

SIGNAL SERVICE NOTES

No. X.

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REPORT ON

LADY FRANKLIN BAY EXPEDITION

OF 1883.

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PREPARED UNDER THE DIRECTION OF  
BRIG. & BVT. MAJ. GEN'L W. B. HAZEN,  
CHIEF SIGNAL OFFICER OF THE ARMY,

BY

ERNEST A. GARLINGTON,  
1ST LIEUT., 7TH U. S. CAVALRY, ACTING SIGNAL OFFICER.

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BY AUTHORITY OF THE SECRETARY OF WAR.

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WASHINGTON CITY:  
SIGNAL OFFICE.

1883.

# National Oceanic and Atmospheric Administration

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#### NOTE.

This note is published for the information of those interested in research in the Arctic regions.

Ordinarily, the letter of transmittal of the Chief Signal Officer would have preceded the report of the officer in command of the supply expedition; but, as that letter contains questions that are answered in Lieutenant Garlington's supplementary report, it has been deemed best to print the papers chronologically.

# LADY FRANKLIN BAY EXPEDITION.

## REPORT OF LIEUTENANT GARLINGTON.

WASHINGTON, D. C., *October 2, 1883.*

CHIEF SIGNAL OFFICER, U. S. A.

SIR: I have the honor to report that, in obedience to par. 7, Special Orders No. 129, c. s., A. G. O., and Instructions from your office (appended and marked "A," with four enclosures and memorandum), I left Washington City on the 11th of June, 1883, and proceeded to New York, thence by United States steamer "Yantic" to Saint John's, Newfoundland, where I arrived on the 21st of June, without incident worthy of notice. I learned from the United States consul, Mr. Malloy, who came aboard almost immediately after the ship arrived, that the stores that had been shipped from New York on the 7th of June, on the steamer "Alhambra," had arrived and had been turned over to Captain Pike, master of steamship "Proteus," which had been previously chartered for the expedition. As soon as possible I went ashore, and visited the "Proteus," then lying at her wharf taking in cargo.

Everything was already on board, except the house and stores left at Saint John's from the expedition of last year. In order to get at the meteorological instruments necessary to carry on the work called for by my instructions, a large portion of the cargo had to be broken out; this was done on the 22d of June. Captain Pike reported that he would be ready to go to sea at the end of a week.

I then proceeded to get together the stores at Saint John's, which had been previously ordered by letter. Many of the articles thus ordered were not as good as they should have been, but it was then too late to replace them, so they had to be taken. I found that Consul Malloy had not secured the services of the three native "sealers" as you supposed had been done. As all the best of these "sealers" had made their arrangements for the summer at the fisheries, I found it very difficult to get anyone suitable for the service; however, after several days, I succeeded in shipping three men, who proved to be very good and reliable.

While in Saint John's, Lieut. J. C. Colwell, U. S. Navy, at his own request, strongly recommended by me, was detailed for duty with the relief expedition, and reported for duty the 23d of June. On the evening of the 28th, Captain Pike reported ship ready to leave the wharf, my detachment went aboard, the ship dropped out into the harbor and anchored.

As a result of a consultation with Commander Wildes, the agreement was entered into, which is hereto appended and marked "B."

At 4 o'clock p. m., the 29th of June, the steamships "Yantic" and "Proteus" steamed out of the harbor of Saint John's for Godhavn.

The day was beautiful, the wind was blowing a gentle breeze off shore. After clearing the narrows, the "Proteus" set her course close into shore; the "Yantic" set sail, and went more to eastward; we lost sight of her at 7.30 o'clock p. m., and saw her no more until she reached Godhavn.

On the morning of the 1st of July several icebergs were sighted, and during the day we passed several small pans of floe ice, also many scattered pieces of ice.

At 5 o'clock p. m. the same day, in latitude  $53^{\circ} 50'$  north, longitude  $52^{\circ} 51'$  west,

a large field of floe ice was sighted ahead, extending to the southward and eastward; we therefore altered our course slightly and ran into more open water. The ship was now forced through a large field of broken ice, very hard and blue in color, of peculiar forms and shapes, generally with flat tops, one-half to three-quarters under water, deeply washed horizontally, with long, projecting, shelf-like sides extending outward and downward into the water.

At 11.20 p. m., on the night of the 1st of July, we had to lie alongside very heavy ice for five hours, on account of an intensely dense fog. At half-past four o'clock a. m., on the 2d, we were again under way, and at 11 o'clock were clear of ice, after doing a little butting.

At 11 o'clock p. m. the temperature of the water was 33° Fahr. at the surface; the minimum temperature of the atmosphere during the night was 31° Fahr. On the morning of the 2d of July much ice was seen from aloft to the southward and eastward, but we soon lost sight of it, and no more floe ice was seen south of Disco, although many icebergs were passed.

On the night of the 4th of July the sun went below the horizon for the last time during the month. On the night of the 5th, at ten minutes to 12 o'clock, the sun touched the horizon, and, after an instant's apparent rest there, started on its upward course.

The coast of Greenland, very high and snow-capped, supposed to be old Sukkertop, was sighted at quarter of one o'clock on the afternoon of the 5th. Disco island was sighted at 11 o'clock on the morning of the 6th, about fifty miles to the northward.

Owing to some error in his bearings, the captain ran by the entrance to the harbor of Godhavn, and was making about due course for Ritenbenk, when some one on deck discovered a small boat several miles astern of us, evidently endeavoring to attract our attention. The ship was put about, and, after steaming five or six miles, came up to the boat, which proved to be the pilot boat from Godhavn. The pilot came aboard and showed Captain Pike the way in. We were anchored in harbor at 7.30 p. m. I immediately went ashore, and was very courteously received by Governor Djurhuus, from whom I learned that the inspector, Herr Andersen, was at Egedesminde, not having as yet changed his residence to Godhavn. He also informed me that no skin clothing had been prepared for this expedition at Godhavn, for the reason that he had received no instructions, and for the same reason he could not furnish me the Eskimo dog drivers, whom I expected to secure here. He could not tell me whether the inspector had received such instructions, so I determined to go to Egedesminde, as it was necessary for me to see him in person.

Governor Djurhuus very kindly offered to accompany me, and accordingly the next day we got the ship under way and proceeded to that settlement. The ship was steamed into harbor, no soundings being taken, and the anchor let go in three fathoms of water. In a few minutes she swung around and grounded under her stern; a warp was run out from the starboard quarter and the ship was pulled clear without much difficulty. I found the inspector absent on his annual tour of inspection, and as Godhavn was included in that tour, and the probabilities were that he would reach that place in a few days, I returned at once to await the arrival there of the "Yantic" as well as the inspector. At Egedesminde, I learned from the governor there that the inspector had, as far as he knew, received no instructions whatever in regard to an expedition from the United States. This was discouraging, as I knew it would then be impossible to procure skin clothing in any quantity, and I apprehended some difficulty in procuring the services of two Eskimo dog drivers in the absence of instructions from the home government.

From the 7th of July until the 16th I remained in the harbor of Godhavn, the crew being engaged in shifting cargo, filling coal bunkers, and generally trimming

ship. My own men were employed in preparing stores for forming depots as ordered (four of these were prepared of two hundred and fifty rations each), moving stores so as to be easily accessible in case of having to abandon ship, airing skin clothing, and getting alongside stores which had been left here by the expedition of last year.

Herr Andersen, the inspector, arrived on the afternoon of July 12th. I immediately called upon him, and through Governor Djurhuus, (the inspector speaking no English) learned that no instructions had been received by him in reference to an expedition from the United States. He, however, said he would gladly do all in his power to further the success of the expedition; that it was of course too late now to procure clothing, but that he would furnish two strong and reliable Eskimo, one of them from Godhavn, the other from Disco fjord, which we would pass on the way north, and could stop there to take him on board. This was satisfactory; the failure to get skin clothing was of no great consequence, as I already had a large supply.

The "Yantic" arrived at 7.15 p. m., the 12th of July. She had come all the way under sail and had encountered no ice at all. Commander Wildes informed me that he would remain there probably a week to repair the ship's boilers, then go to the coal mine in Waigatt strait and mine and get aboard about one hundred tons of coal. He subsequently told me, before leaving Godhavn, that he had succeeded in procuring from the inspector an order for thirty tons of coal from Ritenbenk, and that he would call there for it.

At 1 o'clock a. m., of the 14th, Nordenskjold's steamer, the "Sofia," arrived and left for Ritenbenk the next morning. She was to land a portion of her scientific party on Disco island, put on coal at Ritenbenk, then proceed to Cape York and remain there thirty days. While here they procured the services of Hans Christian for the Cape York party.

On the afternoon of the 14th the Eskimo dogs were gotten on board (twenty-one in number), and placed in a pen on deck, the Eskimo Nicholas taking charge of them.

I determined now to proceed north without further delay. The time necessary for repairing the boiler of the "Yantic," and the additional delay in procuring coal, would be longer than I deemed justifiable in further delaying my progress north. I therefore determined to leave Godhavn as soon as the state of the weather warranted. Outside the harbor it had been thick and threatening since the 12th of July, and Captain Pike did not think it prudent to put to sea. On the morning of the 16th the fog lifted, and at 6 a. m. the ship was under way, intending to call at a small settlement about fifteen miles up Disco fjord to get the other Eskimo whose services had been secured for the expedition.

The inspector and also the governor of Godhavn both assured me there would be no difficulty in reaching the settlement with the ship, and that Nicholas, the Eskimo, was perfectly acquainted with the fjord. At 8 a. m., when abreast of a small island lying on the eastern side of the entrance to the fjord, and which we had to round in entering, the mate reported shallow water ahead. Captain Pike thought there was plenty of water, calling attention to several icebergs ahead as evidence of the fact (these proved to be aground), but took no precaution to ascertain the depth of water by sounding. He caused the ship to "slow down" to half speed, and almost immediately gave signal "astern full speed," but before she answered she struck about 'midships on the starboard side, made one or two jumps, and hung on her starboard quarters; she slewed around easily, and to the southward, and lay north and south with a slight list to the port side. There was a slight swell, causing the ship to bump several times. Lieutenant Colwell got several casts of the lead; over the starboard quarter the line indicated five fathoms of water. He was nonplussed to account for the ship's striking in five fathoms of water, when one of the crew stand-

ing near told him that three fathoms had been cut from the lead line, so that in reality there were but twelve feet of water where she struck; soundings showed nineteen feet over the bow. When the ship hung, the engines were put ahead and astern at full speed, and in a few minutes she started, and with two or three jumps swung clear.

An examination was made by the chief engineer, who reported the main injection pipe cracked, but repaired it with canvass and white lead. A few splinters of wood floated to the surface, which were ground from her false keel as the ship swung on the rocks. The careless manner in which the ship was being navigated was thus again brought forcibly to my mind, and although I was determined not to interfere in the slightest way with Captain Pike in his duties as master, I could not refrain from calling his attention to the matter, and insisting on more care in the future. After the ship was clear, wishing to take no more chances, I called away one of the whale-boats, and with Lieutenant Colwell, and crew of my own men, including the Eskimo Nicholas, started for the settlement in Disco fjord, which we reached after three hours' sailing.

I soon found the man designated by the inspector to accompany me, and Nicholas gave him the inspector's orders. In a few minutes he was ready to accompany us, with all his earthly possessions, a kyack and the skin clothing he had on his back. Before we could get out of the fjord a very dense fog set in, and it was with great difficulty that we finally got clear, there being so many inlets running from the fjord inland. However, I had made arrangements with Captain Pike to begin at 1 p. m. and fire his small swivel gun at intervals of fifteen minutes, and to sound the steam whistle at intervals of five minutes; so, after arriving within hearing, we experienced no further difficulty and reached the ship at 4 p. m. It cleared at 5 p. m., and the ship was under way again. Running around the southwest corner of Disco island, the course was set for Cape York.

On the morning of the 17th we passed Hare island, about forty miles to the eastward. Icebergs were numerous in all directions, as well as fragments, of all sizes, from those which had foundered. Saunderson's Hope was sighted at 6.20 p. m., fifty or sixty miles to the eastward. I was awakened on the morning of the 18th by being nearly thrown from my bunk, and upon looking through my port, saw ice in all directions.

I immediately went on deck, it being 6.30 a. m., and found that the ship was forcing her way through floe ice, the greater portion of which had the appearance of being very rotten and for the most part thin, varying from two to six feet in thickness; other portions, however, were very hard, blue in color, and from ten to twelve feet in thickness, showing manifestly the presence of Arctic ice. Scattered through this ice were numerous floe and icebergs of weird, fantastic shapes. On the top of the flat pans were numerous pools of water, which Captain Pike pronounced fresh. I procured a cup full and tested it with nitrate of silver, which showed that it contained salt.

He caused pieces to be broken from the highest points of the floe and put in the tank, which, when melted, were also subjected to the test, and it showed the precipitate at once, so I, therefore, ordered it to be used for washing purposes only.

The ship was stopped at 4.30 a. m., July 9th\*, by an impenetrable pack. She was backed out and went south for a distance of eight miles, then a more easterly course was taken, and at 7.15 a. m. we sighted land, pronounced by Captain Pike to be Bushman island, with Cape York to the westward. We continued in a general easterly course working our way through the pack, hoping to find an open lead to the northward. At 4 p. m. the ship was brought to a standstill by the solid floe. Here I determined to lay until it was possible to get an observation for longitude, and thus

\* This date was presumably the 19th.—Ed.

ascertain our true position. The pack was unbroken in all directions except to the southward. With an artificial horizon placed on the floe, Lieutenant Colwell determined longitude to be  $61^{\circ} 30'$  W., Captain Pike proving to be entirely in error as to his position, and the land pronounced by him to be Cape York was, in reality, Cape Walker, and the island one of the Belgoni group. I was not surprised at the error made by Captain Pike, as he had no idea of what was the local deviation of his compass, which must have been great and variable for different courses, due to the large amount and unequal distribution of iron about the binnacle. At 7.20 p. m. the ship was turned south and made about twenty miles in that direction, when a lead to the west was discovered and followed, with many changes in course to keep in open water, making as much northing as possible. At 8 o'clock on the morning of the 20th we were again stopped by an impenetrable pack to the north and west.

The ship was again turned about and went twenty or twenty-five miles to the southward, when the course was changed to north and west through loose and rotten ice. Cape York was in sight all the afternoon.

At 7 p. m. we sighted Conical rock and steered directly for it. This island was passed at 1 a. m., the 21st, a few miles to the eastward. On this night young ice formed from the fresh water from the melting icebergs, as temperature of the water was only  $31^{\circ}$  Fahr. During the night and morning we passed through much loose ice and a large number of icebergs. At 9 a. m., 21st, Saunders' island bore abeam. We were within twenty miles of S. E. Carey island, but could not see it for the fog. At 11 p. m. we were stopped by the pack, and forced to retrace our course to the south, to find passage to the north and west, which was done when opposite Wolstenholme island. We were clear of ice at 12 p. m., and reached S. E. Carey island at 3 p. m., the cache of the "Nares' Expedition," being plainly in sight on the southwest end of the island.

As there was quite a breeze from the west, the ship passed around to the leeward of the island, and lay there while I, with Lieutenant Colwell, visited the cache, to leave a record for Commander Wildes in case he should reach this place, and to examine the condition of the stores.

I found everything there undisturbed. From a careful examination of two barrels of bread and three cans of meat, I estimated that sixty per cent. of the provisions are in good condition, while perhaps seventy-five per cent. could be eaten in emergency. The boat was also in good condition. I took a copy of the records of Lieutenant Lockwood of the Greely expedition, also a copy of the records of Sir George Nares, and left the original and my own record well secure under the boat. These copies were all lost in the wreck; the original record of Lieutenant Lockwood, afterwards furnished me by Commander Wildes, is appended, marked "C."

While on the island Lieutenant Colwell obtained a good observation for longitude, and his computation placed it more to the southward and eastward than now indicated on the chart. I saw several broods of young ducks, which indicated, according to Captain Pike, an early season in this region. I sent Artificer Moritz to the top of the island to examine the cairn, which he found as it had been left by Lieutenant Greely, and nothing was disturbed. The quantity and character of the ice encountered was interpreted as showing that a great deal had passed out of Smith's sound. At 7.20 p. m. we were under way, no ice in sight, steaming for Cape Alexander.

At 6 a. m., the 22d, we rounded the Cape and entered Pandora harbor. I went ashore to leave a record, (appended and marked "D") but I could not find the record left by the expedition of last year. The cliffs around the harbor were covered with birds, which kept up a deafening chattering.

The weather was perfect, calm, warm, delightful, and the hills were green with the pretty flowering moss of those regions, with occasional patches of grass of lux-

uriant growth. There was no ice as far as could be seen from the "crow's-nest" with the aid of a very powerful telescope.

I determined, if conditions continued the same, not to stop to leave a record at Littleton island, but to take advantage of the open water and auspicious circumstances, and push to the northward as far as Cape Prescott, where I had determined to make my first cache of provisions and to leave a whale-boat. We passed Littleton island at 9.45 a. m., the coal pile being plainly visible and apparently undisturbed. There was still no ice seen from the "crow's-nest," but at 10.30 a. m. it was reported, and at 11.30 a. m. the ship lay alongside of it. It presented an unbroken front—no leads to the north. I then decided to go to Cape Sabine to examine cache there, leave records and await further developments.

We reached Payer harbor at 3.30 p. m. I immediately landed Privates Ellis and Lamar, with magnetic and other instruments, thinking we would remain in Payer harbor long enough to get a set of observations.

I then, with a crew of my own party in one of the ship's boats, went to search for the cache of the expedition of last year, which I found after some difficulty. The tripod with flag marking the place had fallen down. Everything was in good condition except the boat, which bore marks of the claws of bears, a patch of lead having been pulled off; however, the damage was slight. The tarpaulin which covered the stores that could not be put under the boat, had been torn up by wild beasts. The tripod was placed in position and as well secured as possible. While the men were at work I examined the condition of the ice to the northward, and discovered that the pack had broken, and that open lanes of water had formed leading across Buchanan strait, along Bache island, and across Princess Marie bay as far north as a point of land which I took to be Cape Hawks and around it. After satisfying myself with the glass that there could be no mistake about the presence of a favorable lead, I started back to the ship, hurrying as rapidly as possible, appreciating the rapid changes in the condition of the ice and the treacherous movement of the pack. I reached the ship at 6.30 p. m., and at once got the observers aboard and told Captain Pike of the open way, and requested him to get under way and steam out of the harbor to make an examination of the leads and an effort to proceed north.

