty or eighty leagues, as we approach it from the equator. Sometimes a S.E. wind is found instead.

In December and January alternate land and sea breezes prevail along the coast as far as the equator, and even as far as Bencoolen. The N.E. monsoon is sometimes interrupted, but very seldom, by N.W. winds.

West Coast of Sumatra, South of the Equator.—On the S.W. coast of Sumatra, in the course of the S.E. monsoon, the wind varies from S.S.E. to S.S.W.; sometimes in May, June, and July, it is interrupted by a return of N.W. winds, lasting several days, especially at the time of the syzygies. This also takes place in the strait of Sunda and on Java.

About the equator, in this monsoon, the winds are very variable, and continue so nearly all the year, with occasional calms, but very seldom squalls, especially near Pulo-Mintao and Priaman. In this last part storms frequently come from the mountains at night.

The N.W. monsoon on this coast begins in November and ends in March, reaching each place on the coast gradually later, according as it is more distant from the equator. From October to April it blows fresh, varying from N.W. to W.N.W., and reaching as far as the strait of Sunda. It is sometimes interrupted by South and S.E. winds, and by squalls accompanied with rain.

In April, May, October, and November, the periods of the change of monsoon, the wind is very unsettled. Towards the end of each monsoon alternate land and sea breezes take place; and it may be observed that the land breeze does not frequently blow in the opposite direction to that from sea.

Where the coast lies North and South, the sea breeze is from N.W. and the land breeze from N.E. Where the coast lies N.W. and S.E.

the sea breeze is from South and the land breeze from East. When the wind veers from East to North, the sea breeze may be expected on the following day to occur from West to N.W.

The land breeze does not reach beyond three or four leagues out at sea; it first begins near the coast, while we find a calm at four, six, or eight miles to sea; it then gradually extends further seaward as the heat of a place is more considerable, and attains its greatest distance from the coast in the course of an hour. At the change of monsoon the sea breeze is generally followed by a land breeze; but these breezes at the end of the S.E. monsoon are not so strong nor yet so regular as the others.

(To be continued.)

NOTES ON A VOYAGE FROM ENGLAND TO BALACLAVA *in the "Gilbert Munro," late Store-ship at Hyder Pacha,—By C. R. Maclean, Master.*

(Continued from page 594.)

January 18th.—The wind at S.W., weather wet, raw, and disagreeable. Cleared decks and got ready for discharging. I was this day furnished with a printed form, entitled, "Daily Report," and instructions to leave it every evening, when filled up, on board the *Camperdown* Transport Office. Fifteen fathoms of chain, recovered by the boats of H.M.S. *Leander*, were returned to me, being a portion of that which we had slipped when coming into harbour. Also delivered a few bales of felt.

19th.—The wind to day from the W.N.W., weather cold but dry and bracing, and a very agreeable change from the raw chilly dampness of the last two days. Having received no further instructions for the delivery of cargo, I resolved to take the opportunity to visit Sebastopol; and by the great kindness of Capt. Jones and Mr. Reeves of the L.T.C., I was furnished with a couple of horses; and at 8h. a.m., accompanied by Mrs. M. and the Captain of the *Clara*, we started for what is here called in military parlance "the front." The latter not being provided with a horse, it was agreed between us to make the journey spell about, that is, we should ride turn about, the distance from Balaclava to Sebastopol being only about eight miles, would be but four miles on foot for each, and this we expected would be easily accomplished. But we afterwards found out our mistake, and that it was no joke to travel over eight miles on such a road as that before us. The best of pedestrians would no doubt have found it trying enough, but for us sailors it was too much, and it required all our physical energies to get through the length and breadth of the dreary expanse of tenacious mud. Indeed we were astonished after-

wards to see what ardour and perseverance could accomplish, when forced on by curiosity.

Our first halting place was the town or village of Kadikoi, facetiously yclept Donnybrook Fair. Never having seen Donnybrook Fair I am unable to draw a comparison; but I am somewhat of opinion that Kadikoi presented a picture standing alone, unequalled, beyond all comparison. As I had occasion to see a gentleman resident in this establishment on a small matter of business, from a sharp turn to the left off the main road, a few steps took us in to the principal and only street of Kadikoi, that might then have been most commodiously navigated in a flat-bottomed boat. However, this convenience not being at hand, the pedestrian had to wade it knee deep, and occasionally something more, through a tenacious compound of clay and water, with something like a dash of glue to make it stick well. Wading through this as best we could, the quarters of the gentleman in request were found, and fortunately the gentleman himself at home, if indeed a ricketty residence such as his could be honoured by that sacred name. This domicile was of a very primitive order; and as the town of Kadikoi was made up of similar tenements, a description of this will afford the reader a general idea of the whole.

My friend's residence was more like a square box than anything else, for it really resembled somewhat a gigantic hat-box, with a pitch to the top, roughly boarded at the sides, and roofed over with oilcloth, stretched over a long pole, and nailed to the sides. The interior arrangement comprised what in Scotland is called a "butt and ben," two rooms, front and back, the partition being most conveniently effected by a mat suspended from the roof, that not only saved a door for entrance, but by being triced up threw both apartments into one. A variety in size of similar boxes, fitted according to the taste of the occupier, besides a few long sheds and barn looking structures, and a few "frowning" castles, composed the celebrated town of Kadikoi.

But it was the novelty presented by its motley inhabitants that rendered it the more strikingly and singularly interesting to a stranger. Every nation on the face of the earth seemed to be here represented. It was easy to imagine that the whole human race had set out on a great pilgrimage, and had assembled at the shrine of their devotions. Everything with a roof over it, habitable or not, appeared to be a shop, and had something to offer for sale, where the confusion of noises made by each vendor touting his merchandise in his own "mother tongue," and in his own peculiar way, was sufficient to strike any linguist with despair! To us it was literally stunning and bewildering to the senses.

Here, too, the different dispositions and peculiarities that mark national character, were singularly conspicuous in the motley throng. The pale, slender, joyous Frenchman, his military cap jauntily stuck on one side, whistling or chaunting his "chanson," apparently happy amidst the mire and din, as if Kadikoi were a fair in his own "belle France." The swarthy Oriental and grave Turk, demure and sedate, contemplating the din and confusion of activity around him with a philoso-

phic air of passive indifference, that one might fancy a knowledge of the day of judgment being at hand could not move him; a good exemplification too of Bulwer's remark, that "The man who smokes thinks like a philosopher and acts like a Samaritan." The Turk's smoking propensity is strong, and his thinking we might infer to be truly profound, but the Samaritan portion of his character is as yet exceedingly obscure.

In this Babel of human variety of shade and colour, the Englishman figures,—blooming even here,—and looking the picture of good health, but reserved. and wrapped in his own importance, grumbling loudly at every thing and every body, a prerogative that appears to be the palladium of British liberty, and in the indulgence of which the Englishman derives the greatest satisfaction. Leave him the right to grumble, and you may take every rag from his back with impunity. He will be seen, however, occasionally to relax when some vivacious Frenchman or Sardinian hails him across the muddy channel with the all familiar Bono Johnny, when he will condescendingly growl forth a Bono Johnny in return. In physical force he evidently appeared to have greatly the advantage of those around him, and would in this respect I think be a match for any two of his allies. They seemed to know it too, for he appeared the object of general respect and attention in this Babel, if the incessant Bono Johnnies with which you hear him greeted is any criterion; though there may be other and equally weighty reasons for this little attention; but from whatever cause it may proceed it is equally flattering to the imperious Briton.

Among the shop-keeping fraternity in Kadikoi, the Englishman meets with unmistakeable marks of respect; to which two causes are seen clearly to contribute. First, he has generally more cash to part with, and this being another valuable British prerogative, he does part with it freely; and, secondly, he does not pass an hour in idle altercation with the view of cheapening a bargain to the extent of a "sou." But an hour so passed would be considered well and profitably employed by his more provident allies around. Hence, with the latter description of customer the shop-keeper loses both time and money.

While here, I fell into conversation with a group of men belonging to different corps of the French army, and put the question, how they liked the Krimea. Their answer was, "Assez bonnement malgré la boue et l'hyver. Mais nous allez quitter bientôt à sortir l'hyver," a knowledge of which appeared to reconcile him to a good deal of present suffering, as I found, in the course of conversation, that their comforts were but few, and their wants great. At this time they were verging towards even a worse condition than they were then in, though they vainly strove to conceal how much they envied the comforts and superior condition of the British soldiers, and the chagrin felt at a comparison so unfavourable to themselves.

Leaving Kadikoi, we pursued our journey towards Sebastopol. Having had the first turn on horseback, the more I saw of the road the more I regretted my bargain to walk a part of it, and I did not feel very much inclined when my turn came to dismount. We had, now-

ever, proceeded but a short distance beyond Kadikoi, when our friend the Captain said he was done up, and that he could no longer straggle through the mud, asserting that it was becoming worse and worse, for the further he marched the more tough and tenacious it became. But I cheered him up with the promise of speedily dismounting to give him his turn, as we must, I said, be getting near the halfway. He nodded assent to this, while he secretly thought, and no doubt felt too, that he had walked at least two thirds of the way already.

We continued our march heavily onward till reaching the camp of the second division; when we fortunately met with an officer of the 30th Regiment, mounted on a lively little black poney, that was jumping the trenches as nimbly as one brought up in bogs would do. This gentleman, on learning the object of our journey, most generously volunteered to accompany us, and take us a short cut to Sebastopol. Indeed we all felt most grateful for this unlooked for kindness, which made a deep impression on our whole party. And as for myself, I thought it time to dismount, much to the happiness of my friend the Captain, who had almost began to think that I was going to back out of the agreement.

So far as we had hitherto come, and as far as we could see before us, nothing met the eye but a dreary expanse of hill and dale, bare and sterile as a rock. Not the vestige of a tree or shrub, not even a decaying leaf, encumbered the ground, which was bare and desolate! Soon after passing this living division of our army, we came to the ground occupied by an army of the dead,—the last resting place of hundreds who had bravely fought and fallen nobly in the cause adopted by their country. What a train of reflections was suggested by the scene lying before us! presented indeed by the marks on every side of that melancholy and fearful wreck of humanity over which we were passing at every step. Here we could read the brief sad records of affection left by relatives and friends! Here rest until the final day those who were dearly loved and early lost. How many "excellent" prospects and lofty hopes have been annihilated here? How many sorrowing hearts of mothers, widows, and fatherless children, have sad reason to remember Sebastopol?

But it was useless to dwell on such reflections as these. War is a curse on humanity, wisely no doubt permitted by Providence. It came with the fall of man, when the very ground was cursed for his sake, and was soon after stained by the blood of sacrifice. Then came murders, stratagems, and crimes, bringing Discord and all her attendants, War, Pestilence, and Famine, with Death, to end the short brief span allotted for the life of man. That gentleman is tired, our new friend seemed to be remarking, as I found it necessary to step out to join my companions; and indeed I was not sorry to gather myself up again from a kind of day dream into which I had unconsciously fallen, and quicken my steps from this cheerless cemetery.

Journeying onward over a most tiresome and disagreeable road through a slippery and adhesive mud, on which at every step forward the foot slipped half a step back, we came to a rising ground, from

which we had a fine view of the harbour of Sebastopol. The mast-heads of the sunken Russian fleet were seen standing out of water—presenting a most forlorn aspect—like a range of piles across the channel. From this position, Fort Alexander, on the North, with its two rows of iron teeth, was seen grinning on the opposite side, now entirely evacuated by the Russians. Descending from our position, we came to the ground first broken by the English in their advance on the Redan. Our kind amiable guide pointed out to us the several remarkable and interesting localities in the progress of the siege, giving us a little episode on each. The trenches are now nearly filled up and levelled, little remaining to mark the field of so much toil and almost superhuman labour but the remains of shattered cannon and the iron harvest of shot and fragments of shell that almost covered the ground. Proceeding onwards, we perceived a flagstaff from which the tattered remnant of a union-jack was fluttering in the breeze, indicating the place of the far-famed fatal Redan, the assault on which it is well known closed the career of many brave British soldiers.

Approaching a spot of such surpassing interest in the annals of the present, weary and fatigued as I had now become, naturally absorbed every thought, and as I mechanically kept moving onward, gazing on the place where that fatal struggle and the deadly strife occurred at the point of the bayonet, in the midst of the iron storm, the heaps of dead and groans of the dying rising in my imagination, brought me flat on my face in a pool of mud, an incident that aroused me from this reverie and cooled down the enthusiasm of valour and martial glory to which my thoughts were leading me at storming the Redan. Recovering from this inglorious position, I found myself in a condition to excite the mirth of my companions, who, fortunately, at the time of the accident, were some little way ahead of me. But, to my great confusion, before I had time to shake and scrape from my clothes and person the thick mud with which I was covered, General Codrington, with a well-mounted and brilliant staff, came trotting up, and I presented the contrast of a woful and mud-soiled pedestrian to the glittering uniform of this brilliant cavalcade. The General and his staff, on coming up to me, paused a moment to reconnoitre, and being satisfied I was neither Russian nor spy, rode on for Sebastopol.

Proceeding onwards, and at the same time divesting my clothes of as much of the mire as I possibly could, anxious to make a tidy appearance on this, my first visit to Sebastopol, I reached the flag-staff a short time after my party, and found that a guard was mounted and sentinels placed to watch the enemy and to prevent any but privileged visitors straying into the town. It was yet under the Russian fire from the northern batteries; but at this time, since the French had given up replying to it as a useless consumption of ammunition, their fire had ceased also, for which reason it was then considered safe to pay the town a visit. By the time, however, I reached the passage leading through the Redan, where double sentries were posted, I was fairly exhausted, and therefore determined on a rest. I was dying with thirst and the kind-hearted sentries sympathized with me in my

exhausted and muddy condition, but could not afford me even a drink of water. But perceiving a pool of still water in a hollow which, although it might be a grave, did not look foul, I gladly refreshed myself with a few mouthfulls of it.

