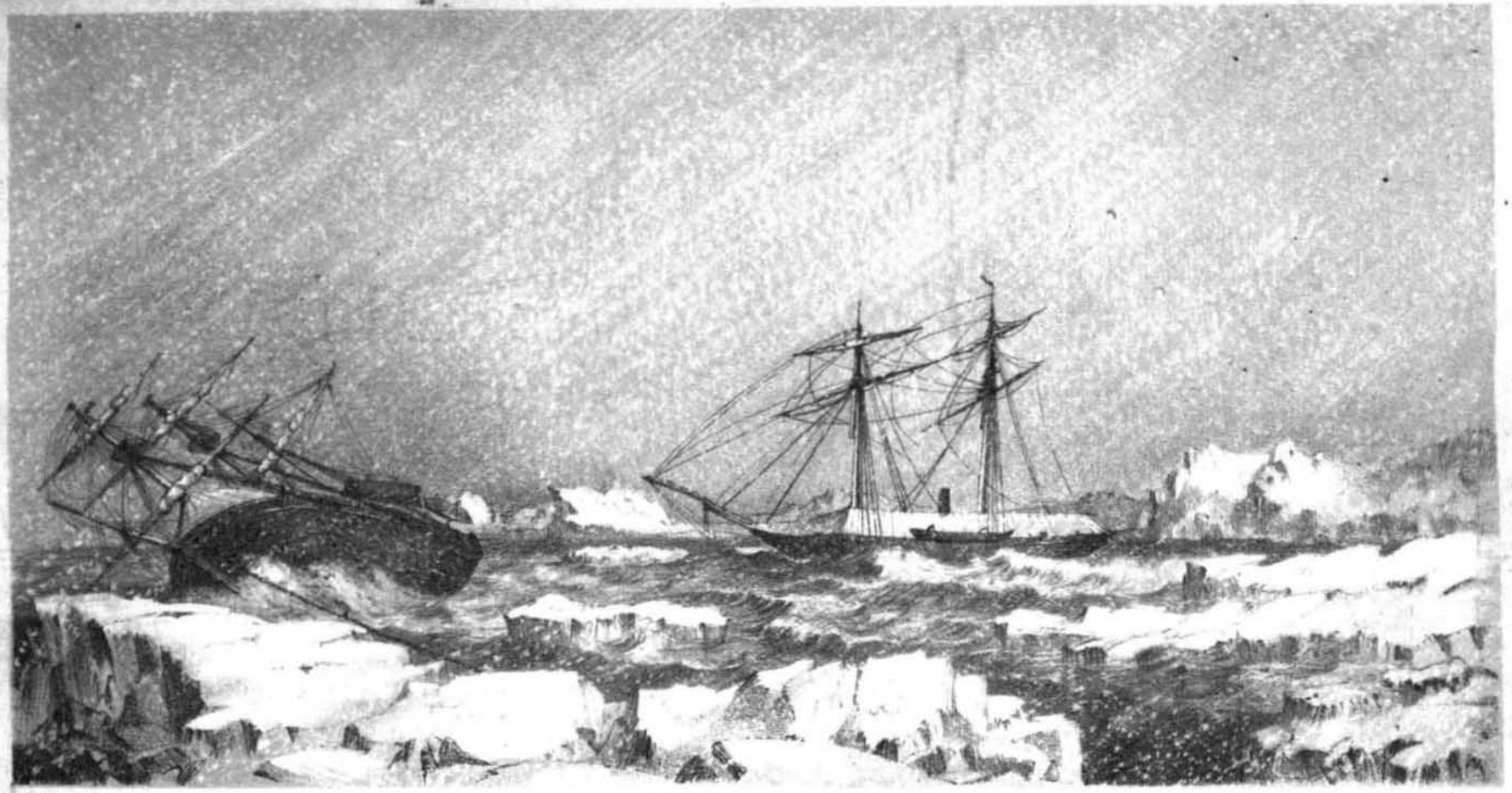
THE

LAST OF THE ARCTIC VOYAGES.



F.B. del

Vincent Brooks Lith

H.M.S. Assistance blown out of Winter Quarters

October 1853.

THE

LAST OF THE ARCTIC VOYAGES;

BEING A NARRATIVE OF

THE EXPEDITION IN H.M.S. ASSISTANCE,

UNDER THE COMMAND OF

CAPTAIN SIR EDWARD BELCHER, C.B.,

IN SEARCH OF SIR JOHN FRANKLIN, DURING THE YEARS 1852-53-54

WITH

NOTES ON THE NATURAL HISTORY,

BY

SIR JOHN RICHARDSON, PROFESSOR OWEN, THOMAS BELL, J. W. SALTER, AND LOVELL REEVE.

IN TWO VOLUMES.

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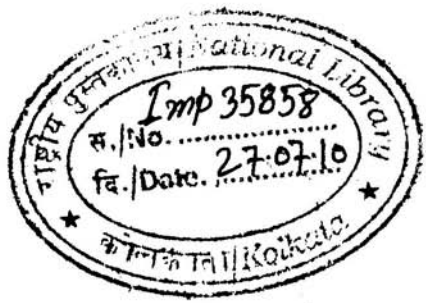

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THE

LAST OF THE ARCTIC VOYAGES,

UNDER THE COMMAND OF

CAPTAIN SIR EDWARD BELCHER, C.B.

CHAPTER I.

Return of Osborn.—Arrival of Despatches.—Fate of Bellot.—Statement of Survivors.—No account of Western Division.—The 'Breadalbane' nipped.—Departure of the 'Phœnix.'—Preparations for housing.—Arrival of Shellabeer.—Departure of Ricards.—Ventilation.—Esquimaux Huts.—Winter Fittings.—Air-pumps.—Hospital Ship.—Thermometers.—Rupture of Ice.—Loose Ice.

September 15.—FINE; temperature 17°, with sharp westerly wind; the outer ice in motion down channel, but our icemen report large lanes of water can be traced outside of them. At nine P.M. the 'Pioneer' was secured, but too near.

On the 17th, 18th, and 19th, officers were sent in advance, to relieve the return-sledge, under Lieutenant Osborn. Eventually Lieutenant Cheyne, with a sledge-crew of seven men and seven days' provision, was directed to advance two days, and there deposit two days', to remain until the fourth day, and then retreat for further instructions to Cape Osborn. Had he not then appeared, I intended to send Commander Richards

with the ice-boat before rejected. I had not quite determined I would not take her myself, and, if I had not lent my own crew for the service, most certainly would have done so. This left me very uneasy and unhappy,—all confidence at an end; not at all satisfied that if the ice should part from the shore, a sledge can get along the land; Mr. M'Cormick says *not, decidedly*. This difficulty of abstracting eighteen men from our force is really alarming; better not undertake such service until we have a lower temperature!

September 21.—Mr. Allard reports this evening that he had proceeded so far in advance, that Mr. Cheyne's sledge was beneath him, but not within sound of his voice; that he commanded the range southerly, but no traces for six miles at least.

September 22.—Under this impression I felt it unnecessary to push my advance officer to a lengthened march today. Preparation was made to forward the ice-boat, commanded probably by Commander Richards; but about 3.30, much to the astonishment of every one, Mr. Herbert's signal, at the advance look-out, intimated the approach of the party, and in a short time the sledges were in sight from the ship: opinions varied,—some deemed the period short. The time however warranted the journey having been made; the distance done was trifling. Telescopes tell strange tales, and it was soon evident that despatches had arrived, part of which the leading officers, Lieutenant Osborn and Mr. Herbert, carried.

Shortly after, Lieutenant Osborn announced three important events:—the arrival of Her Majesty's steamer 'Phœnix,' Commander Inglefield; the total loss of the

Breadalbane transport; and the melancholy death of Monsieur Bellot, Lieutenant de Vaisseau, in his attempt to reach me with the mails, all of which had been fortunately rescued.

The two last unfortunate facts solved all the doubts as to the Halkett's boat and pieces of wreck found near us. The 'Breadalbane' had been nipped, and in a few minutes was nowhere to be seen; yet portions of her boats and wreck had been traced thus far, even since the 21st of August,—a drift of fifty-six miles!

The fate of Bellot,—admired by all, the untiring supporter of Kennedy, a volunteer again with Commander Inglefield, and the intrepid adventurer in this case to carry our despatches even up to Cape Hogarth,—cut off, not by any immediate disaster common to his crew, nor even in their sight, but had slipped down between the hummocks and was no more seen! a most mysterious, incomprehensible death! He had been substituted for Commander Pullen, whose duties (Commander Inglefield having started before his arrival, to seek us by the western shore) required his presence on the spot. The boat (Halkett's) was provided by the 'Phœnix.' This melancholy event occurred on the 18th of August, at the same moment that we were also in jeopardy.

It appears, from the very incoherent statements of the men who accompanied Lieutenant Bellot, that near Cape Grinnell the ice exhibited a heavy crack, opening rapidly, and they were engaged conveying the contents of the sledge to the shore by means of Halkett's boat, when, having secured all but the sledge, the ice drifted off, Lieutenant Bellot desiring them "to let go the line."

