

GREELY RELIEF EXPEDITION

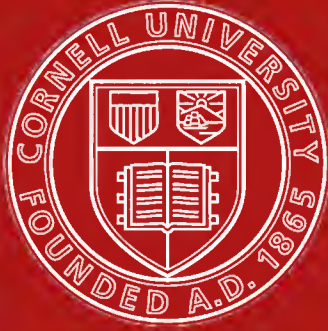
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COMMANDER W. S. SCHLEY, U. S. N., COMMANDER GREELY RELIEF EXPEDITION, 1884.

REPORT

OF

WINFIELD S. SCHLEY,

COMMANDER, U. S. NAVY,

COMMANDING

GREELY RELIEF EXPEDITION

OF

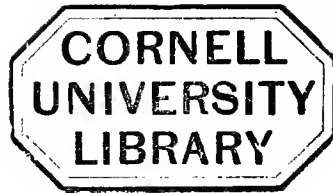
1884.

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THE GREELY RELIEF EXPEDITION.

U. S. S. THETIS,
Navy-Yard New York, September 4, 1884.

Hon. WM. E. CHANDLER,
Secretary of the Navy.

SIR :

In obedience to your order of February 18, assigning me to the command of the Greely Relief Expedition of 1884, as indicated in your communication of that date, following:

NAVY DEPARTMENT,
Washington, February 18, 1884.

SIR: Having been selected for the command of the Greely Relief Expedition of 1884, you will make immediate and full preparation for the performance of your duties. You will investigate the circumstances of Lieutenant Greely's voyage to Lady Franklin Sound, in 1881, and of the attempts to relieve him in 1882 and 1883, incidentally familiarizing yourself with the whole subject of Arctic exploring and relief expeditions. You will examine the *Thetis* and *Bear* and all other ships which may be designed for the expedition, and co-operate with the Chiefs of Bureaus in strengthening and equipping them; giving particular attention to all the special articles of outfit necessary in Arctic voyaging, including boats, sledges, dogs, houses, provisions, clothing, navigation instruments, and the whole material of the expedition.

You will also consider and assist in the selection of the subordinate officers and the enlistment of the crew, and on all points above indicated, and concerning any steps which ought to be taken to give success to the expedition you will from time to time make to the Department all suggestions and recommendations which may occur to you as useful or important.

Very respectfully,

W. E. CHANDLER,
Secretary of the Navy.

Commander WINFIELD S. SCHLEY,
Washington.

the following letters were addressed to the several Chiefs of Bureaus of the Navy Department, suggesting the complements of officers and men, and articles of outfit necessary for the vessels to compose the expeditionary force:

WASHINGTON, D. C., *February 19, 1884.*

SIR: I have the honor to inform you that the Greely Relief Expedition will be composed of three vessels, as follows:

Thetis, with a crew of 35 people (officers and men).

Bear, with a crew of 35 people (officers and men),

Alert, with a crew of 40 people (officers and men).

Reaching Greenland, an addition to each vessel of 25 dogs and a dog driver will occur.

On board the *Thetis* and *Bear* there will be a crew of 28 enlisted men, with rates, as follows: 4 petty officers (quartermasters and boatswain's mates), 10 seamen, 1 boiler-maker, 1 blacksmith, 1 carpenter's mate, 3 firemen, 1 machinist, 1 ship's cook, 1 officers' cook, 1 officers' steward, 2 Esquimaux, 1 captain of hold and yeoman, 1 ice master.

On board the *Alert* there will be a crew of 33 enlisted men. The same ratings will exist, except the number of firemen will be increased to 6 and seamen to 12.

These men should, as far as practicable, be homogeneous in nationality, Swedes and Norwegians preferred, after Americans, and they should understand in shipping that every man will be called upon for any and every duty incident to the service.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Gree'y Relief Expedition.

Commodore EARL ENGLISH,
Chief of Bureau of Equipment and Recruiting.

WASHINGTON, D. C., *February 19, 1884.*

SIR: I have the honor to request that you will forward to New York by the first of April next, for use on board the three ships of the Greeley Relief Expedition, the following articles, viz, thirty-six Springfield rifles, eighteen double-barreled fowling pieces, of the simplest breech loading mechanism, and of the type best suited for the expedition.

For each ship the same quantity of ammunition as furnished the Rodgers.

Also a sufficient quantity of five-pound charges of gunpowder and gun-cotton, to be prepared for use in blasting.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greeley Relief Expedition.

Commodore SICARD,
Chief of Bureau of Ordnance.

WASHINGTON, D. C., *February 19, 1884.*

SIR: I have the honor to inform you that the Greeley Relief Expedition will be composed of three vessels, as follows:

Thetis, with a crew of 35 people (officers and men).

Bear, with a crew of 35 people (officers and men).

Alert, with a crew of 40 people (officers and men).

Reaching Greenland, an addition to each vessel of 25 dogs and a dog driver will occur.

Will you please make out an allowance of provisions for 115 men for a period of two full years.

The stores for each ship to be in as small packages as possible and in accordance with the list suggested by Chief Engineer Melville.

The cloth clothing and over-clothing for the expedition should be made at the navy-yard, New York, and will you please authorize the officer in charge to take meas-

ures of the officers, and men as fast as enlisted, and fit them out in accordance with a list to be supplied later.

The skin clothing, either of reindeer or caribou, should be obtained at once, and the clothing begun at the earliest date; if possible, everything to be ready by April 10 to stow on board; one year's clothing to be baled for stowage.

Seventy-five pairs of Canadian snow-shoes will be required for the expedition.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Paymaster-General J. A. SMITH,
Chief of Bureau of Provisions and Clothing.

WASHINGTON, D. C., *February 19, 1884.*

SIR: I have the honor to inform you that the Greely Relief Expedition will be composed of three vessels, as follows:

Thetis, with a crew of 35 people (officers and men).

Bear, with a crew of 35 people (officers and men).

Alert, with a crew of 40 people (officers and men).

Reaching Greenland, an addition to each vessel of 25 dogs and a dog driver will occur.

Will you please authorize the proper persons to prepare the medical outfit for the same, to be securely packed for delivery at the navy-yard, New York, ready for stowing on board, not later than April 1, 1884.

The supplies should cover a period of at least three years.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Surgeon W. K. VAN REYPEN,
Acting Chief of Bureau of Medicine and Surgery.

WASHINGTON, D. C., *February 25, 1884.*

SIR: Please furnish for each of the three ships of the Greely Relief Expedition the following boats, viz: 5 whale-boats, fitted with bilge keels (24 and 28 feet); 2 17 foot ice dories, fitted as per drawing sent you; 2 ice toboggans, fitted as per drawing sent you. 3 sledges, for traveling over ice and snow (two of 8 feet, one of 12 feet, fitted with reversible runners).

All boats to be fitted with oars and paddles; thole-pins to be of wood, with a number spare for each boat.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Chief Naval Constructor, T. D. WILSON,
Chief of Bureau of Construction and Repair.

WASHINGTON, D. C., *February 25, 1884.*

SIR: I inclose herewith a memorandum of clothing required for the Greely Relief Expedition, referred to in my letter of the 19th instant.

In making the estimates for the total amount of each article required, the number of officers may be placed at 25, and the number of enlisted men at 100.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Paymaster-General J. A. SMITH,
Chief of Bureau of Provisions and Clothing.

Memorandum of clothing required for Greely Relief Expedition.

FOR EACH ENLISTED MAN.

Undershirts of blue flannel, double, lined between with perforated chamois or buff	8
Drawers of blue flannel, same material	8
Overshirts of blue flannel, double throughout; two shirts to have regulation collars, others without	8
Pantaloon, heavy blue cloth, cut citizens' fashion	8
Monkey jackets, lined with blue flannel	2
Pairs long stockings, with strings to tie above the knee (woolen)	12
Felt caps, to haul over the head and ears	2
Pairs lambskin stockings, the length of ordinary hose, wool inside	4
Pairs sealskin boots, with hair removed, to extend above the knee	4
Pairs thick woolen mitts, with thumb and forefinger	6
Pairs lined sealskin gauntlets, with thumb and forefinger	3
Complete suits of reindeer clothing, including cap, with lapels to cover back of neck and face	2
Reindeer-sleeping bag, to be 8 feet long, with flap to cover the head, the hair inside; if reindeer-skin is not obtainable, the bags to be made of calf-skin, with the hair inside, and lined with California blankets	1
Guernsey jacket	1
Suit of oil skins	1
Pairs of glass-goggles	2
Pairs of horse hair goggles	2
Navy caps, regulation pattern	2

FOR THE OFFICERS.

In addition to the foregoing outfit (except the cap and overshirt with regulation collar, for which others will be substituted) there will be required for each:

Regulation overcoat, of heavy blue cloth	1
Regulation blouse suits, of heavy blue cloth; (but one monkey jacket will be required for each officer)	2

There will also be required for the expedition:

Heavy woolen mufflers, one half to be baled	280
Rubber knapsacks, for carrying gear, &c.	140
Rubber blankets, for sled and ice work	20
Pairs leather boots	140
Pairs heavy army blankets, one-third to be baled	432

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

GREELY RELIEF EXPEDITION.

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List of provisions furnished each of the three ships of the Greely Relief Expedition.

Articles.	Quantity.	Articles.	Quantity.
Bread pounds..	33,201	Cibil's extract beef. pounds..	293
Oat-meal do	1,160	Vegetable soup do	288
Corn starch do	144	Assorted soup do	1,104
Flour do	8,200	Olives kegs..	8
Corn-meal do	1,176	Pickles do	10
Tapioca do	144	Vinegar gallons..	576
Farina do	144	Onions pounds..	1,210
Arrow-root do	70	Lime juice (concentrated) do	240
Macaroni do	300	Lime juice (for ship's use) do	3,901
Vermicelli do	300	Sauces dozens..	16
Royal baking powder do	204	Garlic pounds..	40
Dry-cooked sugar cakes do	1,155	Cabbage (pickled) do	285
Hominy do	550	Sauer-kraut do	1,197
Samp do	600	Tomatoes do	2,352
Barley do	300	Prepared pumpkins do	168
Rice do	2,330	Plum pudding do	576
Buckwheat do	1,125	Mince meat do	1,152
Beans (marrow) gallons.	587½	Evaporated apples do	300
Dried Lima beans do	299	Apple butter do	588
Dried green peas do	300	Peach butter do	588
Dried Shaker corn do	300	Candied lemon peel do	30
Split peas do	300	Tamarinds do	140
Carrots (canned) pounds..	1,116	Figs do	575
Potatoes (fried) do	4,680	Citron do	150
Pemmican (for crew) do	9,752	Dried fruit (assorted) do	1,076
Pemmican (for dogs) do	7,332	Raisins boxes..	4
Pork, salt do	11,700	Preserved cranberries pounds..	576
Breakfast bacon do	7,050	Jams (assorted) do	288
Pig's jowl and feet, scrapple do	1,175	Nuts (assorted) do	1,121
Beef, salt do	9,400	Butter (assorted) do	3,528
Dried and smoked beef do	300	Sugar do	10,284
Beef tongues (smoked) do	1,175	Coffee do	1,020
Hams (boiled) do	1,655	Tea do	3,048
(raw) do	3,000	Chocolate do	576
Roast chicken do	1,364½	Cheese do	1,736½
Roast turkey do	564	Dessicated eggs do	96
Roast beef do	4,704	Sirup gallons..	288
Roast mutton do	2,352	Pepper, black pounds..	74
Cove oysters do	966	red do	36
Spiced mackerel do	600	Lard do	2,040
Spiced salmon do	575	Condensed milk dozen..	146
Head cheese do	288	Eggs, boiled and scalded with lard, dozen	648
Sausages do	288	Celery-seed pounds..	36
Sausage meat do	288	Mustard do	72
Cooked corn-beef do	288	Currie powder do	72
Bologna sausage do	150	Hops do	20
Spiced beef do	288	Spices do	25
Sardines boxes.	288	Citric acid in crystal do	20
Philadelphia pepper pot pounds..	576	Olive oil dozen.	17
Turtle soup do	288	Dried herbs pounds.	144
Mock-turtle soup do	28	Salt do	420
Ox-tail soup do	288	Flavoring extracts bottles..	36
Mutton broth do	288	Turnips (canned) pounds..	828
Beets (canned) do	468		

The foregoing list of provisions was put up expressly for the expedition under direction of the Paymaster-General, as requested in my letter of February 19.

The pemmican and canned goods were prepared by Kemp, Day & Co., of New York; the soups, roast beef, and pork by Libby, McNeill & Co., of Chicago; all were inspected by the medical officers of the vessels and, subsequently, during their use, were found to be of most excellent quality, and were well and substantially put up.

WASHINGTON, D. C., *February 25, 1884.*

SIR: Please have sails made for five whale boats and two dories, for each of the three ships of Greely Relief Expedition; also two tents, to be made of blue denim. Sail plans and dimensions of tents will be furnished at navy-yard, New York.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,
Commanding Greely Relief Expedition.*

Commodore EARL ENGLISH,
Chief of Bureau of Equipment and Recruiting.

WASHINGTON, D. C., *February 28, 1884.*

SIR: I would respectfully request that the consul at St. Johns, Newfoundland, be communicated with immediately to secure twenty Labrador or Newfoundland dogs, with their harness, for each of the Greely relief ships, *Thetis* and *Bear*.

These dogs are said to be superior to the Greenland dogs for the purposes in view. It is important in securing these dogs to include in each pack at least six sluts.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,
Commanding Greely Relief Expedition.*

Hon. WILLIAM E. CHANDLER,
Secretary of the Navy, Navy Department.

WASHINGTON, D. C., *February 29, 1884.*

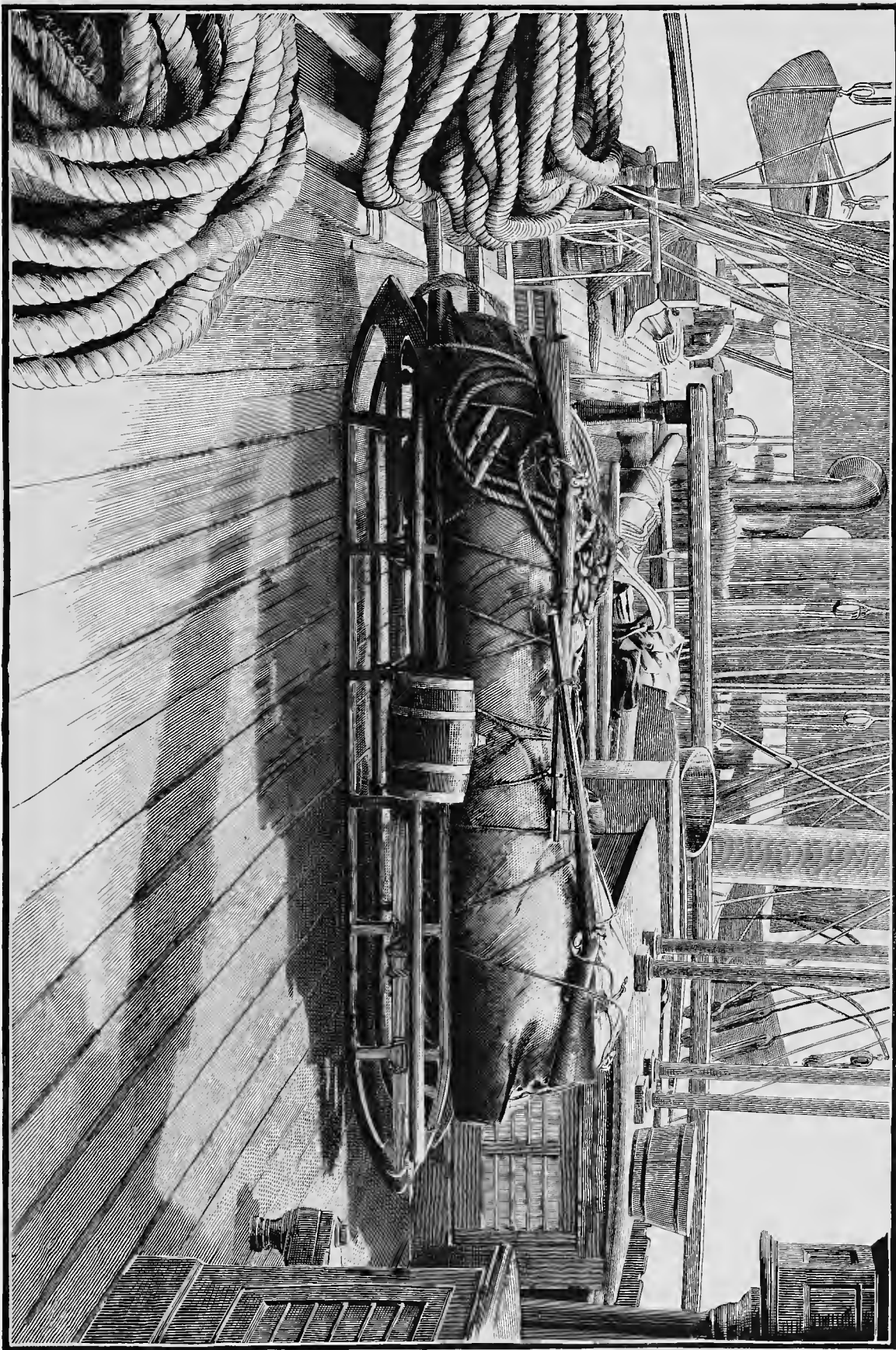
SIR: I have the honor to request the following outfit of articles for boats and ships of the Greely Relief Expedition:

OUTFIT.

All boats to be fitted with stanchions, stepped in composition sockets on rail, for weather cloths 18 inches deep.

All boathook handles to be of hickory; all paddles to be fitted with ice-chisels on upper end; each boat to have one breaker.

Articles.	Quantity.	Articles.	Quantity.
<i>Cabin.</i>		<i>Cabin—Continued.</i>	
Bureau, with writing-desk on top	1	Sideboard, fitted with top for china and glass-ware	1
Small table	1	<i>Men's quarters.</i>	
Dining-table	1	Stationary tables, with rack	2
Lounge (repaired)	1	Mess-lockers	2
Wash-stand, fitted with three bowls	1	Mess-breakers	2
Towel-rack	1	Scuttle-butt	1
Wash-stand	1		



MEYVILLE'S SLED PACKED FOR SERVICE.

Articles.	Quantity.	Articles.	Quantity.
<i>Mens' quarters—Continued.</i>		<i>For ship—Continued.</i>	
Vinegar-kegs	2	Shoemakers' awls	100
Spit-boxes	6	Fox-traps	6
Camp-stools	20	Small square hand-pump for each boat.	1
Mess-chests	2	A supply of felt and material for repair of boats.	
Deck-buckets	20	Overhaul all blocks and fit with patent sheaves.	
Molasses-kegs	2	Repair pumps and pump gear.	
Starting-tub	1	Build houses for galley with drying-room for clothes; fit one bunk on each side (drying-room on forward side of house).	
<i>For ship.</i>		Boat-hooks (hickory staves), hook and point sharp	40
Hawser-reels	4	Short paddles, upper ends fitted with ice-chisels	10
Strong-back for each boat	1	Hatchets, with handles riveted	10
Large socket chisels and gouges	24	Rosin barrels	2
Ice-chisels, 8 inches long and 3 inches wide	12	Tape-measure	1
Large clamps	2	Signal chest	1
Jack-screws	2	Ice-augers, 8 feet long	6
Bear-trap	1	Spare blocks, to be selected hereafter, and stores, to be selected by carpenters' mates.	
Staves, 8 feet long, fitted with black flag 18 inches square	12		
Hose-reels	2		
Complete sets of carpenters', calkers', blacksmiths', and coopers' tools	2		
Ice-chisels, fitted with handles 10 feet long (hickory)	6		
Horseshoe clamps	4		

Please have a house built (after drawing furnished) and all ready for putting up on arrival north; to be shipped by the *Alert* not later than May 1.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,
Commanding Greely Relief Expedition.*

Chief Naval Constructor T. D. WILSON,
Chief of Bureau of Construction and Repair.

WASHINGTON, D. C., March 1, 1884.

SIR: I have the honor to inform you that the following articles and outfit are regarded as necessary for each ship of the Greely Relief Expedition, and would respectfully request that orders be issued for their preparation, viz:

Articles.	Quantity.	Articles.	Quantity.
Chronometer	1	Superior large binoculars (best that can be bought)	2
Hack chronometer	1	Mercurial barometer	1
Chronometer-box	1	Aneroid barometers	2
Deck time-pieces	2	Thermometers (ordinary)	6
Boat compass, for each boat	1	Thermometers (low temperature)	3
Sensitive pocket compasses	6	Set surveying instruments (for "Alert" only)	1
Sextants (superior)	2	Chronometer watches	2
Night octant	1		
Artificial horizons	4		

Articles.	Quantity.	Articles.	Quantity.
Compasses (Navy liquid)	2	<i>Outfit—Continued.</i>	
Azimuth compass	1	Taffrail, registering, patent logs	2
Course indicator and chart board	1	14-second glasses	2
Pocket sextants	4	9-pound hand-leads	2
Superior glasses (best that can be bought)	3	50-pound deep-sea lead	1
Superior small binoculars (lightest and highest power that can be bought)	3	Coasting line..... fathoms..	100
Thermometers (water)	3	Arming	5
Hydrometer	1	Hand-lanterns.....	6
Set plotting and drawing instruments (for "Alert" only)	1	Dark-lantern	1
<i>Books.</i>		Shades	6
Nautical Almanacs, 1884 and 1885 (two for each year)	4	Lampwicks	15
Bowditch's Practical Navigator.....	2	Trimming-scissors.....	2
Arctic Azimuth Tables	1	Signal-rockets, fitted	20
Rosser's Book of Stars	1	Set Army signal equipments	1
Finding Compass Error	1	Pistol	1
Longitude by Chronometer, Sunrise and Sunset.....	1	Pouch	1
Binnacles and Swinging Ship.....	1	Side-lanterns	2
Instructions for Hydrographic Survey- ors (for "Alert" only)	1	Spare binnacle lanterns	2
Table Mast-Head Angles	1	Log chips	4
Regulations for Preventing Collisions at Sea	2	Log reels	2
Weather Guide, Barometer, Thermome- ter, and Hygrometer	1	28-second glasses	2
North Atlantic Sailing Directions	1	7-pound hand-leads	2
North Atlantic Light List	1	25-pound coasting-leads	2
List of Foreign Lights	1	Hand-line	100
Set Hydrographic Office and British Ad- miralty North Atlantic and Arctic Charts.....	1	Deep-sea line..... do.....	10
Sailing Directions, Davis' Straits, Baf- fin's Bay, and Smith's Sound.....	1	Deep-sea reel.....	1
Newfoundland Pilot	1	Spare globes.....	4
Bible	1	Swinging-lamps	3
Prayer Book	1	Chimneys	24
Navy Regulations	1	Lamp-feeders	2
Articles for the Government of the Navy.	1	Trays for lamps	2
Webster's Dictionary.....	1	Lamp-prickers	3
International Signal Code	1	No. 4 U. S. ensign	1
Meyer's Army Signal Code.....	1	No. 5 U. S. ensign	1
<i>Outfit.</i>		No. 6 U. S. ensign	1
Navy-blue lights	20	Sewing-needles	3
Signal discharger.....	1	Thread..... pound..	1
Box Verry's signals	1	Lard oil	8
Pistol frog.....	1	Hand-trumpets.....	3
Set side and mast-head lights, spare shades for each light	1	Log-books	4
Steering binnacle	1	Receipt and expenditure book, 4 pads ..	1
Standard binnacle.....	1	Navigators' memorandum books.....	3
Log-lines	3	Foolscap paper	ream..
		Letter paper	do.....
		Official envelopes	packages..
		Black lead-pencils	dozen..
		Flat gutta-percha ruler	1
		Order-books	2
		Press copy book	1
		Memorandum pads.....	2
		Press copying ink	pint..
		Bowl and brush	1
		Sets checkers.....	3
		Packs cards	12
		Dice-boxes	3

Articles.	Quantity.	Articles.	Quantity.
<i>Outfit—Continued.</i>		<i>Outfit—Continued.</i>	
Spun wick pounds..	3	Note paper ream..	½
No. 4 pennants	3	Note envelopes packages..	4
Union jacks	3	Elastic loops gross..	½
General recall	1	Letter-books.....	2
Cotton spools..	8	Journal.....	1
Coil signal halliard stuff	1	Letter-file	1
Candles for running-lights.....	200	Ink eraser	1
Fog-horns	2	Copying press	1
Navigation ledger	1	Sets chess men	2
Blotting-paper	3	Checker-boards.....	3
Regulation paper	½	Dice	12

Very respectfully,
 Commodore J. G. WALKER,
Chief of Bureau of Navigation.

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

WASHINGTON, D. C., March 1, 1884.

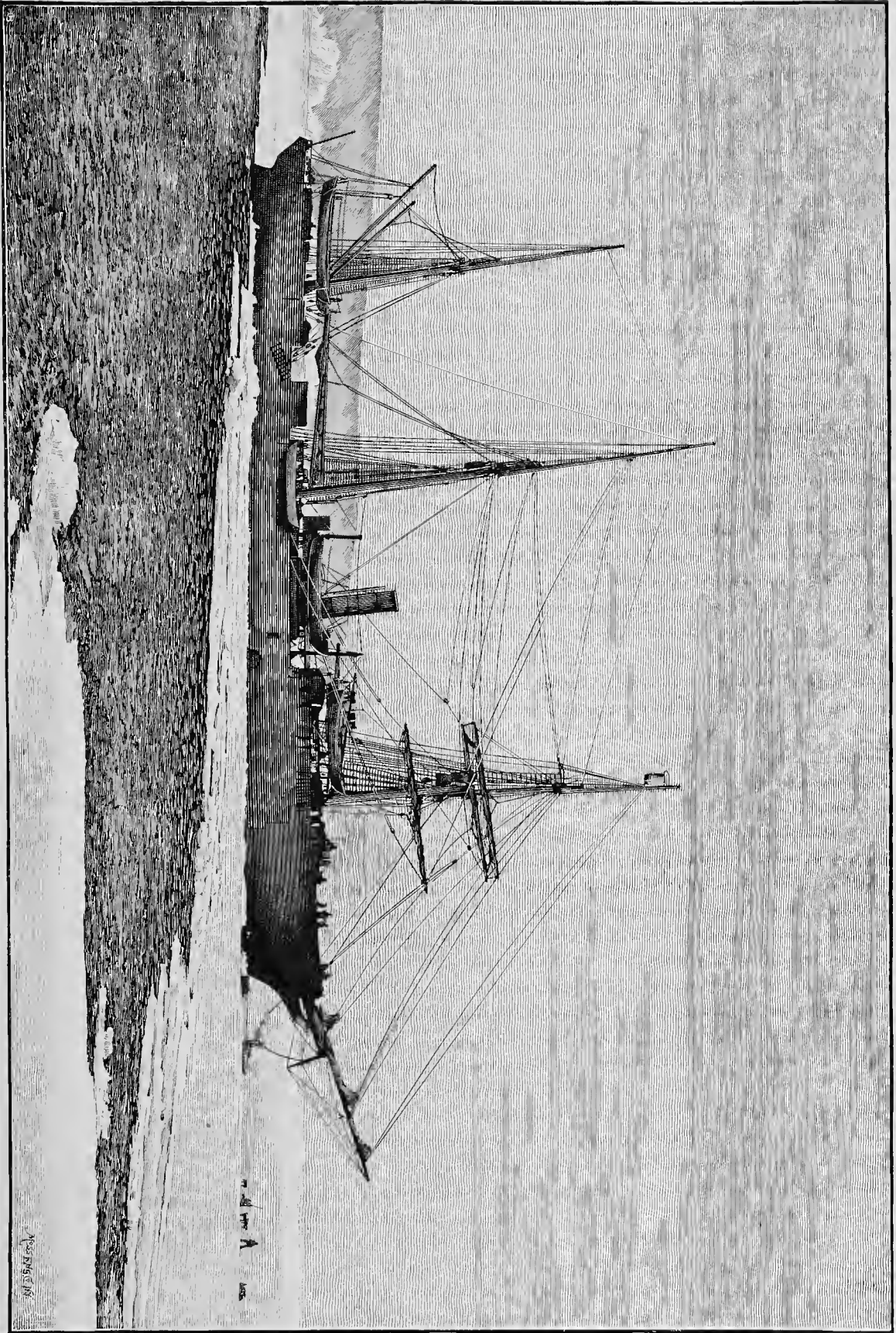
SIR: I have the honor to request that the following articles, under cognizance of your Bureau, may be placed on each of the three vessels of the Greely Relief Expedition.

Very respectfully,
 Commodore EARL ENGLISH,
Chief of Bureau of Equipment and Recruiting.

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Articles.	Quantity.	Articles.	Quantity.
<i>Boatswain's department</i>		<i>Boatswain's department—Continued.</i>	
Bower anchors	2	Sister-hooks, assorted	12
Kedges (300 and 500 pounds).....	2	Fishing lines.....	100
Bower chains	2	Rigger's screws.....	3
Stream chains	2	Split chain-links	6
Chain hooks.....	10	Marline-spikes.....	20
Chain punches.....	4	ail-needles.....	50
Spare shackles	4	Mounted palms.....	12
Grapnel (10 pounds) for each boat, grapnels to be fitted with rope instead of chain	1	Serving-boards	4
Steel hawser, 3-inch	1	Sewing-flax pounds	10
Manila hawser, 7-inch	1	Tar..... barrels..	2
Axes	12	Sheet-anchor	1
Hickory brooms.....	20	Ice-anchors.....	2
Seizing-stuff, assorted..... pounds..	300	Sheet-chain.....	1
Spare set rigging-lanyards for all sizes of standing rigging.....	1	Spare bending-shackle.....	1
Spun yarn (3 yarn)..... pounds..	75	Cold-chisels.....	10
Hack-saws	2	Chain-pins.....	25
Harpoons, fitted.....	2	Keys.....	4
		Spare grapnels (10 pounds) for each vessel.....	2
		Manila hawser, 10-inch.....	1

Articles.	Quantity.	Articles.	Quantity.
<i>Boatswain's department—Continued.</i>		<i>Sailmaker's department—Continued.</i>	
Manila hawsers, 5½-inch	2	Water-bag for largest boat of each ship.	1
Clamp-brushes	12	Mattresses	8
Corn brooms	42	Woolen table-covers	2
Manila rope, assorted	500 fathoms.	Napkins	dozen.
Codline	50 pounds.	Bed-spreads	16
Marline	75 pounds.	Raven's duck	bolts.
Houseline	75 pounds.	Cots	2
Hooks and thimbles, assorted	24	Feather pillows	8
Fishing-hooks, assorted	100	Linen table-covers	8
Hammers	4	Towels	dozen.
Shoemaker's knives	6	Sheets	pairs.
Sides rigging-leather	2	Pillow cases	48
Serving-mallets	2	Crash towels	24
Neatsfoot oil	2 gallons.	Feather dusters	2
Flat-mouthed pincers	1 set.	Water ewers	4
Twine	10 pounds.	Spittoons	4
Thimbles	20	Soap trays	4
Coal-tar	2 barrels.	Set curtains	1
<i>Carpenter's department.</i>		Easy chair	1
Brad-awls	2	Canvas yokes, to be used in sledging.	24
Whitewash brushes	6	A tents, 10 feet long, with ridge poles	
Stop-cock for starting hose	1	and stakes	2
Handy-billy pump	1	Tent cover for each whale boat	1
Leading-hose	250 feet.	New suit of sails for Thetis and Bear,	
Suction-hose	4 sections.	boat sails to be sliding gunter rig and	
Hose-pipes, flexible	2	to be made of dyed cotton	1
Expander	1	Complete set of new running rigging.	1
Hand and leg irons	10	Coil bolt-rope	1
Slaked lime	2 barrels.	Iron commander	1
Shovels	6	Grains	3
Scrapers	20	Old junk	pounds.
Squilgees	12	Sailmaker's bench and complete kit of	100
Stoves, for quarters	2	implements	1
Alcohol stoves	5	Pantry towels	24
Alcohol, in 5-gallon extra tin cans	100 galls.	Hand bell	1
Galley, with outfit and furniture complete.		Wash-stand basins	4
Dish-covers	2	Slop tubs	4
Scratch-awl	1	Foot tubs	8
Charcoal	3 barrels.	Cabin carpet	1
Drying-stoves	2	Dining chairs	8
Fire-extinguishers (with charges)	2	Mirrors	2
Hose-washers	25	Tar brushes	4
Couplings	4	White marline	pounds.
Spanners	4	Hickory heavers	5
Pump-leather	2 sides.	<i>Plated, china, and glass ware.</i>	
Picks	6	Waiters	2
Spare rungs for Jacob's ladders	6	Sugar bowls	2
Squilgees, rubber	12	Cream pitchers	2
Cooking-stove for house, to go on Alert.	1	Caster	1
Fire-wood (as can be stowed).		Butter dish	1
Wheelbarrows	6	Baking dishes	2
Chamois-skins	4	Vegetable dishes	2
<i>Sailmaker's department.</i>		Ice pitchers	2
Flax canvas, Nos. 1 to 8	16 bolts.	Gravy spoons	2
Clew-irons	2	Mustard spoon	1
		Tea spoons	12



BEAR IN ICE OFF SAUNDERS ISLAND.

