56TH CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. { DOCUMENT No. 511.

REPORT

OF

THE CRUISE OF THE U. S. REVENUE CUTTER BEAR

AND THE

OVERLAND EXPEDITION

FOR THE

RELIEF OF THE WHALERS IN THE ARCTIC OCEAN,

FROM

NOVEMBER 27, 1897, TO SEPTEMBER 13, 1898.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1899.

Treasury Department,

Document No. 2101.

Division of Revenue-Cutter Service.

CONTENTS

LIST OF ILLUSTRATIONS.

INTRODUCTORY.

Early in November, 1897, it was brought to the attention of the President, by the Chamber of Commerce and the people of San Francisco, Cal., that eight vessels of the whaling fleet were caught by the ice in the vicinity of Point Barrow and their crews were in great danger of starvation. The danger was so imminent and serious, and the necessity for relief so urgent, that the President immediately ordered an expedition to be fitted out.

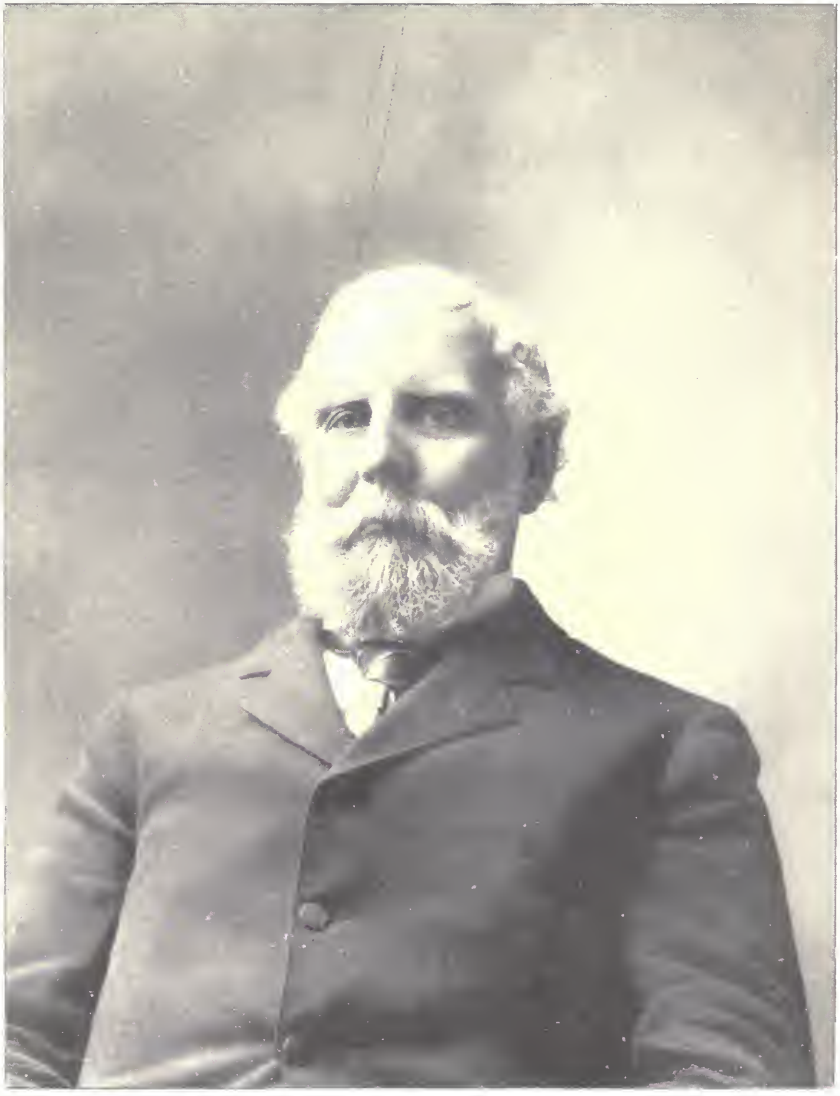
Little hope was held out by those experienced in work in the Arctic regions that anything could be accomplished by an expedition in the winter season, but by the order of the President and under the direction of Hon. Lyman J. Gage, Secretary of the Treasury, the U. S. revenue cutter *Bear* was prepared for the expedition by the Chief of the Revenue-Cutter Service.

The plan of the expedition was drawn, and the whole placed under Capt. Francis Tuttle, R. C. S., whose experience and ability especially fitted him for such a command. The officers and crew were all volunteers, and although the *Bear* had just returned from a six months' cruise in Arctic waters, she was prepared, fitted out, and sailed from Seattle, Wash., November 27, 1897, just three weeks from the date of her arrival from the North.

Ten months later she returned again to Seattle, bringing four crews of wrecked whalers, and having fully carried out all the orders and accomplished all the purposes of the expedition without loss or accident of any kind.

WILLIAM MCKINLEY

PRESIDENT OF THE UNITED STATES



LETTER OF INSTRUCTIONS.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., November 15, 1897.

SIR: The best information obtainable gives the assurance of truth to the reports that a fleet of eight whaling vessels are icebound in the Arctic Ocean, somewhere in the vicinity of Point Barrow, and that the 265 persons who were, at last accounts, on board these vessels are in all probability in dire distress. These conditions call for prompt and energetic action, looking to the relief of the imprisoned whalemen. It therefore has been determined to send an expedition to the rescue.

Believing that your long experience in arctic work, your familiarity with the region of Arctic Alaska from Point Barrow, south, and the coast line washed by the Bering Sea, from which you but recently returned, your known ability and reputation as an able and competent officer, all especially fit you for the trust, you have been selected to command the relief expedition. Your ship, the *Bear*, will be officered by a competent body of men and manned by a crew of your own selection. The ship will be fully equipped, fitted, and provisioned for the perilous work in view, for such it must be under the most favorable conditions.

It is of course well understood that at this advanced season of the year the route to the Arctic Ocean through the Bering Straits will be closed to you, and because of this known condition you will not attempt it. Therefore your efforts will be directed to establishing communication by means of an overland expedition with the whaling fleet, not only for the purpose of succoring the people, but to cheer them with the information that their relief and ultimate rescue will be effected as soon as the condition in Bering Straits will permit your command to advance.

With this purpose steadily in view, you will prepare an expedition of at least two commissioned officers and one forward or petty officer of your command, to undertake, from a landing that you will effect, the journey overland to Point Barrow. You will assign an officer to the charge of this expedition, furnishing him with such written instructions for the government of his party as, in your judgment and discretion, will dictate as most likely to further the success of the under-

taking. This party should be prepared while you are en route and be ready upon leaving Unalaska, bound north, to take advantage of the first opportunity afforded for a landing. They should be amply provided and fully equipped for arctic travel to successfully accomplish the trying journey and work which will be ahead of them from the landing point. You will make your own selection from the personnel of your command, volunteers preferred, of the officers whom you will deem best fitted, physically and otherwise, to encounter the hardships incident to the trip in view. There are several plans deemed feasible, all leading to the same end, by the adoption and execution of some one of which, the primary purpose of the expedition, as above given, can be accomplished. The first and great need of the whalemen will probably be food. It is believed that the only practicable method of getting it to them is to drive it on the hoof. To effect this object and the other ends set forth above it is proposed:

First. That leaving Unalaska you proceed north with your command to Cape Nome, passing between Nunivak and St. Matthews Island, in sight of Nunivak; thence north between St. Lawrence Island and the coast of Alaska, carefully noting the extent and condition of the ice, if any is met, keeping well over to the mainland, the object being to ascertain where there is ice, or indications of it, in Norton Sound. If the way is clear, or you can by any means land the party on the north shore of Norton Sound, between Cape Nome and Cape Prince of Wales, natives can be communicated with at either Cape Nome, Sledge Island, Point Rodney, or Point Spencer. Should a landing be effected at any point named, or near it, a quantity of provisions, previously made ready, should be landed and cached there, to be afterwards conveyed by the natives to the reindeer station at Port Clarence, and left in the care of Mr. Brevig. From the point of landing will begin the overland expedition from your command, above dwelt upon, and the officer placed in charge of it should be fully instructed upon the following general lines:

1. Communicate as quickly as possible with W. T. Lopp, at Cape Prince of Wales; with a native named Artisarlook (generally known as Charlie), at Point Rodney. Failing these, then with Kittleson, superintendent Government reindeer station at Unalakaleet.

2. The purpose is to collect from the herds at Rodney and Cape Prince of Wales the entire available herds of reindeer, all to be driven to Point Barrow.

3. Mr. Lopp is to take charge of this herd and make all necessary arrangements for herders, sleds, and dogs; and the necessary food for the use of the party must be landed from the ship. Such clothing as can be carried should be transported. It is suggested that a reindeer might carry a "light" pack of, say, 40 pounds.

4. Mr. Lopp must be fully impressed with the importance of the work in hand, and with the necessity of bending every energy to its speedy accomplishment.

5. He must also make arrangements, providing sledges and so forth, for transporting the overland expedition (from your command) to Point Hope.

6. When the deer are collected and the start made, the party from the *Bear* should travel with them as far as Kotzebue Sound, to make certain that they are properly started on their route.

7. That point being reached, one officer and the necessary drivers should then push on ahead along the coast to Point Hope, leaving the other officers and Mr. Lopp to follow with the herd over the route selected to reach Point Barrow.

8. Impress upon Mr. Lopp and the natives employed that they will be amply rewarded for their labor in furthering the object of the expedition.

9. Arriving at Point Hope, the expedition will probably get news of the condition of things at Point Barrow.

10. If it should not be known at Point Hope that the whaling fleet is icebound and its people in distress, inform the white people there of the fact that they will be expected to take care of such men as will be sent down later from Point Barrow.

11. At Point Hope the officer in charge of the expedition should, if possible, engage Jim O'Hara at that place to guide the party to Point Barrow, together with as much provisions as can be transported.

12. Then push on, following the coast. En route parties of men may be met with, making their way to Point Barrow.

13. On this stretch of coast (between Point Hope and Point Barrow), at Point Lay, Ice Cape, Wainwright Inlet, and vicinity of Point Belcher, are natives who well know the situation at Point Barrow and can furnish aid in getting there.

14. Upon arrival at Point Barrow, the officers of the expedition should assemble, if possible, the masters of the ships, Charles Brower and Thomas Gordon, of Liebes's Whaling Station, Mr. Marsh, Professor McIlhenny, and Edward Aiken, late of Point Barrow Refuge Station, ascertaining the situation, quantity of available provisions and clothing.

15. If the situation is found, as now anticipated, to be desperate, the officers must take charge in the name of the Government and organize the community for mutual support and good order, apportioning the provisions on hand, and slaughter as many reindeer as necessary (which it is hoped will have arrived) for food, to make all hold out until August, 1898, when you will arrive in the *Bear*. Such reindeer as are left will be turned over to the Presbyterian Mission at Point Barrow.

16. The people at Point Barrow must be divided; some sent along the coast to Point Hope and others among the natives to the south.

17. In any event a part, if not all, of the people from the ships should be at Point Hope by July 1, where they can be reached and succored a month earlier than at Point Barrow by your ship.

18. No opportunity for hunting, sealing, or whaling, whereby the food supply may be added to, must be neglected, and provision must be made for the natives employed.

19. The officer in charge of the overland expedition, from whatever point started, must be instructed to deal firmly and judiciously with every situation that may confront him, particularly after arrival at Point Barrow, he bearing in mind that he represents the Government on the spot.

20. Having succeeded in landing the overland expedition with adequate instructions, you will seek such harbor as you may deem proper to await results and the opening of navigation in Bering Straits.

21. Before parting with the officers of the overland expedition you will instruct them to communicate with and report progress to you, should opportunity offer, giving Unalaska as your address, as you will doubtless return there for fuel and perhaps to winter.

Second. The foregoing supposes that you will effect a landing and start the expedition from some point on the north shore of Norton Sound. If, however, because of insurmountable obstacles, such as imperiling your command or getting fast in the ice, not to escape until spring, you should fail to make a landing for your party, you will try St. Michael or the western end of Stuart Island. At St. Michael the officer in charge of the overland expedition will apply to the military commandant, Colonel Randall, United States Army, for transportation to Cape Prince of Wales, or engage Mr. Englestadt, at Unalakik, or St. Michael, where he may be wintering for the purpose, when your instructions given as above will be carried out.

Third. Finding it impossible to effect a landing at any point in Norton Sound, you will then try Cape Vancouver, on the north side of which is located a Catholic mission, where transportation can be obtained to Andreafsky, and thence to St. Michael, or you may effect a landing at some one of the villages on Nunivak Island, and cross the expedition on the ice to the mainland.

Fourth. Having exhausted effort and found it impossible to land at any one of the named points north, then try Bristol Bay, anywhere from Cape Newenham to Ugaslik, where natives can be procured to convey the expedition to Togiak, Nushagak, or Ugashik. White men will be found at these places, or any of them, who can command and provide the necessary transportation to Bethel Mission, or to Lind's trading post, on the Kuskokwim River. There transportation can be procured to the Russian mission on the Yukon, and from there to St. Michael or Unalakleet, where the instructions above given will become operative.

From whatever point the overland expedition is landed from the *Bear* its first aim will be to get the reindeer herd in motion for Point Barrow, and you will instruct the officer given charge that celerity of movement is of first importance; that he must, so far as possible, live

on the country and change his teams for fresh ones as often as he can. You will be guided by circumstances in outfitting this expedition from the *Bear*:

1. As to the point at which it will be landed.

2. As to the facilities available for traveling expeditiously.

Fifth. If all the attempts to land the overland expedition on the Alaskan coast of Bering Sea should be prevented by the ice, then consider the possibility of sending the expedition by way of Katmai, in the Shelikoff Straits. Obtain all information relative to facilities and time on this route. You are aware that David Johnson made the trip from Bethel Mission, on the Kuskokwim River, to Katmai last winter in thirty-one days, and as he was in no haste it is thought his time can be materially shortened, if deemed practicable to attempt the journey to St. Michael by that route.

Before leaving Unalaska bound north, make such preparations as may be possible, even over the ice, if it promises success. Procure there dogs and kyaks, arrange with the Alaska Commercial Company for credit at any and all of their trading posts and connections, and gather all the information, relative to means of travel and the time required through the region from Bristol Bay to the Yukon.

Sixth. The routes and methods outlined in the foregoing are suggestions for your consideration. You doubtless have formed plans of your own and believe such can be executed with better success.

You will understand that your movements are not, by anything herein contained, in the least hampered. The whole situation may be summed up under two heads, to wit:

1. Food must be gotten to the starving men.

2. The best and most feasible method of doing this is to be adopted.

If the straits were open the whole thing would be comparatively easy of solution and accomplishment. That route being, to all intents and purposes, hermetically sealed, the next best course is to be attempted.

Before sailing from Seattle you will procure as many suitable sleds as you deem necessary, fitted with necessary appurtenances, as sleeping bags, etc.

You are hereby given full authority and the largest possible latitude to act in every emergency that may arise, and while impossibilities are not expected, it is expected that you, with your gallant officers and crew, will leave no avenue of possible success untried to render successful the expedition which you command. I transmit herewith orders to Lieutenant-Colonel Randall, United States Army, commanding at Fort St. Michael, and to Mr. Lopp, at Cape Prince of Wales, to extend to you and the overland expedition every facility and aid in their power. In the next summer, when you shall have carried to a successful termination the rescue of the people in the Arctic and have them safely on board the *Bear*, you will sail with all for San Francisco direct.

Mindful of the arduous and perilous expedition upon which you are about to enter, I bid you, your officers and men, Godspeed upon your errand of mercy, and wish you a successful voyage and safe return.

Respectfully, yours,

L. J. GAGE, *Secretary.*

Capt. FRANCIS TUTTLE, R. C. S.,
Commanding U. S. Revenue Cutter Bear, Relief Expedition for the Whalers in the Arctic Ocean, Seattle, Wash.

CAPT. C. F. SHOEMAKER,
Chief Revenue-Cutter Service

REPORT

OF THE

CRUISE OF THE U. S. REVENUE CUTTER BEAR, AND THE OVERLAND EXPEDITION.

U. S. REVENUE CUTTER BEAR,
Unalaska, Alaska, December 10, 1897.

SIR: I respectfully report the arrival of the *Bear* at Unalaska at 1.30 p. m. December 9, ten days and one and three-fourths hours from Port Townsend. During the first part of the passage rough weather was encountered and progress was necessarily slow. During the latter half, and until making the Aleutian Islands, pleasant weather prevailed. At Unalga Pass a snowstorm was met with, which lasted until after our arrival in Unalaska. The decks being encumbered with salt provisions in barrels, and a large portion of the forward coal bunker being filled with dry provisions for the whalers, which can not reach them until next season, I deemed it best to store these provisions while the *Bear* would be absent on the relief expedition. Arrangements were made with the agent of the Alaska Commercial Company for the storage, and at 2 p. m. the discharging commenced. At 8 p. m. the provisions were all in the storehouse. At 9 p. m. cast off and steamed to Dutch Harbor, to be ready for coaling ship in the morning. The morning of the 10th commenced with a heavy northerly gale, with rain and snow. Most of the forenoon was consumed shifting stores from the coal bunkers to the holds. After that was finished coaling proceeded, and now, at 10 p. m., is going on. Before midnight enough coal will have been received to have nearly 300 tons on board. If the gale dies out I propose, immediately after midnight, to leave for the north. Under my directions Lieutenant Jarvis has had the frame of a boat, to be covered with canvas, sawed out by Mr. Moran. This will be of use in the event of meeting open water while crossing the ice whenever a landing may be made.

Lieutenant Jarvis has secured seven dogs here, and made up what of his outfit was not completed in Seattle on account of hurried departure. At present it is my intention to send Lieutenant Jarvis, Lieutenant Bertholf, Dr. Call, and Koltchoff on the relief expedition

Lieutenant Jarvis thinks, and I coincide with his opinion, the fewer white people in the party the better; natives being able to get along with so much less in the way of outfits and provisions than white people, it is preferable to employ them. I shall give Lieutenant Jarvis such instructions as will empower him to use all the resources of the country through which he may pass. His promises to natives in regard to compensation for services will be respected. As yet I can not form any conclusion as to what I shall do. All depends upon where I meet the ice, and the attending conditions. It will be my endeavor to carry out the Department's instructions as nearly as possible. If I do not return to Unalaska within a month, it may be concluded the vessel has been frozen in. If such should be the case, no fears for the safety of the crew should be apprehended, as I shall take ample means to secure their safety. The mail address of this vessel will be Unalaska, Alaska.

Respectfully, yours,

F. TUTTLE,
Captain, R. C. S., Commanding.

The SECRETARY OF THE TREASURY,
Washington, D. C.

U. S. REVENUE CUTTER BEAR,
Dutch Harbor, Alaska, December 23, 1897.

SIR: I respectfully report the return of the *Bear* to Dutch Harbor, Alaska, from the trip to land the relief expedition to the whalers imprisoned in the Arctic Ocean.

The *Bear*, having finished coaling and watering ship, sailed from Dutch Harbor at 1.35 a. m. December 11, shaping a course to sight Nunavak Island. Strong southerly winds and thick weather prevailed. Owing to the thick weather I did not deem it prudent to run near enough to Nunavak Island to sight it. Therefore at 4 a. m. December 12 the course was changed to go well to the westward of it. At 8 p. m. December 12 considered we were to the northward of the island and shaped course for the east end of St. Lawrence Island. At 12.45 p. m. December 13 saw thin scum of ice, and shortly afterwards came across detached pieces. At 1.22 p. m. made Pamik Islets off Southeast Cape, St. Lawrence Island, bearing NW. ¾ W., distant 4 miles. The outlines of Southeast Cape could be dimly seen through the snow squalls. At 2 p. m., on account of the decreasing temperature of the water and increasing amount of drift ice, steered east in search of open water. At 3 p. m., finding less ice, steered NNE. At 5.40 ran into fields of broken ice mixed with slush ice. At 4, finding the ice getting too heavy to run through, turned and steered SSW. At 6.20 slowed down to half speed, and continued so with reefed mainsail, jib, and staysail, tacking to the eastward and southward every

DUTCH HARBOR, ALASKA WHERE THE BEAR SPENT THE WINTER OF 1897-8

The Bear is at the end of the wharf.

four hours. It was my intention to keep near the outer edge of the ice until daylight, in order to have a look at the ice to the northward, but the farther we worked south the thicker the mush ice became. Knowing that as soon as the wind died out the sea would go down and the mush ice would form into a solid mass which it would be impossible for us to get through, at 6.40 a. m. on the 14th I went ahead full speed to SSW. At this time the mush ice was so dense that we made but slow speed through it. At 8 a. m., being through the worst of it, hauled by the wind and commenced beating to the southward. At the time we turned back, in latitude 63° 13′ north, longitude 167° 28′ west, Cape Nome bore N. by E. ¾ E., magnetic, distant 85 miles, and Sledge Island N. ½ E., magnetic, distant 96 miles. It was with much regret that I came to the conclusion it would be impracticable to reach either of those places. Southerly gales had been blowing for several days, and would have banked the ice up on the shores for many miles out to sea, rendering it impossible to reach the shore over the rough ice. The risk of being frozen in (which would have defeated the object of the expedition) was too great to be taken. Cape Vancouver being the next nearest and perhaps available place, I determined to endeavor to reach there. Fortunately for us the weather cleared up on the morning of the 15th at 9 a. m., the cape was sighted, and the vessel headed for it. The chart gave soundings of 10 fathoms. The lead proved these soundings to be erroneous, and it was necessary to proceed with great caution.