Two men, William Johnson, Ab., and David Hook, were then with Lieutenant Bellot on the detached piece of ice. Johnson gives a most incoherent tale,—loses sight suddenly of Lieutenant Bellot, and supposes him to be drowned between the opening of the floe,—sees his stick, and shouts out for him by name. He then states, that he traversed spaces amounting to *ninety miles* (thirty to Cape de Haven, thirty to Cape Hogarth, and thirty back,) in *no time*, and yet, *by the watch* of Monsieur Bellot, at eight P.M. on the 18th they were adrift; at night, on the 19th, rejoin their companions, a march ahead! On the other hand, the evidence of the boatswain's mate differs widely: he was on shore, not included in the catastrophe, which might have affected the minds of the two blown off; he was therefore in a better condition to see, to judge, and to report *truly*, and dates and facts confirm his evidence. By his account, he watched for them six hours; he then travels to Cape Bowden, for which I will allow six hours more, and then suddenly finds them advancing on land and almost within hail!!

Now, it must be remembered that the misfortune occurred on the evening of the 18th of August, about eight P.M. by Monsieur Bellot's *watch*, and yet, on the night of the 19th, the *party* had reassembled, after a pretty fair land travel (irrespective of the absurd history of ice work at Cape Bowden). But what appears still more incomprehensible to my mind is, two of the most distressed of the party were left behind by their companions to die, starve, or for what purpose is not indicated, and these reach the 'North Star' on the 21st, where their statement is taken.

The receipt of despatches, private letters, newspapers, etc., occupied us closely until long after midnight, and afforded, for some days, matter for serious thought. That most pressing and most important, was the entire dearth of information respecting the Western Division, and, from all the information brought to me, there was neither an indication, nor any hope, of open water in the direction of Barrow Strait; however, we are now too well aware, even from heights greater than that of Beechey Island, that water sufficiently open for navigation may pass totally unperceived at ten miles to the southward of the island; and, looking to probabilities, it is just possible that the very cause which pressed the pack to us in this direction (viz. the gale of the 18th of August) would have left open water to the other vessels, by skirting Leopold Island and sticking to the southern shores of Lancaster Sound, by which Sir Edward Parry, Sir James Ross, and others, have easily effected their passages as late as September. Indeed this is the only reasonable chance at a late season, as the main current sweeps along that coast with great force, driving Sir James Ross, I am informed, forty miles to windward during a strong gale! Even if the 'Resolute' did not proceed, I think it probable that Commander M'Clintock, with the Intrepid,' and having on board the crew of 'Investigator,' would naturally cling to that shore, and, finding access to Beechey Island impossible, move on to England. Such indeed would be my wish; but this I do not now think probable, as Commander Inglefield found the entire Strait impeded by ice, and, from the effect of south-east gales on the ice, driven from Prince Regent Inlet, it

would of necessity, after pressing on Beechey Island and closing this channel completely, bar entirely any exit from Barrow Strait. It is also clear to my mind that the drift up this channel must have been unimpeded, from the undeniable evidence afforded by the pieces of the 'Breadalbane' found in this neighbourhood.

The history of the loss of the 'Breadalbane' has already made its appearance in the official despatches, but it may not prove uninteresting here to record the event and dates.

Early on Sunday morning, the 21st of August, a little after four, the first warning of "nip" was noticed on board the 'Breadalbane,' by the groaning of beams, creaking of bulkheads, etc., which drove the crew on the ice in rather unprepared garb. No time was afforded to save anything. In about fifteen minutes the vessel was destroyed, much to the astonishment even of the spectators from the 'Phœnix,' who came to render assistance. The 'Phœnix' herself had rather a severe nip, and will have their tale to tell, if they reach England safely. I am happy to say, that the most important of her stores were saved; but her coal, landed on such a dangerous, and to us inaccessible, station as Cape Riley, may never be available! If we have such a season as that experienced in August, 1852, it may be possible to remove it, but that is too much to expect.

On the 24th the 'Phœnix,' having seen more perhaps than was agreeable of this "*yachting climate*," departed for England, taking, unfortunately, but a very summary account of our motions; and I fear, from where Commander Pullen last saw us and our unaccountable ab-

sence, she will convey but gloomy intelligence of both Divisions, particularly as Commander Inglefield, by his letter to me, seemed to have imbibed some unfounded notion of my intention to return to England this season. Their Lordships however will clearly perceive, from the despatches, that no such idea ever entered the minds of Captain Kellett or myself.

The 'North Star' exchanged great part of her crew, obtaining nearly a new set of officers and men from the 'Phœnix;' and the history of her adventures last season will doubtless be magnified into something grand and sublime, perhaps got up for amusement at one of the minor theatres, and frighten the loving wives of some of our married men. But it is indeed no matter for joke; we have yet a dreary winter to go through, and, even if the 'Breadalbane's' fate does not befall us, it is not improbable may have to abandon our vessels, and seek refuge at Beechey Island. It is much to be regretted that amongst all the proposals so plentifully showered on the Admiralty for the benefit of this Expedition, no one thought of proposing *a house*—not even Commander Pullen—by the 'Isabel,' last season. It must ere this have occurred to many in England, that before August next there may be many collected at Beechey Island who may require shelter, and that the same or a worse accident than that to the 'Breadalbane' may again visit the 'North Star,' or indeed every vessel of this Squadron!

September 24.—Here we remain. Every hour convinces me that screw steamers alone, not sailing vessels, should be employed on this service. Had we been possessed of adequate moving power, this Division would, in

all probability, be at Beechey Island, or possibly Pond's Bay, where, from the intelligence lately furnished by Commander Inglefield, as to his meeting with a tribe from that locality, it is highly probable that information of a highly important character might be obtained from the natives, particularly as to whether the 'Erebus' and 'Terror' had been *seen sailing out of* Lancaster Sound. I have also strong hopes that Captain Penny may be able to afford further light on this matter from the natives at the Clyde, where, had our Squadron been released, it was my intention to winter, taking with me Mr. Miertsching, the interpreter of the 'Investigator.' The Navy List, and an official letter received by Commander Osborn from the Secretary of the Admiralty, announcing his promotion, although no notice reached me direct, induced me to give him an acting commission; and Mr. Ricards, Assistant-Surgeon of this ship, for duty in 'Pioneer,' received his acting appointment as Surgeon of the 'North Star,' *vice* Mr. M'Cormick, gone home. Mr. Toms, assistant of this ship, lent to 'North Star,' was ordered up to do duty in 'Pioneer.'

September 27.—The ice had now thickened considerably, and some few preparations were made, but not without suspicion, towards housing, but with express injunctions that "the tilt covering must be ready to furl at any sudden emergency." The interior house-framing and building was still proceeded with. Late as it was, I did not feel authorized to proceed further until the spring tide, about the 3rd of October, which would, I imagined, afford us some criterion as to the security of the ice.

From the tenour of my despatches to the 'North Star,

I daily expected the arrival of Commander Pullen, in order to arrange with him respecting the final winter and spring proceedings. He had already made one attempt, but, bad weather threatening, had put back, as the open water led him to suspect that the western ice might break up, and permit the 'Intrepid' or 'Resolute' to reach Beechey Island.

On the 30th however Mr. Shellabeer, Second Master, arrived with some few parcels and service letters, informing me that Commander Pullen expected to be able to quit on the 1st of October. I had already given Commander Richards intimation that, so soon as all was safe, I should despatch him, with two sledges, to make the necessary arrangements, if Commander Pullen did not come in person; from him also I expected to obtain a more complete idea as to the requisite force intended to be pushed over in the ensuing spring, in order to relieve and extricate, if necessary, the men of the Western Division. This arrival however relieved us of one sledge. Lieutenant Cheyne and Mr. Ricards would return by this convoy; the former to attend to tidal and meteorological observations, under Commander Pullen. The first sledge left on the evening of the 1st of October, under the command of Mr. Grove, to bring back the assistant-surgeon for 'Pioneer.' Mr. Shellabeer, with Dr. Ricards, would wait for my letters until the morning of the 2nd, and overtake the others before night. I still had my misgivings of the weather, and more than once thought of advancing a boat. Mr. Shellabeer had also reported, "strong gusts down the valleys," and "open water extending from Cape Osborn to Union Bay." It was for-

tunate he did not start, as originally intended; a smart gale from north to north-north-east sprang up, attended with heavy snow-drifts, which rendered travelling imprudent. Our leading party, under Mr. Grove, had doubtless "bagged," and were enjoying their comfortable rest in the tent, under shelter of some of the high land to the southward. It is strange that human beings will attach the idea of enjoyment to such unmistakable discomfort. I do not think it is confined to any rank; I recollect when I was young enough to be of the same disposition,—life in a jolly-boat was preferable to inactivity in the most comfortable cabin; I think however that that period has passed.

The gale has had no further effect than to disturb one of the huge masses of ice to which we are secured (?), and, as it grounded at low water, caused it to rend, which was attended with considerable noise, added to some slight alarm as to its deranging our present comfortable bed! As it occurred at the moment some of our crew were depositing the sweepings of the decks at the dirt-heap, it occasioned some little fright to the individuals concerned.

On the weather moderating, on the 3rd, Mr. Shellabeer, accompanied by Mr. Ricards, departed under the customary cheers on promotion. We now began to fancy that the ice had attained sufficient solidity to defy any later gale of this season, and, gradually relaxing my opposition to housing, I had now permitted it to advance progressively, until at length we had secured our boats in board on the skid-beams (seven feet above deck), and the covering was laced down. But I was a man persuaded

against his will,—I could not shake off a most incomprehensible feeling, which internally informed me I was *wrong;* I became very nervous, irritable, and excitable; opposition seldom cures such complaints. At every turn of tide our safety hummocks were disturbed, and the vibration touched a corresponding chord in my wakeful disposition.