Articles.	Quantity.	Articles.	Quantity.
<i>Plated, china, and glass ware—Cont'd.</i>		<i>Plated, china, and glass ware—Cont'd.</i>	
Sugar spoons.....	2	Breakfast plates.....	12
Dessert forks.....	1	Soup plates.....	12
Fish slice.....	1	Bread plates.....	2
Crumb scraper.....	1	Decanters.....	5
Nut picks.....	12	Tumblers.....	24
Baking dish linings.....	4	Preserve dishes.....	2
Steels.....	2	Plated candlesticks.....	12
Gravy boats and stands.....	2		
Compotiers.....	2	<i>Stationery.</i>	
Teacups and saucers.....	12	Record book.....	1
Oval dishes.....	5	Blank books, 1-quire.....	6
Dinner plates.....	12	Black ink..... pints..	4
Muffin plates.....	2	Letter envelopes..... packages..	4
Pickle dishes.....	2	Paper fasteners..... boxes..	2
Sherry glasses.....	12	Inkstands.....	3
Jelly glasses.....	12	Memorandum pads.....	12
Salt cellars.....	2	Sheets blotting paper.....	24
Table knives.....	12	Sheets drawing paper.....	12
Dessert knives.....	12	Note paper..... ream..	$\frac{1}{2}$
Carving forks.....	4	Steel pens..... gross..	1
Pickle forks.....	2	Black lead pencils..... dozen..	3
Teapot (6 half pints).....	1	Gutta percha ruler.....	1
Coffee pot.....	1	Box water colors.....	1
Soup tureen.....	1	Memorandum tablets.....	12
Table spoons.....	12	Blank books, 3-quire.....	6
Salt spoons.....	2	Memorandum books.....	24
Dessert spoons.....	12	Official envelopes..... packages..	6
Egg spoons.....	12	Elastic loops..... boxes..	6
Table forks.....	12	Pieces rubber.....	3
Sauce ladle.....	1	Penknives.....	12
Butter knives.....	2	Mucilage..... bottles..	2
Nut cracks.....	12	Foolscap paper..... reams..	2
Carving knives.....	4	Letter paper..... reams..	2
Cheese scoop.....	1	Regulation paper..... ream..	1
Water pitchers.....	2	Pen holders..... dozen..	2
Salad bowl.....	1	R. B. pencils..... dozen..	$\frac{1}{2}$
Breakfast cups and saucers.....	12	Pieces tape.....	6
Well dish.....	1	Vial carmine.....	1

WASHINGTON, D. C., *March 17, 1884.*

SIR: I have the honor to request that the appended list of stores, pertaining to the Bureau of Construction and Repair, be placed on board each ship of the Greely Relief Expedition.

Should occasion require a change in the list in any manner it is requested that instructions be given to meet such an emergency, in order to prevent any possible delay in fitting out the vessels.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,
Commanding Greely Relief Expedition.*

Chief Naval Constructor T. D. WILSON,
Chief of Bureau of Construction and Repair.

Articles.	Quantity.	Articles.	Quantity.
Adzes.....	4	Screw-drivers.....	3
Broad-axes.....	2	Shears.....	1
Pinch-bars.....	2	Oil-stone.....	1
Stripping bar.....	1	Set smith's tools.....	1
Bung-borer.....	1	Set sounding rods.....	1
Brace and set of bits.....	1	Single blocks.....	6
Sash brushes.....	2	Wedges.....	10
Varnish brushes.....	2	Sheet-brass..... pounds..	12
Squirt can.....	1	Chalk..... do..	3
Chisel slice.....	1	Fearnought..... yards..	6
Files, assorted.....	45	Glue..... pounds..	4
Gauge.....	1	Flat bar-iron..... do..	75
Grindstone.....	1	Round iron..... do..	75
Blacksmiths' hammers.....	2	Lumber for ship and boat repair.....	
Sledge hammer.....	1	Baled oakum..... pounds..	50
Set calking irons.....	1	Iron rivets..... do..	20
Set soldering irons.....	1	Solder..... do..	10
Pitch kettle.....	1	Iron spikes..... do..	25
Chalk line.....	1	Iron tacks..... do..	5
Carpenter's mallet.....	1	Copper wire..... do..	10
Mops, pitch.....	2	Black paint..... do..	150
Planes, assorted.....	6	Linseed oil..... barrel..	1
Nail punches.....	2	Rasps.....	3
Augers.....	8	Saws, assorted.....	8
Wood axes.....	4	Spoke shaves.....	2
Shackle bar.....	1	Steel square.....	1
Drift-bolts.....	2	Tape measure.....	1
Tap-borer.....	1	Scuttle butt.....	1
Paint brushes.....	12	Double blocks, assorted.....	18
Seam brushes.....	2	Sheaves and pins.....	24
Paint buckets.....	2	Borax..... pounds..	2
Cold-chisels.....	5	Copper burrs..... do..	6
Pair compasses.....	1	Copper bolts..... do..	25
Portable forge.....	1	Lights.....	20
Gimlets.....	6	Gum packing..... square feet..	5
Claw-hammers.....	2	Square bar-iron..... pounds..	50
Riveting hammers.....	2	Sheet-lead..... do..	50
Reef-hooks.....	2	Copper nails..... do..	40
Set horsing-irons.....	1	Iron nails..... do..	75
Drawing-knife.....	1	Copper rivets..... do..	2
Pitch-ladle.....	1	Brass screws..... gross..	6
Calking mallets.....	3	Composition spikes..... pounds..	25
Horsing mallet.....	1	Copper tacks..... do..	10
Carpenters' pencils.....	6	Brass wire..... do..	15
Pincers..... pairs..	2	White lead..... do..	150
Spike punches.....	2	Turpentine..... gallons..	50
Smiths' punches.....	3	Red lead..... pounds..	150
Two-foot rule.....	1		

The *Bear* arrived at New York February 15, under command of Capt. F. Ash, from St. John's, Newfoundland.

The *Thetis* arrived at the same place from Dundee, Scotland, March 23, under command of Lieut. L. L. Reamey, U. S. N.

The *Alert* arrived April 22, from Spithead, England, under command of Lieut. Commander C. F. Goodrich, U. S. N.



THETIS AND BEAR STOPPED BY ICE TO THE SOUTHWARD OF THE DUCK ISLANDS, JUNE 6, 2 P. M.

These vessels were carefully inspected, as they arrived, by the several Chiefs of Bureaus and by myself. The *Bear* and *Thetis*, being steam whalers fitted for cruising in the ice off the coast of Labrador and in Melville Bay, were staunch vessels, and, with perhaps one exception, were the best vessels of the whaling and sealing fleet. Their experience later in the heavy ice of Melville Bay and Smith's Sound proved them superior to any of the vessels of their class for general ice work.

After their inspection on arrival it was determined, with your approval, in the case of the *Thetis* and *Bear*, to remodel the officers' quarters; to build quarters for their crews by extending the top-gallant fore-castle abaft on the spar deck; to lay extra beams between those of the lower decks; to put in truss beams from bilge to middle of lower-deck beams; to put iron straps over stem secured with through bolts to forward dead-wood; to construct water-tight bulkheads forward and abaft; to fill in space between keel and gar-board strakes with sponsons against the pressure of ice forced laterally under their bottoms; to dock, caulk and paint the ships; to overhaul engines and boilers, repairing all piping, shafting, valves, &c.; to place in the fire-rooms two donkey-boilers for general use during winter; to overhaul all standing rigging, and to replace all running rigging with new gear; to give them a complete suit of new sails; to equip all quarters with mattresses, and officers' quarters with table and bed linen, china, glass, and plated ware; to supply a complete outfit of arctic clothing and provisions for officers and men, and to furnish each ship with a Herreshoff steam cutter, the *Alert* with White's steam cutter. The exceptional strength and recent refitting of the *Alert* in England rendered no change necessary in her equipment beyond the construction of berths for her crew on the forward part of her berth deck; the removal of some unimportant bulkheads in her hold to afford better stowage of her stores; to repair her rigging and sails, and to overhaul her engines and their dependencies.

Experiment indicated that with the use of anthracite coal in the furnaces of these vessels there would be a loss of at least 20 per cent. of their speed; therefore it was determined to use the best Welsh coal in order to avoid this loss. The use of bituminous coal carried with it a danger of spontaneous combustion, and to reduce this to a minimum a system of steam jets was placed in the holds and the bunkers of the vessels as a security against fire from this cause.

The coal transport *Ybarra* was chartered, and brought over from Cardiff 2,000 tons of Welsh coal of superior quality for the three ships. To supply the expeditionary force in the Arctic regions after leaving St. John's, Newfoundland, a contract was entered into with the agents of the English steamer *Loch Garry*, Messrs. Sutton & Co., of New York, to transport 500 tons of coal in bags from Cardiff,

Wales, to Littleton Island, the Government assuming all responsibility for the vessel after leaving St. John's until her return to New York. This was only done after the most diligent inquiry to find in the United States a suitable vessel for this service.

This preparation and the work of refitting was submitted to the several Chiefs of Bureaus of the Navy Department, and to their subordinate officers at the New York navy-yard. I am earnest in saying that my thanks are due to them all for their efficient and zealous co-operation with me in preparing the ships to sail on the days appointed, as shown in your communication of March 10, and mine in reply of March 17, as follows:

NAVY DEPARTMENT,
Washington, March 10, 1884.

SIR: It having been settled that the vessels of the relief expedition will be the *Thetis*, *Bear*, and *Alert*, you will please submit a plan proposing dates for their departure from the United States, and from St. John's.

It is desirable that one of the relief ships should arrive at Upernavik as early as any vessel can safely reach that point.

Very respectfully.

W. E. CHANDLER,
Secretary of the Navy.

Commander W. S. SCHLEY, U. S. N.,
Navy Department.

WASHINGTON, D. C., March 17, 1884.

SIR: In reply to your letter of March 10, informing me it had been definitely settled that the *Thetis*, *Bear*, and *Alert* were to be the vessels of the expedition to relieve Lieutenant Greely and party at Lady Franklin Bay, I would respectfully suggest that the *Bear*, being the vessel most advanced in the strengthening needed for this service, should be dispatched from New York on the 25th of April to St. John's, Newfoundland, to fill up with coal, to take dogs on board, and to inquire into the condition of the ice in Davis Strait; and at the earliest practicable moment to proceed to the Danish settlements of Disco and Upernavik, reaching there about the third week in May, if practicable.

The *Thetis* should follow the *Bear*, leaving New York not later than May 1, stopping at St. John's for coal, to take dogs on board, and to convoy the coal steamer to Upernavik, where she ought to arrive about May 25.

From Upernavik the *Thetis* and *Bear* should proceed onward with convoy to Cape York and Littleton Island. Should the ice appear too formidable for the collier to encounter so early as June, she should remain at Upernavik until the arrival of the *Alert*, which vessel would be then charged with the convoy.

The importance of convoy beyond Upernavik can hardly be overestimated in view of the circumstances that the Government may be obliged to assume all responsibility for the coal vessel and cargo.

The *Alert* should be dispatched from New York not later than May 10 to St. John's, to fill up with coal, and then to proceed onward to Disco and Upernavik where she should arrive not later than June 1.

Her movements should be so timed that she might reach Littleton Island or Foulke Fiord about the 1st of July, in order to have sufficient time to land and build house, land provisions, coal, and other supplies, to establish the station upon



BLOWING WAY THROUGH ICE.

which the advance ships' companies could retreat in the event of disaster, and afterward to send a sled party onward to examine the coast on the eastern side of Smith's Sound as far as Humboldt Glacier.

This duty completed by September 1, and the *Thetis* and *Bear* not having returned to Littleton Island or Foulke Fiord, the *Alert* should return to St. John's with news of the expedition.

I have the honor to be, very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Hon. W. E. CHANDLER,
Secretary of the Navy.

In the preparation of quarters for men and officers it was borne in mind that increased air space was absolutely required to maintain proper sanitary conditions.

The saloons of the *Thetis* and the *Bear* were therefore entirely remodeled; all original bulkheads were removed, except one to separate the commanding officer's room from the main saloon.

Bunks were built along the sides of the saloon fitted with drawers to accommodate the clothing of officers; and to afford the necessary privacy in sleeping, dressing, or undressing, curtains were arranged upon movable rods working through the top of the berth framing. These rods could be rigged in during the day to increase the space in the saloon, and out at night, or while officers were arranging their toilets or preparing for sleep.

In the men's quarters twenty-eight bunks were built in pairs, one over the other, with drawers under the lower bunk for clothing. These quarters were separated from the ships' sides by an alley way to afford free passage to the forward part of top-gallant forecabin, to work chains and windlass or to reach the forward store-rooms.

To exclude cold and frost from all the quarters, the sides and top between the ceilings were lined with felt. The advantage of this arrangement was apparent after we had reached the region where hard service and unusual exposure were necessary. The suggestion was Chief Constructor Wilson's.

Dispensaries of the *Thetis* and *Bear* were constructed, under the supervision of their medical officers, in the run abaft the saloon, and, though compact, were well adapted to the service of the vessels.

It was intended to use the boats of the expedition when the ships had reached the highest attainable limit, and to this end it was important that they should serve three purposes: first, as boats in crossing water spaces; second, as sleds in crossing floes, and third, as quarters when hauled out in stormy weather or for rest.

Their construction as whale boats accomplished the first condition; their bilge runners, after Parry's method, secured the second, and being fitted with covers, weather cloths, and tent stanchions the third condition was obtained.

The sleds of the expedition were made after the design of Chief
H. Mts. 157—2

Engineer Melville, U. S. N., with reversible runners shod with iron; they were of two sizes, 16 and 8 feet, and were intended to be used for carrying the boats, if necessary, as well as for ordinary sledging over the ice; I regarded them as most excellent in design and well calculated for the work in the heavier ice of Smith's Sound.

The ice tools and implements were constructed after designs which experience has shown to be best suited to the service for which they were intended. The ice-augers, designed by Lieut. B. A. Fiske, U. S. N., supplied by the Ordnance Bureau, were especially useful and efficient.

The preparation of the clothing outfit under the cognizance of the Bureau of Provisions and Clothing, was supervised by Pay Inspector A. J. Clark and Paymaster George H. Read, at the New York navy-yard; their suggestions touching the making of this clothing and the special packing of the various articles of this outfit to exclude moisture were valuable, and I am pleased to say everything supplied was found eminently satisfactory.

Some difficulty was experienced in procuring reindeer skins for the winter clothing. As they could not be obtained anywhere in the United States the Paymaster-General was obliged to order them from Stockholm, Sweden; even then there was considerable delay in getting them into Stockholm from the country villages where they were exposed for sale. The arrival of the skins was so delayed in this cause there was much difficulty to find a firm who would undertake to make them up in time. Ullman & Co., of Mercer street, New York, undertook and completed the work satisfactorily, however, in a remarkably short time.

The *Bear* was put in commission March 17 and the *Thetis* April 2, 1884. The *Alert* was continued in commission after arrival from England. The following list of officers and men were detailed for the several vessels, viz:

THETIS.

Name.	Rank, &c.	Name.	Rank, &c.
W. S. Schley	Commander, commanding expedition.	George Harvey.....	Boatswain's mate.
U. Sebree.....	Lieutenant.	E. W. Walker	Do.
E. H. Taunt	Do.	Joseph Mitre	Captain of top.
S. C. Lemly	Do.	John Manin.....	Captain of top, acting quartermaster.
W. I. Chambers	Ensign, transferred to Loch Garry at St. John's.	John Cross	Quartermaster.
C. H. Harlow.....	Ensign.	John McLeod.....	Do.
G. W. Melville.....	Chief engineer	Christian Polson ...	Carpenter's mate.
E. H. Green.....	Passed assistant surgeon.	Walter Booth.....	First-class machinist.
James W. Norman..	Ice master.	James Francis.....	Do.
J. W. Powers	Yeoman, acting captain of hold and pay yeoman.	Adam Stitt	Blacksmith.
W. A. Coffin	Ship's cook, acting boatswain's mate.	W. J. Fisher	First-class fireman.
		William Griffin.....	Do.
		H. B. Neale	Do.
		F. F. Taylor.....	Seaman.



LIEUTENANT W. H. EMORY, U. S. N., COMMANDER OF THE BEAR.

Thetis—Continued.

Name.	Rank, &c.	Name.	Rank, &c.
P. W. Johnson	Seaman.	Carl Wasden	Seaman, acting s. m. mate.
Michael Hickey	Do.	Charles Tong Sing ..	Cabin steward.
Bartley Cook	Do.	Max Tyron	Cabin cook.
F. F. Baggerson	Do.	C. Nilson	Seaman on board Loch Garry.
John McDonald	Do.	J. B. Larson	Do.
George E. Yewell ..	Do.		
Thomas Maloney ...	Seaman, acting ship's cook.		

BEAR.

W. H. Emory, jr	Lieutenant, commanding.	John Johnson () ...	Seaman.
F. H. Crosby	Lieutenant.	John Johnson (2) ...	Do.
J. C. Colwell	Do.	Jacob Johnson	Do.
N. R. Usher	Do.	Albert Jasen	Do.
L. K. Reynolds	Ensign.	D. M. Didrikse	Do.
John Lowe	Chief engineer.	H. Krusberg	Do.
H. E. Ames	Passed assistant surgeon.	J. J. Campbell	Do.
F. Ash	Ice master.	John Lindquist	Do.
John Quevedo	Boatswain's mate.	Fred Law	Ship's cook.
Arthur Lloyd	Do.	George Savo	Cabin steward.
Hugh Brock	Quartermaster.	Otto Schwarz	Cabin cook.
D. H. Keenan	Do.	J. M. Beam	First-class machinist.
J. F. Burke	Captain of top.	Henry Thomas	Do.
C. J. Carlson	Do.	T. J. Morton	Blacksmith.
J. C. Evans	Yeoman.	Archie Currie	First-class fireman.
J. B. Fletcher	Carpenter's mate.	L. C. Smith	Do.
J. Roberts	Seaman.	James Rogan	Do.

ALERT.

George W. Coffin ...	Commander, commanding.	Thomas Wilson	First-class fireman.
Charles J. Badger ...	Lieutenant.	John Watts	Do.
H. J. Hunt	Do.	Thomas Bragger ...	Boatswain's mate.
C. S. McClain	Ensign.	Salvator Tordagoer ..	Quartermaster.
A. A. Ackerman	Do.	Charles Anderson ..	Captain of top.
William H. Nauman ..	Passed assistant engineer.	Thos. Beswetheric ...	Yeoman.
F. S. Nash	Passed assistant surgeon.	Christian Guyken ...	Seaman.
D. L. Gifford	Ice master.	Amund Olsen	Do.
Joseph Doyle	Boatswain's mate.	J. Lukshewitz	Do.
Philip Sbautz	Quartermaster.	Charles Tristram ..	Do.
Albert Jones	Captain of top.	Alexander Watson ..	Do.
Edward White	Carpenter's mate.	Herman Lara	Do.
Frank Blokus	Seaman.	W. Wettergren	Cabin steward.
P. C. Hansen	Do.	William J. Powell ...	Machinist.
William Bloom	Do.	John Wachter	First-class fireman.
Adam Weissel	Ship's cook.	John Sullivan	Do.
Olaf Anderson	Cabin cook.	T. S. Roberts	Do.
M. C. Boi	Seaman.	A. H. Kemble	Blacksmith.
J. F. Green	Machinist.	C. Baxter	Seaman.
William Haas	First-class fireman.		

H. B. Neale, fireman of the *Thetis*, and C. Baxter, seaman of the *Alert*, being found unsuited for the service were transferred at St. John's to New York, and their places filled by the enlistment of Geo. Von Sprecklson and John Degen.

Each officer and man of the expedition willingly undertook the hardships and exposure of this service, and felt complimented and honored by your tender of the opportunity to engage in it.

The officers and men were carefully examined by a medical board at the Navy Department, at naval stations, or on board ship, under instructions of the Surgeon-General setting forth the physical standard necessary for service in the Arctic.

It was determined from the beginning to compose the crews of the expeditionary ships exclusively of volunteers from the able seamen of the naval service and of mechanics whose trades connected them with the repairs of hulls, engines, or boilers. Some delay occurred in getting them together by reason of the necessary absence of the vessels of the North Atlantic Squadron on service in the West Indies. The time of their probable return north being too late to make volunteers from their crews available or to get them in time from distant ports, the commanding officer of the *Powhatan*, Lieut. Commander C. J. Train, generously gave me the pick of his crew. The enlisted men of the expedition were taken largely from that vessel.

As soon as the officers had reported for duty a detail was made and instructions given them to inspect all articles of outfit under preparation, and to report to me daily the progress made in the several departments, as well as any deficiencies which might be discovered in the submitted lists of outfit and stores. The medical officers prepared the medical outfit and were charged with the inspection of all provisions intended for the expedition.

In this way it was easier for me to know at the beginning of each day all that was going on, and to keep up with the preparation of everything needed. Several important features came under consideration in this way and were added to our lists. At the same time the officers were familiarized with every article prepared or purchased for the fitting of their vessels.

The supplies and outfits were well under way by the first week in April, those for the *Bear* being most advanced in order to start her north by the 24th of April. Feeling confident that the date of her departure would not be delayed the following orders were given her commanding officer:

U. S. S. THETIS.

Navy-Yard, New York, April 16, 1884.

SIR: The *Bear* being one of the vessels of the relief expedition to Lady Franklin Bay of 1884, as soon as she is in all respects ready for the contemplated search you will proceed with her under your command to St. John's, Newfoundland, using the utmost dispatch consistent with safety, reporting, by telegraph your arrival, to the Secretary of the Navy.

Your stay at St. John's will be limited to the time actually needed to fill up with coal, to receive twenty dogs, with their harness, to receive two pairs of sealskin boots and one Elsinore cap for each person composing your ship's company, and to make inquiries as to the ice conditions to the northward.

You will purchase, in addition, four ookgook (large seal) skins to be used for soling boots. The foregoing articles, except the ookgook skins, have been ordered through the United States consul at St. John's.

After all supplies have been obtained you will proceed, as soon as practicable, to Godhaven, Disco, and thence to Upernavik, at which place you will await the arrival of the *Thetis*, except in the contingencies hereafter mentioned.

In the interval you will call upon the Danish authorities, whom you will doubtless find ready and willing to render you any assistance. At this point you will secure through the authorities an Esquimaux interpreter to act as driver for the dogs, entering into an agreement for his services, paying him such compensation as the authorities may deem proper and just; if possible, you will secure a similar person for the *Thetis* and *Alert* to be ready on their arrival.

Should you receive information before my arrival that Lieutenant Greely's party, or any of them, have come as far south as Littleton Island, you are to seek the earliest occasion when, in your judgment, it will be safe to attempt the passage across Melville Bay in order to reach him. This fact you will report to me in a communication, to be left at Disco or Upernavik, or at both places.

Should you not hear at Disco or Upernavik of Greely or his party having reached Littleton Island, you may proceed beyond Upernavik, if any special circumstances justify such movement; but, you will, under no circumstance, advance into Smith's Sound until one of the vessels of the relief expedition shall arrive at Littleton Island, unless some unaccountable delay leads you to believe that no other ship will arrive, in which case you will use your best judgment.

In case of your advance beyond Upernavik, it is expected that you will proceed, with caution, onward to Cape York or beyond, if necessary to Littleton Island; but in navigating the ice through Melville Bay I would suggest the importance of keeping in with the land ice, as the safest and surest means of working north, availing yourself of the local knowledge of your ice pilot, as far as it may be useful; your search then must include the coast and islands from Cape York onward.

If it should be necessary to proceed onward before my arrival, you will leave minute information for my guidance in following you; islands or headlands, at which cairns are to be established with records, must be indicated with exactness, and the situation described accurately, in order to avoid loss of time in searching for them.

If the information received should lead to the rescue of Lieutenant Greely and his party, you will take them on board and return to Upernavik; in this event you will leave a record of the fact at Littleton Island, Cape Parry, and at Conical Island, and while on your way south keep a bright lookout for the *Thetis* and *Alert*.

From the moment of sailing for the destination indicated you will constantly exercise the most vigilant watch over the safe navigation of your vessel, and you will institute such inspection of her, day and night, as will effectually guard against fire or other casualty; when in the vicinity of ice you will at all times be on the alert to avoid damage from collision with bergs or floe ice; during thick or foggy weather you will regulate the speed and signals in accordance with the maritime regulations, and, upon all occasions, when near the land you will keep the lead going.

In all matters of navigation much must be left to your judgment to secure the safety of your command, but you must always keep prominently in mind that the region over which your ship is to pass, after reaching the latitude of Cape Farewell, is not accurately surveyed, so that much of its navigation must of necessity be determined by your judgment and alertness.

The few sailing directions published by the Hydrographic Office are commended to your attention, and whenever your service may permit you to add to their accuracy or extent it is desired that this be done.

The exercise of your ship's company will be limited to "fire quarters" and "abandoning ship;" both will be frequent and exact; during the latter men will be stationed in the boats, and the clothing, provisions, and ammunition to be provided by each one is to be accurately described, and the officers and crew are to be instructed in carrying them to the boats, where stowed, and how most quickly and easily reached.

The rubber knapsack provided is to be kept packed with a complete shift of clothes and is to be kept hanging in the quarters of men and officers and must be worn in all exercises of abandoning ship.

Reaching the ice regions, you will keep on deck at least sixty days' supply of provisions, to be landed on the ice if caught in the pack or in danger of a nip.

Money will be supplied you at New York to defray necessary expenses after leaving; in all expenditures of it you will cause vouchers in triplicate to be executed, forwarding originals and duplicates from St. John's to the paymaster of the receiving ship Colorado, retaining the triplicates on board.

You will husband your coal and stores after leaving St. John's, and remember to be careful in shifting your provisions below when sufficient coal has been used to affect the stability of the ship to any serious extent.

Direct the surgeon of your vessel to take charge of the expenditure and account of all provisions and clothing in accordance with the established forms, and cause a daily bill of fare to be prepared for officers' and men's messes.

Two heliographs will be supplied your vessel, one to be used in all boat or sledge expeditions, for signaling in accordance with the Army signal code to the ship.

Regulate with exactness the daily amount of coal to be used by the engine and by the stoves, and give explicit directions to the chief engineer to have it carefully weighed from the outset for both purposes, holding him to a strict accountability for any violation of these orders.

Allow no waste of provisions, stores, clothing, or coal, but impress upon your officers and men the need of frugality in all that concerns your living or motive endurance.

The commercial code of signals will be used instead of the Navy code in all flag signals between the ships, and to this end you will familiarize yourself and direct all officers to do the same with their use.

Transmit a complete muster-roll of your crew, before sailing, to the Bureau of Equipment and Recruiting, and a list of your officers to the Bureau of Navigation; report also to the Bureau of Equipment and Recruiting from St. John's any changes in your crew prior to leaving that port, should any occur.

For your information I would state that the party of Lieutenant Greely is composed of twenty-four persons, four of this number being commissioned officers, the remainder non-commissioned officers and privates. Before leaving New York and St. John's you will institute a strict medical examination of your crew and any men found disqualified will be returned to the receiving ship Colorado and their places supplied by transfer or enlistment.

Very respectfully, your obedient servant,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Lieut. W. H. EMORY
Commanding U. S. S. Bear,
Greely Relief Expedition.

The outfit being completed and received on board by the morning of April 24, Lieutenant Emory sailed with the *Bear* at 3.30 p. m. of that day for St. John's, Newfoundland, and thence for the coast of Greenland.

The popular demonstration of sympathy with the object of this expedition was widespread and very gratifying. Thousands of our people visited the navy-yard to see the vessel off, while the New York and Brooklyn sides of the East River were crowded with persons wishing her Godspeed. Steamers saluted with whistle blasts, while all hands cheered her until out of sight.

On her way outward to St. John's the *Bear* met unusually severe gales and dense fogs, but was not delayed thereby, as her commander and his officers and men fully understood the importance of every hour which bore them onward toward the imperiled party.

She reached St. John's on May 1, seven days from New York, and only remained sufficiently long to effect some repairs, made necessary by her rough passage from New York, and to take on board coal to replace that consumed; to procure seal-skin boots, Elsinore caps, and Labrador dogs obtained by the consul and awaiting her arrival.

Sailing May 4, her energetic commanding officer pushed onward to Godhaven through gales, ice floes, ice fields, and fogs, and reached that point May 13. At St. John's he learned that several Dundee whalers had preceded him, and also at Disco that these same vessels had pushed northward. Lieutenant Emory sailed immediately north, but found the ice about Hare Island absolutely impenetrable at this season. He very properly returned to Godhaven to await a northerly gale to open the ice, rather than risk his ship on the edge of the pack exposed to the dangers of a southerly gale in such position.

Several days elapsed, however, before a gale occurred from the proper direction. During this interval of delay Lieutenant Emory exercised his crew in abandoning ship on the ice-foot at the mouth of the harbor. Torpedoes were exploded to test their effect, and provisions were got up and stowed abreast of boats.

On May 21 a northerly gale set in, when the *Bear* was pushed north into the formidable ice-pack south of Hare Island, in the Waigat Straits.

He was delayed by formidable ice barriers in this vicinity for a day or two, but continued the struggle in densely packed ice of great thickness, rendered much more dangerous by the rapid tidal currents which set large floes in motion after the first break-up.

Holding in with the land and following all leads through tortuous channels, he worked in under the coast about Noursoak, on the north side of Waigat Straits. There he was forced to await patiently until the ice should move or break from the Omenak Fiord in the direction of Black Cape (called Svarten Huk on the admiralty charts).

The wished for change came finally on the 27th. Immediately it was taken advantage of and the *Bear* reached Upernavik on the afternoon of May 28, having first gone to the Brown Islands, some 18 miles farther north, where the ice was found unbroken, with no prospect of advance, owing to solid barriers in all directions.

The following morning the *Thetis* arrived at Upernavik and fell in with the *Bear*. The history of the movements of the latter vessel from this point of departure will be embraced in that of the *Thetis*, as both ships were always together until their arrival at Cape York.

The outfit and stores of the *Thetis* having been completed and stowed on board by the morning of May 1, she sailed at 2.30 p. m. of that day in obedience to your order, as follows :

NAVY DEPARTMENT,
Washington, April 21, 1884.

SIR: The *Thetis*, *Bear*, and *Alert*, the ships of the Greely Relief Expedition of 1884, being ready, you are ordered to take command of them and to proceed to the coast of Greenland, or farther north, if necessary, and, if possible, to find and rescue, or ascertain the fate of Lieut. A. W. Greely and his comrades.

All the officers and men under your command are hereby enjoined to perform any duty on sea or land to which you may order them.

No detailed instructions will be given you.

Full confidence is felt that you have both the capacity and courage, guided by discretion, necessary to do all that can be required of you by the Department or the nation for the rescue of our imperiled countrymen.

With earnest wishes and high hopes for your success and safe return,

I am, very respectfully,

WM. E. CHANDLER,
Secretary of the Navy.