We were under way at 8 p. m. As we rounded Cape Sabine, at my request, Lieutenant Colwell took station in the "crow's-nest" with the mate. We proceeded through the open leads in the broken ice, which was very heavy, to within four miles of Cape Albert, when the ship was stopped about six hundred yards from the open water, which extended along the coast as far as could be seen from the "crow's-nest." Captain Pike thought the ship could be forced through, and entered a crack in the ice, and we accomplished about half the distance by "ramming." But after this the "ramming" was ineffectual, as the fragments of ice about the ship had become ground up so fine that when she backed out it would fill up the space immediately in front of the new fracture in the ice, and, as the ship came forward to ram, it acted as a cushion, which reduced her momentum to such an extent that when she struck the ice itself she had not sufficient force remaining to have any effect upon it. About midnight the attempt at this point was given up. A lead was found more to the eastward, in which the ship made fair progress until 2 a. m. the 23d, when we were jammed, and unable to move in any direction, within two hundred yards of open water. The ice here was not so heavy as it was in the position left at midnight, and Captain Pike pronounced the ship in no danger on account of its yielding nature. Soon after, at 5 a. m., the ice immediately in front separated, and we were in the open water which had been in our immediate front the night before. On arriving within four miles of Cape Albert, it was discovered that the open lane of water seen the night before had disappeared, and that the solid pack now held its place.

The attempt to proceed north was then relinquished for the time, and the ship was turned to the southward to make its way out of the pack. We proceeded in that direction until 11 a. m., when the ice closed in and effectually checked further progress. The ship was held here until 1 p. m.; the ice was much broken, and there was no danger of a "nip." As soon as it was possible, we started and made good progress for some time by frequently changing course and following the most favorable leads.

The large pans of ice which the evening before were passing to the southward, were now being brought back by the tide. Buchanan strait was rapidly filling up from the same cause. About 2.45 p. m. the ship was brought to a standstill within four hundred yards of open water, and movement in any direction was impossible. She was lying east and west. The ice in front and along the crack we were following immediately began to show signs of enormous pressure. The ship was in a most dangerous situation, and I realized that we would have a veritable "nip." I called my men quietly, and at once put them to work getting stores ready to be thrown on the ice at the first evidence of the ship sustaining serious injury. The "Neptune" had been beset in very nearly the same position last year, but had withstood the strain, rising three feet, and had gotten clear without damage. I hoped that the ice floes would ease or part before doing their fatal work. The pressure against the ship's sides was incalculable, the heavy ice, from five to seven feet in thickness, as it came against her sides under this powerful strain, broke and rafted up on the floe amidships and astern, but still there were no signs of giving way. I yet hoped that the pressure would cease. At 4.30 p. m. the starboard rail gave way with a crash.

At this time I was in the "main hold" with part of my detachment getting out provisions; another detail, under Sergeant Kenney, was in the "fore peak" getting out the prepared depots. Lieutenant Colwell came to the "hatch" and told me that the bulwarks had given way, but that he thought the "nip" was easing. I requested him to look after getting the boats clear. About the same time Sergeant Kenney reported the depots on deck. Almost immediately after there was another loud crash; the ice had forced its way through the ship's side into the starboard coal bunker.

The deck planks began to rise and seams to open out. I at once set the men to work throwing provisions overboard as rapidly as possible. I observed that many of the boxes were going under the ship's side as they were thrown over on the starboard side, and two men were sent on the ice to move them farther on this floe as they came over, but this they could not do rapidly enough, and about thirty per cent. of the stores thrown over went under.

All the stores on deck and those near at hand in the hold were thrown overboard. Lieutenant Colwell was at this time getting the boats on the ice. The dingy and the starboard whale-boat were gotten off without much difficulty; a small hole, however, was stove in the whale-boat. There was now much water in the hold, and prevented more provisions being taken out. I now turned my attention to getting those stores already on the ice to a place of safety, and taking my detail proceeded to remove the boats and provisions to a safe distance from the ship, as I feared that when the ship would go down she would keel over to one side or the other and break the ice for some distance from her sides. Lieutenant Colwell was still at work on the port whale-boat, which was jammed and resisted all efforts to move it. The ship began to settle, the alarm was given "she is sinking." All hands on the ship then left her, but she settled only a few inches, and there appeared to be in no immediate danger. Lieutenant Colwell then went back to the whale-boat, and the detail, assisted now by the engineer of the "Proteus," Mr. Carmichael, and the boatswain of the "Proteus," Mr. Taylor, succeeded in getting it from the gallows frame, but here it stuck hard and fast between the ice and the ship. The pressure

fortunately eased a little on that side, and with the assistance of axes the boat was cleared.

The chronometers, sextants, and records were gotten out of the cabin and safely placed on the ice by Privates Ellis and Lamar. At 6.50 p. m. those who were still on the ship, saving whatever they could, left her, Lieutenant Colwell leaving last. At 7.15 p. m. she began to sink, and slowly passed out of sight on an even keel. One boat and a large quantity of stores were on the floe which had been on the port side of the ship, and it was necessary to get them on the other floe with the rest of the stores, and to move those already there, the ice showing signs of breaking where they were. Two boats' loads were successfully ferried over through the broken ice, the floe rapidly passing to the eastward. The line gave way and another boat could not be sent back. Lieutenant Colwell and party, who were on that side attending to the transfer, had by this time floated three-fourths of a mile away. They took what they could carry, and walked on the floe to a point opposite our position.

The dingy was sent and brought the party over. By this time more water had made and Private Murphy took Nicholas, the Eskimo, in the dingy, and by going about a mile and a half reached the point on the other floe where the stores were, and succeeded in bringing over one load, Nicholas having secured seven dogs. The dogs had scattered in all directions over the ice after being thrown over the ship's side, and, with the exception of those caught by Nicholas, ran off. Sergeant Kenney, with three men from the "Proteus," whose bags were on that side, also made a successful trip in the ship's "punt" through a lead which had now formed more to the eastward. I then proceeded to get things ready in case we had to suddenly quit the floe.

The services of Lieutenant Colwell during this trying time cannot be overestimated; but for his courage and presence of mind one of the whale-boats would have been lost, which would have seriously embarrassed, if it did not prevent, a successful retreat. Dr. Harrison is also deserving of commendation for zeal displayed in saving provisions, clothing, &c. The men of my detachment worked as I never saw men work before, and were as cool and collected as if it were an every day exercise. With the exception of the chief engineer of the "Proteus," Mr. Carmichael, and the boatswain, Mr. Taylor, none of the crew lent any assistance to me in saving property. At the first alarm those on duty abandoned their posts and all rushed to look after their own property in the fore-castle, and did nothing toward saving provisions until after their bags had been packed and safely put on the ice. As soon as the stores began to go over the ship's side, they commenced to appropriate anything that suited their fancy. Boxes were broken open and rifled, bags of private clothing were opened and contents stolen. Lieutenant Colwell lost all of his clothing after it had been thrown on the ice; he afterward recovered a portion of it from the possession of one of the assistant engineers of the ship. The crew, with two or three exceptions, seemed bent on robbing from the start, and appeared to think it a matter of right that they should have any and everything they wanted. I think, however, that if their own officers had taken the proper stand, there would have been no difficulty in preventing the carrying into successful prosecution their stealing propensities. I protested to Captain Pike against this outrageous conduct; he admitted it, but said he was powerless to prevent it, saying: "they (the crew) are the worst lot of scoundrels I ever saw." The men of the crew were, of course, shipped under the English law for an English ship. They claimed that, as their pay stopped when the ship went down, their shipping articles were no longer in force, and that they owed no allegiance to the officers of the ship except what they choose to give. To assume control of the crew and to enforce disciplinary regulations necessary to a successful retreat from our perilous position, force would have been necessary, and more force than I had at my command. To avoid this, as well as any

resulting complications, I determined to keep my men and stores separate and distinct, avoiding, if possible, any unnecessary collision, and, if a retreat to the southward should be decided upon, I would sail in company with and give to Captain Pike and his crew all assistance consistent with the safety of the whole party. I called his attention to the importance of saving all the provisions possible, and of abandoning all unnecessary articles. It was agreed that his men should be divided among his three boats, mine in two whale-boats, and that we should sail in company and work for the mutual good, the first objective point being the land. About 12 p. m. the chances looked quite favorable for making land. After consulting with Lieutenant Colwell, it was decided that he should take a whale-boat and make the attempt. As my own men were much exhausted and the crew of the "Proteus" were comparatively fresh, having done, really, little hard work during the day, I asked Captain Pike for a crew for the boat. In response to his call for men, only four signified their willingness to go.

Lieutenant Colwell succeeded in making land, and in cacheing the provisions about three miles west of Cape Sabine. They were secured as well as circumstances permitted, and covered with a tent fly. This cache consisted of hard bread, tea, bacon, canned goods, tobacco, and sleeping bags, estimated at five hundred rations. This cache was not disturbed again. Lieutenant Colwell returned at 2 a. m. I took one of the men who had been with him, launched the other whale-boat and started for the land, but, after going half a mile, found all approaches closed, so returned and pulled the boats on the floe. I then directed the men to make themselves comfortable, and get all the rest they could, and waited a favorable time for making another attempt. This occurred at 5 a. m. the 24th. At first I decided to launch all the boats and endeavor to reach the land, but after consulting with Lieutenant Colwell and Captain Pike, it was decided to send but one of my boats, and one of Captain Pike's. Soon after Lieutenant Colwell left, everything looked so favorable, and the plan we were on having begun to move to eastward, I determined to start at once; Captain Pike also started two of his boats at the same time. It took a long time to make the distance to Cape Sabine, as I had only two men who knew how to row. The boat came near swamping on the way over, by reason of the plug in the bottom having been worked out of its place by boxes rubbing against it. I immediately unloaded the boat, left a man to watch the stores (a part of the "Proteus" crew being already there), and started back to the floe, one of Captain Pike's boats also returning. I found that all approaches to the floe were cut off, and now having but three men, it would be impossible to handle the boat in the ice. I therefore returned to Cape Sabine, and Captain Pike's boat also returned. Lieutenant Colwell in the meantime had reached the floe, and at 9.30 a. m. returned to Cape Sabine, bringing eight of the crew of the "Proteus" besides ten of my own men. He reported great difficulty in getting out of the floe, which was rapidly moving out to the eastward. When, after many failures, he at last found an opportunity to quit the floe, it became necessary to leave nearly all of the stores, which he had been hauling about the floe with much difficulty, in order that he might be able to bring away eight men of the crew of the "Proteus," who had been left on the ice, against their most earnest protests, by the master and officers of that ship. It was impossible to launch the dingy, and it was left on the floe. Sergeant Kenney, Corporal Elwell, Artificer Moritz, and two men from the crew of the "Proteus" made another trip to the shore in the ship's "punt," and secured a load of provisions and clothing. Artificer Moritz brought back the dingy loaded, having pulled it alone for about four miles. None of the Eskimo dogs were saved. The ice was running very thick between the Cape and the floe, which was now passing away rapidly, and all further attempts to reach it were abandoned. At 12 o'clock m., the 24th of July, every one was on the rocks at Cape Sabine; the boats were then hauled up and made as secure as possible. An

inventory of the provisions showed about forty days' rations on hand. A large quantity of clothing, consisting of buffalo overcoats, fur caps and gloves, arctic overshoes, uniform clothing, and underclothing, &c., was cached on Cape Sabine.

The two sidereal chronometers were placed in this cache. Each man's allowance of baggage was fixed: one buffalo overcoat, one fur cap, one pair of mits, a suit of skin clothing, and two changes of underclothing. All were very much exhausted, and I decided to do nothing until the men got at least a short rest.

It rained lightly during the day, and towards evening a thick fog set in, which continued until the afternoon of the 25th. During the stay I visited Brevoort island, and left the record appended and marked "E."

The prime object of the expedition was now defeated; what was the best course to follow to be able to accomplish something looking to the relief of Greely was the great problem to be solved. To have gone north in small boats was altogether impossible, and therefore out of the question, and even had it been feasible would have been useless under the circumstances. If the "Yantic" should reach Littleton island or Pandora harbor, the question would become one of easy solution. I could get from her all the stores she could spare, including clothing, coal, and canvas, establish a station at Life-boat cove, remain there with two or three men, and send the rest of the party and crew of the "Proteus" to Saint John's. A sealer could then have been secured and sent north. But, could she reach Littleton island? This was the point I had to settle in my mind from my knowledge of the condition of the ice as I found it on my way north from Disco island, taken in connection with Commander Wildes' instructions as far as I knew them. The "Yantic" crew was large, about one hundred and forty men, had a limited supply of provisions, and was not at all adapted to contend against the ice. It had taken the "Proteus," specially built for ice navigation, three days to force her way through the ice in Mellville bay. The Commander of the "Yantic," as far as I was informed, had specific orders not to go into the ice, or to place his ship in any position which would risk having to remain in those regions during the winter. When the ice through which the "Proteus" had passed off Labrador was described to Commander Wildes, when I met him in Godhavn in July, he said he would not have put the "Yantic" in it if he had encountered it. And while I was confident that he would go to Littleton island, if he deemed it prudent and consistent with the safety of his vessel and crew, I did not believe he would succeed in getting through Mellville bay where we had met so much ice. But I also thought if the conditions had changed in Mellville bay in the meantime, and if the "Yantic" should cross and reach Littleton island, she would find my record, know of the disaster, and easily follow us along the coast and pick us up very soon; if she did not sight us on her way north. It was my honest opinion that the "Yantic" would not cross Mellville bay. I therefore determined to cross Smith sound at the first favorable opportunity and to proceed to the southward as rapidly as possible, for the purpose of opening communication. There was a possibility of meeting relief at Cape York in the Swedish steamer "Sofia." I considered the chances of her crossing Mellville bay more favorable than those of the "Yantic," as she was smaller, properly equipped, and commanded by a master of extensive Arctic experience.

While on Cape Sabine I took a large quantity of clothing from the crew of the "Proteus," which they had taken from my supplies. They surrendered it with bad grace, notwithstanding that I explained to them the urgent necessity of leaving everything, not absolutely needed, for Lieutenant Greely's party. I afterward saw that they did not give up all they had in their possession.

It cleared somewhat on the afternoon of the 25th of July, and at 3.20 p. m. all the boats were launched and under way, the dingy being towed by Lieutenant Colwell's boat.

Crossing the sound, fog becoming thicker, the boats became separated. My two boats, after being worked through a string of ice along shore, at 12 p. m. put into a small cove just north of Life-boat cove. I determined to remain there until it cleared. It was then raining. It snowed and rained all night. It cleared up the next morning, and we left for Pandora harbor, stopping at Littleton island to leave a record (appended and marked "F"). Upon reaching Pandora harbor at 7.50 p. m., we found Captain Pike's boats there, they having arrived during the morning. In the same cairn which I made on my way north, I now deposited another record (appended and marked "G"). We were detained here until the afternoon of the 28th by fog. At 4.45 p. m. we got under way, heading for Northumberland island.

At Radcliff point we were stopped by fog, but could not land. As the fog lifted we put into Sontag bay, hoping to find a place to secure the boats; it was full of ice and icebergs, among which we felt our way carefully, going entirely around the bay without finding a suitable place. There were several traps along the shore of the bay, but no recent signs of Eskimo. Although the fog was very thick, it was necessary to go on. We reached Cape Saumarez before finding a place to haul up the boats. Having but two men in my crew at all versed in the management of a small boat, at this camp I asked Captain Pike to let me have one of his sailors, if he could recommend a good one. He willingly consented, and it was arranged that the boatswain, Taylor, should come the next morning. When morning came Taylor told me that the rest of the crew "were making so much fuss" he would have to remain with them, but finally, after some conversation, he decided to come, notwithstanding their objections. He remained with me during the remainder of the boat journey, doing good and faithful service. The next morning, the 29th, at 5.45 a. m., we were under way, and after a long, weary pull on the oars, reached Northumberland island at 7.10 p. m. We were delayed here by a strong easterly wind until the afternoon of the 30th. On this island were seen numerous signs of Eskimo, but all old. At 4.40 p. m. the wind subsided and allowed us to get under way, and the next morning we reached a point about seven miles north of Cape Parry, and were stopped there by the threatening outlook ahead. We were kept here two days by a heavy storm from the east, with snow.

After consulting with Lieutenant Colwell, I decided not to go to Carey island, as originally intended. He thought it would be extremely hazardous with our heavily laden boats. We left this camp at 8.30 a. m., August 2. When off Fitzclarenc rock we ran into "slack ice," and through it the rest of the day. We landed on Saunders' island at 9.20 p. m., hauled up the boats, and made camp. There was a good deal of ice to the southward. On this island were numerous signs of Eskimo, from three weeks to a month old. There was also small igloos or huts, which had been inhabited at no very distant date. An Eskimo dog, with one fore foot tied up to his neck, was also seen. Some of the men found two oars, one marked "Active," the other "Polynia." We were delayed at Saunders' island one day by the fog and running ice.

I deposited a record in a prominent cairn (copy of it lost). The boats were launched and gotten under way at 5.30 p. m., of the 4th. After making about seventeen miles we were stopped by the ice at 12.30 a. m. The boats were hauled up on a convenient point of rocks. Here I picked up a piece of a thermometer; there were old signs of Eskimo. At this place we were delayed by rain, fog, snow, and running ice until the 7th of August. At 11 a. m., of that day, we got under way and ran through loose ice, which became closer as we proceeded, and very thick when opposite Potowik glacier.

The leads of water rapidly closed. Finally, about 5.45 p. m., when about three-quarters of a mile from Conical rock, all openings through the ice closed, and the boats were completely jammed. Every man was on the ice in an instant, and by

quick and heavy hauling all the boats were hauled up on a small pan of ice. After an hour's delay, a small lead to the southward opened, the boats were launched and worked through it by pulling and pushing. In a short time we reached Conical rock. The boats lay here while I went to the top of the island to make an examination of the condition of the ice to the southward. I discovered a lane of water following the general trend of the shore. Returning to the boats, we again started and proceeded with great care and caution. Several times the boats narrowly missed being caught between the moving pans. It was impossible to reach the land at any time. During the night there was frost, and young ice formed from one-quarter to three-eighths of an inch in thickness. We succeeded in making land at 10.30 a. m., of the 8th.