At 4 p. m., being within 2 miles of the cape, slowed down and ran along the south shore in search of an Indian village shown on the chart. At 2.40 concluded there was no village, turned, and steamed for the north side of the cape. At 3.50, just as entire darkness shut down, made out a village some 4 or 5 miles distant to the northeastward. Ice was now making rapidly and there was every appearance of a gale coming on. A start was made to run to sea, but the water shoaled so rapidly, and darkness making it impossible to see any distance, it was thought best to get as near Cape Vancouver as possible and come to anchor. This was done at 4.15 p. m. During the night the current set to the westward between 2 and 3 knots per hour, bringing vast quantities of ice, which, being broken up, did not cause the vessel to drag anchor.

At 8.45 a. m. on the 16th got under way and steamed toward the village. At 9.20 anchored in 6 fathoms of water, village bearing E. by N., distant about 5 miles. Lieutenant Jarvis, with the second cutter, started for the village; just as he had left the vessel some native kyaks were seen near the beach about a mile from the vessel. His attention was called to them and he pulled ashore where they were. At 10.15 Lieutenant Jarvis returned and reported that the people ashore belonged to the village of Tununak. Among them was a half-breed trader who agreed to take the relief party to St. Michael and have

them there in ten days from the time of starting. He had dog teams and could get supplies on the route across the country. As the weather was threatening, the party and their outfits were loaded into two boats and started ashore. Before the boats returned the ice commenced to run, and before the first cutter could reach the vessel she was caught in it, and, not being able to get out, was rapidly being carried to leeward. Anchor was hove up and the vessel pushed through the ice until the boat was reached. Being in 4½ fathoms of water, the anchor was let go to bring the vessel head to the current. While this was being done, Lieutenant Berry, in the second cutter, got alongside and reported that Lieutenant Jarvis had concluded he would like the 7 dogs and 2 sleds we had on board (Lieutenant Jarvis had on his return from the shore told me they would not be needed), and also some other articles. At this time we were some distance to leeward of the landing place, and it was necessary to get to windward in order to get a boat ashore. Anchor was hove up and the vessel steamed as far to windward as the depth of water permitted, and again anchored. The dogs, sleds, and other articles were loaded into the cutter and sent ashore in charge of Lieutenant Berry. At 4 he returned and reported the party had left the beach, and the tracks in the snow showed they had started for the village; so he had landed his boat load and returned to the vessel. Considering the present anchorage dangerous, the vessel was got under way and headed for sea. At 4.40, being in 4½ fathoms of water, extremely dark, and every indication of a gale, turned and stood SE. At 4.55 anchored in 6½ fathoms of water. During the night a strong easterly gale with snow and very violent squalls prevailed. At 10.30 p. m. the ice commenced to run and continued until toward morning, but fortunately it was not heavy enough to part the chain. As the gale came from off the land there was no sea of any account.

At 8.40 a. m., on the 17th, got under way and steamed to the westward, running at half or slow speed, occasionally stopping and backing when the water shoaled to less than 5 fathoms. The bottom was very irregular. At times 13 fathoms would be found for a distance of 3 or 4 miles, and then this would decrease to 4¾ fathoms. The land was shut in by the falling snow, thus making it impossible to tell which way or how far the currents had set the vessel. The soundings on the chart having been found to be wrong, no reliance could be placed upon them. A rapidly falling barometer predicted the approach of a gale, or I should have anchored the vessel until the weather cleared. Knowing the anchors would not hold in the heavy sea that a gale would create in such an exposed place, there was nothing to do but to continue feeling our way along. At 2.10 p. m., during a momentary cessation of the snowstorm, a rocky islet off the northeast end of Nunavak Island was seen and recognized, bearing SE. by S. ¼ S., and having something to take a departure from we

could now go on with more confidence. It was 7 p. m. before the depth of water increased sufficiently to warrant running at half speed, and at 8 o'clock, having 13 fathoms, went ahead at full speed, steering W. by S, along the north shore of Nunavak Island. At 10 p. m. there was a strong SSW. wind, bringing a heavy beam sea, and the vessel was put under short sail. At 11.30, on account of the heavy sea, ran at half speed, and at 2.35 a. m. on the 18th the wind and sea increased to such an extent as to make it necessary to heave to. The vessel was brought to the wind on the port tack and lay in that position until 9.45 p. m. on the 18th. The wind then moderating, a course was shaped for St. Paul Island, but the heavy sea did not permit running at full speed until 6 a. m. on the 19th. St. Paul Island was made at 7.50 a. m. on the 20th, and the vessel came to anchor in Southwest Bay at 11.50 a. m. Mr. J. Murray, special agent in charge of the islands, Mr. Redpath, agent of the North American Commercial Company, and others came on board. They reported all well on the island, and that no vessels had been seen since the departure of the *Bear* on October 24 last. They were greatly pleased to receive the mail and newspapers we brought them. Mr. Murray said the seals branded in 1896 had returned to the islands with the brands perfectly legible and their skins destroyed as far as commercial value was concerned.

It was my intention to remain only a few hours, to give the people a chance to answer their letters, and then proceed to St. George Island. A strong northerly wind coming up, I knew there would be no landing at St. George, therefore remained at St. Paul until 6.30 a. m. on the 21st, when the wind having moderated, got under way and steamed for St. George. Arrived off the village at 11.30 a. m., but a heavy sea was running and a landing was impossible. Signals were made to "try Garden Cove," on the southeast side of the island, and the *Bear* was steamed around there and anchored at 1.15 p. m. Here, too, a bad sea was running on the beach, through which it would be dangerous to attempt a landing in a boat, so the mail was inclosed in a small cask, to which a line with a heaving stick was attached, taken in the cutter, and carried to the outer edge of the breakers, where the heaving stick was thrown ashore and the cask drawn through the breakers. There was no way of getting the mail from the shore, but Mr. Judge, the special agent, shouted that all was well on the island. Upon the return of the boat, at 2.30 p. m., anchor was hove up and a course shaped for Unalaska, which was reached at 12.50 p. m. December 22.

During the cruise much bad weather was experienced, but neither the vessel nor the crew sustained any injury. Everything will be ready to leave for the north as soon as there is any possibility of getting news from the expedition or the imprisoned whalers.

Inclosed is a copy of my instructions to Lieutenant Jarvis. (See Appendix.) In addition to these, a copy of the instructions received

by me from the Department under date of November 15, 1897, was also given him.

I inclose a chart showing the track of the *Bear* from the time she left Unalaska until her return to that port.

Respectfully, yours, F. TUTTLE,
Captain, R. C. S., Commanding.

The SECRETARY OF THE TREASURY,
Washington, D. C.

U. S. REVENUE CUTTER BEAR.
Norton Sound, Alaska, June 23, 1898.

SIR: The *Bear* left Unalaska June 14 for St. Lawrence Island. Pleasant weather was experienced during the passage, and the island was reached at 12.30 a. m. June 19. After a stop of a couple of hours a start was made for Indian Point, but within an hour heavy ice was met with and a thick fog settled down, and it was deemed advisable to return to the island and await clearing weather.

At 9 a. m. of the 20th the fog lifted, and another start was made for Indian Point. After steaming through 20 miles of ice it became so closely packed as to prevent further progress, and the vessel was again headed back for St. Lawrence Island, which was reached at 5 p. m. There being some open water to the northward and eastward, I concluded to try for King's Island, but in a couple of hours ice was again met with, and until 9 a. m. of the 21st was spent working toward that place. At that time the ice ahead was closely packed, but to the northward appeared open water, and the vessel was headed in that direction. At 11 a. m. more open water was struck, and St. Lawrence Bay, Siberia, being the nearest port the vessel was headed for it, and at 10 a. m. we reached the village at North Head. The bay was solidly frozen, making it impossible to reach the reindeer station, so a messenger was sent to notify the superintendent of the station of the arrival of the *Bear* and that she would remain at North Head until night in order that he might communicate with us.

During the evening the superintendent, Mr. Kelly, came over and reported there would be about 800 reindeer to transport to the Alaskan shore. At 2 a. m. the 23d, was got underway for Cape Prince of Wales, where she arrived in the evening.

Upon landing I found that Mr. Lopp, who went to Point Barrow with Lieutenant Jarvis, had returned, and I was greatly pleased to learn that the overland expedition had been entirely successful, the reindeer having arrived in good order, and no accidents had happened to any of the members. I forward herewith copies of reports I received from Lieutenant Jarvis.

Lieutenant Jarvis was obliged to buy a great many articles for the expedition and to hire a number of natives for various purposes. As

ST. LAWRENCE ISLAND

FORECASTLE OF THE BEAR AND VIEW AHEAD, WHEN THE SHIP WAS HEADED SOUTH ON ACCOUNT ICE. LAT. 67° 13' N., BERING SEA

he could not carry with him enough articles to pay for services, etc., I had instructed him to give written orders, to be presented on board the *Bear*, and which I would make good.

I have already given out a quantity of flour and sugar, but other articles, such as cloth, tobacco, powder, soap, etc., are not in the ship's stores. I shall purchase them in St. Michael and deliver on my return next week.

At St. Michael the Alaska Commercial Company supplied the party. At Point Hope, H. Liebes & Co. furnished the supplies. Vouchers will be made out and forwarded to the Department.

Lieutenant Jarvis mentions the necessity of a supply of clothing and bedding for 100 men. I am in doubt as to my authority to purchase them, but as it is a clear case of absolute necessity I will, if possible, obtain them at the lowest price.

The matter of compensating Mr. Lopp for his services can not be settled until I see Lieutenant Jarvis. Mr. Lopp deserves the greatest praise and a substantial reward for what he did for the expedition. He left his wife and children, the only white people in this part of the country, alone in an Eskimo village and went with Lieutenant Jarvis on what looked very much like a forlorn hope.

Charlie Artisarlook, of Point Rodney, also left his family, took all his reindeer, and went with Lieutenant Jarvis, and this forenoon I found his wife and child in a camp of natives on Sledge Island, where they were hunting seals. Mrs. Artisarlook said they had nearly starved since her husband left, as seal and fish, their principal food, had been very scarce. I gave her ample provisions to last three months, and promised to bring her husband back from Point Barrow.

I expect to reach St. Michael to-morrow, and as soon as supplies can be obtained I shall proceed north.

I do not anticipate being able to reach Point Hope before the 15th of July, as there are enormous quantities of ice both in Bering Sea and above the straits in the Arctic Ocean.

Respectfully, yours, F. TUTTLE,
Captain, Revenue-Cutter Service, Commanding.

The SECRETARY OF THE TREASURY,
Washington, D. C.

REPORT OF SECOND LIEUT. E. P. BERTHOLF, R. C. S.

U. S. REVENUE-CUTTER SERVICE,
Point Hope, Alaska, July 15, 1898.

SIR: In accordance with the instructions of Lieut. D. H. Jarvis, Revenue-Cutter Service, commanding the overland relief expedition, under date of March 5, 1898, a copy of which is hereby inclosed (see Appendix), I respectfully submit the following report:

The plans referred to for the return of Mr. W. T. Lopp related principally to the transportation of provisions up the coast to the mouth of the Pitmegea River. With this object in view, I left Nelson's Whaling Station on March 31, with two sleds loaded with the provisions for the cache, and after three days' hard traveling, for the sleds were heavy and the trail very bad, reached the mouth of the Pitmegea River. On the way up we had stopped at the Corwin Coal Mine and procured a few boards from the old ruined house there, with which to build our cache. Upon reaching our destination we found no driftwood handy for posts, so we cut into the side of an old native hut, scooped out the snow and made a cache in that way, after which we closed up the opening with the boards we had brought along and left a note between two boards stuck up in the snow, to call attention of whoever should pass that way coming from Point Barrow. Having finished our task, we started to return on the morning of the 3d of April, and now having light sleds made excellent time, reaching Cape Lisburne that same night, a distance of some fifty-five miles. The next day we returned to the station here. On the way down we also cached some seal meat at the Corwin Coal Mine, to be used for dog food. Both caches were found by Mr. Lopp when he returned from Point Barrow, and he left here on the 23d of April for his home at Cape Prince of Wales, leaving one deer herder behind with me, to care for the deer that had strayed from the main herd while en route to Point Barrow.

When Mr. Lopp and myself left Anyok (near Cape Kruzenstern) with the deer herd, on the 21st of February last, it had been decided to send back to their homes four of the native herders then with the herd, and these were consequently left behind at that place, provision having been made for their return travel.

Having accompanied Lopp and the deer herd along the coast as far as the place where he was to strike across the lagoons for the Kivalena

WHALING STATION AT POINT HOPE, ALASKA—SPRING

WHALING STATION AT POINT HOPE ALASKA WINTER

KILLING DEER FOR THE WHALERS, AT POINT BARROW.

SKINNING REINDEER AT POINT BARROW.

River, I parted company with him on February 27 and proceeded to this place, in accordance with previous orders from Lieutenant Jarvis. Here I received word on March 21 that some of our deer were at Anyok in charge of two of the herders. I sent word to them to drive the deer up here, and on April 21 the herd reached this place in charge of Iuk and Keok. It appears that somewhere between Anyok and the Kivalena River these deer, 34 in number, had strayed from the main herd unnoticed, and a native who had acted as a guide had discovered them on his return to Anyok. As the four herders had not yet started on their return trip to their homes, they went after the deer and drove them back to the village, after which they all started for their homes at Cape Prince of Wales, except Iuk and Keok, who then drove the small herd here. Three deer had been killed for food on the way, so that when they reached here there were 31 in the herd, 26 of them being females. I gave the herders my tent and camp gear, employed three young natives to help them, and sent them with the deer several miles back into the hills, where the moss was good and they would not be troubled by the dogs from the villages. There the camp was established and the deer cared for. When Lopp passed here on his way home he took Keok with him, leaving Iuk to care for the animals, with the help of the three young natives I had engaged. From time to time I have supplied them with such clothing and provisions as were deemed necessary, and also tobacco, cartridges, shot, lead, and powder. All these articles I obtained from Mr. Nelson, manager of Liebes & Co's Whaling Station, at Point Hope, with whom I have been living, and charged the same to the account of the overland relief expedition. Up to the present time 2 of the old deer have been killed for food and 25 fawns have been born, 5 of which have died, thus leaving 29 old deer and 20 fawns in the herd, and all in good condition and apparently well cared for.

With regard to the illicit distilling of spirituous liquor by the natives, I have made several trips to different villages and visited and searched all the native houses from Cape Thompson to Point Hope, discovering and destroying six stills and about ten gallons of mash nearly fermented. On two of these trips I have been assisted by Capt. Peter Bayne and Mr. Henry Koenig (commonly known as Cooper), who have whaling stations on this point, and I have been most materially assisted by Mr. Nelson, who accompanied me on several of the trips.

When I visited the native village at Point Hope, Mr. Nelson and myself searched several of the houses there, but finding no traces of what we were looking for I concluded to talk to the natives and try persuasion, Mr. Nelson acting as interpreter.

After telling them about the bad effects of whisky, I recited instances where whole villages had been depopulated by indulgence in the liquor, having thereby been rendered incapable of providing the nec-

essary food supply for the winter. The natives appeared very much impressed by what was said, and they soon showed us many places where the stills had been hidden, buried in the snow, and in a short time we had destroyed nine stills, which had been concealed in all sorts of snow banks, where it would have been almost impossible for us to discover them. The following day a native woman came all the way down here from Point Hope, a distance of 15 miles, and gave me five still pipes, the tubs of which she said had been broken up.

Although whisky was introduced into northern Alaska many years ago, when the ships first began to make trading voyages to that region, the distilling of spirits was not known or practiced by the natives until about ten years ago, when white men who were engaged in the whaling business on Point Hope taught the old chief Ah-tung-owra, of the Point Hope village, a process of obtaining a sort of alcohol from a mixture of flour, water, and sugar or molasses. The chief taught the process to his henchmen, and they in turn gave it to the people of the different villages they happened to visit, and thus it was passed along until there was not a single village on the coast from Point Barrow south that did not have one or more distilling apparatus going whenever the natives could procure the necessary flour and molasses. During the past few years, however, the Point Barrow natives have stopped making this liquor, having realized its bad effects, but from Point Hope all along the coast to Cape Prince of Wales, and even as far as Unalaklik, the natives will brew and drink this "whisky" as often as they can procure the necessary ingredients—molasses or sugar.

The general practice is to mix together one part each of flour and molasses with four parts of water, and then let the mixture stand for several days in a warm atmosphere until it is fermented. The distilling apparatus consists of a 5-gallon coal-oil tin, an old gun barrel, and a wooden tub. The fermented mash is put in the coal-oil tin, and the gun barrel, which serves as the coil, leads from this tin through the tub, which is kept filled with cracked ice. A fire is then built under the tin, and as the vapor rises from the heated mash it is condensed in the gun barrel by the ice in the tub, and the liquor comes out at the end of the gun barrel drop by drop and is caught in a tin cup or wooden bowl, whichever happens to be on hand.

While the distillation is in process, the natives who have an interest in it, by virtue of having furnished the flour or molasses or the still, sit around and patiently wait for a sufficient quantity of spirits to drop from the gun barrel to allow them a drink. The process is necessarily slow and it takes a long time to obtain a half pint of the liquor, but the "whisky" makes up in strength what it lacks in quantity and it does not take much of it to make "drunk come" to several natives, which, being the object for which the stuff was brewed, the result is highly satisfactory from a native standpoint.

In these debauches there is no discrimination made on account of sex, the women being entitled to and obtaining their share as well as the men. The natives being as a rule good natured, the liquor generally has the effect of making them hilarious and voluble, and they make a great deal of noise shouting and singing, but they are not usually vicious when intoxicated. Of course when a bad-tempered native gets drunk he becomes very bad, and there is likely to be a cutting or shooting affray, but this is not often the case, and the bad result of whisky making and drinking comes from the fact that the life of the average Eskimo family is one continual struggle for enough to eat and enough to wear, and when the elder members of a family keep on a drunken debauch for several days, the children sicken for lack of nourishment and die. Often in the fall whole villages have been known to engage in a drunken carousal for weeks at a time, and as they thus neglect to lay in enough fish and game for the winter's supply, many of them perish from starvation before the game again becomes plentiful in the spring.

The interior natives do not suffer so seriously from the whisky habit as their brothers of the coast, probably from the fact that flour and molasses are harder for them to get, and when they come to the coast in the summer to trade with the ships, if they do brew the liquor, they use up their flour while on the coast, so that when they return to their villages they have nothing with which to make the liquor, and are thus not rendered incapable of hunting the deer during the winter months.

Although I destroyed in all about twenty stills during the winter, there remain, I believe, many other stills in this vicinity which I have been unable to discover, but even if they were all destroyed the natives could easily make more, and I am convinced that this illicit distilling can not be stopped unless the whites are prevented from trading molasses and sugar to the natives or these articles are diluted with something that will prevent fermentation. While at Point Hope I mixed up two mashes after the native formula, putting in each a little yeast to aid fermentation, and in one of the mixtures I put about a teaspoonful of seal oil. After allowing the mixtures to remain in a warm place for several days, I found the one having the seal oil in it had not fermented at all, while the other was fully fermented, and as a result of this experiment I recommended to the white traders at Point Hope to dilute their molasses with a little seal oil before trading it to the natives, but whether or not they will do so is hard to say.

Some of the older natives having seen the effects of whisky, and realizing it is rapidly reducing the numbers of their people, try to stop its manufacture by the younger and more thoughtless ones, but with poor success; and in this connection I will state that I have been asked by several Eskimos, who seemed to be very intelligent, the very pertinent question why the white men are allowed to trade molasses

to the natives if it is wrong for them to make whisky with it, and why the ships are allowed to trade whisky to the natives at all.

I can not speak too highly of the aid given me by Mr. Nelson in this matter, whereas it is an open secret that there have been times when white men on Point Hope have encouraged this illicit distilling by buying and drinking the concoction after it has been brewed by the natives.

The circumstances of the murder of the native Washok by other natives last fall, are as follows:

About 11 o'clock in the forenoon on the 17th of November, 1897, Mr. Rustan Nelson was sitting in his house reading, and Messrs. Charles Sandbourne and George F. Tilton were working in one of the other rooms, when they all heard two rifle shots fired in quick succession, followed shortly after by four others. Nelson thrust his revolver in his pocket, rushed out of the house, and there saw, close to the house, two natives, Avulik and Shukurana, each with a smoking rifle in his hand, standing over the body of Washok, which was lying on the snow close to his sled, pierced with six bullet holes. Washok's wife was close by, and several other natives were running to the scene of the firing. Sandbourne and Tilton ran out soon after Nelson, and after ascertaining that Washok was dead and beyond all help, they all returned to the house. Soon after the body was carried out into the country and put up on sticks, after the native fashion, the murderers aiding in the ceremony.