On the other hand, I was also anxious to complete, at the earliest prudent moment, before winter became inconveniently obnoxious, my intended scheme of rendering the ship warmer and more comfortable than last season; but this could not be effected until the *housing was finally secured.*

As these remarks relate especially to my own views of winter protection and arrangements, it may be as well to warn those not interested in the discussion of such dry subjects, that they occupy one or two pages. I imagine that hitherto we have been in error as to the principles which should be observed in such arrangements. Taking into consideration the experience which I have had, derived partly from personal opportunities, partly from the records of each Arctic adventurer,—I mean, of those who afford us a proper estimate of Esquimaux habits, and the effect resulting to their constitutions;—further, upon some little experience upon the modes of life among the North Americans, Russians, Dutch, Danes, etc., I have arrived at the conclusion, that so long as a supply of pure air can be introduced to sustain the fires in their proper duty, and the healthy respiration of the beings confined between decks, all that is required is effected. Now, part of this duty is to demand fresh air, and to

cause it to flow in *only* by proper prearranged openings, which will inevitably result, as a natural consequence, if the openings are conveniently adapted. The fire produces heat, or, as a natural result, consumes air. I will not mystify the question by dealing with the gases, etc.,—these can be followed naturally by the initiated. I am writing simply for those who care not for the *rationale*, but wish for *facts* and proofs resulting.

It is not requisite that this pure air should be of such a low temperature as to cause, not only unpleasant, but unwholesome condensation and inconvenience to the lungs of those compelled to remain between decks; nor do I consider it, from my personal experience of last year, at all requisite to have *extra holes* to admit the cold air, when it defies our efforts to keep up a convenient or comfortable temperature. The idea of ventilation may drive a man too far—even to absurdity, and unconsciously induce disease at the moment he fancies himself the promoter of health. But we have nothing to do with robust men and their powerful lungs; we know that we have some very weak lungs; indeed we fear the result of this winter, and more particularly if we should be as damp between decks as last. Even at the moment I pen these remarks, I am told that in every direction, and before half our trial is prosecuted,—and we have already experienced a pretty good taste of damp in August and September,—"the lower deck is infinitely drier and more comfortable!"

I cannot lose sight of this excess of ventilation without stating that I enjoyed good health, had a dry cabin, but more cold air than I could keep out, disturbing my rest

completely. This, I contend, is not healthy,—is unpleasant, and repugnant to reason. It will naturally be asked, Of what use was our warming apparatus? The Sylvester did not act satisfactorily; it could not overcome the cold between decks, and the heat refused to travel to the cabins abaft the mizen-mast. Now in order clearly to comprehend my scheme, it is necessary to observe that the action of cold air is a direct downward pressure; that may be proved any frosty day, by standing a piece of funnel vertical, and another inclined at 30° from the perpendicular: the rime, or hoar-frost, will mark the disc in the vertical tube; but what is the result in the second? Every part of its vertical shadow, so to speak, supposing a vertical light, will be protected from any deposition. On the other hand, hot air will flow upwards at any angle of inclination. If Mr. Sylvester, or the workmen he employed, had duly considered this, his principle might have been carried out; but he will find few captains of moderate ability who would bring their ships two feet by the head simply to neutralize, or perhaps make good, bad arrangement (accident may do this, of which hereafter).

Now the Esquimaux, although perhaps illiterate, are a very shrewd, sagacious set of people; of this we have many undeniable proofs in our museums. They fully comprehend, or at least act upon, the laws relating to cold, and therefore, in the construction of their winter habitations, take great care to place the entrance below the level of their flooring of the main chamber (possibly, in those most complete, three feet), and furnished with a long, low, arched passage, compelling the occupants or

visitors to creep on their hands and knees until they gain the entrance to the inner chamber by a sort of step. Such were those of Western America, at Capé Lisburne delta, Icy Cape, and other places visited by me, and such are those at the Danish settlements of Lievely and the Whalefish Islands. The interior is dome-shaped, and the height admits of the breath ascending sufficiently to condense aloft without causing annoyance to those within. At the apex of the dome a square slab of ice is placed (in summer, a frame covered with skin); but in one I examined (deserted) with Mr. Collie, we noticed the action of Nature to carry off the heated air by fine grooves in the ice plate, as if cut by design, and possibly affording some degree of ventilation when the wind penetrated by the same. But to our object. The principle with them is to obtain dry, heated air, and this is effected solely by a lamp and animal temperature; the result is, that they are comparatively healthy, and no scurvy is noticed. It is true that their eyes suffer, from causes not well ascertained.

The principle of hot, dry air, even with salt food, and that not of the best quality, appears to overcome the scorbutic tendency among the civilized people to whom I have alluded. I do not recollect one single case, nor have I been able to find any recorded by others; and I made it my peculiar study to ascertain what diseases prevailed at every place visited by me in the Northern Pacific.

Now, the first, and very serious, defect in all these ships is the want of sufficient height between decks; and yet, if a vessel is taken up to convey troops or passen-

gers, to the Equator, or to Quebec, in either cold or hot weather, the law demands, and the Emigration Officers take care, that a certain height shall be available between decks. This, be it remembered, is simply for security from ordinary disease, as well as comfort. Surely we, who have to live in these vessels for years perhaps, require it more, where vital interests are at stake! The evil however principally lies in pushing out these ships, and determining the command at the latest moment,—when the consent of Parliament for the outlay may be obtained,—or possibly to save the expense of a few weeks' wages!

To fit a ship properly for this service requires something more than a seaman's head. These vessels were ordered by the Admiralty to be fitted with air-tight sections; but this was not satisfactorily, or trustworthily, executed; indeed the steamers were not close ceiled; however, had I known all the requirements before I left England, I could easily, with our own resources alone, have remedied them. Most certainly I would have hatched, instead of decked, the hold-beams; I would have made preparation beneath for placing the hatches during winter on the level with the Sylvester apparatus, and thus ensured a space sufficient for the escape of noxious air and damp from the lungs. These fittings would have strengthened the ship considerably at the expected position of nip. The great evil we are infested with—the immediate condensation of the breath on the beams—would thus be obviated.

On this true lower deck I would have shifted the range or cooking galley during winter, which, in addition to the

direct heat of the Sylvester, would tend to preserve a more equable and genial temperature. These two great fires at the lower level would, it is manifest, materially purify the air from the hold upwards; and their funnels should be so constructed as to carry off, by outer casings, all superabundant heat to the upper condensers, and thence horizontally, within six feet of the deck at the hatchway; but manifestly, *not perpendicularly*, and exposed to intense cold, such perhaps as would not allow vapour to ascend! By such an adaptation we should obtain full and healthy play for the lungs, and then even a colder, but dry, atmosphere would not perhaps be objectionable.

But as at present or hitherto arranged, the heat derived from the expenditure is contemptible. Let the scientific reader picture to himself the radiation from the galley fire impeded by a tinned bulkhead or casing to the fore-companion, distant but three feet and a half from the fire; further, that a constant volume of cold air rushes down this companion, condensing in visible clouds as it passes to the sides,—not a very pleasant position either for the unfortunates of the mess which is exposed to the blast from that door, which, on deck, is merely shielded by a tilt awning, old, threadbare, of last cruise, and this frequently left open for ventilation! Also no radiation, and the steam arising from cooking, struggling to escape by various channels, condensing in cavern-like drippings from the beams. At present all this is demolished, and that hatchway sealed! the radiation now reaches where it should, and is sensibly felt by the messes on each side; but the steam, where has it gone?

Above this galley, and immediately over the fire, an opening has been cut, furnished with a hinged hatch, serving as a valve and affording a vertical ascent to the steam; but this steam escapes into a fitted steam-chest including the funnel, which has an outer casing also, to aid the direct escape from the fore part of the coppers: this steam-chest occupies a space of seven feet square. Thus far one great evil is remedied; that is *un fait accompli*.

I now proceed to what would have been my arrangement had all these matters been duly reported on by our predecessors. I blame them not,—they are not engineers; it has not been with them, as with me, a kind of hobby. But one most important consideration, involving the safety and comfort of ship and crew, would have been adequately prepared before leaving port, and the housing become eventually but a very minor consideration. I think I hear some of the old Arctics exclaim, What will he be at next? But patience, my friends.

Cold, I have asserted, descends vertically, in preference, and if your chimney has not been provided to meet this, you must expect it to tumble into your fire and negative its value. Who ever dreams of entering his house by the chimney? yet we sailors undoubtedly pursue this most absurd principle in this very oppressive climate. This must be remedied; we cannot conveniently cut an entering port in the side, but, if requisite, it might be done, at great inconvenience, in the bow or stern: however, the evil is to be remedied, and I trust, even with our slender means, to effect it (when it can be completed) in such a manner that the ship may even

be *worked at sea* with her new fittings, which I consider indispensable, when properly complete.

I have, in the first instance, closed all the hatchways but the main and my companion hatch, which will also be secured. Between the fore and mainmasts, at the height of our skid-beams (seven feet), one compact house, covered in at the roof, is complete,—battened, caulked, and will be canvas-covered. Over the main hatchway, receiving the vertical heat of Sylvester's stove, is a square cabin (which includes the chain holes), seven feet in width, and adapted with a door, closing by weight and pulley. The entrance door is on the starboard side, some yards before this, and an additional canvas screen intervenes, thus breaking any cold air which might otherwise enter. Overhead, the vapour hatch in the awning remains, in order to facilitate the escape of the vapour from beneath the awning, but its hatch prevents the vertical descent of cold air. The fore steam-chest, including the great galley valve or space between the funnel and main hatchway, and forming a commodious cabin, now furnishes the seamen's washhouse; and here they can perform this very important operation well and without fear and trembling, and other evils of which I shall presently have to speak. All vapour here arising from hot water is carried off. I thus obtain three immense condensers of the vapour arising from the main hatchway, and any air passing down will be very much deprived of its killing cold virtues before it meets the warm ascending current. That no air incapable of combustion may flow down to the Sylvester, the pipe is contained within this after-cabin, and warms its air before it descends from a higher level, cut off from the vapour by the canvas lining.