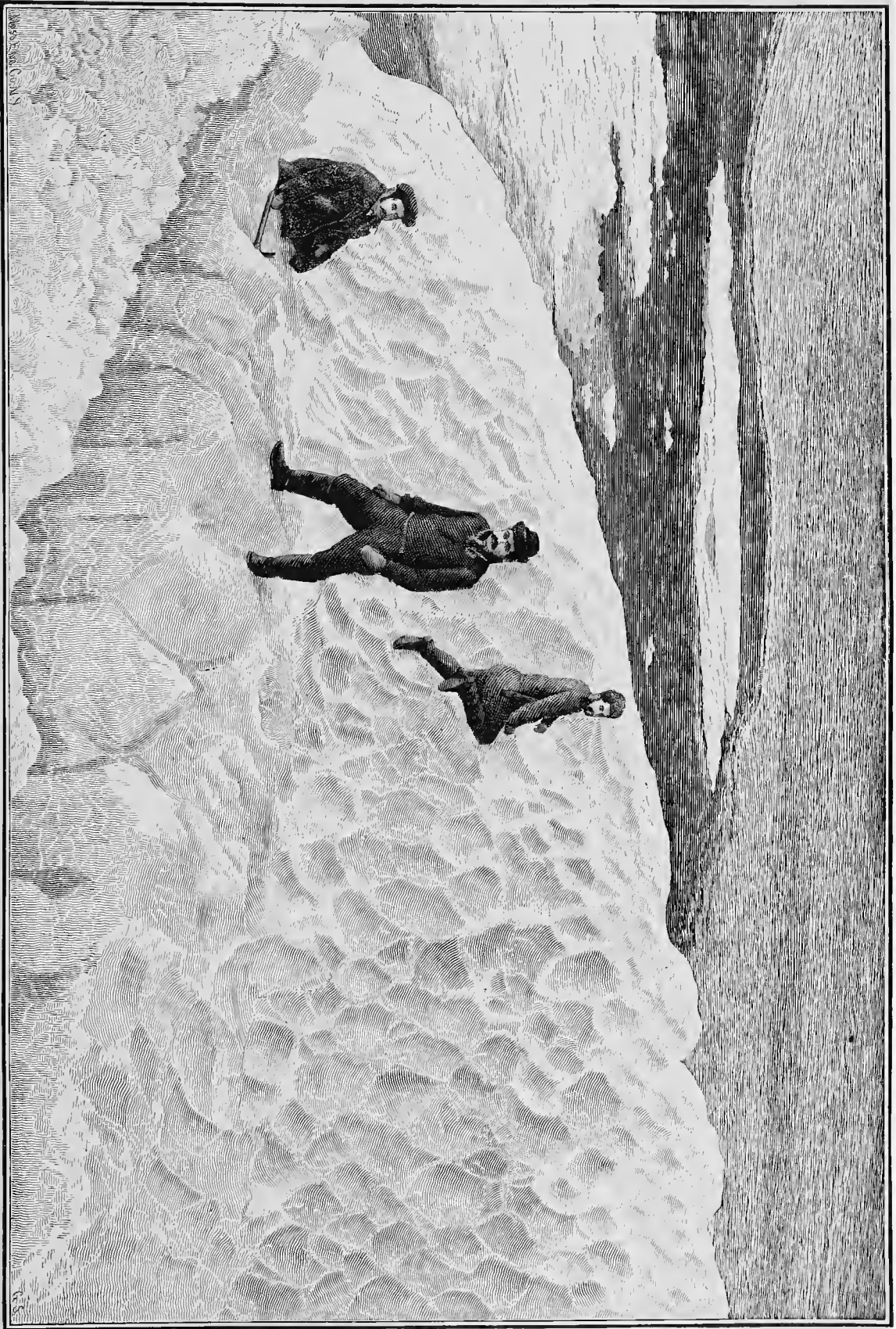
Commander WINFIELD S. SCHLEY, U. S. N.,
Commanding the Greely Relief Expedition.

The repetition of the popular demonstration of sympathy along our route to sea was extremely gratifying.

The salutes of cannon from the navy-yard, Governor's Island, and Fort Hamilton when the *Thetis* passed could only be answered by the dipping of our colors, as the ship carried no guns.

The officers and men were much touched by the evidence of your sympathy and interest when the *Tallapoosa* steamed as far as the lower bay with us to say the last good-bye, and to see the last of the ship and her officers upon whom you had conferred such responsibility and honor.

Reaching the Sandy Hook light-ship the vessel was swung to determine deviation of her compasses, after which she continued on to sea and reached St. John's, Newfoundland, at 3.35 a. m., May 9, after a most delightful passage of eight days, without other incidents than a slight break down of the connecting rod of the air-pump, which was promptly repaired in a few hours by Chief Engineer Melville.



ICE HUNMOCK.

A painful though not serious injury to the hand of Machinist Walter Booth also occurred during this passage. While oiling the engine Booth's hand was caught in the machinery and his fingers crushed.

My stay at St. John's was limited to two days and a half, during which time seal-skin boots, Elsinore caps for the crew, and coal to replace that consumed during the passage were taken on board; also twenty-two Labrador dogs for service with sleds north. These dogs were also obtained by United States Consul Molloy from Labrador.

In the interval I availed myself of an opportunity to call upon the civil and military authorities of the port.

The *Loch Garry*, a chartered coal steamer, with 500 tons of Welsh coal, commanded by Capt. Robert Jones, reported to me as a fourth vessel of the expedition.

The charter under which he served reads as follows:

This Charter Party, made and concluded upon in the city of New York, the 29th day of March, 1884, between Sutton & Co., agents for owners of the good iron screw steamship *Loch Garry*, of Dundee, of 950 tons gross register, and 616 tons net register; having engines of 98 horse-power, and classed A 1 (built in 1880) at Lloyds, of 1,200 tons dead weight or thereabouts, inclusive of fuel and stores, now in Europe, and Commodore Earl English, Chief of Bureau of Equipment and Recruiting, United States Navy Department, by authority of the Secretaries of War and the Navy, charterers:

Witnesseth, that the said agents agree to let, and the said charterers agree to hire the said steamship for the term of three calendar months, from the 5th day of April, she being then (after docking and cleaning bottom) placed at the disposal of the charterers, at Cardiff, in such dock or at such wharf or place (where she may always safely lie afloat, at all times of tide) as charterers may direct, she being then ready to receive cargo, and being tight, staunch, strong, and every way fitted for the service (and with full complement of officers, seamen, engineers, and firemen for a vessel of her tonnage), to be employed in carrying 500 tons of coal in bags (and passengers, so far as accommodation permit) within the following limits, viz: Cardiff, Wales, to St. John's, Newfoundland, for orders to proceed from thence as ordered by the Greely Relief Expedition; the United States Government assuming all risks of vessel and cargo as soon as the steamer reports at St. Johns. Value of vessel, £15,000, equal to \$75,000, on the following conditions:

That the owners shall provide and pay for all provisions, wages, and consular shipping and discharging fees of the captain, officers, engineers, firemen, and crew; shall pay all engine room stores, and maintain her in a thoroughly efficient state in hull and machinery for and during the service.

That the agents shall accept and pay for all coal in the steamer's bunkers; and the owners shall, on expiration of this Charter Party, pay for all coal left in the bunkers, at the current market prices at the respective ports when she is delivered to them.

That the charterers shall pay for the use and hire of the said vessel at the rate of \$7.54 per gross register ton per calendar month, commencing on and from the day of her delivery, as aforesaid, hire to continue until her delivery in like good order and condition to the owners, fair wear and tear only excepted (unless lost), at Halifax.

It is understood and agreed that the steamer is to be at St. John's, Newfoundland, before the 10th day of May next, dangers of seas excepted.

Payment of the said hire to be made in cash at New York, monthly, in advance.

That the cargo or cargoes may be laden or discharged in any dock, or at any wharf or place that the charterers or their agents may direct, provided the steamer can always safely lie afloat at any time of tide.

That the whole reach of the vessel's holds, decks, and usual places of loading, and accommodation of the ship (not being more than she can reasonably stow or carry) shall be at the charterers' disposal, reserving only proper and sufficient space for ship's officers, crew, tackle, apparel, furniture, provisions, stores, and fuel.

That the captain shall prosecute his voyage with the utmost dispatch, and shall render all customary assistance with ship's crew and boats.

That the captain (although appointed by the owners) shall be under the orders and directions of the charterers as regards employment, agency, or other arrangements, and the charterers hereby agree to indemnify the owners from all consequences or liabilities that may arise from the captain signing bills of lading, or in otherwise complying with the same.

That if the charterers shall have reason to be dissatisfied with the conduct of the captain, officers, or engineers, the owners shall, on receiving particulars of the complaint, investigate the same, and if necessary make a change in the appointments.

That the charterers shall have permission to appoint a supercargo, who shall accompany the steamer and see that the voyages are prosecuted with the utmost dispatch.

That the master shall be furnished from time to time with all requisite instructions and sailing directions, and shall keep a full and correct log of the voyage or voyages, which are to be patent to the charterers or their agents.

That the charterers shall have the option of continuing the charter on the same terms for a further period of three months monthly, on giving due and sufficient notice thereof to the agents previous to the expiration of the first-named term.

That previous to arrival at St. John's, in the event of loss of time from deficiency of men or stores, breakdown of machinery, or damage preventing the working of the vessel for more than forty-eight working hours, the payment of hire shall cease until she be again in an efficient state to resume her service; but should the vessel be driven in port or to anchorage by stress of weather, or from any accident to the cargo, such detention or loss of time shall be at the charterers' risk and expense.

That should the vessel be lost after the expiration of the first three months, freight paid in advance and not earned (reckoning from the date of her loss), shall be returned to the charterers. The act of God, the Queen's enemies, fire, restraints of princes, rulers, and people, and all other dangers and accidents of the sea, rivers, machinery, boilers, and steam navigation throughout this Charter Party always mutually excepted.

That should any dispute arise between the owners and the charterers, the matter in dispute shall be referred to three persons at New York, one to be appointed by each of the parties hereto, and the third by the two so chosen, their decision, or that of any two of them, shall be final, and for the purpose of enforcing any award this agreement may be made a rule of court.

That the owners shall have a lien upon all cargoes and all subfreights for any amounts due under this charter; and the charterers to have a lien on the ship for all moneys paid in advance and not earned.

All derelicts and salvage shall be for owners' and charterers' equal benefit. Penalty for non-performance of this contract, estimated amount of damages.

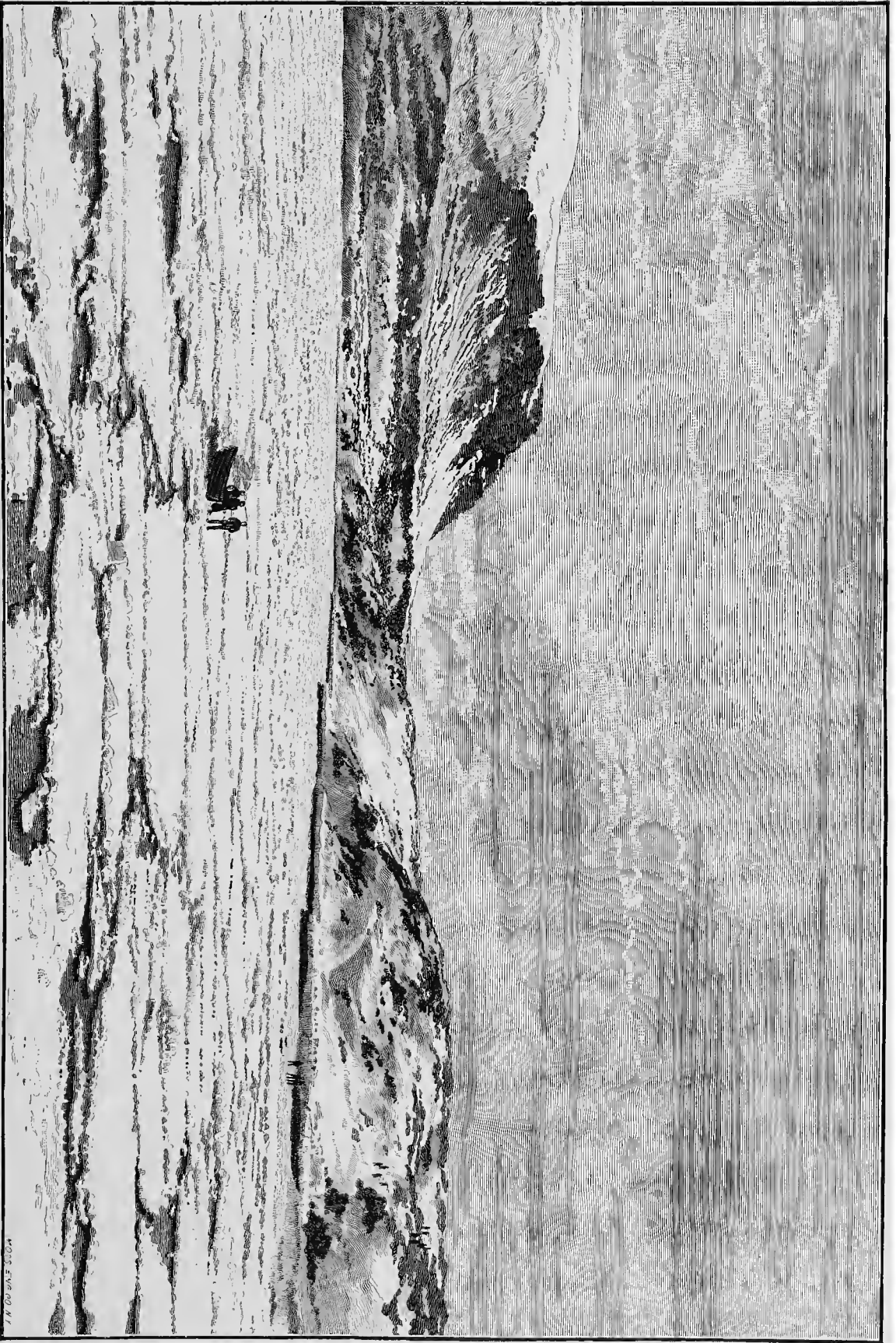
Signed in the presence of James Patterson, as to Sutton & Co.

SUTTON & CO.

Signed in the presence of S. Henriques, as to Earl English.

EARL ENGLISH,

Chief of Bureau of Equipment and Recruiting.



LOOSE ICE IN GODHAVEN HARBOR, DISCO.

Ensign W. I. Chambers, with two seamen, Carl Nilson and Jno. B. Larson, were detailed for duty on board the *Loch Garry*, under the following order to Mr. Chambers :

U. S. S. THETIS,

St. John's, N. F., May 10, 1884.

SIR: You are hereby detailed for duty on board the coal steamer *Loch Garry*, containing 500 tons of coal to be delivered at Littleton Island, for use of the Greely Relief Expedition; seamen John B. Larson and Carl Nilson are detailed to assist you in this duty.

Your immediate duties will be to represent the Government and to protect its interests in its responsibility for the ship and cargo from the time of her sailing until her return to St. John's.

You will keep watch and require the two seamen accompanying you to do the same, in order that the Government interest may be represented on deck throughout the voyage.

You will verify the master's position as determined each day, and you will keep a journal in which all needed information will be recorded, in case of disaster.

All signals in clear weather will be by Meyer's code, during foggy weather by whistle blasts after the same system.

Speed signals during the day will be by senior officer's penant; if not hoisted, full speed will be indicated; if half way up, half speed; and if at masthead, stopped.

During foggy weather one blast of the steam whistle will indicate slow; two blasts, stopped; three blasts, backing; and four blasts, ahead full speed; one, followed by two blasts, port helm; two, followed by one blast, starboard helm; several quick blasts indicates "attention."

The *Thetis* will convoy the *Loch Garry* outward, and you will maintain a position of about three cable lengths on her starboard quarter when practicable; under no circumstances will you follow in her wake when it can be avoided, except when specially directed.

Further orders will be given you for your return voyage to St. John's. In case of separation you will join me at Disco. These instructions may be changed by signal as occasion may require.

Very respectfully,

W. S. SCHLEY, *Commander, U. S. N.,
Commanding Greely Relief Expedition.*

Ensign W. I. CHAMBERS, U. S. N.

The following instructions were given to Captain Jones :

U. S. S. THETIS,

St. John's, N. F. May 10, 1884.

SIR: I have respectfully to inform you that Ensign Washington I. Chambers, U. S. N., has been detailed to act as supercargo of the steamer *Loch Garry* and to accompany you to Littleton Island.

This officer will represent the Government and will act under my immediate orders so long as in company, after which his directions regarding the movements of your vessel will be observed as provided by the terms of the charter party. His instructions regarding the position to be maintained by your vessel and speed signals while under convoy will be observed as far as practicable.

Two naval seamen have been detailed to accompany Ensign Chambers, and you are requested to provide them with the necessary berthing accommodations and

rations ; compensation for the latter to be adjusted and settled by the United States consul at St. John's upon return to that port.

Very respectfully, your obedient servant,

W. S. SCHLEY, *Commander, U. S. N.,*
Commanding Greely Relief Expedition.

Capt. ROBERT JONES,
Steamer Loch Garry.

These preliminaries arranged, and all articles on board, the *Thetis* sailed at 6 a. m., May 12, for Godhaven, with the *Loch Garry* under convoy. A strong breeze sprang up the afternoon of the day of sailing from St. John's with dense fog, which greatly increased the difficulties of navigation in this region, where large icebergs were numerous and often passed at close quarters. Reaching the latitude of Cape Farewell the *Thetis* fell in with the first field ice, but little difficulty was experienced in working through it. Open water was held from this point up to the south side of Disco Bay, where we encountered a large number of heavy icebergs, but separated sufficiently to permit passage through them.

May 21 the ship crossed the Arctic circle, and from that point had continuous daylight, which greatly facilitated our work.

Passing through many dangerous obstructions of ice and icebergs onward to Godhaven, the entrance to this harbor was found obstructed by heavy floe ice. No great difficulty was experienced in breaking a passage for the *Loch Garry* into the harbor, where both ships arrived and moored to the land ice at 8 a. m., May 22.

A strong southerly breeze the following day packed the small harbor so full of ice that the *Thetis* and *Loch Garry* were detained for thirty-six hours.

David Danielson, Eskimo, was engaged at Disco as dog driver of the *Thetis*. Lieutenant Emory's letter of advice informed me that he had employed Hans Hansen in same capacity for the *Bear*. Their pay was fixed at \$30 per month.

During the delay at Godhaven I called upon Hon. A. Anderson, inspector of North Greenland and the governor of the district. During this visit the inspector informed me that he had purchased thirty dogs, ordered by Lieut. E. A. Garlington last year in accordance with the following communication from that officer, and that they were ready for delivery to the ships :

UNITED STATES RELIEF EXPEDITION,
Upernavik, North Greenland, September 2, 1883.

SIR ; I have the honor to request that you will provide for the use of the prospective expedition of next year from the United States the following articles :

Thirty dogs and sixty sets dog harness ; as many, not to exceed twenty, dog-skin sleeping-bags, as can be procured.

I am sorry that the *Yantic* cannot call at Disco, that I might arrange these matters with you.



THEETS BEHIND ICEBERG OFF WAGAT STRAITS.

Nicholai remains here, and I have paid his and David's wages to the governor of the district.

I am, very respectfully, your obedient servant,

E. A. GARLINGTON,

First Lieutenant, Second Cavalry, Commanding.

Hon. A. ANDERSON,

Inspector, North Greenland.

Although the *Thetis* and *Bear* were supplied with dogs, it appeared to me that the inspector had only acted in good faith in purchasing these animals from the natives, and under the circumstances I felt obliged to direct Commander Coffin of the *Alert* to take them for his vessel to avoid controversy.

Lieutenant Emory left me a list of the Dundee whaling fleet in the waters of Greenland, with the names of those ahead of my ship. His letter gave me a good idea of the ice conditions about the Waigat Straits and in Melville Bay.

At 9 a. m., May 24th, the *Thetis* and *Loch Garry* sailed for Upernavik. At the mouth of the harbor a belt of ice extending about 3 miles off-shore obstructed the passage of the two ships, obliging the *Thetis* to ram her way through the ice. Clearing this ice, open water was carried to the vicinity of the North Fiord, some 26 miles south of the Waigat Straits, where both ships came up to a solid ice barrier extending as far as the eye could reach to the north and west. The pressed up, hummocky appearance of this ice enabled us to recognize it as the polar pack of the last season. The *Thetis* was pushed some fifty yards into this pack to lie during the night. The *Loch Garry* maintained a position to the southward of its edge for the reason that if a southerly gale should come on, as is so frequent in these high latitudes, her position would have been one of great peril in the pack.

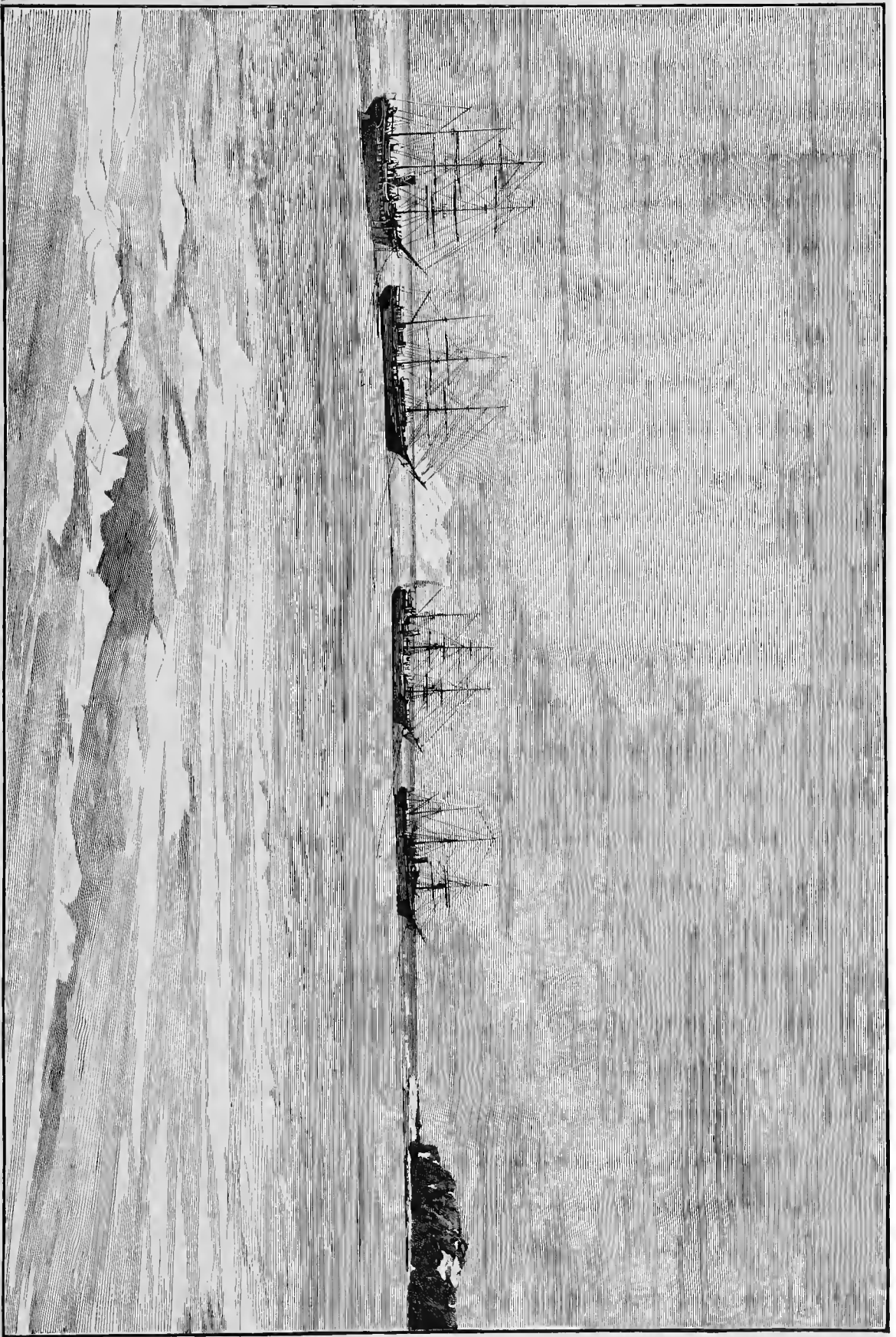
The following morning, May 25, a fresh breeze sprung up from southwest, with indications of an approaching gale from that direction. It was determined to send the *Loch Garry* back to Godhaven to await a northeast gale before attempting the passage north, as the ice appeared too formidable to risk her at that time. As soon as the collier had fairly started south, about 1 p. m., the *Thetis* was pushed into the pack toward Hare Island with the hope that open water might be found under the land. Struggling with heavy floes and ice barriers and following tortuous leads until midnight, it was discovered that no refuge remained except escape to the lee of a heavy iceberg off the north entrance of the Waigat Straits. During a circuitous passage of 36 miles the ship was several times beset by heavy ice, but good luck worked to our advantage and the first lesson of patience was learned. The ship was finally secured to an iceberg some 200 feet in height, where she remained in comparative safety during the 26th, though in occasional danger of being crushed, until

the morning of May 27, when we escaped from the grinding pack to the "land water" under Hare Island.

Before venturing into the ice pack with its uncertainties and its hourly perils, sixty days' supply of provisions was got up from below and stowed opposite each boat. Knapsacks were served out with a complete set of underclothing and foot gear.

Rigid instructions were given that the articles contained in them were not to be disturbed for any purpose except after abandonment of ship. The hatches were kept ready for removal at a moment's notice in order to get at provisions and clothing to throw on the ice in case of dangerous nips. Officers and men were detailed for each boat with instructions what to carry to them, and every arrangement made to avoid confusion in hasty abandonment.

The tidal movement of ice in and about the Waigat Straits and through Melville Bay gave a very dangerous impetus to the heavy bergs and floes of this sea. To attempt to avoid them by seeking more westerly water was to push out into the polar pack with every chance of being beset and drifting helplessly back through Davis' Strait. Under such circumstances the risk of holding on to icebergs to await favorable winds and tides to open leads was to be preferred, though it must be admitted that great anxiety was always felt lest these monsters should fall over on the vessel. This was possible with any change of wind or current. While lying under the lee of an enormous berg near the Waigat Straits to escape the force of drifting floes, it suddenly pivoted, exposing the ship to imminent danger of being crushed. The ship swung rapidly around, carrying away her head gear and figure-head. Lines were cast off immediately and the ship was worked safely into open water spaces between the floes toward the land water in the direction of Hare Island. To gain this water it was necessary to ram our way through the lighter floes and to blow the way with torpedoes through the heavier. At last the ship gained the open water under Hare Island and was able to keep in it by standing north and south along the land until the afternoon of May 27. At this date a northerly gale set in at Godhaven and with it the *Loch Garry* sailed northward, falling in with the *Thetis* at Hare Island about 9.30 p. m. The following day (May 28) at 5 a. m. the *Thetis* and *Loch Garry* took to the pack off Hare Island, working with much difficulty and delay to Noursoak, followed by the Dundee whaler *Wolf*. Finding the ice had opened somewhat in the Omenak Fiord the *Thetis* continued to the northward, ramming, where necessary, to gain leads or to make a passage for the *Loch Garry*. Fog prevailed for a time in the morning and greatly increased the difficulties of navigation. At 5 p. m. a heavy snow storm set in, accompanied by a fall of temperature below the freezing point of Fahrenheit. The water about the ship was coated with young ice, the rigging was covered with rime. Notwithstanding these dif-



THEETIS, ARCTIC, AURORA, AND BEAR AT THE DUCK ISLANDS, JUNE 7, 10.30 a. m.

difficulties the ship was continued northward, ramming her way through weaker floes or by avoiding heavier ones. Being too thick to distinguish the land it was necessary to average courses by going east of one floe and west of another towards Svarten Huk and Upernavik, where the *Thetis* and *Loch Garry* arrived at 8 a. m., May 29. Twenty consecutive hours of the twenty-four had been passed in the "crow's nest," with no comfort beyond the fact that each hour of the time reduced the interval of separation from the Greely party.

At Upernavik we came up with the *Bear* and the steam whalers *Polynia*, *Triune*, and *Nova Zembla*. The *Arctic* and *Wolf* arrived later in the day. Lieutenant Emory reported the *Aurora*, *Cornwallis*, and *Narwhal* beset in the pack to the westward of the Brown Islands, some 18 miles north.

The *Loch Garry* was sent alongside the *Bear* to fill the bunkers of the latter with coal. During this interval of delay I called upon the governor of the district Mr. Elberg, and secured the services of Nicolai Broberg, Eskimo, as interpreter.

At Upernavik all my information indicated the ice unbroken and packed to the northward, and much too formidable to expose the *Loch Garry*, unfitted as she was for ice work. Accordingly verbal instructions were given her master to land sixty tons of coal for the *Alert*, and to await the latter's arrival later in the season before attempting the passage of Melville Bay. Orders to this effect were left for Commander Coffin :

U. S. S. THETIS,

Upernavik, Greenland, May 29, 1884.

SIR: The coal steamer *Loch Garry* is left here to come on later under your convoy, the ice to the northward making it unsafe to venture with her so early in the season.

The *Bear* and myself go at once to the northward and will leave a record for you at Conical Rock, Cape Parry, and Littleton Island. The cairns will be designated by poles with black flags on them and the notices will be in bottles. The western points of islands, capes, and headlands will be chosen for the cairns. Leave a record as you find them both going and returning. Fill up your bunkers from the steamer and land from her fifty tons at Foulke Fiord to supply the house.

We have a rumor here of five white men to the northward in the vicinity of Cape York; hence my anxiety to get on, as two whalers are ahead of us, but I think I can catch them; at all events I shall push to the utmost.

All are well and in fine spirits; weather cold; ice heavy and thick.

Hoping you are well, I am, very sincerely, yours,

W. S. SCHLEY, Commander, U. S. N.,

Commanding Greely Relief Expedition.

Commander G. W. COFFIN, U. S. N.,

Commanding U. S. S. *Alert*.

At 5 p. m., the *Bear* having finished coaling, both ships sailed in company for Kingitok Islands, touching, *en route*, at one or two points to secure seal meat for the dogs. Governor Elberg accom-

panied the ship as far as Kingitok in order to secure the services of a native pilot to enable me to take the inside passage as far as Tassuisak. At 9 p. m. came to with ice anchors to the ice foot at Kingitok Island. We were detained at this point until June 1, when a violent southwest squall set in and destroyed this ice foot and obliged me to run around to the north side of the island for security against the running pack.

During our detention at Kingitok we improved every moment to exercise dog teams, and to send parties morning and evening to the top of the island to examine the outlook north. From the anchorage on the north side we discovered a lead later in the day, after the wind had subsided, and pushed into it, though it carried us a little off-shore. We succeeded nevertheless in gaining the islands off Tassuisak during the evening of June 1, and fell in with the Dundee whalers *Aurora*, *Cornwallis*, and *Narwhal*, moored to the ice foot. The other whalers accompanying us to this point remained in the pack several miles off shore.

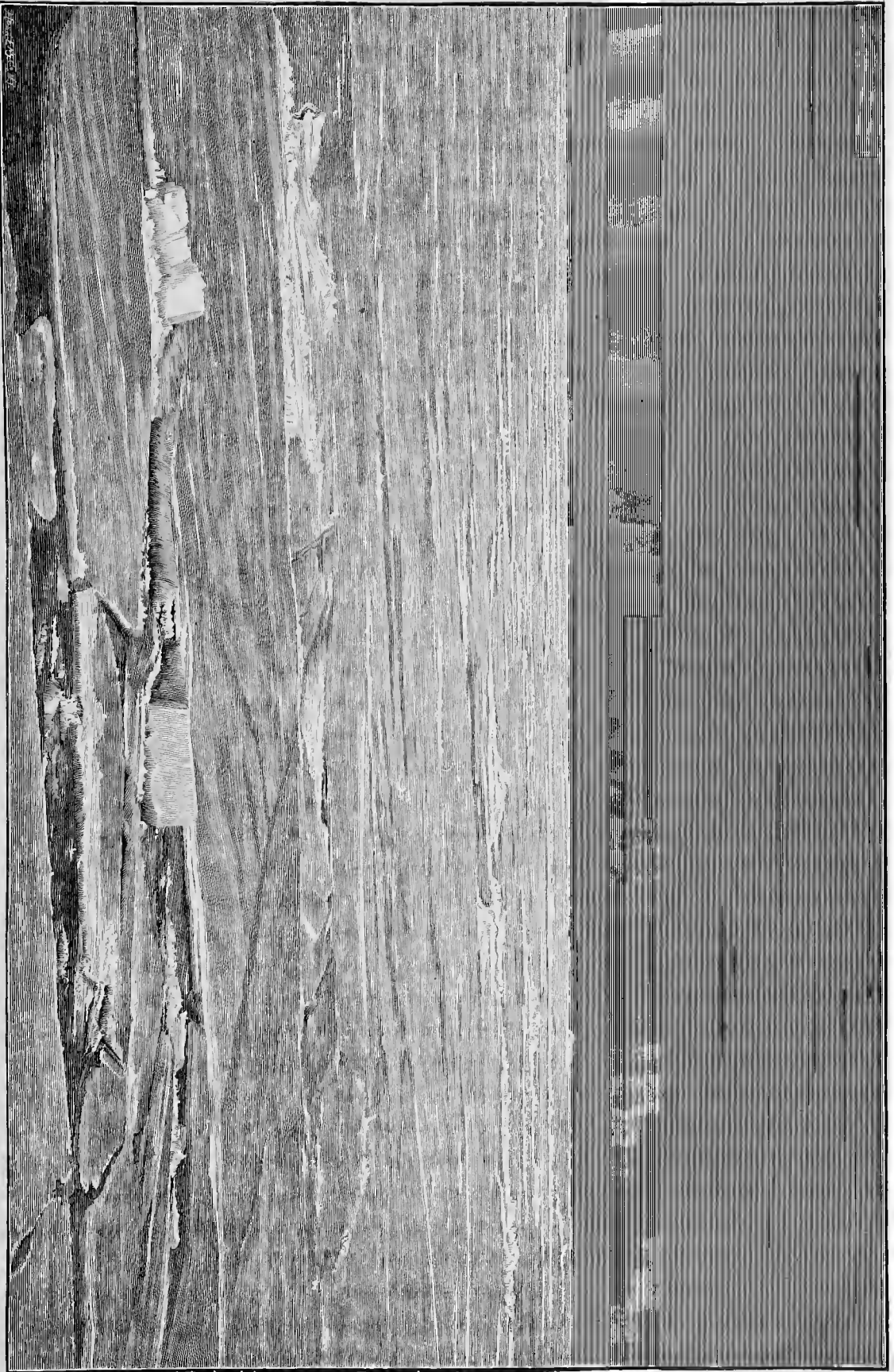
Passing through some thinner ice into a lead which the watchful commander of the *Bear* had discovered, and into which he was leading the *Thetis*, a few miles north of the Berry Island in order to reach open water along the land, the *Bear* ran upon one of the numerous unknown and uncharted rocks of that vicinity. She was going at half speed at the time; her commander was in the foretop, the officer of the deck was in the "crow's nest," and a lookout on the boom end. All precautions possible in this ice-covered region were taken to avoid accident, but risks which could not be justified under ordinary circumstances of cruising had to be assumed now as incidental to the extraordinary service.