We remained here until the afternoon of the same day, when we launched the boats and made about five miles, when we were stopped by the ice about fourteen miles from Cape York. The boats were hauled up on shore and the ice almost immediately jammed into the shore, completely blockading us. The wind, which was from the east, and to which we looked to free us, completely subsided. The tide came and went out without changing the condition of affairs. We were now very near Cape York, with no immediate prospect of being able to get our boats in the water. It was very important to communicate with Cape York, for the purpose of finding out from the Eskimo there whether any ship was in that vicinity or whether any had passed north. It would be necessary to drag the boat for some distance on the ice, so I decided to ask Captain Pike for his "punt," a small, light, and strong boat, specially built for knocking about in the ice, to send on to Cape York with a small party. He consented to furnish the boat and three men. He met with some difficulty in getting men willing to go, but after some parleying one of his engineers and two firemen signified their willingness to go; Artificer Moritz and Nicholas completed the crew. Lieutenant Colwell took charge of the boat and left for Cape York 9.30 a. m., of the 9th. I instructed him to find out all he could from the Eskimo there, and if I did not join him within a reasonable time, to return. It began to snow at 11 a. m. and continued, with occasional rain, until night. It then began to blow quite strong from the northeast, which drove the ice from the shore immediately in front of camp, but it still remained unbroken to the southward. Shortly after midnight an open lane of water formed, following the trend of the shore, and the boats were immediately launched. It became necessary to put into the land, after having made four or five miles, on account of a very strong head wind. After about three hours the wind moderated, and we were able to proceed. When about eight miles beyond Cape York, our attention was attracted by the report of a rifle fired on shore. We immediately steered for the point whence the sound proceeded, and in a few minutes arrived at Lieutenant Colwell's camp. The evening before he had discovered some natives on shore and had gone to communicate with them. He reported that the camp consisted of three men, four women and nine children, and that they were well supplied with blubber and birds. With the aid of Nicholas he learned from them that there was no ship in the vicinity at that time; beyond that he could ascertain nothing definitely. One of the men had seen ten ships going to the eastward, but whether that year or during his lifetime it was impossible to make out. A ship had stopped there at some time but when, that year or some previous year, it was impossible to form an idea. They remembered Hans Christian, but had not seen him for a very long time; so we knew the "Sofia" had not been there.

From them we understood that there was a large settlement farther up in Immelick bay, and that we could secure the boats there. Thinking that I might be able to find out something more definite in regard to passing ships, I determined to go on. We went about eleven miles and were stopped by the ice, which closed in rapidly and prevented our going further or returning. The boats were with difficulty

pulled up on the rocks. Very soon after we landed, several natives came down from the rocks. I found it impossible to learn anything further than that the large settlement was inland some distance, and that they were there only temporarily. There were ten or twelve men in this party, no women or children. They appeared kind and generous, giving away their blubber for fuel and offering birds for food. I gave them some hard bread and a few cans of meat. There seemed to be no scarcity of game, many reindeer bones, antlers, &c., lying about, and several large caches of the blubber of seal, walrus, and white whale were found among the rocks. The natives themselves were strong and healthy looking, comparing very favorably in appearance with the Eskimo of the more southern settlements. They have no boats or kyacks, and travel entirely by dog sledge. Their only weapon is a short spear; with this they kill all their game, including reindeer and polar bear. We now realized that it would be necessary to cross Melville bay in the small boats, and after consulting with Lieutenant Colwell it was determined to load his boat as light as possible, and to send him directly to Disco at the first favorable opportunity, and that the other boats should proceed to Upernavik, keeping as close into the land as possible, on the outside of the ice. This course was decided upon because it was thought that the "Yantic" would not remain at Upernavik for any length of time, owing to the insecurity of the harbor, and that there was a strong probability of her leaving Disco before we could accomplish the distance by following the more circuitous route, which was necessary for the more heavily loaded and less seaworthy boats. Lieutenant Colwell's instructions are appended, marked "I." We were delayed in that camp until the evening of the 12th, it having rained and snowed all the time. There was so much ice that it prevented the boats being launched at any time.

At 7 p. m., the 12th, a small lead having opened, the boats were put in the water and an attempt made to get out of the bay. We met with considerable difficulty, having at one time to haul the boats on the ice and drag them for some distance, but finally reached open water.

At 1 a. m., on the 13th, we landed very near the place where we had overtaken Lieutenant Colwell a few days before. At this point we were delayed until the 16th. The time was occupied in rigging the boats with weather cloths and wash streaks, under the supervision of Lieutenant Colwell. Sea anchors were also prepared and made ready to use at short notice. The bows of the two whale-boats, along the water line, were sheathed with tin to protect them from the young ice.

At 10 a. m., of the 16th, although still cloudy, the boats all left in company. At 1 p. m. we bade Lieutenant Colwell "good bye" and "good luck," his course taking him more to the southward. We made fair progress during the afternoon, and all night there was a heavy frost and frequent snow squalls.

On the morning of the 18th ice began to offer more obstruction to progress; there were large fields of it, but for the most part "slack." Icebergs were numerous. It snowed and rained at intervals during the day. The ice stopped us at 4 p. m., and it was necessary to retrace our course for several miles, then take a more southerly course. There was a heavy swell from the southeast all day; the wind increased towards night, and at 5 p. m. was blowing a half gale and snowing hard. The sea was very high, the wind still blowing from the southeast. It was extremely hazardous to keep the boats under way any longer, and they were made fast under the lee of a large iceberg. We remained here about an hour, when a large iceberg coming down upon us forced us to cut loose and seek another protecting berg. We lay on our oars among the ice, keeping under the lee of the larger pieces and out of their way until about 8 o'clock, when we succeeded in mooring the boats to a low berg. We remained here three hours, then the foundering of a very large berg in our immediate vicinity necessitated another move. We rowed about among the ice as best

we could for two hours, when we reached a floe-berg and made fast under the lee of it. This afforded us shelter until the morning of the 18th. It snowed hard all night during the night of the 17th; a soft, slushy snow, as bad as rain. There was also a heavy swell from the southeast. Finally, at 2 a. m. the 18th, the wind and sea moderated sufficiently to allow us to proceed on our course. After a hard drag on the oars all day we reached an island, supposed to be Thom's island, at 10.30 p. m. Here we landed and made camp, having been in the boats sixty-one hours. There were some very old signs of Eskimos on this island. At 9 o'clock next morning we were again under way. There was still much ice, but it was "slack;" icebergs also became more numerous. Many were foundering, and their hard fragments made it very dangerous navigation for small boats. We reached Browne's island on the morning of the 20th, and stopped there long enough to go ashore and prepare a hot meal. From a cairn on top of this the record of Sir James Ross, commanding ships "Enterprise" and "Investigator," was taken. (Appended and marked "K.") This cairn had remained undisturbed for thirty-five years. We left the island at 9 a. m. and steered for Red Head, then in sight. Very soon we found ourselves in a perfect labyrinth of icebergs of immense size, piled upon each other, and were continually foundering. My boat scarcely got from under one, over a hundred feet high, as it parted with the report of a 20-inch gun, making the water boil and seethe as it was ground into fragments. While endeavoring to steer the boat rapidly out of the way of a large piece of ice that day, Private Murphy lost his footing and went overboard. He was pulled into the boat without much difficulty, and experienced no ill effects from his arctic bath. At 9 p. m. we reached a group of small rocky islands, landed and made camp. It was now bright and clear for the first time since August 7th.

On the 21st Private Ellis got an observation, which put this island in latitude  $74^{\circ} 51'$ . At 12.45 p. m. we again started, weather continuing fine. There was a great deal of ice, but slack; also countless icebergs lying around the islands and along the shore. Large glaciers lined the whole coast, and the mer-de-glace extended as far inland as the eye could reach.

At 7.30 a. m., the 22d, we reached Baffin island, where we moored boats and landed to get breakfast. There had been long ago a large settlement of Eskimo on this island, as indicated by several ruins of stone igloos, and many old graves; also by large numbers of bones lying about. Some Arctic blueberries were found here, but not ripe. A thick heavy fog set in soon after arriving, and prevented further progress for the time. While lying here a very large berg, about three miles away, foundered with a tremendous report, and produced a wave that broke the boats of Captain Pike from their moorings. At 7.30 p. m. we started under sail and passed Cape Shackleton at 2 a. m. At 4 a. m. we saw a puff of smoke rising from an island ahead; it was evidently a signal. Heading for it, we soon distinguished people among the rocks. We landed and found a party of Eskimo from Tessuissak with a whale-boat. The man in charge, who belonged to Upernavik and talked a little English, turned over to me two bags of ship's biscuits and two cans of coffee. From him I learned that Commander Wildes had heard of our disaster and had sent a lot of stores, of which these were a part, to Tessuissak; that he had been sent to this point to keep a lookout for my boats, deliver the provisions, and pilot us to Upernavik. He had been on the island six days. We left this island at 7.55 a. m., and a few hours later reached the most northern of the North Greenland settlements, Ivitarsuk, but did not stop. At 2.30 p. m. we reached Tessuissak. Here I received a letter from Commander Wildes, dated August 13, at Upernavik, saying: "I shall remain here as long as prudent, and then proceed to the coal mine at Godhavn." Governor Klieman delivered to us the supplies which had been sent up by Commander Wildes; fifteen days' rations for thirty-seven men. I determined to proceed

to Upernavik, and although Captain Pike's men made some objection to getting under way before the next day, we all started at 6.10 p. m. We had a favorable wind and made fair progress, keeping inside the islands and piloted by the Eskimo from Upernavik, until we were stopped at 11.30 p. m. by the thickest fog I ever saw. After groping around in it for a short time we made an island, but could not land; so we lay under its lee until 7 a. m. the 24th. The fog then lifted sufficiently for us to proceed on our course. Hundreds of icebergs were in Kikertarsoak fjord, having been discharged by the Upernavik glacier.

At 11.30 a. m. we reached Upernavik to find the "Yantic" gone, Governor Elborg met me at the landing, and at once took me to his house and insisted upon my being his guest as long as I remained there, the minister, Mr. Christiansen, kindly inviting Dr. Harrison to become his guest. Governor Elborg, before my arrival, had a large comfortable house cleared out and ready for occupancy by my men and the crew of the "Proteus," also a house for storing my property. These he at once placed at my disposal. The boats were secured, stores housed and the men took possession of their new quarters. Governor Elborg informed me that anything in the way of clothing, rations, fuel, &c., that I wanted he would be too glad to furnish. I availed myself of his kind offer to the extent of getting some potatoes, tobacco, and coal. It was impossible for him to have been kinder, more obliging or more thoughtful of our comfort. Here I learned the first news of Lieutenant Colwell since he left me on the 16th; he had arrived the day before, the 23d, and almost immediately started for Disco, transferring his crew to a small schooner kindly furnished by Governor Elborg.

Governor Elborg gave me a letter from Commander Wildes in which he said: "The time has arrived when I think it a serious risk to keep this ship in this high latitude. It is necessary to obtain coal at the mine at Disco, and the uncertainty of the weather and insecurity of the anchorage at that place make it doubtful if we can do much there. I shall remain in Godhavn until about September 15th, not later, and then proceed home."

I decided to await here news from the "Yantic," and in case she did not return to Upernavik, to winter there with my party. The coast is very abrupt between Upernavik and Waigatt strait, affording no harbor even for small boats, and the passage across Omenak fjord in rough weather extremely hazardous, if not impossible, in open boats. While at Upernavik I inquired particularly as to how far north the Eskimo of that settlement and its dependencies had succeeded in going. There was no remembrance or legend, as far as could be ascertained, of any having gone beyond Cape Shackelton. No one at Upernavik knew anything of the old settlement on Baffin island described to the governor by me.

At no time within the memory of the oldest one of these people had they communicated with the Cape York Eskimo. This matter was looked into with a view to ascertain the feasibility of making a sledge journey to Cape York. I concluded it to be impracticable. I also examined into the report brought there by the Swedish steamer "Sofia," of the death or killing of the "Doctor" of Greely's party, at first interpreted as referring to Dr. Pavy, but afterwards thought to refer to the commander or leader of the expedition. It appears that Hans Christian claimed to have been told by the Cape York Eskimo, while he was there on the "Sofia," that the two Eskimo belonging to Lieutenant Greely's party had visited them, and had told them that the doctor of the party at Lady Franklin bay had been killed, his arms and legs cut off. There was another story purporting to have come from Hans Christian that the Cape York Eskimo had received their information from the natives living about Cape Ohlsen, who had received it from a party of white men on Littleton island. The records of former Arctic expeditions show that full reliance

cannot be placed upon the statements of Hans Christian, and I do not think, under the circumstances, that the least credit should be given to those which he makes now. There were no evidences at Cape Sabine, Littleton island, Life-boat cove, Pandora harbor, or other points visited by me that any one had visited that vicinity from the station of Lieutenant Greely, and I am confident that all sensational stories, which have been recently published in regard to himself and party, are without foundation in fact.

If any white men had come south from Lady Franklin bay as far as Littleton island, they would most certainly have left a record. It is not within the range of probability that the Eskimo belonging to Lieutenant Greely's party would have been sent or even allowed to come south alone, and it is quite certain that if they did reach the Eskimo settlements they would not have returned to Fort Conger. There are no Eskimo above Rensselaer bay, nor, as far as I have been able to learn, do they go farther north. The Etah Eskimo do not cross Smith sound, and there are no settlements on the west side. So the only possible means of communication would have been by a party from Fort Conger, and that there was no such communication is, in my opinion, certain.

The "Yantic" arrived on the morning of the 2d of September; Lieutenant Colwell had reached Godhavn on the 31st of August, (copy of his report appended and marked "L"), and Commander Wildes had at once started for Upernavik.

My own party and the crew of the "Proteus" were soon aboard, and 1 p. m. steamed out of the harbor for Saint John's, where we arrived on the 13th of September. As soon as possible I sent you the telegram notifying you of the fatal termination of the expedition, and I need scarcely add, General, the sending of that telegram was the saddest duty I had ever been called upon to perform.

Pursuant to telegraphic instructions, the "Yantic" left Saint John's on September 20th with myself and party on board, and arrived in New York on the 29th.

At Carl Ritter bay there are two hundred and twenty-five rations (Greely); at Cape Collinson two hundred and forty rations (reported by Lieutenant Greely); at Cape Hawks about fifteen hundred rations (reported by Lieutenant Greely); on Cape Sabine seven hundred and fifty rations, a large cache of clothing, and a whale-boat in a damaged condition; on a small island near Brevoort island an English depot of about two hundred and forty rations; at Cape Isabella, a whale-boat; and across the sound on Littleton island, a depot of two hundred and fifty rations, and six and one-half tons of coal. The next depot is on S. E. Cary island, consisting of at least eighteen hundred rations, and a whale-boat. This season there was game in abundance on both sides of Smith sound. On the small islands about Cape Sabine there were ducks and gulls, and from Life-boat cove to Cape York the shore and islands were alive with ducks, lummies, and auks.

About Littleton island we saw at least one thousand walrus and some seal; in Pandora harbor a white whale, and in the hills back of the harbor reindeer. There were also Arctic hare seen there and frequently afterwards along the coast.

At Cape Athol, Artificer Moritz thought he saw a herd of musk oxen at a long distance, but they are more likely to have been reindeer. There were reindeer bones and antlers at each of the old Eskimo camps visited. The natives at Cape York reported reindeer very numerous about that place. I am of the opinion that if Lieutenant Greely should reach Littleton island this season he will divide his people among the different Eskimo settlements, and the stores he will find on his line of retreat, supplemented by the game of that region, will be sufficient food for his party during the coming winter. Unless the condition of the ice permits Lieutenant Greely to leave Discovery harbor in his boats, I do not think he will attempt the journey to Littleton island this season. Previous experience shows that a sledge journey in the fall of the year in that latitude is attended with so many difficulties

as to make it almost impossible. The attempt of the English expedition of 1875-'76 at fall sledging was abandoned in the face of insurmountable difficulties. I think that the experience of two winters will have shown to Lieutenant Greely the futility of making an effort to reach Littleton island by sledges in the fall. The conditions for sledging in the spring are much more favorable. He has at Discovery harbor a good house, plenty of fuel and provisions, with what game the country affords, to carry him to next spring. He could then start south as early as the state of the season permitted and reach Cape Sabine without much comparative difficulty. This will, in my opinion, be the course adopted by Lieutenant Greely, unless he has found Lady Franklin sound and Kennedy channel free of ice, which is improbable. I take great pleasure in calling attention to the very valuable services of Lieut. J. C. Colwell, U. S. Navy; to his professional knowledge is added great energy and determination, and a sound practical judgment, which qualities, with his experience of this year, eminently fit him for duty in the Arctic regions, and I earnestly recommend that his services be secured to command the relief vessel of the next expedition. The men of my detachment deserve the highest commendation for the cheerfulness and willingness with which they performed their onerous duties under the most trying circumstances, and I hope that the Chief Signal Officer will grant them such reasonable indulgence as they may ask.

I desire to call your attention to the manifest injury done me in the publication of certain statements immediately after the news of the disaster reached here. These statements purporting to have been authorized from the Signal Office, were to the effect that I had been furnished with "supplementary instructions," prior to my departure from the United States, which instructions I had positively disobeyed.

The only instructions I ever received are the original instructions published at the time. An unsigned written paper (with appendix "A" marked 5) was enclosed in the envelope with my instructions. This paper is simply an unauthenticated copy of a memorandum prepared in your office. I was informed that this memorandum was to have been furnished the Secretary of the Navy to form the basis of instructions to be given the commander of the vessel ordered to accompany the "Proteus;" when I found it among my instructions I at once carried it to you and called your attention especially to that clause, relating to landing supplies on Littleton island. You said, in substance, you did not know how that had gotten in there, and impressed upon me the necessity of carrying out, as far as possible, the instructions I had received. These instructions were based upon the letter of Lieutenant Greely (first enclosure of appendix "A"), and you called my attention to the fact that Lieutenant Greely strongly urged that the officer commanding the relief party should have no "latitude of action." The paper was not addressed nor signed, indeed bore no official marks whatever. I did not then nor have I at any time since regarded it as an order, and I was surprised to find the statement published that this paper was the "supplementary instructions."