I must now revert to the practice of last year, to which I submitted, because "it was so before," for quiet's sake. Will any one credit that I was so simple? Read and judge.

The washhouse was on the shore, distant about two hundred yards. Here the consumption of fuel was *lost*, as it did not aid in heating the ship: it was cold and comfortless. It was quite impossible that the clothes could be properly washed and wrung: they were brought on board frozen. Where were they sent to be dried? Thus charged with ice and moisture, they were sent to the *main hold*, to be dried by the aid of the Sylvester. The main hatchway being closed, where did the vapour escape? To the lower deck. Again: the officers and men bathed in warm water; all this was also diffused, and no vent! The main hatchway at present, owing to the rarefied state of the atmosphere, enables this vapour to escape. It was remarked during last winter that the wettest place in the ship was around the mainmast: the water ran down upon the chronometers! Why? Because the after-companion, alternately open and shut, threw down such volumes of cold air, condensing these warm vapours, seeking the nearest escape, that of necessity nothing but wet could result.

In the present condition of the Sylvester, at the keel, aided by the warm current of air ascending, I hope to maintain, throughout the winter, a temperature not under +32°, or the freezing-point: at all events, never as low as 32° to 62° *minus*. The air, before it can descend, will be of a temperature better adapted to support combustion and maintain a high temperature, simply on the

principle of the use of hot air, not very long introduced (within my own recollection) into the blast furnaces. One thing must be evident, viz. that in the same proportion as the combustion is increased at the keel, so must the foul air be consumed, the vessel dried, and the ascending warm current maintained; all acting with unerring certainty, to produce the greatest degree of actual circulation of air, so much to be desired. Before leaving England I applied to have the pumps fitted expressly for air-pumps, in order to draw off daily all the foul air from the limbers. The order was given by the Admiralty; but difficulties equal to refusal were started, and so disheartening, as to prevent further prosecution of the plan. However, I caused Downton's pumps to be worked daily for this object, and I am satisfied that they materially assisted my views.

Of the after-part of the ship I will now explain, that the Observatory, not being required, by reason of the uncertainty of our communication with the shore, was, to prevent its destruction, put up complete, so as to include the after-companion leading to my cabin, with the door at its after-end, so that no cold air could pass by these doors, one being closely shut before the other could be approached. This position was one of the miserable defects of last season; everything around the mizenmast froze; the after gun-room bulkhead, forming one side, was constantly coated with ice, and the temperature of my cabin could not be maintained, falling at night as low as $+18°$. All this has already been obviated, and this previously ice-bound passage is now *warm*. I am quite satisfied that this could have been completely fitted

in England, and that the ship could have been safely navigated here and back, if necessity required, *without its removal*; indeed, I would retain the entire framework, as not at all inconveniencing the deck stowage.

But still further to preserve on the upper deck a pleasanter promenade, and to take off the sharpness of admitted air, I propose to form a level ceiling overhead by the inverted boats and old canvas; over this, the housing; and beneath all, when grim winter is unmistakably established, the further protection of all the spare sails, forming also, laterally, an inner curtain, thus producing another artificial deck, of a temperature some degrees higher than in its ordinary exposed state. But all this would be inefficient, if the entrance was left accessible to any intrusive breeze. Our *entrée* is therefore quasi-Esquimaux, by a portico from the floe, having the ascent leading forward to a landing below the gunwale, previously fitted for our accommodation ladder. This leads, by a rectangular inner porch, to the gunwale, thence descending to the deck, where mats will be spread, instead of the one foot of snow and gravel of last season, to preserve warmth and dryness, and prevent the slumbers of those who can command pleasant dreams from being disturbed by the drum-like sound of every constitutional pacer of the icy deck. No trouble will be spared; but until we are safe, the greater part of these measures cannot be completed.

The sick, who during the last season were subject to all the inconveniences I have stated, have now been removed to the midship section of the 'Pioneer,' where greater height, a powerful Brodie's stove, and detaching

them from the main body of the crew, will, should this second winter produce more serious cases, afford an immediate and available hospital. Up to this date, but four of the crews, amounting to ninety-one men and officers, have been considered objects for removal; but several cases of severe catarrhal fever, resulting probably from the first effects of condensation between decks, have occurred; but evidently selecting those predisposed, particularly among the crew of the 'Pioneer.'

Today the thermometers have been placed under the small boat, inverted and suspended to our driver boom, affording a free current of air through them, at four feet above the floe edge. These are registered at the hours of eight A.M., noon, and four P.M.,—the standard spirit and minimum every two hours.

October 10.—The day proved beautiful; calm, sun brilliant, and temperature 15°. I had become very fidgety about our return sledge, as well as the non-appearance of Commander Pullen, accompanied also by a strange, oppressive, unaccountable feeling. Ascending the hill above us about four P.M., I noticed a suspicious dark streak on the distant floe, apparently, to my comprehension, a lane of blue water; but the Ice Quartermaster declaring it to be mere fog, I was relieved from anxiety, and as it indicated nothing which demanded further investigation, it passed unnoticed—*but not forgotten.* About ten P.M. the breeze freshened considerably, and before going below for the night, I jocosely desired the officer of the watch to "Call me, if the ice parts at the bow, and take care that the 'Pioneer' (the wind being aft, and her bowsprit pointing over our beam, not many yards distant)

does not run foul of the ship." Little did I dream of the immediate prospect of any such danger; but many similar random observations have been treasured up, and if burning for sorcery be still a legal sentence, I may become a victim! Hardly had I reconciled myself to my bed, when the officer reported, "the ice has broken off within a few yards of the bow, and is going off rapidly." I was at that moment thinking of our dangerous state, with the housing over and not secured, boats stowed, and too many provisions on deck, choking access to the hawseholes, no cables bent, and every chance of a capsize. I certainly was in no mood to turn out and redress myself again on such a night, and go through all the necessary preparations for safety: however, not a moment was to be lost. I was soon on deck, but not without difficulty and much tardiness could I get the hands up to bend cables.

Few could credit the reality of our predicament! For four hours, anxious hours, were they engaged clearing the provisions away from the bows, and securing them abaft. At two the cables were bent, the wind had shifted to south-south-east, and blew in hard squalls off the land; we were sealed in ice about a foot and more in thickness, and moreover were secured by hawsers to the grounded ice within shore; considering her safe for the present, I allowed the men to rest by watches, until daylight, when provisions and every available weight were struck below, to give her stability; the fore-part of the housing was directed to be furled, and the ends drawn down, to prevent the wind getting under. The topmasts and lower yards were struck, and every precaution adopt-

ed, which the prevention of confusion or our limited force enabled us to "*do well.*" The awnings could not have been removed without our entire force; and calculating on their present smooth and inclined surfaces, I considered that the wind would have infinitely greater force on the unequal surfaces of boats and other objects exposed to its action. I therefore determined to keep that close, to prevent any ingress of wind, and I much regretted having disturbed the bow housing, for the difficulty and confusion it created was manifest. Power was to be husbanded; it required too many men. If the ship broke out before the deck load was stowed below, I must confess that I feared the result! Axes as well as saws were in readiness to fell the masts: but they were of *teak.*

Few of those who possibly may read this (if it ever reaches?) will conceive that anything selected to carry a pendant and to encounter Polar navigation could be so unseaworthy; yet just at this moment the croakers informed us that "her former skipper came down to Woolwich, to see her turn the turtle," and that he was nearly gratified; but we had embarked fifteen tons of ballast at winter-quarters, had on board twenty-eight tons of water and forty-six tons of coal, all stowed low, together with stores and provisions for two years! Yet her situation, even thus prepared, was one of extreme doubt and danger! I cannot really say I felt so sure of the latter expression; if the anchors held and she rode fairly, head to wind, there was no danger, so long as they availed us! If driven from them into the pack, why then we must take our chance. In this condition, with our hatches

battened down, we awaited the result. Surrounded by all these threatening dangers, our thoughts were still on the bright side, and we derived some comfort from the probability of our improved condition, should the ice again form, and leave us a smooth surface for spring travelling.

Parry (Third Voyage, p. 17) observes of bay ice:—"*September* 9, 1824.—This phenomenon, to the extent to which it occurred, was to me a new one, and there can be no doubt that, had the temperature continued low for two or three days together, while the sea was thus covered, a sheet of ice would have been formed, too solid to have again dissolved the same season; it was impossible therefore not to apprehend, at times, that a continuance of weather so unseasonable might expose us to the unpleasant dilemma of being frozen up during a winter in the middle of Baffin's Bay."

At any close harbour, even at our late winter-quarters on the 18th August, 1852, and later, at Port Refuge, in August, 1853, this reasoning might hold; but where tides, winds, or currents prevail, there is no need of the sun, or even of water of high temperature, to remove the thick bay ice: wherever the wind can act on water, and the tide-ripple obtain play and find the slightest crack, it is astonishing how greedily the former seizes the advantage, rips up the ice, weather as well as lee, and causes its almost magical disappearance.