The Redan, though now in a state of ruin, bears evidence of its original strength, and is situated about four hundred yards behind the docks and barracks of Sebastopol. It is an immense mound of earth, thrown up with much labour, and a wall or breast-work, many feet in thickness, built up with bags of sand and basket-work—the latter, in military phrase, called gabions. In the wall are embrasures; through which heavy guns from the Russian ships, and worked by the sailors, were pointed against the besiegers. In the interior of this work were subterranean retreats—lodgments, the roofs of which were supported by massive beams of timber, deeply covered with earth, and bomb-proof, where that portion of the garrison off duty retired in security from the fire of the allies. In the debris of this formidable place cart loads of ships' blocks were seen, which the soldiers were very quietly using as fuel, with an immense quantity of rope worked into mats that had been used to mask the guns and to protect the gunners from the deadly aim of the rifleman. All this was gradually disappearing under the fire of the camp kettle, and a most excellent fire it made—having made myself very comfortable before it. During this operation I was most agreeably entertained by the cook of the mess with his experiences of the campaign and the storming of the Redan, his story was the more interesting from being given here while we were seated quietly and unmolested on the very spot.

While in this agreeable position I learned from the Serjeant in charge that the French and English mines were to be sprung in the course of the afternoon, as a part of the operation of blowing up the docks; and this it appears had brought General Codrington and staff to Sebastopol on the present occasion. Having completed our survey of the Redan and got a moment's rest, we left. A few minutes' walk brought us to the Russian dockyard, which before the bombardment had been considered equal to any other in the world. The first place we visited was the once splendid barracks; of which now there only remains the ruined wall, in which grape and round shot, with pieces of shell, are everywhere deeply embedded. From thence we descended to the docks. On reaching the principal entrance, however, we were stopped, the sentry telling us that only staff-officers and Frenchmen were admitted within the walls. As we happened to be neither we had to content ourselves with remaining outside. This, however, was no great disappointment, for the many breeches in the wall gave us an uninterrupted view of the interior; so, stationing ourselves between the roofless walls of some office or storehouse connected with the docks, mounted on a broken down portion of the wall commanding a full view of the North side of the harbour and dry docks about to be blown up,—we had an excellent look-out. We could see the whole of the northern side of the harbour to be bristling with cannon, and, from its superior elevation, entirely commanding our side. With my

glass I distinctly observed the Russian artillerymen on the ramparts of the higher fort loading the mortars that soon after opened their fire upon the docks. Large crowds of French officers and soldiers were collecting in and around the docks, and were evidently attracting the attention of the Russians, for I observed the latter collecting in great numbers about their guns, and could perceive huge telescopes in the hands of officers on the ramparts directed towards us.

While waiting to see the effects of the explosion that was to take place, our attention was turned to the now deserted and roofless town, and no language could convey an adequate idea of the very darkness of desolation which it presented. Had the destroying angel, armed with divine vengeance, hurled on it a storm of thunderbolts, the ruin could hardly have been more complete. Sad and painful reflections crossed the mind when contemplating this picture of ruin and desolation. I was intent on the scene before me, thinking of the widows and orphans, the aged and infirm, whose homes were within these ruined walls while the iron tempest was falling on their doomed city, when I was suddenly awoke from such further reflections by the explosion of the French mine. Though doing a good deal of damage, it made but little noise, the effect being more in a lateral direction—very little being thrown to any elevation. In a very few minutes after, the second or English mine exploded, which was much the loudest in report and by far the most effective, overthrowing immense masses of masonry of many hundred tons weight.

It would seem that the vengeance of the Russians was roused on seeing their docks blown into the air, for the cloud of smoke and dust raised by the last explosion had scarcely subsided when a fire of shot and shell opened on the crowd in the docks that caused all who had any regard to their safety to retire. Our position being on the West side, we seemed to be safe from the direct line of fire, and Mrs. M., with the characteristic loyalty and pluck of a blue nose, stood her ground. We could not help admiring the great precision with which the Russians threw their shells directly over the dock where the explosions had been seen, but most of them burst at a great elevation and were falling harmless. The appalling and fiendish noise produced in the air by the flight of these destructive missiles was highly exciting All fear seemed to vanish in the excitement produced, and one felt inclined to advance, to rush forward, as it were, and strangle the fiend whose demoniac howl was thus disturbing the tranquillity of the scene around.

We were soon, however, apprised of, to us, a more dangerous foe than the shells by the whistle of round shot as they passed over our heads, informing us that we were under a salute from Sauk Kaia Balka (Dry Ravine Battery), the fire of which reached some distance beyond and over the docks, and enfiladed our position, while at the same time some fragments of shell came scattering over our ground. We took the hint they gave us and agreed that it was time to retreat, which we did without loss of time and in good order, though the whistling compliments of the dry ravine were sweeping over us pretty

fast and thick, till, getting the Redan between us and Sebastopol, we emerged from under it and were safely beyond reach of the Russian fire.

It was now three p.m. and we had to retrace our steps to Balaclava, which we did not reach till half-past nine. The Captain and I having to walk our four miles each, were completely done up on reaching the camp of his division, where we parted company with our kind and excellent friend of the 30th, whom we had the pleasure of meeting the following day for the last time in Balaclava. I hope that at some future time to have the opportunity of testifying my gratitude for his kindness and attention. As our party were unprovided with a pass, it would not have been possible had he not accompanied us to have passed the different sentries guarding the various avenues to Sebastopol.

January 20th.—Wind S.W. with a heavy fall of rain. Wind blowing in heavy gusts through the gully. Got out an extra hawser abaft to the shore, for a stern mooring. Employed in filling up water. 21st.—Received orders from the Admiral to proceed to the Bosphorus and Scutari; sent up top-gallant-masts and yards, bent the sails, and prepared for sea; blowing hard with rain, the wind at S.W. 24th.—The wind being light from the N.E. and favourable, at 8h. a. m. hauled out of the tier into the stream, and at 10h. was taken in tow by a tug and towed out of the harbour. On finding ourselves outside we observed that the *Leander's* launch, in charge of the boatswain, had cleared and recovered our anchor. Sent a line from the ship to the launch and hauled her alongside with the anchor which was soon stowed in its place, and sail was quickly made for the Bosphorus.

The passage from Balaclava to the Bosphorus produced nothing of interest. We lay twenty-two hours off the entrance of the strait sometimes not more than three miles from shore, and neither the land by day nor lights by night could be seen owing to the thickness of the weather and the dense wall of fog that the light wind then prevailing had rolled into the Bosphorus.

February 9th.—At daylight the wind having freshened, the fog had risen from the land, and the entrance to the Bosphorus was made out half a point on the starboard bow, for which the ship was steered. At 10h. p.m. we entered the channel with a freshening breeze, and with current in our favour made rapid progress, passing clear of the many ships that encumbered the strait. At 2h. p.m. we came to an anchor two cables' length S.W. of Leander Tower, on the Scutari side, where we found the *Clara*, that sailed the same time from Balaclava just arrived a few hours before us.

In conformity with my instructions from Rear-Admiral Fremantle, to report my arrival at Scutari to Admiral the Hon. F. W. Grey, I lost no time in crossing over to Constantinople in one of those numerous and graceful little craft called here caique, being very similar to what has appeared on the Thames at regattas, and not a bad imitation of the caique. The rapid current that with but rare and short intervals constantly running down the Bosphorus, renders these light little craft far preferable for dispatch than our heavy ships' boats. Indeed it is oft

times as much as a smart six-oared gig can manage to cross the stream without falling immensely to leeward.

The Golden Horn, crowded with a forest of masts, and the city of Constantinople has a truly noble and splendid appearance when approaching from the opposite side. My caique landed me at the naval offices in Galata, conveniently situated for the purpose, having a water frontage on the Golden Horn, with a good stone quay. The house, large and commodious, being, I was told, formerly the banking-house of Messrs. Hanson. On the left of it, supported by a partition wall, is a more humble and less imposing building, on the top of which in friendly companionship with the union jack on its big neighbour flew the tri-coloured flag, indicating it to be the Intendance Francais. In front of the first-mentioned, and characteristic of the proprietors, a marine with a constable's staff, and police written on a band round the arm, was the guardian of the landing place, this being constantly crowded with boats which required to be regulated; while in front of the latter, with shouldered arms, gray great coat and measured step, paraded a soldier of the Armée Francais.

A few steps from the boat, after a good deal of trouble in settling the fare, the fellow thinking he had not cheated enough, took me into the offices. The entrance hall was embellished with nautical notices, rules and regulations, to be observed by ship-masters in the transport service, with the pains and penalties incurred by a breach of the same. Though adding little in the way of ornament to the place, they were exceedingly useful, and before proceeding further I took the opportunity of getting information on these important subjects.

While thus occupied, you are (or at least I was) quite unconscious of being momentarily jostled by naval officers of every grade in the service, and of every age. Old veterans of the days of Trafalgar, and others not then born, newly-made Lieutenants, Commanders, Captains, and C.B.'s were there, who had distinguished themselves in storming stockades, or burning and destroying corn stacks in the Sea of Azof, or may be on the banks of the Danube or the Don, services for which their grateful country has rewarded them. Such company induces one to look back to the days of the Nile, Copenhagen, and Trafalgar with a sigh, when the memory of a mutilated friend, a broken-down father, rise in the mind, who in their day did something more for their country, and its gratitude left them to obscurity and neglect.

(To be continued.)

The Pacific Ocean Considered with Reference to the Wants of Seamen.

(Continued from page 615.)

Coquimbo.—Off the coast about Coquimbo, the Northerly Monsoon only lasts for three months. In the course of the night theland breeze sets

in, probably about midnight, and falls a short time after sun-rise. The climate here is so uniform that it has been named La Serena.

Copiapo.—At Copiapo strong N. W. winds are occasionally met with, and the periodical winds of the coast of Chili are not found to the Northward of this place. On the coast of Chili tornados are unknown, nor are they anywhere met with on the coast of Peru.

General Winds on the Coast of Bolivia and Peru.—On the coast of Bolivia, from Copiapo to Cape San Francisco, in 1° North lat. Southerly winds prevail throughout the year, varying from S.S.E. to S.S.W., with a sky always overcast. These winds seldom exceed a fresh breeze, and on certain portions of the coast are often scarcely strong enough to enable a vessel to sail from one port to another. This is especially the case between Cobija and Callao.

Occasionally in the summer two or three consecutive days of calm take place with a perfectly clear sky. On those days when the sea breeze sets in, it generally commences towards ten o'clock in the morning; it comes at first light and variable, and keeps gradually increasing till one or two o'clock in the afternoon, and then continues well established till sun-set, when it begins to slacken. Soon after sun-set there is a dead calm, and towards eight or nine o'clock in the evening a light land breeze gets up and lasts till sun-rise. At this time there is a dead calm, which continues until the sea breeze again sets in. The land breeze varies from N.W. to N.N.E. and even to E.S.E. The sea breeze varies from S.S.W. to S.W., and sometimes even to W.S.W. These winds are then very similar to the solar breezes. During the winter season, from April to August, light north winds may be expected, generally accompanied with thick fogs, and a cloudy sky. This condition of weather is not common in summer, although the summits of the mountains are enveloped in mist.

North of Callao the wind may be expected with more certainty. Here the sea breeze is found very regular, attaining more strength than anywhere to the Southward. On the coast of Peru about Payta, and off Cape Blanco, the sea breeze is often so strong as to oblige ships to double reef.

It is observed that notwithstanding the wind on the coast of Peru is generally moderate, heavy breezes come down from the mountains even after the sea breeze is established. They are found very detrimental on entering harbour if not provided against by shortening sail considerably.

The only difference in the prevailing winds in winter and summer here is the frequency of light North winds during the winter. The difference of climate is however greater than one would suppose, for so low a latitude. In summer the weather is superb, with the thermometer rarely under 70° and often above 80°, while in winter the weather is cold and damp, with thick fogs and a cloudy sky, when it is necessary for the health of the ship's crew to adopt flannel.

The general winds of the coast of Peru extend about 500 miles to sea, from whence they take a more Easterly direction, so that at 600 miles from the coast the S.E. trade is generally found. Sometimes,

especially between Chili and Callao, the wind veers to W.S.W. reaching 90 or 120 miles out to sea, and blowing fresh at the distance of 15 or 20 leagues. On this coast there is generally a fog in the morning, and heavy dews during the night.

Between Pisco and Callao the wind varies from S.S.W. to S.E. Between Callao and Guayaquil southerly winds change to S.W. between November and May, and during the summer is W.S.W.

At Lima it is said that it never rains—certainly not such rain as is found within the tropics is to be found there, but sufficient to wet one through has been experienced by the author. The sky is generally overcast. From March to September the weather is fine; in summer storms occur; and in October thick fogs are experienced.

At Callao those storms are not found that are frequent on the coast to the southward of it. The winds from North to N.N.W., so scarce at Callao, are good breezes. Those from West to N.N.W. are but weak when they do come. During summer the wind is generally from S.W. to W.S.W., and in winter from South, changing sometimes to S.E.