The injury sustained by the *Bear* was only of slight importance and did not prevent her continuing to the north with the *Thetis*, and afterwards during the cruise, whenever it was necessary to ram the thicker and more flinty ice of Melville Bay and Smith's Sound, the *Bear* was always found a most faithful and efficient support to the *Thetis*.

Both ships were detained about Tassuisak from June 1 to June 3, by solid ice-pack to northward and by strong southerly winds, with occasional thick weather and snow.

On the forenoon of the latter day a lead was discovered along the land toward Titliasook, near Horse Head Islands, and was followed, but proved delusive near the Wedge Islands. Both ships attempted to ram their way through, but the ice was too formidable and the strain to ships too severe to be continued.

June 4 Governor Kleeman, of Tassuisak, visited the ships and endeavored to impress the danger of our exposed position if a westerly gale should set in. Somewhat against my judgment, however, the ships went into Tassuisak Harbor, where we remained about two



VIEW FROM THE CROW'S NEST OF THETIS TO THE WESTWARD, ACROSS MELVILLE BAY, JUNE 13, 2 P. M.

hours, when the lead we had left opened for several miles. Lines were cast off from the ice foot in Tassuisak Harbor; full steam power was raised, and a rush was made to get through a narrow lead into open water, but we were a trifle too late. The ice closed on the *Thetis* and held the ship immovable until the next morning, notwithstanding the use of torpedoes ahead and on both beams to extricate her.

The morning of June 5, the ice appearing slacker, the *Thetis* began ramming again under high speed and succeeded in breaking through a distance of about three hundred yards into open water, which was followed most of the day amongst icebergs and through floes past Horse Head Island, Cape Shackleton, and Baffin Islands to a position about six miles south of the Duck Islands in Melville Bay. At this point the ice was found packed and impenetrable, and both ships were secured by ice anchors to the floe ice to await an opening. The three advance whalers, the *Arctic*, *Aurora*, and *Narwhal*, had worked through the ice to this position in advance of the Relief Expedition.

June 6 we got under way again and followed a lead for about two miles northward, but finding it more difficult and hazardous to ram successfully this heavier ice of Melville Bay, we sought refuge a little north of a large iceberg, around which there had opened a large water space which permitted us to ram a dock in the floe ice for the *Thetis* and *Bear*.

While lying in this improvised dock most of the Scotch whalers came up with us.

During the afternoon of June 6, observing from the "crow's nest" a large open water space about the Duck Islands, both ships were got under full headway about 9 p. m. and rammed their way through several floes to gain this desired outpost for advance into the more perilous dangers of Melville Bay.

At 1 a. m., of June 7, both ships reached the ice foot of the Duck Islands, and were made fast to it in company with all the whalers.

This point being the outpost from which advance across Melville Bay is always made, it was necessary to examine carefully the ice conditions in order to distinguish the land ice, which rarely moves, from the floe ice which detaches from it further and further in towards the land with each month of the short Arctic summer.

During four anxious days the ships were detained at this anchorage. Strong winds from north and south, with snow squalls and dense fogs, with fine weather intervals, occurred during this delay.

Whenever it was clear enough to see trips were made to the top of the islands to examine the outlook across Melville Bay, though very little comfort was derived from these visits. This vast sea of ice lay unbroken before us in the north and west directions. Sometimes it seemed that it would never break up.

Countless icebergs lay in stately and silent splendor, with here and there slight pools of water about them. These were promising signs, but we soon learned that the changes with every turn of the kaleidoscope are hardly more wonderful or surprising than those following each strong wind or tide in these regions of ice.

These enforced waitings were all the more hard to bear as we knew how seriously delay must tell upon the party to whose relief we were anxiously hurrying.

Watch was, therefore, always kept in the "crow's nest," and every crack in the ice was critically scanned in the hope that advance might be made.

Every chance, however slight, was availed of to work northward nearer to the imperiled party.

On the evening of June 10 there were unmistakable indications of a break in the ice, and another advance northward.

At 6.30 a. m., June 11, observing open water through the rifts in the snow to the northwest of the anchorage, lines were again cast off, but after a run of an hour or two in a snow storm it was found that the leads were short and tended northerly toward the land ice, though closing by a northwest tide then commencing to flow. When the snow squalls passed it was found that several whalers had preceded us to this position, and later the others worked off near us.

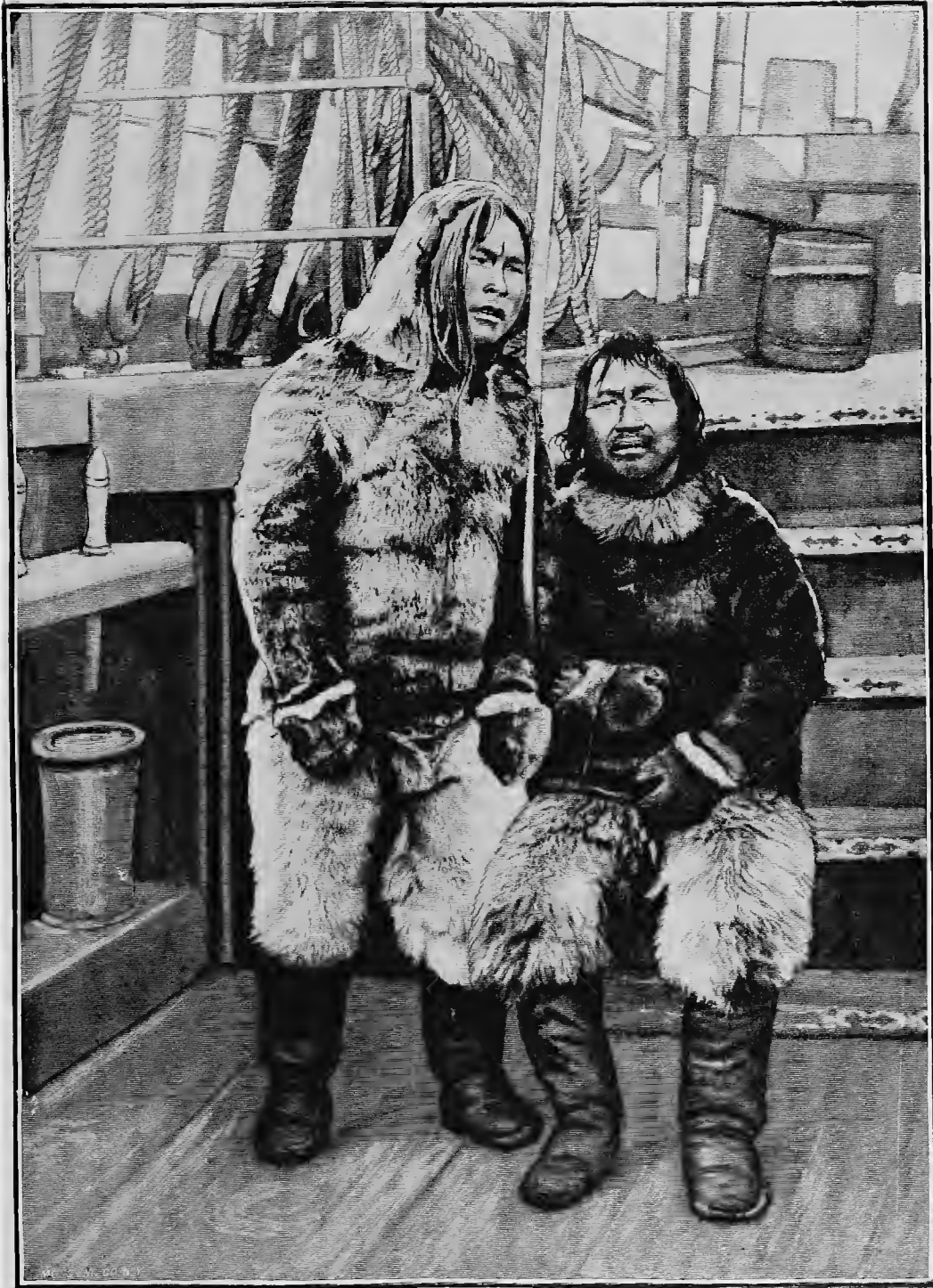
Advantage was taken of the largest open water space and held during most of the day until an opportunity offered to gain a temporary mooring against the solid ice floe, close to a favorable crack leading landward, which opened toward 6 p. m., after some ramming had been done by the two ships.

By 9 p. m., however, a still better opening occurred, when both ships succeeded in making good a distance of at least three miles northward; but with each advance to a higher latitude the ice grew so noticeably heavier that ramming was of necessity resorted to with caution.

From the position gained by this day of hard work, it was discovered that the northerly wind of a day or two past had broken the ice very considerably across Melville Bay; therefore, it was necessary to await its recurrence, or the cessation of a moderate wind then blowing, in order that the floe ice might ease off from the land ice.

A promising feature in the outlook of this day was, that, although the floes were all large and heavy, there was a great quantity of broken rubble ice near their edges, which usually indicated advance when the tides or winds changed.

At 3 p. m., June 12, a movement in the ice gave us a chance to reach a lead, after some ramming, by which a mile further to the northeast was made toward the land ice. Again, on the afternoon of the 13th another advance of a mile was made, where both ships were detained until June 14.



NATIVES AT SAUNDERS ISLAND.

During the afternoon of the 12th there was considerable movement of the floes and some dangerous grinding of the ice where the floes touched. To avoid this all the whalers, except the *Arctic* and *Wolf*, steamed back to the eastward of the Duck Islands to open water seen near Sugar Loaf Peak.

Most of the 13th and the morning of the 14th the *Thetis*, *Bear*, and the Dundee whaler *Arctic* were working at intervals into more northerly positions as the ice opened and closed, the advantage being first with one and then with the other, but ultimately the Relief Ships gained three miles in advance of the *Arctic* and saw from this position the *Wolf* lying in the ice, southwest about 5 miles, and the remainder of the whaling fleet to the eastward of the Duck Islands, distant 10 or 12 miles southeast.

The wind was light during the afternoon of June 14, but the tide opened ahead into which the *Thetis* and *Bear* started, but were jammed for an hour or two in packed ice near a large berg. The *Arctic* and *Wolf* having better luck and more open water about them reached the lead in advance of the Relief Ships, but gained no other advantage than leading in open water along the land ice in the lead that broadened from 100 feet to as many yards, extending about 30 miles to the northwest, with here and there a difficult pass that had to be rammed through, until the solid ice was met with again about 2 a. m., June 15.

This was the best run made for several days and the novelty of making 8 knots was much enjoyed. Both ships reached the vicinity of the northerly Brown Islands, when further advance was arrested by barriers of ice from 6 to 8 feet thick, and in places where rafted from 15 to 20 feet.

Ramming ice of this character was so serious a matter to the safety of the ships that it was resorted to with much caution, while torpedoes were of no practicable use, those of gun-cotton producing only local effects.

We were detained at this point until 2.35 p. m., of June 15, when fairer weather and wind allowed the ice to ease off from the solid land ice, when another advance of some 60 miles was made through dangerous and tortuous leads close to heavy icebergs up to a position 58 miles southeast of Cape York. At this position the land ice was found to extend in one unbroken mass off-shore a distance of about 60 miles, impenetrable and impassable, with the pack solid in all directions, and with some indications of a coming gale. Under such circumstances the imminent peril to both ships from rapidly running floes, whose area, in most cases very great, suggested the importance of ice docks in the land ice. This was soon abandoned, as it was found impossible to work the saws in ice of such thickness. Ramming was not to be thought of. We were obliged, therefore, to keep under way a good deal of the day of June 16, and part of the 17th, during

a fresh southerly wind, in order to maintain a position in the largest open water space that could be reached and held to avoid the nipping floes.

The anxiety of some forty hours was severe and wearing ; but little sleep was obtained by the commanders, as it was possible at any moment that both ships might be crushed and their crew, thrown on to the ice.

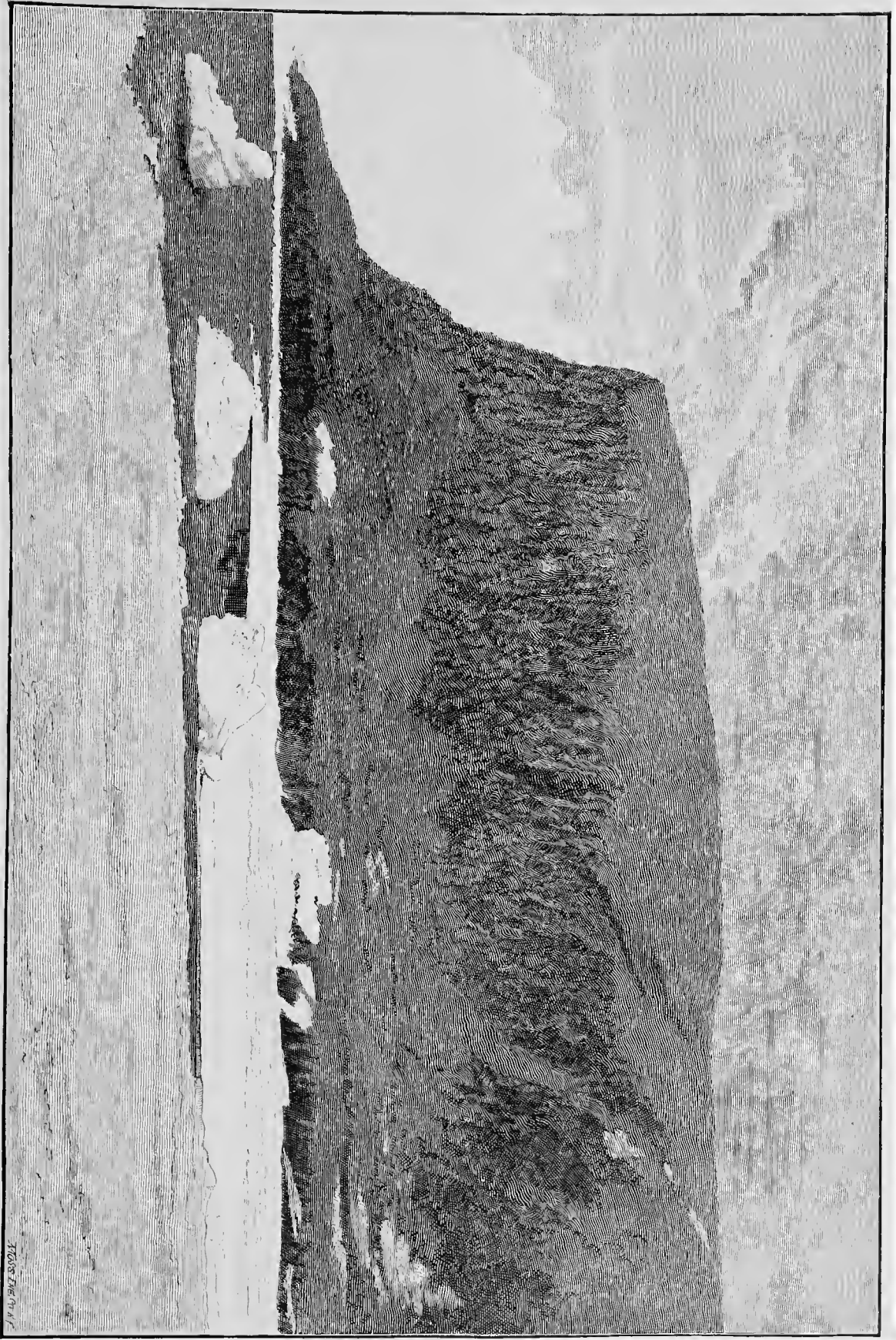
The movements of the floes on this day occasionally opened tempting leads to the southwest of our position, which the energetic captain of the *Arctic* could not resist, but which, unfortunately, caught his vessel and squeezed her considerably.

The *Aurora* and *Wolf* strove to make a similar movement, but, fortunately for them, the ice closed before they could gain the lead in which the *Arctic* was caught. It was reserved for them to get through Melville Bay with the Relief Ships, as the *Arctic* was left behind and was never seen again by the *Thetis*.

Fortunately, we were able to avoid dangerous nips during this interval, when, to our satisfaction, the wind shifted and fell lighter, and a promising lead in the direction of Cape York enabled us to escape at 9 p. m., June 17, and to reach that coveted point at 5 a. m. of the morning of June 18. In clearing a false lead and working through heavy ice the *Thetis* split her rudder by collision with a heavy floe and was detained about an hour to effect repairs. The two Scotch whalers, *Aurora* and *Wolf*, were in company and worked ahead of the Relief Ships, and with them ultimately into a large open water space, which was thought at the time to be the "north water." Gaining this open water, the *Bear* being somewhat faster than the *Thetis*, was sent ahead to land Lieutenant Colwell and three men to communicate with the Cape York natives. This Lieutenant Emory effected about 6 a. m., and sent the party 6 or 8 miles over the ice to Cape York. I determined to remain with the *Thetis* to pick up this party, and, therefore, instructed Lieutenant Emory to go to the westward in search of a lead northward, and, if possible, to continue on, examining Cary Island *en route*, and to await my arrival at Littleton Island.

The *Bear*, the *Aurora*, and the *Wolf* steamed westward about 6.30 a. m.

At 7.30 a. m. the tide changed and the ice broke from the land, opening a lead close up to Cape York, where I found Lieutenant Colwell interviewing a native, but no information could be obtained of Lieutenant Greely's party. Taking Colwell's party on board the *Thetis* continued by Cape York and onward through troublesome ice pack, and reached Conical Rock about 3 p. m. the same day. A cairn was erected on its western side containing a record for Lieutenant Emory and Commander Coffin.



CAPE PARRY.

1858. 21/11

The pack of lower Smith's Sound, studded with hummocky pack ice, was very formidable in appearance. The strong tides made it dangerous in movement. About midnight the pack to the northward was examined, but finding it impenetrable and impassable the *Thetis* was forced to return and moor again to an iceberg, grounded under the lee of Conical Rock, until 1.45 p. m., June 19, when the southerly wind, which had sprung up that morning shifted, and the ice under the tidal influence had become slacker. Another advance was made after considerable ramming and by using torpedoes, when practicable, until open water was gained some hours later near Capes Dudley Digg's and Athol. Ten hours of hard work through the pack, following narrow and winding leads amongst hummocky floes, brought the *Thetis* up to a narrow open water space about the western end of Wolstenholm Island, where a cairn was erected and notices deposited for Emory and Coffin. This concluded, she was continued onward to Saunders Island, where she arrived about 3 a. m. of June 20. At this latter island we met a large number of natives, but could learn nothing from them of the Greely party. Indeed they were not even aware that any white men were in the north country.

Some broken oars and pieces of wood were given the natives for their kayaks, and some bread and meat to encourage them to acts of friendliness to others coming after us. The uncertainties of the navigation in these regions suggested the importance of cultivating kindly relations towards the natives, who had on previous occasions aided parties returning after disaster from the northward.

The coast and islands up to this point had been carefully searched with glasses, but without discovering any indications of Greely's party. The natives here stated that during the early spring, before the ice had broken, a party of them had hunted well off on the ice, towards the Carey Islands, but had not seen anything to indicate that any white men were there. This information determined me to move to the northward with all dispatch from Saunders Island, about 5 a. m., for Cape Parry and Littleton Island.

Great difficulty was experienced during this entire day in working my way through the very heavy and very troublesome ice, studded as it was with numerous large hummocks. Cape Parry was reached, however, about 2.30 p. m., and another cairn erected on its western side, and records were left in it for Lieutenant Emory and Commander Coffin.

Leaving Cape Parry, this vessel grounded upon a sunken rock, not marked on my small scale chart, but as her speed at this time was about two knots no injury of consequence was sustained.

Standing across Whale Sound, through very heavy ice, ramming frequently through tongues connecting large floes, Northumberland and Hakluyt Islands were reached about 8.30 p. m., and examined carefully in turn without results. We continued onward to Little-

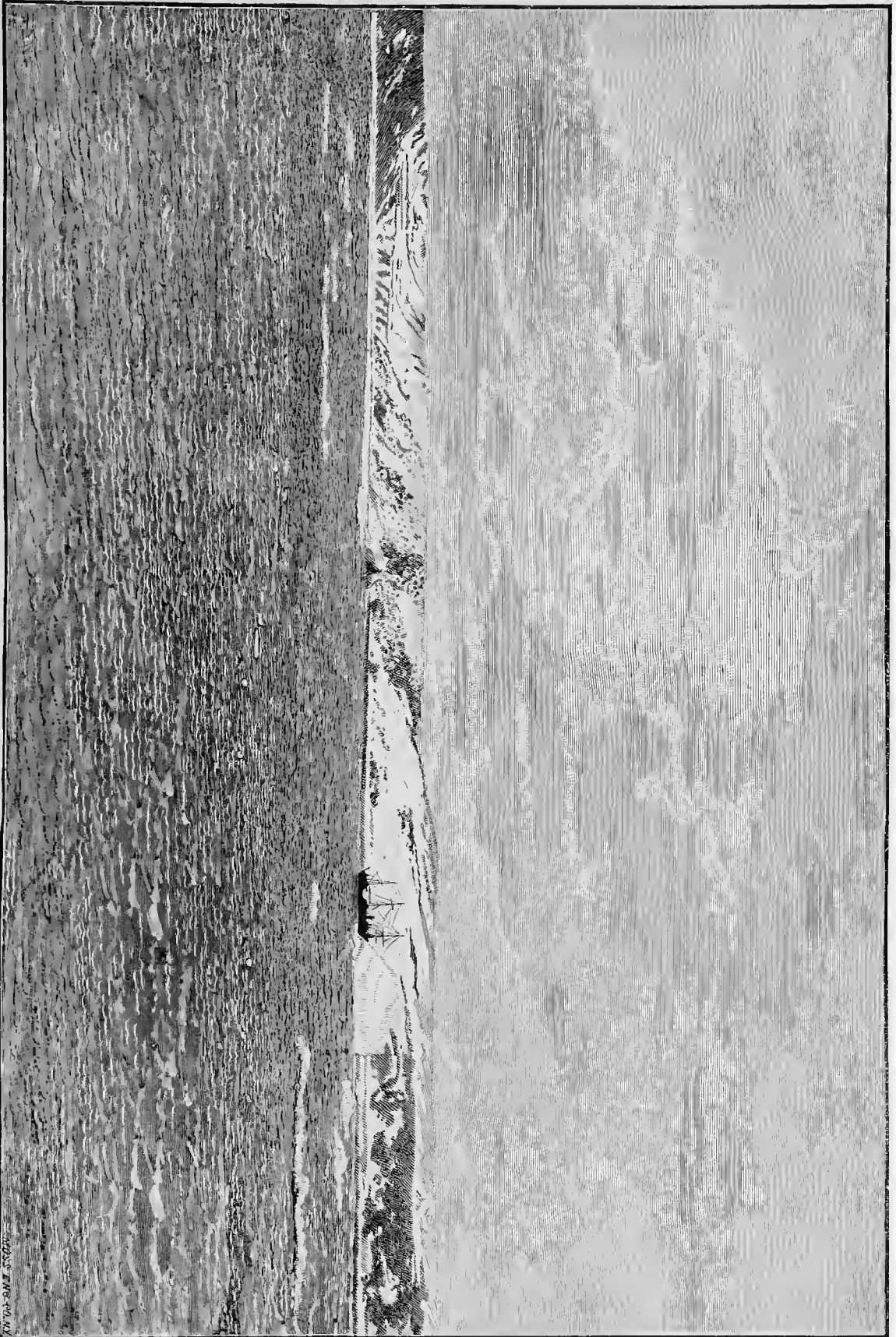
ton Island about 9 p. m. From Northumberland Island to Cape Alexander the ship was navigated through a belt of icebergs twenty-four miles broad, so close together, in many instances, that it was difficult to determine the way until up with them. By 11 p. m. a southerly wind, with occasional snow squalls, set in and continued until my arrival at Littleton Island, about 3 a. m., June 21. Rounding the island to its north side the ship ran upon another unknown rock, but at low speed, and caroming off she fetched up against the ice-foot of the island. She hung about ten minutes, thumping some, but sustained no injury whatever, the grinding pack ice in driving down having smoothed off the rocks in passing over them. Clearing this danger, the north side of the island was reached and the ship was moored to an iceberg grounded near it. Parties were sent to examine the Nares cairn, the Beebe cache, and Littleton Island for records of Lieutenant Greely, but without success. Before their return the wind had increased so much, with driving snow, that it was impossible to see a hundred feet from the ship, while the opposite shore of Grinnell Land was completely hidden from view.

While the parties were engaged in searching for the cairns and caches the tide fell and the wind had increased so much that getting off the ice-foot of the island in the swell was difficult and very dangerous. As it was intended to increase the cache of provisions at this place to 1,000 rations, it was necessary to wait for the wind and sea to go down before this could be effected. The search parties returned late in the afternoon to the ship and were taken off with some difficulty, tired and worn out by their tedious travelling over rocks and snow and through steep valleys.

Again, it was intended to visit Polaris winter quarters at Lifeboat Cove, the following morning, but the wind and sea, though somewhat abated, were still too heavy to allow this to be done. Attention was directed on the following morning, June 22, to landing provisions at the Beebe cache, which we succeeded in doing towards noon. Leaving a record on McGary Island for Emory, informing him that the *Thetis* would wait for him at Payer Harbor, and having learned nothing of Greely up to this point, it was determined to push on at once to Cape Sabine, but, as the *Bear* had not come up, I was anxious lest she had met with disaster in working through such ice as the *Thetis* had encountered coming from Cape York. Again, as it had been concluded that the advance must now be pushed vigorously to Lady Franklin Bay, it did not seem prudent to attempt the dangers of Kane Sea until the *Bear* had come up.

To my great relief and delight she arrived about 12.30 p. m., June 22.

Lieutenant Emory came on board and reported that he had carried out his instructions to search for a passage to the westward of Cape York, on the morning of June 18, but after several hours steaming



LITTLETON ISLAND AND LIFE-BOAT COVE.

WINDS EMB-CO. NY

in that direction was convinced that his better route was to regain the shore leads and to follow them to the Carey Islands.

Approaching Cape York the same afternoon the ice conditions were found entirely changed. A southwest wind, accompanied by snow, had driven extensive floes of ice into the large water space the ships had traversed the morning of that day, and with no open water in sight the *Bear* was obliged to force her way up to the land ice off Cape York, to remain there beset until the morning of June 20, shifting position continually, as the grinding floes would render each new one precarious. Several hours later the *Arctic*, *Wolf*, and *Aurora*, Dundee whalers, were seen approaching, but they failed to force their way nearer than a league of the *Bear's* position.

The *Aurora* appeared badly nipped at this time and lowered all of her boats on to the ice, as if preparing to abandon her.

During the morning of June 20 the wind shifted from southeast to northeast, with heavy snow. This shift of wind slackened the ice and released the *Bear*. The *Aurora* was eased from her nip by the same influences.

Taking advantage of this release the *Bear* forced her way to the Carey Islands after an unceasing combat of thirty-eight hours, in a blinding snow-storm, imperiled hourly by the heaviest ice and increasing difficulties of its movement.

During much of this time it was almost impossible to distinguish leads beyond a ship's length ahead. Several times during this passage the *Bear* was beset with heavy ice and was in much danger. By 7.30 p. m., June 21, the weather cleared and the Carey Islands were observed about two miles distant, north-northeast. At 9 p. m. they were reached and the ship was secured to a grounded floeberg adjacent the cache established by Sir George Nares in 1876. The provisions of this cache were sampled and found excellently preserved.

As Lieutenant Emory found here no record of Lieutenant Greely he sailed at 11 p. m., heading for clear water to the northward, indicated by a "water blink," or water sky, in that direction, and for several hours was required to force his way through the heavy and troublesome pack, but he succeeded at last in gaining open water.

Assisted by a fresh southerly gale blowing at this time, Lieutenant Emory made the best of his way to Littleton Island, where he rejoined the *Thetis* about noon of Sunday, June 22.

When the *Bear* left the Carey Islands the Dundee whalers *Arctic* and *Aurora* were seen to the southward and westward, working through the pack in the direction of Lancaster Sound.

Records for Commander Coffin were left at Littleton Island and those for Emory taken up. The Beebe cache of provisions there was increased to 1,000 rations, and both ships sailed for the north about 3 p. m., in a moderate gale. They reached Payer Harbor at 7 p. m.

and moored with ice anchors to the harbor ice that had not yet broken up.

Lieutenant E. H. Taunt with three seamen, George Yewell, Joseph Mitre, and Hugh Brock were sent to examine the cairn on Brevoort Island; Ensign C. H. Harlow with two seamen, J. W. Powers, and John Manin, to examine Stalknecht Island cache; Lieutenant J. C. Colwell, Ice Masters J. W. Norman, F. Ash, and Chief Engineer John Lowe were detailed to visit, in the *Bear's* steam cutter, the Wreck Camp cache west of Cape Sabine; Chief Engineer G. W. Melville, Dr. H. E. Ames, and Ensign Reynolds, with seaman John Lindquist, to examine the coast line at bottom of Payer Harbor. These parties were started simultaneously in order to cover the entire ground in the shortest practicable time, that no opportunity be lost to push rapidly towards Cape Hawkes, if no advice should be received of Greely at any of these cairns or caches.

About 8 p. m. cheers were heard above the roaring winds, but could not be located accurately; again, a second time, cheers were heard more distinctly. A few minutes later, however, Seaman Yewell came to me, almost out of breath, with the information that Lieutenant Greely and his party were at Cape Sabine. He handed me several records which Lieutenant Taunt had discovered in the cairn on Brevoort Island. These records were carefully read. They were found to refer to dates eight and nine months previous to my arrival, and in them the location of Lieutenant Greely's camp was described. The records are as follows;

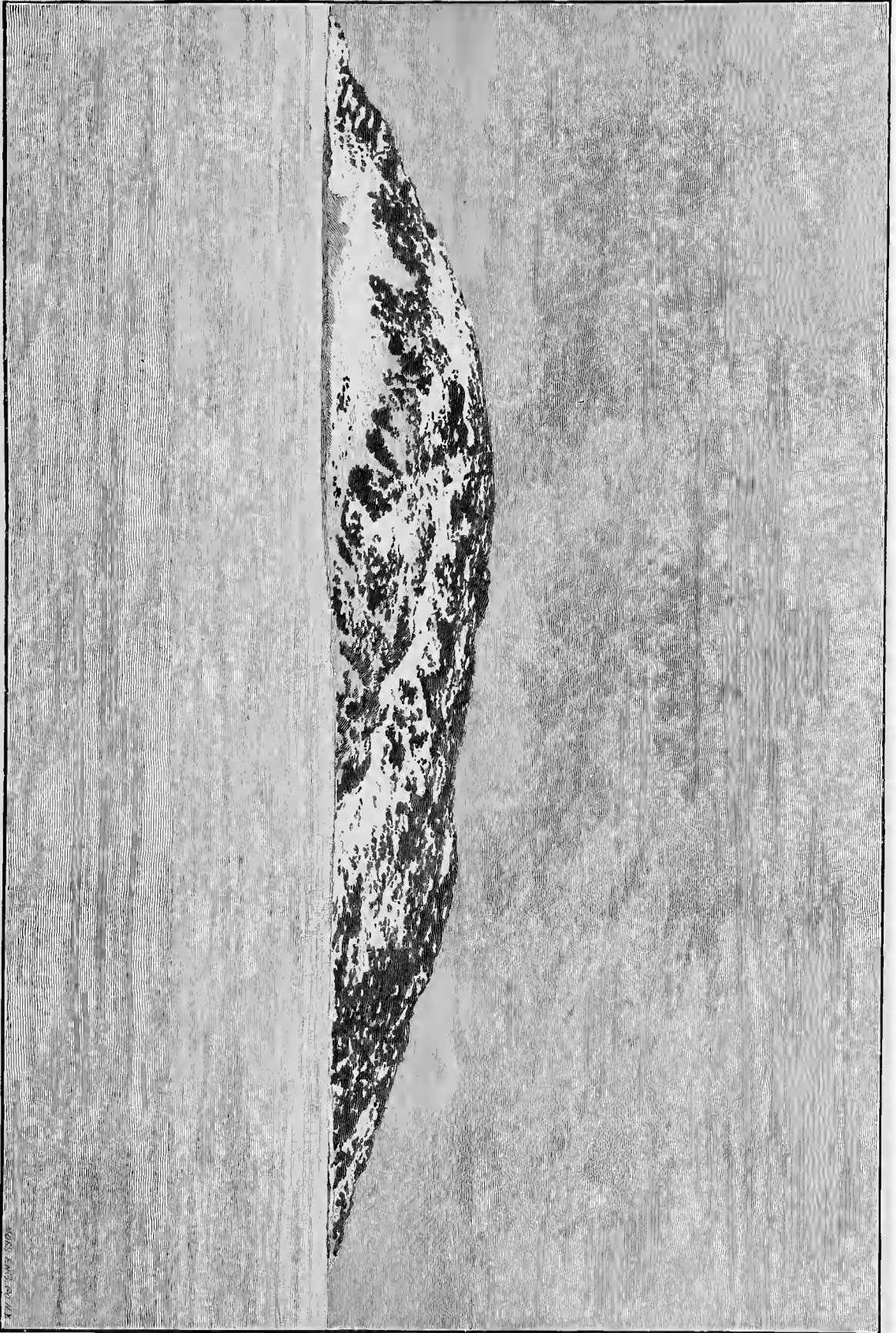
The International Polar Expedition was fitted out by the War Department of the United States, under the supervision of Gen'l W. B. Hazen, Chief Signal Officer.