I am very respectfully, your obedient servant,

E. A. GARLINGTON,  
*1st Lieut., 7th Cav., A. S. O., Commanding.*



## APPENDIX A.

WAR DEPARTMENT,  
OFFICE OF THE CHIEF SIGNAL OFFICER,  
WASHINGTON CITY, June 4, 1883.

Lieut. E. A. GARLINGTON, U. S. Army,

*Commanding relief vessel to Lady Franklin bay.*

SIR: You are aware of the necessity of reaching Lieut. A. W. Greely and his party with the expedition of this year. This necessity cannot be over-estimated as Lieut. Greely's supplies will be exhausted during the coming fall, and unless the relief ship can reach him, he will be forced with his party to retreat southward by land before the winter sets in. Such a retreat will involve hardship, and the probable abandonment of much valuable public property, with possible loss of important records and life.

For these and other reasons which will occur to you, no effort must be spared to push the vessel through to Lady Franklin bay.

In the event of being obstructed by ice in Smith sound or Kennedy channel, you are advised to try to find a passage along the west coast, which, besides being usually the most practicable, will afford better advantages for sighting and communicating with any party sent out by Lieutenant Greely. To make communication surer, your party must be able to readily send and receive messages by flag or heliograph and other means, and the necessary articles should be kept in readiness for instant use, when communication is possible.

Should the vessel be unable to get through the ice to Lady Franklin bay or to reach the west coast at points above Cape Sabine, it will be of great importance that Lieutenant Greely should know of the efforts being made to relieve him, and of the plans for doing so. You will endeavor, therefore, to convey such intelligence and omit no means of informing him or any of his party of the situation. Should any landings be made at prominent points on either coast during the efforts to get through the ice, you will leave a short record of the fact, with such information as it is desirable to convey, so deposited and marked as to render it discoverable by parties traveling southward. If such landings be made at points where caches of provisions are located, you will, if possible, examine them and replace any damaged articles of food, leaving, of course, a record of your action.

If it should become clearly apparent that the vessel cannot be pushed through, you will retreat from your advanced position and land your party and stores at or near Life-boat cove, discharge the relief vessel with orders to return to Saint John's, Newfoundland, and prepare for remaining with your party until relieved next year. As soon as possible after landing, or in case your vessel becomes unavoidably frozen up in the ice pack, you will endeavor to communicate with Lieutenant Greely by taking personal charge of a party of the most experienced and hardy men equipped for sledging, carrying such stores as is practicable to Cape Sabine, whence a smaller party, more lightly equipped, still headed by yourself, will push as far north as possible, or until Lieutenant Greely's party is met. In this and other matters you will follow closely the instructions of Lieutenant Greely, dated August 17, 1881, a printed copy of which is furnished you herewith. (Enclosure "1.")

The men not employed in these expeditions will lose no time in preparing the house for the whole party and in securing the stores preparatory to the arrival of Lieutenant Greely.

You will be furnished two observers and an outfit of scientific apparatus, and will be guided in their use by instructions herewith. The character and amount of the meteorological and other scientific work to be accomplished by your party is enumerated in enclosed memoranda marked B, C, D, E.

In addition to the medical officer and enlisted men taken from this city, you will employ three hardy ice-men at Saint John's, who have been already selected by the United States Consul there, under my direction, and in Greenland such Eskimo as you may require.

It is important that a careful and complete record of events should be made, and in case your party does not return this year that a full report be sent by the vessel on her return to Saint John's.

Each member of your party will be required to keep a private diary, which will be open to the inspection of the Chief Signal Officer only in case it should be necessary.

Whenever a junction is effected with Lieutenant Greely, you will report to him with your party for duty.

Should any important records or instruments have been left behind by Lieutenant Greely in his retreat, they may be recovered by the steamer to be sent in 1884.

It is believed that with the stores and supplies sent last year, which are at Saint John's, Newfoundland, and at the Greenland ports, a list of which is herewith furnished (enclosure "3") and which you will gather on your way northward, together with the provisions and articles supplied this year, everything needful will have been furnished for safety and success. I believe and expect that you will zealously endeavor to effect the object of the expedition, which is to succeed in relieving your comrades, since upon your efforts their lives may depend, and you cannot over-estimate the gravity of the work entrusted to your charge.

A ship of the United States Navy, the "Yantic," will accompany you as far as Littleton island, rendering you such aid as may become necessary and as may be determined by the captain of that ship and yourself, when on the spot.

With my best wishes for your success and the safe return of the united party,

I am, very respectfully, your obedient servant,

W. B. HAZEN,

*Chf. Sig. Offr.*

[Enclosure 1.]

FORT CONGER, GRINNELL LAND, *August 17th, 1881.*

CHIEF SIGNAL OFFICER OF THE ARMY.

SIR: I have the honor to recommend that in connection with the vessel to visit this station in 1882 there be sent some captain of the merchant service who has had experience as a whaler and ice-master. Five enlisted men of the army are requested to replace men invalided or who are found to be unfit otherwise for the work. One of the number should be a Signal Service sergeant. Sergeant Emory Brañe, 2d Cavalry, and Sergeant Martin Hamburg, Company E, 10th Infantry, are recommended most highly, and without they are physically or morally unfitted within the year, their detail is requested. The two remaining men should be such as have had some sea experience. All the men should be rigidly examined as to their physical condition. The ice-master should be expected to see that every effort is made to reach this point by the vessel sent. In case the vessel cannot reach this point, a very possible contingency, a depot (No. "A") should be made at a prominent point on the east coast of Grinnell Land (west side of Smith sound or Kennedy channel) consisting of ninety-six cans chocolate and milk, ninety-six cans coffee and milk, one-half barrel of alcohol, forty-eight mutton, forty-eight beef, one keg rum, forty-eight cans sausage, forty-eight cans mulberry preserves, two barrels bread, one box butter, forty-eight cans condensed milk, one-half barrel onion pickles, forty-eight cans cranberry sauce, forty-eight cans soup, twenty-four cans tomatoes, one gross wax matches (to be in water-tight case), one-eighth cord of wood, one wall-tent (complete), one axe and helve, one whale-boat. At Littleton island, carefully cached on the western point, out of ordinary sight, with no cairn, should be placed an equal amount (Depot "B"), but no boat. A notice as to the exact locality should.

be left in the top of the coal (preferably in a corked and sealed bottle), buried a foot deep, which was left on that island. A second notice should be in the edge of the coal furthest inland, and a third in the Nares cairn, now open, which is on summit southwest part of island.

The second boat should be left at Cape Prescott, or very near, in order that if boats are necessarily abandoned above that point one will be available to cross to Bache island and go the southward. These boats should be not exceeding forty feet and not less than twenty above high-water mark, and their positions should be marked by substantial scantling well secured and braced, to the top of which a number of pieces of canvas should be well nailed, so that it may be plainly and easily seen. A second staff, with pieces of canvas, should be raised on a point which shows prominently to the northward, so a party can see it a long distance. Depots "A" and "B" should be made ready in Saint John's, and be plainly marked and carefully secured.

The packages during the voyage should be easily accessible. Depot "A" should be landed at the farthest possible northern point. A few miles is important, and no southing should be permitted to obtain a prominent location. The letters and dispatches should all be carefully soldered up in a tin case and then boxed (at Saint John's) and marked, or put in a well-strapped, water-tight keg, and should be left with depot "A," if such depot shall be at or north or in plain sight of Cape Hawks, and the newspapers and periodicals left at Littleton island. If depot "A" is not so far north, the letters and all mail should be returned to the United States. After making depot "B" at Littleton island, the vessel should, if possible, leave a record of its proceedings at Cape Sabine. If the party does not reach here in 1882, there should be sent in 1883 a capable, energetic officer, with ten (10) men, eight of whom should have had practicable sea experience, provided with three whale-boats and ample provisions for forty (40) persons for fifteen months. The list of all provisions taken by me this year would answer exceedingly well. In case the vessel was obliged to turn southward (she should not leave Smith sound near Cape Sabine before September 15th), it should leave duplicates of depots "A" and "B" of 1882 at two different points, one of which should be between Cape Sabine and Bache island, the other to be an intermediate depot between two depots already established. Similar rules as to indicating locality should be insisted on. Thus, the Grinnell Land coast would be covered with seven depots of ten days' provisions in less than three hundred miles, not including the two months' supplies at Cape Hawks.

The party should then proceed to establish a winter station at Polaris Winter Quarters, Life-boat cove, where their main duty would be to keep their telescopes on Cape Sabine and the land to the northward. They should have lumber enough for house and observatory, fifty tons of coal, and complete meteorological and magnetic outfit. Being furnished with dogs, sledges, and a native driver, a party of at least six (6) men should proceed, when practicable, to Cape Sabine, whence a sledge party northward, of two best fitted men, should reach Cape Hawks, if not Cape Collinson. Such action from advice, experience, and observation seems to me all that can be done to insure our safety. No deviation from these instructions should be permitted. Latitude of action should not be given to a relief party, who on a known coast are searching for men who know their plans and orders.

I am, respectfully yours,

(Signed)

A. W. GREELY,

1st Lieut., 5th Cav., A. S. O. and Asst.,  
Commanding Expedition.

A true copy:

LOUIS V. CAZIARC,

1st Lieut., 2d Art., A. S. O.

## MEMORANDA OF DEPOTS CONTAINING SUPPLIES LOCATED IN SMITH SOUND AND KENNEDY CHANNEL.

*Southeast Carey island.*—One whale-boat and depot of provisions. (Expedition Sir George Nares, 1875.)

Visited in 1881 by Lieutenant Geely, and supplies reported in good condition.

*Littleton island.*—Six and one-half tons of coal on low ground, southwest side of island, facing Cape Alexander. (Greeley's expedition, 1881.)

Two hundred and fifty rations left in cache well secured. (Expedition, 1882.)

*Cape Sabine.*—Small depot of two hundred and forty rations (Nares' expedition, 1875) reported by Lieutenant Greely, but not visited by him.

Visited by expedition, 1882, and reported in good condition.

One whale-boat, one-eighth cord of birch wood, and two hundred and fifty rations left in cache well secured and covered. (Expedition, 1882.) August 31.

*Cape Hawks.*—Small depot, consisting of bread, two kegs pickles, two kegs rum, two barrels stearine, one barrel preserved potatoes. (Nares' expedition, 1875.)

Reported serviceable by Lieutenant Greely. (Expedition, 1881.)

*Cape Collinson.*—Small depot of two hundred and forty rations, (Nares' expedition, 1875) reported by Lieutenant Greely 1881, but cache not visited.

*Carl Ritter bay.*—Small depot of two hundred and twenty-five bread and meat rations on first bench from the sea, northeast part of the bay. (Lieutenant Greeley's expedition, 1881.)

*Thank God harbor.*—Depot containing supplies, amount and condition unknown. (Hall's expedition, 1874.)

*Cape Isabella.*—One whale-boat. (Expedition, 1882.)

Highest latitude reached by expedition of 1882, 79° 20' north, August 10.

Highest point at which landing was possible, Cape Sabine, August 31, 1882.

[Enclosure 2—Memorandum A.]

## INSTRUCTIONS FOR CLOSING SCIENTIFIC WORK AT CAMP CONGER.

1st. Before closing the station, have all thermometers and barometers carefully compared.

2d. Continue all meteorological observations on land to the latest practicable moment.

3d. Prepare for meteorological observations on the homeward voyage, by properly establishing on the vessel a marine and aneroid barometer and some thermometers, and have simultaneous comparative observations made on the vessel and on the land.

4th. Let the astronomical instruments on shore remain in place to the last practicable moment, and secure numerous comparisons of chronometers and determinations of time and azimuth.

5th. Shortly before sailing carry the chronometers carefully on shipboard, and make full comparisons between them and the ship's chronometers; also before sailing obtain as many determinations of time as possible by observations on the vessel. During the voyage maintain daily chronometer comparisons and observations of time, latitude and longitude by lunar distances. Stop on the Greenland coast and obtain special time observations for chronometric longitude on the meridian of some well determined station. On arriving at Saint John's, Halifax, and New York, make special time observations and comparisons with time-balls while in these harbors.

6th. During the voyage, maintain meteorological observations at 3, 7, and 11 a. m., and 3, 7, and 11 p. m., Washington time, and more frequently if possible. On arrival at New York make comparative simultaneous readings on the vessel, then

carry all the instruments to the army Signal Office, and compare them with the standards at that station.

7th. Have the barometers and delicate thermometers brought carefully by hand to this office for further comparisons.

8th. Before leaving Camp Conger, all the thermometers used should be compared at the lowest possible temperatures, and in the following manner:

A mercurial thermometer should be selected as a standard of reference for temperatures as low as  $30^{\circ}$  Fahr. For holding the thermometers, a tin thermometer tester, with the perforated diaphragm knocked out, will suffice. When readings are being made, this should be placed with its contained liquid (brine or spirit) in an ordinary water pail, and the surrounding space filled with a mixture having nearly the same temperature as the liquid contained in the tin. The thermometers should not be allowed to rest with their bulbs on the bottom while being read, but should be held in the hand three or four at a time, and readings made after thoroughly stirring the liquid.

The spirit thermometers should be kept at the temperature to be compared for at least twenty minutes. For mercurial thermometers a much shorter exposure suffices; say five minutes.

A low artificial temperature can be obtained by mixing ice (or snow) and salt in the proportion of two parts, by weight, of ice, to one of salt. In making comparisons at low temperatures, this mixture should be put in the tin and around the tin in the pail. The mixture in the tin should be stirred thoroughly.

Comparative readings should be made at  $-6^{\circ}$  Fahr., or lower, and at  $+2^{\circ}$ ,  $+12^{\circ}$ ,  $+22^{\circ}$ ,  $+32^{\circ}$ , and  $+42^{\circ}$ . The readings of all the thermometers at freezing-point should be noted. If the external temperature renders it possible to obtain comparisons below  $-6^{\circ}$  the brine should be replaced with alcohol, whisky, or coal oil.

9th. You will provide, if possible, that the magnetic instruments and observers of Lieutenant Garlington's party be landed temporarily at Camp Conger, and a complete series of independent astronomical and magnetic observations be made by them, according to their own methods, including a comparison of chronometers, barometers, and thermometers, and determination of the bearing of your azimuth marks.

10th. Verify the dates of your calendars.

11th. Should your combined party be held in the ice at Camp Conger or remain during the winter of 1883 and 1884 at Life-boat cove, or at any other point, you will, as far as possible, continue the old, or make a new and complete series of, astronomical, magnetic, and meteorological observations, taking the precaution to check your work by independent determinations of important data by each of the methods in which your men have been instructed.

[Memorandum B.]

SCIENTIFIC OUTFIT OF THE LADY FRANKLIN BAY RELIEF EXPEDITION OF 1883.

1. 75-foot tape-line.
2. 2 tin thermometer testers.
3. 2 sextants.
4. 1 mercurial horizon.
5. 1 solid horizon and level.
6. 1 plumb line.
7. 1 pocket chronometer.
8. 2 marine chronometers (mean time).
9. 2 marine chronometers (sidereal time).
10. Charts of Smith's sound.

11. 4 thermometer shelters (cotton belt).
12. 12 ordinary stem divided mercurial thermometers.
13. 6 ordinary stem divided spirit thermometers.
14. 6 minimum stem divided spirit thermometers.
15. 6 ordinary stem divided spirit thermometers with cups and supports (for wet bulb).
16. 6 maximum stem divided mercurial thermometers.
17. 6 special-low minimum stem divided spirit thermometers.
18. 6 Yale minimum stem divided thermometers.
19. 1 Allnard dew-point apparatus, with bellows, and three long-stem low spirit thermometers.
20. 36 half-pint cans of ether.
21. 6 Signal Service water thermometers, and three cases.
22. 2 Koppe's hair hygrometers.
23. 2 pairs Arago-Davy conjugate thermometers.
24. 2 pairs Violle conjugate bulbs, with supports.
25. 2 mercurial marine barometers.
26. 2 mercurial cistern barometers and leather cases.
27. 4 extra glass barometer tubes, cisterns, and bags.
28. 4 extra attached thermometers.
29. 40 pounds pure mercury.
30. 2 aneroid barometers.
31. 2 single self registers for anemometers (Gibbon).
32. 1 small wind vane.
33. 4 Robinson's anemometers (heavy pattern).
34. 4 extra anemometer cups.
35. 4 galvanized iron rain gauges.
36. 10 measuring sticks (six snow and four rain).
37. 10 cells Eagle battery and 347 pounds copperas.
38. 100 feet cable for self register.
39. 2,000 yards insulated wire for telephone.
40. 8 telephones, viz, four transmitters and four receivers
41. 4 telephone call boxes.
42. 4 Le Clanche batteries.
43. 4 copper "grounds."
44. 10 dark lanterns (brass).
45. 150 blank books.
46. 12 blank daily journals.
47. 280 star charts for auroras.
48. 750 forms No. 102 for self register.
49. 1 tool chest (Signal Service).
50. 1 medicine chest.
51. Supply of wicking for lanterns.
52. 2 chamois skins.
53. 4 boxes pens.
54. 2 reams legal cap.
55. 4 reams letter paper.
56. 2 reams note paper.
57. 2 reams foolscap.
58. 4 quarts Arnold's ink.
59. 1 dozen capstan bars.
60. 1 reading glass.
61. 1 spool double silk fibre.