It appears that Washok and his wife were returning to the village with a load of wood, the two above-named natives having concealed themselves, shot Washok when he came near enough to make their aim sure. There was probably only one actual witness to the affair besides the two murderers, and that was Washok's wife, all the other natives of the village being out of sight at the time, and subsequent inquiry developed the fact that these other natives knew that the shooting was to take place. The natives gave as a reason for the killing that the murdered man was a bad character, having threatened the life of an old man of the village, and having shot at two men the night before he was killed, but the real reason was undoubtedly because of a family feud, of which I will speak later.

After the killing, the two murderers left this place, Shukurana going to the village of Tarpkwa, on the northern shore of the Cape Prince of Wales Peninsula, and Avulik to another village near Cape Thompson. Avulik came back here this spring to work for Nelson during the whaling season, and it has been my intention to bring him on board the *Bear* with me when I reported, and turn him over to you. I had planned to do this without exciting his suspicions, for it seemed quite impracticable for me to seize him and hold him here as prisoner, there being no place to shut him up

securely. It has been the custom of the natives to remain at the whaling stations until the ships arrive in the early part of the summer, so as to get their pay, and I could easily have persuaded him to accompany me on board the *Bear* without exciting his suspicion; but this spring, as no whales were caught, no pay was coming to the natives, and they have been gradually leaving for the eastward to catch their fish for the winter. Avulik seemed in no hurry to leave, and in fact told me he was going to wait for the ships, but when I returned to this place on the 10th of July, after a trip to the Point Hope village, I found that Avulik and his brother had departed in their canoe for the Kivalena River, where they intend to live the coming winter. He probably went to the eastward to fish like the other natives, as seal is very scarce here now, and I am sure he had no idea of my intention toward him, as I had spoken about it to no one but Mr. Nelson, and neither he nor I have talked of the matter in the presence of anyone else. Avulik can be found near the mouth of the Kivalena River, and Shukurana is somewhere on the south side of Kotzebue Sound. The witnesses to the affair can be found here, except Mr. Tilton, who is probably in San Francisco.

This murder was one of a series, resulting from a feud between different families, all the people connected with the affair being originally Port Clarence natives, which tribe have always been notorious for the number of their killing affairs.

According to the native custom and tradition, when one man is killed by another, some one of the relatives of the murdered man is bound to avenge the deed, and this second murder must in turn be avenged, and so on, thus creating a feud, a state of affairs which is by no means confined to uncivilized peoples. Usually, however, when a native has done any killing which must, according to the custom, be avenged, he leaves his village and transfers his home to some other part of the coast, so that he will be obliged to be continually on his guard, and thus it is often many years before the original murder is avenged. This was the case in the affair at Point Hope. Washok was the son-in-law of a Port Clarence native by the name of Itoyhenna, who, because of some murder, had moved with his family to Point Hope. Avulik belonged to another family that had also been obliged to move away from Port Clarence, and had established their home on the Kivalena River. Washok had been concerned in the killing of some member of the Avulik family, which called for revenge, and he met his death last fall as the outcome of that feud. From the native standpoint it now becomes incumbent upon some member of the Washok family to kill some member of the Avulik family, though it may be years before circumstances bring together the representatives of the two families.

There being no headman, chief, or lawgiver among the different villages or tribes of the Eskimo, each native family is a law unto

itself, and up to the present time the natives having been under little or no restraint, have killed and revenged as their traditions or inclinations made it expedient. They have, as a rule, confined their killing to other natives, though there have been isolated cases where a white man was the victim.

Some time in August, 1897, a young native belonging to the Cape Prince of Wales village shot and killed a white prospector by the name of Frank Boyd while the latter was on his way up the Noatuk River on a prospecting trip. This murder was undoubtedly committed to avenge the death of the young native's father, who was killed some years ago by white men on board a trading vessel, during a fight between the vessel's crew and the natives of Cape Prince of Wales. I do not intend to convey by the above the idea that the Eskimo is murderous by nature. Far from that being the case, he is, as a race, unusually gentle, kind, and good natured; but even among the best tempered of people quarrels will sometimes occur, and then if a killing takes place the feud which ensues may cause the death of others in the course of several years.

On or about the 27th of May last another murder occurred near Cape Thompson. A native named Anemeah shot and killed his former wife because she refused to return and live with him in company with his new wife. This murder was not the outcome of a feud, but simply the wanton act of a native who has a reputation among the other Eskimos as a very bad man, and several natives came to me after the shooting to ask if I was not going to kill Anemeah because he was such a bad native and had killed his wife, for they knew I came from the *Bear*, and their only idea of authority outside of themselves is represented by that vessel.

As I have said, the Eskimos have no chiefs among themselves; consequently there is no one among them to whom they owe obedience, and the only way by which any one native can gain ascendancy over others is by becoming rich as viewed from a native standpoint; that is, he must have plenty of furs, deerskins, food, etc. Such a man is called by them an "Oomailik," and his very limited authority is obtained simply because he is rich and can afford to gather about him other natives who live upon his bounty and do his bidding. Consequently they think the *Bear* is sent up to Alaska each year by some big white Oomailik, and as she has on board what seems to them very big guns, they look upon and recognize her as a power and an authority. I assured them that, though I did not intend to kill Anemeah for his offense, when the *Bear* came up in the spring Anemeah would be taken far away and punished for what he did, and I would have endeavored to bring him on board the *Bear* when she arrived, but he was taken ill with some affection of the chest and died July 10.

It is only fair to the Point Hope tribe of Eskimos to say that, though these two killing affairs, of which I have spoken, happened within a

period of but seven months, none of the parties involved were members of that tribe, and that for several years previous there has not been a single killing affair among the Point Hope natives.

The native village of Tigera is situated on the northern shore of the extreme end of the spit of land called Point Hope, and comprises in all about two hundred and fifty inhabitants. It is evidently a very old village, for the graveyard contains ruins of thousands of very old graves, but no idea of the probable age can be obtained from the natives, as they have no conception of time at all, and do not even know their own ages or their children's after the latter have passed the fourth or fifth year.

Traditions concerning their origin are very hazy and unsatisfactory, but they have a well-defined one that they originally came from Cape Prince of Wales, and if that is true it must have been many centuries ago, for, as I have said, their graveyard is exceedingly old; and though the natives of Point Hope and Cape Prince of Wales speak practically the same language, yet many of the words have different endings in the two places, and the accent is softer at Point Hope; indeed, the accent becomes still softer and more pleasing as one gets farther north, so that the hard "k" sound of the Norton Sound district is changed to the soft "e" sound at Point Barrow.

There were during the winter of 1897–98 thirteen different whaling stations strung out at intervals along the shore between Point Hope and Cape Seppings, owned and run by white men, and connected with these outfits were forty white men—that is, there were forty men who were not Eskimos, for in that country every man who is not a native is called a "white man," whether he is an American, Japanese, Portuguese, or negro, and this whaling colony on Point Hope included all these nationalities and many others.

These outfits need, besides the white employees, many natives to help man their boats during the whaling season, and as the natives of the Point Hope village prefer to hunt the whales on their own account, each spring large numbers of natives come up the coast from the region of Kotzebue Sound, and the Noatuk and Kowak rivers to work for the stations, in return for which they receive as pay rifles, ammunition, tobacco, and the much-prized white man's food—flour and molasses. Thus during the spring and the early part of the summer there is a large population stretched along this shore, but later in the summer, after the whaling season has ended and the ice has left the beach, these natives all depart for the rendezvous near Cape Blossom, and the coast is deserted again save for the whaling stations and the village of Tigera at Point Hope.

The Noatuk natives had plenty of stories to tell me of gold to be found in the small streams tributary to their river, but upon questioning them closely I invariably found it was someone else that had seen the gold, and they were simply telling me what they had heard.

I also heard two stories of an old man living on the Kowak River who had been chased many years ago by a "caligabuk," which is the Eskimo name for the mammoth. But very little dependence is to be placed in the average Eskimo's stories of strange things, for they are very apt to tell you what they think you would like to hear, hoping to get some present in return for their information, and for this reason they draw largely upon their imagination.

While I was at Point Hope a story came up from the Noatuk natives of the birth of a most remarkable child. The mother of the child was an unmarried woman, who had a dream prior to the birth, in which the Good Spirit had told her to name him "Jesus Christ," and when the child was about a year old it could talk, make water burn, and was endowed with the power to tell a bad person from a good one. According to the story, if a good person approached this youngster it would laugh and crow and hold out its hands in greeting, but if a person who was bad came near him, the child would howl and cry and call out for the bad person to go away. The imagination of the natives in this case was probably stimulated by the attempts of the missionaries in Alaska to teach them the Bible, and one native having heard somewhere the story of the Savior's birth had passed his version of the story along, which became twisted and distorted by others in turn until it reached us at Point Hope in the shape I have stated above.

When I arrived at the point in March the landscape was, of course, one vast expanse of snow, extending in all directions, and so continued until the summer, when, under the effect of the continual presence of the sun above the horizon, the snow rapidly disappeared, and the latter part of July there was not a sign of snow to be seen anywhere except on the tops of the highest mountains back in the country. It was truly remarkable how quickly a bank of snow would disappear under the influence of the ever-present sun, and on the tundra, flowers quickly began to bloom, even while other parts of the ground were not entirely devoid of snow.

When the *Bear* arrived in July it was difficult to imagine I was 125 miles north of the arctic circle, for the open sea showed not a sign of ever having had ice on its surface, the land was covered with many varieties of short-stemmed and brilliantly colored flowers, and the temperature, which had been as low as −45 during the winter, was such that one could wander about in shirt sleeves and not feel uncomfortable. And yet in spite of the fact that we could walk around lightly clad and gather quantities of flowers, with no ice or snow to be seen, if one were to dig below the surface of the ground in the neighborhood of Point Hope from above the Kookpuk River to about half way to Cape Thompson, solid glacial ice would be found at a depth varying from 2 to 7 or 8 feet. How far down this ice extends is not

known, but under Mr. Nelson's storehouse an ice house has been chopped out to a depth of 15 feet, and the ice is still clear and solid.

The range of mountains which extends from Cape Lisburne south to Cape Thompson and thence along the coast, comes down to the sea in abrupt bluffs at both these capes, but is broken about half way between them where the Kookpuk River comes through to empty into the inlet just north of Point Hope. The sides of the mountains overlooking this river show unmistakable signs of corrosion by the lateral moraines of a glacier, and it is more than likely that the land making out from these mountains in a sort of peninsula and terminating in Point Hope, was formed by the soil deposits on an extinct glacier, which during the glacial period of that region came down through the valley now forming the bed of the Kookpuk River.

In conclusion I will state that the account of Liebes & Co.'s whaling station at this place for services and supplies furnished the overland expedition is not ready to be submitted at present, but Mr. Nelson informs me he will have the same ready upon the return of the *Bear* from Point Barrow.

Very respectfully,

E. P. BERTHOLF,
Second Lieutenant, R. C. S.

Capt. FRANCIS TUTTLE, R. C. S.,
Commanding U. S. Revenue Cutter Bear.

REPORT OF FIRST LIEUT. D. H. JARVIS.

OVERLAND RELIEF EXPEDITION.

Point Barrow, Alaska, July 10, 1898.

SIR: An expedition, consisting of Capt. A. C. Sherman, F. Hopson, James Clark, W. J. Dryden, Anton Roderique, Oscar Thompson, Peter Nelson, Ivan Elt, and two natives, will leave here to-morrow to proceed south along the coast to meet your command. The situation here has not materially changed since my last report, with the exception of the loss of the schooner *Rosario* on the 2d instant, having been crushed by the ice. Her crew, provisions, and outfits were all saved, and the vessel is now being stripped. My last information from the steamer *Jeannie* was of the date of June 1, from the steamers *Newport* and *Fearless* of June 19, at which dates they were all right. They have provisioned until about August 15.

At this place we have provisions to last, under the present ration, until August 20. Should the necessity be apparent, the provisions will be extended to last the full month of August. The steamer *Bear*, at Sea Horse Islands, has flour until August 1, and we have reserved enough here for her use until August 15. I am supplying her with meat as she needs it. Up to this date, I have killed for food 159 reindeer, and expect to have to kill more before your arrival.

Until the present there has been practically no change in the ice, and during the past ten days the wind has been very unfavorable for any opening. Should this continue, I will begin, not later than August 1, to move some of the men south along the coast, to go as far as Icy Cape, if necessary, to meet the ships.

I would suggest that you send flour to the *Bear* as soon as possible, which might relieve us here of the necessity of sending the 500 pounds we have reserved for her use. We are badly in need of clothes and soap, but can make out until your arrival. Since my last report there has been one death—Phillip Mann, seaman, of the *Jesse H. Freeman*—of heart disease. At present the health of the people is good. There seems now no danger of any distress, but we will be in urgent need should the ships not arrive by August 1. I inclose for your information a list of the wrecked men now under my care. Those

ALEXIS KALENIUS'S HOUSE AT TUJUNAK

belonging to the *Belvedere* are being cared for here because of the great difficulty in getting provisions to the vessel.

Respectfully, yours,

D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

Capt. F. TUTTLE, R. C. S.,
Commanding U. S. Revenue Cutter Bear.

U. S. REVENUE STEAMER BEAR,
September 1, 1898.

SIR: The overland relief expedition, together with its provisions and outfits, was landed about 3 miles from the village of Tununak, near Cape Vancouver, Nelson Island. The beach at that place, at the base of a range of mountains, was narrow and strewn with a great number of rocks and bowlders, and as the snow was quite deep and soft it would have been difficult to pack our outfit over this road to the village. The shore was free from ice, however, and a half-breed Russian trader, with several natives, having come from the village in their kyaks to meet us, I engaged them to transport the outfit to the village by water. This they did by lashing their kyaks together in pairs, like catamarans, and they were able to take the entire load in one trip, while we followed along the beach on foot, reaching the village just before dark. The village was formerly the site of a Catholic mission, but that had been abandoned, and at that time the population consisted of the trader, Alexis Kalenin, his wife and family, together with some thirty natives. They all lived in native huts, with the exception of Alexis, who occupied a well-constructed log house and store. Having reached the village, we were taken into Alexis's house with that open-hearted hospitality which is universal among the natives of Alaska. The kyaks arriving a little later, the natives carried everything up to the store, when we discovered that some of the flour and hard bread had been wet by the sea and was unfit for use. Now that the expedition had at last gotten ashore, it was important to get started on the journey, and I immediately set to work bargaining for means of travel. It was fortunate that the *Bear* was able to make a landing at Tununak, for, though the influx of miners into Alaska had made dogs scarce along the Yukon, Alexis's village was out of the line of travel, and his dogs had not yet been bought up. He agreed to let us have as many as we needed, furnish natives to accompany the expedition, and go along himself as a guide across the Yukon Delta country. I learned that St. Michael could be reached in about twelve days, if the

weather held good and the sleds were not heavily loaded; but, as two of Alexis's teams had just returned from an eight days' trip to the Kuskokwim River, he insisted it was necessary for them to rest a day before setting out on another journey. Realizing that it was of the utmost importance to get the deer herds at Cape Prince of Wales moving north as soon as possible, I was loath to lose even one day; but nothing was to be gained by starting improperly prepared, and it was decided to postpone our departure until the morning of the 18th.

When the boats returned to the *Bear*, after landing us on the 16th, she hove up anchor and steamed offshore, and we thought she had departed; but on the morning of the 17th she was still seen in the offing, and, from noises we heard during the night, it was concluded she had landed the sleds and dogs that had been obtained in Unalaska, so Alexis and Koltchoff were sent down to the landing place to investigate. They returned soon after, bringing with them two sleds, seven dogs, some dried fish for dog feed, and some other articles that had not come ashore the previous day. The remainder of the 17th was spent in overhauling our clothes, provisions, and outfit, and setting aside enough food to last until we could reach St. Michael. I concluded that for quick traveling, a load of from 200 to 300 pounds was enough for each sled, and the arrangements were made with this in view.

It was learned from Alexis that there were native villages scattered along through the country to the Yukon, and at such convenient distances that one could be reached each night, and it would not be necessary to carry a large amount of dog food, as sufficient could be obtained as these villages were reached. The sleds made in Seattle were heavy and cumbersome, while those of Alexis were light and strong, and thoroughly adapted to the needs of the country. It was finally decided to take three of the latter's sleds, and one of those brought from the ship, assigning to each member of the expedition the sled upon which were packed his personal outfit and sleeping bag, together with such portion of the general provisions and camp gear as would make an equal division of the load to be carried. Such of the outfits brought from the ship as were not absolutely needed were discarded, for speed being the thing most desired, whatever interfered with this was cast aside. All arrangements being made, the sleds were packed on the night of the 17th for an early start the next morning.

List of provisions and outfits taken from Tununak.

	Pounds.
Tents and poles	30
Stove and pipe	21
Oil stove	15
Oil	50
Cooking gear and grub box	40
Two axes	10

DEER TRAIN SHOWING SLEDS AND HARNESS

	Pounds.
Two rifles	14
One shotgun	8
400 rounds rifle ammunition	50
100 rounds shotgun ammunition	25
Four clothes bags (personal outfit)	140
Four sleeping bags	200
Two bags of mail for St. Michael and Point Barrow	75
Bale of trade tobacco	50
Sleeping gear and outfit for natives	125
One ham	12
Beans	30
Pork	50
Bacon	24
Hard bread	40
Tea	12
Flour	50
One dozen canned meats	48
Compressed barley soup and condensed coffee	25
Dog fish	150
Total	1,294

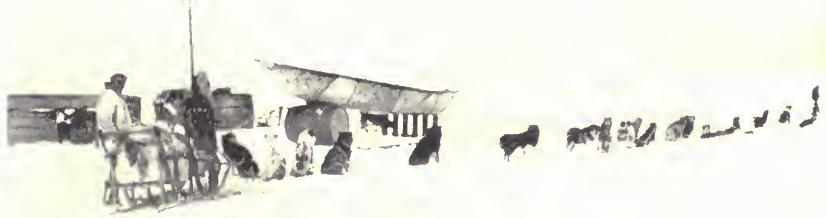
The camp gear consisted of a wall tent of light ticking, that had been made on board ship, 8 by 10 by 6 feet high, the walls being 3 feet; and a sheet-iron stove, 20 by 12 by 10 inches deep, with the pipe fitted in lengths that telescoped one into another, and short enough to go inside the stove when not in use. We also took the small oil stove and a supply of oil, to be used in case we should find wood scarce. This oil stove, not being especially constructed for such an expedition, was found of little use, for it had no protection from the surrounding atmosphere, and much of the heat from the burners was thus lost. It consumed a great deal of oil, and as that article was bulky, heavy, and inconvenient to carry on the sled, the stove was finally discarded. Our cooking utensils were two frying pans, two camp kettles, two teapots, and a large knife and spoon. In addition each member of the party had a knife, fork, spoon, tin plate, and cup, together with a large hunting knife. All these small articles were carried in a light wooden box of a convenient size to pack snugly on the sled. The beans, pork, and ham were boiled before leaving the ship, so as to occupy as little time as possible in preparing our meals, and in case we were prevented from having a fire at any time there would be something to eat that would not need cooking. Across the delta country there is very little brush and no trees or timber, but as we camped at villages on the way we were able to obtain enough driftwood or brush from the natives to make sufficient fire for the little cooking necessary.

Before daylight on the morning of the 18th we were off, with 4 sleds and 41 dogs, 9 being harnessed to each of the sleds belonging to Alexis and 14 to the heavy one from the ship. These sleds were from

9 to 10 feet long, 22 inches wide, with the runners 12 inches deep and the sides about 18 inches high. The sled is an open framework of hickory or oak, no more wood being used than is absolutely necessary, and all the parts are lashed together with strips of seal skin or walrus hide, few or no nails being used; so, while the sled is very strong, it is also flexible and able to withstand the constant rough usage to which it is subjected in traveling. The sled cover, of light drilling, is made large enough to spread over the whole length of the sled on the bottom. The articles to be carried are then snugly packed and the sides of the cover hauled up and lapped over on top so all articles are entirely covered, and the whole load is securely lashed to the sides of the sled with strips of hide or rope. The sled is now ready for traveling, the lashing preventing the load from jolting or spilling out during the frequent capsizings on rough trails, and the cover protecting the articles from the falling and driving snow.

The harness is made of strips of heavy ticking, canvas, sennit, or seal hide about 2 inches wide, and is all in one piece for each dog. A strip goes around the dog's neck and crosses in front of the chest, where the two parts are fastened together to form a collar. The ends then go underneath between the forelegs and lead up, one on each side, to the dog's back. Another strip is fastened to the top of the collar at the back of the neck and leads along the back to meet the other two ends, and here all three pieces are secured together and made fast to a small piece of rope about 2 feet long. In harnessing a dog, the collar is put on over his head, each of his forefeet put through one of the loops formed by the ends coming together, and he is ready to be made fast to the sled. A larger rope, the length of which depends upon the number of dogs used, is made fast to the front of the sled, and to this is secured the small rope of the dog's harness; the dogs being harnessed in pairs, one on each side of the central rope, and yoked in close to this by short lines to their collars. A team generally consists of an odd number of dogs, the odd one being harnessed to the central line ahead of the others and acts as a leader. This method is used by all the white people in the Lower Yukon, and is generally superior to the native mode of stringing the dogs out in one long line.