That high temperatures are indeed our enemies, and not to be despised, we have but too good reason to be assured; but until the general surface of these Straits, or even of Baffin's Bay, ceases to offer any open water, any spaces for ice to *move in*, or weak points on which

the breeze can impel the great surface of ice, miles in extent, to press, nip, buckle, or yield, the wind will do its work, and that fearfully. That no temperatures or late dates can be reckoned on to free one from this liability, we have but too much reason to be convinced. We were almost harboured and locked by berg-pieces* aground, with the following sufficiently low temperatures:—September 9th, 2·5°; 18th, 0·0°; 20th, 5·0°; 28th, 1·0°; October 7th, −9·0°; 11th, +20·0°. The outer young bay ice had been accumulating, forming, as we deemed, a complete sea-guard, and this ranged between ten and fifteen feet in thickness at sixty yards from our bow. The bay ice under our stern, averaging nine inches, was apparently blocked securely within by the great masses grounded outside in six fathoms: who, under such circumstances, would have a suspicion of danger?

The wind, at south-east, rapidly increased in strength directly off the land astern, which, ascending by terraces, attained an elevation of about three hundred feet in a mile, or possibly, from the nearest beach, about one hundred feet in one hundred yards. There was no direct acting power on the weather ice but the wind and reverberatory wave. Little did we dream of treachery from within! But surely, though gently, did this latter subtle and oscillatory power take advantage of every crack which the gaping of the great opening from north to south, or parallel to our beach, now enabled it to enter, causing sufficient swell to set the whole floe in undulatory motion. Mass by mass freed itself, and, grinding

* Not literally berg, but ice aground in six fathoms.

against each other, drifted away, leaving our vessels adhering to the bare edge of the in-shore bay ice; still we thought that our stern hawsers, secured to heavy masses of grounded ice, would retain her. But no! the signal for desertion was followed too closely; piece by piece dropped from us, like blood from our veins, leaving us, waterborne, afloat! Even the grounded pieces followed the example, denuding the surface, even to the very beach! All was confusion, and that considerably heightened by a heavy snow-storm. Once more the ship was reduced to the seaman's care, and to trust to her ground tackle; but until the loose ice left the bow clear, no anchor could reach the bottom; the breeze shortly effected this, impelling the ship forward with such velocity that it became doubtful, in such deep water, whether the anchor could bite the loose, gravelly bottom. It bit, held, and now the crisis!—she took her "trial lurch;" it was deep, and the men were much frightened; the water came in about five seams within the water-ways, but I had witnessed the 'Samarang' go even further. That was enough for me; I was satisfied all was safe! At that instant my thoughts reverted to our absent sledge, as well as to the fate of poor Bellot. In such a gale, similar in every feature, did that gallant Frenchman meet his fate!

But to our position. Notwithstanding she rode to her cable, she did not "right" satisfactorily, but remained with a most inconvenient heel to starboard. I cannot say that I expected her total loss; she was securely battened down, and, doubtless, would have "righted," had she been relieved of her masts, etc.; but the lurch she

took was so deep as to cause all hands to rush to windward, and some one was indiscreet enough to open the weather curtains. I was soon there, and had them secured.

All were soon reassured, and went to work cheerfully, completing various duties; it continued to blow hard, with heavy snow-drift, and our anxieties were freshened occasionally by huge pieces of drifting ice getting across our cable, grinding our sides, and threatening my friend Glaisher's nursery of thermometers, still suspended under the stern, and causing me infinite anxiety.

For thirty-six tedious hours were we retained in this state of suspense, with the additional uncomfortable reflection that any sudden shift of wind, bringing the main body of western ice down upon us before we could get our anchor, would send us high up on shore. The windlass levers, having bent, were inadequate to perform their duty properly, and we had *none spare!*

CHAPTER II.

Moor in-shore.—Open Water available.—'Pioneer' prepared for service.—Return of Pullen.—Interpretation of Instructions.—Thoughts of abandoning 'Investigator.'—Limits of Travelling Season.—Return of Grove.—Instructions to Richards.—His Proceedings.—Deposits Despatches.—Reaches the 'Resolute.'—A Bear and Buck shot.—Cutter in danger.—Returns to the 'Assistance.'

About 4.15 A.M. on the 13th, it lulled, and at six it had moderated sufficiently to get the boats out and make fast our hawsers to our old berg-piece, which we found had retained its position, and from which, deeming ourselves protected from seaward by the barrier floe, we had too soon withdrawn our hawsers. Truly glad were we again of its important aid, and, lifting our anchor, we succeeded in recovering our old position by noon. Between the remaining pieces which had withstood this gale, and up to the beach, all the bay ice had "cleared out." Very tempting docks were offered, and, had they been rock, probably we should have availed ourselves of the chance; but the crush, if they moved, was too foolish an experiment. Our anchors were now let go. Determined to hold on by this shore so long as our means permitted, and to prevent further mischief by driving in

shore, I considered that the only chance of saving vessel or crew would be taking the ground as early as possible after any adverse movement drove us from our anchors. We therefore considered our outer anchor as in reality lost if the ship should be beached, and, under such circumstances, no longer required; but, if the events of the spring should offer floatation and release, that it was well laid out, and beyond the chances of damage from floating ice. Here then we secured; anxiously praying for that intensity of cold which alone can render us securely frozen in or comfortable for the winter. What variable mortals we are,—at one moment yearning for warmth, at another for intense cold!

During our temporary detention alongside the great berg-piece, I had an opportunity, favoured by the beautifully transparent state of the water, of examining its base, and even to detect every article at the bottom which had fallen overboard. I now ascertained that it was a much more important mass than I had anticipated; it formed an irregular pyramid, having a very broad base or flat pedestal, apparently well imbedded in the tough clay bottom, the depth on its seaward side affording six fathoms and its inner three. I therefore felt that I could now trust more confidently to its friendly offices in warding off any infringing floe or loose pack, at all events taking the worst before it molested us.

At this period I contemplated, now the sea was open, making an attempt to reach Union Bay, and, had the services of the 'Pioneer' been available, most certainly would have made the experiment, even against the chances of being caught midway; but, unfortunately, I

had given permission to unpack for the winter, and before her machinery could be effective, affairs had assumed a different aspect. It was fortunate that I did not; as upon a more minute inspection of the western ice, manifestly in motion, I felt satisfied that it was still too close, and we should probably have been hampered within ten miles of our present position.

Many concurrent reasons induced me to be in readiness to move, should Nature again offer an escape; and one perhaps of those uppermost in my mind was to prove how late and at what degree of low temperature steamers could act with effect. With such feelings I directed the 'Pioneer' "to prepare for service." Of course many observations were hazarded on the time required to complete such a duty; but these only proved, to my mind, the necessity of placing such questions beyond mere opinion, and thus afford me sure grounds on which to base any future orders. Eventually, after some little conversation with the Chief Engineer (Mr. Harwood), he considered that he could place his engines in action within sixteen working hours, and, much to his credit, within that interval, in so far as the machinery was concerned, she was reported efficient. About the same moment the light bay ice had recommenced forming; but the breeze still kept open clear lanes of water, the temperature ranging between 19° and 22°.

October 13.—This evening, and whilst these matters were in progress, two persons were reported to be advancing by the beach from the southward. Anxiously alive to any accident to our sledge parties, it naturally produced a little excitement; but this was of short du-

ration, as it was soon made out that Commander Pullen was one, and a boat was sent to bring him on board. Commander Pullen had been obstructed by water at a bluff about six miles southerly, where he had left the sledge and remainder of the crew, bringing on one man. Lieutenant May was immediately despatched with the cutter, and before ten that evening the party was safe on board, having, as they termed it, "been reduced to lummes for the last two days." This great hardship our poor fellows would most gladly have submitted to without a murmur; but those who had been revelling in mutton, salmon, and ducks, might reasonably fancy inferior food a deprivation.

From Commander Pullen we obtained satisfactory intelligence of our sledges, having met them within two days' march of Beechey Island, and free from further obstruction, should they prefer the land journey. Thus, in the course of a few hours, have we experienced three important causes for gratitude! From the report however of Commander Pullen, it proved that he had experienced a narrow escape, possibly from a similar fate to that of poor Bellot. He had incautiously taken to the floe, encamped, was caught by the gale, which levelled his tent during a snow-storm, and eventually had barely time to regain the land ice before it separated. These constant liabilities prove how imperative it becomes to provide boat-sledges or Halkett boats,* for service in autumn. The question is not what an officer may choose to risk in his own person, but what degree of confidence

* These Halkett boats are invaluable on any service, but, it occurs to me, especially so for the conveyance of wounded, arms, ammunition, etc., across streams.

a Commander can entertain, and even of ultimate reproach to be heaped on him, should any fatal accident overtake a party despatched by his orders, unprepared.

From the report of Commander Pullen as to the state of the ice in the lower channel, and also of the dangerous coast-line, on which the vessels might probably be nipped, between Cape Osborn and Beechey Island, even if they escaped nearer dangers, together with the opinion, that, should any such accident befall, no such shelter as was here offered could be afforded, I determined at once that, unless driven by stress of weather, or by other causes over which I had no control, I would not risk the destruction of all by any blind movement.* Nor was it simply our immediate safety that was now to be considered; I was here the Commander-in-Chief of this disjointed Expedition, and the lives of all would be required at my hands. Of the Western Division I knew nothing beyond the jeopardizing of sixty additional souls belonging to the 'Investigator;' indeed all might be in extreme difficulty or even extinct! Upon our efficiency, as well as that of the 'North Star,'—and last season had proved her insecurity,—all now depended; caution therefore became imperatively necessary.