At Payta and near Cape Blanco northerly winds are not met, but instead of them southerly breezes, rarely becoming S.E. One naturally concludes, when navigating from the northward to the southward, that in working up near the coast, in order to profit by the variable winds, great difficulties will be met with; but this is by no means the case. The land wind is generally weak near the shore, and calms often prevail off the most prominent points. Another source of difficulty in this passage is the current, setting always to the North or N.W., that prevails there. However, M. Humboldt asserts that the Spanish vessels proceed along the coast in going from Guayaquil to Lima because in these regions, he says, the land breeze blows for eighteen hours and the sea breeze only six hours; consequently, a vessel may sail S.S.W. with the land breeze and stand near the coast with a sea breeze. In these latitudes a vessel should not be further from the coast than fifty or seventy leagues. This way of sailing, called by the Spaniards *por el meridian*, has the advantage of enabling a vessel to avoid the squalls of wind which are often met with in August, September, October, and November, between the parallels of lat. 28° and 33° S., in keeping to sea when crossing the zone of the trade winds, and not standing in for the land until the vessel is sufficiently to windward to attain her port.

At the Galapagos, in November, December, and January, stormy and squally weather prevails. During May, June, July, and August, the weather is fine.

Between Cape San Francisco and Cape Corrientes, from September to March, the wind is from North, varying to N.E., when it changes and continues between S.E. and S.W. during the rest of the year. Thus vessels from Peru and Guayaquil to Panama may take advantage of these winds in going and the northerly winds in returning. On this portion of the coast, from June to November heavy squalls

are encountered, as well as frequent calms. Near the Island of Gorgona it rains nearly all the year round, but more especially in June, July, and August.

In the Bay of Panama the winds winds vary from East to North from September to March, and from South to S.S.W. during the rest of the year. The dry season is that in which the wind prevails from E.N.E., and lasts from December till April or May, the months in which the rainy season sets in with squalls; the rain gradually increases, and is heaviest in June, July, and August; in September it lessens, and terminates in November or at the latest in December.

In the Bay of Panama alternate land and sea breezes are found. The former blow from S.S.W., the latter from North, varying to N.N.E. These breezes are only regular during the dry season; they are very light during the damp season, and cease entirely with the rains. Mr. J. H. Smith, a gentleman long resident in Panama, gives the following general view of the weather at that place, which is entitled to attention:—

January. February, and March.—Fresh North winds, fine weather, and clear sky.

April.—North winds decreasing, with frequent calms, and light southerly airs in the day. Latter end of this month. occasional squalls from the North in the afternoon, with rain, thunder, and lightning.

May.—During the day frequent calms and light southerly winds, weather becoming cloudy, and occasional fresh squalls from N.E. to S.E., with rain.

June.—The rainy season well set in, breezes during the day increasing from the South, with squalls and heavy rain; nights generally clear, with light land breezes from the North. Latter end of this month eight or ten days of fine weather frequently occur.

July, August, and September.—Moderate South winds, squalls and rain. During the equinox four to six days of strong South winds, without cessation during the night, and frequent squalls, with rain.

October.—South winds, squalls, and rain. Frequent land winds at night, and fine West.

November.—South winds decreasing, with frequent intervals of fine weather, and occasional squalls off the land.

December.—First part of this month, frequent calms and light South winds during the day. Latter part, occasional North winds and fine weather.

The rainy season in Panama is not so severe as in some parts of India—seldom a continuance of rain for more than twenty-four or thirty-six hours.

When the North or South winds continue fresh during the day and night at Panama they always blow strong at the entrance of the bay. With the South wind a long swell sets in, causing a heavy surf on the reef on the South side of the town.

The anchorage in Panama Bay may be considered secure; the ground is mud and holds well. During my residence in Panama (near

five years) I have never known a vessel to be driven from her anchor; in fact, with good ground tackle, and common precaution, a vessel may lie there all the year round with one anchor down.

The rainy season 1852 was unusually severe, and the rains continued until the 5th of February of the year following, an occurrence seldom known before.

The city of Panama is so situated that two or three hours after heavy rain—which, at the time, will flood the places and streets—the inhabitants are enabled to walk in any part; and it only requires proper sewerage to keep it cleanly all the year round.

Periodical Winds on the Coast of Mexico or Lower California.—From the western extremity of the Bay of Panama to the parallel of lat. 30° N., we find the periodical winds on the coast of Mexico called monsoons. On this coast, from November to April the wind varies northwardly from N.W. to N.E.; and from May to October it varies from S.W. to S.E. These winds, however, do not blow with the regularity of the monsoons of the Indian Ocean. These Mexican monsoons extend forty or fifty leagues from the coast, but at seventy leagues from it the N.E. trade wind is generally found.

On this coast, between lat. 10° and 20° N., westerly and W.N.W. winds sometimes are found as well as tornadoes and weather like that of the corresponding western coast of Africa—that is, calms during the night and, towards morning, light land breezes, lasting until about eight o'clock.

The winds which prevail between S.S.W. and S.S.E. from May to October are called by the Spaniards *vendavales*, and are accompanied by heavy rains, tornadoes, calms—often lasting several days, with continual thunder and lightning. Sometimes the rain continues incessautly between three and four weeks.

The squalls generally come from S.W. from July to October. They are called *tapayaguas* on the coasts of Nicaragua and Guatemala. It is dangerous work to seek Mexican ports at this time, and the Spaniards never think of going to San Blas or Acapulco before the end of November, when this weather is gone by. Some seamen aver that fine weather cannot be looked for with certainty until the month of January.

Winds from N.W. to N.E., as already observed, prevail during the winter—from November to April, inclusive—when the weather on the coast of Mexico is fine. The Spaniards call this season the summer of the South sea. However, while it lasts strong N.N.E. and N.E. winds are frequent, with a clear sky. They are called *papagayos*, and M. Humboldt says that they extend from the Gulf of California to the Bay of Panama, that is from lat. 22° N. to 7° N., and are more severe in about 10° N. In May, June, and July, these winds continue from the northward for three or four days together, and often for a whole week, without ceasing.

Between the parallels of lat. 13° and 15° N. long calms are found, especially in February and March, like those in the Gulf of Guinea.

Cases are on record where they have lasted for twenty-six days, and this too at a distance of eighty leagues from the coast.

About Acapulco, during the winter, the wind is West and often strong from N.W. At this season vessels must be cautious not to approach the land to the southward of their port, and must keep far enough to the northward to admit of nearing the shore with the N.W. wind, on account of the current which sets S.E. along the land. The only thing in favour of keeping in shore southward of Acapulco is that of profiting by the land breeze, which, although light, blows all night from East to E.N.E., and lasts till eight or nine in the morning.

(To be continued.)

The Loss of the West India Steam Packet Tay.

The following account of the loss of the *Tay* is the substance of two letters in the *Daily News*.

The *Tay* left Vera Cruz for Tampico on the 29th of August, with about a dozen passengers. The cargo on board of her consisted of about 500 bottles of quicksilver and a few packages of sundries. She had on board also the Tampico mails from England, St. Thomas, Havana, and Vera Cruz. Tampico being about 200 miles from Vera Cruz.

All went right with the ship until 5 o'clock on the morning of the 30th, when, within fifty miles of her destination, she struck on a reef near Cape Roxo. The coast about the cape is low and sandy, and the surf being very dangerous. In a very little time after she struck, she came broadside to the swell, on which she immediately commenced rolling heavily, sending everything on the quarter-deck from side to side. Every one was soon on deck, holding on as well as he could, the officers and men behaving nobly, and perfect discipline being preserved. It was at once seen that the ship would be lost, and preparations were made for the worst. The whole of the boats were lowered, and kept at a safe distance from her, to prevent injury to them. Lieut. Stewart, the Admiralty agent, got the mails together, and it was decided he should take one of the life-boats and proceed at once to Tampico with the mails and passengers, and send assistance to the officers and crew.

The second officer and a boat's crew of four men were given him to assist in navigating the boat. Some hams, cheese, and bread, a five-gallon can and a large cask, supposed to be filled with water, were thrown into the lifeboat. Just as this was done, the boat struck violently against the sponson of the steamer, and rebounded to a distance of fifty yards from her. Such a concussion would have stove in any other boat than the lifeboat. The Admiralty agent was wounded in

the head and lost his cap from the striking of the boat. To avoid another collision the boat shoved off at once on its adventurous voyage to Tampico with nineteen persons on board, three of whom were women. Those in the boat had scarcely saved anything. Lieut. Stewart had nothing but what he stood upright in, for knowing that the mails contained letters of great value, his only anxiety was to save them. There was no compass in her, and the helmsman had to keep her head to the North, and steer along in sight of land.

The lifeboat left the ship at about 6h. a.m., and the keel of the latter was then heard grating and crashing underneath, so that it became evident she could not hold together long. At half-past eight the crew of the lifeboat rested on their oars, and preparations were made for breakfast, when, to the horror of the nineteen persons in her, it was found that the cask contained brandy, and that there were only two gallons of water in the five-gallon can. The sun's rays were intensely hot, the men who worked at the oars were parched with thirst, and amidst a heavy sea little progress could be made with the boat; the water was therefore obliged to be dealt out very sparingly. The crew, who worked hard, and required drink, were manly fellows. A small cup of water, scarcely containing half a pint, was given them occasionally by their officer, who would say, "There, that's for all four of ye." The first just sipped it, and then looked to see if he had drunk more than his share. Such was each one's anxiety not to drink more than his allowance, that the last one to drink generally had the largest quantity.

They continued the whole of that day pulling, and sailing when the wind was fair. At night they stood off and on the coast. The second day the water, notwithstanding the great economy in the use of it, was expended. The sun was raging, and intense thirst prevailed. The women suffered so much that they prayed they might be put ashore. The Admiralty agent and the officer said, that if they attempted to beach the boat in the raging surf, they would all perish; but the women said, "Better perish in the surf than die from thirst." The Admiralty agent promised that if no signs of their approach to Tampico appeared by four o'clock in the afternoon, (31st,) he would beach the boat and attempt a landing. No signs appearing, the boat was run ashore, and after encountering fearful risks they effected a landing close to an immense jungle. Three parties immediately went in different directions in search of water, and some dug holes in the sand by scooping the latter out with plates, oars, and their hands; but no water could be found. A tent was formed with the sail in the jungle, and preparations were made to pass the night there. At ten o'clock in the night a pitcher of water was brought into the tent.

Two of the party thought they knew their way to Tampico, and they set off to find it. After great difficulties from having to cross streams, lakes, and difficult passes, they reached Tampico, told of the disasters that had occurred, and a party of Mexicans immediately set off on land to succour the boat party, who were about twenty-five miles

off, and a Mexican war steamer prepared to start to find the rest of the officers and crew of the *Tay*.

At eleven o'clock in the forenoon of the 1st of September the boat's party welcomed the Mexicans, who had come to refresh and rescue them. After the sufferers had partaken of refreshment brought them by the Mexicans, the whole party started for Tampico. The Mexicans carried the mails, and assisted the poor women with much kindness along the sand, sheltering them as much as possible from the scorching sun. They had to cross the Tamiaguan Lake in boats, and at four o'clock p.m., they arrived at a village, where they were again refreshed with dishes of rice, garlic, chilies, &c., and horses were then procured for the whole party to convey them to the banks of the Tampico river, which they crossed in boats. The mails were then delivered up at ten o'clock that night. The next morning the Mexican war steamer was ready to proceed to the wreck, and she started with the British Consul on board. In the course of the afternoon H.M.S. *Amphion* arrived off Tampico with important political despatches relative to the pending dispute between Great Britain and Mexico. The Admiralty agent and the boat's crew of the *Tay* were then placed on board the *Amphion*, and soon after she started for Vera Cruz with the homeward Tampico mails.

Turn we now to those left in the *Tay*. At the time of the lifeboat leaving her, the scene on board was most awful. The monster steamer rolled about as if in its last agony—the captain cool and collected. All the boats, lowered and manned, lay off at a short distance. Hideous sharks surrounded us, and seemed to mark us for their prey. Between the raging seas there was a sort of lull, by which the boats could communicate with the ship. The surf was dreadful to look at. If it had been rough weather not a soul would have been alive half an hour after the ship struck. As soon as possible one of the lifeboats being despatched to Tampico, in charge of the mail agent, with the mails and passengers, to obtain assistance, the captain's gig was loaded with some hams, candles, jams, jellies, the captain's private goods and clothes, some of the officers' private clothes, some valuables, and three men. The gig drifted round to the stern of the *Tay*, and after being knocked about like a shuttlecock she was thrown bottom upwards. Two of the men were dragged below by sharks, and never appeared afterwards. The other made his appearance, resting on three oars, which he had grasped. He truly represented a strong man in agony. He battled with the raging surf, and got ashore safely, although sharks were all around him.

At eleven a.m. the ship was deserted, the captain being the last to leave. Ninety-nine persons were now cast adrift, with scarcely provisions enough for a single meal. It was impossible to land anywhere near Cape Roxo, on account of the violence of the surf. At intervals a low small island could be discerned several miles distant, and this was our only hope of safety. The captain declared that it was the island of Lobos, and probably water would be found there. He re-

commended that all the boats should go for that island, and on being importuned, he recommended all to trust in God, and take care of their lives. At one p.m. the chief officer led the way in his boat to the island, the captain in the dingy bringing up the rear.

We reached the island soon after 4h. p.m., but found the surf rolling mountains high, forming apparently an impregnable wall around it. We waited for the captain, to know what should be done. Captain Strutt examined various parts of the island, and at length he saw what he considered an opening, and he entered it, the dingy being light, and landed. He was to wave a handkerchief close by a hut seen on the island if we were to follow. No handkerchief waved. At length the captain came off again. He said the loaded boats could not get in; the dingy must take in a few at a time. By this means we all landed, after great difficulties. It was a sandy beach, studded with rocks. A man with a boat-hook stood on the bow of the dingy, and guided her in through an avenue of rocks. Before everything was landed and the boat made fast it was nearly dark.