The next village on our route after leaving Tmmmak was Ukoganute, on the northern shore of Nelson Island, opposite the mainland, and it was usual in going there to travel over the ice, following the coast line to avoid crossing a range of mountains extending along the shore between the two villages. The southeast wind which prevailed for several days had, however, driven the ice over to the westward and cleared the entire western and northern shores of the island, so we were compelled to cross this range, and the snow being soft, the first day's journey was particularly hard for both men and dogs. When the start was made there were besides the four members of



ESKIMO DOGS AND LOADED SLED

the expedition, Alexis, who acted as guide, and four Eskimos, who were to help with the sleds and go ahead to break a trail, for where there is no beaten trail or road it is the custom for one man to go ahead and pick out the road. The team with the best leader comes first, and he faithfully follows the footprints of the man in the lead, and the other teams follow the first one. In traveling over a comparatively level country, with a good road and light loads on the sleds, the dogs will maintain a trot, which is faster than a man can walk, but not as fast as he can run, so the trail maker runs ahead for some distance and then slows down to a walk until the head team comes up with him, when he repeats the operation. By this alternate running and walking a man can keep ahead of the dogs for a considerable time without excessive fatigue. Many of the natives who travel a great deal in the winter can keep up this mode of travel all day and show little sign of exhaustion when camp is made at night.

When we started from Tunnnak, Alexis went ahead to pick out a road. The snow was deep, and he was compelled to use snowshoes. For some time he led us up a gentle incline and fair progress was made, but we soon came to the real ascent of the mountain, and then our progress was very slow, many places were so steep that it required three or four of us to help each sled up. The summit was reached at last, and as we were all rather fatigued with the unusual exertion of pushing behind dog teams, we were glad to be able to sit on our sleds while the dogs trotted down into the valley below. Here a halt was made beside a small stream, where we could break the ice and obtain water to wash down a lunch of hard bread and cold ham. Our mountain climbing for the day was not over, for there was still another portion of the range to be crossed, which was even higher and steeper than the one we had just come over. Refreshed by our rest and lunch, we started for the second ascent in good spirits.

In course of time, after much tugging and pushing of sleds, and urging of dogs, we reached the summit, where we found ourselves in the midst of a furious storm of wind and snow, which was so thick that it was some time before Alexis and the natives could decide upon the proper direction, for there was some danger of our taking the wrong course and going over a precipice into the sea. After considerable jabbering they finally came to a decision and preparations were made for the descent, which Alexis told us was so steep that the dogs could not run fast enough to keep ahead of the sleds. The dogs were turned loose, small chains, brought along for the purpose, were wound around the runners to impede the rapid descent, and we proceeded to coast down the side of this mountain, which, as near as I could judge, was some 2,000 feet high. The snow was quite deep, but with two people seated on each sled this additional weight gave us a momentum that nothing short of a solid obstacle could stop, and we flew along at such a rate that in about ten

minutes we reached the gentle slope at the base of the mountain and the sleds came to a stop. Here we waited for the dogs, for the little fellows had to come down on foot and were far behind. They soon hove in sight, floundering along through the deep snow and following the trail of the sleds. Alexis now showed us some dark spots on the snow, several miles distant, which he said was the village at which we were to stop for the night.

As soon as the dogs came up they were harnessed again, and we proceeded down the gradual slope to the beach, along which the guides led us until about dark, when we reached Ukogamute, a native village, consisting of seven small huts and one large one. The small huts, called "igloos," are occupied by one or more families, often being very crowded. The large hut was the "kazheem," used for the dance house, council house, general workhouse, and place of lodging for travelers; and is occupied by all the male inhabitants of the village who have no families—that is, the bachelors and widowers—no women being admitted to the kazheem except during a dance or to bring food to the men. All the huts are built after the same fashion, all the men, women, and children old enough to work aiding in the construction of each.

In the summer, when the upper portion of the ground has thawed, a hole in the form of a square is scooped out to a depth of three or four feet. The sides of the hut are then formed with sticks of driftwood gathered in the rivers and on the coast and filled in with brush, the height of the sides depending upon the size of the hut. The roof is made in a very ingenious manner. Logs of driftwood are laid along the top of the sides and lashed there with hide rope; two logs, notched on the ends to fit securely and close, are then laid across these on opposite sides, but a little farther in toward the center. Two more logs are then placed across these on the other two sides and still farther in toward the center; then two more across these, and so on until a sort of arch is formed, which is then covered and filled in with brush and dirt, leaving a hole in the center of the roof about two or three feet square, according to the size of the hut. In the large kazheem the center of the roof is often 10 to 12 feet above the floor. Other pieces of driftwood, split into rough slabs, are laid inside to form the floor, leaving a space about two feet square near the south side of the hut. From this hole in the floor a passage has been scooped out large enough for a man to crawl through. This leads to the surface of the ground, opening into a small entrance built against the south side of the hut, and this in turn leads to the open air. The whole structure is covered with dirt, but is not used for a habitation until the winter, when the ground has frozen and the snow has covered everything, allowing no wind to get in except through the openings. Over the opening leading into the small entrance is hung a heavy piece of skin to keep out as much air as possible, and the

opening in the roof is covered with pieces of dried intestines of the seal or walrus sewed together. This not only keeps the warm air inside from escaping, but, being thin and translucent, admits light during the day.

In a hut of this sort filled with people, the animal heat from their bodies, together with that from the seal-oil lamps, soon raises the temperature so the natives sit around with the upper part of their bodies entirely uncovered. Fires are not used in the huts, and, as a rule, all the cooking is done in the outside entrance. The farther north we went the cleaner the houses were; whether this was due to our being earlier in the southern part of the country, before the cold weather set in and everything was frozen up so it could be kept clean, or to a better general character of the natives, it is difficult to state; at any rate, the houses farther north generally were cleaner, and we often saw houses there where the floors were washed each morning. The only provision for ventilation was a small hole through the roof, about 2 or 3 inches in diameter, and at night, in cold weather, this was invariably stopped up. The condition of the air can better be imagined than experienced, when fifteen or twenty natives are sleeping inside the small room and a seal-oil lamp or two burn continuously.

The wind being from the south, the thermometer registered 30 above zero, and the weather was quite warm. The deep snow, together with our not being accustomed to the unusual traveling, made the day's trip very tiresome, and we were all wet and pretty well played out by the time we reached the village. We were urged to spend the night in the ka-zheem, but it was found to be too crowded and filthy, and we decided to pitch the tent.

Our arrival seemed to create some commotion, and though we noticed quite a large population at first, all the women and children ran into their huts on our nearer approach. Alexis informed us, that, with the exception of one or two of the Jesuit missionaries, we were the first white travelers who had gone through this part of the country for many years; and, as it had been the practice of the traders in the old days to steal the women during their visits to a village, these women were taking the precaution of getting out of sight lest we should do the same thing. As soon as the tent was pitched, the camp gear, sleeping bags, and sufficient food for the evening and morning meals were taken inside, the dogs unharnessed, and the sleds placed on the racks, of which there are generally several in each village. These racks are skeleton platforms of wood built on posts stuck in the ground and high enough to prevent the dogs from reaching anything on top. All articles not taken into the tent or the huts must be put up on the racks, for the dogs are so ravenous they will eat everything not made of wood or metal. When obliged to camp where there is no village, everything eatable must be unloaded and carried into the tent, and that tightly closed, or there will be little left in the morning.

After the evening meal of warmed-over pork and beans, tea, and hard bread had been prepared and eaten, the dogs were fed and the day's work was over. Feeding the dogs was always a trying and interesting task. They are always hungry, and upon appearing among them with an armful of dried fish, in their eagerness to get a stray mouthful, they crowd around in one fighting, jumping mass, and make it difficult for one to even keep his balance. After throwing out a fish to each dog, it takes all hands with clubs to keep off the larger fellows and see that the smaller and weaker ones are allowed to keep and eat their share. Usually they are peaceful enough, but when being fed they are like wild animals, and snarl and bite each other, and keep up a continual fight until everything is eaten. When the meal is finished and there is nothing more to eat in sight, they will lie down quietly in the snow and go to sleep. They are tough and need no protection. During the coldest weather and the most violent blizzards, they will curl up on the snow anywhere and sleep, and when the snow has drifted over them, get up, shake themselves, and lie down again in the same place for another sleep.

Sunday, December 19.—The wind was light from the northeast, and the thermometer 25° above zero. We arose early, broke camp, packed the sleds, and were on the road by half past 7. Though the next village lay in a northeast direction, we were obliged to travel several miles southeast, along the banks of the river separating Nelson Island from the mainland, before we found the ice of sufficient thickness to cross with the sleds. From here we took a general northeast course, following, and sometimes crossing, innumerable small streams and lakes, but, although we passed over a level country, we did not make good time, as the crust on the snow was thin, and the dogs and sleds were continually breaking through. At noon we came across a few sticks of driftwood on the banks of a frozen stream and stopped to make tea, have something to eat, and allow the dogs a short rest, after which we went on, reaching the native village of Ki-yi-liang a mile about dark, half past 4. Here we found wood so scarce that we were obliged to trade with the people for some pieces from an old and unused hut which had been recently torn down.

When we started from Tununak, two of our teams were made up of very young dogs that could not be expected to stand the strain of travel for any length of time, and Alexis had expected to be able to replace these teams with fresh dogs from this village; but after supper he returned to the tent from a visit to the native huts, and announced the unwelcome news that all the dogs belonging here were 'absent' on a trip to a neighboring village for fish, and it would be two days before they could be placed at our disposal. Not wishing to lose any time in reaching the deer herd at Cape Prince of Wales, I decided to take the two good teams and go on ahead to St. Michael with Dr.

Call and two of the native guides, leaving Lieutenant Bertholf and Koltchoff to follow as soon as the village dogs returned. There was the more reason for this, as native promises can not always be relied upon, and the dogs might not return for some days. There was also the chance of the weather turning bad, rendering travel impossible, and now that the weather was favorable, I desired to get ahead as far as we could while the good spell lasted.

Monday, December 20.—When we arose early in order to complete the arrangements for the division of the party, the weather was found to be getting colder, the thermometer registering 16° above zero, and the wind from the northward. Our outfit was separated into two parts; leaving the oil stove with half the provisions and cooking gear with Lieutenant Bertholf, while the other half, with the tent and iron stove, was packed on the sleds Dr. Call and myself were to take. After giving Lieutenant Bertholf written instructions for his guidance (see Appendix), I left the village with Dr. Call, taking the two good teams and two of the native guides. Our route was over a country very much the same as the day before, and led along a network of small lakes and rivers which traversed the country in all directions. I gathered the impression that in the summer, when the snow and ice had melted, this section must be more or less of a swamp. This appeared to be the general character of the delta country through which we traveled, until the Kashunak River was reached. The banks of the streams were clearly defined, but in the spring, when the snow melts from the land and the ice breaks up in the rivers and lakes, the water must overflow the whole country. The villages are built on the highest knolls to be found, for at such times, they are the only places above water, and even they are often flooded. The natives are miserably poor; their only food is fish and birds, with occasional seals, which they obtain from the coast in the summer. They are also poorly clad, their clothing being made of the breasts of birds and seal skins, and their boots generally of tanned salmon skin. Farther north, all these are made of warm, comfortable deerskin, and there is a great difference in the strong, healthy appearance of the people there.

Although we rarely kept going in the same direction for very long, the guide making innumerable twists and turns in order to pick out a good road, we preserved a general northerly course, which brought us late in the afternoon to Akoolukpugamute, situated on the banks of the Azoon River, a few miles to the northward of where the Nugnakchuk empties into it, and here we camped for the night.

Tuesday, December 21.—When we broke camp in the morning, the thermometer had fallen to 4° below zero, and as the wind had freshened from the northward it made the weather quite sharp. To the northward of Akoolukpugamute a short range of mountains extends in an east and west direction, and I had intended to cross this range

in order to take the shortest route toward the Yukon; but the natives of the villages warned us, that, as the snow on the mountains was very deep, traveling would be slow and difficult, and that it was doubtful if we would be able to cross the mountain and reach the village beyond in two days, so I decided to make a detour around the western end of the range and have the advantage of a level road.

We traveled during the day in a general northeast direction, and soon after leaving the village the trail crossed a medium-sized lake, called by the natives Naniwuknuk, the outlet of which is the Azoon River. Then we followed for some distance along a winding stream known as the Agoocharuk, and then struck across the country until we came to a large body of water, called by the natives Lake Agoo, upon which we traveled several hours, finally reaching the village of Chukwoktuliengamute about dark. This lake appeared to be about 12 miles long, and 5 miles wide, having its greatest length in an east and west direction, and the village is situated on the eastern half of the northern shore. A few miles farther to the eastward is the mouth of a good-sized river, called by the natives the "Izawerknuk," which they declare rises between the Yukon and the Kuskokwim rivers, where these two streams come closest together, and has a connection with the Yukon. The river given on the chart as the Kuliehavak answers this same description, except as to the geographical position of its mouth, and the lake into which it empties, and it seemed to me that Izawerknuk and Kuliehavak were but two different names for the same stream. The water of Lake Agoo is fresh, while the streams that had no connection with the Yukon were said by the natives to be salt.

Wednesday, December 23. The wind was still blowing fresh from the north, and the thermometer showed 6° below zero in the morning, falling to 15° below in the afternoon. We had hardly accustomed ourselves to such cold, and our clothing was not well suited for it, so we had to be moving quite lively during the day to keep warm. After leaving the village the trail led in a general northwest direction, skirting the base of the range of mountains around which we had come, crossed and followed numerous small streams, and finally, late in the afternoon, brought us to Lake Koggan, the source of the Manokinek River. The shape of this lake is different from that put down on the chart, and appeared to be more like two lakes with the shores coming close together near the center, forming a narrow passage, and the whole extending some 12 or 15 miles in a northwest direction. On the eastern shore, near the narrow passage, two isolated hills about [illegible] feet high rise out of the low surrounding country. After striking the southern portion of this lake we traveled about two hours before coming to the narrow part, when the guides turned to the left, following along the shore some distance, and finally, about

7 in the evening, reached the village of Kogerehtehmute, which is situated on the southwestern shore of the northern portion of Lake Koggan, a few miles from its outlet, the Manokinok River, and here we pitched our tent for the night.

Thursday, December 23.—The mercury still registered 15° below, but as there was little or no wind traveling was more comfortable than the day before. Leaving Kogerehtehmute about 8 o'clock in the morning, we crossed the northern portion of Lake Koggan, and taking a general northeast course traveled over the same character of country as on the previous days, except that now the brush was larger and more plentiful. When we reached the Kashunak River, many small trees were noticed along the banks, which were somewhat higher than the banks of the other streams we had crossed. Following along the frozen surface of this stream for several miles, the guide brought us to the small native village of Chukwoktulik, on the northern bank of the river, about southwest from Andreafski.

Friday, December 24.—The light wind had died out into a calm by morning, and the thermometer had gone up to zero when we broke camp. We still preserved the same general direction as on the 23d (northeast). The land was much higher, the brush got thicker all the time, and the timber line was struck about 6 or 7 miles from the Yukon. We crossed several large rivers, which the guide informed us had no connection with the Yukon and flowed into the sea independently, and shortly before that stream was reached we followed a small branch of one of the large rivers nearly to its source.

Reaching the Yukon opposite the site of the old deserted Russian village of Andreafski, we crossed over and followed along the northern shore for about 8 miles, and finally drew up at the new village. This is one of the trading posts of the Alaska Commercial Company, and is situated on the banks of a small branch of the Yukon, 7 miles from the main river. Opposite the post is a pocket or slue which is so formed that the river ice can not back up into it when the spring break-up comes, and on this account has for years been used as a place to lay up the river boats during the winter season. Last fall the ice overtook the steamers at different points on the river before they were able to reach their winter rendezvous, and at this time there were at the post only the people connected with it and a few of the steamer folks who had come to spend Christmas.

Before the *Bear* left Seattle the postmaster had sent on board a large sack of mail destined for the Yukon River, with the request that it be delivered at St. Michael in case the expedition reached that point; and though its weight, 70 pounds, was a great drawback, it was brought along. As some of the mail was for the people at Andreafski, and taking it through to St. Michael might prevent their getting it until the river opened for navigation in the spring, I assumed the responsibility of opening the mail sack and delivering to the

proper persons the letters directed to them; and on the way down the Yukon, I pursued the same course, delivering to the people on the different steamers whatever letters were addressed to them. The next day being Christmas, the temptation to remain over and rest was great; but our mission would admit of no unnecessary delay, and after replenishing our stock of provisions from the stores at the post we started on our way down the river, the thermometer 4° below zero and the wind fresh from the northwest.

Soon after leaving the wind increased, and about noon, when we reached a bend in the river that brought our course directly in the teeth of the gale, the dogs were unable to face it and we were compelled to camp and wait for better weather.

Sunday, December 26.—The wind having gone down enough to make traveling possible, we resumed our journey, the thermometer 6° below. We followed the course of the Yukon, keeping close to the northern bank, and as the ice was hard and level, made excellent progress, meeting and passing several parties of miners going up and down the river, and in the afternoon reached a small log hut that had been put up for the convenience of passing travelers, and camped for the night.

Monday, December 27.—This was an ideal day for traveling, the thermometer being 15° below, with little or no wind, and the road generally hard and smooth. In the fall, when there are southerly and southwest gales in the Bering Sea, the water rises and overflows the ice along the banks of the lower river, and, as it quickly freezes in the low temperature, one often strikes a trail of smooth, clear ice for miles. At such times everybody would jump on the sleds and the dogs bowl along at a gallop and keep it up as long as such clear ice lasted. Sometimes when the water had overflown the ice it would again fall before the ice on top was more than an inch thick, leaving this thin layer a foot or so above the old solid ice of the river. There is nothing to distinguish this thin shell from the more solid of the new ice, and often when the dogs were speeding along over the smooth surface the sled would strike one of these places and suddenly, with no warning, the whole outfit, dogs, sleds, and men, would go through and bring up on the solid ice below. Then we would have to go ahead and break through the shell so the dogs could follow until the firm ice was reached again.

After a long day's journey we came to a small slough of the river where three steamers, having on board a large number of miners bound to the gold diggings in the Upper Yukon, had been frozen in late in the fall. Some of the men were living on board, while others occupied log huts they had built on the banks of the river. By this time some of our dogs were in rather bad shape. The thin crust on the snow coming across the delta country and the hard ice on the river had lacerated the cushions of their feet, and many of them left

a trail of blood behind them with every step. Besides this, the two natives who had accompanied us thus far had developed heavy colds, which settled on their chests, rendered them of little use in traveling. We spent the night on the steamer *Alice*, of the Alaska Commercial Company, and the next day, having obtained a new guide and some fresh dogs, resumed our journey, leaving behind the worst of our old dogs and the two sick natives, the purser of the steamer having kindly agreed to care for them until they were able to return to their village.

The thermometer was still 15° below, but the wind had freshened from the northward, and it was bitterly cold when we were obliged to face it. Following the course of the river as usual, late in the evening we came to a log house occupied by a trader and his family, built upon the site of the old and deserted village of Kotlik, on the Aproom mouth of the Yukon, and but a short distance from the seacoast. We must have made nearly 50 miles this day, for the ice was good and smooth, and our fresh native runners spurred the tired dogs up to a fast rate.

Wednesday, December 29.—The weather was clear and the mercury had risen to zero when we left Kotlik and started down the last part of the river. We soon came to the coast and then struck across the ice to Cape Romanoff, reaching there about 3 o'clock in the afternoon. The cape seemed to us about 10 or 12 miles farther to the north than shown on the chart, for at our rate of travel we must have made 30 miles before reaching it, while the chart shows barely 20. Offshore we could see the open water, and we were compelled to pick our way very carefully over the ice crush around this bold headland before we could strike across the tundra for Pikmiktallik, a native village near the mouth of a small river bearing the same name, and about 9 miles farther on. A thick and violent snowstorm came up soon after leaving Romanoff, and so blinded the guide that he lost the way frequently, and it was long after dark before we came to the village, where we were glad to accept the offered shelter of the huts for the rest of the night.

Thursday, December 30.—The wind had fallen to a calm and the mercury having gone up almost to the freezing point, the weather seemed very warm and traveling was very disagreeable. Even the dogs were affected by the rise in temperature, and, though we made an early start from Pikmiktallik, and the distance to St. Michael was but 25 miles, they went so slowly that we did not reach the latter place until the middle of the afternoon.

We had now completed the first stage of our journey, and our experience with dogs had shown us we could expect, with good roads and fair weather, to average from 20 to 25 miles a day. But this was not to be accomplished as usually pictured, sitting back on the sled and cracking a whip. In Alaska, at least, it is not that way, and unless the road is very smooth and the load light, the men of an out-

fit must not only walk, but push, and haul, and sometimes harness themselves up to the sleds to get along. At first such work seems killing, but you get used to it like anything else and take it as a matter of course.