62. 1 bottle clock oil.
63. 2 universal awls.
64. 1 extra sun shade.
65. 1 bottle shellac.
66. 2 large brass lanterns.
67. 6 extra level tubes for theodolite.
68. 3 extra level tubes for dip circle.
69. 1 ream computing paper.
70. 120 copies form 101.
71. 750 copies form 120.
72. 50 copies form 113 *a*.
73. 200 copies form 117.
74. 50 copies form 127 *b*.
75. 50 copies form 132 *a*.
76. 50 copies form 132 *b*.
77. 50 copies form 140.
78. 10 copies instructions to observers.
79. 2 copies instructions to observers with latest corrections.
80. 10 copies card table for reduction to freezing.
81. 12 copies Signal Service Order 41, 1881 (dew-point tables).
82. 50 copies form 124.
83. 4 sets Signal Service property returns.
84. 10 sets Signal Service invoices and receipts.
85. 3 boxes paper fasteners.
86. 6 sets quartermaster's returns.
87. 650 sets pay-vouchers.
88. 1 ream heavy manila paper.
89. 2 spools red tape.
90. 1,000 envelopes.
91. 100 envelopes (white).
92. 100 sheets blotting paper.
93. 2 small blotters.
94. 12 gross rubber bands.
95. 12 dozen lead pencils (eight soft and four hard).
96. 2 dozen pen-holders.
97. 1 volume "Meteorological Record."
98. Material for magnetic observatory 10 x 10 x 7 feet, all wood with copper nails and brass hinges.
99. 20 pounds eightpenny nails.
100. 1 copy Treatise on Aneroid Barometers.
101. 1 copy Admiralty Manual of Scientific Inquiry.
102. 1 copy Arctic Manual, 1875.
103. 1 copy Vega's Logarithms.
104. 2 copies Nautical Almanac, 1883.
105. 2 copies Nautical Almanac, 1884.
106. 1 copy Chauvenet's Astronomy.
107. 1 copy Chauvenet's Trigonometry.
108. 2 copies Loomis' Meteorology.
109. 2 copies Guyot's Tables.
110. 1 copy Everett's Deschanel.
111. 1 copy Bowditch Useful Tables.
112. 2 copies Negur on Chronometers.
113. 1 magnetometer with tripod.

- 114. 1 dip circle with tripod.
- 115. 1 altitude azimuth with tripod.
- 116. 2 marine glasses.
- 117. 1 record box, padlock and key.
- 118. 2 Grugan heliostats.
- 119. 2 cans, cases and straps.
- 120. 2 canteens and straps.
- 121. 2 extinguishers, foot.
- 122. 2 extinguishers, flying.
- 123. 2 flags, four foot, red.
- 124. 2 flags, four foot, white.
- 125. 2 funnels.
- 126. 2 shades, flame, foot.
- 127. 2 shades, flame, flying.
- 128. 2 pairs scissors.
- 129. 2 jointed staffs, complete.
- 130. 4 straps, small.
- 131. 2 torches, foot.
- 132. 2 torches, flying.
- 133. 2 pairs pliers.
- 134. 2 wormers.
- 135. 1 Webster's dictionary.
- 136. 1 tub for exposure of Arago-Davy thermometer.

## [Memorandum G.]

## INSTRUCTIONS AS TO OBSERVATIONS ON THE VOYAGE.

1. From the time of leaving Washington until your return you will, when at sea, determine your time, latitude and longitude, daily, unless the weather prevents.

2. Wind and compare together all the chronometers daily and keep them at as nearly uniform temperature as possible; in addition to the regular time observations you will compare the chronometers with the time-balls at New York, Halifax, Saint John's, &c., and with the chronometers belonging to the vessels; the care of the chronometers will be in accordance with the instructions published by Negur.

3. Regular observations of meteorological instruments and phenomena will be taken at least six times daily, namely: at 3, 7, and 11 a. m. and 3, 7, and 11 p. m., Washington time, and oftener, if practicable; this record will be maintained from the time of leaving Washington until you return. If, for any reason, the number of observations must of necessity be diminished, then at least the 7 a. m., 3 and 11 p. m. will be taken. Duplicate copies of all these should be made up daily for transmission to this office whenever opportunity occurs. Copies of the 7 a. m. observation on form 124 are particularly desired.

4. In order to execute these observations, you will carry by hand and keep with you the necessary sextants, chronometers, barometers, thermometers, &c., and will have them properly established on the vessel that carries you from New York and transferred to the search vessel on your arrival at Saint John's. When similar instruments are already in use on board of these various vessels, you will have proper comparisons made with these. Without in the least intermitting your own astronomical and meteorological observations, you will obtain complete copies of the logs and observations made by the officers of the vessels on which you may be, and make such notes as may explain any discrepancies as to dates and styles of records.

5. When at any port, if possible, you will either directly, or by means of an

intermediate portable barometer, make comparisons between your own and those used by meteorological observers in other cities.

The following is a list of stations where comparisons are desirable :

New York City Signal Service sub-standard.

Halifax, A. Allison.

Saint John's, Newfoundland, John Delaney.

Ivigtut, Greenland.

Godthaab, Greenland, S. Kleinschmidt.

Jacobshaven or Disco.

Upernavik, Greenland, Elborg (The Governor of the Colony).

Should you by stress of weather be driven to any of the meteorological stations on the coast of Labrador or to the German station in Cumberland sound, you will carry out similar comparisons.

6. Should you have occasion to stay for more than two or three days at any station on the Greenland or other coasts, you will have the magnetic apparatus carefully landed and secure one or more determinations of *declination dip* and *intensity*.

[Memorandum D.]

INSTRUCTIONS FOR LIEUTENANT GARLINGTON AT LIFE-BOAT COVE.

1. Should you be unable to reach Lieutenant Greely and be obliged to return to Life-boat cove and stay there during the winter of 1883-'84, you will, as soon as possible, erect the magnetic observatory, establish the instruments in place and maintain a series of observations in general accordance with the instructions heretofore issued by the International Polar Commission (see special orders 87 and 92, 1881), and those verbally given to your own observers.

2. The meteorological observations will be made as before at least six times a day, and, if possible, more frequently; the absolute magnetic elements will be determined several times during the day on the 1st and 15th of each month, and by each observer independently. Observations for true latitude and longitude by lunar distances will be made as often as necessary; tidal observations will be made daily through holes cut in the ice; special observations of auroras and other phenomena will be made as occasion requires.

3. Observations on the thickness of the ice, the currents and temperature of the water, its color and clearness, the nature of any sediment contained within it, as also the minute vegetable and animal matter; in short, whatever bears on the opening and closing of the channel, will be carefully recorded. Characteristic specimens of the water should be preserved in glass stoppered bottles.

4. One pair of Violle conjugate bulb, on short stands, and one pair of Arago-Davy conjugate thermometers (in the centre of the black iron tub), will be established side by side, about one foot apart, fully exposed to the sunshine and sky, and another pair of each, also side by side, but on long staves, about four feet above the ground, all will be read at each regular hour of observation (the Arago-Davy conjugate thermometers have, unfortunately, been made as maximum thermometers, and must be set after each observation as preparatory to the next one; they should be read both before and after setting). Experimental observations should be made as to the effect of covering the ground for several feet around and beneath these thermometers with sail cloth, furs, snow, &c.

5. The observations of heights of clouds, auroral arcs, &c., will be facilitated by establishing telephonic connection between two observers furnished with sextants, a short distance, say 1,000 yards apart. The distance of any terrestrial object may be similarly determined.

6. The effect of earth currents is to produce peculiar sounds in the telephone;

these may be observed by connecting the copper plates (that are to be buried in the ground or the water) to the ends of a line of about 1,000 yards long of insulated wire. Insert the telephones into the circuit and observe the sounds.

Record will be made at regular hours of the intensity and character of the noises heard in the telephones connected respectively with the north, south, east, and west lines. For further details you are referred to Special Orders 97 and 102 of 1881, and Instructions Nos. 72 and 76 and the appendices to the annual report, C. S. O., for 1881, all of which are herewith supplied.

7. Observations with Koppe's hair hygrometer will be made in accordance with the instructions of Goldschmidt and furnished herewith. The dry and wet hygrometer should be ventilated at all observations with a fan or hand-bellows. Observations of the dew-point, by means of the Allnard dew-point apparatus, will be made at least once a day.

[Memorandum E.]

1. If frozen in the pack ice of Smith's sound before reaching Camp Conger, you will maintain regular meteorological observations on or near the vessels as well as practicable.

2. The astronomical and magnetic instruments will be established on the pack ice and all special observations kept up as far as practicable; the instruments should, of course, be moved to the vessel on the least evidence of danger. If connection is opened with Lieutenant Greely and his party moves down to your vessel, he will provide that the independent observations by your observers be kept up with as little interruption as possible and that the proper comparisons with his instruments be made.

[Enclosure 3.]

LIST OF STORES AT SAINT JOHN'S OR CACHED.

Invoiced to Lieutenant Garlington by Lieutenant Craig, June 17th, 19th, and July 1st, 28th.

1,080 lbs pemican.	40 pairs drawers.
192 lbs sausage (2-lb cans).	150 pairs Iceland hose.
200 lbs chicken (2-lb cans).	25 pairs S. S. boots (soled).
488 lbs mutton roast (2-lb cans).	50 pairs S. S. boots (unsoled).
100 lbs turkey (2-lb cans).	49½ yards red flannel.
Value in army rations 2,060.	60 pairs cloth gloves.
288 lbs okra (2-lb cans).	50 pairs boots (gusset and b.).
240 lbs whortleberries (2-lb cans).	10 seal skins.
60 gals. lime juice.	6 tons dried seal meat.
50 lbs dried cherries.	240 fathoms Manila rope.
24 bottles horse-radish flour.	100 lbs oakum.
60 gals. rum (½ bbls).	200 yds cotton duck.
408 lbs squash (cans).	3 balls twine.
*384 lbs blueberries (2-lb cans).	2 tackle and visc.
600 lbs carrots (2-lb cans).	2 whale-boats.
600 lbs turnips (2-lb cans).	18 boat oars (14 feet).
162 lbs chocolate.	2 sprits and sails.
*300 lbs extract coffee.	2 barrels cement.
60 gals. cider (½ bbls).	3,012 feet dressed boards.
*250 lbs peach butter.	1,494 feet clear boards.
250 lbs pear butter.	2,517 feet pine.
250 lbs plum butter.	170 pieces flooring.

\* Blueberries (48 jars); ext. coffee (140 lbs.); peach butter (2 cases, 12 5-lb. cans) returned to N. Y. by error, and stored with depot C. S.

1,000 brick.	6 Forms 132 B.
5 packages copper nails.	30 Forms 140.
25 packages tacks.	1 Travels in Siberia.
2 gross screws.	1 Schwatka.
10 lbs (assorted) staples.	1 Revenue cutter Corwin.
½ cord wood.	12 lbs. hektograph material.
160 gals. alcohol.	120 collodion plates.
432 boxes wax matches.	5 dry slate boxes.
2 hand lamps.	2 Ger. Arctic Expedition.
2 lanterns (B. and E).	1 Ger. Star Cot.
100 gals. signal oil.	14 reams letter paper.
25 lbs gunpowder.	4,000 envelopes.
100 zinc battery.	8 gross pens.
1 theodolite.	400 sheets blotting paper.
1 sextant (small).	2 small blotters.
1 hygrometer.	12 gross rubber bands.
100 lbs excelsior.	3 steel erasers.
½ gal. clock oil.	16 doz. lead pencils.
15 large diaries.	3 doz. pen-holders.
25 small diaries.	2 reams note paper.
4 S. S. P. returns sets.	1 ream wrapping paper.
10 S. S. I. and receipt sets.	3 rulers.
30 S. S. pur. and ex.	12 spools tape.
60 Forms No. 52.	10 balls twine.
40 inserts.	1,000 C. lined envelopes.
10 Abs. D.	1 chart N. P., No. 278.
6 Ins. to O. S.	1 " " " " 2,177.
6 temp. tables.	1 " " " " 235.
24 rolls pins.	1 " " " " 2,117.
24 journals.	1 " " " " 2,282.
6 reams cap paper.	1 " " " " 2,118.
3 boxes paper fasteners.	1 " " " " 2,382.
6 sets Q. M. returns.	1 " " " " 276.
3 Army Reg.	1 " " " " 274.
650 sets pay vouchers.	2 C. Polar charts.
3 Nau. Almanac.	1 nail puller.
50 Forms No. 101.	3 hatchets.
400 Forms No. 102.	2 oz. pyrogallic acid.
50 Forms No. 113 A.	2½ lbs sal amoniac.
1 met. record.	5 lbs sal soda.
3 Ins. to Obs. S. S.	6 lbs soda hyposulphate.
12 Forms 127 B.	½ lb bromide potassium.
6 Forms 132 A.	400 lbs sulphate copper.

[Enclosure 4.]

SAINT JOHN'S, NEWFOUNDLAND, *May 26, 1883.*

This agreement, made by I. & W. Stewart, owners of the good steamship "Proteus," burthen per register 467 tons net, or thereabouts, Richard Pike, master, parties of the first part, and General W. B. Hazen, now in Saint John's aforesaid, Chief Signal Officer of the Army of the United States of America, and acting on behalf of the Government of the United States, party of the second part, witnesseth :

That the parties to the first part agree that, in consideration of the terms herein after set forth, the said steamship or vessel being light, staunch, and strong, and in

every way fitted for the voyage hereinafter described, shall be ready for the said voyage and shall be at the disposal of the Chief Signal Officer of the Army of the United States from the fourteenth day of June, 1883, when the voyage shall be construed to have begun, and the said party of the second part hereby, in consideration of the aforesaid, contracts to pay for the use of said vessel for at least three and a half months at the rate of six thousand dollars (\$6,000.00) per month of thirty days, in Newfoundland currency, at one and one-half per cent. premium, being difference of exchange; the said party of the second part further agrees that the said compensation shall be paid at the end of each month by draft on the office of the Chief Signal Officer, Army of the United States, the first draft to be made payable fourteenth of July, 1883.

It is also mutually agreed by the parties hereto that should the said vessel be detained on the said voyage beyond the time stipulated, then the same rate of six thousand dollars per month shall be paid for her until her return to Saint John's, Newfoundland, the said expenses to be paid at the end of each month as is herein provided for the payment of the compensation, and that, in the event of the loss or abandonment of said vessel, the party of the second part shall continue and pay the stipulated hire monthly until the arrival of any portion of the crew in Saint John's aforesaid.

It is further agreed by the parties of the first part to provide all necessary food and provisions for the force accompanying the relief expedition or returning from Lady Franklin bay, said food to be equal to the usual ship's fare and to be furnished at the rate of four dollars (\$4.00) per week of seven days each, in Newfoundland currency, for each individual comprising said force, and the party of the second part agrees to pay for the food thus furnished at the same time, and in the same draft, that final payment is made for use of said vessel.

It is hereby further mutually agreed, that in the event of the force of Lady Franklin bay (Fort Conger, Discovery harbor) being in need of coal, the said parties of the first part will deliver to said force, or at points designated by the agent of the Chief Signal Officer, such quantity as may be needed to the amount of seventy (70) tons, at the rate of four dollars (\$4.00) per ton, in Newfoundland currency, to be drawn for upon the return of the vessel to Saint John's.

It is agreed by the party of the second part, that persons constituting the relief force, shall render the captain and crew of the said vessel, all the assistance in their power to expedite the landing of supplies at all points where landing shall be made.

It is further agreed that Lady Franklin bay, (Fort Conger, Discovery harbor) is the extreme northern point which it is desired that the vessel aforesaid shall reach, but if the master of the vessel, and the officer or agent representing the Chief Signal Officer aforesaid, after consultation, shall agree that it is impracticable to reach said bay by reason of ice barriers, lateness of season, or any other insurmountable obstacle, then the said Richard Pike, master aforesaid, may leave Smith Sound (or the northernmost point attainable) to return to Saint John's aforesaid, not earlier than September 1st, 1883, and he shall discharge and cache stores, as may be required by the agent of the Chief Signal Officer aforesaid. The parties of the first part hereby agree that this contract shall be performed by them.

The act of God, the Queen's enemies, fire, and all and every other danger and accident of the seas, rivers and navigation of whatsoever kind and nature, always excepted. The parties of the first part further agree that they will pay to the agent of the Chief Signal Officer, army of the United States, as a penalty for non-performance of this contract, the sum herein agreed to be paid by the officer of the Chief Signal Officer aforesaid, for the use of said vessel for the period of three and a half months.

Signed, executed, and delivered at Saint John's, Newfoundland, this twenty-sixth day of May, one thousand eight hundred and eighty-three.

(Signed)

W. B. HAZEN,  
*Chief Signal Officer, U. S. Army.*  
 p. p. I. & W. STEWART.  
 J. SYME.

Witnesses :

(Signed) JAS. CODY.

THOS. MOLLOY,

[SEAL.] U. S. Consul.

A true copy:

LOUIS V. CAZIARC,

1st Lieut., 2d Art., A. S. O.

[Enclosure 5.]

The naval tender to join the "Proteus" at Saint John's, Newfoundland, and to proceed with her to the neighborhood of Littleton island.

The "Proteus" to land her stores, except supplies for more northerly depots, at Littleton island on her way north. If she succeeds in reaching Lady Franklin bay, to pick up the stores, excepting the house and depots, if possible, on her return. The naval tender will await the return of the "Proteus" at the neighborhood of Littleton island, and on her return steam to the south in her company, until she reaches the southern limits of the ice pack, when the vessels may separate. Should the "Proteus" be crushed in the ice, her crew will retire on Littleton island, and the tender will bring to Saint John's, Newfoundland, the officers and crew of the "Proteus." The rest of the party to remain at Littleton island. But should the ice render it dangerous for the tender to remain in the neighborhood of Littleton island until the "Proteus" returns, or her crew and the expeditionary force succeed in reaching there, the tender may go to the south, leaving full particulars at Littleton island.

Signals by flags, heliograph, and guns should be preconcerted, and communication by this means should be maintained between the two vessels as long as possible after they are separated by the passage north of the "Proteus."

Nothing in the northward movement must be allowed to retard the progress of the "Proteus." It is of the utmost importance that she take advantage of every lead to get to Lady Franklin bay.

OFFICE CHIEF SIGNAL OFFICER,  
 Washington, D. C., June 5, 1883.

[Copy.]

#### APPENDIX B.

MEMORANDUM OF AN AGREEMENT BETWEEN LIEUTENANT GARLINGTON, U. S. ARMY,  
 AND COMMANDER WILDES, U. S. NAVY.

"Yantic" to proceed to sea with the "Proteus" and remain in company as long as possible. "Yantic" will proceed to Disco under sail, will leave letters for Lieutenant Garlington at Disco and Upernavik.