All were pale, haggard, and tired. All hands were, however, piped, and Capt. Strutt, with a voice choked with emotion, offered thanks to Almighty God for our great deliverance. Every one was in tears. Nothing could be more solemn or affecting than this scene. The island on which we were was about three miles in circumference. We wandered about, and found beneath two fine trees iron funnels driven into two wells, to prevent the sand from getting into the water. The wells did not seem to promise a very liberal supply of water. There were other signs of visitors having been on the island. After a small piece of biscuit, a little grog, and a scrap of pork had been given to every one, we prepared for rest.

Every one wandered about seeking at every bush a shelter for the night. A lighted lamp was hung up in a tree. Many a strong iron-looking man was subdued that night, and went secretly on his knees imploring succour from Heaven. We all rested on the ground, with nothing over us but our day clothes. The island was brilliant with fire-flies, and snakes and lizards crawled over us. The rolling sea, beating and expending itself in angry surges on the tiny spot on which we were resting, was thundering all night in our ears.

Sunday morning arrived. It was feared that the wells would be dry after we had emptied them of the small quantity of water found in them; but this was not the case, for soon afterwards the springs filled the wells again. All hands were piped again, and prayers were read. A slight breakfast of biscuit and pork, or cheese, was served out. The captain asked for volunteers to visit the wreck, to see what could be saved from her. Numbers of men volunteered to go, and they started for the wreck; but could not approach it, the sea had so increased in violence. Men were occupied on our solitary island in shooting seagulls and pelicans, which abound there, and we fed on the birds. After prayers in the evening we laid down again with heavy hearts. Tormented with hideous land crabs, which caused horrible disgust as they crawled over us.

Monday morning rose to no better prospects. The captain and volunteers again visited the wreck. No better luck this time. There was no approaching the wreck. Hunted for turtle-eggs, and found quantities. Although plenty of turtle were there, they could not be caught. Passed another miserable day; half starved, and had no good prospects. The captain read prayers, and all lay down to try to find rest for both body and mind, for the third night.

Tuesday morning, after prayers and breakfast, a party went again to the wreck, and this time succeeded in getting on board, and took away from her several sheep and fowls that were nearly dead. On hearing of this success, two more boats went off directly, and got stew pans, lamps, blankets, and a few beds, pillows, &c. Found the poor cow alive, but much exhausted. Could not get her out then, for the weather was threatening, and the captain made us all leave for our solitary home.

In the course of the day our mourning was turned into joy,—a steamer was seen bearing down upon us. This was a Mexican war steamer sent from Tampico to our relief. We got all on board of her that day, and went and saved the poor cow. The captain of the Mexican war steamer would not delay any time, for if bad weather had come on it would not have been safe there. We got everything off our island by Tuesday night, and were comfortable on board the war steamer. Our minds were now at ease, for the worst had passed.

On Wednesday night we reached Tampico. Here we were a month waiting for the *Conway* to take us to St. Thomas, where we should be shipped for England. What with anxiety, fatigue, exposure, and bad living, half of the officers and crew were laid up with ague and fever at Tampico. We were placed in a house which was infested with centipedes, scorpions, emmets, and mosquitoes, which nearly drove every one mad. Those who were well enough went with some Americans up Tampico River to shoot alligators. At length our deliverance came. The chief portion of the officers and crew were brought off in the *Conway*.

On the morning of Wednesday the 3rd of September, at about mid-day, the *Amphion* met the Mexican war steamer returning to Tampico, with the officers and crew of the *Tay* on board. The second officer and crew of the *Tay* were put on board the Mexican war steamer, to be taken with Captain Strutt, the Commander of the *Tay*, and the rest of his officers and crew, on to Tampico, there to await the next British mail gulf steamer. Stewart, the Admiralty Agent, remained in the *Amphion* in charge of the homeward mails.

On the 8th of September the *Amphion* touched at Vera Cruz, and took in mails there. Fever had been rife on board of her after she left Tampico, but at Vera Cruz yellow fever broke out and before she reached Havana all the officers were attacked, and Mr. Lightbody, the Surgeon, Mr. Harry Percy, Naval Cadet, only son of Sir Josceline Percy, and nephew of the Duke of Northumberland, and one seaman fell victims. Just as the *Amphion* reached Havana on the 24th September, the American steamer *Quaker City* was leaving for New

York, so that our letters and the Mexican mails must wait here for another fortnight.

I forgot to say that the officers and crew of the *Tay* visited the wreck from Lobos Island during their stay there several times, and many of them obtained what belonged to them from the wreck. Poor Stewart, the Admiralty Agent, however, has lost his watch, which was a valuable souvenir, his medals, which are irreplaceable, and, in fact, everything. Captain Strutt and the Chief Engineer dived into his cabin during one of their visits to the wreck from the Lobos, but everything had been washed out of it. These Admiralty Agents, being out here for three months at a stretch, carry a large kit. Stewart, however, is an Irishman, and bears his losses with good humour. The figure in which he reached Tampico was truly laughable; he had on an old pair of ragged, dirty white trousers, with a lady's flannel petticoat round his head, which had sheltered him from the burning sun. He will proceed to Europe, I believe, *viâ* the States, and I shall go on to Jamaica. Captain Strutt is a most kind and gentlemanly man, and a good navigator. He, unfortunately, did not allow sufficiently for a treacherous indraught.

The gross pecuniary loss by the wreck of the *Tay*, including the value of the ship and the plate and furniture belonging to her, the cargo, and the property of the officers, crew, and passengers, is estimated at £100,000.

The inquiry into the above wreck has terminated in admitting the usual current in the Gulf of Mexico as having in some degree occasioned it, but that it would be a matter of consideration whether the Captain had or had not observed the usual precautions in navigating the ship. The Magistrate's report, it appears, speaks in strong disapproval of the *practice* on board the *Tay* of *not using the log*. By nautical men it will scarcely be credited that this has been a common practice in the *Tay*, and that the rate of the vessel was inferred by the revolutions of the engines, so that *with* the sea or *against* it, the speed of the vessel was obtained by multiplying these revolutions by one number and dividing the result by another, and then this last result was considered the number of knots the vessel is going!—the log not being hove once during the whole voyage! The thing, we say, seems scarcely credible. No wonder the strong disapproval of the report. But what are the Managers of the Company about to allow their vessels to be thus navigated, and the lives of passengers and crew thus endangered. The season when the *Tay* was lost seems to have been about the end of the Northers, in which a southerly current might have been anticipated; but why the ship's head was not directed to seaward as soon as something on the horizon was seen—which was merely a line of breakers—seems most extraordinary, when at that moment, possibly, the ship might have been saved. And when standing along shore (as the passage between Vera Cruz and Tampico is made) that the lead should never have been once hove as a precaution against getting

into shoal water (which might have been expected) is perhaps scarcely to be looked for where such neglect of the log appears to have been the custom. But it is what every seaman looks for. In fact, it seems to be clearly established that a systematic neglect of the log, the lead, and the look-out, or, as old seamen would say formerly, the neglect of the three L's, that has lost the *Tay*, and it is marvellous with such a system of navigation that she was not lost before. It is to be hoped, however, that the lesson will not be lost on the Company, and that the system by which their vessels are navigated will be looked into in future more than it seems to have been.

In making these professional observations on the loss of a valuable ship that should not have occurred, it is gratifying to remark the excellent conduct of the Captain after the catastrophe. The loss may really be attributed to an idle bad system of navigation, the effect of routine, of constantly running over the same ground, and the imagined security afforded by steam. It is the result of the system that has fallen on Captain Strutt. When, under other conditions requiring the skill and resources of the seaman in saving the lives of his passengers and crew, he did all that man could do,—and, happily, succeeded.

THE AKBAR, FRIGATE.—A RETROSPECT.

The writer of the following lines went to the East Indies on board this ship in the year 1804; and, after serving in her through various cruizes about the Eastern and Pacific Oceans, left her at Madras in the beginning of 1808. During that time she was called the *Cornwallis*, but when her Parsee builder, the celebrated Jemsatjee Bomanjee, constructed a line-of-battle ship to be complimented with the same designation her name was changed to *Akbar*, in memory of the renowned Mogul conqueror. She was then the largest frigate in the service, mounting fifty guns, and having a company of three hundred and sixty-five men. During the period treated of she was commanded by the present Vice-Admiral Charles James Johnston—an excellent officer, an amiable man, an expert lunarian, and one of the best seamen in the Navy. From quitting this ship in 1808, the writer never saw her afterwards till the current September, 1856; when, for the benefit of another educational institution, he was led to Liverpool to inspect her as a school frigate or floating reformatory for turning the hitherto misdirected energies of dangerously destitute boys to good and useful account. This visit being a singular incident awakened the train of recollections hereunto appended.

And this is then the ship in which of erst
I sail'd so far—so many thousand leagues,
And bore hard cruizing, hunger, heat, and thirst;
With broken rest, that more than work fatigues;
Which sometimes check'd the urgent wish to roam,
And made pale memory yearn for joys of Home.

Yet she's the ship wherein my buoyant youth—
Turning all minor evils into sport—
Made halcyon days of trouble: search for truth
Had taught me Nature's grandest scenes to court.
Thus every clime its glories held to view,
India or Chili, China or Peru.

In this same ship what sunny shores we made:
Whilom we did in Madagascar rove,
Among the Indian ports we oft-times staid,
And saw colonial germs at Sydney Cove;
At that time too, a nautic feat to tell,
We trod the rock where Cook, lamented, fell.

This is the vessel in whose strength and form
(The noblest specimen from Jemsatjee)
We plac'd a firm reliance; no fierce storm
Had e'er compelled her from her post to flee:
We fear'd no danger from a chang'd monsoon,
And dar'd to face the terrible typhoon.

Her frame full oft was tried by sea and wind,
While dire explosion did its worst to fill
Her horn of evil; yet throughout we find
The Men's good order, and the Captain's skill.
And though of all her crew so few survive,
Her gallant Commandant is still alive.

That was the time when England's valour shone
To save her altars 'gainst a world in arms—
Then was our energy for hearth and throne
A safety-valve through perilous alarms:
We had bold Jervis, brave Pellew, and Hood.
Courageous Nelson, and lov'd Collingwood.

And such were wanted—foul Discord had riv'n
The bonds of nations, and enslav'd the free;
All had been lost, but ever-righteous Heav'n
Gave to Great Britain rule and power by sea.
This loos'd from Europe, in that dubious day,
The iron grasp of Buonaparte's sway.

Full well those anxious hours do I remember,
When continental tidings, fraught with woe,
Told how wild violence made kingdoms render:
And laid the Sovereigns and their Councils low:
Each in his turn the victor's trammel feels,
And one by one they deck his chariot wheels.

* * * *

Return we to the moor'd *Akbar*. 'Twas here
I early felt of nautic zeal the glow,
Here shot the sun, and learn'd to reef and steer,
And bore my little part against the foe:
Resolv'd to face disease—or battle grim—
And in life's ocean either sink or swim.

Such were the motives for a life at sea,
And such enliven'd duty's toilsome drag,
No Don of interest car'd a straw for me—
And yet I ever sought to reach a flag;
Rank's topmast-head was gain'd, the task complete,
I walk'd her deck—an Admiral of our Fleet.

And this good ship, which rang'd the hostile climes—
Which hail'd the haughty foe in voice of thunder,
And play'd a splendid part in troublous times,
'Gainst those who tore the ties of States asunder,
In green old age, by age not rendered mute,
Is bent on teaching "young ideas to shoot."

O philanthropic act—O moral good—
To train the destitute for useful life,
Teach homeless boys to earn their honest food,
And rescue juveniles from penury's strife!
Blest be the *Akbar*, and her may future fame,
As once in arms, so now in arts proclaim.

May those fine lads soon play a manly part,
Well taught their several courses how to steer,
As well in nautic as in general art,
Each fitted to pursue his proper sphere.
May thus, effectively, the Frigate School
For ages float, the pride of Liverpool!

IMPORTANT CIRCULARS REGARDING THE COAST-GUARD SERVICE.—*General Memorandum.*

Admiralty, October 1st, 1856.

The organization of the coast-guard force to be raised or employed under the provisions of the Act 19th and 20th Victoria, cap. 88, for the protection of the coast, and to form a reserve for manning Her Majesty's Navy in case of war or emergency, as well as for the protection of the revenue and of the naval coast volunteers raised under the Act Victoria 16th and 17th, chap. 73, in combination with the coast-guard, will be as follows:—

The whole coast of the United Kingdom will be divided into eleven districts, each of which will be under the charge of a Captain in the Navy, who will be appointed to the command of a guardship, to be stationed at some convenient port within the district.

On the books of such ships all the naval officers and such seamen of the coast-guard employed in the respective districts as are fit for service at sea will be borne.

The revenue cruisers and the gun-boats to be employed for the defence of the coast in each district will be attached to the respective guardships as tenders, and manned from their complements.

Men and boys will also be entered on board for general service in the navy, and will be trained for service in sea-going ships.

The Captains of these ships will also have the command and take charge of naval coast volunteers within their districts.

Such officers and men of the present coast-guard as, on survey, may be found incapable of performing their present duties, will be removed from the service, with such allowances as they may be entitled to. Those who, although unfit

for service at sea, are capable of performing duty in the coast-guard, will be retained, with their present pay and advantages, until they are provided for by pension, superannuation, or otherwise.