Upon arriving I first reported to Lieut. Col. George M. Randall, U. S. A., commanding the military post. I detailed to him the object and purpose of the expedition, and received a warm welcome and every assistance in his power. A large number of people destined for the Yukon gold fields had been compelled to winter here on account of the extremely low water in the river the previous summer. To these we were an object of great interest and curiosity, but their good intentions of assistance, I am sorry to say, were more hindrance than help.

The mail brought from Seattle was finally delivered, and nothing could have been more welcome to this imprisoned and idle crowd. The winter thus far was reported very mild, and on that account our road to Golovin Bay was in a bad state for travel. The ice had not yet formed strong enough to keep a firm hold on the shores, and blew out with every easterly wind, and the high winds had driven the snow from the tundra, leaving it nearly bare in many places. A trader had just come in from Golovin Bay, and had been nineteen days on the road. It was necessary that careful and complete preparations be made before leaving St. Michael, for, as far as we knew, this was the last base of supplies we could depend upon for food or transportation as far north as Point Hope. The dogs which had brought us thus far had made with us a trip of 375 miles, and were completely worn out. They had been going constantly for twenty-one days with only one day's rest, and the hard, rough ice of the Yukon River and the crusty snow had worn their feet bare. Nothing short of a week's rest and good feeding would put them in condition to go on. I was loath to part with them, for they were the best dogs I saw in Alaska, but I could not wait for them to recuperate. The great influx of white people into the Yukon country had made such a demand for dogs that it was next to impossible to procure any here. Only the urgency of our mission induced the agent of the Alaska Commercial Company to let us have the station team as far as Unalaklik. The agent of the North American Trading and Transportation Company promised us his station's team from that place on, but first it had a load to deliver there for the company. Mr. Englestadt, trader for the Alaska Commercial Company at Unalaklik, was at St. Michael with a loaded team to return to his station, and I engaged from him such assistance as he could give us. The reindeer herd from the Teller Reindeer station at Port Clarence was supposed to be on its way from that place to St. Michael to report to Colonel Randall for use in relieving the people on the Upper Yukon, and could not be used by our expedition. The difficulties of getting along in this region

HARBOR OF ST. MICHAEL

were so great, however, that I obtained from Colonel Randall an order to Dr. A. N. Kettleson, superintendent of the reindeer herd, for such assistance as he could give the expedition as far as Cape Prince of Wales, where we would have our own reindeer and be independent. The services of F. Koltchoff were of no further use to the expedition, and orders were left for Lieutenant Bertholf, directing Koltchoff to report to Lieutenant-Colonel Randall for duty with the reindeer herd upon its arrival at Unalaklik, as directed by Department order of November 15, 1897.

It was necessary here to refit ourselves with deerskin clothing. The dogskin and woolen clothing we brought from the vessel was heavy and cumbersome and not suited to the cold weather we were to encounter. The sleeping bags we had were made of goatskin, with canvas and rubber covers, and were too heavy to haul and too cold for comfort or safety. Fortunately, we had been favored thus far with mild weather, but every day's use of such clothing was dangerous. Deerskin clothing, boots, socks, and sleeping bags, were an absolute necessity. These were rare and commanded extravagant prices, and we were fortunate in being able to supply ourselves from Mr. Englestadt, who had about the only deerskins in this part of the country. Another point to be considered here, was to supply our party with provisions to last from here to Cape Prince of Wales and as far as Point Barrow. It was impossible to load the sleds with more than two or three hundred pounds and travel with the speed we should. Mr. Lopp, at Cape Prince of Wales, could have but a limited supply, probably only enough for himself and family. A large party was necessary to care for and drive the deer herd, and even in the time we hoped to reach Point Barrow, they would, for two months, be wholly dependent upon themselves. With accidents or delays, they might be until summer.

To make the party wholly independent of all villages to the north, and capable of sustaining itself, whatever route it was compelled to take, I ordered a supply of provisions to be taken across the divide from the head of Norton Bay to Kotzebue Sound to meet us at Cape Blossom on our arrival there, depending upon Port Clarence and Cape Prince of Wales for enough to take us that far. This provision train could be fitted out at Unalaklik, and I directed Lieutenant Bertholf to come to that place on his arrival. If he made the connections we planned he was not due at St. Michael until January 1, but it was most important that I should get to Cape Prince of Wales as soon as possible, and I did not dare wait nor delay for him. Leaving orders for him to come on to Unalaklik when he arrived, and there meet Mr. Englestadt, with whom I made arrangements to fit out the provision train, we proceeded on January 1, 1898. Striking across the bay to the mainland, we were soon compelled to take to the tundra, as the easterly winds had blown the ice away from the shores of the sound and left open water.

The weather continued very warm, and our road was trying and difficult. The wind had cleaned the snow from the plains, and made progress one continual, hard, grinding pull, and we were fortunate to reach the village of Kikiktaruk at dark, though only 18 miles distant from St. Michael. The next day was no better, and, though we had hoped to be at Unalaklik in two days, it was soon evident that we must be satisfied with what progress we could make under the conditions. We shoved and pushed over bowlders and almost bare, grassy mounds, and up and down steep gullies and cliffs, and when darkness overtook us, 15 miles was all we had accomplished. On the 3d, coming down on the ice which held in some of the small bays, we observed a native woman on snowshoes going south. Upon coming up with her, I recognized her as a native whom I had known at Point Hope in the Arctic, and, upon questioning her as to why she was in this region, I learned that she and her husband were with a white man named Tilton, coming from Point Barrow with mail and seeking assistance for the people there. Tilton was ahead with the sleds and had gone close under the bluff, so that we had passed within a few hundred feet without knowing of one another's presence. We soon brought Mr. Tilton to, and found he was the third mate of the steam whaler *Belvedere*. He had left Point Barrow October 17, and his ship, which was frozen in at the Sea Horse Islands, on the 21st. He had had a hard, long journey, and both he and his teams were all but played out. It was fortunate he was now in reach of people and supplies.

What official mail he brought I opened for any information it might contain that would help me to understand the condition of things at Point Barrow, and enable me to prepare for it. From all I could gather from the mail and from Mr. Tilton himself, I learned that the steamers *Orca*, *Jesse H. Freeman*, and *Belvedere* had gotten past Point Barrow and down the coast as far as the Sea Horse Islands. At this point September 22, the ice closing in, the *Orca* was crushed and the *Freeman* caught and abandoned, both crews going on board the *Belvedere*, which was worked in behind Point Franklin and put into winter quarters there. The crews of the two wrecked vessels were sent to Point Barrow and quartered at that place. The *Rosario* was close to Point Barrow on the west side; the *Newport*, *Fearless*, and *Jeanie* along the shore at various distances east of Point Barrow and within reach of that place.

The *Wanderer* had last been seen 60 miles west of Herschel Island, early in September. Nothing had been heard from her as late as October 17, and it was supposed that she was within communication of Herschel Island, where the steamer *Mary D. Hume* was wintering with two years' supplies on board.

The wreck of the steamer *Navarch* was drifting about in the ice east of Point Barrow, and Mr. Tilton thought that 7 of the 9 men who remained on her last summer had been gotten out safely.

TILTON'S CAMP ON THE SHORE OF NORTON SOUND

I had anticipated meeting in this region some one from Point Barrow, and almost my first question on arriving at St. Michael was whether or not they had heard from the imprisoned vessels. The information Tilton brought hardly altered the situation at Point Barrow, as it was understood before the *Bear* sailed, except that the loss of the *Orca* and *Freeman* with their provisions made it worse.

At Unalaklik the last arrangements were made about the provisions to go to Kotzebue Sound, and orders were left for Lieutenant Bertholf to take charge of the train, and go across what is known as the portage to Cape Blossom and wait my arrival or the arrival of the reindeer herd from Cape Prince of Wales. I was disappointed in getting the teams Mr. Englestadt had promised, for one was all he could give us, and though I had agreed to take the Alaska Commercial Company's team no farther, I was obliged to keep it and also the North American Trading and Transportation Company's team, as there was nothing else to do if we were to get along.

We secured here another tent and stove (having left the others for Lieutenant Bertholf), proper deerskin sleeping bags, and deerskin socks, boots, and mittens. We were now fairly well equipped to stand the cold weather, though even yet our outfit was not what it should have been. We left Unalaklik on the 5th with three light sleds, and the first day took us over the hills and mountains back of the coast, for there was still no ice along the shores. This part of the country was timbered, and as we passed along the old trail of the telegraph expedition of 1865 we saw several of the poles they erected then still standing. The timber was only a scattered growth, and consisted mainly of spruce and scrubby pine. It was thickest and largest along the water courses and in the valleys, and extended but a short distance up the sides of the mountains.

Except for soft snow and climbing the mountains the trail was fair. We passed the native village of Egawik in the afternoon, and late at night camped in a deep gully on the shore, about 15 miles farther on, where we hoped to pass the base of the last big mountain rather than climb over it. At night the tide was too high, but the next morning it was low, and after a hard pull of several miles along the rocky beach we reached the level land beyond. Here was good traveling, and we made a long day's run to Unoktolik, on the shores of Norton Bay. Crossing the bay the next day the ice was firm and smooth and good progress was made until nearing the north shore, where rough ice and deep snow began. The wind had not only crushed up the ice, but had driven the snow all over to that side of the bay, and it was a hard struggle through it to the shore.

On the 8th, passing the village of Kuik in the morning, we were compelled to travel with snowshoes, for the snow was growing deeper all the time, and a heavy storm setting in during the forenoon made it more difficult than ever to fight our way along. The runners

would sink to the body of the sled, and the dogs go nearly out of sight in their struggles to drag along. It took four men to tramp down a trail in order to make any progress at all, and at night, though we had hoped to make a small village ahead, we were compelled to camp in the woods along the shore, for our dogs were so exhausted they simply laid down and refused to go any farther.

The next day, though clear, found the same deep snow on our road, and we continued packing down a trail and dragging the sleds along. To get out of the trail meant to be stalled in the drifts, and after a long day's struggle we were glad to have made 10 miles.

On the 10th, though the snow was deep, it improved as we went along, and that night we were surprised and pleased to find the camp of the Government reindeer herd at the foot of the mountain leading over to Golovin Bay. They had started from Port Clarence December 16, and had been stopped here by the deep snow we had just passed over. I delivered to Dr. Kettleson the order from Colonel Randall, and made arrangements with him for us to go over to Golovin Bay the following day, and arrange for leaving there on the 12th, when the deer teams would arrive to take us to Cape Prince of Wales.

The weather now grew cooler, and, except for a few days, the thermometer remained below zero until near the middle of the following May. We went over the mountain and arrived at Golovin Bay on the 11th. On the east side of this mountain was a good heavy growth of timber, but the west side was entirely bare. At this place were the houses of the Swedish mission and a trader named John A. Dexter, surrounded by a small village of natives. Here I dismissed the dog teams, sending two back to St. Michael and one to Unalaklik, and directing them to take back to the latter place some of the people of the reindeer camp who were now a burden to the herd.

Having our clothes repaired and our stock of provisions replenished from the store here, we were ready on the 12th to start when the deer teams arrived. Wishing to make a visit to Port Clarence, Dr. Kettleson came himself, bringing four sleds and two "poulkas" (Lapland freight sleds, shaped like a boat), and one of Mr. Lopp's herders who was with the Government herd for experience, and whom I engaged to go along with us to Point Barrow. Our provisions were packed on the poulkas, while each man's personal outfit was packed on the sled he was to use. I found this an excellent arrangement in case one got lost from the rest of the party, as I did later in a blizzard.

All our travel heretofore had been by dog teams, and, as we were to have much deer traveling farther on, I was very anxious to try the change and note the difference, wishing for anything that would hurry us along. There came with Dr. Kettleson, to manage our train, Mikkel, a Laplander, who was counted a thoroughly experienced and capable man, and I found him all that. A stolid, determined character,

NATIVES OF GLOVER BAY

and possessed of a wonderful patience. He took the lead with two deer harnessed to his sled, while we had but one. All hands must be ready at the same time when starting a deer train, for, just as soon as the animals see the head team start, they are all off with a jump, and for a short time keep up a very high rate of speed. If one is not quick in jumping and holding on to his sled, he is likely either to lose his team or be dragged along in the snow. They soon come down to a moderate gait, however, and finally drop into a walk when tired. They are harnessed with a well-fitting collar of two flat pieces of wood from which a short trace goes back on each side to the ends of a breast piece, or a swingletree, that fits under the body. From the center of this a single trace runs back to the sled, either between or to one side of the hind legs. In the wake of the legs this trace is protected with some soft fur, or the skin will soon be worn through with the constant chafing. Generally there is a single line made fast to the left side of a halter, and with this the animal is guided and held in check; but this line must be kept slack and only pulled on when the deer is to be guided or stopped. By pulling hard on this line the weight of the sled comes on the head, and the animal is soon brought to a standstill, though often this is only accomplished after he has gone around in a circle several times, and you and the sled are in a general mix up. Sometimes two guiding lines are used in the same manner as driving horses, except that they are both made fast to the halter near the horns. No whip is used, and none should be, for the deer are very timid and easily frightened, and once gotten in that state they are hard to quiet and control. A little tugging on the lines will generally start them off, even when they balk. The sleds in use are low and wide, with very broad runners. Having a very low rail or none at all, it is hard to pack and secure anything on them so it will stay and be protected from the snow and the rough usage. It struck me that a great improvement in this respect was needed if they are to come into general use.

After many preparations we got off a little after noon. I had learned by this time that it is harder to start from a station where you have to fit out, than from a camp, and despite all our precautions and preparations, there seemed to be endless things left undone until the last minute, so I almost wished there were no white people anywhere on our road. After starting we had a good smooth trail up Golovin Sound; the deer were fresh and kept up a gallop until we came to the mountains back of Stony Cape. This was a steep, hard climb and a very precipitate descent, which, however, was accomplished without much trouble, though going down hill is often a dangerous operation. Arriving at the base of these mountains, it was but a short distance to the village of Seookuk, where we spent the night. Eskimo dogs seem natural enemies to the deer, and as it was dangerous to go close to a village on that account, the sleds were halted a short distance

away, the deer unharnessed and taken by Mikkel several miles away, out of the sight and scent of the dogs; there they were tethered by toggling them with long lines to the thick crust of the snow, leaving the animals range enough to feed during the night. We now hauled the sleds to the village, they were unloaded, and we were glad to get the shelter of even a native hut, for the day had been cold and riding on a deer sled is much colder work than traveling alongside and pushing behind a dog team.

In a few of the valleys of Golovin Sound was a sparse growth of trees, but, except for a few, visible in the distance in the Kotzebue Sound region, we saw no more trees in all the country we traveled from here on to Point Barrow.

January 15.—It was still very cold and a light wind was blowing from the north this morning. Our course lay straight along the north shore of Norton Sound, and we tried to keep on the ice where the traveling was easier, but the crushes along the shore grew so rough that we were compelled to take to the hills that lined the coast. Coming down the last one of these, my deer, which, as I afterwards learned, once had a leg broken by the sled running ahead on him, became frightened and bolted down the hill, throwing me off the sled. I held on to the line and was dragged through the snow against an old fish rack at the bottom of the hill. When I saw that fish rack loom up, I thought my time had come, but my bones seemed stronger than the rack, for throwing my head aside, my shoulder caught the upright and broke it short off. When I finally stopped the deer and pulled myself together, I was grateful to find I had no bones broken, for such a thing was too serious a matter even for contemplation.

The wind had now increased to a gale, and the blinding snow made progress slow and difficult. We had planned to reach a village about 35 miles distant, but night overtook us on the road. It seemed to be my day for accidents, for soon after dark my deer wandered from the trail, became entangled in a lot of driftwood on the beach, half covered with snow, and finally wound up by running the sled full speed against a stump, breaking the harness, dragging the line out of my hand, and disappearing in the darkness and flying snow. My first impulse was to run after him, but soon recovering my wits I concluded to make the best of the situation. It was impossible to see 10 yards ahead, and I knew it would be reckless to start off alone, for the others were far in advance by this time, and I might wander about all night, become exhausted, and perhaps freeze. So righting my sled, I proceeded to camp where I was for the night, and await developments. I had nothing to eat on the sled, but fortunately had my clothes bag and sleeping bag, and getting them out under the lee of the sled, I proceeded to make myself as comfortable as possible. I knew the others would be searching for me as soon as they noticed my absence, yet it seemed impossible to find anything in that storm. I thought I had been there about

[illegible]

[illegible]

an hour, when I heard a faint shout; jumping up, I answered as well as I could against the howling wind, and soon was gratified to see some muffled figures groping their way toward me in the darkness and flying snow. They were Kettleson and Mikkel leading my deer. I was glad to see them and know that this little episode was ended, for by the next morning, with the cold and hunger, I might have been in no condition to help myself.

It seemed that my deer, after breaking away, had picked up the trail, caught up with the others, and trotted along behind their sleds. In the darkness the drivers could not tell whether there was a sled behind him or not, and only discovered my absence when they had occasion to stop and consult with me. Seeing I was gone, they took the deer and turned back to find me, following carefully and slowly the trail the sleds had made in the snow, all the time keeping up a shouting. They had a good laugh at my expense, but I think all hands were very glad it was nothing more serious than a laugh, at least, I am sure I was. A short distance from where I was lost we had passed an old and abandoned hut high up on the bank, and as it was now late we decided to camp there. Shoveling out the snow, we made the best of this hole in the ground for the night.

January 14.—The blizzard was still on when we started this morning and grew worse as we went along. As though to make amends for his performance of yesterday, my deer kept up alongside Mikkel's sled, and we two soon were far ahead of the others, and were greatly relieved when we picked up the village of Opiktillik, at least the deer led us there, for it was beyond us to find the way in the blinding snow. It was now blowing so hard that we could scarcely stand. In an hour the others came along. They had been compelled to pick their way on foot, one of the natives going ahead on his hands and knees. It was hard to think of losing the day, for we had made only about 5 miles, but there was no help for it, it was impossible to go on in that wind, so we crowded into an already overfilled native hut and tried to wait patiently for the storm to let up.

January 15.—The gale showed no signs of abatement; if anything, it blew harder than the day before, and we concluded not to start. In the afternoon Mr. Hultberg, the Swedish missionary at Golovin Bay, and a prospector came in from a short distance in the mountains. They were bound for Golovin Bay but dared not go on, and had paid for their trip thus far that day with frozen cheeks and noses.

January 16.—The gale still continued, and by this time our patience was nearly worn out. This was the first time we were compelled to stop on account of the weather, and it was hard to think of the time we were losing with any degree of composure, but the natives and the whites all agreed that it was dangerous to venture out, and I reluctantly fell into line, though I resolved no amount of wind would keep us there another day.

January 17. There was still no change in the weather, but bundling up as well as possible, and taking extra precautions for the protection of our faces, we started soon after daylight. Fifteen degrees below was almost more than one could stand in such a blizzard, but time was too precious, to lose any more of it, and as we had come into the country to travel, I felt we must get along somehow. It was all the deer could do to keep going ahead, and it required all our efforts to keep them from turning tail to the wind and going out to sea. As we had to be very careful, our progress was slow; to lose anyone in such a storm might mean serious results. We had to make the next village ahead, some 35 miles away, for it was out of the question to pitch the tent in that wind. Tramping along beside the sleds and beating ourselves to keep warm, there were times when we anxiously looked for the protecting lee of the mountains near Cape Nome. In the middle of the day we could see the sun, a red ball through the driving snow, but everything on a level was a winding, blinding sheet. As we worked on, seeing nothing, buffeted about by the fierce gusts, it seemed as if we would certainly pay dearly for our temerity, and even Mikkel, the stolid Lapp, swore that nothing would ever induce him to start out in such a blizzard again. In the afternoon the wind suddenly lulled, and we found ourselves under the lee of Cape Nome. We now breathed easier, and several hours later made our camp at the village of Kebethluk, on the west side of the cape. It was quite a large village, and we saw evidences of native energy and improvement, in the comfortable log houses building. It had been a weary day, but we were much gratified to learn from the natives that we had gotten out of the region of the storm and could now go along under the protection of a lee.

January 18. We had an experience this morning that taught us to keep away from villages in the future while traveling with deer. Just as we were ready to start, the native dogs ran out and attacked our teams, and only after a hard fight were we able to drive them off. The temperature was falling all the time and now registered —30°, and it was a cold day's journey. We hoped to reach Artisarlook's house before night, but by 9 p. m. were glad to pitch our tent on the mountain side and let Artisarlook go until to-morrow. During the night I awoke to find one foot feeling like a block of ice, and found that I had worked into a cramped position which had stopped the circulation and the rest of the night I spent kicking that foot to keep it from freezing.

January 19. I had looked forward to this day so long that now it had come I almost shrank from the task it brought. We reached Artisarlook's house about noon. He and his wife were old friends, and I knew I would receive a hearty welcome, but how to induce [illegible] to give up their deer and convince them that the Government would return an equal number at some future time, was quite another

matter. These deer were their absolute property. The Government had only a few weeks before taken from Artisarlook the original number it had loaned to him because of his good service and character, and had left him the increase, which were now his, and "Charlie," as we called him, had come to a realization of his wealth and position. Besides this, he and the people gathered about him, were dependent upon the herd for food and clothing.