Sailing from St. John's, Newfoundland, July 9th, 1881, it touched at Disco, Ritenbenk, Upernavik, Carey Islands, Littleton Island, Cape Hawkes, Carl Ritter Bay, and was stopped by ice for the first time in Lady Franklin Bay, near Cape Lieber. It landed in Discovery Harbor, August 12th. The steamship *Proteus* sailed August 26th.

The winter of 1881-'2 proved to be of remarkable severity; the corrected mean for February of a thermometer on the floe was -48. 03. Musk-ox meat was procured in large quantities and other game to less extent. Lieutenant Lockwood during the autumn explored the "Bellows" and the valley of St. Patrick's Bay and attempted in November, twenty-one days after the sun left us, to cross Robeson Channel, but was obliged by open water and heavy ice to turn back several miles from Cape Beechy.

Starting eleven days before the sun returned he examined Robeson Channel off Cape Beechy, and leaving March 1st, visiting Thank God Harbor via Capes Beechy and Lupton, returned via Newman Bay and Cape Sumner March 11th, having been detained two days by violent storm.

Dr. Pavy visited Lincoln Bay in September, established depots in Wrangell Bay in October and near Mt. Parry in November, returning on the 8th, and between March 5th and 9th, 1882, established a depot near Cape Sumner. On October 2nd he started to visit Cape Joseph Henry, but was turned back by open water at the Black Cliffs. He leaves March 18th, 1882, to reach land, if possible, north of Cape Joseph Henry. Lieut. Lockwood leaves April 1st to explore the land north and east



BREVORT ISLAND.

W. H. WOOD

of Cape Britannia. The commanding officer proposes, later, an attempt to reach the western shore of Grinnell Land via Black Cliffs Valley.

The health of the command has continued excellent to the present time. No signs of scurvy, except possibly Eskimo Jens; all well at present date (March 15, 1882). The winter has passed comfortably and pleasantly.

A. W. GREELY,
1st Lieutenant, 5th Cavalry, Act'g Sig. Off. and
Assistant Commanding Expedition.

This record is deposited by Octave Pavy, who leaving Fort Conger Oct. 27th, 1882, with party of D. L. Brainard.

Oct. 31, 1882.

Taken up Aug. 12th, 1883, by Lieutenant Greely and party going Sd. to Littleton Island.

FORT CONGER, G. L., Oct. 26th, 1882.

During the spring and summer, 1882, the following trips have been made: A. A. Surg. O. Pavy left March 19th to reach land north of Cape Joseph Henry, but returned May 4th, having found open water in the Polar Ocean, where he was for a time afloat with his party on the moving ice-pack.

Lieut. J. B. Lockwood left April 3rd and returned June 2nd, having in the mean time discovered Hazen Coast, which extends northeastward from Cape Britannia to 83° 30' N. and about 38° W. He reached 83° 24' N., 40° 46' W. No land directly north or northwest, although horizon was searched on clear days from altitude of over 2,000 feet. The coast still continued its trend to the N. E. (tr). The commanding officer penetrating the interior of Grinnell Land in April and again in July, discovered a lake about 60 miles by (8) eight, called Lake Hazen and reached Mt. C. A. Arthur, 81° 13' N., 74° 10' W., whence from an elevation of 4,500 feet a view was had on a *very clear day*. Low land to the W., S. W., and S. as far as the eye could reach. In W. S. W. in slight depression, from 75 to 100 miles distant, a range of mountains which, *possibly*, are on a land separated from Grinnell Land by a narrow strait. During August launch "Lady Greely" ran to head Archer Fiord and part way into Howgate Fiord, which latter, inland from Miller's Island, receives the water of Lake Hazen via Ruggles River. No casualties to date; all well at present. In case of no vessel the station will be abandoned August 11, 1883, the party retreating by boats along the west coast of Kennedy Channel and Smith's Sound.

A. W. GREELY, 1st Lt., 5th Cav., A. S. O. and
Assistant Commanding Expedition.

Record left by Lieutenant Greely, commanding Polar Expedition, en route to Littleton Island, with ultimate intention of reaching S. E. Carey Island.

I abandoned Ft. Conger, G. L., August 9th, 1883, at 3 p. m., with party of twenty-five, all well. Reached Cape Baird August 10 and left same evening near midnight, steam launch *Lady Greely* towing boats *Valorous*, *Beaumont*, and whaleboat. On board 5,500 lbs. coal and over forty days rations. Took up enough at Cape Craycroft to make forty-five days rations. Had foggy weather, with snow; met some ice. Reached Carl Ritter Bay about 10 p. m. Aug. 12, and took up cache, leaving at once with about fifty days complete rations, except sugar. Stopped by floe about 80° 43' N., morning Aug. 13. Took up depot of 240 rations at Cape Collinson Aug. 22nd and at one p. m., Aug. 23rd were tied up to ice-foot about two miles south of Cape Norton Shaw. Stopped by dense rubble ice, which extended as far south as could be

seen. All well at that time. Reached Cape Hawkes Aug. 26th, took up 168 lbs. potatoes, 111 lbs. pickles, 250 bread, 324 stearine. Left same afternoon and were beset that night in about 73° W., 79° 25' N. in attempting to reach Victoria Head by direct course. All well Aug. 27, 1883. No signs of a ship or of depots for us have been seen, although the shore has been carefully followed and watched. A N. E. gale forced us down to 79° 00' 06" N., 74° 45' W., when temperature fell Sept, 8th to -0.8, freezing in the party. It is the intention to abandon launch *Lady Greely* and one boat Monday, Sept. 10, and to reach Cape Sabine with two boats by sledge via Cocked Hat Island. Party all well and in good spirits at date. Have about (40) forty days complete rations. It is the intention, as soon as separation shall be safe, to send an officer and two men to Brevoort Island to obtain record, which should be there, of the movements of ship and location of depot this year. If boats have been left there it will greatly facilitate our movements and increase our chances of safety. Abandoned launch and one boat Sept. 10th, and later another boat. Driven into the middle of Kane's Sea twice by S. W. gales; once from about three miles off Cocked Hat Island, and again from about same distance from Sabine; yet later, when within two miles of Brevoort Island, driven by a N. W. gale and ice pressure to north side Baird Inlet, between Leffert and Alfred Newton glaciers of Admiralty chart or just north of Cape Patterson, Nares map. Reached land Sept-29th with one boat, 12 man sledges, 25 days rations. Party of 25 all well yet and hopeful of future. Lt. Lockwood probably starts for Sabine Oct. 1, and will deposit this record. If no rations except English are found they will be hauled away to this point, and Cape Isabella visited by sledge in hope of finding another there; as a forlorn hope, when rations are reduced to ten days, an attempt will be made to reach Littleton Island by sledge, *leaving records and cairn here with boat*; records to be not exceeding 25 feet from boat. Pendulum and duplicate records will be cached at site of English depot by Lt. Lockwood. Hope to obtain game enough to keep us alive until Feb'y., when will start for Littleton Island as soon as sun permits travelling.

A. W. GREELY,

1st Lt. 5 Cav., A. S. O. & Ass't Commanding Expedition.

Sept. 30th, 1883.

N. side Baird Inlet.

Visit Brevoort Island for maps and records in English cairn. Our party winter under desperate circumstances, in imminent danger of starvation, on N. side Baird Inlet. All well; twenty-five yet in party.

A. W. GREELY,

1st Lt. 5 Cav., A. S. O. & Asst. Commanding Expedition.

Sept. 30, 1883.

N. side Baird Inlet.

Left Lt. Greely's party at north side Baird Inlet on Oct. 1st., accompanied by one Eskimo, and arrived at Payer Harbor yesterday, Oct. 5th. Encountered great difficulty in travelling. Rosse Bay and all its ramifications entirely open and a strait found opening out to the west of Cocked Hat Island and separating Sabine from mainland; had to be followed on inside throughout its entire length.

Travelled through thick weather yesterday and did not see cache landed from wreck of *Proteus* and mentioned in Lt. Garlington's notice, but found depot of 240 rations marked by tripod all right. Boat damaged as stated. The cache of clothing opposite the place has been scattered by the bears. Two bags of hard bread found with the clothing; one partly destroyed (also some * * * *). I shall now endeavor



RESCUING GREELY AND HIS COMRADES AT CAPE SABINE.

to examine the English cache so that we may know what to depend upon, but it is now a dense fog and the ice not very secure and it is possible I may have to return to my party without the information regarding the latter cache. It is impossible for Lt. Greely and party to move with their equipment to this neighborhood until later in the season, and it is my opinion he will go into winter quarters at his present position and send for the provisions herein mentioned so soon as Rosse Bay freezes over.

I take up all records concerning us for Lt. Greely's information, as I cannot wait to make copies.

Too cold for further particulars. I start back at once.

GEO. H. RICE,

Signal Corps, Lady Franklin Bay Expedition.

Oct. 6th, 1883.

My party is now permanently encamped on the west side of a small neck of land which connects the wreck cache cove or bay and the one to its west. Distant about equally from Cape Sabine and Cocked Hat Island. All well.

A. W. GREELY,

1st Lt., &c., Commanding.

Sunday, Oct. 21, 1883.

A short time after Yewell's arrival with these records, which established the location of Lieutenant Greely and his party, Ensign Harlow signaled from Stalknecht Island, "Send five men; I have found all Greely's records, instruments, &c."

After the foregoing records found by Lieutenant Taunt had been carefully read and understood, the *Thetis* sounded three long blasts of her whistle, the signal of general recall.

Up to this moment the steam cutter of the *Bear* had not yet got away. She was ordered alongside the *Thetis*, given a flag, some pemmican, and bread.

Lieutenant Colwell, of the *Bear*, was given instructions to proceed to the Wreck Camp cache, the whereabouts of which he knew, as he had established it the year before, and if any of the party were alive to inform them that their relief was close at hand. At the same time he was instructed to administer food with the greatest care until the surgeons should arrive.

Some half hour later I went on board the *Bear* and steamed round to the Wreck Camp cache, distant about five miles from Brevoort Island.

The *Thetis* was left at Payer Harbor with orders to pick up all parties sent out to examine the cairns, caches, and coast line, and then to follow the *Bear* to the Wreck Camp cache.

The ice of Kane Sea was set off the land to the northward about a quarter of a mile by the strong southerly gale blowing at the time.

The *Bear* reached the camp about 9.30 p. m., about ten minutes after the steam cutter. The *Thetis* arrived at the camp about fifteen or twenty minutes later than the *Bear*, and thirty or forty minutes after the steam cutter.

The water about the coast being very deep, the *Bear* was run close in towards the beach.

As the steam cutter reached the Wreck Camp cache, Lieutenant Colwell, Chief Engineer Lowe, and Ice Masters Ash and Norman discovered Sergeant Long standing on the rocks, above the beach. Running in to the shore, and taking him into the cutter, they learned from him the location of the camp and the number alive. They went to it to announce to Lieutenant Greely the coming of relief. Chief Engineer Lowe returned to the steam cutter from the camp, and brought Long off at once to the *Bear*, to give me all details of the party. The others remained on shore with Greely's party.

As Long was too weak to get on board himself, he was carried up the side by the crew and placed on a chair in the saloon. Learning full particulars from him, after a few moment's conversation, I went on shore in the steam cutter immediately with Lieutenant Emory, Ensign Reynolds, Doctor Ames, and several of the crew of the *Bear*, and reached Greely's camp about 10 p. m.

Lieutenant Colwell informed me that he found the tent covering the party blown down on them, and that he had partially raised it with the assistance of Ash and Norman, and had given the survivors some small bits of bread and pemmican.

Signal was made to the *Thetis*, soon after coming up, to send more officers and men with Ensign Harlow, and the photographic instrument; also to send clothing, blankets, and stretchers.

To this signal Chief Engineer Melville, Dr. Green, Lieutenant Taunt, Lieutenant Lemly, and Ensign Harlow, of the *Thetis*, and Lieutenant Usher, of the *Bear*, responded.

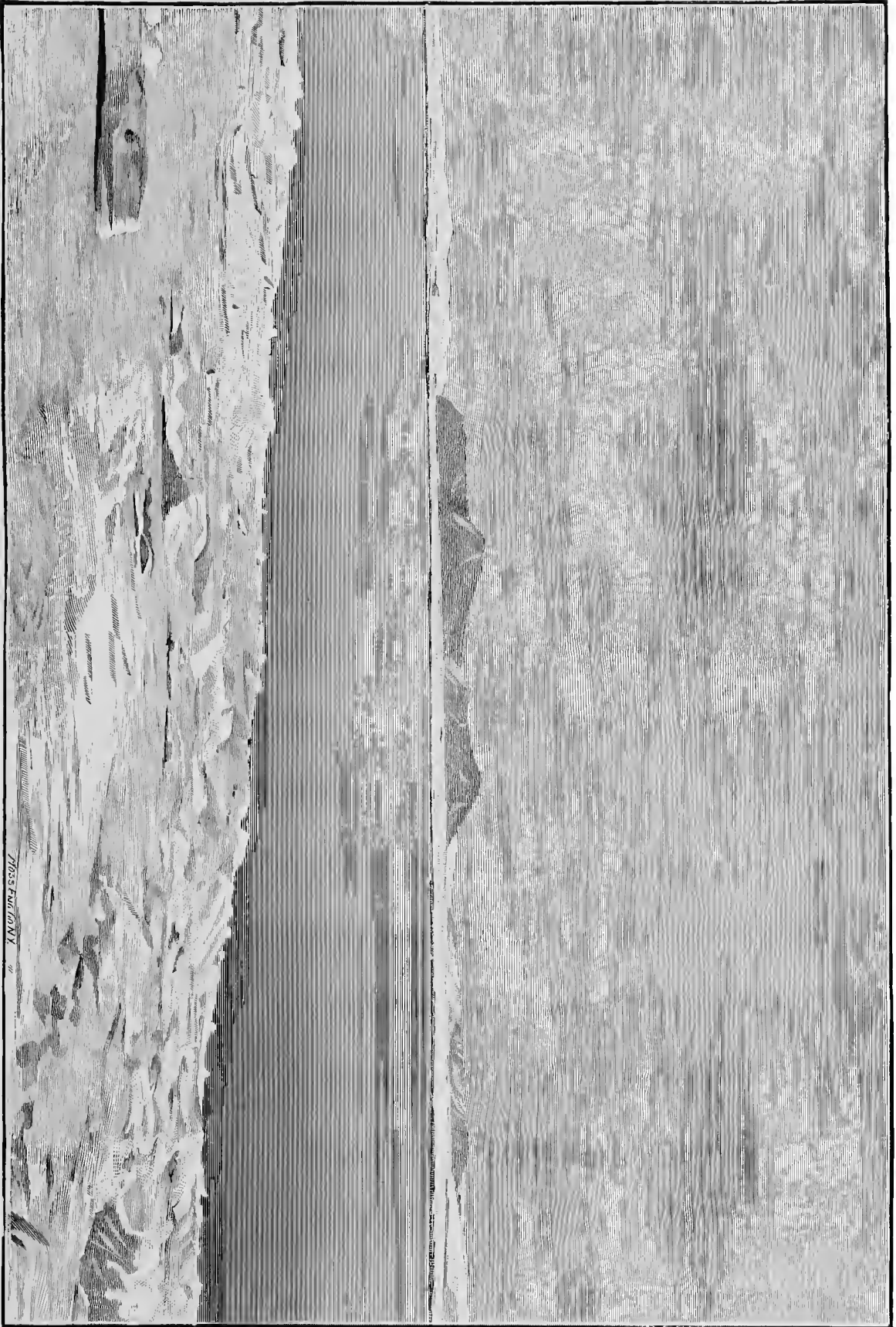
These officers were assigned various duties in connection with the removal of the living and dead, their effects, &c. The doctors were left to administer stimulants to Lieutenant Greely, Sergeant Elison, Sergeant Brainard, Hospital Steward Bierderbick, Sergeant Fredericks, and Private Connell, who were found alive in this wretched tent. Ensign Harlow photographed the tent, the burying ground on the ridge, and the winter hut in the hollow near by.

While these things were being done the camp and its surroundings were carefully examined.

It was determined at once to remove all the dead for transportation to the United States.

Lieutenant Emory, of the *Bear*, was directed to take such officers as he might deem necessary to exhume the bodies.

This order to exhume the dead included their removal, with all effects, to the *Thetis*; the careful examination of the ice-foot and vicinity of the camp for records and everything belonging to the Lady Franklin Bay Expedition. The work was so energetically and promptly performed that the ships were able to start for Payer Harbor about 3. a. m. June 23



FIELD ICE NEAR LITTLETON ISLAND.

7055. F. W. CO. N.Y.

Some time after midnight the surgeon reported the survivors were so far strengthened by stimulants and food that removal to the ships was begun ; Lieutenant Greely, Sergeant Brainard, Hospital Steward Bierderbick, and Private Connell to the *Thetis* ; Sergeants Fredericks and Elison to the *Bear*.

The gale which had blown all day increased to a hurricane during the night. Work with boats, therefore, was both difficult and dangerous. With much difficulty the ships were kept head to the wind ; the frequent squalls often drove them off, broadside to, and while in such position, without sail, their rails would be driven almost into the water.

It was in such weather that we were obliged to work to recover the living and the dead ; and although the shore was at times hardly a hundred feet away, the boats would nearly swamp in traversing that short distance.

Lieutenant Greely's permanent camp, mentioned in his record of October 21, 1883, was located nearly midway between Cocked Hat Island and Cape Sabine. It was situated about seventy-five to one hundred feet back from the beach, on a slight elevation above the water, and protected by high mountains to the southward.

When reached, the tent was found blown down, but was raised partially by the parties first reaching it. It contained all the survivors except Long. Soon after Colwell and his party reached the tent Brainard, Bierderbick, and Fredericks came out, and under their great excitement and joy insisted that they were strong enough to walk to the boat. But a short time was needed to demonstrate how mistaken they were, for after the strength gained in their excitement had subsided all were carried on stretchers to the boats, except Fredericks, who was assisted by two strong-armed seamen.

Colwell reported to me on my arrival the condition in which he had found the tent and the difficulty he had in giving food sparingly, as directed ; the conversations that had ensued between him and those rescued ; but to describe the impressive scene inside the raised tent, on my arrival with Lieutenant Emory and others, is not an easy task.

Lieutenant Greely was in his sleeping bag, with his body slightly inclined and resting his head upon his hand. Notwithstanding he had been told who we were he appeared dazed and asked if we were not Englishmen. Physically he seemed weakest, except Connell ; mentally, he appeared more vigorous than the others of his party. His mind wandered somewhat. His answers to questions appeared disconnected and at times incoherent ; occasionally he would collect himself, apparently with some effort, but would soon indicate that his memory was indistinct. Pausing for a moment, as if reflecting, he would say, "I am so glad to see you," and almost immediately afterwards, "Those lemons your wife so kindly put up for us," &c.

He had lain for weeks in his sleeping-bag, on account of gradually failing strength ; was unable to stand alone, and was almost helpless, except in a sitting posture ; all pain of hunger had ceased ; his appearance was wild ; his hair was long and matted ; his face and hands were covered with sooty, thick dirt ; his form had wasted almost to a skeleton ; his feet and joints were swollen ; his eyes were sunken, and his body scantily covered with dirty and almost worn-out garments, which had not been changed for six or eight months.

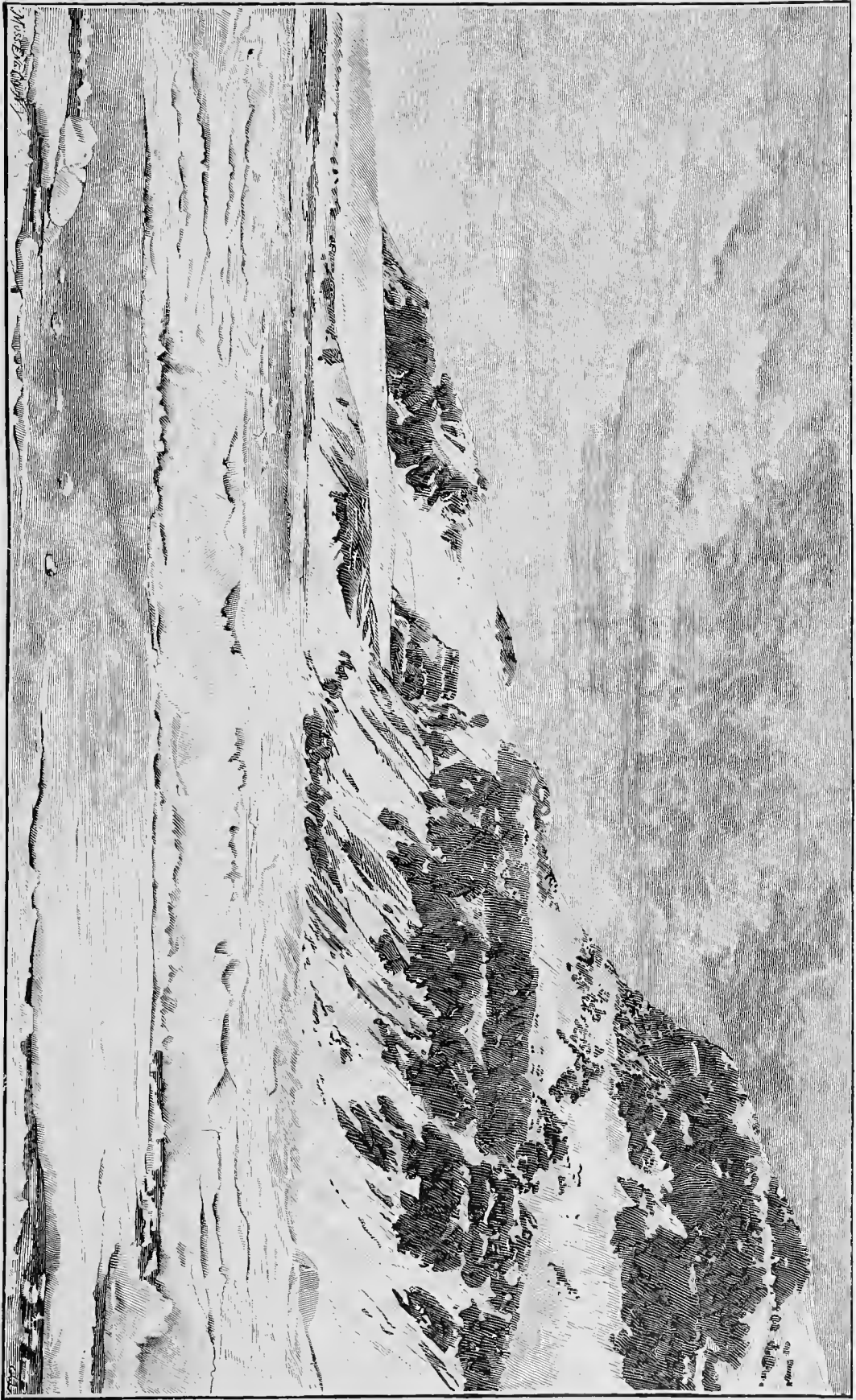
Private Connell's condition when found was desperate and critical. He was speechless and was breathing with difficulty. He was cold almost to his waist. His eyes were fixed and glassy in appearance. Stimulants were administered by the surgeons after their arrival with considerable difficulty, although Colwell had ventured to anticipate them on account of his extreme condition. His heart was pulsating irregularly ; his temperature was quite low, while his face was swollen beyond recognition. From his eyes and the corners of his mouth offensive humor was emitting. He was virtually saved from the jaws of death.

Poor Sergeant Elison was found in his sleeping-bag, in which he had lain helpless for months, with his hands and feet frozen and sloughing away. His comrades had secured a spoon to the stump of his right hand that he might feed himself. Otherwise he was in better condition than most of the party, from the fact that his companions had doled out to him from their scant allowance of food during the latter period of greatest distress on account of his complete helplessness to add anything to his pittance by hunting about the rocks for lichens, or by catching shrimps. He suffered less waste of strength than the others, and if the rescue had been delayed another forty hours he would in all likelihood have been the only one left to tell us the tale.

This case of Elison, under the most desperate circumstances, impressed me as worthy of brave and generous men who had been found suffering and dying together.

Sergeants Brainard and Fredericks and Hospital Steward Bierderbick were all extremely weak and unable to stand without assistance for any length of time. Such was their condition that they no longer dared venture away from the immediate vicinity of the camp to seek food, nor to collect lichens or catch shrimps upon which they had to depend to a great extent to sustain their lives. Like Greely, they were swollen, and beyond recognition. They were covered with sooty dirt ; had not changed their worn-out clothes nor washed for eight months.

Sergeant Long's office of hunter for the starving party had made it necessary to increase his allowance somewhat over that of the others to maintain his strength that he might continue to the last his battle for food and life to the other helpless ones. Yet, in his case,



ICE JAM NEAR NORTHERBERLAND ISLAND.

the effect of continued and anxious effort had told its story in his wasted form. Shorter and shorter daily journeys were made during the good weather of that region, while in bad weather, so frequent there, he found his strength unequal to braving winds, storms, and cold. Like the others, he was giving up the battle, and his strength was so much impaired when he heard the sound of the joyful recall signal whistle of the *Thetis* that enough only was left to enable him to stagger out to the rocks overlooking Kane Sea to discover if that signal proceeded from ships in sight.

His first visit was a bitter disappointment, as he saw nothing. A second visit, made some fifteen minutes later, under great difficulties, brought him within 50 yards of the *Bear's* steam cutter, and in view of the relief ships coming around Cape Sabine. When the steam cutter ran into the beach where Long was seen he walked and rolled down the ice-covered cliff and was taken into the cutter. He informed Lieutenant Colwell that the location of the camp was just over the cliff, and that only seven men were alive, including Lieutenant Greely.

The experience of the rescued, gained during the latter part of the long and desolate winter while watching their dying comrades as one after another had passed away forever from amongst them, taught the few remaining that their swollen joints and faces had a significance that could not be mistaken. These same symptoms had come to all of those who were now dead about forty-eight hours before dissolution. It indicated to the survivors but a short lease of life if no rescue came, probably not much more than forty-eight hours.

During the last few months the rescued party had survived upon boiled strips of seal-skin, cut from their sleeping-bags and clothing. Shrimps boiled with them formed a gelatinous mass of repulsive substance, that sustained without strengthening them. Supplementing this mass with lichens which grew about the rocks, those rescued managed to maintain themselves for several weeks, though when the camp was reached a supply for some forty-eight hours only was found.

About the camp were strown various articles of cast-off clothing, broken camp equipage of all sorts, the bow of a boat which had been used as fuel, and débris of all kinds. Each one, however, had carefully wrapped and marked what valuables remained to him after their desperate struggle. They were to be opened by friends at home if, perchance, death should come before rescue.

The conditions of the surroundings of this wretched camp were in keeping with the scenes inside and about the tent—desperate, desolate, and abandoned. The bleak barrenness of the spot, rarely visited by Arctic fowl or animal; the row of graves on a little ridge a hundred feet away, with protruding heads and feet of those later buried, were a sad and silent witness to the daily increasing weak-

ness of the little band of survivors; the deserted winter quarters in the hollow below, with its broken wall, invaded by the water from the melting snow and ice about it; the dead bodies of two companions stretched out on the ice-foot that remained; the wretched apology for cooking utensils, improvised by them in their sore distress, hardly deserving the name; the scattered and worn-out clothes and sleeping-bags of the dead; the absence of all food, save a few cups full of boiled seal-skin scraps; the wild and weird scene of snow, ice, and glaciers overlooking and overhanging this desolate camp, completed a picture as startling as it was impressive.

It was more startling and deeply pathetic than I had ever dreamed could be possible. In beholding it and pondering over what had taken place about me, the suggestion occurred that if the expedition's service had demonstrated any one thing more than another, it was that an hour had its value to at least one of the rescued party.

From this scene it was necessary to turn to the duty to be performed while the gale was still holding the floe ice off the land. About 1 p. m. the survivors were sufficiently strong to be carried on stretchers to the steam and other cutters, and were taken on board the ships during the fury of the gale. The surgeons and myself accompanied them. Lieutenant Emory was left on shore to exhume the dead and to bring off everything belonging to the expedition found in or around the camp. I did not return to the camp again. The dead were buried on a ridge back of the camp, distant from it perhaps fifty yards.

The bodies of Privates Henry and Schneider were found on the ice-foot west of the camp, the former distant about fifty, the latter about one hundred and fifty yards.

In exhuming the bodies, one at a time was taken up and wrapped in blankets. Tickets or tags of canvas were sowed to them, marked in the order of exhuming them, 1, 2, 3, &c.

Lieutenant Emory drew a plot of this burying ground, with the numbers of the graves marked in order of exhuming. This plot was subsequently submitted to Sergeant Brainard, who had superintended the burials. The names of the dead corresponding to these numbers were marked under them. Their identity was complete.

The bodies were carefully wrapped up and stowed in one of the dories on board the *Thetis*. They were covered with ice and guarded until tanks could be prepared to hold alcohol. This was done three days afterwards, when six of the bodies were transferred to the *Bear*. All the bodies were then placed in alcohol in the tanks, and so carried to St. John's, Newfoundland.

The orders to Lieutenant Emory were carried out with such promptness and dispatch, that by 3 a. m., June 23, the bodies of all the dead, as well as all records, instruments, clothing, and relics found in camp, were on board the *Thetis* and *Bear*. Both ships



ICE-FIELD IN SMITH SOUND.

then steamed back to Payer Harbor, in order to give officers and men a few hours' sleep and rest after their hard work and exposure for the preceding twenty-four hours.

Lieutenant Greely and Sergeant Brainard, being much improved by 10 a. m., of June 23, informed me officially (the former referring me to his diary in verification) that seventeen men of the Lady Franklin Bay Expedition had perished by starvation, and that one had been drowned while out sealing. The names of the dead, with date of death, follow:

Name.	Date of death.	Name.	Date of death.
Sergeant Cross	January 18, 1884.	Private Whistler.....	May 24, 1884.
Frederick Christiansen (Eskimo)*	April 5, 1884.	Sergeant Israel.....	May 27, 1884.
Sergeant Linn	April 6, 1884.	Lieutenant Kislisbury	June 1, 1884.
Lieutenant Lockwood.....	April 9, 1884.	Corporal Salor.....	June 3, 1884.
Sergeant Rice	April 9, 1884.	Private Henry.....	June 6, 1884.
Sergeant Jewell	April 12, 1884.	Doctor Pavy.....	June 6, 1884.
Jens Edward (Eskimo).....	April 24, 1884.	Private Bender	June 6, 1884.
Private Ellis	May 19, 1884.	Sergeant Gardiner	June 12, 1884.
Sergeant Ralston	May 23, 1884.	Private Schneider	June 18, 1884.

*Buried at Godhaven, in compliance with the request of the Inspector of North Greenland.

The bodies of all the dead were recovered except that of Jens Edward, Eskimo, who was drowned while sealing, and those of Sergeant Rice, Corporal Salor, Private Bender, Sergeant Gardiner, and Doctor Pavy. These bodies, having been buried in the ice-foot, were swept away by winds and tides before my arrival. No trace of them could be discovered, although the vicinity was carefully searched.