Cairns enclosing bottles or tins will be left at Cape York, S. E. Carey island, or Hakluyt island, Pandora harbor, and Littleton island. "Yantic" will remain in Pandora harbor not later than August 25, Disco not later than September 20.

Lieutenant Garlington to leave letters in Disco and Upernavik and records on S. E. Carey island, or Hakluyt island, Littleton island, and Pandora harbor if entered.

"Proteus" to endeavor to communicate with "Yantic" at Pandora harbor before August 25.

Should "Proteus" be lost, push a boat or party south to "Yantic."

Pandora harbor will be headquarters, but before departure "Yantic" will run up to Littleton island.

[Copy.]

#### APPENDIX C.

INTERNATIONAL POLAR EXPEDITION TO LADY FRANKLIN BAY, FITTED OUT BY THE WAR DEPARTMENT, UNDER THE SUPERVISION OF GENERAL W. B. HAZEN, CHIEF SIGNAL OFFICER UNITED STATES ARMY, AND COMMANDED BY 1ST LIEUTENANT A. W. GREELY, 5TH CAVALRY, A. S. O. AND ASST.

Left in the Steamship "Proteus," island off Upernavik, 7 p. m., July 29, 1881, and at 7 a. m. July 31, stopped by heavy fog about six miles south of land supposed to be Cape York. Middle passage taken and found to be entirely unobstructed by ice. All well. This notice deposited August 1, 1881.

(Signed)

J. B. LOCKWOOD,  
*Lieut., 23d Inf., U. S. Army, 3d Officer.*

[Memoranda.]

One keg of biscuits opened and found mouldy. One can of beef opened and found good. Stores generally found apparently in same condition as when deposited here in 1875.

(Signed)

J. B. LOCKWOOD,  
*Lieut., U. S. Army.*

COPY OF THE COPY OF THE RECORD OF SIR GEORGE NARES.

ARCTIC EXPEDITION, July 27, 1875.

H. M. S. "Alert" at Carey island.

Any one finding this depot of provisions and boat is requested not to appropriate it to their own use. The depot is deposited by the English Arctic Expedition of 1875, for use in the event of the crews of the ships having to travel south to Upernavik. The "Alert" and "Discovery" passed through the middle ice in two days. They leave for Smith sound at 6 a. m. this morning.

(Signed)

G. S. NARES,  
*Capt. R. N., in command of the Expedition.*

A true copy of the original taken this 1st day of August, 1881, by expedition under Lieutenant A. W. Greely, U. S. Army, for whose record see bottle herewith.

COPY OF ENDORSEMENT OF LIEUTENANT GARLINGTON

UNITED STATES RELIEF EXPEDITION,

4 p. m., 21st July, 1883.

Left Godhavn, Disco island, 16th July, 1883. Encountered pack 18th July in lat.  $74^{\circ} 40'$ , long.  $61^{\circ} 30'$ , steamed through it in various directions until fifteen miles south of this island. Open water to the north. Depot apparently same as left in 1881. Opened two barrels of bread; one spoiled, one a little mouldy, but eatable, and two cans of beef; one good, one spoiled.

E. A. GARLINGTON,  
*1st Lieut., 7th Cav., A. S. O., Commanding.*

[Copy.]

## APPENDIX D.

STEAMER "PROTEUS,"

*United States Relief Expedition, 22d July, 1883.*

At 6 a. m. we are rounding Cape Alexander, and will enter Pandora harbor to leave this record. No ice met between Carey island and this point, and none to be seen to the north from the "crow's-nest" with the aid of a powerful telescope. Weather perfect; if it continues I will go directly north and not stop at Littleton island to leave a record, for it takes but a very short time to change the aspect in these regions.

(Signed)

E. A. GARLINGTON,

*1st Lieut., 7th Cav., A. S. O., commanding.*

[Copy.]

## APPENDIX E.

UNITED STATES RELIEF EXPEDITION,

*Cape Sabine, 24th July, 1883.*

The Steamer "Proteus" was "nipped" midway between this point and Cape Albert on the afternoon of the 23d instant, while attempting to reach Lady Franklin bay. She stood the enormous pressure nobly for a time, but had to finally succumb to this measureless force. The time from her being "beset" to going down was so short that few provisions were saved. A depot was landed from the floe at a point about three miles from the point of Cape Sabine as you turn into Buchanan strait. There were five hundred rations of bread, sleeping bags, tea and a lot of canned goods; no time to classify. This cache is about thirty feet from the water line, and twelve feet above it on the west side of a little cove under a steep cliff. Rapidly closing ice prevented its being marked by a flag-staff or otherwise; have not been able to land there since. A cache of two hundred and fifty rations in same vicinity left by the expedition of 1881; visited by me and found in good condition, except boat broken by bears. There is a cache of clothing on point of Cape Sabine, opposite Brevoort island, in the "jamb" of the rock, and covered with rubber blankets. The English depot on the small island near Brevoort island in damaged condition; not visited by me. There is a cache of two hundred and fifty rations on the northern point of Littleton island, and a boat at Cape Isabella. All saved from the "Proteus." The U. S. Steamer "Yantic" is on her way to Littleton island with orders not to enter the ice. A Swedish steamer will try to reach Cape York during this month. I will endeavor to communicate with these vessels at once, and everything within the power of man will be done to rescue the brave men at Fort Conger from their perilous position.

The crew of the "Proteus" consisted of Captain Pike and twenty-one men; my own party of Lieut. J. C. Colwell, U. S. Navy, Acting Assistant Surgeon, J. S. Harrison, five enlisted men of the line of the Army, two Signal Service men, three Newfoundlanders and two Eskimo.

It is not within my power to express one tithe of my sorrow and regret at this fatal blow to my efforts to reach Lieutenant Greely.

I will leave for the eastern shore just as soon as possible, and endeavor to open communication.

E. A. GARLINGTON,

*1st Lieut., 7th Cav., A. S. O., Commanding.*

[Copy.]

## APPENDIX F.

UNITED STATES RELIEF EXPEDITION,

*Littleton Island, 26th July, 1883.*

My party, consisting of Lieutenant Colwell, U. S. Navy, Dr. J. S. Harrison, seven enlisted men, U. S. Army, three civilian employés, and two Eskimo, arrived here at 5 p. m. to-day from a very rocky inlet above Life-boat cove in two whale-boats and having dingy in tow; very thick fog on way over and sea quite rough. Boats behaved admirably, considering the strains to which they have been put, dragging them over the floes, rocks, &c. This party was in the steamer "Proteus," of Saint John's, Newfoundland, chartered by the United States Government, going to the relief of Lieut. A. W. Greely, U. S. Army, at Lady Franklin bay, Grinnell Land. The steamer was crushed in the ice between Cape Sabine and Cape Albert, Bache island, on the afternoon of the 23d instant. All saved. Much provisions gotten over side of ship, but a great quantity went under before it could be removed a sufficient distance from the ship for safety. Five hundred pounds of hard bread, sleeping bags, and assorted subsistence stores were landed from the floe about three miles from Cape Sabine around point towards Bache island. There is also a cache, made last year, along same shore. The depot was secured as well as possible. Ice was rapidly closing, heavy, &c. A quantity of clothing was left on extreme point of Cape Sabine, and one barrel of beef—all poorly secured for same reason as above. I am making for the south to communicate with the U. S. steamer "Yantic," which is endeavoring to get up. Every effort will be made to come north at once for the Greely party. The "Yantic" cannot come into the ice, and she has a crew of one hundred and forty-six men. So will have to get another ship. Everything will be done to get as far north as possible before the season closes. Ice thick and heavy. Calm to-day, and I am in a great hurry to take advantage of it and tide.

(Signed)

E. A. GARLINGTON,

*1st Lieut., 7th Cav., A. S. O., Commanding.*

[Copy.]

## APPENDIX G.

UNITED STATES RELIEF EXPEDITION,

*Pandora Harbor, July 27, 1883.*

Arrived here at 7.50 last evening with two whale-boats and one dingy in tow, Lieut. J. C. Colwell, U. S. Navy, Dr. J. S. Harrison, seven enlisted men, U. S. Army, three civilian employés, two Eskimo, and self, composing party. Captain Pike, of the steamer "Proteus," and his crew (twenty-two men) are also in this harbor. The "Proteus" was crushed in the ice about six miles from Cape Sabine, magnetic bearing from Cape Sabine about S. by E. 1-2 E., on the afternoon of the 23d inst. All saved. I have forty days' full rations for my party. Will go south, keeping close into shore as possible, and calling at Carey islands, to Cape York or until I meet some vessel. Hope to meet U. S. steamer "Yantic," or the Swedish steamer "Sofia," which should be about Cape York. Weather since wreck has been foggy, and at times some rain, delaying progress very much. Party are well and in good spirits. Will leave here at 5 a. m. to-morrow; detained all day by fog.

E. A. GARLINGTON,

*1st Lieut., 7th Cav., A. S. O., Commanding.*

[Copy.]

## APPENDIX H.

UNITED STATES RELIEF EXPEDITION,  
*Immelick Bay, Near Cape York, 12th August, 1883.*

The steamer "Proteus," Saint John's, Newfoundland, Captain Pike, chartered by the United States Government to carry relief expedition under my command to Lady Franklin bay, Grinnell Land, was caught in pack six miles nnw.,  $\frac{1}{2}$  w. from Cape Sabine, and was crushed, sinking at 7.30 p. m., on the 23d July, 1883. The crew and relief party all saved, and also about forty days' provisions for all hands, together with a lot of fur and other clothing. My party fitted out, and the rest left in a cache on the point of Cape Sabine. A cache of provisions and twelve sleeping bags left at a point along northern shore of Cape Sabine, about three miles from point of the cape. This cache contains about four hundred pounds of hard bread, canned meats, fruits, and bacon sufficient to make full load for whale-boat. A large quantity of stores went down under the sides of the vessel after being thrown overboard; much had necessarily to be abandoned on the floe, and it was impossible to secure all of it afterwards, although several boat loads were secured subsequent to leaving floe. The party made a landing on Cape Sabine on the morning of the 24th July, and remained there until the evening of the 25th, when the ice opened sufficiently to allow our leaving, but closed in almost before we got under way. Pike's men in three boats, my party in two whale-boats, Colwell's boat towing dingy.

We crossed Smith sound and made land just above Lfe-boat cove at 12.30 p. m. in a dense fog. Remained there until next day and made Pandora harbor at 7.50 p. m., which place Pike's boats had reached the night before; from that point we have come here, having been delayed by bad weather, fogs, and ice more than half the time. Just north of Conical rock we were "jammed" in the ice and had to drag the boats on a "pan." Things looked very dubious for a time.

From this point Lieutenant Colwell, with second whale-boat, goes direct to Disco, as it is probable that U. S. steamer "Yantic" will be in that vicinity; the ice having prevented her progress north, and the harbor at Upernavik not admitting of a long stay at that place. I, with Pike's party, will go hence to Upernavik (his party not being well equipped with boats), keeping as close into shore as possible, but on the outside of the ice. In the event of no ship coming to my relief, I will winter at Upernavik, and divide my party among the neighboring settlements.

Everybody well and in good spirits. With God's help we all hope to reach port in safety in good time.

E. A. GARLINGTON,

*1st Lieut., 7th Cav., A. S. O., Commanding.*

First whale-boat: E. A. Garlington, 7th Cavalry, U. S. Army; Dr. J. S. Harrison, Acting Assistant Surgeon; Sgt. John Kenney, I Troop, 7th Cavalry; Private J. J. Murphy, F Company, 11th Infantry; Private R. F. Rogge, 3d Infantry; Pvt. F. W. Ellis, Signal Corps Observer; Nicholas, Eskimo, from Godhavn; George Taylor, boatswain of the "Proteus;" F. J. Huostul, Newfoundland.

Second whale-boat: Lieut. J. C. Colwell, U. S. Navy; Corpl. Frank Elwell, 3d Infantry; Artificer O. E. Moritz, 17th Infantry; Pvt. W. H. Lamar, Signal Corps Observer; George A. Wight, A. F. MacDonald, Newfoundland; David, Eskimo, from Disco fjord.

[Copy.]

## APPENDIX I.

UNITED STATES RELIEF EXPEDITION,

*Cape York, August 12th, 1883.*

Lieut. J. C. COLWELL, U. S. Navy.

SIR: Having volunteered for the duty, you will, with your boat and crew as now constituted, except Dr. J. S. Harrison, Acting Assistant Surgeon, U. S. Army, proceed, at the first favorable change in the weather, hence to Godhavn, Disco island, endeavoring to communicate with the U. S. steamer "Yantic," which is supposed to be somewhere along the Greenland coast. When the "Yantic" is found, representation of the present state of affairs will be made to Commander Wildes, and of the proposed route of retreat of the rest of the party by way of Upernavik. In the event of the "Yantic's" having gone south, you will endeavor to make arrangements with any ship which may be at Disco, or neighboring settlements, to come to the relief of my party. The Swedish ship "Sofia," or some of the Danish ships may still be in the vicinity of Godhavn. In case all the ships have gone south, you will make the best arrangements for wintering at Godhavn with your party, taking advantage of the first opportunity to communicate with me at Upernavik, state of your party, and such other information as you deem desirable. You will, however, not send a sledge party for the purpose specially. If no ship comes to our relief, I will winter at Upernavik and divide party among the neighboring settlements. In the equipment of your boat, personal baggage and provisions, you will be governed by your judgment of the necessities of the case.

Wishing you a successful trip, and as pleasant and comfortable one as the conditions will allow,

I am, very respectfully, your obedient servant,

E. A. GARLINGTON,

*1st Lieut., 7th Cav., A. S. O., Commanding.*

[Copy.]

## APPENDIX K.

H. M. S. ENTERPRISE AND INVESTIGATOR,

*6th of August, 1848, Lat. 75 1-4, Long. 59.*

Placed in a cairn erected on (the supposed) Browne island. Officers and crews all well, and prospects of a speedy passage satisfactory.

(Signed)

JAS. C. ROSS,

*Commander of Expedition.*

Whoever finds this paper is requested to forward it to the Secretary of the Admiralty, London, with a note of the time and place at which it was found; or, if more convenient, to deliver it for that purpose to the British consul at the nearest port.

## APPENDIX L.

WASHINGTON, D. C., *October 9, 1883.*

SIR: In accordance with your request, I beg leave to submit the following report of the movements of the second whale-boat and the party under my command after separating from you at Cape York:

Leaving Cape York on the morning of August 16, we kept together while working

out through the ice until, at 1 p. m., open water was visible to the southward. I then parted company, pulling off to the southward, got into open water shortly after, and set foresail to fresh west-northwest breeze. Steered south-southeast (true) for Upernavik, and about 1.30 p. m. lost sight of all the other boats, under sail, well together, and steering about east. They were in range with Bushman's island, and bore north.

At 2 p. m. I met the edge of another pack, extending to northward and eastward as far as I could see, and kept off to southward to keep inside the broken ice on its western edge. Wind increasing to moderate gale, with frequent snow squalls; close reefed the foresail. About 4 p. m. the south edge of the pack trending off to the northward and eastward, I left the ice and again set course for Upernavik. While inside the edge of the pack the swell was considerable, but the seas did not break. After leaving it I encountered a short, heavy, breaking sea, wind still increasing from west-northwest, until, at 6 p. m., no ice was in sight, with the exception of a few distant, scattered bergs. By that time I was unable to longer steer my course, and was obliged to run before the gale and heavy, breaking sea.

Three of my crew were very sea-sick, and the Eskimo too frightened to understand any English; so I was reduced to two men, and right well they stood to their work. The weather brightened slightly towards midnight, and I saw land to the northward and eastward, but by 1 a. m., August 17, it was again overcast and thick, snow squalls at frequent intervals, wind, however, moderating and hauling to west. At 4 a. m. I gave the tiller to Wight and lay down until 6 a. m., snowing heavily in the meantime, but wind decreasing to light breeze. By burning some alcohol in a tin can I made a pot of tea and warmed some canned meat, the first we had had to eat since starting, with the exception of some wet hardtack.

The wind hauling to southward and eastward, shook reef out of foresail and set mainsail after breakfast, making east course on the wind. Sea still rough and irregular, but not breaking. Sighted land ahead at 9.30 a. m. Wind freshened towards noon and weather looked very threatening to southward and eastward. Close reefed both sails, but was obliged to take in the mainsail soon after. Sea getting up; headed for a small island in sight to northward and eastward, but missed it in a thick snow squall which came up about noon. Sighted it again about 1 p. m., but found myself a mile to the leeward of it with too heavy a sea to attempt to pull against. Ran for a line of icebergs to northward and eastward, to get out of the heavy sea and constantly increasing wind, and at 3 p. m. made fast to a small berg. Snowing heavily, with constantly increasing gale until midnight. I was obliged to cast off my boat and pull to a safer place four times, on account of the berg breaking, or the too close approach of neighboring ones, giving the men a longer pull each time than was really necessary, to prevent their getting benumbed by the cold and wet. I finally made fast to a flat berg with a large mound in its centre, which lasted us six hours, until the gale broke. When I made fast to it it was about one hundred and fifty yards long, but by masses breaking from it, was reduced to barely fifty yards, when I finally left it. While fast to the bergs I kept the bow oarsman with an axe ready to cut the painter in case of sudden danger, but fortunately, we always had timely warning to leave.

During all this time the unflinching courage of the men and their cheerful readiness to comply with any call I made on them, exhausted as they were from loss of sleep, sea-sickness and constant exposure, wet to the skin for two days, and not knowing what minute might be their last, are evidences of a spirit deserving the highest commendation.

The fourteen hours they sat on the thwarts, the oars out ready to pull at a moment's notice, dozing over their oars as they were able, covered with snow, and the boat snowed full, the constant crash sounding in their ears of the hundreds of bergs driven

by before the gale, grindings together and foundering in all directions, and not a despondent word or other than attempts at cheerful remarks from any of them.

About 1 a. m., August 18th, I started a fire with some alcohol in a tin and managed to warm some bacon and a little water for tea, which, with a couple of doses of whisky during the night, prevented their becoming too much exhausted.

At 4.30 a. m. snow stopped, wind moderated, and clouds commenced to break to westward. Saw land to eastward, and recognized the locality as being off Thom island, in Mellville bay, near the place the "Proteus" was stopped on her way north on July 19th. Cleared snow out of the boat, and at 5.30 a. m. started, under oars, pulling to the se.