There will be borne on the books of the district guard-ship:—

I. The Captain, who will have the command and charge of all the coast-guard and naval coast volunteers within the limits of the district.

He will receive the full pay of his rank, an allowance for victualling when permitted to reside on shore, and for travelling, horse hire, &c.

II. One Commander for the service of the ship, and all the Inspecting Commanders, Lieutenants of Divisions, and Chief Officers of the coast-guard districts, being naval officers, within the limits of the command of the Captain of the guard-ship.

The Inspecting Commanders and other officers will receive the full pay of their rank, and, when permitted to reside on shore, allowances for victualling, travelling expenses, and horse hire as at present.

III. A Surgeon, Paymaster, and the requisite number of executive officers.

IV. 1. Such petty officers, seamen, marines, and boys as may be necessary for the service of the ship and her tenders

They will be paid and victualled as men of their respective ratings in the royal navy.

2. The seamen fit for service at sea employed on shore in the coast-guard within the district.

They will be rated in the first instance as boatmen, and may be promoted, if deserving, to be commissioned boatmen, and from commissioned boatmen to be chief boatmen.

Boatmen will receive the pay of A.B. continuous service.

Commissioned boatmen that of leading seamen continuous service.

Chief boatmen that of first class petty officers continuous service.

They will be allowed 1s. 4d. per day in lieu of their provisions, and lodgings will be provided for themselves and families free of rent.

All the men will have the benefit of medical attendance.

Payment of wages and allowance in lieu of provisions will be made monthly.

When a chief boatman shall have charge, and is performing the duty of a chief officer of a station, he will receive as heretofore, 1s. per diem in addition to his pay as chief boatman.

In the event of war or emergency, any men whose services may be required will be sent to serve on board any of Her Majesty's ships for such time as circumstances may render necessary, with the pay to which they may be entitled in the coast-guard, or of such ratings as they may be qualified to fill and may hold. They may be victualled as seamen of the fleet.

In such cases their families, during good behaviour, will be allowed to remain in their lodgings so long as the men are in the service.

These men will be subject in all respects to the same laws, regulations, and discipline, and enjoy all the same privileges and advantages, including good conduct badges, pay, pensions, &c., as other seamen serving in the fleet, and time served by them in the coast-guard will count for pensions as time served afloat.

Men pensioned from the coast-guard will be in the same position in all respects as other naval pensioners.

These regulations will only apply to such officers and men as may be entered in the guardships to be commissioned in the coast-guard districts, and from the date of their being borne on the books of those ships.

3. Such men and boys as may be entered for general service on board the guard-ships.

They will be in the same position as men and boys entered at the ports, and will be sent off to sea-going ships as opportunities offer.

4. And temporarily such naval coast volunteers as may be called into service under the provisions of the Act of 1853, for the time that they are so called out.

Men of the naval coast volunteer service will in future be under the command of the Captain and officers of the guard-ship of the coast districts, and will be trained to the use of guns, &c., at the coast-guard batteries, in the guard-ship, or in her tenders; and they will be entered in such districts respectively, under the provisions of the Act 16th and 17th of Victoria, c. 73, with the same liabilities, privileges, and pay as are therein specified.

By command of their Lordships,

THOS. PHINN.

Entry of Seamen into the Coast-Guard.

Admiralty, October 1, 1856.

Seamen who have served seven years* with 'man's ratings' in any ship of Her Majesty's navy, and not exceeding 37 years* of age, are eligible on their ship being paid off, for service in the coast-guard, upon their receiving the necessary certificate of good conduct from the Commanding Officer of such ship.

When a ship is ordered to be paid off, the Commanding Officer will send to the Admiralty a list of the men whom he recommends for admission to the coast-guard.

Continuous service men are eligible for the coast-guard, although they may not have completed the term of service for which they entered.

Seamen gunners on board the gunnery training ships may be recommended for the coast-guard by the Captains of those ships when they have completed the five years service as seamen gunners, provided they are otherwise qualified.

Men who have served seven years, with 'man's ratings,' in a revenue cruizer, and not exceeding 37 years of age, may be appointed to the coast-guard on the recommendation of the Comptroller General.

The men so selected will be directed to join any district where there may be vacancies, and will be placed on the books of the coast-guard-ship of that district, and victualled on board until lodgings are provided for them and they can be transferred to the shore.

They will be rated in the first instance as boatmen, and may be promoted, if deserving, to be commissioned boatmen, and from commissioned boatmen to be chief boatmen.

Boatmen will receive the pay of A.B. continuous service.

Commissioned boatmen that of leading seamen continuous service.

Chief boatmen that of first class petty officers continuous service.

Coast-guard men doing duty on shore will be allowed 1s. 4d. per day in lieu of their provisions, and lodgings will be provided for themselves and families free of rent.

The annual pay and allowance for provisions of men serving ashore will, therefore, be as follows:—

	Pay.	*Allowance for provisions.*	
Boatmen.....	£28 17 11	£24 6 8	£53 4 7
Commissioned boatmen..	31 18 9	24 6 8	56 5 5
Chief boatmen	36 10 0	24 6 8	60 16 8

Payment of wages and allowance in lieu of provisions will be made monthly. They will also have the benefit of medical attendance.

When a chief boatman shall have charge, and is performing the duty of a

* This period of service, qualifying for entry, and the age of admission into the service of the coast-guard may be altered from time to time by the Lords of the Admiralty.

chief officer of a station, he will receive, as heretofore, 1s. per diem in addition to his pay as chief boatman.

The amount of reward for seizures, according to the rank of those belonging to the station or vessel who are present or on duty at the time of seizure, will be as heretofore:—

	Shares.
Chief officer	£25
Chief boatman	10
Commissioned boatman	8
Boatman	6

Men belonging to the coast-guard will be subject in all respects to the same laws, regulations, and discipline, and enjoy all the same privileges and advantages, including good conduct badges, pay, pensions, &c., as other seamen serving in the fleet, and time served in the coast-guard will count for pensions as time served afloat.

In the event of war or emergency, any men whose services may be required will be sent to serve on board any of Her Majesty's ships, for such time as circumstances may render necessary, with the pay to which they may be entitled in the coast-guard, or of such ratings as they may be qualified to fill and may hold. They will be victualled as the seamen of the fleet,

In such case the families of the men employed on shore will, during good behaviour, be allowed to remain in their lodgings so long as the men are in the service.

Men pensioned from the coast-guard will be in the same position in all respects as other naval pensioners.

These regulations will only apply to such officers and men as may be entered in the guard-ships to be commissioned in the coast-guard districts, and from the date of their being borne on the books of those ships.

By command of their Lordships,

THOS. PHINN.

Note.—Such officers and men of the present coast-guard as, on survey, are found incapable of performing their present duties will be removed from the service, with such allowances as they may be entitled to. Those who, although unfit for service at sea, are capable of performing duty in the coast-guard, will be retained with their present pay and advantages until they are provided for by pension, superannuation, or otherwise. Those naval officers and seamen who are fit for service at sea will be entered and borne on the books of the district guard ships, and from the date of their being so entered will come under the above regulations.

NAUTICAL NOTICES.

HONDURAS.—*Island of St. Andrew.*

3, *Constitution Street, 25th October*, 1856.

Sir,—I have only been a subscriber to the Magazine for a short time and know not whether the following error in Raper's Table of Maritime Positions has been corrected. In case it has not, I beg to submit it to your notice.

The Island of St. Andres, off the Coast of Honduras, is placed in the Table in Lat. 13° 21′ 7″, while, I presume, from the Admiralty Charts, and from a

letter recently published from "An Officer of the Fleet," it ought to be 12° 28′, or, more precisely, between 12° 28′ 30″ and 12° 27′ 30″. The Longitude is correct.

I am, Sir, your obedient Servant,
JN. HUGH JOHNSON, late of Liverpool.

To the Editor of the *Nautical Magazine*.

P.S.—The late Captain Bird Allen published a paper in the Royal Geographical Society's Journal, on the Coast of Honduras, wherein he states that "report gives to the Rio Hondo, the New River, and the Belize, courses nearly parallel to each other in a direction from North-West to South-East, while in the illustrative Maps they are represented as running in a diametrically opposite course." If you could throw any light on this subject so as to establish the course, or even the probable course of these rivers, you would much oblige.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from p. 509.)

	Name.	Position.	F. or R.	Ht. in Feet	Dist. seen Mls.	Remarks, &c. [Bearings Magnetic.]
31.	Cape Race	Newfoundland	F.	180	17	Est. 15th Dec, '56. In 46° 39·9′ N., 53° 2·6′ W. Visible when bearing from S.W.b.W. to East, and in every Northerly direction between these compass points.
33.	Skaw	Kattegat				Present light partially eclipsed by new light tower.
34.	Hielsa Isld.	Kattegat. 56° 8′ N., 10° 48′ E.	I.	164	19	Est. 15th Nov., '56. A strong glare of light of 15 seconds duration will be preceded and followed by 25 seconds of darkness, and then followed by a steady light of 2m. 55s. duration.
35.	San Francisco, California	Pt. Bonita		270		1856. Fog bell only.
36.	Deep Hole Rock	Massachusets				1856. Fog bell and day mask.
37.	Fly or Green Island, Maine	Edgemoggin Reach		25	7	Est. 2nd Feb., '57.
38.	Maceio, Brazil	9° 39·3′ S., 35°41·4′W.	I.			Est. 1st July, '56. A strong glare of 12 seconds duration will be preceded by 16 seconds of darkness and followed by 12 seconds of darkness, an interval of 70 seconds of steady light will follow and the above will be repeated.
39.	Absecum	New Jersey, U. S.	F.	167	20	Est. 15th Jan., '57. In 39° 2·2′ N., 74° 25′ W.
39.	Beaver Tail	Newport, U. S.	F.	80	14	Est. 20th Oct., '56.
40.	Salina, Black Sea	45° 9′ N., 29° 41′ E.	F.	65	15	Est. 15th Sept., '56.
	,, Fidonisi, Do	45° 15·5′ N., 30° 14·9′	R.	195	18	Est. 15th Oct., '56. Serpents Isle.
	,, Kum Kaleh. Asia	Dardanelles		50	4	Est. 15th Sept., '56. Appear as one 1¼ mile off.
41.	Saralnitzk Spit, Taganrog	Azof Sea	2F.	34	7	——— Light-vessel shifted to South side of channel, and to be left to the southward. Two lights vertical.

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

Remarks on the East Side of the Gulf of Siam.—*With a Chart.*

[The chart which accompanied the paper of our correspondent being very imperfect, has been replaced here by another more correct, which has been considerately offered, and, although this does not contain the details of the inshore navigation, it will perhaps be more serviceable to the navigator with the information which follows. For ships bound to Siam we recommend the whole Admiralty chart of the Gulf.]

Ships bound to Kampot during the N.E. monsoon, should stretch across after leaving the Straits of Singapore, and endeavour to make the coast of Borneo on one tack, making an allowance for a current of one and a half to two and a half miles an hour. They should then pass through one of the channels between Borneo and the Natunas, (a correct chart of which has been published by the Admiralty from the Surveys of Lieut. Gordon of the *Royalist,)* and then work to the Northward until able to weather the Natunas, when they will fetch Pulo Obi, at the entrance of the gulf. If the wind be moderate, a good sailing vessel may work up between the Anambas and Natunas, and endeavour to make Pulo Obi; but no time should be lost in working in the open sea, as the winds will be generally more favourable for getting to the Northward in the gulf than outside.

Pulo Obi is a high hilly island, covered with forest, and may be seen in clear weather at the distance of 45 miles, but a thick haze that usually hangs over it in the N.E. monsoon, conceals it, and it sometimes cannot be made out when only 15 miles off. Its position as given by Horsburgh is correct, viz., 8° 25′ N. and 104° 54′ E. If a vessel is well to the northward she may pass through the channel between Pulo Obi and the mainland, where there is deep water near the island (15 to 16 fathoms) shoaling quickly on the shore side from 10 fathoms to 3. To the eastward of this island the water is not so deep as represented in the charts, and the lead ought constantly to be attended to, as Captain Welch, of the *Polka*, who has twice passed through this strait, tells me that with Pulo Obi bearing W.¼S. and distant 10 or 12 miles he had soundings of only 3½ and 4 fathoms, and carried these depths until close up to the island. Working along this coast to the eastward on a voyage to China, in the *Pantaloon*, we shoaled very quickly from 15 to 10 fathoms, next cast 7, and had 6½ in stays, Pulo Obi bearing S. 85° W.

Cambodia Point or, as it is called in Horsburgh's chart, Mni-Sha-Kaoc, is in line with the highest part of Pulo Obi when bearing S. 30° E. It is low and covered with trees, and has several ranges of fishing stakes off it; beyond which shoal water extends some distance. Several ships have grounded here by hauling up too soon after rounding Pulo Obi, and to avoid the spit it is necessary not to bring Pulo Obi more to the southward than S.E.b.E. until round the point.

A little to the N.E. of the point is the mouth of Camao river, in lat. 8° 38′ N. and long. 105° by an estimated distance. The soundings about 4 miles off are 5 fathoms, and by the account of the natives there are 3 fathoms in the river's mouth. This I had not an opportunity of verifying. There seems to be but little trade carried on here, and all intercourse with Europeans is strictly prohibited. The coast from this river to the northward is uniformly low and level without any feature of interest or any town of consequence until Tecksia is reached. It is lined by a mud flat, for which the lead is a sufficient guide.