At 11 a. m., June 23, I sent Lieutenant Emory, with the *Bear*, back to the wreck camp. Lieutenant Sebree, Chief Engineer Melville, and a number of men from the *Thetis* were detailed to accompany him in order to make another search more extended than that of the preceding day, and to include the coast from the ice limit, half mile west of the camp, up to Cape Sabine. This search lasted several hours, but added nothing to that made the previous day. During the *Bear's* absence Lieutenant Greely's records and the standard pendulum were brought to the *Thetis* from Stalknecht Island.

About 5 p. m. the *Bear* returned to Payer Harbor. She barely escaped the crush of ice against the land in the vicinity of Cape Sabine. The wind having slacked up, the ice in Kane Sea moved to the southward.

After the *Bear's* return both ships sailed from Payer Harbor to Littleton Island, passing Baird Inlet, but found all the ice swept out to sea. We reached Littleton Island about 6.30 p. m., and transferred six of the dead to the *Bear*, with instructions to prepare them

for transportation in alcohol to St. Johns, Newfoundland. We were driven from Payer Harbor by the ice from Kane Sea setting down outside the harbor.

The tanks having been prepared by June 25, the bodies of the dead were transferred to them. Dr. Green, Chief Engineer Melville, and Ensign Harlow, of the *Thetis*; Dr. Ames, Lieutenant Crosby, and Lieutenant Colwell, of the *Bear*, prepared the bodies in the following manner: From each body the clothing was removed. It was then wrapped in strips of cotton cloth from head to foot, backwards and forwards several times. Cotton sheeting was then used to cover the whole, cut to fit the form of the body. Wrapped in this way, the body was placed in the tanks and secured against movement when ramming ice or when rolling in the passage after leaving the ice. This arrangement was temporary, and would not answer when making the passage beyond St. John's, Newfoundland.

In preparing the bodies of the dead for transportation in alcohol to St. John's, Newfoundland, it was found that six of them (Lieutenant Kislingbury, Sergeants Jewell and Ralston, Privates Whistler, Henry, and Ellis) had been cut and the fleshy parts removed to a greater or less extent with a view no doubt to use as shrimp bait. All other bodies were found intact.

When the bodies of the dead were exposed in preparing them their identification was found to be complete. Some of them could be recognized by aid of a picture taken with us from home. Others, whose features had decayed, were identified by other characteristics. I am, therefore, satisfied that no mistake was made in this important matter, which so impressed us from the beginning.

Both ships remained at Littleton Island until 5.55 a. m., June 24, to deposit a record in the Nares cairn for Commander Coffin, informing him of the result of the expedition, and ordering him to Upernavik or Disco, where the *Thetis* and *Bear* were to await his arrival. This concluded, and the wind having hauled to the northward, sending the ice down upon the ships, we steamed to Foulke Fiord, until the ice, moving down Smith's Sound, obliged us to move southward, to avoid being caught in the pack.

At 2.35 p. m. both ships started southward towards Northumberland Island, and meeting very heavy ice we attempted to reach a position on its northern side, but to do so we were obliged to pass through a field of icebergs for twenty-four miles, packed closely together. The difficulties of navigating in this mass of ice were much increased by dense fog and snow. Continuing onward, however, we arrived about 11.25 p. m., but were beset for the remainder of that night in the heavy pack between Northumberland and Hakluyt Islands.

The following morning, June 25, at 10 a. m., the ice opened somewhat, with water spaces here and there. Both ships then succeeded



ICE-FIELD NEAR CAPE YORK.

in working out of this heavy ice pack around the north side of Hakluyt Islands, into a small space of open water on its southwest side. Here we were detained until 3.30 p. m. before the ice permitted us to ram our way into open water, under the south side of Northumberland Island, where we arrived about 5.30 p. m., when both ships came to anchor on the edge of a large floe piece. All leads were closed to the southward across Whale Sound. This position was much exposed and the ships in much danger should any northerly movement of the tide set the heavy floes against the south side of Northumberland Island. The utmost vigilance was necessary to detect the slightest opening in the ice across Whale Sound to effect escape into more open water and to a less exposed situation. At 7.30 p. m. the tide changed, and fortunately there was but little wind. The opening, as expected, began at this time, and both ships were pushed into a lead near by, though it required some heavy ramming for a distance of 6 miles to reach the open water that had made with the change of tide under the land in the direction of Cape Parry, where both ships arrived about midnight.

A cairn was erected on the top of Cape Parry, in the most prominent position to be seen in passing north or south. Orders and news were left in this cairn for Commander Coffin.

At 3 a. m., June 26, got under way and steamed towards Wolstenholm Island through a narrow lead. At a point near that island we fell in with the Dundee whalers *Jaen Maen*, *Esquimaux*, *Cornwallis*, *Narwhal*, *Triune*, *Nova Zembla*, and *Polynia*, and announced to most of them the news of the rescue of Lieutenant Greely and six of the Lady Franklin Bay Expedition. This was done in order that they might not continue on into the dangers of Smith's Sound or be led farther north, if they had so intended, in view of the reward offered by Congress for the rescue of Lieutenant Greely and his comrades. This was eight days after we had passed Cape York.

In connection with these splendid sailors of the Dundee fleet I would state to the Department that they were most cordial to me during the interval of time when the ice conditions of Melville Bay kept us together. From them a vast amount of useful information touching the navigation of this region was obtained, which aided greatly, and increased my confidence much, in pushing the expedition into the perils of Melville Bay at that early period of a very close and unfavorable season. At both Disco and Upernavik the governors informed me that the season was the closest and severest for thirty years.

In their behalf I am glad to say that their appreciation of the desolate situation of Lieutenant Greely and his party in the Arctic regions inspired them, as it did us, with a determination to assume any risk necessary to reach the imperiled party. If the expedition had met

with accident some of these noble men would have reached Greely, though, as the sequel has demonstrated, too late to have saved the few survivors we had the good fortune to reach in time.

Continuing onward we reached the land ice near Saunders Island about 9 a. m., June 26, and both ships were secured to it with ice anchors. On account of a very low barometer, 29.10 inches, and strong northerly wind then blowing, I remained at this point until 7.30 p. m. in order to avoid being caught in a more exposed position in the heavy ice floes south of it.

Notwithstanding this low barometer the weather continued fine. Another move was made towards Conical Rock and Cape York. Very heavy ice was met in passing Cape Athol and the Petowik Glacier. Towards midnight of the same day the wind hauled suddenly to the southwest and packed the ice so densely that it was found impossible to reach Conical Rock. Both ships were, therefore, secured under the lee of small bergs. Securing this ship in a strong tideway she collided with a berg and lost a part of her head booms.

At 3.30 a. m., June 27, the iceberg to which the *Thetis* was fast pivoted round and exposed the ship to very heavy floe ice driven by wind and tide up Smith's Sound.

As the *Bear* appeared to be more secure under the lee of a steadier berg the *Thetis* steamed over and sent a line to her to hold on by. The wind freshened up and her ice anchors slipped, so that both ships were obliged to keep under way during the rest of the night, holding the largest open water space available until a favorable lead opened toward Conical Rock about 4.30 a. m. Steaming through this lead Interpreter Hans Hansen, Eskimo, of the *Bear*, bounded over the rail and attempted to reach the Petowik Glacier by crossing over the ice floes. After an exciting race to cut him off we succeeded in capturing him an hour afterwards. It was discovered that he was somewhat out of his mind. He was landed and discharged at Upernavik at the request of Governor Elberg.

Conical Rock was reached at 7 a. m., and both ships were secured to grounded bergs on its north side. Orders and news of Lieutenant Greely's rescue were left for Commander Coffin in the cairn we had built in going north.

By 9 a. m. the weather had so much improved that both ships got under way and steamed through tortuous leads, ramming their way in a number of instances through the pack ice nearly up to Cape York, when dense fog, with occasional snow, set in.

Abreast, and to the westward, of Cape York a formidable ice barrier was met, which forced the ships to the westward about 18 miles, in order to gain more advantageous leads. During this detour, in foggy weather and in snow squalls, it was often almost impossible to distinguish leads, but after some hours of anxious work



COMMANDER G. W. COFFIN, U. S. N., COMMANDER OF THE ALERT.

we succeeded in working our way back into open water to the eastward of Cape York, near the Bushnan Islands. The *Thetis* during the fog brought up solidly at 10 p. m. against the land ice in a bight, and ran half her length on to the ice.

As no advantage was to be gained by searching for favorable leads in such weather, both ships were secured to the land ice to await the clearing up. Surgeon Green reported to me that Elison's mental condition was unfavorable and gave him serious apprehensions.

During the night the wind hauled to the eastward, though very light. The weather cleared sufficiently by 9 a. m., June 28, to enable us to see open water to the southward of our position in the vicinity of the grounded McClintock bergs, which lie some 30 miles southeast of Cape York. Both ships got under way and steamed to the southward, but changing tide and freshening wind from southward obliged me to secure both ships, at 1 p. m., to the land ice between two enormous icebergs to await a favorable opening in the ice. We were detained at this point until 7 a. m., of June 29, before the wind had died away sufficiently to allow the ice to slack. Both ships then got under way and were driven eastward under full speed, in order to gain every inch, for it was evident that unless the utmost vigilance was maintained, to take advantage of every favorable condition, we should have to encounter the same difficulties, the same anxieties, and the same perils in recrossing Melville Bay that had been encountered in working north. At a number of points where it was important to break through into the open water along the land ice the ships were driven at high speed, and in every instance succeeded, though it demanded much caution to avoid serious injury. At 11 p. m. we had gained about 80 miles to the eastward, and, finding all leads to the southward closed, both ships were secured to the land ice in a narrow canal of open water, which the closing floes had left as a dock. Before securing them for the night it was attempted with the *Thetis* to ram a way out at full speed, but the ship came up solidly as against a wall of granite and knocked down every one about decks. I was nearly thrown from the "crow's nest" by the shock, The ship rebounded some twenty feet. The barrier was found to be impassable.

The wind being light from the westward and hauling to the eastward, at 3.30 a. m., June 30, both ships got under way again and steamed through an open lead for a distance of five or six miles, passing scores of enormous icebergs. Some heavier ice was fallen in with and both ships were obliged, at intervals, to ram their way from lead to lead. Working thus until about 10 a. m., amid heavy floe ice and pieces of broken icebergs, the *Thetis* was beset near a cluster of icebergs. Attempting to free her by backing to gain more room to charge the floes ahead, her injured rudder-head was twisted

off by collision with smaller floes closing in astern of the ship. This new damage was repaired in about two hours by Lieutenant Sebree, and both ships continued their way towards the Devil's Thumb and the Sugar Loaf Mountain, prominent points of departure in crossing Melville Bay. Near the latter point the *Alert* and *Loch Garry* were fallen in with about, 7.30 p. m., beset in the ice pack. The *Thetis* and *Bear* broke their way up and released them. Orders were given Commander Coffin and Ensign Chambers, of the *Loch Garry*, to follow the *Thetis* and *Bear*, in line ahead. By 9 p. m. all leads to the southward had closed up under the influence of the flood tide and a southerly wind. Dense fog soon obliged all vessels to come to with ice anchors to a large ice floe to await clearing weather.

Commander Coffin reported on board and delivered our mail. He informed me that he had sailed from New York May 10, and had reached St. John's May 19, in obedience to the following orders :

U. S. S. THETIS,
Navy-Yard, New York, April 30, 1884.

SIR: The *Alert* being one of the vessels of the expedition of 1884 for the relief of Lieutenant Greely, at Lady Franklin Bay, you will take on board, with the utmost dispatch, the stores and other equipments now ready, and proceed with her under your command, at the earliest moment to St. John's, Newfoundland, thence to Godhaven, Upernavik, and Littleton Islands, on the west coast of Greenland.

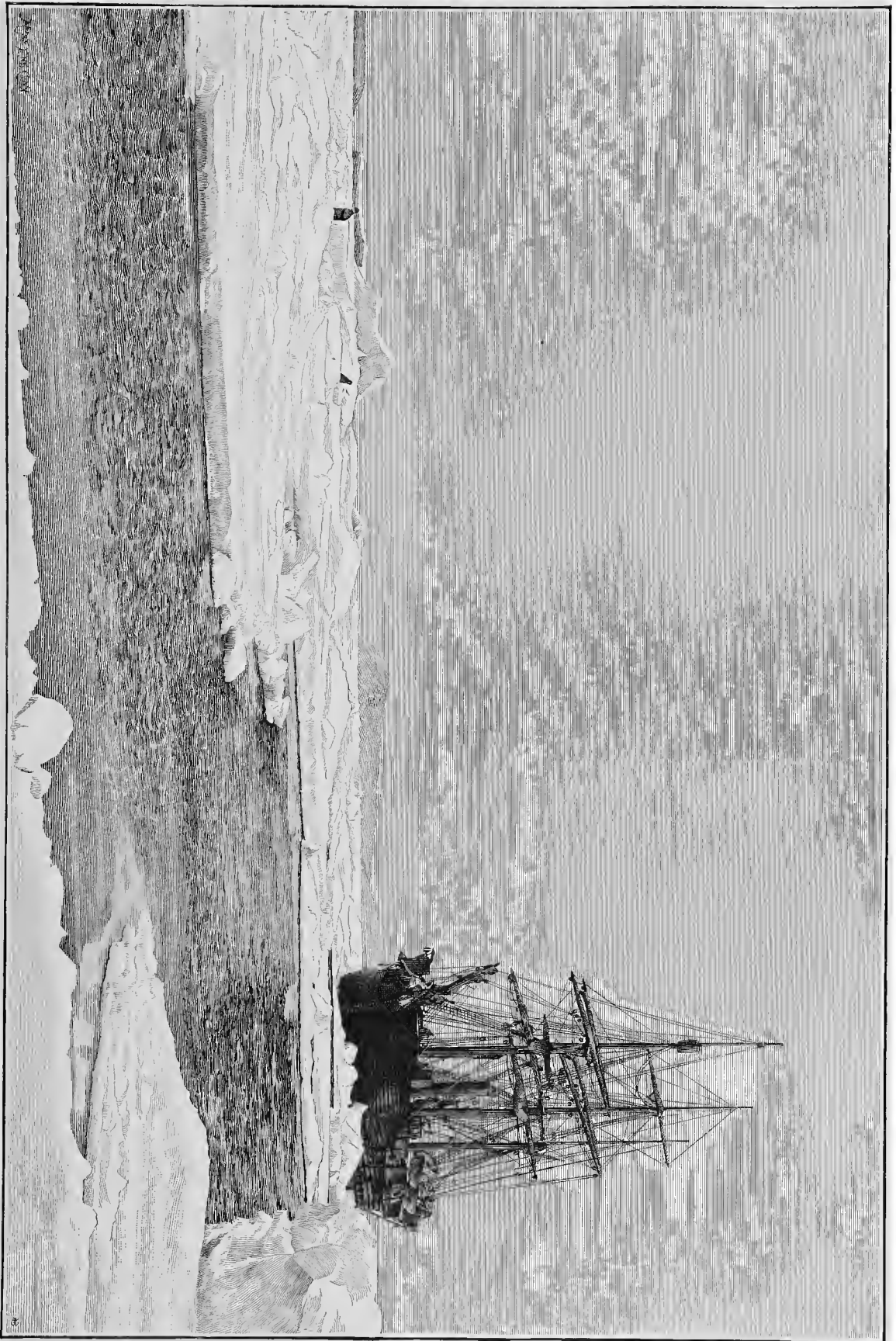
Your stay at St. John's will be limited to the time necessary to replace the coal used in making the passage, and to receive two pairs of seal-skin boots and one Elsinore cap for each person on board; at Godhaven and Upernavik to communicate with the Danish authorities for information as to the movements of the advance vessels, and to procure an Esquimaux interpreter, whom you will probably find awaiting your arrival. Thence you will proceed to Littleton Island, at the entrance to Smith's Sound, touching *en route* at Conical Island, Cape Parry, and Cape Alexander, where you will find cairns erected containing information for your guidance.

Should you find, on your arrival at Littleton Island, which ought to be about the last week in June (if practicable), the *Thetis* and *Bear* absent to the northward, you will organize a sledge party, consisting of at least eight persons, with provisions for forty or fifty days, instructing the officer in charge to search the east coast of Kane Basin to the vicinity of Humboldt Glacier, for information regarding Lieutenant Greely or any of his party, and to return by September 1, at the latest.

This done you will proceed with the *Alert* to Foulke Fiord, distant some 4 or 5 miles, where you will land and erect the house provided at New York for the purpose, storing in it all the provisions possible, leaving in your vessel only enough to enable you to reach New York; land about 40 tons of coal, and place in charge of one officer and two men, furnishing them with three guns, 2,000 rounds of ammunition, one whale boat, and White's steam cutter, fully equipped.

To facilitate the erection of the house drawings will be furnished you, in which every timber is marked and showing how each is to be placed, and to avoid confusion you will confer, together with your executive officer and carpenter, with the constructor at the yard for explanation of the same.

At Foulke Fiord you will probably find a transport coal steamer; from her you will take what coal may remain of the 500 tons carried for the ships of the expedition, after landing the 40 tons for the use of the house.



ALERT BESET BY ICE IN MELVILLE BAY.

This steamer will have on board an officer and two seamen of the Navy, and when ever in your judgment it shall be safest to do so, you will order her return to St. John's, Newfoundland, with dispatch, giving written instructions to the naval officer on board to report his arrival at that port to the Secretary of the Navy.

During your stay at Foulke Fiord, which should continue until about September 10, you will keep a vigilant lookout to the northward for signals from the advance ships; should nothing be observed of them from Littleton Island by the date indicated, you will proceed with your ship to Cape Sabine to make further observations for signals, thence south to Upernavik or Disco, stopping at Cape Alexander, Cape Parry, and Conical Island to leave record of your movements.

At Upernavik or Disco, as may be most favorable, you will remain until about September 25 for possible news from the advance ships; thence you will proceed to St. John's, Newfoundland, reporting your arrival to the Secretary of the Navy, and making a detailed report of all that concerns your doings and those of the advance ships, so far as they may be known to you.

The region over which you are to pass after leaving the latitude of Cape Farewell is not accurately surveyed, so that its safe navigation will depend much upon your judgment and vigilance; should your cruise, therefore, enable you to add to the accuracy of the charts, or to increase our information as to its hydrography, it is desired that you will avail yourself of all opportunity for doing so.

From the outset of your cruise you will maintain the strictest vigilance over the navigation of your ship, and you will prescribe such inspections of her, day and night, as will guard against casualty from fire. When the region of ice shall have been reached, you will keep at least sixty days' rations where they can be most easily reached in the event of a nip or the abandonment of the ship.

"Fire quarters" and "abandoning ship" will be your only exercises, and they will be frequently practiced; the rubber knapsack provided must be kept packed with a complete shift of clothes and kept hanging in the quarters of officers and men, so as to be easily reached in case of emergency.

It is hoped that your departure from New York will not be later than May 10, in order that you may reach Littleton Island not later than June 25, to carry out the instructions directed at that point and at Foulke Fiord.

Should you leave the party at the depot to be established at the latter place, you will direct them to set up the instruments sent you by the Chief Signal Officer of the Army and to make the observations requested by him, to be recorded on the forms transmitted with the instruments.

The signals from the advance ships will be by heliographic instruments, and the code used in the Army known as "Meyer's system" will be followed.

Direct the surgeon of your vessel to take charge of the expenditure and account of all provisions and clothing in accordance with established forms, and direct him to make out a daily bill of fare for officers and men.

Use the strictest economy in the expenditure of coal and direct your chief engineer to weigh accurately, each day, the amount used by the engine and by the stoves.

Money will be furnished you before leaving New York to defray necessary expenses after sailing; in all expenditures of it you will execute triplicate vouchers, forwarding originals and duplicates from St. John's to the paymaster of the *Columbia* at New York, and retain the triplicates on board. The commercial code of signals will be used, instead of the Navy code, in all flag signals between the ships; for distant signaling the heliographic signals will be used.

Before leaving New York and St. John's you will institute a strict medical examination of your crew, and any men found disqualified will be returned to the receiving ship *Columbia*.

Transmit a complete muster-roll of your crew, before sailing, to the Bureau of

Equipment and Recruiting, and a list of your officers to the Bureau of Navigation ; report also any changes which may take place in either at St. John's.

Wishing you a pleasant cruise, I am,

Very respectfully, your obedient servant,

W. S. SCHLEY, *Commander, U. S. N.,
Commanding Greely Relief Expedition.*

Commander GEORGE W. COFFIN,
*Commanding U. S. S. Alert,
Greely Relief Expedition.*

He had stowed on the spar deck of the *Alert* the two houses intended as winter quarters at Foulke Fiord, where it was intended to maintain a supply of stores upon which to fall back if disaster should overtake the advance ships. Of provisions and clothing he had a full two years' supply.

The *Alert* sailed from St. John's May 22, and reached Godhaven June 5, having fallen in with drift and floe ice near the latitude of Cape Farewell. During this passage she had the usual bad weather of the higher latitudes, but was not delayed by the ice until within 4 or 5 miles of Godhaven, where it was met too thick to yield to her poor ramming power.

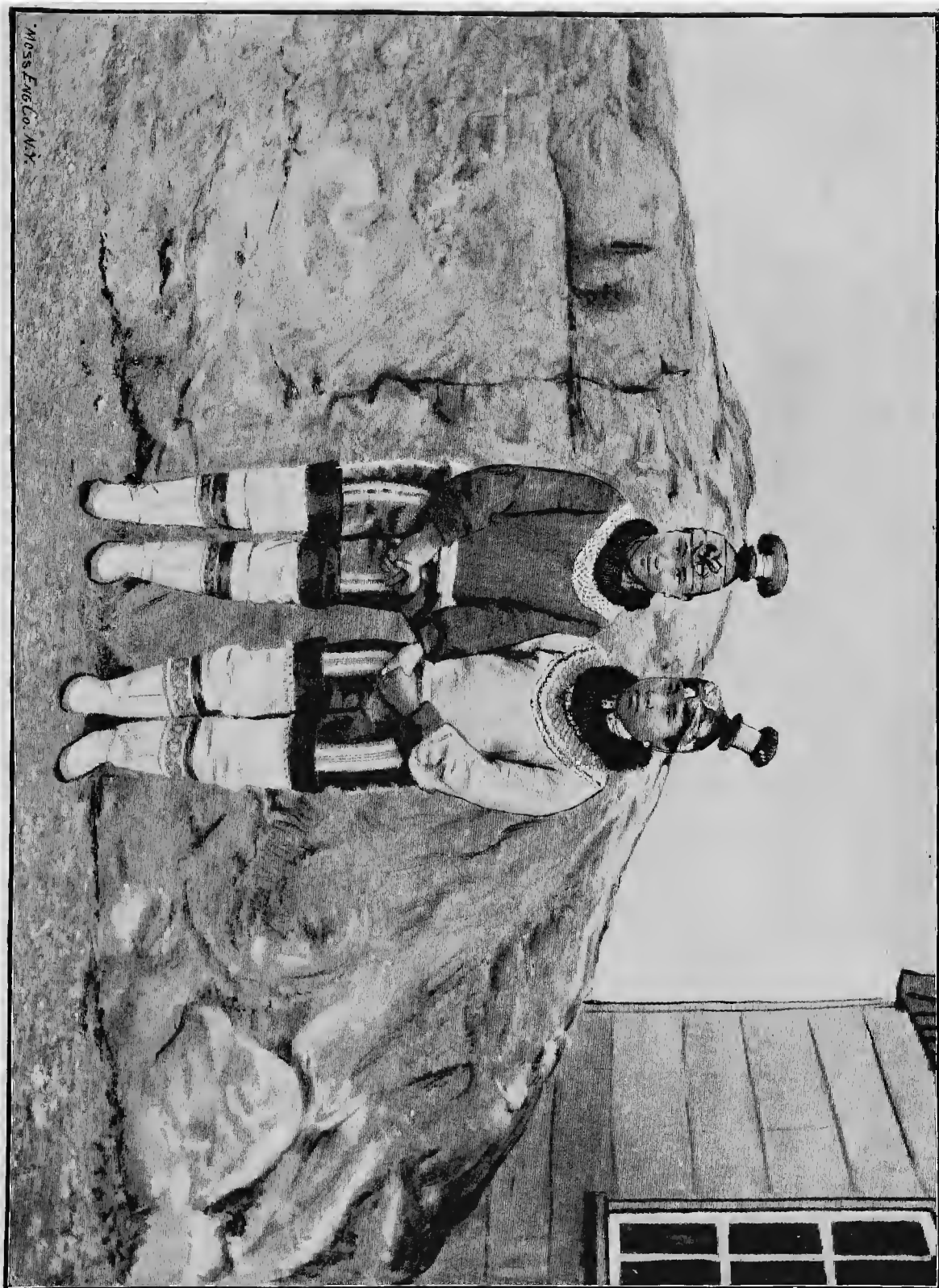
While at Disco Commander Coffin took on board twenty-five Esquimaux dogs, purchased by the Inspector in accordance with Lieutenant Garlington's order, and engaged for the cruise Nils Jensen, as dog driver.

While at Godhaven the *Alert's* crew were exercised at "abandoning ship;" on such occasions every person was landed on the ice and her boats hauled out with thirty days' provisions. Practice was also had with torpedoes and ice tools during the necessary delay in this port until June 9, when she got under way for Upernavik. Finding the drift ice from Waigat Straits had closed the land water for a distance of 12 or 15 miles off-shore, the *Alert* was obliged to battle for five hours with it to gain open water.

From Disco to Upernavik the *Alert* had much the same weather and experience as the *Thetis* and *Bear*. Her way was through dangerous leads and past heavy icebergs; the difficulty of the ordinary navigation of this region was increased by fogs and snow storms. Some slight changes in the ice gave her the choice of a route closer to the land beyond Omenak Fiord. She arrived at Upernavik near midnight June 13.

The *Loch Garry* was found at Upernavik awaiting the arrival of the *Alert*, but as she was a simple iron vessel not fitted for navigating in heavy ice Commander Coffin was obliged to delay his departure until the conditions of the ice north were more favorable to the collier's safe passage.

The delay at Upernavik enabled the *Alert* to fill her bunkers and to take a quantity of coal on her deck as a precaution against disaster



Moss Eng Co. N.Y.

BELLES OF UPERNAVIK.

to the collier. Commander Coffin would have been able to leave from his ship a full amount at Foulke Fiord with the house.

The *Alert* and *Loch Garry* sailed from Upernavik June 19, meeting with much difficulty from heavy ice, but succeeded in reaching the Berry Islands, where all leads had closed. The larger floes and heavier ice obliged them to come to with ice anchors to await a movement of the ice. June 24 a southwest gale sprang up and made it advisable to cut a dock for the *Loch Garry* after the plan of that described by Commander Markham.

Two hours finished the work and the docking of the ships. The ice was about 4 feet thick.

The gale ceased June 25, and both ships took advantage of the opportunity to work north, following the inshore leads past Horse's Head, Cape Shackelton, Baffin and Duck Islands until up with the Sugar Loaf, where solid ice again stopped them. During the 26th and 27th the *Alert* worked continuously day and night to gain only 8 miles. She reached latitude $74^{\circ} 30' N.$, and was within the dangerous navigation of Melville Bay.

At this point the *Thetis* and *Bear*, returning across Melville Bay, came up with the *Alert* and *Loch Garry*. Their movements from this point to Upernavik are the same as those of the *Thetis* and *Bear*.

The *Alert* having so much less engine power than either of the other ships, Commander Coffin was obliged to resort to docks to avoid nips, or to torpedoes to open the ice, or to leave it when beset. Such difficulties were usually rammed by the *Thetis* and *Bear*, with their greater power. Commander Coffin was obliged to move with greater caution on account of the *Loch Garry*, and was forced on several occasions to return, after passing into leads, to free the collier when caught by rapidly closing floes. This occasioned him much anxiety and was a cause of much delay.

Considering the thickness of the ice at the point where we found him, I was surprised that Commander Coffin had advanced so far. The excellent judgment he displayed in reaching so advanced a position at such an early period of a close season, delayed as he was by the collier, deserves much commendation.

On the morning of July 1 the ships got under way, *Thetis* leading, *Loch Garry* following; the *Bear* and *Alert* in line astern, to follow a lead inshore which appeared to extend, after considerable winding, as far as Duck Islands. Numerous icebergs were lying in our way, so close to each other that passage between them was somewhat difficult and dangerous in fine weather, but as a dense fog shut down on us while working past them the speed of the vessels was reduced to about $1\frac{1}{2}$ knots, and fog signals were sounded frequently to indicate position. Feeling our way through this danger, the ships often got into close proximity to icebergs of great size before discovering them,

but later in the morning the squadron came up to the edge of a large floe and were secured to it with ice anchors to await clearing weather.

By 4 p. m. the wind shifted to the eastward and the fog lifted. All conditions being favorable the ships got under way in line, *Thetis* leading, the *Bear* following to break through into leads toward the Duck Islands. Near these islands the *Alert* and *Loch Garry* were caught by the floes closing up rapidly after the *Thetis* and *Bear* had passed through. It was necessary, therefore, to return several times with the *Thetis* and *Bear* to break again the floe ice in order to release the other vessels.

These difficulties overcome, the expedition continued southward, with occasional interruptions, past the Baffin Islands, Cape Shackelton, Horse's Head, and the Wedge Islands off Tassuisak. In the latter vicinity considerable floe ice was met, that gave some trouble to work through. Its character was found much changed, however; the floe pieces were smaller and the toughness experienced when going north, a few weeks earlier, had disappeared to a great extent; all of it yielded to ramming. At 2 a. m., July 2, the ships had reached the vicinity of the Berry Islands.

As we were approaching a region where hidden dangers abounded, signal was made to the ships to reduce speed to 2 knots per hour and to station extra lookouts for rocks, and to follow in wake of the *Thetis*. To avoid these dangers the commanding officers were piloting from the "crows' nests;" the officers of the deck kept their watch in the tops, and lookouts were stationed on the jib-boom ends.

About the Berry Islands, a very dangerous region of this coast, the ice was found jammed in against the land, leaving a narrow lead among the rocks off the island. The *Thetis* and the *Loch Garry* avoided all dangers; the *Bear* (following nearly as possible in their wake) ran upon a sunken rock, striking on her keel. She hung for a half hour, until pulled off by the *Alert* and *Thetis* about 4 a. m. The *Bear* sustained but little injury; her usual leak was not increased. Her commanding and other officers were constantly mentioned for their vigilance and care of the ship. The grounding on this last occasion could not be attributed to any lack of watchfulness. The rock lay fifteen feet under water and must have been passed very "close to" by the *Thetis*. From this point to Upernavik there are numerous unknown rocks; to avoid them we maintained constant watchfulness and slow speed. This whole coast is unknown and illy surveyed; the small scale of the charts we had did not permit one-half the rocks which abound there to be placed on them.

Reaching the Brown Islands, north of Upernavik, signal was made to the *Alert* to proceed to Disco with the *Loch Garry* under convoy, and to await there the arrival of the *Thetis* and *Bear*; during the interval to transfer the houses from her deck to the *Loch Garry* for transportation to St. John's.



LOOSE FLOE-ICE OFF HARE ISLAND.

The *Thetis* and *Bear* continued on to Upernavik and arrived there about 10 a. m., July 2, anchoring in the outer harbor. The *Bear*, needing most coal, took on board the 60 tons landed from the *Loch Garry*. During my stay a strong gale sprung up from southwest, driving both ships from their moorings; much anxiety and trouble was occasioned to secure them in the deep water and bad anchorage of the outer port. The Danish harbor being filled with icebergs was inaccessible. During the gale the *Thetis* was secured to a grounded . . iceberg, which later in the day capsized. In bringing her up she lost an anchor and thirty fathoms of chain in water too deep to allow sweeping for it. The *Bear* was driven from her moorings and was exposed to imminent peril. She was extricated by great skill and good seamanship of her commanding officer.

At the request of Governor Elberg, of Upernavik, Hans Hansen, dog driver of the *Bear*, was paid off, discharged, and landed at that place. Most of the dogs of the *Thetis* were landed at Upernavik, as they could not live in the warmer climate of the United States.

The *Bear* having finished coaling by 6 p. m., of July 3, both ships got under way for Disco. Standing out the harbor the ships were saluted by Governor Elberg. Having no guns on board we returned it by dipping colors and sounding whistles.

Following a route indicated by the governor to be clear of dangers the *Thetis* touched a rock; her speed was so slow at the time that she sustained no injury.

Clearing this harbor, course was shaped for Disco, in a wide lead of water extending well off-shore. From Svarten Huk south occasional floe ice was met, with numerous imbedded icebergs; their number had not diminished since our passage north, but they were easily avoided in the clear weather we had going south.

The ships passed from dangerous ice regions on July 2. From the time of entering (May 19) until we left the ice there was not a moment when the ships were out of danger. The most unceasing vigilance was necessary to avoid damage, or to take advantage of opening leads to advance.