I explained to him carefully and particularly what the deer were wanted for; that I had not come with power or force to take his property from him, and that he must let me have them of his own free will and trust to the Government, which I represented, for an ample and suitable reward and return. He and his wife, Mary, held a long and solemn consultation, and finally explained their position. They were sorry for the white men at Point Barrow, and they were glad to be able to help them; they would let me have their deer, which represented their all, on my promise of return, if I would be directly responsible for them. They said as I was the man taking them I should be directly responsible for them. I readily agreed to this, for I fully appreciated their goodness and the justice of their position. They were poor except for the deer herd, which was all they had to depend upon. There had grown quite a village about them, all in the service of the herd, and if I took the deer and "Charlie" away, these people were likely to starve unless some arrangements were made for their living. I was compelled to arrange for them to obtain enough food to last until the arrival of the *Bear* in the spring, by giving Mary orders on the trader at Golovin Bay, and the few supplies remaining at the reindeer station at Port Clarence. This finally disposed of, I turned my attention to the preparations for getting the herd started. There were 138 deer in the herd, and of these Charlie owned 133, the other 5 being the property of some boys whom Charlie employed; and upon consideration I concluded to buy these five outright, giving in value about $15 for each deer. It was estimated that in the spring Charlie's herd would have 80 fawns which would live, and this increase had to be taken into consideration, and repaid in making a settlement with him. I engaged Charlie to go with the herd to Point Barrow, to drive and care for the deer, at a salary of $30 per month, with the understanding that his money would be properly invested in goods which would be brought to him in the *Bear*. I had dreaded this interview with Charlie for fear he might refuse my proposition, but his good character can have no better exposition than that he was willing to give up his property, leave his family, and go 800 miles from home to help white men in distress, under a simple promise that his property would be returned to him.

When we arrived at the house, Charlie was out on the ice sealing, but he and his brother soon returned, dragging a seal along behind them.

Along the north shore of the sound the solid ice made off from 5 to 6 miles, but beyond that was open water, and ice drifted about by the winds. Every day in good weather the natives go out to this open water and watch patiently for hours for a chance shot at a seal. At this season the blubber is so thick on their bodies that when killed they float, and are easily recovered by throwing a line, with a hook on the end, over the floating carcass and drawing it to the edge of the ice. Toggling a line into the head, it is then dragged ashore to the village. I have often seen it stated that after shooting a seal the men will not drag it in, but send out the women to do that part of the work—the drudgery. This may happen in some places and in some individual cases for individual reasons, but I never saw a time when a man did not haul in his own seals, unless he had too many, and then a sled would be sent to bring them in.

There was still much work ahead; many preparations had to be made for moving this herd to Cape Prince of Wales to connect with the one there; and yet I could not afford to remain behind to attend to it, for the principal delay would come when all the deer were finally united, and the long journey to Point Barrow to be prepared for. Leaving Surgeon Call to make the preparations and come on with the herd to Cape Prince of Wales as soon as possible, I left the next day with Kettleson and Mikkel, for Port Clarence. The country was now level and excellent for traveling, but our deer were tiring, and it was well into the night before we made 35 miles, our allotted day's trip. The thermometer registering —40°, we were not very comfortable in our tent without a fire, and long before morning Mikkel decided it was too cold to sleep, and turned out of his bag, and made a roaring fire of driftwood on the beach, of which there is great abundance all along this coast. In fact, the whole north shore of Norton Sound is lined with driftwood that comes out of the Yukon in the spring, and in many places it is piled up high by the southerly gales.

January 21. It was very cold sitting idly on a deer sled, and it was all we could do to keep some part of the body from freezing; many times a sharp twinge or prick would make one's head turn from the wind and his hand go up, to work vigorously to rouse the feeble circulation in the end of his nose. It was a beautiful day, the road was good, and we had but 15 miles to go, so we were not long in reaching the shelter of the Teller reindeer station at Port Clarence, then occupied by the Rev. T. L. Brevig and wife, Government school teachers.

The Government herd had left this vicinity December 16, and the station was practically abandoned, except for the school, though some of the station's supplies were still left. These helped us a great deal in the preparations necessary here and Cape Prince of Wales, before we were finally on the arctic side of Bering Straits and pointed north. The deer that had brought us from Golovin Bay had notice-

RETURNING FROM A SEAL HUNT

ably tired toward the last of the journey, and, as it was a hard road from here to Cape Prince of Wales, Kettleson feared they might give out altogether on the route; so that night I engaged a native and a dog sled, intending to go on alone the next morning. In the morning it was blowing a blizzard, with the thermometer −38°, and my native said it was impossible for him to get dogs enough for the trip, and he would not go. I suspected he was afraid of the storm, and after my experience I didn't much blame him. I did not like the delay, but I could not bribe anyone to start with me that day, all having some excuse or other, so I was compelled to smother my disappointment and make the best of it. I now had time to have my clothes overhauled and put in good condition, for one's clothing is subjected to hard usage in arctic travel, and constant attention to it is necessary. All the little holes must be stopped up, and when one has the time to allow a native woman look over one's outfit, a general overhauling is an adjunct of safety. I was also able to obtain here the extra deerskin clothing that we needed so badly, extra socks, boots, and an extra deerskin artigge, or shirt. Nothing would keep one warm in the weather we were having but deerskins, and we were fortunate in being able to obtain what we needed, for the miners had pretty well cleaned out the supply in all other parts of the country.

On starting out I had determined to do as the people who lived in the country did—to dress, travel, and live as they did, and, if necessary, to eat the same food. I found the only way to get along was to conform as nearly as possible to the customs of those who already had solved many of the problems of existence in their arctic climate. In this connection it has seemed to me that the value of deerskin clothing has not always been known or fully appreciated in arctic explorations. The Eskimo of arctic Alaska and northeast Siberia use hardly anything else, and nothing is so warm and light as their dress. There are slight local differences in the make-up of the clothing, but in general, the men's winter clothes consist of a single pair of close-fitting trousers, with the hair next the skin for cold, and the reverse for ordinary weather; a pair of socks, with the hair next the feet; a pair of boots with the hair out, with heavy sealskin soles for hard wear or deerskin soles for light wear; two artigges, or shirts, one with the hair next the body and the other with the hair out, and both with close-fitting hoods fringed with wolfskin to break the wind from the face and nose; and a pair of mittens. These are all made of the summer skins of the reindeer, and the whole outfit will not weigh more than 10 or 12 pounds. Over the skin shirt is worn a snow shirt, made of drilling, and sometimes a pair of drill trousers is worn over the skin trousers to keep the snow from driving into the hair, and, on coming indoors into a warm house, melting and wetting the deerskin. A belt is worn around the waist outside the shirt to keep the cold air out, or, rather, to keep the warm air in. This is loosened

when the person gets too warm. With this outfit well sewed and everything tight, one can defy almost any degree of cold, and no amount of woolen clothing accomplishes the same result. The weight of one's clothing is very telling in the days and weeks of traveling through the snow and over the rough ice, and the lightness of the deerskin is one of its most striking features. The skins are beautifully tanned, and are soft and pliable. The heavy winter skins are seldom used for clothes, but make excellent sleeping gear, either as mats or blankets, or made up as sleeping bags. Here also their lightness and warmth are their chief recommendations.

Though my stay was forced and the delay irksome, Mr. and Mrs. Brevig did all they could to make it pleasant and profitable, and my outfit had a thorough overhauling. Mr. Brevig later gave me great assistance in paying my debts and furnishing me with supplies to start the deer herd, without which I would have been greatly at a loss. Here I parted from Dr. Kettleson and Mikkel, as they were to return to their herd at Golovin Bay. I was under many obligations to them for their assistance thus far and for information concerning reindeer.

January 23.—Early in the morning, with the thermometer —30 and the blizzard still blowing, I finally got started for Cape Prince of Wales. There were two natives with me, one Artisarlook and another called "Ed," who had spent several years on a whaler at Herschel Island. On account of his acquaintance with white men, Ed presumed to take charge of me, but a short distance out he discovered that his gun had somehow dropped from the sled, and going back over the trail to find it, did not return. Artisarlook and I kept on, however, and made slow progress along the beach until about 4 o'clock, when he wanted to camp. I was not yet tired and thought he was trying to work on my fears, and so told him to go on. It was now dark and we were near Cape York, where the bluffs come down abruptly to the sea, and our road was over the ice crushes that lined the shore. He went ahead to pick out the way and I was left to manage the heavy sled, which was continually capsizing in the rough ice, and it was about all we both could do to right it. About 8 o'clock I was completely played out and quite willing to camp. But Artisarlook said "no," it was too cold to camp without wood, and, as the ice we were on was in danger of breaking off from the shore any minute, it was necessary that we get beyond the line of bluffs before stopping. In the darkness I stepped through a crack in the ice, and my leg to the knee was immediately one mass of ice. I was now compelled to go on to some place where my foot gear could be dried, and, though almost ready to drop where I was, I had to keep on, for to stop meant to freeze. Pushing and lifting our sled, and urging the dogs, we dragged along until midnight, when we came to a house, high up on the shore, that Artisarlook some time before had told me about. Though it turned out to be a horrible place, no palace could

have been more welcome. It was a small hut, about 10 by 12, and 5 feet high, and 15 people were already sleeping there. It was most filthy and the worst house I have seen in all my Alaskan experience; but I was too tired then to care for that, too tired even to eat; and though I had had nothing but a couple of crackers since morning, I was quite satisfied to take off my wet clothing, crawl into my bag, and sleep.

January 24.—When we awoke in the morning the natives had dried our clothes, and urged us to stay, as the blizzard was still raging outside, but their hut was too filthy to remain in it any longer than necessary. The air was horrible, and it was refreshing to get outside and to be going again through the storm and over the rough ice. Even Artisarlook found difficulty in eating his breakfast, and explained to me that the house and the people were too dirty for him to eat anything with them. There was another village about 10 miles farther on, and here we stopped and fortified ourselves with a good meal for our hard trip around the mountains of the cape. I also engaged a small sled to go with us to lighten the heavy load on the one we had.

I thought the ice we recently passed over had made a rough road, but this was even worse, for here were all the crushings of the straits shoved up against the mountains that ran down abruptly into the sea, and over this kind of ice we had to make our way. Darkness set in long before we had come to the worst of it, and a faint moon gave too little light for such a road. It was a continuous jumble of dogs, sleds, men, and ice—particularly ice—and it would be hard to tell which suffered most, men or dogs. Once, in helping the sled over a particularly bad place, I was thrown 8 or 9 feet down a slide, landing on the back of my head with the sled on top of me. Though the mercury was —30°, I was wet through with perspiration from the violence of the work. Our sleds were racked and broken, our dogs played out, and we ourselves scarcely able to move, when we finally reached Mr. Lopp's house at the cape. I think the 50 miles from Port Clarence to Cape Prince of Wales, the most trying and fearful of all I experienced on the expedition, and I was about convinced then that if there were any more places like that, a relay of men would be needed, as well as of dogs and reindeer. The next morning both Artisarlook and myself were so completely done up we could scarcely raise our feet.

My arrival at Cape Prince of Wales caused great excitement in the village, and Mr. and Mrs. Lopp were much exercised to know what brought an officer of the Government into the country at this time of the year. I delivered to Mr. Lopp his mail, and explained to him the necessity of the situation at Point Barrow and the desire of the Department that he become a part of the expedition. He was indispensable. His capability of handling natives, his knowledge of them and the

reindeer, was far above that of any one in the country. While in no way ostentatious, he and Mrs. Lopp had acquired a position of ascendency and respect among the natives that was productive of the greatest success in bettering the condition of the latter. I felt sure he would go with me, but knew there must be many grave matters to be considered and settled before he could leave. He first explained to me the position his reindeer herd occupied. Some were owned by his society, the American Missionary Association, others by himself and his "boys," or native herders—six bright, smart Eskimo youths, whom he had trained to be excellent deermen—and a small number were owned by natives of the Cape Prince of Wales village. The Association had written him to use his best judgment about letting the deer go, and gave him liberty to leave his station if he deemed it best. The reindeer had been builded upon by his people as their future wealth and support in life, and to lose them now would be to make a break in the work that could not be reckoned. Still, in the interest of humanity, he said he would give them all, explain the case to the natives, and induce them to give their deer also, if I would throw around them all the safeguards in my power, to the effect that their loss would be fully repaired and repaid.

At his solicitation I gave him a receipt for the deer herd, specifying that I, as the representative of the United States Treasury Department, received them for the use of that Department, which he desired should also assume the responsibility of their return. There were in all 301 in the herd, 292 of which were given up on this promise of return, but the other 9 belonged to a native who was unwilling to part with his in this way, and as it was impracticable to separate the herd, I was compelled to buy these 9, giving orders for goods upon Mr. Brevig at Port Clarence and upon you. Once Mr. Lopp decided to go, a very important consideration was the position and welfare of his wife and family during his absence. Instead of holding her husband back, Mrs. Lopp urged him to go, believing it to be his duty. It was first suggested that she and the children go to Port Clarence and remain with Mr. Brevig and his wife, but Mrs. Lopp would not leave her home and the work to which she had devoted her life, and insisted upon remaining, together with her children, the only white persons in this village of over 500 natives. Though in a most trying position during Mr. Lopp's absence, her faith in the native character and her hold upon it were vindicated, for she not only had little or no trouble, but received much help and comfort from them while her husband was away with the expedition. I am glad to be able to say this not only to testify to the sincerity and bravery of both Mr. and Mrs. Lopp, but also to demonstrate that the natives of this circumpolar village are not the wild, reckless, murdering people that many have represented them to be, but, on the contrary, are a good, orderly, and generous tribe.

The journey and task ahead of us was a hazardous one, any way we might look at it, and it was necessary before starting to make the most careful and ample preparations. First, Mr. Lopp engaged his six herders, Ootenna, Kivyearzruk, Sokweena, Kenk, Iuk, and Netaxite, and a sled was sent to Port Clarence to bring back Tautuk, a herder there. Netaxite was left behind to work for Mrs. Lopp and care for the house, thus giving us 7 herders, including Artisarlook. We were making an experiment; no such undertaking had ever before been tried in Alaska, and we could not tell how long it would require to travel the 700 miles ahead of us. We must, if possible, get to Point Barrow before April, as by that time the fawning season began. Again, it was necessary to fit out the party to be independent of villages, from the beginning to the end of the journey. I had no fear of the natives we might meet, but the dogs at any place might disperse our deer herd and leave us stranded. We had a great amount of work to accomplish before we could start. Sleds must be built, the herders must be fitted out properly with clothing, clothes bags, tents, stoves, camp gear, and spare harness, and lassoes must be made. Clothing was the most important item, for herding and driving are particularly hard on skin clothes, and everything available was bought and made up, for, even if we did not need it, it would be invaluable at Point Barrow. It was not until the 29th that these preparations were finished and we were able to go out to the herd, which was about 20 miles distant, on the north shore of the cape, and where we arrived on the 30th.

The herd was in excellent condition, but there was only a small number of trained sled deer for so large a party, and outfit as we had to carry with us. Dr. Call with Artisarlook's herd had not yet arrived, and we set to work making the best use of the time, building more sleds and breaking in sled deer. On the night of February 1 Tautuk arrived from Port Clarence with two good sled deer of his own, two sleds, and a lot of clothing from the Teller Reindeer Station. He reported that Dr. Call and Artisarlook had left Port Clarence that same day and that he must have passed them somewhere in the mountains. Our anxiety was relieved the next afternoon, however, when the doctor and Charlie showed up with their herd. They had a hard time of it from Point Rodney, with storms and deep snow in the mountains, and had lost two deer on the road. Things had now a much more assuring aspect, and we were all anxious to get off on what we hoped would be a successful journey, but which had doubtful points about it that could not be foretold.

February 3 we started with 438 deer and a train of 18 sleds. It took a long time to break camp and pack and lash all these sleds, as well as to lasso and harness the deer to draw them. Mr. Lopp and three herders having light sleds and well-broken deer, went behind the herd, driving from one side to the other and keeping it moving on the jump.

Tantuk brought with him a small Lapp dog that was trained to this work, and this little fellow circled around the outer edges of the herd and kept the deer from straying. If one started from the herd, the dog was after him, barking at his heels until he returned. In this way the deer were kept moving along in one compact body, and as the road was hard and fairly level, we went at a very good pace. The rest of us went with the train, which consisted of the other thirteen sleds and deer. This train was really three separate trains, two of four, and one of five sleds. The deer in each train were tied by their lariats to the sled ahead, and the driver sitting on the head sled, guided his deer, while the others were compelled to follow. The doctor at times took part in the driving, but I was content to sit on a sled in one of the trains and see the procession ahead of me. In this way one man handled four or five sleds, and many are the tangles and jumbles the animals get into when going up and down the hills, for in trains like this the deer soon worry themselves into a state of excitement. By night we had made from 6 to 8 miles, and though it was not much in distance, we had moved from our base, and it seemed that we had made a good start at doing something.

Thursday, 7. It took a long time this morning to break camp and get the sleds moving, and I grew impatient at the delay. We kept to the hills, for there the deer moss was plentiful. Indeed, it seemed the disposition of the deer people to stick to the hills as their natural fields. This is very well for ordinary work and travel, but our experience later on proved that the nearer we kept to the level ground and the ice on the coast, even though at night we had to drive some distance back to find moss, the more distance ahead we could make, and with much less trial and exertion to ourselves and the deer. The baggage train was the worst part of the outfit, and caused nearly all of the delays. This day we probably made about 12 miles, which was good progress if we could keep it up, but it was evident that our sled deer would play out in a short time if we could not reduce the weight on the train.

The country was rolling and apparently perfectly barren. The high winds that had prevailed, had packed the snow hard wherever it was exposed, and even in the deep valleys there was crust enough to bear the weight of the sleds. There was moss for the deer all over the country, but it was most abundant on the hilltops. It was an ideal reindeer country, and this north shore of the peninsula would support large and numerous herds. Alders and willow grow along the banks of the streams, but in most places the snow was so deep that they were completely covered. We had to depend upon these for firewood, and it was very difficult to get enough for our purpose.

Friday, 8. On this day, though we were under way about six hours, we made but 8 miles. Something had to be done, for the delays and vexations of the baggage train were causing the loss of valu-

able time and wearing out the deer. We were breaking fresh ones each night, but these were poor makeshifts, and it was hard work getting them along. Upon talking it over with Mr. Lopp, I decided to leave the herd in his sole charge, and take the doctor, with our baggage, down to a village on the coast, there secure dog teams, and go on to Kotzebue Sound, apprising the people of Mr. Lopp's coming, and make such arrangements as were possible to help him along. I was disappointed to leave the herd, for I had hoped to travel with it to Point Barrow and help solve the problem of the route farther on, but the necessity of the situation required some radical change.

It was found that our leaving would take away the loads of six sleds. We were not essential to the progress of the herd, Mr. Lopp and his herders having all the knowledge and experience necessary for the work in hand, and we, with our baggage, were just so much more to be hauled. By transferring our outfit to dog teams we would relieve the train of that much weight. Besides, there were many things I could do ahead to help them along. The natives beyond Cape Prince of Wales had never seen domestic deer, had no knowledge of their coming through the country, and might, as happened later at one place, take them for wild deer and go gunning for them. This danger I could guard against by telling the people at each village what was coming behind. There was information as to the best route and the character of the country that I could gather in advance and prepare the way with guides, etc. These matters were all discussed with Lopp and an understanding as to our different movements arrived at.

It was hoped that the herd would be able to cross Kotzebue Sound on the ice, and thus save the long journey around the head of the Sound, and yet this was very doubtful, depending, of course, upon the winds. A southeast wind breaks up the ice in the Sound and opens leads of water through it, while a northerly wind keeps the ice firm and in place, and the cold soon freezes over any open places. I was to learn the conditions of the ice over the Sound and send back word to Lopp how to prepare for this part of the journey.

February 6.—This morning while we were preparing to start for Sinrazat, a village on the coast, the very man we wanted, a native, Perninyuk by name, came tramping over the hill back of our camp. He was on a hunting trip and was probably the only man for miles around, and how he came to strike our camp at the very time we wanted him so badly was unexplainable. After the freezing of the streams in the fall the people hereabouts depend upon sealing and rabbit hunting for their winter's food, part of the population remaining on the coast, going out on the ice every favorable day when there is open water offshore, while others go back into the hills trapping rabbits, and Perninyuk had just come out for that purpose. I engaged him to go along the coast with us as guide, and, Lopp having driven us to the village of Sinrazat, we parted there on the night of the 6th

with mutual good wishes and hopes of meeting again in the vicinity of Kotzebue Sound.

Along these shores stretches a series of lagoons from Cape Prince of Wales to within 40 miles of Cape Espenberg, the largest being Schischmareff Inlet, into which two fair-sized rivers flow from the mountains to the south. Though a large body of water, it is filled with bars, and its opening to the sea is hardly more than deep enough for a boat. Where the lagoons end the coast is a line of bluffs and small sand hills until Cape Espenberg is reached, which terminates in a very low sand spit.