Ships bound to Kampot, however, generally pass outside of False Obi, an island of a moderate size bearing N. 30° W. from Pulo Obi, and distant from it about 11 leagues. It lies in lat. 8° 56′ N. long. 104° 38′ E. by observations made in passing it during different voyages. It makes when bearing about

North like two small hummocks, and may be seen from a vessel's deck 29 miles. The South end of this island should not be approached, as the commander of one of the Siamese vessels informed me that he had grounded on a shoal south of this island that he supposed extended so far as only to leave a narrow channel between it and Camao river. No bearings were given in order to fix its position, but it is probable that it joins a small island bearing S. 29° E. from False Obi, distant 5 miles, from which some rocks and shoal water extend to the southward.

In passing here in the night a vessel should not come under 11 fathoms, nor in standing to the westward deepen over 17, as the depth increases rapidly after this to 20 and 25 fathoms, which places a ship very near Pulo Panjang.

This island is moderately elevated, covered with trees, and may be seen about 30 miles. By observations brought on from Pulo Aor and also from Pulo Obi, on different voyages, I make it 9° 18′ and 103° 34′. Mr. C. Turner, Master of H.M.S. *Bittern*, in the *Nautical Magazine* for November, 1853, gives the position of this island 9° 16′ N., 103° 30′ E., reckoned from Singapore flagstaff in 103° 50′. He describes it as being very flat or even, and as being seen about 30 miles, its height 614 feet.

There are several small islands and rocks round and near to the larger island, and N. 65° E. about 11 miles, lies a small peaked island called Anak Panjang, which may be seen 12 or 14 miles off. One vessel made Panjang when bound to Kampot, and, having no chronometer on board, took it to be Pulo Dammar, spent two days in trying to beat round its western end, and at last bore up to the eastward of it, and stood to the northward as far as Kapongsom river before he discovered the mistake. This is an error not likely to occur if the lead is attended to, as south of Panjang the soundings are generally 24 and 25 fathoms, while South of Dammar they are generally 11 and 12.

Passing outside of False Obi a vessel should steer to the northward, in soundings of 13 or 14 fathoms, to make Pulo Dammar, an island of some size; the highest peak of which, about 1,100 feet in height, is in lat. 9° 40′ by altitudes taken when at anchor with the peak bearing East, and in long. 104° 24′ by bearings taken upon the Twins, two small islands in Kampot harbour. There are several small islands to the eastward of Dammar, with two or three to the northward, and two to the southward, which may be the means of identifying the island should no observations be obtained.

The South end should not be approached within 5 or 6 miles as a spit, steep to, projects from it. The channel to Kampot lies to the westward of Pulo Dammar, between it and the small islands called the Brothers, the northernmost of which bears from Dammar N. 58° W. It is a quoin-shaped island about 368 feet in height, and lies in lat. 9° 50′ N. and long. 104° 8′ 30″. The other Brother is less elevated and more level than the northern one, and bears from it S.W.b.W.½W. To the S.W. of this is a bare rock, connected to the South Brother by a reef, and with discoloured water extending about 1½ miles to the S.W. of it.

The channel between these islands and Dammar is safe to beat through, with soundings of 15 and 16 fathoms about mid-channel. Near the Brothers they are rather irregular and shoal suddenly, for which reason it is better to keep over towards Dammar Island, where they shoal more gradually. When the Brother bears W.b.S. the water shoals to 10 fathoms, and decreases gradually to 5 in standing to the northward. The channel to the westward of the Brothers is also safe, but has much deeper water than that just described, for which reason it is less eligible should a vessel have to anchor to stop tide.

The island of Koh-tron, called by the Siamese Koh-Dud, bounds the channel to Kampot to the westward. It is of considerable extent, stretching North and South about 28 miles, and is of a triangular shape, the apex being to the southward; off which a chain of islands extends to a considerable distance.

The southermost bears from the North Brother N. 69° W. Most of these islands are small, but there are five or six of a moderate size, quoin shaped, like the hills upon Koh-Tron, their bluff faces to the E.N.E. Between several of these islands there are deep water channels; but reefs extend some way to the eastward of many of them. The East coast of Koh-Tron trends about North and South, and is lined by a sand flat which is very steep to.

From about the middle of the island there is a chain of hills parallel to the coast continuing nearly to the North extreme. The whole of the island is thickly wooded, and only the shore parts appear to be inhabited, principally by Cochin-Chinese, for although in the empire of Cambodia it has been seized upon by the unscrupulous inhabitants of Cancao.

The Twins are two small islands lying N.N.E. and S.S.W., surrounded by a reef of coral rocks. The North one, by observations taken upon its North end, is in lat. 10° 13′ 30″ and 104° 17′ 30″.

When abreast of the Brothers, and with the North one bearing W.b S., the Twins will be seen bearing about N.b.E. They are in one, bearing N.N.E., and may be steered for on this bearing until the water shoals to 4½ fathoms, when the Little Quoin, a single isolated hill upon Koh-Tron, will bear W.b.N. When about 3 or 4 miles from the Twins, steer to pass about midchannel between them and Koh-Tron, as the channel to the eastward of the Twins is not safe From the Twins to the N.E. point of Koh-Tron a bar of sand, with 3 and 3¼ fathoms, extends in a North and S.E. direction. This bar, from the overfalls near it, is rather alarming to strangers; but although crossing it in every direction, both by night and day, I have never found less than 3 fathoms upon it. By keeping about midchannel, a vessel will deepen when the Twins bear S.E.b.E.

When the Twins bear about E.S.E. a hummock on the mainland will be seen, making like two small islands, bearing about North. This hummock, called Goonong Susu or the Paps, forms a good leading mark and may be kept bearing about North until Gunung Kwala, the northernmost hill upon Koh-Tron, bears W.b.N., when a vessel should edge out to the westward and bring the Paps to bear N.¼ E. to N.b.E., to avoid some patches of 2¼ fathoms bearing S. 2° W. from the Paps.

Steering with the Paps bearing about N.b.E., a vessel may anchor when Rocky Island and Temple Island are in one bearing E.S.E. This was formerly the anchorage and may still be taken by strangers until they get acquainted with the landmarks of the place, but a better anchorage has been discovered more to the eastward. It was usually the custom to anchor at the outer anchorage and sound and buoy the channel to the inner one across a spit of sand with only 1½ fathoms on some parts. The leading mark across this spit is a small peaked hill to the eastward, about quarter of a point open of Kep Point, which is the extreme point of the bay to the eastward. A better channel to the inner anchorage, with a leading wind, is to steer as above directed until Temple Island, a small round island covered with trees, is on with the Kep Mountains, between the middle and South peaks, and steer for it thus until the West Pap bears N. 10° W., when it should be steered for on this bearing. This will take a vessel within half a mile of Rocky Islet, and this distance should not be much exceeded as at the distance of a mile the water shoals from 4 to 1¼ at a cast, upon the spit of sand already mentioned. The bearings for the inner anchorage are:—West Pap N. 10° W.; Kep Point S. 80° E.; Rocky Islet S. 25° E.; 3¼ fathoms, mud.

Should the weather be hazy, or any difficulty experienced in making out the Paps, the Elephant Range, a mountain on the main upwards of 3,000 feet in height cannot be mistaken. The highest part of this kept N.b.W.½ W. after passing the Twins will lead a vessel up to the outer anchorage. In beating up here great care is required in taking bearings, as from the distance of most of

the objects the mistake of 1° may put a vessel from 10 fathoms into 2 on the bank that lines the shore of Koh-Tron. It is therefore advisable to trust to the lead, and whenever a cast of 8 fathoms is had with the Twins bearing to the southward of E.S.E., a vessel should tack to the eastward. To avoid the shoal patches on the East side of the channel there is a small pyramidal hummock like a sugar-loaf; this kept open of the West shoulder of the Paps, will keep a vessel clear, and is a good mark for tacking. As a general rule it may be observed that the deepest water is nearest the edge of the banks, which are mostly of sand.

The latitude of rocky Islet, which bears S.S.E. about 2 miles from the inner anchorage, was found by altitudes observed upon it to be 10° 29′, and the longitude, deduced from the mean of seven passages, 104° 15′, reckoned from the East Peak of Pulo Aor in 104° 34′ 30″, the time being obtained by equal altitudes, and the greatest difference 1·5′ of long.

The tides here are very irregular and seldom rise above 2 feet. There is generally a high tide at noon or midnight on the days of full and change, but the mean of a month's observation gives the time of H.W. three hours after the moon's passage. Sometimes there are three high tides within a few hours of each other, at other times only one in twenty-four hours. The diagram kept on board the *Pantaloon* presents strange anomalies, which would require a much longer series of observations to reduce to a system. The set of the tide is governed entirely by the wind, and as an instance it may be stated that for six weeks in the months of June and July, at which period constant westerly winds prevailed, the *Pantaloon* never once swung with her head to the eastward. At these times considerably less water is found on the banks.

The whole of the coast of the mainland is lined by an extensive mud flat, stretching out in some parts 5 or 6 miles. Some of the spits are rocky, and on one of these the English barque *Seagull* was wrecked while attempting to leave Kampot by the western channel. Bearings taken with the boat fast to the wreck places this shoal about 4 miles West from the outer anchorage, as given above.

The town of Kampot lies about 3 miles up the Western branch of the river; which has two entrances, one close to the foot of the Paps, which is very shallow and can only be used by small boats, and the other further to the westward, which is deeper and has the channel marked by bushes, but even this has scarcely water enough for a ship's long boat at the end of the dry season.

Besides the islands already mentioned, which are those generally seen in a voyage to Kampot, there are others which we had an opportunity of seeing during a search for an English ship called the *Victory*, which had been seized upon by Chinese Coolies on board and brought into the Gulf of Siam. This intelligence was brought to us by a fishing boat, which, as a voucher for his honesty, brought us a bill for goods supplied to the Captain by a house in London, that had been given by one of the seamen on board. We proceeded first to Pulo Obi and followed the vessel closely along the coast, but did not succeed in finding her, as the Chinese, having no doubt been informed of our proximity, gave the vessel up to the crew and landed on the coast.

This, as already described, is very low and uninteresting, but appeared to be safe to work along. The first island that is made after passing False Pulo Obi is a high island, called Tama-sou, to the N.E. of Pulo Dammar, with two summits—the southernmost a flat table hill, and the northernmost peaked. On the South and East sides these hills descend steep to the sea, covered throughout with trees, and the island appears to be inhabited. The North peak is in lat 9 48′ N. and long. 104° 40′. Between it and the main the soundings are 4 and 5 fathoms, and this is the channel usually adopted by junks proceeding to Tecksia and Cancao

Tecksia is a place of considerable trade, and has the reputation of affording

a haunt to piratical prows and junks. We found a fleet of upwards of forty anchored under the lee of an island called Tecksou, but they proved to be trading junks from various parts of China and one or two from Singapore. There is a large river here, which runs through a fine rice country, and thus enables a great number of vessels to load. The island already named Tecksou is close to its mouth, and is in lat. 9° 58′ and 104° 51′; between which and the main there is no channel, except for boats. At anchor off this place the hills about Cancao could be distinctly seen; but as we had already lost much time, and as square rigged vessels are not allowed to visit it, we bore up for Kampot between Tamassou and a peaked island called Texere, something like Pulo Tingy on the Malay coast, in lat. 10° 2′ and 104° 36′ E. The soundings here were generally 4 and 5 fathoms until we reached the usual track for proceeding to Kampot. Both the islands last mentioned may be seen in clear weather in the passage to or from Kampot. I may state that the sketches accompanying these remarks have been adopted in the Admiralty chart of the China Sea, and Commanders of vessels should procure the new edition of that chart, as they will find it tolerably correct.

GEO. D. BONNYMAN.

PORT WILLUNGA.—SOUTH AUSTRALIA.—*Port Willunga: Position.*—Port Willunga is situated in a small Bay, measuring a mile and a half from point to point, on the east side of Gulf St. Vincent, thirty miles S. ¼ W. of the Light-ship off Port Adelaide, and twenty-seven miles N.E. ¼ E. of Cape Jervis.

White Cliffs.—This part of the coast may be recognised by a remarkable range of white cliffs, lying within the limits of the Bay.

Reefs to the Southward of the Anchorage.—Vessels intending to visit Port Willunga should stand in for the white cliffs, and bring the end of the Jetty lately erected to bear E. by N. ¼ N., to clear a reef which extends in W.N.W. direction from the southern point of the Bay, and runs parallel to the coast, to the southward, for fully two miles. This reef (the only danger near the anchorage) shelters the Bay from southerly winds; but all other winds, from N.N.W. to S.W., round by south, blow directly into it; and, when their force increases to a gale, bring in a heavy sea, to ride out which vessels must be well found in anchors and cables.

Reef.—The reef alluded to is composed of hard rocks, and has ten fathoms close to its outer extremity, on which are two fathoms, with rocks dry at low water close to.

Vessels from the Southward.—Vessels approaching Port Willunga from the southward should guard most carefully against this reef, and not haul in for the Bay until the Jetty bears E. by N. ¼ N. in one, with a small house on the high ground inland; on this line they may stand in safely, either anchoring or picking up the moorings in five fathoms.

Vessels from the Northward.—Vessels coming from the northward will find no danger in approaching the coast, after the reefs of the Onkaparinga (seven miles north of Port Willunga) are passed.