A few miles to northward of my position the bergs, driven in by the gale, were packed together as solidly as a glacier face, and the view was blocked by them in every direction.

Pulled along through the bergs against a moderate head wind, getting a couple of hours' sleep during the forenoon. About 3 p. m. a light n. breeze came up, made sail to it and allowed all the crew to sleep. At midnight we were off Cape Seldon, about forty miles distant, and still among many bergs, with occasional strings of lump ice from the bergs.

The men were divided into two watches, the three strongest in one watch, with Corporal Elwell in charge, the other three in my watch. Pulled watch and watch at night, all hands from 8 a. m. to 8 p. m., and this arrangement was kept up until I reached the "Yantic." Saw the sun set below the horizon at 11.30 p. m. on this evening.

Sunday, August 19, shortly after midnight passed a rocky islet one-fourth mile long in n. and s. direction, by one hundred and fifty yards wide, and standing about twenty feet out of water.

Wind increased and hauled to southward shortly after. Could make nothing working to windward, so at 3 a. m. took in sail and tried to pull to eastward, but the wind and sea were too much for the exhausted men. Ran back to the small islet passed at midnight, arriving at 9 a. m. The rock was perpendicular on its leeward side and about twelve feet high. Tied the boat by her painter, keeping her clear with a couple of oars. Started an alcohol fire on the rock and had a meal, the men taking advantage of the opportunity to stretch themselves on the rocks and get a short nap. I found a very old moss-covered cairn in a hollow in the centre of the islet with one very old bone lying near by. Approximate magnetic bearings from this islet: Red Head, ssw.; Cape Seldon, sse.  $\frac{1}{2}$  e.; Cape Walker, e.  $\frac{1}{2}$  s.; a small islet, nne., about ten miles, and another about ten miles sse., in a line with Cape Seldon. Left a record in a tin can in a small cairn on the summit of this rock, and replenished the water supply from the melted snow in the crevices.

Wind falling light, left at 11.30 a. m. and pulled in for Red Head. Wind dying out, changed course at 3 p. m. to sse. (true.) Made sail at 6 p. m. to light e. breeze, very many bergs and occasional strings of lump ice. Sailed along all night and until 11 a. m., August 20, when, being headed off to sw., took in sail and manned oars, pulling in for Devil's Thumb, which I did not sight until 7.30 p. m. Heavy swell from southward during forenoon and first part of afternoon, until I got in among a great many bergs and lump ice off the coast. At midnight Wilcox Head bore e. (true.)

Pulled along until 1 a. m. August 21, when made sail to light n. breeze, steering sse. Carried sail until 7 a. m., when it again fell calm and oars were manned. Bright, pleasant day. Pulled until 4.30 p. m., when made sail to light nnw. breeze. A heavy fog bank, coming up from northward and westward, shut down thick at 6 p. m. Wind failed at 7 p. m.; manned oars and pulled for passage between Baffin island and main land. Dense fog until 9 p. m., when it lifted sufficiently for me to see the neighboring land and that I was in the channel I was steering for. Calm

and thick fog at intervals until midnight; weather very cold. August 22, commenced clear and cold, fog in patches. Made sail to gentle n. breeze at 2 a. m. At 4 a. m. found we had run in among a lot of high, uncharted islands off a large glacier. Great numbers of bergs and quantities of lump ice, frozen together in solid sheets in places. At 5 a. m. wind died away; manned oars and pulled to southward and westward to get clear of ice. Struck the swell of open water clear of the islands at 9 a. m. Set foresail to fresh nnw. breeze which came up about 9.30 a. m. and steered south. Wind increased to moderate gale; thick fog rolled in from seaward and sea got up. Close reefed foresail, and steered probable course for Upernavik, having concluded to land there to leave notice for the "Yantic," in case she should stop there before I met her.

Not having been able to get a sight of the sun, and fog obscuring the land, I could only estimate my position and supposed I was below Tessuisak at noon.

At 6 p. m. I sighted an island which I supposed to be Long island, adjoining Upernavik island to the sound. Round its south end and hauled up along its east side for next island to northward, looking for the settlement. While sailing along its coast we sighted a barrel on the shore which had a very exhilarating effect on the spirits of all hands, but, on searching the south side of the next island and seeing no signs of natives, they felt pretty low.

The weather had by this time cleared off showing a large glacier to eastward. This, from its size, I took to be Upernavik glacier, that being the only one marked on the chart tracing I had. I informed the men that we had missed Upernavik, and that, after cooking a meal with the barrel we had passed, I did not intend to again land until reaching Godhavn. This decision, to their credit, they very cheerfully accepted, notwithstanding they very much needed a rest and dry clothing.

I sailed back and landed at the barrel, with which I started a fire and cooked a solid meal of the best we had. The place was evidently a summer camp of natives, and had not been long abandoned.

From bearings I got of the glacier, which I supposed to be that of Upernavik (but which afterwards proved to be Tessuisak glacier), and of a high point on the sound, which I took to be Sanderson's Hope, I located myself about eight miles ese. of Upernavik.

Having finished our meal, and after leaving a record in a tin can in a small cairn, we started again at 9.30 p. m. under sail.

August 23 commenced bright and clear, thick to southward and heavy swell. Wind dying away at 1 a. m., manned oars and pulled along with the watch. At 2 a. m. I sighted a store house to southeastward, which I supposed to be Proven, and, after a while, concluded to pull in and leave a notice to be sent to Upernavik. Landed at 5 a. m. and sent David to call up the natives at the only hut in sight, not even a dog being visible. He came back with the information that we were at Upernavik, when I roused up the watch in, who had not been awakened by the landing and the shots I had fired to attract attention, manned all oars and pulled around the south side of the island for the settlement on the other side, Danish harbor being the place I had landed. I was met at the landing by Governor Moller, of Proven, with the information that the "Yantic" had left at 9 p. m. the previous evening for the south, a very great disappointment to us all.

The governor of Upernavik, Mr. Elborg, was up and met me when I reached his house, and did everything in his power to make us comfortable. I was given a letter, addressed to yourself, from Commander Wildes, of the "Yantic," in which he stated his intention to fill up with coal at the Kudlisæt mines in Waigatt strait, then to remain at Godhavn not later than September 15th; at which time he would proceed south to Saint John's, Newfoundland.

Wishing to reach him in time to have the "Yantic" come back north for the rest

of the party, who I thought were probably blocked in the ice in Melville bay, I proposed starting at once in my boat. The combined protests of both governors and the minister against crossing Omenak fjord in a whale-boat, a trip that had only once been accomplished, and then at a very great danger, and the urgent offers of Governor Elborg, influenced me to leave my whale-boat and accept a heavy, open launch belonging to him. This boat was also more roomy, admitting of lying down and moving about, impossibilities in the whale-boat. Mr. Elborg wished me to wait two days while he decked it over, but I decided to start the same day, and at 3 p. m. left Upernavik for Kudlisæt mine.

While at Upernavik the hospitality and kindness of Mr. Elborg and Mr. Kristensen, the missionary, could not be exceeded. Everything was placed at my disposal; a large house was assigned the men to sleep in; a substantial meal and all necessaries for their comfort furnished; and all the wet clothing and provisions taken out of the boat and carefully dried. The governor and Mrs. Elborg did all for my personal comfort their kindness could suggest, while the minister presented me with a pair of his own boots, articles of which I stood very much in need, and a chart of the coast, of which I had only a rough tracing.

When we were ready to leave, the entire population, after stowing our supplies in the boat, gathered to see us off, giving us a hearty cheer as we set sail out of the harbor.

On examining my stores at Upernavik, I found nearly all my hard bread sour from having been so long wet, so I had to get a barrel of bread from the supplies of the settlement, the governor of Proven to furnish it from his stores. I was also to get the water casks Mr. Elborg gave me filled at Proven, to avoid longer delay at Upernavik. Mr. Moller, governor of Proven, was to accompany me to that place, and Joseph, an Eskimo from Upernavik, was to accompany me as pilot as far as Svarten Huk, and to lend a hand generally until I returned the boat to Upernavik.

I arrived at Proven at 4 a. m., August 24, sailing to within eight or ten miles of the harbor, when the wind died away and oars were manned. As the boat pulled only four oars and was very heavy, the men found it hard work after the light whale-boat. At Proven I met with the same kindness from Mr. Moller I had experienced at Upernavik. He had the water casks filled for me, furnished the barrel of bread, presented us with two quarters of reindeer, with some fresh provisions and fire wood from his own slender stock, and, when I left at 3 p. m., accompanied me with his boat, towing for two hours. The only return I could make him was the present of my shot-gun and the few cartridges I had remaining.

The weather was calm, so we pulled all night and until 9 p. m. the next day August 25th, when made sail to light n. breeze which lasted four hours. Calm again at 1 a. m., 26th. Manned oars and pulled until 6 a. m., when made sail to light nnw. breeze off Svarten Huk, increasing to moderate breeze and lasting all day until 9 p. m. Manned oars again and pulled until afternoon of the next day. At 8 a. m., 27th, when off Noursoak, about five miles distant, some hyaks came off from shore and, after ascertaining from David who we were, carried the news on shore. Shortly afterwards the governor pulled out to us and again illustrated the hospitality of these people by bringing off some bottles of gin to present us. The governor was a half-breed and spoke very little English, but he informed me he had seen a steamer, presumably the "Yantic," pass down the Waigatt strait on the 23d instant, and that he had news by a native boat that she stopped at Kudlisæt coal mine two days but had left.

Wishing to get word to the "Yantic" as quickly as possible, I wrote a note stating the condition of affairs, and requesting Commander Wildes to communicate with me at Ritenbenk, for which place I would make if I failed to meet him at Kudlisæt. This note the governor agreed to send direct to Godhavn by kyaks, then returned

to the shore. Half an hour later two kyaks passed us going down the strait with the note. Made sail to light nw. airs during afternoon to rest the men, manning oars again at 6 p. m. and pulling till 11 p. m., when I was able to make sail to a gentle nw. breeze, which lasted until 7 a. m. 28th. This was the first night we had had dark enough to necessitate a light to read the compass. Pulled all day and night and until 8 p. m. the next day, 29th. Passed Kudlisœt at 11 p. m. 28, but it was too dark to see more than the "Yantic" was not there. Weather was overcast, heavy fog banks at intervals these two days, and frequent showers afternoon of 29th. Passed settlement of Oyorasook at 5 p. m., from which two kyaks came off. They said the Noursoak kyaks had passed that day, and that the "Yantic" had passed three days before. I engaged these two men to carry a note to Commander Wildes informing him that I would not stop at Ritenbenk but would keep on to Godhavn.

Made sail to light se. breeze at 8 p. m. and beat to windward until 1 p. m. August 30, making only about ten miles. Manned oars when wind failed and pulled around Fletterhuk (southeast point of Disco island) until 5 p. m., when made sail to light e. breeze.

Breeze increased to stiff wind and hauled to enc., carried all sail before it and ran all night along the coast, about four miles distant.

Ran under lee of promontory on south side of Godhavn harbor at 2.30 a. m., August 31. Double reefed the sails and tried to beat in; wind blowing directly out the entrance. Reef points tore out of the main-sail, and after beating for three hours and making very little to windward, missed stays twice on south side of channel and went on the rocks. I then sent a signal man on the hill to flag the "Yantic," which I could see at anchor in the harbor. I had got the boat clear and was about standing off again when the "Yantic's" first cutter was sighted coming around a point a couple hundred yards away. My boat was taken in tow, and I was brought alongside the "Yantic" at 8.30 a. m.

On reporting to Commander Wildes, I found the note I had sent by kyacks from Noursoak had arrived about an hour previously, and the second note had not yet come.

On my representing the situation of the rest of the party, and their probable condition, Commander Wildes gave orders for getting the ship under way, and at 6.30 p. m. she was steaming out of the harbor for Upernavik, the launch belonging to that place in tow. David, my Eskimo, disappeared when I got alongside the "Yantic" and I did not again see him.

Had pleasant weather, light breezes, and smooth sea to Upernavik, where we arrived at 7.30 a. m., September 2, and I rejoined you with my party.

Very respectfully, &c.,  
(Signed)

J. C. COLWELL,  
*Lieut. U. S. Navy.*

1st Lieut. E. A. GARLINGTON, 7th U. S. Cav., A. S. O.,  
*Commanding Greely Relief Expedition, Washington, D. C.*



LETTER OF TRANSMITTAL OF CHIEF SIGNAL OFFICER.

SIGNAL OFFICE, WAR DEPARTMENT,  
*Washington City, October 16, 1883.*

Hon. ROBT. T. LINCOLN,  
*Secretary of War.*

SIR: I have the honor to enclose the report of 1st Lieutenant E. A. Garlington, 7th Cavalry, upon the expedition sent to the Arctic seas this summer for the relief of the International Meteorological Expedition, under the command of Lieutenant A. W. Greely, U. S. A. The report describes the passage of the ship "Proteus," carrying stores and a rescuing party for Lieutenant Greely, who with his men were to have been brought away, could they have been reached. The report also describes the loss of the ship and a large proportion of the supplies intended for Lieutenant Greely. The failure to find stores and dogs ready in Greenland, as had been expected, is not understood, since the Danish government had been communicated with upon that subject, at the proper time, which was all that could be done, or had been usual in previous years.

The question of supplementary orders that Mr. Garlington refers to, as having been raised, and in unfairness to himself is, in substance, correctly stated by him. After Lieutenant Greely arrived in Lady Franklin bay, in 1881, he wrote out and sent to this office full directions for the party that might be sent to relieve him, ending as follows: "No deviation from these instructions should be permitted. Latitude of action should not be given to a relieving party, who, on a known coast, are searching for men who know their plans and orders." This made it a matter of greatest delicacy to give any directions that in any manner might change the programme there marked out.

Congress had afterwards, however, added another element to the question, in this, that the party should be brought away this summer. This at first caused the instructions to be determined upon, that the stores be landed at Littleton island before going north of that point. Afterwards it was arranged to send a ship of the U. S. Navy with the "Proteus" as a convoy, and this so far obviated the absolute necessity of first stopping to unload at Littleton island, the convoy itself being a depot, that it was thought best that Lieutenant Greely's directions should remain as Lieutenant Garlington's guide, and that it be suggested only that the landing be first made. Just before starting, Lieutenant Garlington brought a copy of a memorandum that had been prepared for the Secretary of the Navy to aid him in preparing instructions to the convoy, which contained the original condition of first landing at Littleton island, explaining that it would conflict with the plans of Lieutenant Greely, so far as it should consume the time of the expedition, and in case he should find clear weather and open water beyond, with a fair prospect of getting straight through, while by stopping he might lose the opportunity if he should not at once proceed. I replied that the authority and discretion which must always rest with the commander on the spot, must in such case be his guide.

The great delicacy in imposing positive instructions in cases like this seemed to make the simple suggestion in that paper sufficient. The strictures upon Lieutenant Garlington, so far as they refer to the question of disobedience, have been unwarranted.

As to the situation of Lieutenant Greely and his party, while serious, I do not

consider it desperate, and fully look for his rescue next season, preparations for which must be timely and complete. Lieutenant Garlington has been asked to explain more fully, 1st, why he did not endeavor to make a depot at Littleton island, with what stores he could gather during the remaining time he might have remained in that region; 2d, why a large portion of Mr. Greely's stores were abandoned on an ice floe, so long as the season still permitted work with boats; 3d, why, out of six boats, none were left for Mr. Greely and his party; 4th, why he started south with forty days' supply in place of leaving a large portion of them for Lieutenant Greely, when the country was full of game, seals, walrus, and fish, and the party well supplied with means for its capture, which was an ample source of food; 5th, why he came south of Cape York at all, it being in the friendly Eskimo country and fairly supplied with the necessaries of life.

These explanations will be furnished you as soon as received.

I have the honor, sir, to be, very respectfully, your obedient servant,

W. B. HAZEN,

*Brig. and Bvt. Maj. Gen'l,  
Chief Signal Officer, U. S. A.*

REPLY OF LIEUTENANT GARLINGTON TO CHIEF SIGNAL OFFICER.

WASHINGTON, D. C., *October 20, 1883.*

CHIEF SIGNAL OFFICER, U. S. ARMY.

GENERAL: I have the honor to acknowledge the receipt of your letter of the 18th instant, and beg leave to submit in reply to the questions asked the following answers:

1. "Why did you not endeavor to make a depot at Littleton island with what stores you could gather during the remaining time that you might have remained in that region?"

Answer. As I stated in my report, I decided, while at Cape Sabine, to make a prompt and earnest effort to communicate with the "Yantic," and to proceed south at once for that purpose. Having come to this conclusion, I proceeded to gather together all the stores I could spare and reclaim from the bags of the crew of the "Proteus," and make a cache of them on the rocks in Payer harbor under Cape Sabine. The cache made there contained clothing—blouses, trousers, flannel shirts, socks, stockings, mits, buffalo overcoats, fur caps, flannel drawers, undershirts, woolen and rubber blankets; all wrapped in rubber blankets, covered with a tent fly and weighted down with rocks. The supply of clothing is sufficient for twenty-five men for six months. Near this cache is a new top-sail and two boats of new canvas, left by Captain Pike; a sufficient supply to furnish shelter for a large number of men.

In a cove about three miles west of Cape Sabine a cache of provisions was made. This cache contained fifteen sleeping bags, six hundred pounds of hard bread (three barrels and two painted canvas bags), an unknown quantity of bacon, about seven hundred pounds of canned meats, vegetables, and fruits, a box of tea (forty pounds), a box of gunpowder, a can of matches, a tin pot, and a quantity of clothing—all secured as well as possible in a crevice of the rocks, covered with two tent flies, and the whole weighted down with stones. In a conspicuous cairn on the top of Brevoort island, built by the Nares expedition, I deposited a notice of the loss of the "Proteus," a definite description of the locality of the caches of clothing and the provisions, and also of my proposed movements and efforts to communicate with the "Yantic" and return to the relief of Lieutenant Greely.

The record of the late Mr. W. M. Beebe is in the same cairn. I did not disturb the cache left by the expedition of Mr. Beebe of last year further than to see if the stores were in good order and the boat serviceable. The depot of the English expedition on the small island south of Payer harbor was not disturbed.