There are numerous remains of old villages all along the coast, but that they are now deserted I believe to be due not so much to the fact that there are less people, as to the desire to change a situation when the houses get into bad repair and the accumulation of filth is too great about them. Wood is plentiful, and it is no great task to get enough for a new house when wanted.

We now began a very trying experience. The natives along this part of the coast were very poor, and scattered in small numbers at distances of about 20 miles apart. Sealing had been very poor. In some places their dogs had starved, and the people themselves had little to eat. No one man seemed to possess more than two or three dogs at most, and the difficulties of obtaining means of travel were almost insurmountable. It seemed impossible to get anyone to either take us, or go along with us more than one day's journey from his own home. The best we could do during the day was about 20 or 25 miles, and at night it was a long, trying ordeal to buy, borrow, or hire dogs, sleds, and men to go on to the next village. We found one man who was on his way to Point Hope to bring back a bride, and I induced him to join our train and help us along, but one morning, farther on, his heart failed him and he deserted, leaving us badly in the lurch.

Our trials were many and exasperating. We would buy or hire dogs, only to have them run away and return to their owners after going but a short distance with us. Native dogs are very unlikely to remain with anyone (particularly white men) but their owners, if they are within reach of the village where they live. They will chew off the stoutest harness or rope, and nothing but a chain will keep them securely, but chains are too much weight to carry on so long a journey. Finally, by bribing, threatening, and offering shiploads of provisions, we managed to reach Toatut at Cape Espenberg. We were completely worn out, and our provisions had been drawn upon so [illegible] by our native friends that hardly more remained now than a few broken crackers, enough beans for a day, and some tea. Dogs and men were hungry for white man's food, and had helped themselves [illegible] and eaten to their hearts' content, while we dared not [illegible] lest they should leave us. Finally, at this place, all of

them except Perninyuk did leave us and take their sleds with them, and I think mainly because they thought we would starve, for evidently they had no faith in my story of the sled loads of provisions awaiting us at Cape Blossom.

There were only two huts in Toatut, and in these were crowded twenty people; but no inducement could get them to go across the Sound the next day. It was more than 40 miles over the ice to Cape Blossom, where I felt Lieutenant Bertholf was waiting for us with his load of provisions and, probably wondering what had become of us, for we were now about a week behind our plans. I was tired and worried. We had been separated since December 20 and had heard absolutely nothing of Bertholf's whereabouts or his progress since that time, and did not know even if he had arrived at St. Michael. I had left him at Kiyiligamute to wait for dogs. Had they come on time, or did he have to wait? Had any accident or sickness befallen him, and had he been able to get across the divide to the Arctic with his heavy load? Was the snow too deep or soft, and had he been stalled somewhere? There were no people in all that long route, and he had to depend upon his preparations entirely. His provisions we were now greatly in need of, and our progress from here on absolutely depended on them. The deer herd was behind, and I could not help being worried over its progress.

I had perfect faith in Lopp and his boys, but the progress while I had been with the herd was so vexatious and slow that I could only hope that with less baggage it would improve after we had left and after all hands had become more accustomed to the daily travel. Our own position was also rather bad, with no provisions and no sleds, and 40 miles of ice that might open at any time between us and the hope of supplies. A week before the ice had been open, but for the last five days the wind had been from the north, with the thermometer from −20° to −25°, and the old men of the village said the ice was all right. Yet nothing could induce the young men to cross with us the next day. "No," they said, "not until we go out on the ice and see for ourselves whether it is safe or not." I tried to explain to them that another day and another wind might change matters, but it was of no use, they would not move. All the next day we were compelled to wait, idly gazing at the mountains on the other side and wondering whether there was more to eat there than on our side. There was nothing else to do but wait. We could not carry our clothes and outfits ourselves, nor could we replace them, for deerskins were worth more than their weight in gold in these parts. Perninyuk, who had remained faithful to us, helped us pass the day and compose ourselves by giving an exhibition of his magic. He was a native doctor, or "unatkook," and the performance consisted of two hours of frenzied tragic declamation and crawling around on the floor, combined with a few simple tricks.

That night I had an interesting experience, which showed how easily natives' actions may be misunderstood and misrepresented. There was an old couple living in the house, and hearing something unusual in their corner, I looked over and saw the old man tie a string around his wife's neck and put a long stick in the loop. The old woman was sick. I have long heard of how the old and sick are sometimes killed to put them out of their miseries and relieve their relatives of the burden of keeping them, and the thought came that the old man was going to strangle his wife by twisting on the stick. I immediately made strong objections to what seemed to me would soon be murder, whereupon the natives, who showed astonishment at my interference, called in Perninyuk, and he explained how I was mistaken. There was no intention of harming the old woman, but she was sick in the head, being possessed there of a devil in the shape of a dog, and night and morning had to be tied up in this way like a dog and incantations said over her to drive out the devil. My mistake was amusing and very natural, and showed how easily one may be mistaken in a people whose ways and customs one does not understand. Without Perninyuk's explanation, I might have taken to myself the credit of stopping a deliberate murder, whereas I was only interfering with the administering of the doctor's prescription.

Toward evening the man who had gone out in the morning came back and reported the ice as far as he had gone to be good and hard, and that they would start with us the following morning.

February 12. By this time the days were fast growing longer, and it was light shortly after 8 o'clock, when we started. At the last minute our prospective bridegroom deserted us and we had to begin a great hustling for dogs in this small village. Fortunately, one of the young men thought he would like to visit some friends and do a little trading on the other side of the Sound, and he offered us his dogs if we would take him and his stock along. I was never more relieved than when we finally rushed down the bank on to the ice and were pointed for the mountains back of Cape Blossom. Along the shores and for miles out on the sound there were heavy crushes of ice over which we had to pick our way very carefully, often being obliged to carry our sleds, as we wound in and out hunting for the smooth patches of ice that a few days before had been open leads. The north wind still [illegible], and with the bright, clear sky the mountains looked close, but after traveling hard all day they seemed little nearer than when [illegible]. The natives wanted to camp when it fell dark, but I was [illegible] to make the land on the other side before stopping, no matter how long it took. A few crumbs of crackers and some frozen [illegible] about all we had in our provision box, and I was not going to [illegible] out there with all Lieutenant Bertholf's stores only a [illegible] away.

[illegible] we kept our course by the stars, and the natives, who [illegible] out, claimed we would miss the village, wander along

way up Hotham Inlet, and lose ourselves till morning. But being convinced of my determination to keep on they said no more about camping, and we worked on over the rough places, almost famished, but hustling the dogs and ourselves to keep warm. Suddenly, about 10.30 p. m., we came against the land at the graveyard below the village of Kikiktarnk, and soon after drew up at the house of Rev. Robert Samms, a Quaker missionary, who, with his wife and Miss Hunnicutt, a teacher, had established themselves at this place during the previous summer. Here also was Lieutenant Bertholf, who had arrived the night before. We were relieved and overjoyed. Everything at this end had turned out well, although Lieutenant Bertholf had a hard time getting his provisions across the portage. Englestadt, the trader at Unalaklik, who was to furnish the teams for the trip, had failed to keep his agreement, and Bertholf had been at the mercy of some unscrupulous natives, and forced to go back to Golovin Bay to the deer camp, and there obtain seven deer and sleds, with a Lapp and a native driver to help him along. But he arrived all right, with the provisions intact, and we were now fully able to prepare all parts of the expedition for the long and hazardous journey to Point Barrow. There was not much to be done that night. Both parties had had all they could stand and needed rest. The weather had been growing colder and the light north wind made the 62° of frost biting and sharp, but we felt much better in the tent that night after a good supper, knowing everything was in good shape, than we would have been out on the ice of the sound, with no fire and nothing to eat.

February 13.—We spent the day overhauling our outfits and deciding upon points further on. There was much information to be gathered as to whether the deer herd should keep the coast or strike up the Noatnk River and down the Ootokok, or the Ikpikpung rivers to Point Barrow. It seemed shorter to strike across the country, but the considerations of timber, deep snow, and the possibilities of getting lost or stalled in the mountains were too great and too much fraught with danger to be faced, and it appeared best to keep to the coast as far as possible, providing we could find moss for the deer.

Bertholf had bought at St. Michael the dog team that had carried me from Tununak, and, having brought it over the portage with him, this relieved me to a great extent of the difficulties of travel further on. He had also brought seven good sled deer, five from the Government herd and two from the herd of the Swedish missions. These I decided to keep to help out the train in our large herd. Lopp's sled deer must soon be played out, or at least well tired, and these seven would be a valuable addition.

I paid off and sent back the Laplander and the natives who had come in Lieutenant Bertholf's train, except one native herder, Okitkun, who was retained to care for the deer they brought. I knew him as a thoroughly good and reliable Eskimo, and, moreover, an excellent deerman—one of the best in the country, and I wanted him here when

our herd came along, for Lopp's choice, if he should be needed, or in case any of our herders had played out. Accidents were always possible in such work as they were engaged in, and as things had to be prepared for here, I wanted to take all the safeguards possible.

Lopp, however, was not here yet, and there was no way of telling when he would arrive; it seemed at Toatut that the ice was too rough for the deer to cross to Kruzenstern, and I had left a letter advising him not to try it, for, though the trip around Kotzebue Sound would take at least ten days, it seemed better to go that way than to run the risk of having the herd scattered on the ice, and perhaps lost. As I did not expect the herd at Cape Blossom for a week, and, if they went around the Sound, two weeks, I could not wait that long. I must get to Point Barrow news of our coming and obtain news from there as soon as possible. Point Hope was but a week's journey distant and I felt sure some news would be there, if not some of the Point Barrow people themselves, for there were ample stores at Point Hope, which the people at Point Barrow knew.

Arranging our affairs to provide against accidents or delays, I decided to take Surgeon Call and continue on to Point Hope at least, leaving Lieutenant Bertholf behind with the provisions to wait for the arrival of Lopp and the deer herd. The situation was thoroughly understood between us, and leaving orders for Bertholf to come on to Point Hope if he did not continue with the deer herd, we left Cape Blossom on the morning of the 16th. The weather had continued clear and cold, with the thermometer registering about —35° for several days.

Striking across Hotham Inlet toward Cape Kruzenstern, we reached the village of Anyok that night. This was the place the deer herd was to make for, from Cape Espenberg, and though now I hardly expected them to come that way, it was well to prepare the people and have them on the lookout. As it turned out afterwards, they were, at that very time, camped out on the ice but 10 miles from the village. From here on to Point Hope we had ideal weather for traveling, clear and cold, the thermometer ranging from —30° to —42° the whole way, and we had to keep moving. With plenty of food and plenty of driftwood along the beach, we were able to fortify ourselves against the cold, and by exercising care and paying attention to our noses and cheeks, we were not touched even in these sensitive places.

The difference between care and carelessness is slight, in arctic travel, and the first let-up is sure to bring its reminder in the shape of a frosted toe or finger or a frozen nose. One must be on guard, and the slightest tinge in the nose or cheek must be heeded, and circulation started again by vigorous rubbing. Though somewhat disagreeable and painful, freezing these parts is not necessarily harmful unless too long neglected. I saw a case where the end of a man's nose had dropped off from frostbite, but such things are rare. Usually the

skin is discolored, becomes dead and peels off, leaving the member quite sensitive for a time. But with the hands, and especially the feet, it is different. No part of the body requires more attention than these; socks and boots must be well made and kept thoroughly dry; even the slightest perspiration will, if one stops too long, work disastrously. Both boots and socks should be changed immediately upon going into camp, and dry ones must be put on in the morning before starting. The natives know the importance of this only too well, and if they see one inclined to neglect these precautions, they will insist on his taking care of his foot gear. It is the easiest thing in the world for a man to suffer severely in such a climate, but it is possible, by good care and attention, to avoid what one might call extreme suffering, and live there with only the unavoidable discomforts of the country, to which a man in good health sooner or later grows accustomed.

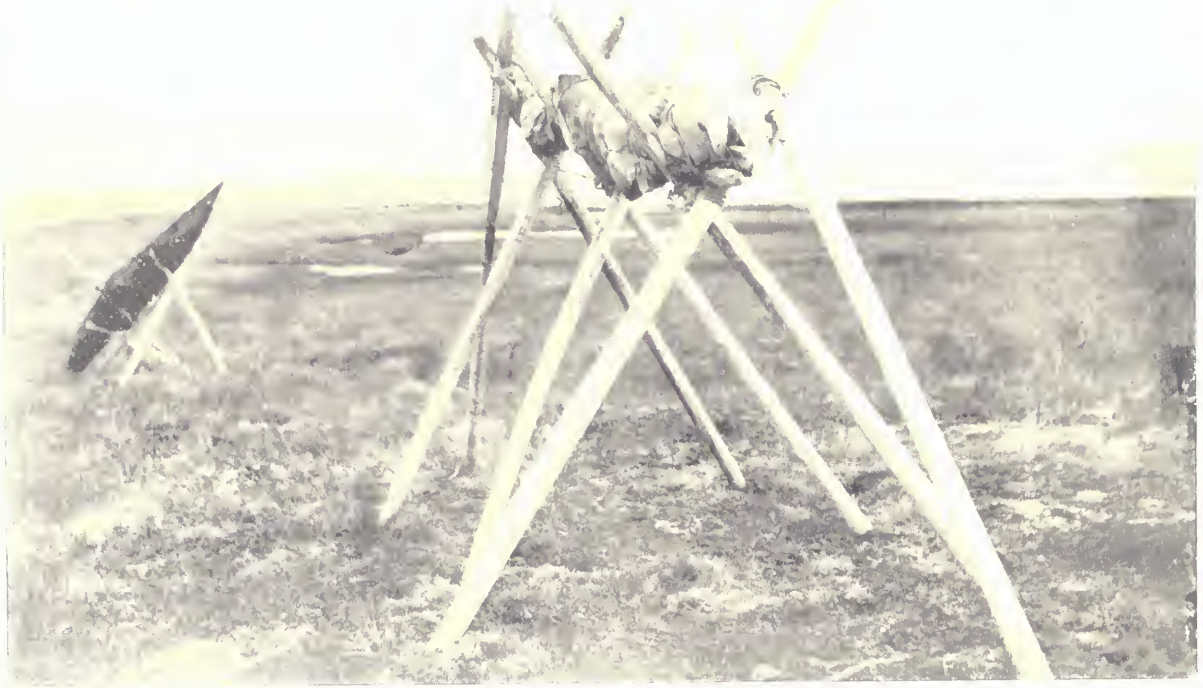
We had now bade good-bye to native houses, and, except at Point Hope, camped in our tent from here on to Point Barrow. I much preferred the tent for cleanliness and health, although when, after a long, hard day's travel, we drew up at a village cold, hungry, and tired, it required considerable determination and a more powerful consideration than cleanliness to resist the temptation to get in out of the cold as soon as possible. Pitching the tent and making a proper camp seemed, at such times, an endless job, and one was apt to crawl into the nearest hut, drag off his bundling clothes, and settle down in some corner in perfect peace, while the men of the house went outside and attended to the wants of the teams and secured the sleds for the night. The hospitality of these people I have never seen equaled elsewhere. It is never grudging; it is thrust upon you. The best they have, and the best place in the house are at your disposal. It is so universal that it comes as a matter of course, and as a result does not seem to be properly recognized or appreciated. Often it is embarrassing, for the natives are so insistent and generous that it is hard to refuse to accept their offers, and go about your business in your own way. Never in all our journey did we pass a house where the people did not extend a cordial welcome and urge us to go in; and hardly a hut that we did go into, but the best place was cleared out for us and our belongings. What this means to a tired, cold, and hungry traveler can not be fully appreciated save by those who have experienced it, and my former good impressions of the Alaskan Eskimo were but intensified by this winter's journey. All that we ever gave in return for such hospitality, and all that was expected was a cup of tea and a cracker to the inmates of the house after we had finished our meal.

From Cape Prince of Wales on we had been treated to bright auroral displays almost every night. They generally came out of a dark bank that would form in the northern horizon just after dark, and stretch in long shooting streamers that gradually worked over the heavens to the opposite horizon, waving back and forth, so close to the earth as

to be seemingly within reach, and then as gradually receded and subsided. Usually they came in extremely cold weather and seemed to presage cold weather for the following day. I was particularly on the watch to see the brilliant colors so often described, but was disappointed; and, while they lit up the heavens and the snow-covered earth, I could note only a faint orange and violet color in the displays, and people who have lived in the country many years told me they never showed more color than we saw, so I concluded that, on this coast at least, they were seldom more than streaks of orange tinged light. During the coldest days there were numerous sun-dogs, and, sailor-like, when two and often three of these showed in the sky, I anticipated bad and stormy weather, but it never came, and it seemed that good weather instead of bad followed in these regions.

On the morning of the 20th we pulled up at the house of Mr. Nelson, manager of Liebes & Co.'s trading and whaling station at Point Hope. Mr. Nelson was away farther down the Point, and it was reported that a man had just come from Point Barrow. Here was the news I expected and had come all this way to obtain. Dispatching a sled for Mr. Nelson and Ned Arey, the man who had come from Point Barrow, they soon returned to the house, wanting to see the men who had come into that country in the winter. It was more than they could at first realize, and we were as much objects of curiosity here as at the other places on our route. Arey had arrived from Point Barrow the day before, and had been more than a month on the way, having left there January 18. He described the situation at that time as bad, but as yet not serious. Provisions, of course, were very short, but there was enough flour, bread, tea, and coffee to keep them going until the middle of May. The men had been kept together and prevented from straying. Three deaths were reported—one from dropsy and two from freezing. Scurvy was feared and had already made its appearance on the *Belvedere*. Providentially, there had come into the surrounding country large numbers of wild deer, or caribou, and native hunters, who had been sent out early in the winter, had killed and sent in enough meat to keep the crowd going, with the stores they already had. Mr. C. D. Brower had given up his stock of provisions and was managing the people ashore, and hoped to get enough meat from the spring hunting to keep actual starvation from setting in. I felt relieved to learn things had gone so well thus far, and I could now turn back to the deer herd to further its progress.

I had decided to send Surgeon Call on to Point Barrow to let the people there know of our coming, and on the night of the 21st was arranged to leave the next morning for Kotzebue Sound and there await Lopp's coming, when a messenger arrived, bringing a letter from him, stating that he had arrived at Anyok, on Cape Krusenstern, on the morning of the 18th, after a terrible journey across the ice from Cape Espenberg. He had not received my letter at Tootuk,



advising him not to make the attempt. They had crossed where I thought it would be impossible, and had a hard experience, but they saved a distance of 150 miles and probably two weeks in doing it. I was greatly relieved and overjoyed at this news; our plans were moving on to success, and I can not speak too highly of Lopp and his boys for the courage, fortitude, and skill they showed in making that awful trip successfully. They had arrived at Toatut shortly after we left there, and determined to risk themselves and the deer by crossing on the ice rather than take ten days or two weeks to go around by land.

After traveling all day and well into the night, they camped about 10 miles from the land on the north side, but during the night the deer wandered off, and the next morning were found many miles back on the trail they had just come over, making their way to where they knew was feed. The boys rounded them up and started again for Cape Kruzenstern, and traveled all that day and night until daybreak the next morning before making the land. Deer and men were in the same condition, almost dead from hunger and fatigue. Six sled deer had become exhausted and were left on the ice, but the remainder had been brought safely over, and with the good moss found in the vicinity and a rest, they would soon be in good condition again.

Gathering some further supplies for them, I started down the coast on February 24, together with Nelson, to meet them at the Kivalena River. That night we camped at Cape Seppings, and the next day kept on to the Kivalena River. It grew much milder toward night and soon it snowed, as it always does with mild weather in the winter, and we were very glad to make a small native hut in the brush. The next day it was snowing so fiercely that no one dared venture from the house for fear of getting lost. I was fearful lest I should miss the deer herd, but experience and patience are the chief virtues in this country, and one has to be content with the conditions found.

February 26.—The snow let up enough this morning for us to find the hut where I planned to meet Lopp. This was a deep, wide valley among the mountains, and winding our way along the Kivalena River, we finally came to the place we were hunting for, but hardly had we got started making our camp when a native boy came running up, saying he had seen the deer. Sending our guide back with the boy, they found the herd and soon returned to our camp with Mr. Lopp. He showed the marks of frozen cheeks and nose that all his party had gotten in their hard trip over the ice of Kotzebue Sound. He was thankful that was over and the deer safely on this side of the Sound; and after carefully considering the features of the country, we concluded that it would be wisest for the herd to go up the Kivalena River and then cross the mountains to the headwaters of the Pitmegea River on the north side. This was the last great trial, to get the deer on the north side of these mountains, and had caused us much anxiety and study. We had canvassed and discussed with

natives and whites all the routes from the Noatuk to the Ikpikpuug, the Ootookok, and the Kookpowuuk, and finally after long consideration and in the light of our own experiences thus far, concluded the shortest route away from shore was the best, and that the closer we kept to the coast the safer not only would the deer be but also the men. Lopp had communicated with Lieutenant Bertholf at Kikiktaruk, and had taken his supplies. Bertholf had come up along the coast with him until their routes divided, the day before.