Moorings.—Heavy moorings for two vessels have lately been laid down off the Jetty, in five fathoms. Commanders and Masters of Vessels, using the moorings, must observe the following directions for their guidance:—The upper buoy chains, which are of ⅞in. chain, are not intended for vessels to ride by. Masters of Vessels must haul up on this portion of the buoy chain, until they can unshackle it from the large chain of 1⅛in. attached to it, of which there are thirty-seven fathoms to each buoy. This length of chain being insufficient fo

vessels to ride easily by during bad weather, it will be necessary for Masters of Vessels to shackle on both their chains to the buoy chain, and veer away according to circumstances; the longer the range the better in bad weather, as, the moorings being so heavy, a great strain is brought on the hawse pipes and bitts of vessels, unless they are riding with a long scope.

Masters responsible for Damage or Loss.—Masters of Vessels will be held esponsible for any damage or loss they may occasion to the buoys or moorings whilst using them.

The Bearings are Magnetic; variation, 5° East.

Leading Lights for Channels through New York Bay.—*Range Lights from East End of Gedney's Channel, between Sandy Hook and Flynn's Knoll.*—Two fixed lights near Point Comfort, New Jersey.

The front light will be on the keeper's dwelling, (white) near the beach.

The rear light three-quarters of a mile from the front one, in a white tower. The keeper's dwelling is white, and north of it.

The front light is 40 and the rear one 76 feet above the mean level of the sea, and should be visible outside the bar. The front building is distinguished from others by the lantern on its centre, and the rear one by the lantern being visible above the trees.

Main Ship Channel Range Lights.—Two fixed lights on the New Jersey shore, west of Highlands of Navesink.

The front light is near the beach, with two white and one red horizontal bands. The keeper's dwelling is white, and west of the tower.

The rear light is on the north side of Chappel Hill, one and a half mile from the front light, and be on the keeper's (white) dwelling.

The front light is 60 and the rear one 224 feet above the mean level of the sea, and both should be visible the entire length of the range line.

They can also be readily recognised by the tower of the front light, and by the lantern of the keeper's dwelling, about one mile east of Pigeon Hill.

Swash Channel Range Lights.—Two fixed lights on Staten Island, N. Y.

The front light will be in a tower near the site of the "Old Elm Tree" Beacon, with two white and one red horizontal bands. The keeper's white dwelling is south of the tower.

The rear light is on a hill near New Dorp, about one and three-quarters mile from the front light, in a lantern on the keeper's white dwelling.

The front light is 59 feet and the rear light 189 feet above the mean level of the sea; and both should be seen well outside of the bar at Sandy Hook.

They can also be readily recognised by the shape of the tower, and the lantern on the dwelling.

Sailing Directions.—Masters of Vessels intending to enter by Gedney's channel, and Main Ship channel, around the S.W. spit buoy, should run on a N.W. ¼ W. course from the light-vessel for the black and white perpendicular-striped nun buoy at the outside of Gedney's channel, and from it W. by N. through the channel, keeping between the buoys until the Range Lights near Point Comfort, New Jersey, are in one, when haul up for them, and continue upon the range until the two main channel lights are brought in range, which will also be shown by the main light at Sandy Hook being a little open to the southward of the West beacon.

From this point the Main Ship channel range will take them up clear of the "West Bank," and Craven's Shoal.

Masters of Vessels intending to pass through the Swash channel, can bring the lights in range just outside the bar, and run for them until the red can buoy, No. 8, (which marks the upper middle) is passed, or until the Main Ship channel range is on, when haul up on that range until clear of the "West Bank."

Vessels drawing more than 17 feet should not be taken through this channel on the range line at low water.

A foot more water may be carried through this channel, after crossing the bar by keeping a little to starboard, and opening the front light clear of the red one.

The Swash channel range line indicates, by the most recent survey, 18 feet at low water.

TEMPLAR BANK, CHINA SEA.—The China Mail, of the 21st August states, that the *Salsette*, on the 11th of that month signalized a ship in 12° N. and 117° 7′ E., and on the same day passed over some shoal patch of sand or coral, but before the deep sea lead could be hove the ship was clear. Thus the position of this "patch" is left uncertain, but it may be a continuation of the Templar Bank, 50 miles to the Southward of the above, and ships are cautioned to look out accordingly.

LIGHT HOUSE ON CAPE HANCOCK, MOUTH OF COLUMBIA RIVER, WASHINGTON TERRITORY.—A Fixed White Light, first order of Fresnel, illuminating the entire horizon. The tower is white, on the pitch of the Cape, about 190 feet above the sea. The light is elevated about 230 feet above the sea level, and will be seen, from a height of 15 feet above the water, 22 nautical or 25 statute miles.

The latitude and longitude and magnetic variation of the Light, as given by the coast survey, are:—Lat. 46° 16′ 35″ N. Long. 124° 02′ W. Magnetic Variation, July, 1851, 20° 45′ E.

The Light will be exhibited for the first time on the night of the 15th of October, 1856, and thereafter every night from sunset to sunrise, until further notice.

A Fog Bell of 1,600 lbs. has been placed on the Bluff in advance of the Light Tower, which will be sounded during foggy or other thick weather, night and day, from the same date.

LEFEVRE'S PENINSULA.—In order to afford a guide for Vessels anchoring off the Pilot Station, and for Boats landing on the beach thereat, a Red Light, visible about three miles on an E.N.E. bearing, will be exhibited from the Pilot Station on Lefevre's Peninsula, on and after the 4th of August, 1856, from sunset to sun-rise.

Copy of a Resolution of the House of Representatives of the United States, authorizing the purchase and restoration to the British Government of the ship *Resolute*, late of the British Navy.

Whereas it has become known to Congress that the ship *Resolute*, late of the navy of Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, on service in the Arctic seas in search of Sir John Franklin and the survivors of the expedition under his command, was rescued and recovered in those seas by the officers and crew of the American whale-ship, the *George Henry*, after the *Resolute* had been necessarily abandoned in the ice by her officers and crew, and after drifting still in the ice for more than one thousand miles from the place where so abandoned—and that the said ship *Resolute* having been brought to the United States by the salvors at great risk and peril, had been generously relinquished to them by Her Majesty's government. Now, in token of the deep interest felt in the United States for the service in which

Her Majesty's said ship was engaged when thus necessarily abandoned, and of the sense entertained by Congress of the act of Her Majesty's government in surrendering said ship to the salvors:—

Be it resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the President of the United States be, and he is hereby requested to cause the said ship *Resolute*, with all her armament, equipment, and the property on board when she arrived in the United States, and which has been preserved in good condition, to be purchased of her present owners, and that he send the said ship with everything pertaining to her as aforesaid, after being fully repaired and equipped at one of the navy-yards of the United States, back to England under control of the Secretary of the Navy, with a request to Her Majesty's government that the United States may be allowed to restore the said ship *Resolute* to Her Majesty's service—and for the purchase of said ship and appurtenances, as aforesaid, the sum of forty thousand dollars, or so much thereof as may be required, is hereby appropriated, to be paid out of any money in the Treasury not otherwise appropriated.

Approved August 28, 1856.

NEW BOOKS.

THE DISCOVERY OF THE NORTH-WEST PASSAGE.—*By H.M. Ship Investigator, Captain Sir Robert Le Mesurier M'Clure. 1850-1-2-3-4. Edited by Captain Sherard Osborn, C.B.* Longman, Paternoster-row.

After a lapse of three centuries, and after many a hard struggle, it has fallen to the lot of the British navy to secure for England the glorious laurel-wreath for which so many nations have nobly contended, and for which great sacrifices have been made by all who have been engaged in this enterprise.

It has fallen to the lot of Sir Robert M'Clure to achieve the North-West Passage by passing with his gallant associates from the Pacific into the Atlantic Ocean, by boldly navigating the Northern Coast of America in search of Franklin and his lost companions.

The volume now before us has a two-fold interest; first as relating the voyage of the *Investigator*, from Sir Robert M'Clure's own journals, and secondly as being edited by Captain Sherard Osborn, who has greatly distinguished himself in the profession during the last war, as he had previously done in the arctic voyages, and who is far better read in all arctic literature than any officer of the present time. Captain Osborn has moreover the pen of a ready writer, and has already produced a charming little book descriptive of his first voyage (when in command of the first screw steamer which ever stemmed the ice of Baffin Bay—the gallant *Pioneer*,) under the title of "Stray Leaves from an Arctic Journal." With such an editor,—no small commendation,—the book before us will take that place to which it is justly entitled among our standard works.

The voyage of the *Investigator* is familiar to us all. Suffice it then to say that she was the first vessel that ever rounded Point Barrow, and the first keel that ever ploughed the waters of the Arctic Ocean on the Northern shores of America, pushing her way up to the Northern face of Banks's Land, where she was ultimately abandoned, being unable to penetrate through this portion of the passage, some 60 miles in width, which is apparently for ever covered over with "thick-ribbed ice." That barrier, dividing the East end from the West, has been (not badly) named "Temple Bar,"—and, but for this barrier, the North West Passage would unquestionably be an available passage for ships. It is, however, a fatal obstruction,—more hopeless than Temple Bar itself, which

may possibly be swept away in a future generation,—while the ice in this part of Barrow Strait will dissolve only with the great globe itself.

Quitting the vessel at Banks's Land, and crossing the 60 miles of ice in the straits, Sir Robert M'Clure and the officers and men joined the *Resolute*, Captain Kellett at Melville Island, and proceeded in her towards Beechy Island, where they embarked for England in the *Phœnix*, leaving the good ship *Resolute* to follow as a matter of course., which ship, indeed, by the adjacent page, may be expected at Spithead in a few days.

We subjoin one extract from this most agreeable volume, the editing of which does great credit to Captain Osborn, and we regret that we have not space for many more.

"The morning of the 26th of October, 1850, was fine and cloudless; it was with no ordinary feelings of joy and gratitude that Captain M'Clure and his party started before sun-rise to obtain from the adjacent hill a view of that sea which connected their discoveries with those of Sir Edward Parry. Ascending a hill 600 feet above the sea level, they patiently awaited the increase of light to reveal the long sought for North-West Passage from the Atlantic to the Pacific oceans.

"As the sun rose, the panorama slowly unveiled itself. First the land called after H. R. H. Prince Albert showed out on an easterly bearing; and from a point since named after the late Sir Robert Peel, it evidently turned away to the East, and formed the northern entrance of the channel upon that side.

"The coast of Banks Land terminated about twelve miles farther on than where the party stood; and thence it turned away to the North-West, forming the Northern coast of that land, the loom of which had been so correctly reported and so well placed by Sir Edward Parry's expedition thirty odd years before. Away to the North, and across the entrance of Prince of Wales Strait, lay the frozen waters of Barrow's or, as it is now called, Melville Strait; and, raised as they were at an altitude of 600 feet above its level, the eyesight embraced a distance which precluded the possibity of any land lying in that direction between them and Melville Island.

The North-West Passage was then discovered! All doubt as to the water communication between the two great oceans was removed; and it now alone remained for Captain M'Clure, his officers, and men, to perfect the work by traversing the few thousand miles of known ground between them and their homes.

"The feelings of Captain M'Clure and his companions may be easily understood when we remember what they had gone through to earn this success, and how the hand of the Allpowerful had borne them through no ordinary dangers in their gallant efforts; but no arrogant self-estimation forms part of the crowd of tumultuous feelings which made their hearts beat so high, and never from the lips of man burst forth a more fervent Thank God! than now from those of that little company. And we feel that they had reason to be proud as well as grateful, when we call to mind the time, the money, the men which England had previously lavished, without success, on the discovery of the great geographical problem.

"Franklin and his heroic followers, had, indeed, not been found; but, in seeking them, the great secret they had sought to solve had been unravelled, and Captain M'Clure felt that, even should he be so unfortunate as never to discover the missing expedition, he nevertheless should not return to his country with empty hands.

"The position of Mount Observation from which the important discovery had been made, was ascertained to be in latitude (observed) 73° 30′ 39″ N., longitude 114° 39′ W., and by lunar 114° 14′ W The travellers encamped that night on Cape Lord John Russel, and cheered lustily as they reached the shores of Barrow Strait. A mimic bonfire, of a broken sledge and dwarf willow, was

lighted by the seamen in celebration of the event; and an extra glass of grog, given them by the leader, added to their happiness.

"The question of a North-West Passage being now placed beyond all doubt, the rapid fall of temperature warned Captain M'Clure that he should return to his ship without delay, and terminate the trials the whole party were exposed to every night. Their fur robes were frozen into a solid mass, which could only be thawed by the men lying upon them for some hours; the blanket bags were so stiff from the same cause as to stand erect; and their clothes, caps, whiskers, and beards were frozen together, and required to be thawed inside the tent after they had retired to rest; and when the clothes were taken off, they had to be placed under the body that they might not freeze again; and the hardships and discomforts to be endured in consequence of the lateness of the season, although no novelty to the arctic traveller, would appear almost fabulous to others, if minutely described. From Point Lord John Russell, the coast of Banks Land was seen to tend away to the westward, and increase in boldness of outline and altitude. Much vegetation, for this latitude, was observed, and numerous traces of animals, such as the deer, hare, and ptarmigan, as well as of their destroyers the fox and the wolf; but not one of the animals themselves was seen. A large cairn was constructed, a due record of the visit of the party placed therein, and then, in the teeth of a S.E. gale, they commenced their return to the *Investigator*.

"The return journey might have ended seriously for the leader of the party. On the 30th of October at 2h. p.m., having seen the Princess Royal Isles, and knowing the position of the *Investigator* from them, Captain M'Clure left his sledge, with the intention of pushing for the ship, and having a warm meal ready for his men on their arrival.