Much of my time, as well as that of the energetic commanders of the other ships, was spent in the "crows' nests;" in many instances we passed sixteen to twenty hours in them on the lookout, or in navigating leads. The anxiety and great responsibility of this period cannot be understood properly without experience in these dangerous regions. The labor and anxiety would almost break one down, but it was never forgotten that Greely and his party were in peril. The confidence of our countrymen, the remembrance of their God-speed, and the interest you took in the expedition encouraged us when difficulties increased. The struggle with ice from 3 to 7 feet thick was constant and furious for 1,300 miles to reach and rescue

the survivors of the Lady Franklin Bay Expedition and to bring them home.

After passing the Waigat Straits the wind, which had been northerly, hauled to southwest and increased on July 4 to a moderate gale, with snow during most of the day.

At 12 m. the national colors were displayed at the peak and mast-head of both ships for one hour in celebration of our Independence Day.

We reached Godhaven at 3.35 a. m. July 5, and found the *Alert* and *Loch Garry* in port. The latter vessel was hauled alongside the *Thetis*, and about 70 tons of coal were hoisted on board. A similar amount was taken by the *Bear*. Soon after our arrival Surgeon Green reported that Ellison's condition was extremely critical, and that his only chance lay in amputation of his frozen limbs, which was soon after performed. His system being too much depleted by exposure and hardships of the three past years, he died at 3.30 a. m. of the 8th, apparently without suffering.

The rudder of the *Thetis*, which had been damaged in the ice crossing Melville Bay, was unshipped and the spare rudder shipped in two hours. Its condition was too uncertain to venture outside.

The civil authorities were called upon and their views requested as to the disposition of the remains of Frederick Christiansen, Eskimo, one of the Lady Franklin Bay Expedition, who perished at Cape Sabine. Inspector Anderson officially requested the burial of the remains in their cemetery at Godhaven. The body being on board the *Bear*, Lieutenant Emory was directed to have a casket made for the remains. At 3 p. m. July 7 the remains were landed and conveyed to the little chapel by six seamen of the *Thetis*, *Bear*, and *Alert*, and followed by nine officers and sixteen men. The remains were received by the inspector and governor at the chapel; services were performed over them by a native minister, after which they were carried to their little cemetery and laid away in peace forever.

During our stay in Greenland we were assisted in every way by the inspector of North Greenland and the governors of Godhaven, Upernavik, and Tassuisak. These gentlemen were unremitting in their politeness and assistance to the expedition. Inspector Anderson informed me that the detention of the Danish supply vessel beyond her usual time of arrival had reduced their supply of food so much that he was afraid they would be in want before her arrival. Under these circumstances I directed Lieutenant Emory to land some two hundred rations of bread, meat, and soups.

The engine of the *Alert* needing some repairs, the expedition was detained at Godhaven until 6.30 a. m. July 9, when we sailed for St. John's, the *Alert* in tow of the *Loch Garry*.

Excellent weather was experienced, and but little ice was fallen



MOSS & CO. N.Y.

ESKIMO HUT.

in with for several days, but when in the vicinity of the Funk Islands, on the coast of Labrador, north of St. John's, a fresh southeast gale sprung up and continued during the night of July 15, with thick fog and quite a heavy sea.

The *Loch Garry* labored so much during the morning with the increasing sea, she cast off the *Alert* and took position astern of *Thetis*, six cables distant; the other ships keeping in position on starboard and port quarters, three cables distant.

The wind and sea increased very much during the night, and our position under these circumstances being somewhat nearer to the Funk Islands than was prudent, the course was changed more off-shore and speed reduced to two knots, to enable the *Alert* to maintain her position. At 2.30 a. m. her lights were lost sight of in the thick fog; when daylight came, nothing could be seen of her. The three ships stood on under low speed for the appointed rendezvous, 25 miles northeast of Cape Spear, but, thick weather continuing, it was deemed useless to remain there; accordingly, course was shaped for St. John's, where the *Thetis*, *Bear*, and *Loch Garry* arrived at 9 a. m. July 17. The following telegram was sent to you :

[Telegram.]

ST. JOHN'S, N. F., July 17, 1884.

HON. W. E. CHANDLER,

Secretary of the Navy, Washington, D. C.

Thetis, *Bear*, and *Loch Garry* arrived here to-day from West Greenland, all well, separated in gale from *Alert* yesterday 150 miles north. At 10 p. m. June 22, five miles west of Cape Sabine, in Smith's Sound, *Thetis* and *Bear* rescued alive Lieut. A. W. Greely, Sergeant Brainard, Sergeant Fredericks, Sergeant Long, Hospital Steward Bierderbick, Sergeant Elison, and Private Connell, the only survivors of the Lady Franklin Bay Expedition.

Sergeant Elison had lost both hands and feet by frost bite and died at Godhaven July 8, three days after amputation, which had become imperative. Seventeen of the twenty-five persons composing the expedition perished by starvation at the point where found; one was drowned while sealing to procure food; twelve bodies of the dead were recovered and are now on board *Thetis* and *Bear*. One Eskimo, Frederick, was buried at Disco, in accordance with desire of the inspector of North Greenland. Five bodies buried in ice-foot near the camp were swept away to sea by winds and currents before my arrival and could not be recovered. Names of dead recovered, with date of death, follows: Sergeant Cross, January 18, 1884; Frederick, Eskimo, April 5; Sergeant Linn, April 6; Lieutenant Lockwood, April 9; Sergeant Jewell, April 12; Private Ellis, May 19; Sergeant Ralston, May 23; Private Whisler, May 24; Sergeant Israel, May 27; Lieutenant Kislingbury, June 1; Private Henry, June 6; Private Schneider, June 18. Names of dead buried in the ice-foot, with date of death whose bodies were not recovered, follows: Sergeant Rice, April 9, 1884; Corporal Salor, June 3; Private Bender, June 6; Acting Assistant Surgeon Pavy, June 6; Sergeant Gardiner, June 12; drowned by breaking through newly formed ice, while sealing, Jens Edwards, Eskimo, April 24. I would urgently suggest that bodies now on board be placed in metallic cases here for safer and better transportation in a sea-way; this appears to me imperative.

Greely abandoned Fort Conger August 9, 1883, reached Baird Inlet September 29, following, with party all well. Abandoned all his boats and was adrift for thirty

days on ice floe in Smith's Sound. His permanent camp was established October 21, 1883, at point where he was found.

During nine months this party had to live upon a scant allowance of food brought from Fort Conger; that cached at Payer Harbor and Cape Isabella by Sir George Nares in 1875, but found much damaged by lapse of time; that cached by Beebe at Cape Sabine in 1882, and the small amount saved from the wreck of *Proteus* in 1883, and landed by Lieutenants Garlington and Colwell on beach where Greely's party was found camped. When these provisions were consumed the party was forced to live upon boiled seal-skin strips cut from their seal-skin clothing, lichens and shrimps procured in good weather when they were strong enough to make exertion. As 1,300 shrimps were required to fill a gill measure, the labor was too exhausting to depend upon them to sustain life entirely.

Channel between Cape Sabine and Littleton Island did not close, on account of violent gales, all winter, so that 240 rations at latter point could not be reached. All Greely's records and all instruments brought by him from Fort Conger are recovered and on board.

From Hare Island to Smith's Sound I had a constant and furious struggle with ice. Impassable floes and solid barriers were overcome by watchfulness and patience, no opportunity to advance a mile escaped me, and for several hundred miles the ships were forced to ram their way from lead to lead through ice ranging in thickness from three to seven feet, and where rafted much greater.

Thetis and *Bear* reached Cape York June 18, after passage of twenty-one days in Melville Bay, with two advance ships of the Dundee whaling fleet, and continued to Cape Sabine. Returning seven days later fell in with seven others of the fleet off Wolstenholm Island and announced Greely's rescue to them, that they might not be delayed from their fishing grounds nor be tempted into the dangers of Smith's Sound in view of the reward of \$25,000 offered by Congress.

Returning across Melville Bay fell in with the *Alert* and *Loch Garry* off Devil's Thumb, struggling through heavy ice. Commander Coffin did admirably to get along so far with transport in the season before an opening had occurred. Lieutenant Emory, with the *Bear*, has supported me throughout with great skillfulness and unflinching readiness in accomplishing the great duty of relieving Greely. I would ask instructions about *Loch Garry*, as the charter-party held by her master differs in several important particulars from mine.

Greely party are much improved in health since rescue, but was critical in extreme when found and for several days after. Forty-eight hours delay in reaching them would have been fatal to all now living. Season north is late and closest for years. Smith's Sound was not open when I left Cape Sabine. Winter about Melville Bay most severe for thirty years.

This great result is entirely due to the prompt action and unwearied energy of yourself and Secretary of War in fitting this expedition for the work it has had the honor to accomplish.

W. S. SCHLEY, *Commander*.

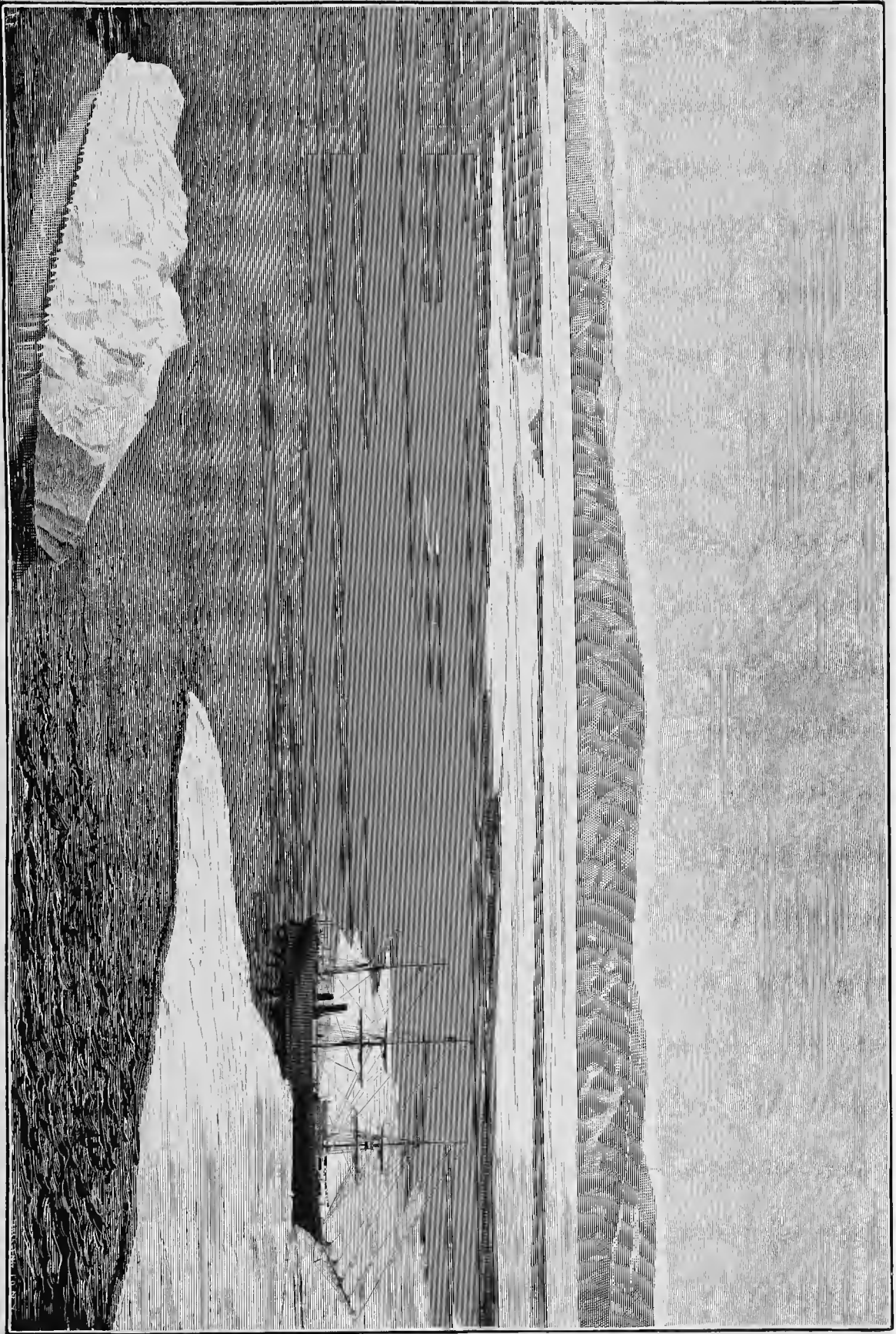
Your reply with that of the Acting Secretary, Rear Admiral Nichols, as follows, were received and read to the officers and crew at muster:

[Telegram.]

WEST POINT, N. Y., July 17, 1884.

Commander W. S. SCHLEY:

Receive my congratulations and thanks for yourself and your whole command for your prudence, perseverance, and courage in reaching our dead and dying countrymen. The hearts of the American people go out with great affection to Lieuten-



THETIS IN ICE OFF CONICAL ROCK.

ant Greely and the few survivors of his deadly peril. Care for them unremittingly and bid them be cheerful and hopeful on account of what life yet has in store for them. Preserve tenderly the remains of the heroic dead; prepare them according to your judgment and bring them home.

W. E. CHANDLER,
Secretary of the Navy.

NAVY DEPARTMENT,
Washington, D. C., July 17, 1884.

Commander SCHLEY, *Steamer Thetis*:

Use your discretion about care and transportation of bodies. Report by wire when ready to sail for New York. Department sends most hearty congratulations to yourself, officers, and men.

E. T. NICHOLS,
Acting Secretary of the Navy.

These telegrams expressing the Department's approval of our action, the following general order was read on board each vessel to the officers and crews at muster:

[General Order.]

U. S. S. THETIS,
St. John's, N. F., July 19, 1884.

The object for which this expedition was fitted out having been successfully accomplished and approved by the honorable Secretary of the Navy, the commanding officer avails himself of the opportunity to join his thanks, congratulations, and obligations to those of his superiors.

Greely's relief was made possible, first, by the promptest activity and unwearied energy of the honorable Secretary of the Navy and honorable Secretary of War; secondly, by the unceasing vigilance and readiness of officers and men, their alacrity in responding to orders, their cheerfulness at all times, day or night, in the performance of the duties which demanded promptness, endurance, and courage.

My confidence grew daily in noting that the spirit of those who fitted this expedition had been caught up by the officers and men, who were to use it to accomplish its important duty.

Commanding officers will please read this at general muster.

W. S. SCHLEY,
Commander, Commanding.

The *Alert* arrived at 6 p. m., July 18. The following telegram was received from Rear-Admiral Nichols, Acting Secretary, July 19, regarding movements of steamer *Loch Garry*:

[Telegram.]

WASHINGTON, D. C., *July 19, 1884.*

Commander SCHLEY, *St. John's, Newfoundland*:

Owners of *Loch Garry* are willing she should be delivered at New York.

As soon as you have taken out all coal, you will dispatch her at once to the navy-yard, New York, with lumber and house on board. If you deem it advisable, send another officer in her; time is an important element.

NICHOLS, *Acting Secretary.*

In obedience to which she was dispatched to New York at 12 m., July 21. Ensign Chambers, who was placed on board her to rep-

resent the Government interests throughout her employment, was instructed to report her arrival to the commandant of the New York navy-yard.

The great change of temperature, and the possibility of bad weather from St. John's, suggested the importance of transporting the bodies of the dead in metallic cases. As soon, therefore, as your authority was received the caskets were ordered and made of boiler-iron with air-tight tops, fitted with handles, painted black, and each surmounted by a silver plate, bearing the name and date of death of the body inclosed.

The week of rest, occasioned by the delay in making these burial cases, was most grateful to officers and men of the expedition after their hard work and exposure in the Arctic regions.

During our stay at St. John's we were the recipients of much courtesy and attention from the Queen's representatives, Sir John and Lady Glover, as well as from other distinguished residents of the city.

I would refer with much pleasure to the valuable assistance and attention of Mr. Thomas N. Molloy, the United States consul at St. John's; he was always energetic and untiring in furthering the interests of the expedition; his acquaintance with the requirements of Arctic expeditions gave him great advantage in assisting us.

The dogs which he obtained for the expedition were generally fine animals.

The caskets having been delivered on the afternoon of July 25, the dead were transferred to them at once. The *Thetis*, *Bear*, and *Alert* sailed from St. John's Saturday, July 26, at 10 a. m., for Portsmouth, N. H., as indicated in the following telegrams:

[Telegram.]

PORTSMOUTH, N. H., July 25, 1884.

Commander W. S. SCHLEY,
St. John's, Newfoundland:

If possible, name the day on the morning of which you can enter Portsmouth Harbor; Saturday, August 2, or Monday 4, appropriate; answer quick to me at Portsmouth.

W. E. CHANDLER,
Secretary of the Navy.

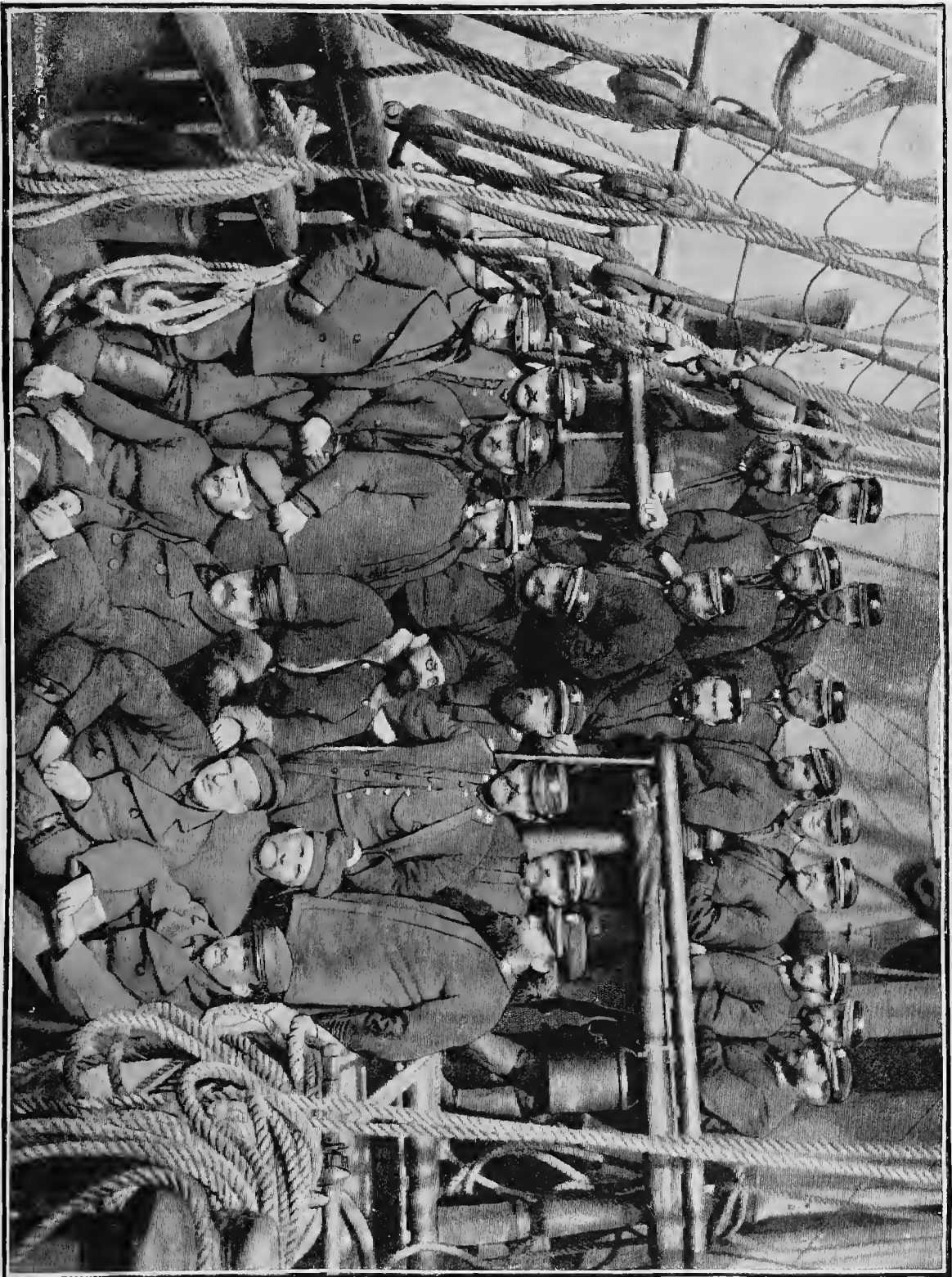
[Telegram.]

U. S. S. THETIS,
St. John's, N. F., July 25, 1884.

Hon. W. E. CHANDLER,
Secretary of the Navy, Portsmouth, N. H.:

Will sail to-morrow at 10 a. m., and will reach Portsmouth Saturday, August 2, unless detained by fog or contrary gales. *Alert* is so slow that no calculation can be made upon her speed, if contrary winds are met. Will tow her if practicable. Dead of this ship are now in their caskets; those on board *Bear* will be to-night, as soon as caskets are delivered. There will be quite a demonstration here to-morrow when we sail. Lieutenant Greely's party much improved.

W. S. SCHLEY, *Commander.*



THE OFFICERS OF THE RELIEF SHIP AND THE SURVIVORS.

We were accompanied out of the harbor of St. John's by a fleet of steamers, with colors at half-mast, carrying a large number of citizens, who adopted this manner of testifying their respect for the rescued, their appreciation of our work, and their sympathy for the dead.

The speed of the vessels was regulated to reach our destination on the 2d of August. Fair winds and unusually favorable currents, that were not to be expected at this season, prevailed throughout the passage and forced the ships ahead so much that a day was gained, so that we arrived at 9 a. m., August 1, at Portsmouth, N. H.

The sailing order observed was the same as that prescribed in leaving Godhaven, the *Thetis* leading, with the *Alert* and *Bear* on the starboard and port quarters, distant three cables.

Arriving at Portsmouth the relief ships were received by the North Atlantic Fleet, under Rear-Admiral Luce, dressed as for a holiday.

As each ship approached her anchorage she was received with cheers by the ships of the fleet. When the relief ships had anchored their commanding officers proceeded on board the flagship *Tennessee* to pay their respects to the Secretary of the Navy, in accordance with Rear-Admiral Luce's instructions following :

NORTH ATLANTIC STATION.

OFFICIAL MEMORANDUM REGARDING THE PARTICIPATION OF THE NAVAL CONTINGENT IN THE RECEPTION OF THE ARCTIC RELIEF SHIPS.

(1) One of the vessels of this squadron will be detailed to cruise off the mouth of the harbor to obtain the earliest intelligence of the approach of the three relief ships, *Thetis*, *Bear*, and *Alert*.

(2) If on their approach their colors should be at half-mast, they are to be signaled to masthead. A copy of this memorandum will then be furnished to the commanding officers of each relief ship.

(3) The relief ships, accompanied by the lookout ship, will enter the harbor at 11 o'clock a. m., Saturday, August 2, 1884; the former taking up their berths at discretion on the outer limits of Pepperell Cove, to the eastward of the flagship, the latter taking her previous berth.

(4) The ships lying in the roads will be dressed with the national colors at each masthead and Sunday colors at the peak.

(5) As the relief ships near the anchorage the rigging of all the ships in the roads will be manned, and the crew of each ship will give three cheers as the relief ships pass.

(6) No persons will be allowed to go on board the relief ships except the relatives of Lieutenant Greely, and of the survivors of his party, until further notice.

(7) Immediately after anchoring the commanders of the *Thetis*, *Bear*, and *Alert* will repair on board the *Tennessee* and pay their respects to the honorable Secretary of the Navy and the commander-in-chief of the North Atlantic Station. The officers of the relief ships will follow in boats provided by the squadron.

(8) When the officers return to their ships, the honorable Secretary and the commander-in-chief will visit the *Thetis*, *Bear*, and *Alert* and inspect them.

(9) After the visits arrangements will be completed for participation in the parade and reception given by the citizens of Portsmouth.

(10) The families of the officers of the relief ships will be received on board the *Tennessee*.

By direction of the Secretary of the Navy.

S. B. LUCE,

Rear-Admiral Commanding,

U. S. Naval Forces on the North Atlantic Station.

U. S. FLAGSHIP TENNESSEE,
Portsmouth Harbor, July 29th, 1884.

NORTH ATLANTIC STATION,
U. S. FLAGSHIP TENNESSEE (1ST RATE),
Portsmouth, N. H., August 2, 1884.

GENERAL ORDER, }
(No. 4). }

The Naval Brigade will land for parade and review at Portsmouth, N. H., on Monday, August 4, 1884.

The following is the detail of officers :

Lieut. Commander B. P. Lamberton, Commanding Brigade.
Lieut. C. E. Colahan, Adjutant.
Passed Assistant Surgeon R. Ashbridge, Surgeon.
Assistant Paymaster J. S. Carpenter, Quartermaster.
Lieut. R. H. McLean, Aid.
Naval Cadet R. Welles, Aid.
Capt. J. M. T. Young, Commanding Marine Battalion.
Lieut. R. P. Rodgers, Commanding Infantry Battalion.
Lieut. T. T. Wood, Commanding Artillery Battalion.
First Lieut. M. C. Goodrell, Commanding First Company Marines.
First Lieut. L. J. Gulick, Commanding Second Company Marines.
Commanding Third Company Marines.
First Lieut. G. T. Bates, Commanding Fourth Company Marines.
Lieut. W. W. Kimball, Commanding First Company Seamen.
Lieut. J. B. Collins, Commanding Second Company Seamen.
Lieut. John Downes, Commanding Third Company Seamen.
Naval Cadet G. W. Littlehales, Commanding Fourth Company Seamen.
Lieut. S. C. Paine, Commanding Fifth Company Seamen.
Lieut. G. H. Peters, Commanding Sixth Company Seamen.
Lieut. York Noel, Commanding Seventh Company Seamen.
Ensign F. R. Wall, Commanding Eighth Company Seamen.
Ensign J. T. Newton, Commanding Ninth Company Seamen.
Lieut. Alfred Reynolds, Commanding Tenth Company Seamen.
Lieut. R. Wainwright, Commanding First Platoon Artillery.
Lieut. F. E. Sawyer, Commanding Second Platoon Artillery.
Lieut. M. F. Wright, Commanding Third Platoon Artillery.
Ensign W. D. Rose, Commanding Corps of Pioneers.
Naval Cadet R. H. Orr, in charge of Band and Buglers.

The following instructions will be observed :

Commanding officers will see that all men of the naval brigade are ready to embark from their respective ships by 8 o'clock, a. m. The preparatory signal will be made at 7.45 a. m., and when this signal is made the landing force of each ship will get ready to go on board the tug *Leyden*, which will convey the brigade to the landing.

The *Leyden* will anchor near the *Tennessee*, and the men be sent to her in ship's boats when the signal is made.



ICEBERG OFF NORTH BROWN ISLAND.

MASS ENG CO. N.Y.

The landing will be at *Emerald's* landing, foot of Daniell street.

The Naval Division will form on Congress street, the right resting at Pleasant street.

The uniform of all officers will be undress, with helmets and leggings.

The uniform for the sailors will be blue, with mustering frocks, white cap covers, white knife-laniards and leggings.

Men having good-conduct badges and medals of honor will wear them.

The uniform of the marines will be full dress, with helmets and chains.

The apothecaries and stretchermen will wear a Geneva cross on the left arm.

Neither canteens nor tin pots will be carried, and there will be no water carriers detailed.

The color guard will be posted on the left of the fifth company.

The artillery men will be armed with cutlasses only. Neither pouches nor spare article boxes will be carried. The slings for pioneer's tools and implement bags will be made of white canvas.

In the right wing of the battalion the tallest men will form on the right of companies; in the left wing they will form on the left.

Immediately upon landing, the marines of the North Atlantic Squadron will join the command of Colonel Broome.

S. B. LUCE,

Rear-Admiral Commanding,

U. S. Naval Forces on the North Atlantic Station.

This pleasant duty performed, the officers and men of the relief ships, and the rescued survivors, were the recipients for several days of handsome civic demonstrations and attentions from the citizens of Portsmouth and vicinity, and were given the freedom of that city.

Soon after our arrival at Portsmouth, N. H., Lieutenant Greely and five other survivors of the Lady Franklin Bay Expedition were transferred to the jurisdiction of Rear Admiral C. H. Wells at the navy-yard.

The *Thetis*, *Alert* and *Bear* sailed from Portsmouth for New York at 8.20 a. m. Tuesday, August 5, in obedience to your order, following :

NAVY DEPARTMENT,

Washington, August 5, 1884.

SIR : Proceed to Governor's Island, New York, with the three relief ships, arriving Thursday morning about 11 o'clock.

Deliver the remains of the Greely party, as directed in writing either by the Secretary of War or Major-General Hancock, and await further orders at New York.

Very respectfully,

W. E. CHANDLER,

Secretary of the Navy.

Commander W. S. SCHLEY,

Commanding Greely Relief Expedition.

During the passage to New York the weather was densely foggy up to Fire Island, and the navigation very difficult. Passing through Vineyard Sound we saw nothing except the light-ships, and did not see the land after leaving Portsmouth more than once until we had reached Fire Island light.

We were delayed on this account for twenty-four hours, but reached New York on Friday, August 8, at 11 a. m., and delivered the bodies of the dead at Governor's Island to Major-General Hancock, commanding Military Department of the East. They were received with military honors. All records, relics, and effects of the living and the dead were delivered at Governor's Island on Saturday, August 9.

The ships were taken to the navy-yard Monday, August 11, in obedience to your orders, and the bulk of their stores and provisions landed.

COAL CONSUMED.

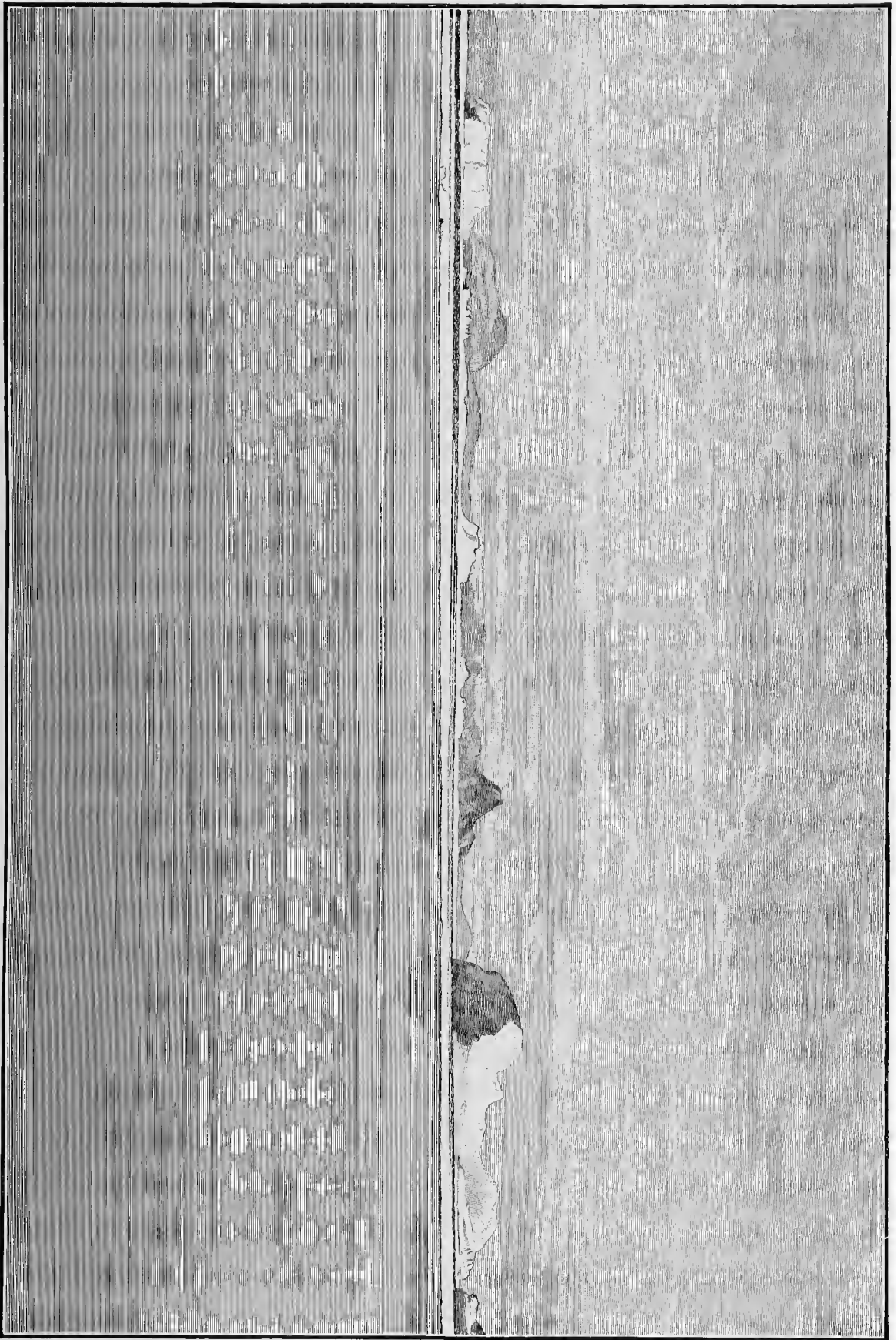
During the cruise in the Arctic regions, from New York until their return, the following amount of coal was received and consumed by each of the vessels of the relief expedition :

	Thetis.	Bear.	Alert.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Received at New York.....	610	425	190
Received after departure.....	220	359	240
Total	830	784	430
Expended.....	422	587	346
Total remaining on board.....	408	197	84

The distance traversed by the *Thetis* and *Bear* was nearly 7,000 miles, and by the *Alert* about 6,000 miles.