Properly to comprehend my position, none but the Powers who sent me forth could understand; next, the simple reading of my Instructions clearly indicates, that, by the advice of the Committee of October, 1851, (page 2, paragraph 4,) the safety of the crews was to be my *main* consideration; page 5, paragraph 18, is to the same effect; and the concluding matter reduces my final

* Later events proved this decision to be correct.

operations to the spring of 1854, supposing even that I am assisted by Nature. The new orders of this season rely on my judgment,—for what?—*zeal* in the prosecution of common sense operations, but *determination* where it bears on the *abandonment* of the Expedition, "unless *you* see *reason* to think differently;" implying simply the powers accorded to me throughout. Stores indeed were sent to Beechey Island, but for what end? Not to prolong service *here*, but to place in depôt *there*, for those who might arrive at Beechey Island, *ourselves included!* for to bring them here, or to send them to aid the Western Division, required an express Expedition for this object and no other! People in England forget to reason on this matter. Let it even be imagined that the 'Phœnix' and another vessel had been sent out complete, to replace part of my Squadron, what would have been the result? They could not have been moved beyond Beechey Island, and would have remained there idle, shut up at that position!

Upon the 6th paragraph of the latter Instructions it was my duty to act, and totally irrespective of the opinions of any officers but those around me *and known to exist.* Accordingly my views were discussed with Commanders Richards and Pullen (the former next in seniority to Captain Kellett), and, without adverting to their special opinions,—which coincided with mine, or were even literally more decisive as to obedience to my orders to return,—I came to the conclusion that nothing like uncertainty, or indecision, upon such important matters, would be deemed by those who selected me for command as satisfactory.

In this matter I had to deal with subjects involved in doubt and intensely perplexing. Had it been possible for me to communicate in time last season, I should instantly have determined on the abandonment of the 'Investigator;' indeed, *privately*, I had reason to understand that it *must be*. Doubtless my "Geographical" opponents in England scouted the idea; but Her Majesty's Government had entrusted to my keeping the public interests, and I felt too well assured of the decision which they contemplated. I had for years looked this matter seriously in the face; I had put very searching questions, in 1850, into the possibility of ice moving between Melville Island and Banks Lands, and, with perhaps too strong a conviction that it never would break up, unless by some extraordinary effort of nature, or possibly under an incomprehensible season, came to the conclusion that extrication, without any hesitation, would have been my course, —that officers and crew would now be safely in England, and I should have received the thanks of their Lordships and the public. That no twenty men would be found mad enough to volunteer, I felt confident; indeed I should strongly suspect the saneness of those who might, unless indeed for bombast, knowing it could never be carried out. But one object, in my mind, could warrant any such devotion, not to any proof of north-west passage, but to one infinitely more akin to the high, honourable, and philanthropic feeling of our profession,—the relief to, and extrication of, their missing Commander-in-Chief, Captain Collinson. But in none of the records can any such feeling be traced; it is mere matter of endurance, in order to solve the geographical question. The alter-

natives left were, "If twenty men volunteer to remain with Commander M'Clure, in the 'Investigator,' then all her remaining crew, together with that of the 'Resolute' (exceeding thirty-eight men), were to be sent home in the 'Intrepid;'" but the lateness of the season, the delay of carrying out such plans, must of necessity in some measure delay the 'Intrepid,' ordered to call at Beechey Island, and where I had hoped our invalids would have been added, for two lives here were very precarious. On the other hand, if twenty men did not volunteer, then the entire crew of the 'Investigator' would abandon the vessel, and return in the 'Resolute' direct to Beechey Island.

Such were the contents of the communications forwarded to me, and, whatever may have been the result, we were absolutely in the dark, and my decision for future action must be determined without reference to Captain Kellett. It was apparent, from the information brought by Commander Pullen, that no chance of further information, although possible, was at all probable this autumn: the ice, both easterly as well as westerly, had been completely stationary since the end of August.

The probabilities of disaster, under this scanty information, were threefold. We had before us the disastrous gale of the 18th of August, 18th of September, and also that recently experienced on the 11th of October; and the further additional cause for disquietude, should Captain Kellett have sent the 'Intrepid' forward alone, with scanty supply for her increased crew. Other considerations also intruded, and matters, which find no place in the public despatches, left me not quite at ease: this

principally regarded the 'Investigator'; the fourth winter must tell deeply on her debilitated crew, and, should they fail, who would be selected for the opprobrium? As to our own condition, our thoughts scarce dwelt upon it, but we could not help recurring to the probable effect of the gales we had experienced on our Western Division, and reflecting that the force is generally increased in more southern latitudes. On one point however we derived some little consolation, in the probable deflection, or break, upon the peculiar coasts between Melville and Beechey Islands, converting our south-eastern and most violent gales into a north-western in that region. Such indeed I perceive to be the fact during Commander Richards's journey to the south-west: he experienced uncompromising gales from north-west, with few gleams of sunshine, whereas, in my own journey to the north-east, we were basking in the sun's rays and enjoying light southerly or easterly winds; with this material difference however, that he was murdering defenceless deer and musk-oxen, luxuriating in the fat of the land, when we, but for the Queen's allowance, were comparatively starving. Under the before-mentioned difficulties, I had to decide on the means to be adopted for *relief*, as well as the *ensuring obedience* to the wishes of Government.

As it would be imprudent at the present moment to make arrangements which our own condition might derange before the spring, I deemed it prudent to draw up the necessary instructions for Captain Kellett, and to appoint Commander Pullen to proceed with them, after the receipt of my final despatches, which would be

forwarded to him in February or March. Commander Richards volunteered, but there was ample time before the period for starting arrived, to determine upon the possibility of sparing an officer of his rank and of so much importance, should accident befall me.

Commander Pullen was further instructed, should it be found practicable, to forward a party this season to Cape Hotham, as well as Assistance Bay, where a depôt, containing provisions for ninety men, had been established by Captain Kellett, and endeavour to obtain tidings of our missing vessels, or to aid any persons he might fall in with in reaching Beechey Island.

The temperatures of October—even of November—are so much above those deemed fit for travelling, that we may, taking last year's tables as a guide, reckon upon $-5°$ to $+21°$ up to the 10th of November, and from the 10th until the end of the month principally $+18°$ to as low as $-22°$. The travelling temperature is deemed $-30°$, at least so the frost-eaters would wish us to believe: we see but little of their faces on the floe, unless well muffled up, even at zero. Under these considerations, the journey across and back, by the 'Assistance' men, would occupy about ten days; but as most of the crew of the 'North Star' have been changed, are new, untried, and not to be compared to our picked men, I consider that double that period is yet available.

The duties which now require our consideration involve the security of all valuable instruments and documents, and depositing them safely at Beechey Island. The sledge parties detached from hence in the spring will be charged with one portion of this duty, taking

with them a heavy load of ship's books, logs, private journals, instruments, etc., and after due rest and preparation at the 'North Star,' will eventually be told off for our new and exciting search westerly. Thus far indeed the supplies saved from the 'Breadalbane' become of considerable importance, as many of the most important necessaries for travel, including fuel, etc., have been entirely expended in the operations of last season.

Under our contemplated duties of laying out depôts, it is more than probable that it will involve the necessity of extending them even as far as Melville Island, and that a second Division will follow up another search on the southern shores, where Captain Collinson's parties have also to be sought, and supplies for their sustenance deposited.

The entire distance between Melville and Beechey Islands, we are now aware, has been travelled by Mr. Roche, attended by invalids, in twenty-two days; but as westerly winds prevail, and offer much greater impediment, particularly in March, it will be necessary to allow thirty as the shortest under the then very low temperatures.

In accordance with one article of the late Instructions I had fully determined that one vessel should be left near Assistance Bay and at Cape Capel, should it be found practicable. My calculations would enable me to throw across, by our entire force, about 2500 rations,—and should the water open early and release the 'Pioneer,' possibly about 2500 more in July, leaving about 5000 rations, or three months' for sixty men. These, including the depôts left by Captain Kellett in his advance in the autumn of 1852, would, if no intelligence had

been received relative to Captain Collinson, fairly provide for his retreat upon Beechey Island, where a house, possibly a ship and provisions, would sustain him until further relief would be forwarded. In all these operations I felt quite assured, from the tenor of my late despatches, that further assistance would reach Beechey Island before the end of July next, and by those vessels I fully expect either intelligence of the safety of Captain Collinson, or full instructions for my guidance, with reference to his ultimate safety.

All these matters had been fully discussed, committed to paper, and read over to Commanders Richards and Pullen; the most important papers and journals were forwarded, and should accident occur to us, Commander Pullen was fully instructed as to his duties.

October 17.—About two P.M., accompanied by Mr. Loney in the 'Hamilton,' to aid him in his journey round the water-washed points, who would also escort back our own sledge, he took his departure under a temperature of 22°; the ice still very tender, occasionally breaking, but admitting of repeated journeys with light loads only to the shore. As our depôt at Cape Bowden, near to the position where poor Bellot met his fate, was supposed to be stale or injured by open weather, ten days' additional provision was forwarded to make good that station.