"When still six miles from the ship the night overtook him, and with it came a dense mist accompanied with snow drift, which rolled down the strait and obscured every object. Unable to see his road, but endeavouring to preserve a course by the wind M'Clure continued to hasten on, until repeated and heavy falls amongst the broken ice warned him to desist or incur the additional peril of broken limbs. 'I now,' he says, 'climbed on a mass of squeezed up ice, in the hope of seeing my party, should they pass near, or of attracting the attention of some one on board the vessel by firing my fowling-piece. Unfortunately I had no other ammunition than what it was loaded with, for I had fancied when I left the sledge, that the two charges in the gun would be all I should be likely to require. After waiting for an hour patiently, I was rejoiced to see through the mist the glare of a blue-light, evidently burnt in the direction in which I had left the sledge. I immediately fired to denote my position; but my fire was evidently unobserved, and both barrels being discharged, I was unable to repeat the signal. My only hope now rested upon the ship answering; but nothing was to be seen, and although I once more saw, at a greater distance, the glare of another blue-light from the sledge, there seemed no probability of my having any other shelter for the night than that the floe afforded. Two hours elapsed: I endeavoured to see the face of my pocket-compass by the light of a solitary lucifer match, which happened to be in my pocket; but in this hope I was cruelly disappointed, for it fizzed and went out, leaving me in total darkness. It was now half-past eight; there were eleven hours of night before me, a temperature 15° below zero, bears prowling about, and I with an unloaded gun in my hands. The sledge party might, however, reach the ship, and finding I had not arrived, search would be made and help be sent; so I walked to and fro upon my hummock until I suppose it must have been eleven o'clock, when that hope fled likewise. Descending from the top of the slab of ice upon which I had clambered, I found under its lee a famous bed of soft dry snow, and thoroughly tired out, I threw myself upon it and slept for perhaps three hours, when upon opening my eyes I fancied I saw the flash of a rocket. Jumping

upon my feet, I found that the mist had cleared off, and that the stars and aurora-borealis were shining in all the splendour of an arctic night. Although unable to see the islands or the ship, I wandered about the ice in different directions until daylight, when, to my great mortification, I found I had passed the ship fully the distance of four miles.' Retracing his steps, Captain M'Clure reached the *Investigator* on the 31st of October, very tired, but otherwise none the worse for his rough and dangerous exposure to a winter's night in 73° North latitude. A few hours afterwards the sledge arrived under Mr. Court, and great was the joy on board, and hearty congratulations at their safe return, and the glorious news they brought."

A second edition of this interesting volume is already in the press.

Assassination of Captain Graves, R.N.

We find the following account of this sad event in the *United Service Gazette*.

A correspondent has sent us the following additional particulars relative to the lamented death of Captain Graves, R.N.—"From the lax interest taken by Captain Graves's predecessors in protecting the public from the frauds practised daily, even hourly, especially upon persons unacquainted with the regulations of the port, the boatmen were in the practice of charging treble, and, in some cases, quadruple, the stipulated price of fare, and, in fact, acting in any manner they thought proper; but on Captain Graves's appointment as superintendent, the rules and regulations of the port were promulgated and, as far as possible, strictly enforced. The boatman guilty of this vile murder had applied to Captain Graves, just as he was quitting the office of the Secretary to Government, in Strada Reale, to have his boat, which had been hauled up as a punishment, released. The man's insolent demeanour, however, obtained for his request a positive refusal, upon which the man declared that, as Captain Graves was starving his family, he would kill him, and immediately struck him twice in the side with one of those fearful knives that are commonly used by the lower order of Maltese for ordinary purposes. The knife having entered the intestines, the ordinary course of nature was suspended, and the greatly to be lamented officer expired after three days of extreme suffering.

"From information received (says the *Belfast Mercury*) we learn that about mid-day on the 25th ult. Captain Graves, having obtained a four months' leave of absence, was preparing to go on board the *Avon*, to sail that evening for England. Just as he was in the act of stepping into his carriage, a ruffian seized him from behind, and inflicted two stabs on the abdomen. One of these only wounded the skin; the other was at first considered trifling, but on the second day inflammation set in, and on the third, the 28th ult. he breathed his last. At Malta, where the genial character of the deceased was fully known, we can readily believe what is stated in the public papers—that a general gloom was diffused over the whole community. Nor could it be otherwise, when an officer who had served for five and thirty years in all climates, who possessed high scientific attainments and moral worth, and who, in all human probability, might have lived for many years, was suddenly struck down by the hand of an assassin. Here, in the north of Ireland, where the family of Captain Graves has for a long period been resident, where he was personally known, and had many attached friends, the sad event has excited a deep feeling of regret. In our own town it has been felt as a severe and sudden shock by several who had the happiness of knowing intimately the sterling worth of him who has been so suddenly cut off. About twenty-five years ago, when he was engaged in the survey of Lough Neagh, by orders of the Admiralty, he was frequently in Bel-

fast, took a warm interest in the efforts there made for the erection of the Museum, enrolled himself as a life member, and was present at the opening of that institution, as well as on many other occasions afterwards. It was by his invitation, and in his vessel the *Beacon*, that our lamented townsman, the late Mr. William Thompson, visited the Ægean, in 1841, accompanied by their mutual friend, Edward Forbes, the late eminent professor of the University of Edinburgh. It is, indeed, an impressive lesson as regards the uncertainty of human life, that in the space of less than five years the three scientific friends who had sailed together over the sunny waters of the Ægean should all have passed away."

The truth of all the foregoing we can personally confirm from a knowledge of this officer since he first joined the South American Survey under the late Admiral King; and we readily give insertion to the following in compliance with request.

It is proposed that a Monument shall be erected in Valletta to the memory of this lamented officer who, while in the upright and faithful discharge of his duty as a Servant of the Civil Goverment of Malta, perished from a wound by the hand of an assassin. No one was more extensively known and esteemed throughout the Mediterranean. His numerous and important surveys will hand down his name to future generations.

It is left for his friends, fellow citizens, and society in general at once to express, by some fitting tribute, their respect for the memory of a valuable public servant; their horror at a crime which has thus snatched him from the midst of a useful life; and their sympathy with a bereaved family suddenly deprived of a warm-hearted, upright and affectionate protector.

Subscriptions (in any sum not exceeding one guinea) will be received by W. Leonard, Treasurer, 14, Strada Ponente, Valletta, and by Messieurs Stillwell, 22, Arundel Street, London. Also Messieurs Hanson & Co., Smyrna and Constantinople.

TESTIMONIAL TO COMMANDER DRURY, R.N.—*late of H.M. Surveying Vessel "Pandora."*

It is with much pleasure we give place to the following, on which we need make no comment.

Auckland, 31st March, 1856.

Dear Sir.—In fulfilment of the intentions which were in course of being completed when you left us, as expressed to you in the interview with which you favoured us, it is now our pleasant duty and privilege to inform you that by this mail we have sent instructions to Messrs. Smith, Elder, & Co. of 65, Cornhill, London, to have prepared and to hold at your disposal a silver Tea Service, with the Inscription, a copy of which we enclose.

On behaalf of the Subscribers, we have the honour to request your acceptance of this acknowledgement of your many services to this province, and of the earnest and cordial discharge of your duty at all times while amongst us.

With every good wish for your own and Mrs. Drury's health and happiness,

We are, Sir,

Yours faithfully,

W. S GRAHAM

J. A. GILFILLAN.

Capt. Drury, R.N.

Inscription.

"Presented to Capt. Byron Drury, R.N., by the Members of the Chamber of Commerce, and some of the Inhabitants of the province of Auckland, New Zealand, as a testimony of their esteem, and in acknowledgment of the valuable services rendered to the Northern portion of the colony by his extensive surveys of its coasts and harbours, prosecuted with energy under many difficulties, and completed with such great ability, while in command of H.M. surveying vessel *Pandora*, during the last five years."

Auckland, N. Z. 18th February, 1856.

THE BARQUE GLOBE.—The following from the British Consul gives the particulars of the murderous transaction on board this vessel, the men having arrived at Portsmouth in the *Melampus*.

Constantinople, August 18th.

My Lord,—I have the honour to transmit the depositions relating to a flagract act of piracy committed in the Black Sea on board of the British barque *Globe*, of Alloa, John Scotland, master, on the 5th of July, by five foreign seamen, enrolled on the articles of that vessel, named Giuseppe Lazard, Giovanni Babazetto, Matteo Pettrick, Angelo Pastino, and Castello Galio. Only three of the criminals have been apprehended. It is supposed that Castello Gallo was murdered and thrown overboard by his companions after their escape from the ship in the boat; the other, named Angelo Pastino, I regret to state, has effected his escape, and it has not been possible as yet to capture him. It appears in evidence that the *Globe* proceeded to sea from the Bosphorus, bound to Balaclava, on the 4th of July, and that these five men rose against the master and the rest of the crew at about three o'clock in the morning of the 5th of July; that they murdered Joseph Pattison by cutting his throat from ear to ear while he was asleep; that they wounded Evan Evans so severely that he died of his wounds in the naval hospital of Therapia on the 20th of July; they also severely wounded Daniel Cullen by cutting his throat, and slightly wounded David Thomas; and having by these means overpowered the captain and the rest of the crew, they plundered them, and afterwards left the ship in the boat at about ten a.m. on the 5th of July, landing on the Asiatic coast of the Black Sea, near to Chili, about thirty miles from the entrance of the Bosphorus. The master immediately put back to the Bosphorus, and, having given notice to the Admiral, the Hon. W. Grey, of the circumstances, every effort was made to apprehend the criminals. The three who have been taken have been sent on board H.M.S. *Melampus*, to be conveyed to England to take their trial. The witnesses named in the margin [George Nelegan, David Thomas, Daniel Cullen, and William Scotland] will also proceed to England by the same opportunity. The master, John Scotland, proceeded to England in the *Globe* on the 11th of August, bound for Cork or Falmouth for orders; he will probably arrive in England about the same time as the *Melampus*, or not long after, and I have bound him over to appear when called on to give his evidence at the trial. I have also sent a box by the *Melampus* containing a pistol and other things connected with the crime, which may be required on the trial.

A. CARLTON CUMBERBATCH.

To the Right Hon. the Earl of Clarendon, K.G. &c.

THE MASSACRE ON BOARD THE ENGLISH BRIG GAZELLE.—The Board of Trade has received confirmation of this horrible affair by the natives of Woodlark Island, and it is understood that H.M.S. *Juno* has been despatched from Sydney to punish the murderers. The names of the unfortunate suffer-

ers, besides the Missionaries, were Capt. William Thomas Parkin (master of the *Gazelle*), of Deptford; Mr. Junius Parking (brother of the captain), aged 27, chief mate; Robert King, ship's carpenter, of Yarmouth; Henry Gould, of Chelsea, cook and steward; James Coffy, of Liverpool, aged 28; Henry Wilson, aged 57, of the United States, able seaman; John Gilligen, able seaman, of Boston; Joseph Fulkard, aged 32, able seaman, of Maryland; C. H. Bagust, aged 20, ordinary seaman, of Chelsea; and a lad, a native of Sydney. The case of the *Gazelle* is the third case of the murder of crews of vessels that has been perpetrated by the natives of the same islands within the last fifteen years.

New and Corrected Charts, &c.

Published by the Hydrographic Office, Admiralty, and Sold by J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

	Price	s.	d.
England, South Coast, Falmouth Harbour, Capt. G. Williams, R.N., 1855		3	0
Scotland, West Coast, Loch Gilp, Millport, and East Loch Tarbert, Captains Robinson and Bedford, R.N., 1847		2	0
,, Oban Bay, Captains Robinson and Bedford, R.N., 1856		0	6
Africa, South Coast, Algoa Bay, Lieut. Dayman, R.N., 1855		2	0
China Sea, Palawan Island, Commander W. T. Bate, R.N., 1854		3	6
N.W. Coast of America, Sketches of Plans of Ports in Queen Charlotte Island, Messrs. Inskip, Moore, Gordon, and Knox, R.N., and Captain Sinclair of the Hudson Bay Company, 1853		1	0
Vancouver Island, Nanaimo Harbour and Knox Bay, Messrs. Inskip and Knox, R.N., 1853		0	6
Tartary, Kuril Islands, corrected to 1856		3	0
,, Barracouta Harbour, Messrs. Freeman and Carr, Masters, R.N., 1856		0	6
Tide Tables for 1857, Computed by J. Burdwood, Master, R.N.		1	6
Graphic Methodof Correcting the Ship's Course for the Deviation of the Compass, Captain A. P. Ryder. R.N, 1856		1	0
Pacific Ocean, S.W. part, Captain Denham, R.N., 1856		0	3

Edward Dunsterville, Commander, R.N.

Hydrographic Office, Admiralty, November 22nd, 1856.

Certificates Cancelled or Suspended.

Where.	*Name.*	*Ship.*	*When.*	*What for.*
Fernando Po	– Holmes, *M.*	*Thornhill.*	18th Sep. '56.	Cruelty to his mate who died on board.
Shields	J. Rive, *M.*.	*Kohinoor*.	14th Nov. '56.	Drunkenness.
Liverpool ..	D. Shaw, *M.*	*Custos* ...	31st Oct. '56.	Drunkenness.
Constantinop	W. Dick, *m.*	*Ruthenia*.	7th Oct. '56.	Drunkenness.

M. master, *m.* mate.

LONDON: WALTER SPIERS, PRINTER, GREAT PRESCOT STREET.

INDEX TO VOLUME FOR 1856.

ENLARGED SERIES.

CHARTS AND ILLUSTRATIONS.

LONDON: WALTER SPIERS, PRINTER, GREAT PRESCOT STREET.