I brought the members of my party down to one suit of clothing, one change of underclothing, one buffalo overcoat, one sealskin suit, one pair overshoes, two pairs of socks, one pair of mits, and one cap. Everything else was left in the depot. Having made these arrangements, I started for Pandora harbor, stopping at Littleton island to leave a record. In this record I reported the wreck of the "Proteus," my intention to go south and my reasons therefor, and indicated my course along the coast to Cape York. I stated that I would visit Carey islands, but this was afterwards found to be unadvisable on account of stormy weather, the heavily loaded boats, and the inexperienced crew.

The reasons which induced me to decide upon going south at once I gave in my report, but I will enter into them more fully.

After the "Proteus" was lost, I determined to communicate with the "Yantic" as soon as it was possible to do so, to get from her all the supplies that could be spared and establish a depot at Life-boat cove. I intended to remain there with a small party, while the "Yantic" could proceed to Saint John's, report the disaster, and endeavor to secure a vessel suitable for ice navigation and come north with additional supplies. If anything was to be done this season looking to the relief of Lieutenant Greely, it was of the greatest importance to communicate with the "Yantic" at once. When the "Proteus" encountered the pack in Melville bay, no one on board that vessel thought the "Yantic" would cross the bay. This opinion was formed from the known intention of the commander of the "Yantic" not to put his vessel into the ice.

The "Proteus" had run into the "middle pack" about one hundred miles northwest of Upernavik, and it was very nearly four days from that time until she arrived off Cape York. The ice in the bight of Melville bay had not broken this season, and, if the "middle pack" should move off to the westward, leaving a passage around the edge of the fast ice, this ice was still to break up, and would form a pack which would prove a barrier to the "Yantic." As it turned out, to every one's surprise, the "Yantic" saw no ice in Melville bay, and had an unobstructed passage to Littleton island.

If I had remained a fortnight at Littleton island for the chance of the "Yantic's" arrival, my supplies would have been reduced to a dangerously small margin. If she did not arrive, I would have had to commence my retreat during a rapidly closing season, with inadequate provisions. It would probably have been necessary to force our way through much young ice, which at even that date formed one-quarter of an inch thick during calm nights.

This would have delayed the progress of the boats, and prevented communication of the disaster to the "Yantic" in time that she might render any assistance to Lieutenant Greely, if it did not prevent me entirely from reaching the Danish settlements this season, and the sending of the news of the disaster home this year. If I had remained in that region until it was too late to reach the Danish settlements, it would have been necessary to draw on the supplies already deposited for Lieutenant Greely, and if he should arrive he would find his own supplies diminished and the addition to his party of another body of men no better off than his own party. If I started at once, I would secure the arrival of my party at the Danish settlements before the close of the season. If the "Yantic" succeeded in crossing Melville bay, there was nothing to prevent her reaching Littleton island—the "Proteus" having encountered no ice north of Carey islands until she ran into the ice fields of Smith sound, and that ice had not yet moved out to obstruct the channel. I, therefore, reasoned that she would at once, after finding my record on Littleton island, proceed along the coast following my indicated line of retreat, steaming in a day the distance it would take me a week to cover. If she should miss my boats in thick weather, I thought she would endeavor to communicate with me at Cape York, which was my stated objective point. It would then still be early enough to carry out my original plan of remaining at Life-boat cove with supplies from the "Yantic," while that vessel proceeded to Saint John's with the news of the wreck.

I left Littleton island on the 26th of July, and on the 7th August had made but one hundred and thirty miles.

I reached Cape York on 10th August, and was confirmed in my belief that the "Yantic" had not crossed Melville bay. The natives at Cape York had not seen any vessel pass to the northward and westward lately, and they knew nothing of the Swedish steamer "Sofia," which was to have come there for a series of scientific observations. This fact convinced me that the "Sofia" had not been able to get

through the Melville bay pack, and if she had not, I thought the "Yantic" most certainly had not.

I afterwards learned that the "Sofia" had reached a point about thirty miles west of Cape York. After starting on the retreat south, I pushed on as rapidly as possible, stopping only when compelled to do so by bad weather or ice. I knew if the "Yantic" did not succeed in crossing Melville bay, it would be necessary for me to make the passage during the month of August. Young ice begins to form during that month, and if it was encountered in extensive sheets it would be fatal to my own party. The few patches of this young ice we had already met cut the bows of my boats badly. The constant exposure and the hard work were already beginning to tell on my men, and it was very questionable whether we would be able to cross the bay. If I had concluded to take the risk of waiting at Littleton island for the "Yantic," I would not have gathered any of the supplies at Cape Sabine and the west coast of Smith sound to form a depot at Littleton island. These stores are much more available to Lieutenant Greely where they are than they could be if on Littleton island. There are three caches of provisions between Lady Franklin bay and Cape Sabine, one of them consisting of two months' supplies for Lieutenant Greely's party. Cape Sabine, according to Lieutenant Greely's own plan, was his first objective point in a retreat south. If he arrives there this season, he will find the record of the loss of the "Proteus," and will know that there is no depot on Littleton island. He will have at Cape Sabine food, clothing, and facilities for making shelter. If he comes south in his boats and reaches Cape Sabine after the 1st September, it is questionable whether he could cross Smith sound at that season, even if he should desire to do so. The ice is then in motion with the winds and tides, and the young ice is rapidly forming. If he should come down later in the fall in sledges (which is improbable), the same difficulties would exist to a greater extent. So, in my opinion, depots of supplies on the west coast of the sound are in better position to afford relief to Lieutenant Greely than they would be if on the other side. I saw no natives about Life-boat cove or Littleton island, nor any recent signs of their presence, so I could not have formed a depot of supplies procured from that quarter. Birds were plentiful, but I had but one shot-gun and eighty-six cartridges in my party, so could not have secured many birds.

Although I made every effort to do so, I was unable to find the guns and ammunition provided for the expedition

Walrus were very numerous, but at that season they were very wild and wary, taking to the water at the slightest alarm; moreover, they sink when shot in the water. A harpoon and line are necessary to secure them. After ice forms of sufficient thickness to bear their weight, they are easily speared or shot if they are caught away from their holes or if the holes freeze over. One of them was shot, but he sank immediately. Seals are difficult to secure for the same reason; several were shot during the retreat, but sank immediately.

In the spring of the year these animals float when killed. Any attempt at securing game would have seriously retarded my progress south, which I desired to hasten as much as possible, for reasons already given.

2d. "Why were a large portion of Mr. Greely's stores abandoned on an ice floe so soon as the season still permitted work with boats?"

Answer. The boats worked all night and until twelve o'clock the next day, getting the stores saved from the ship on Cape Sabine. Each trip was attended with great danger; the ice was all in motion, and running rapidly to the southeast before a strong wind from the northwest and the ebb tide. The large floes of heavy Arctic ice were continually crushing and grinding together, cracks opening and closing, the edges of the floes marked by ridges of ice blocks piled up ten or twelve feet high, by the enormous pressure of the great masses of ice as they jammed against

each other. The boats when pulling through the closing cracks were compelled to haul up on the ice and wait for the crack to reopen. One boat was detained in this way for two hours, being walled in on a circular floe by blocks of ice seven feet thick piled around its circumference. The risk of handling the boats in that sea of moving ice was so great that it was seriously argued by a party of the crew of the "Proteus," then on the floe, to give up the attempt to reach Cape Sabine and trust their fortunes to the solid ice floe they were then on, rather than run the chances of being crushed while endeavoring to make land. When I last saw the floe having the provisions on it, it was about two miles away, the sea between covered with heavy broken running ice, and the floe itself moving to the southward and eastward at the rate of two and a half miles an hour. I lost sight of it soon after, and saw no more of it or any trace of the wreck. The men had now been working almost continuously for twenty-four hours, having eaten nothing except some hard bread and tea during that time, and were worn out with fatigue and loss of sleep. I did not consider the stores remaining on the floe of sufficient importance to again endanger the lives of my men or seriously risk the loss of my boats.

As near as I can ascertain, when the last boat left the floe there remained on it two barrels of assorted canned goods, some loose cans, a small quantity of lumber, two sails, some scattered clothing, the theodolite and some boxes of newspapers.

3d. "Why out of six boats were none left for Mr. Greely and his party?"

Answer. I had two ordinary navy built whale-boats and a dingy. The dingy was a very light, shallow cedar boat, for use in perfectly smooth water and a very light cargo. She would have been of no use to Lieutenant Greely, and I took her along in tow that she might lighten the cargoes of the other boats and serve as a shelter for the men when on land. When I left the shelter of the land at Cape York, she was left above high water mark above that point. The two whale-boats were necessary to carry my own party of fifteen men; one would not have been sufficient. Even with their light crews of seven in one boat and eight in the other their gunwales were not six inches above the water when loaded. They floated lighter at the start, but after a few days, when everything became water-soaked with the frequent rain, snow, and spray, they were dangerously overloaded.

The three boats of the "Proteus" were old, very much out of repair and badly equipped. They had neither spars, sails, nor rudders fitted, and only four oars each could be found for them. Make-shift rudders and sails were fitted at Cape Sabine. I subsequently loaned them one of my sails, which they used in their largest boat throughout the trip. These boats were twenty-one feet, nineteen feet, and fifteen feet six inches long, and carried crews of nine, seven, and six men, respectively. No two of the boats would have carried the crew of the "Proteus." To have left one of the "Proteus" boats, or to leave one of my whale-boats and distribute my surplus men in the "Proteus" boats, a resort to force would have been necessary, which I was not prepared to make for the questionable benefit of leaving a boat.

Lieutenant Greely has with him three whale-boats and a steam launch. At Polaris bay, opposite Lady Franklin bay, there is a twenty-foot ice-boat, left there by Lieutenant Beaumont, of the "Discovery;" also a whale-boat in Newman bay, left by the "Polaris."

If he comes to Cape Sabine without boats, there is a whale-boat left there last year and needing only a small patch replaced to be perfectly serviceable. Twenty miles below Cape Sabine, at Cape Isabella, is another whale-boat. He has eight boats available on the west coast and another on Carey islands.

A boat at Littleton island would prove of no benefit to him, for, after reaching the Greenland coast, he would have no further need of boats until next summer, when, it is to be hoped, he will not be reduced to the necessity of trying to make his way south in small boats.

4th. "Why you started south with forty days' supply, in place of leaving a large portion of them for Lieutenant Greely, when the country was full of game, seals, walrus, and fish, and the party well supplied with means for its capture, which was an ample source of food?"

Answer. The exact amount of supplies I had for my party of fifteen men (afterwards increased by one man) when I left Cape Sabine was as follows:

Six hundred pounds of hard bread in bags, a great deal of which got wet and soured and had to be thrown away; three hundred pounds of bacon, eighty pounds of tea; one-half barrel of sugar, one hundred and forty pounds of pemican, from last year's stores, about half of which was spoiled; about four hundred pounds of canned meats, vegetables, and fruits, and one-half barrel of alcohol.

This was a smaller quantity of food than was taken by any party retreating from that region. I could not foretell the exact length of time necessary to make our journey. Dr. Kane retreated from a short distance north of Littleton island to Upernavik, taking with him all the provisions he could carry in his three boats. It took him eighty-four days to make the journey. I made the distance from Littleton island to Upernavik in twenty-nine days.

The "Polaris" people started south with supplies for two months and a half, but were picked up a short distance from Cape York by a whaler, after having been in their boats twenty-three days. At that time of the year I could not expect to meet a whaler, for they only visit the vicinity of Cape York in the early season on their way to the whaling grounds of Pond's inlet and Jones sound, where they remain until September, when they are able to cross Davis' strait, for the southward, homeward bound.

In my answer to your first question I have stated why it would have been impossible for me to have killed sufficient game to subsist my party and at the same time make rapid progress to the southward. I saw no fish in that region, and, if I had, I had no means of catching them. If I had left any of my small stock of provisions at Littleton island, I would have seriously endangered the safety of my men to no purpose. As it was, the short rations of sometimes one, and never more than two meals a day began to tell heavily upon them by the time I reached Upernavik.

After leaving Cape York I saw no game, except two or three seals, until I reached the islands about Tessuisak.

5th. "Why did you come south of Cape York at all, it being in the friendly Eskimo country and fairly supplied with the necessaries of life?"

Answer. I did not remain at Cape York because I did not see then, nor do I see now, how I could have possibly been of any service to Lieutenant Greely.

The friendly Eskimo I saw about Cape York consisted of three families of sixteen people (three men four women and nine children) at one place, and six men at another place about ten miles distant. From these people I learned that the settlement near Cape York, which they indicated as being somewhere to the northward and westward, consisted of about forty people, and that they were only there temporarily hunting, that they would soon return to the main settlement. The only habitations I saw along the coast were several abandoned winter huts, at long distances apart, and the three skin tents in which the three families referred to above were living. From the best information attainable, I am of the opinion that there are no more than one hundred and twenty-five Eskimo from Cape York to Renssalaer bay, and it is a well known fact that they are a very improvident and shiftless race, and on the verge of starvation every winter. To have quartered a party, howsoever small, without provisions on these people with the chance of Lieutenant Greely's reaching there with his party during the fall, would have been but to seriously endanger the lives of the whole community, without being able to accomplish any good whatever. I had not more than two weeks' supplies when I left Cape York. I left that point

for the same reason I left Cape Sabine—to endeavor to help Lieutenant Greely and party in the only way which seemed to me practicable. As I have stated from the information received there (Cape York), I was convinced that the “Yantic” had not crossed Melville bay, and, consequently, had not found my records. The only alternative left to me was to endeavor to reach Upernavik and Disco just as soon as possible, still making every effort to communicate with the “Yantic,” detaching Lieutenant Colwell to make communication more certain.

If my actions in this matter are not explained to the satisfaction of yourself and the honorable Secretary of War, I have the honor to request that a court of inquiry be ordered to investigate the whole case.

Very respectfully, your obedient servant,

(Signed)

E. A. GARLINGTON,  
*1st Lieut., 7th Cav., A. S. O.*

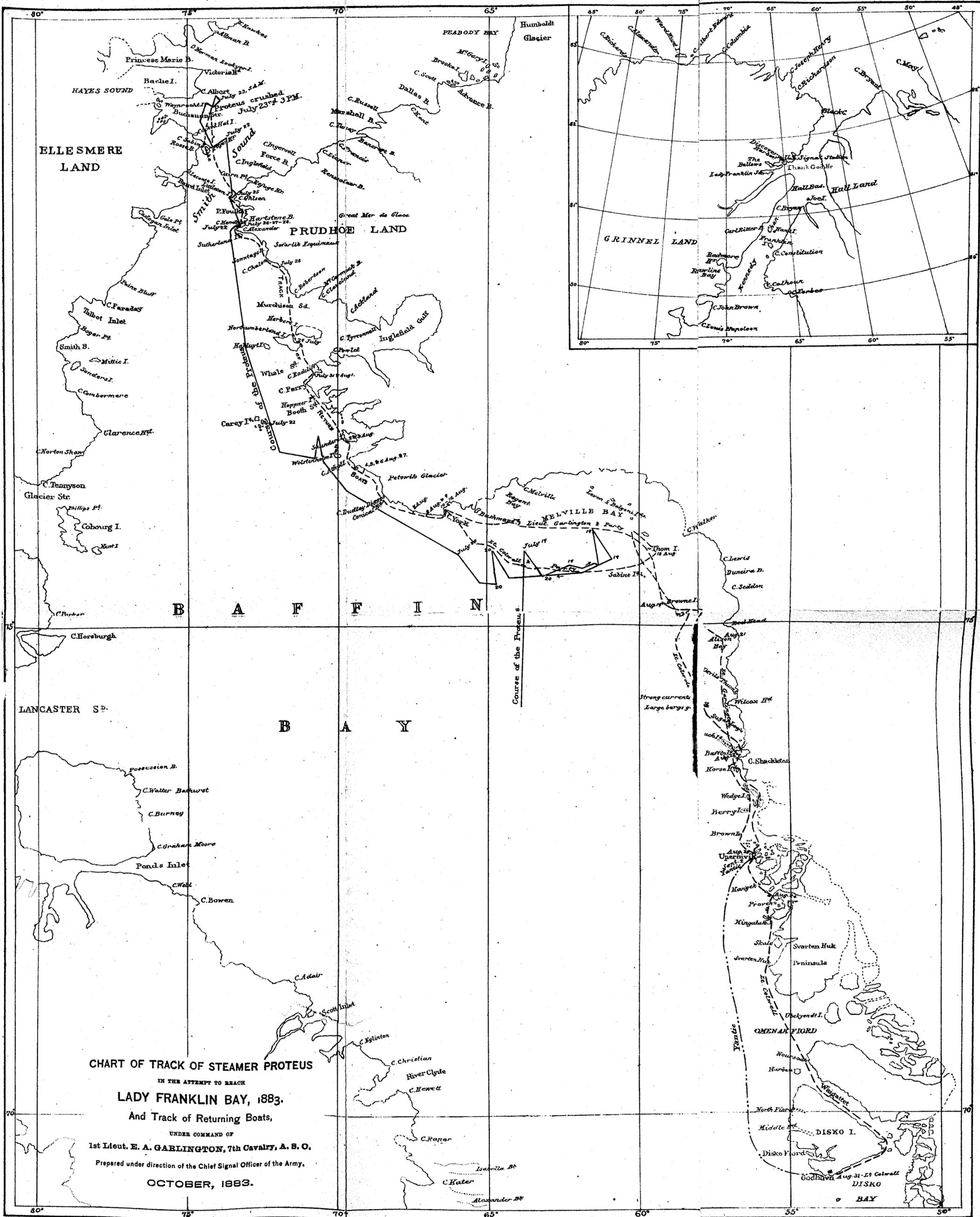


CHART OF TRACK OF STEAMER PROTEUS  
 IN THE ATTEMPT TO REACH  
 LADY FRANKLIN BAY, 1883.  
 And Track of Returning Boats,  
 UNDER COMMAND OF  
 1st Lieut. E. A. GARLINGTON, 7th Cavalry, A. S. O.  
 Prepared under direction of the Chief Signal Officer of the Army.  
 OCTOBER, 1883.