This event, nearly the closing act of the season, caused no little excitement, for to some of the gloomy anticipators of disaster, "the last letters" seemed to indicate a belief that our next purpose would be to seek relief at the 'North Star.' Under such feelings, jauntily as the 'Stars'

parted, under "the customary honours," on their southern march, there were many of our party to be noticed, loitering with a vacant gaze, a last wave of the glove, and possibly a frozen pearl to set the eyelash in motion.

October 20.—Shortly before noon the 'Dauntless' banner announced the advance of Mr. Grove, one of the most cheerful and light-hearted of our party, and before night I had the gratification of feeling that all my officers and crew were again collected, and comfortably housed. This was our final chance, my last hope for the season of any communication from the Western Division. If accident should have arrested one, both, or all three of the vessels near Cape Hotham, it was some consolation to know that they would find there a boat, should water be available, to aid in their journey to Beechey Island.

Our minds have been so much engrossed by startling and active events, that the present pause affords me the first available opening to refer to the contents of Commander Richards's proceedings, from which I have extracted the following.

In order to understand the nature of the orders under which Commander Richards proceeded, I consider it expedient to give them the precedence.

ORDERS

By EDWARD BELCHER, Kt., C.B., *Captain of H.M.S. Assistance, and in Command of the Arctic Squadron.*

1. Whereas it is expedient that a special examination of the south-western shores of this great opening into the Polar Sea should be made by sledges during the present season,—and having every confidence in your ability and zeal to carry out this important measure,—and further, Lieutenant Osborn, commanding Her Majesty's steam-tender 'Pionéer,' having in the handsomest manner, and with his customary zeal, volunteered to support you in this arduous duty:

2. You are hereby directed to take under your command the undermentioned sledge crews, and, accompanied by Lieutenant Osborn, proceed, *viâ* the depôt already established at Cape Lady Franklin, to vigorously search the points in succession towards the position agreed upon with Captain Kellett as the Rendezvous of 1853, viz. lat. 77° 0′ N., long. 105° W., or the nearest coast thereto, where I fully anticipate you will precede that party.

3. This duty effected, you will deliver to any officer whom you may chance to meet there, or deposit in cairn, in conformity with my General Order, failing to meet any one, the despatches addressed to the Secretary of the Admiralty, as well as those for Captain Kellett.

4. Proceeding with the run of the land then in sight, I must trust to your own judgment in prosecuting the great work of our Expedition, viz. to search not only for our missing countrymen, but also for any traces of cairns, drift-wood, or other indication of the missing Expedition having entered this sea by the Wellington Channel; also, any traces of the Expedition under Captains Collinson and M'Clure.

5. You will bear in mind that unless the state of the ice should render it probable that the sea had at any period within the last ten years been free from ice, and been in motion at the entrance of any bays, inlets, or channels, that no valuable time should be expended in their examination for the vessels. Your own judgment will point out any other chances of the crews having sought refuge there.

6. If any opportunity occurs, by sight of divergent objects, which may render it expedient to separate, you will take the northernmost and westernmost, and Lieutenant Osborn that to the south-west, taking especial care that your Rendezvous is so securely fixed and understood by both parties, that no possible mistake, misconception, or disappointment to either party shall accrue.

7. The general Instructions to the sledges which will escort and remain by you for stated journeys are already clearly set forth; you will therefore, as you detach them, countersign each order furnished to them, adding any further directions which your experience on the journey may render expedient.

8. You have been fully provisioned for this important service; no thought or caprice has been forgotten: indeed, I feel that the minor matters of detail have rested within your own province.

9. Up to the period of detaching your last commissariat sledge you will insert your "state and condition" on the last detached orders of the officer commanding that sledge, and you will of course exchange any men that seem unable to hold out.

10. In the pursuance of this duty I must urge on you the necessity of system, forethought, and precaution, which although probably unnecessary, is nevertheless one part of my duty.

11. You will yourself keep a strict daily journal of every occurrence, and cause the same to be done by every officer under your command; the same to be delivered to me within a reasonable period after your return.

12. This Expedition is especially, in addition to that of the search after our countrymen, one of science; and I need not remind you how much its pursuit tends to sharpen the wits, as well as to wile away many hours of otherwise sluggish indolence or sleep, when snow-storms, or low temperatures, may confine you to your tents.

13. I do not expect from you sledge-loads of fossils, or whole carcases of mastodon or megatherium; but sketches, records, etc., will not much encumber your head, and some waistcoat-pocket specimens may serve to determine important desiderata in the field of science. I will not say more: perhaps I have said too much. "A word to the wise is sufficient."

14. Should you meet with any officer superior to yourself, you will of course show him these instructions; but he is hereby strictly forbidden in any way to interfere with your command, route, or proceedings.

15. On the other hand, should you fall in with any other your inferior in rank, you will inform him of your intended route, give him (if sent on the same) a divergent one, as the interest of the service may point out, or instruct him to seek and carry back the despatches, should you already have deposited them.* This last duty you will consider paramount to any other route, of which you will then be the best judge.

16. It is needless for me to exhort you or Lieutenant Osborn to do anything but *return securely*, and without allowing your own high feeling to be the standard by which those who labour under you are to be urged forward. It is the retrograde movement which tells on the minds and feelings of all.

17. Trusting to your judgment, and to Him who watcheth over all, and with our sincere prayers for success and safety, I send you forth on your noble mission, and

Believe me, etc.,

EDWARD BELCHER.

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* It is curious that even this should have so unmistakably occurred.

With a sealed public letter, to be opened if any superior should meet you, read, and exhibited to him, but to be returned to me *unopened* if no such cause for its use presents.—E. B.

The extract from the official letter reporting proceedngs explained, as extracted in page 48, the general movements of Commander Richards in the search, and the cause for his deviation from his original Instructions. Having now before me that part of his detail of the sledge operations necessary to explain his course, which must however be followed on the chart to be understood, I shall endeavour to condense the parts of most interest, using, where expedient, his own words, with the customary mark of extract.

"On the 10th of April, with the thermometer at —4°, breeze favourable, the Division sailed from Northumberland Sound.

"On the 16th reached a group of islands fifteen miles west-north-west of Cape Lady Franklin, to which the temporary name of Deception Group was given. Here the first depôt was secured, and the first auxiliary returned to the ship (Mr. Grove, of 'Dauntless').

"On the 21st reached the western termination of this group, and on the 24th reached Cape Fortune: it lies in latitude 76° 26′ N., and longitude 103° 33′ W. The second depôt was placed on this Cape."

On the 25th the 'Lady Franklin,' Dr. Lyall, returned to the ship. These two were auxiliary sledges, and belong to my Division. The others were commissariat, and on which the victualling of Commander Richards would depend until he proceeded alone.

On Friday, the 29th of April, he reached the north-

east point of Byam Martin Channel, which in itself being the discovery and proof of its being open to the Queen's Channel, and further, approaching the nearest to any accessible spot for the Rendezvous, was named Point Success. Here the despatches were deposited in lat. 76° 32′ N., and long. 105° 4′ W., being twenty-eight miles south and four west of my assigned position, 120 miles from the ship, and little more than half the distance to where the 'Resolute' wintered. Here a depôt was established, and the first commissariat sledge, Mr. Herbert, was directed to return to the ship.

Crossing the Byam Martin Strait in very thick weather he reached and landed on the north-east point of Melville Island, on the 6th of May; the position was determined to be in lat. 76° N., and long. 106° 25′ W., thus cutting off a large portion of Melville Island. Here the fourth depôt and the light boat were deposited, and Lieutenant May, of the 'Reliance,' received instructions "to proceed to the Grand Depôt at Cape Lady Franklin, revictual, deposit notice, and return with provisions to meet the requirements of the returning sledges, and enable them to make further examination of the overlooked coast on their return." Proceeding north-westerly, skirting the northern coast of Melville Island, which does not extend beyond the parallel of 76° 48′ 30″ N., he passed the Bays of Promise and Plenty, having there noticed abundance of game. Commander Richards notices that on the 11th of May "we find the night travelling very disagreeable yet; it is certainly like going back a fortnight in the season, and it takes some time to reconcile the appetite and rest to the change. It is

absolutely necessary however, to prevent the snow blindness, cold and cheerless as the nights are."

It is rather a curious coincidence that I should have altered my time of travelling on the same day, but with very different result, and our temperature at that moment five degrees lower. We were in 77° N., and he in 76° 10′, but we experienced a bright, warm sun, and our progress was easterly: evidently we enjoyed a far superior climate. He had the luxuries of game and the occasional sight of vegetation; not so with us! and immediately I notice he killed two musk-oxen, cow and calf, and not long after a deer. I cannot but pity them: they could not spare the fuel to cook them!

"Skinned and cut up the musk-oxen, one weighing 150 lbs., the other 50 lbs.; buried a part of them for our return." "The coast trending N.N.W. and about one hundred and fifty feet high, fronted by flat beaches, terminating in hummocks of pressed-up gravel, or rather soil, which is now very abundant (stones are scarce); indeed we are obliged generally to build our beacons of gravel or earth. Osborn shot a deer today, a doe, weighing about 60 or 70 lbs., which was divided among the sledge crews. The musk-calf shot yesterday was very good, no taste whatever of musk about it. We find the fire however insufficient to cook it."