The Herreshoff steam cutters supplied to the *Thetis* and *Bear* proved most excellent boats in a sea-way. For the uses of the general cruisers of the Navy they are very desirable additions, but for service in the Arctic, which is exceptionally severe and where the exigencies of hard usage and neglect are rather the rule, I must say the Herreshoff type did not meet my expectation. Simpler design of engine and boiler seems needed in that region, or at least a type which occasional neglect would injure to less extent than the Herreshoff. In both these cutters the coils burst; the spring safety-valves failed to work at a critical moment and nearly involved the loss of both cutters; the exterior condenser was unsuited and vulnerable when hauled on to the ice. On the other hand, their advantages over the ordinary launch used in the service were: the rapidity with which steam could be got up, their economy in the use of coal and water, and their speed.

The White steam cutter of the *Alert* was an exceedingly handy boat. She was neither so fast nor so good a seaboat as the Herreshoff cutter. The engine is simple and easily kept in working condition. The boiler being of old type, too much time is consumed in raising steam, a fatal error in launches for Arctic service. This cutter compared with Herreshoff's for such service presents defects of equal



SUGAR LOAF, AND ICEBERGS.

importance. Her construction makes repair of injuries to hull very difficult.

In view of the disaster to the Lady Franklin Bay Expedition at Cape Sabine and the conclusion of the Department last year that it was impracticable to send another vessel north after the *Yantic's* return to St. John's, September 13, 1883, with report of the loss of the *Proteus*, I would state that the past winter in Melville Bay was reported to be the most severe experienced for thirty years.

The winter began earlier than usual and continued with great severity later into the spring of 1884. About the equinox (September 21) cold weather began to set in and the temperature steadily fell at Disco, Upernavik, and Tassuisak. Sixty degrees below zero (Fah.) was reached later in the winter, when it was said to have continued for a period of sixty consecutive days. Melville Bay was frozen over as far as could be seen from these three points in the latter part of October. As the season of continual darkness had come on by October the navigation of this region would have been well nigh impossible, unless the bay had been entirely open. Under the circumstances, any vessel attempting this navigation would have come to grief, if she had not been totally lost.

It can be seen in view of this information that the action of last year was wise.

The total expense of fitting out the expedition will aggregate about \$750,000. A considerable portion of this sum was for the purchase of the ships, which are returned in good condition. Their value, together with that of the returned stores and outfits in all departments, when disposed of either by sale or transfer to the general service, will greatly reduce this amount.

HYDROGRAPHIC INFORMATION.

During the cruise of the ships on the coast of Greenland, Lieutenants Sebree, Crosby, and Badger, who were the executive officers of the three ships, doing duty as navigating officers in addition thereto, ascertained that the English Admiralty charts of that coast were defective in a number of particulars.

Whenever opportunity offered advantage was taken by these zealous and untiring officers to increase the accuracy of navigating this region. In almost every instance their observations were similar, and their results agreed; for example *The Knight Islands*, off Holsteinborg, are represented as extending out to longitude $54^{\circ} 30'$ W. in latitude 67° N. (chart 235, Arctic Sea, Davis Straits, and Baffin Bay). Our course on the way north ran over the outer islands. These islands do not extend off land over 7 miles, instead of 15 miles as by chart.

The Rock off Rifkol Island, marked on this same chart 20 miles NW. $\frac{1}{4}$ N. (true) from Rifkol Island, could not be seen from this ship at a distance of less than 1 mile. The whalers say it exists, but, if true, it must be much nearer the coast.

Western and Whale-Fish Islands, in Disco Bay, are from 10' to 15' of longitude west of the true position. Our course up run west of the Western Islands 5 miles and 3 miles west of the Whale-Fish. When up with the Western Islands they could not be seen on a perfectly clear day. They lie much closer to the shore. When up with the Whale-Fish Islands we found ourselves at least 10 miles west of them. The weather being clear and the ship steering for Disco Island, in sight, this could not have occurred from current without detecting it.

Godhaven or Lievely is down on this chart from 10' to 15' of longitude west of its position as given in Bowditch's Navigator; heading a little east of the position given in Bowditch it was difficult, until close up, to distinguish the beacon. It is better to approach it from the westward, as the beacon shows better from that direction.

Upernavik Harbor chart gives a rock 75 yards in diameter; the rock is a pinnacle 10 yards in diameter and bare at low water. Angles taken on the rock: W. end Olrick Island to Church, 122° ; SW. end Small Island close to village, to Church $20^{\circ} 30'$; Church to N. point of entrance to Danish Harbor, $62^{\circ} 10'$. There are from 6 to 9 fathoms of water around this rock.

Approaches to Upernavik are extremely dangerous. Numerous rocks and islands exist that are not down on the charts. The *Thetis* touched on one and saw a number of others.

If clear, make Sanderson's Hope, head in for it, and keep a good lookout for rocks, are about the only directions that can be given.

From Upernavik to Horse Head there are numbers of rocks not marked on the charts, and many islands not even indicated. The coast line is out of true position, and many of the islands are inaccurately located. The longitude of Tassuisak appears correct.

Duck Islands, from a number of observations for longitude and latitude, were found out in position. The largest or southern island is in latitude 74° , longitude $57^{\circ} 46' W.$, instead of the position given on the chart.

The Devil's Thumb, a most important landmark in crossing Melville Bay, was established, from a number of positions well determined going north and returning south, to be in latitude $74^{\circ} 38' N.$, or 18 miles north of the charted position. The whole coast line in the vicinity of the Devil's Thumb is from 10 to 20 miles too far south. All the islands and the entire coast line on the north side of Melville Bay are out in latitude, probably 15 or 18 miles.

Hakluyt Island off *Northumberland Island* is about 5 miles further north than marked on the chart. Herbert Island and North-



BERG NEAR UPERNAVIK.

umberland Island are not relatively put down right, but we were not delayed long enough in their vicinity to accurately establish them.

The following soundings were taken by Lieutenant Sebree, executive officer of the *Thetis* during her cruise in the Arctic. The instrument used was a machine of Sir William Thomson's, and, except when the ship was beset in the ice, the tubes were always used. This machine is of the greatest value to navigators, and when in water of 100 fathoms or under is the most reliable instrument of the many used. The advantage of sounding while under full headway at sea needs no discussion by sailors. The machine on board the *Thetis* was poorly made and somewhat clumsy, but its principle was perfect. It could be improved in several particulars which would materially increase its efficiency.

Date.	Soundings.	Character of bottom.	Latitude north.	Longitude west.	Remarks.
1884.					
	<i>Fathoms.</i>		° /	° /	
May 20.....	80	Crs. Gr. S. Sh.....	64 15	53 46	
21.....	30	Br. Sh.....	66 50	54 17	
21.....	36	...do.....	67 06	54 22	
21.....	27	Gr.....	67 21	54 29	
21.....	18½	Br. Sh. Gr.....	67 48	54 30	
	.				
21.....	54	.....	68 12	54 30	No bottom.
27.....	50	Fine S.....	70 23	55 04	One-fifth mile west Hare Island.
June 12.....	98	S. and Sh.....	74 07	58 22	
13.....	212	No specimen.....	74 09	58 24	Vessel tied up to ice.
	.				
15.....	230	.....	75 00	59 50	Do.
18.....	55	Gr. S.....	75 52	67 32	
	.				
20.....	85	.....	76 47	70 35	Large berg aground 100 yards east of sounding.
	.				
20.....	58	Sounding between Hakluyt and Northumberland Island, about one-third distant from Northumberland to Hakluyt.			
20.....	80	Blk. Gr.....	77 33	72 25	Numerous large bergs aground.
		These soundings were taken between Dalrymple and Wolstenholm Islands; the first sounding ¼ mile S. by W. ¼ W. from S. end of Dalrymple Island, and the last sounding about 2 miles ESE. from the S. end of Dalrymple.			
26.....	29	Bearings were taken, but as the chart was found to be incorrect they were not of much use.			
	21				
	14				
	12				
	12				
July 1.....	148	No specimen.....	74 09	57 28	
9.....	16½	S. and Sh.....	67 37	54 35	On Torsk Bank.

It is my agreeable duty to commend to your attention the services of Commander George W. Coffin, commanding the *Alert*; the perilous and arduous duties imposed upon him, to conduct in safety his own vessel and the collier, *Loch Garry*, through Melville Bay, were ex-

ecuted with judgment and skill. Starting later than the other two vessels of the expedition, and having much less steam power, the *Alert* did not reach so high a latitude as the *Thetis* and *Bear*. She penetrated the ice region to an extent that surprised me, notwithstanding the detention occasioned in awaiting favorable opportunities to advance with safety to the *Loch Garry*.

Commander Coffin pushed the *Alert* into an advanced position in Melville Bay, until his progress was arrested by ice too heavy for him to break or drive asunder. I feel that he accomplished successfully and skillfully all that was practicable and possible under the circumstances.

The greatest confidence was felt that he would carry out his instructions to the letter in the event that it would be necessary for me to remain in the Arctic beyond the present year; I therefore pushed on with no uncertainty about what he would do.

Lieut. W. H. Emory, jr., commanding the *Bear*, was under my immediate observation during most of the cruise. It affords me the greatest pleasure to testify to the promptness, energy, and skillfulness of this meritorious officer; his coolness and good judgment were valuable to me. On no occasion was it necessary to either prompt or order him to discharge duties. He was always on the watch with the keenest appreciation of the situation in anticipating all my wishes. Signals were never necessary between the two ships.

His earnest example of loyalty to the service we were sent to perform was caught up by his officers and crew, so that the two ships were always worked with the utmost accord and harmony; he enjoyed and deserved my entire confidence.

I would commend him especially to the Department as an officer of high professional merit and competency, and would frankly state that much of the success of the expedition was due to him and to his ably officered ship.

Lieut. Uriel Sebree, of the *Thetis*, F. H. Crosby of the *Bear*, and C. J. Badger, of the *Alert*, were the executive and navigating officers of their respective vessels. Lieutenant Sebree being on board the *Thetis*, and Lieutenant Crosby on the *Bear*, came under my immediate observation, and of them, I am able to bear personal testimony. I need say no more in their favor than to inform the Department that two more capable, efficient and energetic officers could not have been selected for the positions they filled; they were always ready, always prompt, always zealous, and always cheerful; both enjoyed the complete confidence of their commanding officers in discharging their duties; they were in no sense less skillful or less competent than their commanding officers, so that if accident had incapacitated the leaders the ships would have been left in able hands.

Their services were invaluable to the expedition, and I hold them in the highest estimation professionally and personally.



ALERT AND LOCH GARRY AT UPERNAVIK.

Commander Coffin speaks in terms of high approbation of Lieut. C. J. Badger, and of his competency and capacity as an officer; he praises his method and manner of performing his responsible duties and refers to his coolness and judgment under all circumstances.

I am glad to indorse all that Commander Coffin says of this highly competent and efficient young officer, and to include him with Sebree and Crosby in special commendation to the consideration of the Department.

Lieuts. E. H. Taunt and S. C. Lemly, and Ensign C. H. Harlow, of the *Thetis*; Lieuts. J. C. Colwell, N. R. Usher, and Ensign L. K. Reynolds, of the *Bear*, and Lieut. H. J. Hunt and Ensigns H. C. McClain, and A. A. Ackerman, of the *Alert*, were the watch officers of the respective ships. I mention them collectively, as the Department could not have selected more competent men for their duties.

Their aptitude, experience, and physique made them invaluable for the exposed duties of shipboard life in the Arctic regions, or for detached work there.

Their assistance to their several commanding officers was most valuable, while their good judgment inspired the greatest confidence.

In no instance in any of the ships did they make a mistake; the constant and rapid advance was largely due to their watchful attention and judgment of ice movements.

I hold them to be tried and valuable officers, and in this view commend them to the Department.

Ensign W. I. Chambers was detailed to represent the Government interests on board the *Loch Garry*. I am glad to say that he was always most interested and efficient; his judgment and ability were most conspicuous, and to him and to his advice the safety of the *Loch Garry* was mainly due. He enjoyed my highest confidence for his officer-like management of delicate duties.

Lieut. J. C. Colwell was on detached duty at Cape York; his previous experience in this region gave him the preference when it was necessary to communicate with the natives; his promptness in reaching them at Cape York did him much credit and fully justified his selection for the duty. He was returned to the *Bear* at Littleton Island June 22.

Chief Engineers George W. Melville, of the *Thetis*, John Lowe, of the *Bear*, and Passed Assistant Engineer W. H. Nauman, of the *Alert*, were without exception most efficient and capable. Six men only composed the engineer's force of each of the ships, so that when others found opportunity to rest these officers were obliged to be on hand that the engines might be ready at a moment's notice, and this continued from the moment of entering the ice until it was left.

The engines were always worked from full speed ahead to full speed astern in ramming, and in most cases under the direct control

of the chief engineers. In all the harassing demands upon the engine and the engineer's force of the ships no mistakes were made.

For the perfection in their motive power, upon which so much of the success of these Arctic ships depended, I am indebted to the great skill and untiring exertions of their engineer officers; they were always vigilant, always ready for any emergency, and always unceasing in their efforts to maintain the motive power in the highest condition of efficiency. Chief Engineer Lowe slung his cot in the engine room while in the ice in order to be near his work in an emergency. Chief Engineer Melville's bunk was so chosen by him to be as near the engine room as possible without being actually in it. The great experience of the latter officer in Arctic matters had determined me to choose him for a sledge journey onward to Lady Franklin Bay if such had been necessary. During the cruise northward I availed myself of his experience in many matters of detail, in fitting sleds, clothing, and provisions for journeys; he is too well known to you to need other commendation from me than for his entire and hearty support in carrying out the purposes of the expedition.

Passed Assistant Surgeon E. H. Green, of the *Thetis*, Passed Assistant Surgeon H. E. Ames, of the *Bear*, and Passed Assistant Surgeon F. S. Nash, of the *Alert*, rendered me the most valuable assistance in their constant care of the sanitary conditions of the ships; their watchful attention of the officers and men to guard them against sickness, or to relieve them when injured, were praiseworthy. Our only accidents occurred at the wheel; they were caused by large pieces of ice rising under the stern and striking the rudder after the vessels had forced their way over them in ramming through the floes.

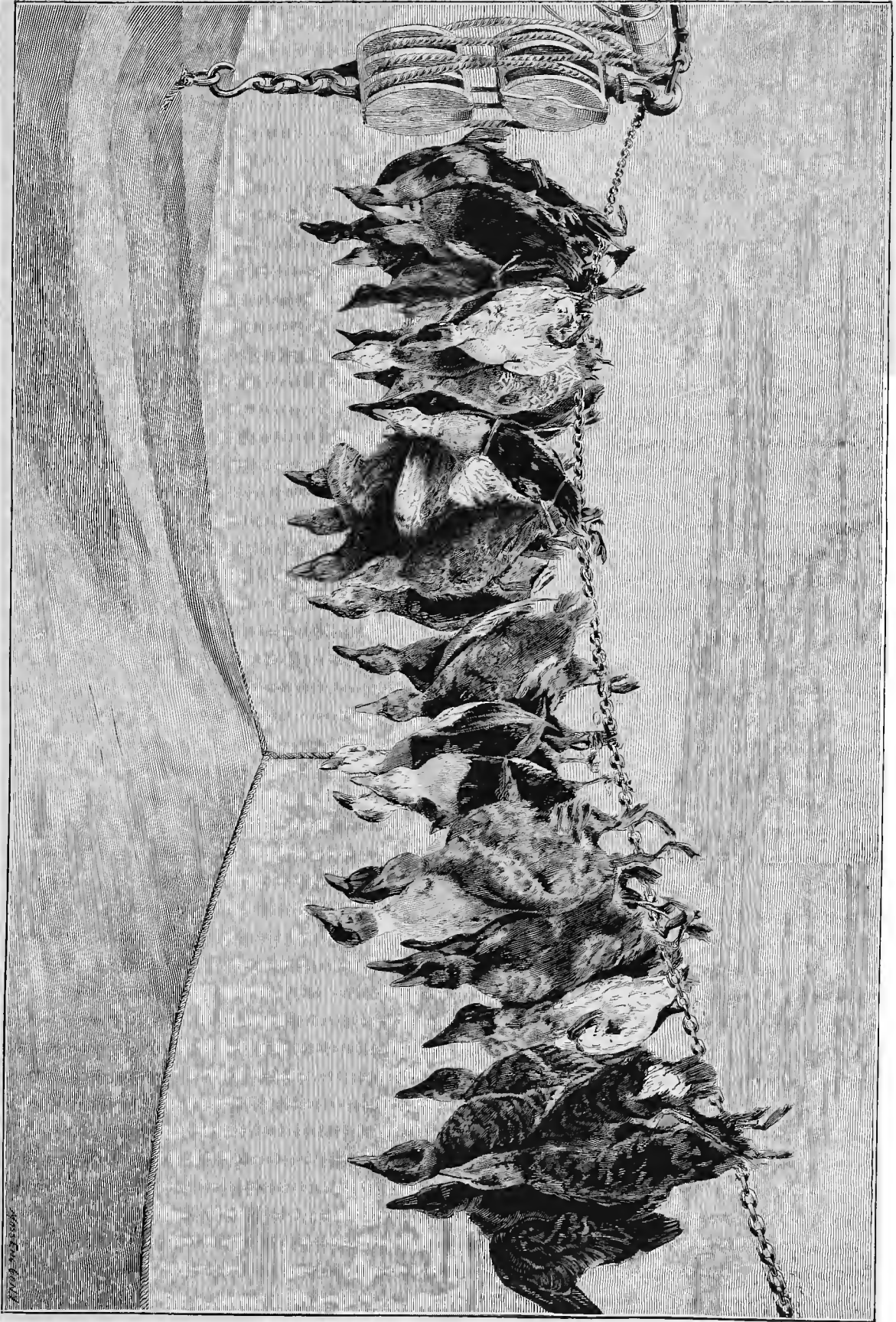
Drs. Green and Ames had entire charge of the survivors from the time when discovered until our return home. They were unremitting in their care and attention to them. That any of the rescued are now alive, after their unusual exposure and critical condition when found, is due to their skill.

Not only were they conspicuous in their professional duties but in all matters connected with the expedition; on board ship or on the ice, they were always assisting.

Ice Masters Francis Ash, J. W. Norman, and David L. Gifford gave me much assistance in discharging their duties; the two former came more immediately under my observation.

Mr. Ash is a man of high character and merit. He is a thorough sailor, a man of worth, and an officer whose experience and judgment were of much value to the expedition.

I regret that differences involving the discipline of the ships required the discharge of Mr. Gifford and Mr. Norman immediately after the return of the expedition to the United States; this in no way affected the value of their services in the ice region or the heartiness with which they assisted their commanding officers while there.



GAME SHOT AT LITTLETON ISLAND.

W. H. WOOD

The selection of the crews of the three vessels was faultless; I can pay the men who composed them no higher tribute than by bearing testimony to their constant cheerfulness, their instant obedience of orders, their incessant vigilance, and their fearlessness under all circumstances of danger. There were no punishments on board the ships until our return to civilization, and the few cases then were caused entirely by rum.

If not a breach of official etiquette I would state that our success in the work which we had the honor to accomplish was made possible, first, by the munificent appropriation of the Congress of the United States; second, by the unceasing energy of yourself and the Secretary of War; your masterly comprehension of the problem to be solved by the expedition; your indefatigable activity in fitting it for its work, and your unflagging interest in preparing everything which concerned its success. This spirit was caught up by the officers and men you honored and was the mainspring of their action when absent. Much of the success of the expedition is due to you, and when I say this I only convey to you the sentiment of all who served with me in the difficult, dangerous, and honorable duty which you intrusted to our charge.

I inclose herewith a series of photographs to illustrate the conditions of ice at various points of the passage in Melville Bay. These photographs are numbered, and represent the conditions of ice as met by the expeditionary ships; they will explain much better than a volume of words some of the difficulties which were encountered and some of the reasons why delay was necessary at times; further reference to them in the body of this report is therefore unnecessary.

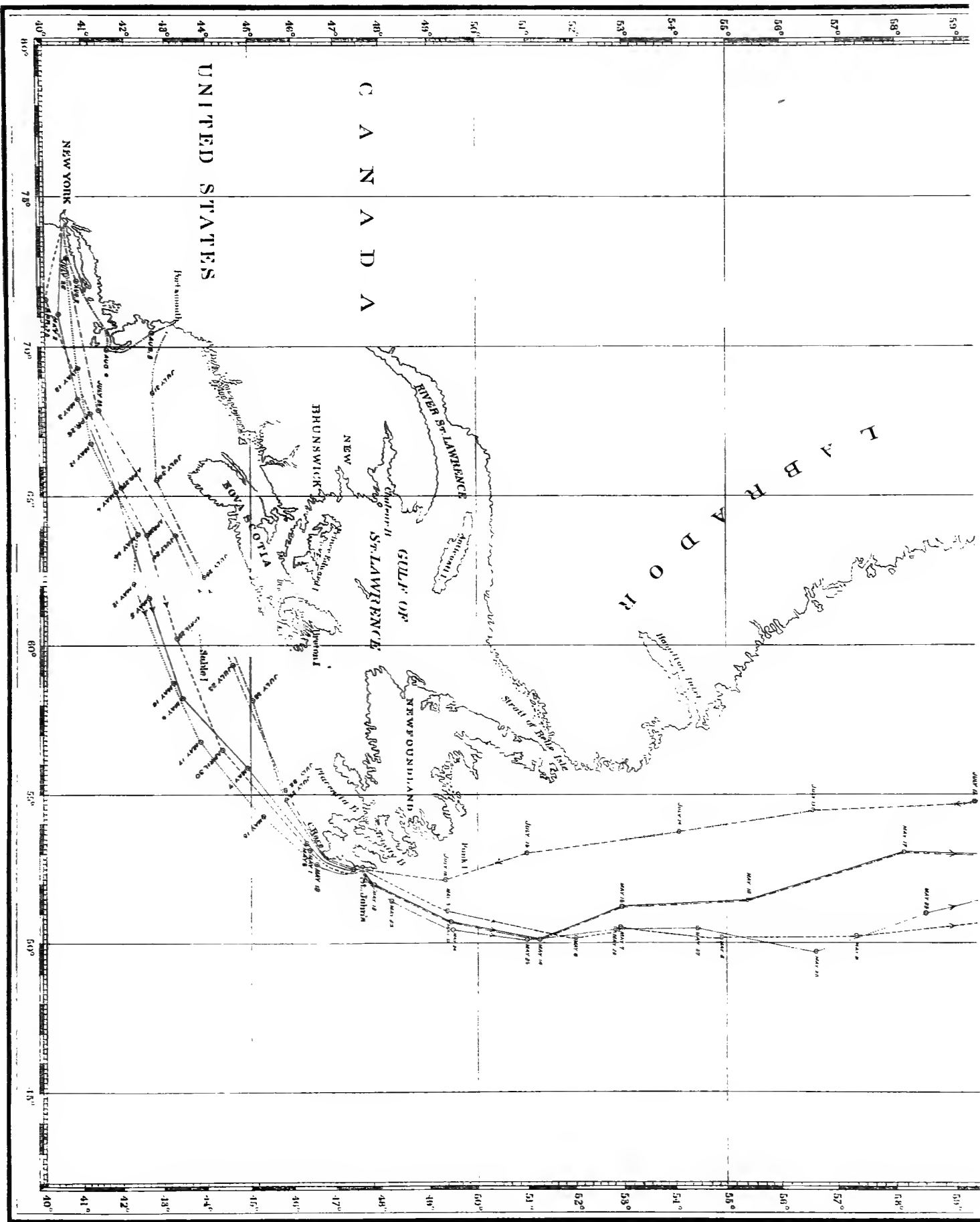
The track chart accompanying contains the route pursued by the ships on the outward and homeward journey; the data on its margin explains itself.

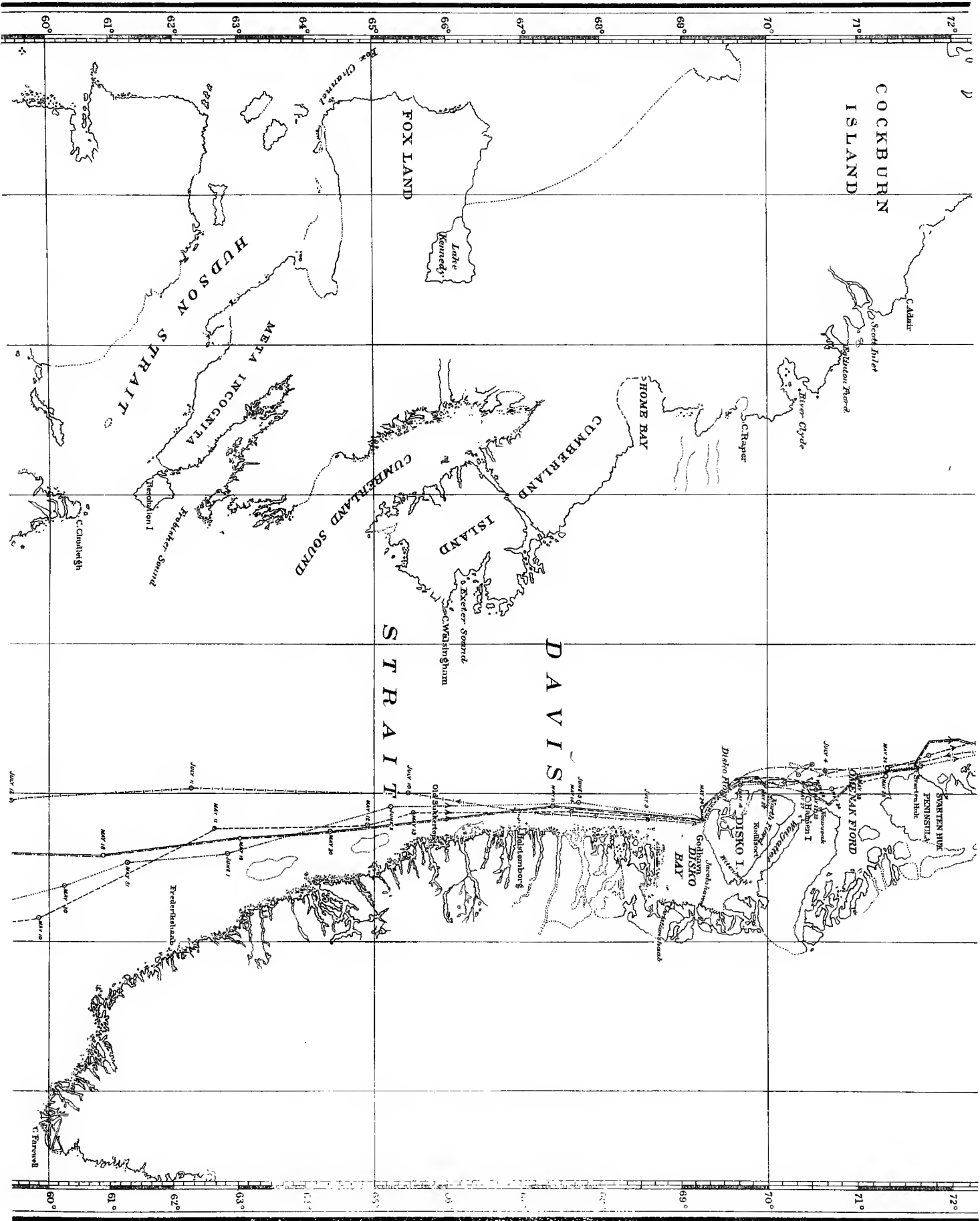
In conclusion, I beg to thank you for your earnest, prompt, and cordial support in preparing the expeditionary force for its work, and, above all, for the lasting honor conferred upon me and upon the officers and men composing it in connecting our names and our efforts with yours in a relief which had filled the nation, and indeed the civilized world, with the gravest solicitude for a year past.

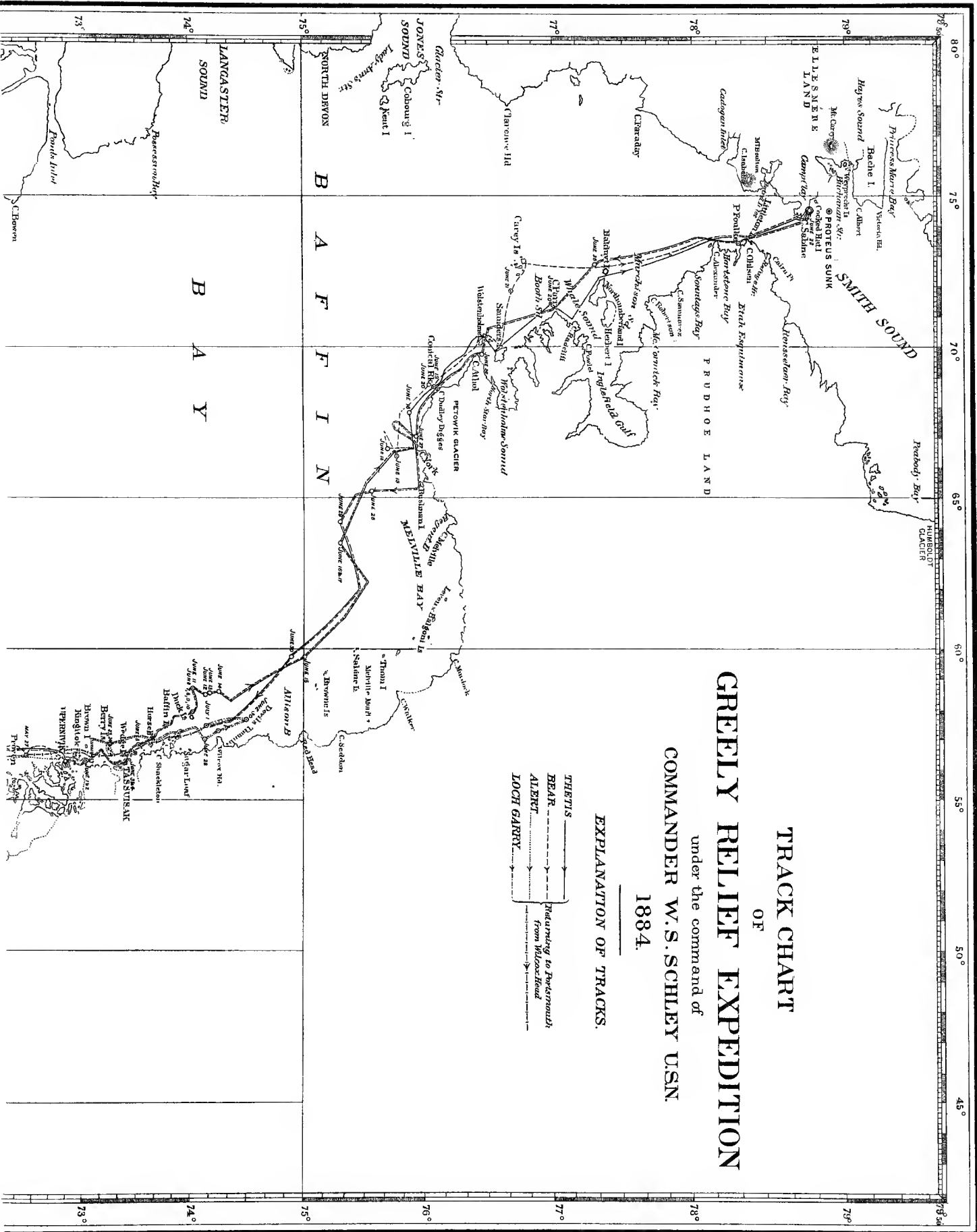
I congratulate you on the achievement of this expedition, fitted under your personal observation and care.

Very respectfully, your obedient servant,

W. S. SCHLEY,
Commander, U. S. Navy,
Commanding Greely Relief Expedition of 1884.







TRACK CHART OF GREELY RELIEF EXPEDITION

under the command of
COMMANDER W.S. SCHILEY USN.

1884.

EXPLANATION OF TRACKS.

- THETIS —————
 - BEAR - - - - -
 - ALBERT - - - - -
 - LOCH GARRY - - - - -
- Returning to Portersmouth
from Wilcox Head

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