On the 16th of May he reached a remarkable cape, about six hundred feet high, on which a large cairn was erected and the Union hoisted, but, as this was within Governor Kellett's province, it was merely cutting off some of his fair proportions. It was therefore decided, to appease him, that it should bear his name. The extraordi-

nary watercourses were here remarked, some of a vertical depth of one hundred feet. He observes:—"This hill is about six hundred feet high, and is cut up in an extraordinary manner by watercourses, a hundred feet or more in perpendicular depth, running in every direction. The lower land is sandstone; on the summit are large masses of lime, and, I think, some granite. Mica (at least so I take it to be) is very abundant in the cliffs which are bared by the melting of the snows. The surface soil is covered with a red and green-coloured earth, resembling the dust of copper ore." (Pray number the intervening series between the shell-bearing limestones and granite!) It is not for me to dispute these records; all have been told of their mistakes, but they determine to adhere to their adopted theories. The specimens are *selenite*.

Proceeding a short distance further, he deposits five days' depôt, for his return; blanket-cover, and specimens, to lighten their weight.

Completing his sledge to forty days from the 'John Barrow,' they move forward, parting with his last commissariat, and directing him to examine the unexplored gaps left by his necessarily rapid advance, as well as the coast up to Marshall and Goodsir's furthest.

He was now alone, and, as he observes, "The 'Sir Edward' moved on in search of new discoveries; we were full of hope, although as yet no trace of the missing Expedition had been discovered. We had examined three hundred miles of new coast, and were good for two hundred more; the people were in good health and spirits, though it must be confessed somewhat lower in bodily strength than when they left the ship (?), and we

had every reason to hope that, with the resources at our command, we should get to the westward of Melville Island, and find, at any rate, some indications of those we came to seek, should they have entered the Polar Sea."

May 17.—"About one P.M., to our great surprise, we crossed a sledge-track, which appeared very recent; I immediately halted the sledge, and followed them back to the eastward. After an hour's quick walking, we saw an encampment, and, on coming up to it, found it to be a party from the 'Resolute,' under Lieutenant Hamilton. The surprise of himself and his party may be imagined at being awoke from their dreams by the hail of a stranger!" The former intelligence has been already given. Lieutenant Hamilton had been now twenty-one days from Dealy Island; he accompanied him back to his tent, and finally, giving him instructions where to overtake Lieutenant Osborn, they separated. Commander Richards was then very nearly on our parallel, latitude 76° 48′ 30″, and having now reached the north extreme of Melville Island, bore away southerly for Hecla and Griper Bay, meeting with many difficulties.

On the 19th, on visiting a cairn left by Lieutenant Hamilton, he noticed "a fragment of a pine branch, about two feet long, with part of the *bark* upon it, worn and split from contact with the ice, having probably drifted from North-west America. It had not the slightest appearance of having come from a ship."

He reached Cape Mudge on the 28th; all appearances of animals ceased on rounding the north point of Melville Island, and heavy weather prevailed.

On the 31st, he had previously observed, "I feel myself, in the evening, like an iron poker, only not so strong," having sprained his ankle. This morning however another adventure occurs. He notices "a tent pitched on the land, very close; presently the inmates of it saw me, and were evidently much surprised, and doubtful as to what colours we were sailing under, knowing that we could not be any of their own parties. The officer advanced to ascertain my character, and in a few minutes I had the pleasure of shaking hands with Lieutenant Pim, of the 'Resolute.' My party coming up, we received a hearty welcome from him and his people. Lieutenant Pim, I found, had been weather-bound here for some days; and well he might be, for, except before the gale, it would have been impossible to travel." He remained one hour, supplied himself with provisions, obtained information as to his best route, and pushed on. Lieutenant Pim was *en route* to Cape Fisher, to place a depôt for Commander M'Clintock. The overland journey was attended with difficulty.

On the 3rd of June he discovered the 'Resolute' and 'Intrepid,' and "at five A.M. on Sunday, the 5th of June, I arrived on board the 'Resolute,' where my appearance (*alone*) created no small surprise. They were not prepared for a solitary visit from 'the Wellington Channel.' The ship seemed almost deserted, two or three officers only on board, and the few men I saw seemed strangers, as indeed they were, being invalids from the 'Investigator.' I received a hearty welcome, and every kindness a weary traveller could wish for. Dr. Piers, of the 'Investigator,' undertook to patch my feet up, and render me

fit for travelling in three days. Captain Kellett was absent; but Mr. M'Dougall, the commanding officer, made the preconcerted signal for his return, and Monsieur de Bray proceeded with a sledge towards Cape Bounty, to look for him. Dr. Domville was at the 'Investigator,' at Banks Land, holding a medical survey of her crew, and was hourly expected back. His report would decide the steps to be taken with regard to remaining by or deserting that ship."

On the 7th Captain Kellett returned, and was of course much surprised and delighted to learn the news and to have the opportunity of such a direct communication with me, more than any day's writing could convey. The extract of his letter has already been given. After feasting on venison, musk-ox, hare, ptarmigan, etc., all served in Christian style, he observes, "I could not help contrasting this fare with what my less fortunate shipmates are probably revelling on at present, peradventure a curried gull, or a steak of walrus or Polar bear!" Captain Kellett having delivered to him the necessary documents, accompanied him one day's march, taking him on his dog-sledge.

On the 8th of June he took leave of Captain Kellett, and travelled by the eastern coast of Melville Island up the Byam Martin Channel. He adopts the double journey, sleeping between. I cannot perceive the advantage; more is possibly got out of the men, but not justifiably. Broken sleep and double fatigue may not be detected on the light homeward journey; but, in our case, we returned heavy, did quite as much, and the men were not out of working order: no jaded countenances or

complaints, and yet we had no luxuries, no extra food. I notice that the outward heavy journey took fifty-six days, and the return, light, thirty-five days; total, ninety-six days. All evidently much the worse for wear.

On the 14th of June he discovers, at Point King, one of Dr. Bradford's cairns, and finds his latitude to agree nearly with that determined by that officer, but, he observes, "the chart is constructed nearly twenty miles at variance with this latitude. This coast is remarkably straight, being a series of very shallow bays or indentations, with the land extending some distance off them: occasionally watercourses from the inland ranges. The cairn had entirely mouldered away." Here they fell in with a bear, which was fired at within thirty-five yards, hit in the chest, charged, shot in fore and hind quarters, and fell, but before they reloaded he regained his legs, took his departure, and escaped. It was seen to fall at some distance, but was considered too lean for fuel, and therefore not pursued further.

On the 15th they killed a fine buck, the Sergeant hitting him in the windpipe at seventy yards. Although Sergeant of Marines here, he is an old campaigner in the Indian wars, being a non-commissioned officer at the Kyber Pass, and other similar amusements.

On the 16th of June he reached Dr. Bradford's furthest, where he found the cairn, constructed of stone, quite perfect. The latitude of this position is 75° 56′ N.

The entire journal is occasionally enriched with the natural dry humour of my friend Richards. As it will doubtless contribute to the customary Blue-book, I shall be cautious in my extracts, so as not to rob it entirely of

interest. He is about to encamp near the Rendezvous Bluff:—"We had our choice of ground tonight, either soft snow or soft clay; we chose the latter, as being a novelty, and as reminding us of the approach to a pig-stye in England of a November day."

Saw deer, but the men were too much reduced to care about killing them. Vegetation here was more luxuriant; but the wild sorrel, seen for the first time, even a rarity. Everything very backward; this too on the 24th of June! He observes: "There is much more vegetation however on this side of the Strait than on the other; indeed, there would seem to be a well-defined line of sterility on the north-east side of Melville Island, which appears to extend thirty miles to the southward, and nearly as far to the westward of the north-east extreme." "It is remarkable too that no animals, or traces of them, were seen on that corner. I can only account for it by the force of the north-west wind telling constantly there."

Why the Hudson's Bay guns should burst, in preference to all others, I know not, but in both Expeditions we have had very narrow escapes. Who makes them?

On the 10th of July, having reached Cape Lady Franklin, he met with the tent, and two men, left by Lieutenant Osborn, gone southerly; he is also surprised by meeting with Mr. Loney, sent to relieve him. He observes, as he is obtaining sights, "I saw two people coming over the hill, which I took to be Lieutenant Osborn and one of his party; but, to my great surprise, on coming nearer, one turned out to be Mr. Loney, from Northumberland Sound, who had been sent with a cutter to recall me, if I should have arrived, and help to carry

my people across the Strait, which I could ill have done with the small boat alone." He moves on for the cutter, and observes:—"I found the wooden waterproof tray (Forster's) answer well; it carried the sledge and gear across some wide lanes of water without giving us the trouble of unloading and putting them in the boat." Having reached the cutter, and sent her men back to assist, he and Mr. Loney were quietly having a yarn, or, in his own words, "we were seated quietly in the cutter, which was hauled on the floe, one hundred yards from the land, when suddenly we perceived the ice to be in motion, and in a few moments the floe, with the boat on it, was forced twenty feet up the steep beach, and rested on a mass of grounded hummocks. She was turned completely over, with enormous pieces of ice hanging over and about her, threatening instant destruction! There was no help at hand, and all we could do was to pick up some of the gear and instruments which had been turned out of her, and look on (looking out for ourselves at the same time). It was more than half an hour before we could recall the people by firing guns, etc., during which time the boat was being moved about among the hummocks in a manner that surprised us how she was not crushed to pieces; it seemed impossible that she could escape. The ice however stopped running, and she eased down and saved herself by a miracle, resting on her mastheads, bottom up, against the ice! I am persuaded that, had a ship been in the same position, it would have been total destruction to her. The lightness and pliability of the boat's frame was alone her safeguard; but it was an extraordinary sight to look at