February 28 and March 1 I spent in camp with the deer herd. The soft weather brought lots of snow and a southeast gale, and all we could do was to stay inside the tent and try to keep dry and comfortable; but at best it was very trying, for time was flying, and we were anxious to get the herd to its destination before the fawns began to make their appearance. We had been nearly four weeks moving the herd thus far and had fully 400 miles more of travel against the northeast wind that generally prevails in this part of the country during the winter, and only this month of March to do it in, and could afford to lose no time.

March 2.—It was clear this morning, so we dug our tent and sleds out of the snow and prepared to start. Lopp and the herd up the Kivalena River, and I around the coast to Point Hope to meet Bertholf and Call, and then to follow on up the coast past Lisburne, and meet Lopp as he came out on the north coast at the mouth of the Pitmegea River. Before we could start two of our dogs got adrift and into the herd and started them off. We tried at first to shoot the dogs, but had to stop for fear of hitting the deer instead. After racing around in a circle a few times the herd took off in one body for a mountain, about 5 miles away. Three of the boys started after them, and as the dogs soon tired of running in the deep snow and abandoned the chase, the boys caught the herd and drove it back, but not before two deer (cows) were so badly injured that they had to be killed. They both had prospective fawns, so we really lost four animals by this bad job of the dogs. That night I reached Cape Seppings and found Bertholf, he having been stalled there by the storm, and hearing we had passed down the coast had waited for us.

March 3.—We arrived again to-day at Nelson's house at Point Hope, having been gone eight days on the back track. As I had laid out our journey to Point Barrow we had gone now about three-fourths of the distance. So far we had been successful and it remained to prepare well for this last quarter of the journey, for it was to be the hardest of all, as well as the most lonely. After leaving Point Hope there were no villages until Point Belcher was reached, 300 miles away, and we must depend upon what we carried with us for both men and dogs. Again, there were the people at Point Barrow to consider and the object of our mission. There were ample stores at Point Hope that could be spared for 100 men, and our orders contemplated sending some of the shipwrecked men here.

If the provisions at Point Barrow ran out in May, as we had been informed by Arey would probably be the case, it would never do to keep 300 men there until August with plenty of stores at Point Hope. Looking at it from this point and from this end of the route, I decided that upon arriving at Point Barrow I would send 100 men down from there to Point Hope, and that I would leave Lieutenant Bertholf at the latter place to take care of them as they came down. They would have to travel a distance of about 400 miles and it would be a severe journey, as it must all be made on foot, and provisions carried or dragged on sleds the whole distance. With a view to relieving them at this end and reducing the amount of provisions to be carried from Point Barrow, Lieutenant Bertholf was instructed to transport and place about 500 pounds of flour, tea, bread, etc., at the mouth of the Pitmegea River, nearly 100 miles up the coast. I designed that the men should be started in parties of ten, with a leader, and provisions enough to last to the Pitmegea River.

The prevailing wind was northeast, and in the spring the weather would be warm enough to prevent any danger of freezing, and the wind would be at their backs. If it were possible to supply the men with proper foot gear, there would be no great difficulty in carrying out this arrangement, though there was a possibility of some of the men playing out on the road. Still it appeared to be better to run this risk than to have them all remain at one place without sufficient food, with the consequent starvation and disorder.

Within the past ten years knowledge of how to distill spirituous liquor in a crude way, from flour and molasses or sugar has spread all over this coast and has worked incalculable harm to the natives, causing great destitution and at times even murder. The natives at Point Hope were the first to learn this from white men, and it has been carried on there to a greater extent than anywhere else on the coast. Recently several willful murders had been committed, one in particular, that of a native named Washok, by two others, Avulik and Stagnmera, and Lieutenant Bertholf was instructed to give his attention to these matters during his stay and take such measures as he could to break up the distilling and to arrest the murderers.

It was difficult to secure a man and his wife to accompany us on the journey to Point Barrow, for none wanted to go into what seemed a starvation camp, even though I promised to send them back to Point Hope immediately. I was persuaded by others that a woman was necessary to look out for our clothes, but if I had the journey to do over again I would never take a woman when I could get a half-grown boy or a man, for women are not so strong and can not stand continuous travel like a man.

We had now come so great a distance that, while we were somewhat hardened to the work, we had been at it so long we were necessarily tired, and could not stand running ahead of the dogs all the time as had to be done in this part of the country. Through Mr.

Nelson I finally engaged a middle-aged man and wife, who had lived at Point Barrow several years. They had never been over the road we were to travel, but we could follow the coast and I wanted them more to help with the sleds than for any particular guidance. Nekowrah, the man, while not a good traveler, was the best man around a camp I ever saw, and his judgment and foresight in these matters saved us much discomfort, if not suffering. It is characteristic of the natives of the extreme north that they have an excellent knowledge of how to prepare for and withstand the rigors of the climate. They seem to have no fears of it, but at the same time are fully alive to its dangers and menaces.

We got off on the morning of March 6, with two sleds, and Mr. Nelson came along with one extra sled that was to haul dog feed a part of the way and give us a good start on the road. We made a good day's run out, but with our loaded teams it was late at night before we reached a little gully by Cape Dyer, where we could find wood for our camp.

March 7.—It blew hard from the northeast to-day, and the ice was out from the shore along to Cape Lisburne. At some places we were compelled to make portages across the land and at others to cut roads through large drifts, that ran from high up on the mountains down into the water at an angle of 60 to 70 degrees, and, in consequence, progress was slow and tedious. We had hoped to round Cape Lisburne, but arriving near there found the wind howling over the cliffs, sending showers of small rocks and bowlders to the ice below. This was a notorious wind hole, summer and winter, and when Mr. Tilton came around it on his way from the north the wind took the piece of ice he was on out in the open water, and he was three days getting ashore. It was so black and thick about the cape that we dared not try it, and concluded to wait and see what the next day would bring.

March 8.—The wind had gone down during the night so that this morning we got around to the north side of the cape to Wevuk, where two native families were camped, hunting seals and polar bears. Here we loaded up the extra sled with dog feed for the rest of our journey. Upon telling one of the natives, Sakavaichik, what we wanted, he simply told us to go into his ice house and help ourselves. No price was asked; no stipulation made. He saw what our needs were, and, so far as he was able, or as much as he had, he would help us gladly. It is refreshing to meet such simple, true-hearted people in time of need, and to have dealings with them, even if they are only Eskimos.

March 9.—We were off again in the morning, with loaded teams and rested dogs, for the long journey ahead of us. South of this point, at times during the winter, come periods of soft weather, that amount almost to a thaw, but from here north, rarely does the thermometer go as high as zero during that time. Everything is frozen hard and so is and remains in that condition until the summer. The northeast

wind blows during the winter like a trade wind, and against this we had to fight our way most of the distance to Point Barrow. The snow is usually packed hard by the wind, and we were told we would find a good road for traveling. For a part of this day it was; but not long after leaving Cape Lisburne there came a fine, light snow fall, with not enough wind to blow it away, and, as the snow increased, our promised good road turned to a very bad one, and we were toiling again. However, we made nearly 30 miles during the day and felt quite satisfied. At night we camped at the side of a house that was built some years ago to develop the Corwin coal mine. There remained now only the floor and one side, the rest having been burned by natives traveling by. We did the same as they, and were glad to get some good dry wood.

March 10.—We now began to strike soft snow and rough ice. In some places where the snow lay in hollows our sleds and dogs would sink almost out of sight; and at others, around the bluffs, we had to stop to cut off the corners of the rough ice, fill up the hollows, and make our own road. It was hard work, and it was not until about 3 o'clock in the afternoon that we came to the mouth of the Pitmegea River, where we had planned to meet Lopp. We looked anxiously around for some sign of the deer herd, and saw sticking in the snow a cross made of two pieces of bread box, which our natives immediately recognized as the work of a white man. Such it proved to be, and was the message Lopp had left for me according to our agreement. "Letter between boards" was what the sign read on the outside. Hastily tearing it apart, I found his note. He had arrived here on the 7th, having been six days crossing the mountains; the sled deer were nearly played out, but the herd was all right, and after one day's rest he had gone on the day before we arrived. The last great obstacle had been overcome; and though the cold, strong winds were hard to face it was now a straight drive over a level country, and it seemed we surely must arrive at Point Barrow before the month was out. Human nature could not accomplish more than had been done, so, pushing on until nightfall, we went into camp, feeling we had things well in hand to go to the end of the journey.

March 11.—Loading all our outfits and the dog feed on two sleds, I sent the extra sled back to Point Hope. It was all our dogs could do to drag their increased loads, and in the afternoon all the animals had to be put on one sled at a time to drag them through the deep drifts. We were making poor progress, but we were at least going ahead all the time, and that was something. I was anxious to catch up with the deer herd, but so long as they were ahead I did not care much. Eight miles was all we made after a most laborious day's work.

March 12. The storm still continued, and the smooth, level road was now covered with 6 inches of soft, fine snow, and though our progress was still slow, yet it was more satisfactory than the day before.

At night we came to the end of the mountains, where we could expect more wind and a better road, and we made our camp in the same place that Lopp had made his the night before. I felt confident of catching him in a day or two; but our loads were heavy, and we could not afford to work our dogs too hard on the start and risk playing them out.

March 13.—We got off early this morning and toiled along first on the ice and then on the land; but there seemed to be no improvement in the travel anywhere. The thermometer varied from 15 to 30 below zero, yet in an hour after breaking camp we were wet through with perspiration, and had to be moving until we camped at night to keep from freezing, for it is almost fatal to stop with wet clothes. Our bodies had by this time accommodated themselves to the atmosphere. In the first part of our journey +10 seemed cold and sharp, but gradually a lower temperature suited us better, and now anything above —20 was altogether too warm to work in. Now we went about and worked with our bare hands with impunity, and our endeavors were to not wear too many clothes, yet still have enough on to keep us warm in case we had to stop any length of time. This afternoon we passed the deer camp of the night before and gained some distance on them, and I felt it was well they were ahead and within reach at any time, and we could follow their tracks and not be far separated. If we got to Point Barrow at all, we must get there with something to eat, not only for ourselves, but for the people there, or the expedition would fail of its primary object—to feed the hungry.

March 14. We now came to the lagoon that stretches along this coast for a distance of more than 100 miles, about 5 to 10 miles wide, and separated from the sea by a narrow sand spit with four openings in the entire length. Three large rivers empty into the lagoon south of Icy Cape. About 15 miles below Point Lay is the mouth of Kookpowruk, a large stream nearly 100 miles long. Its source is to the south of the Meade River Mountains, and it runs in a general northeasterly direction. The Kokolik, the shortest of the three, rises on the north side of the mountains, its mouth being just back of Point Lay. The largest and farthest north is the Ootookok. Its head waters are near a branch of the Noatok and almost directly south of Icy Cape, and its mouth is in the lagoon, about 15 miles south of the cape. Before the wild deer were driven from this part of the country there were large settlements on these rivers, and the natives from Kotzebue Sound often made the passage up the Noatok and down the Ootookok in the spring, to trade with the people on the northern coast.

Along the shores of the lagoon, near the mouths of the rivers, the land is marshy and low, gradually rising to rolling hills until the Meade River Mountains are reached. The southern part of the lagoon is shallow and filled with bars, but the northern half is wider

TENT CAMP AT LAY CAN

and has depths of 3 fathoms in places, and through the two openings from 8 to 10 feet can be carried. There are only a few small streams emptying into the northern half, and the land back of the lagoon is generally higher than along the southern half. The deer had to pass along the inshore of these lagoons for feed, and we followed their trail; but the fine, drifting snow which filled the air prevented our seeing any great distance ahead, and the wind, which had now full sweep, was biting and sharp. This night we camped on the inshore side of the lagoon, beside an old abandoned hut. It had been a beautiful day, as days go in the arctic region, and we had made good progress. I had intended going on during the night and catching up with Lopp and the deer herd; but the doctor's team was pretty well tired and did not work well, and besides we had heavy loads and not a very good trail. At the time I decided to camp the doctor was far behind, and I feared we might lose one another if we tried to keep on during the night.

March 15.—Our dreams of catching up with the deer herd were gone this morning, for the wind had increased during the night, and by the time we awoke was blowing a gale, a howling blizzard from the north, filling the air with quantities of fine, hard snow that cut like a knife and hid everything from sight, even a few feet away. It was all we could do to keep the tent from blowing down, so we cut blocks of snow and built a barricade around our camp that kept off some of the wind, but still it was anything but comfortable, and as the old native hut was filled with hard, packed snow and we could not get in there, and we had to finally tear off its covering of wood to get enough to keep our fire going. I afterwards learned that during this blizzard Lopp was compelled to move his camp. How such things are done at such times none can tell but those who do them, and too often the experiences are so terrible that the desire is to forget about them when they have passed. When we caught up with the deer herd later, all the party showed the effects of their work this day, in the masses of black skin on their faces and noses where they had been frozen while shifting their camp. During this day the thermometer registered —40° to —45°, which is unusually low with so much wind.

March 16.—Though the temperature moderated somewhat to-day, the wind blew as hard as ever, and we could only remain where we were until the blizzard had spent its force. We had been warned concerning the blizzards on this coast, and I had heard many stories of the terrible times of parties who had been caught in these storms. One party I knew of had been storm-bound for forty-two days at a place but a few miles from where we now were, and were compelled to eat their dogs before the storm passed over. We had never allowed the darker side of the stories we had heard to trouble us, except so far as to make our preparations more complete, yet often during our long fight up this coast if one had dared let down we might have been left

somewhere on the road. The deer herd we knew could be but a few miles from us, yet it might just as well have been a hundred for all the good it did us in this blizzard. Our supply of dog feed had been growing less all the time, and during these days of idleness we were obliged to let the poor animals go unfed. We still had a long distance to go, and natives, as a rule, do not feed their dogs except when working, and we had now to do the same. A little "flour soup" was all they got for two days, and in consequence began to eat everything in the shape of lashing on the sleds, in fact, everything that was not wood or metal. Eskimo dogs are seldom or never housed; sometimes they crawl into the passage of the huts, but generally they remain out in the open, no matter what the temperature or the condition of the weather. In traveling, the tent or snow house is securely closed at night lest they get inside and make short work of anything they can chew. Our clothes even were not safe, especially the boots, and everything eatable that could not be kept in the tent had to be raised high on racks or on blocks of snow to keep it beyond reach.

The favorite way among the Eskimos of camping in this part of the country is to build snow houses at night. The wind packs the snow so hard that with a long knife it can be cut into blocks like building stone, and in a short time a small strong house can be constructed with these, the chinks being stopped up with loose snow, and a large block used as a door to close the opening, making the place nearly air tight. Soon the warmth of the bodies of three or four people, together with the heat from a native seal-oil lamp or kerosene-oil stove, will raise the temperature of the place so that it is fairly comfortable, and one can even remove some of his clothing. On account of the difficulties of construction, a snow house can not be so large as a tent, and the oil for the stove adds greatly to the weight to be carried; but, when traveling back from the coast, where there is no wood, snow houses are the necessity of circumstances. As such they are made the best of, and whatever discomforts they entail are passed off as unavoidable and not thought of. A philosophical common sense is a great help in living in the arctic regions, as elsewhere. If you are subjected to miserable discomforts, or even if you suffer, it must be regarded as all right and simply a part of the life, and like sailors, you must never dwell too much on the dangers or suffering, lest others question your courage.

March 17. It had stormed so hard during the night that we were nearly buried in the drifts that had formed and we had to dig ourselves out in the morning. Our sleds this morning were completely buried, and dog harness, shovels, axes, and the like had to be dug out of the drifts. In camping one must be careful of the few belongings and camp tools, for anything left outside at night is sure to be covered over in the morning if it is blowing, and anything that has to be left out must be stuck up in the snow or packed in the sleds if you want to see it

SNOW HOUSE I

again. We had now been traveling so long that our camping and packing the sleds had been reduced to a system. There were four of us and each had his own part of the work to do. The doctor was the cook and looked out for the stove and the food. I attended to the sleds and the tent. The native woman was the doctor's assistant and besides looked after our clothes, while her husband Nekowrah helped me and did the heavy work. On coming to our camping place, Nekowrah and I would get out the tent and pitch it. This done, the doctor would set up his stove, while Nekowrah went on a hunt for wood, and I would bank up the snow around the sides to keep the wind out and secure the hut generally. Then the sleds were unpacked and all our sleeping gear, food, and cooking utensils were passed in to Shucungunga, who arranged them inside. By the time the fire was started in the stove, the dogs were unharnessed, and the sleds put beyond their reach. This would all take from one-half to three-quarters of an hour, and in that time the tent would be good and warm and we could go inside and change our clothes. The wet ones were passed over to Shucungunga for drying, who stretched a line along the ridgepole and hung up the clothes to catch all the warm air possible.

It was not long before supper was ready, and it generally mattered little what it was, so long as there was enough, for by this time we were about like the dogs, hungry enough to eat anything that could be chewed. Usually the supper consisted of bacon and beans, followed by "slapjacks" (cakes made of flour and water and fried), and all the tea we could drink, generally not less than a quart. Nekowrah had in the meantime got together enough wood for the night and morning, and after supper and a smoke it was time to feed the dogs. The frozen seal meat was first chopped into small pieces, and Nekowrah and myself, armed with clubs, would undertake to see that all the dogs fared alike. It was a task, for I know of nothing so ravenous as a hard-worked Eskimo dog, and with a pack of fifteen or twenty animals it took all of our time and attention to see that the larger dogs did not monopolize all the food. If a piece of meat was too large for a dog to swallow immediately, another dog would have it out of his mouth and a general fight ensue, and then a liberal use of the clubs would be necessary to produce harmony in the pack. Dogs should be fed once a day, and best at night, after they have rested a while from their work. It is bad to feed them much in the morning or to feed them during the day, as they become heavy and loggy, and do not work so well as on an empty stomach. The dogs being fed, there was nothing else to do but to write up our diaries and make plans for the following day.

Shucungunga had been attending to our clothes, turning them to see that they were thoroughly dry and looking for rips and tears, for after each day's work some mending was generally needed, and oft-

times the fire was kept going well into the night to be sure everything was dry for the morning. Sleeping bags were now in order and all hands would be ready to turn in. If the weather was very cold, I slept in a light artegge, but ordinarily I would remove my outer clothing and turn in my bag in that way. The natives, however, no matter what the temperature, removed all their clothes after getting in their bag, and slept with only the protection of the skin bag, and this of course had a large opening. I was not sufficiently inured to the cold to stand this, for we always slept without fire, and it was nearly as cold inside as outside the tent. After getting in my bag seldom did I ever sleep cold, and less seldom do I remember being wakeful during the night. In the morning Nekowrah or the doctor would be up by 5 o'clock and have the fire started and the breakfast under way, which was not different from the supper—simply something to eat.

It is always well before starting in the morning to take as much tea and water as one can hold, to avoid as much as possible a thirst during the day. It is impossible to get water during the day without stopping to build a fire and melt snow, unless one carries a flask inside the clothing, and this stopping uses up time. Snow is bad for the mouth and soon makes it sore, besides not being sufficient to quench the thirst except for the minute. The worst feature of eating snow is that if one gives way to the temptation there is no stopping for the rest of the day, for, while it serves to quench the thirst for the time being, it seems to really increase it in the long run, and shortly after taking some snow one is more thirsty than ever. I found that by drinking a quart of tea in the morning I seldom was thirsty until night, and had no great desire to drink unless a halt was made in the middle of the day to rest and make a fire for tea.

Breakfast being over, the sleds were gotten out and packed, reserving the tent to the last, so as to be handy at night. The grub box, with a little food inside, and a camp kettle and axe were placed on the sled where they could easily be gotten at in case a stop was made during the day. The sleds were then lashed, the dogs caught and harnessed, and we were ready to start. If in the middle of the day wood could be had, and other circumstances would permit, a stop was made to make a fire, melt snow, and have a lunch of tea and crackers. Sometimes, however, circumstances would not permit us to stop, and we kept on the entire day without a break. At first I was more loath to stop than later, but after more experience I found that the hour spent in getting our fire and a bite to eat was well spent, for not only were we refreshed and better able to continue in the afternoon, but the dogs also seemed to be benefited by the short rest and traveled the better for it.

On the morning of March 17 we found the dogs buried in the drift, with only their noses sticking out. They were all right, however, and anxious to be going. We worked our way along and in

the afternoon passed two huts on the inner shore of the lagoon, the people from which came out to meet us and delivered a note from Lopp. He had passed there only a short time before, and we could now see him ahead, like a small black cloud sweeping over the sea of intense white snow. The natives who occupied these huts were most miserably poor. The wild caribou had long before left this part of the country, and these were now the only ones left of a once numerous and prosperous people. Those who had not died had gone to other parts of the country for better hunting grounds. These two families were now living on a store of bad walrus meat and the carcass of a whale that had drifted ashore there the previous fall. We continued on until dark, then making a camp I lightened my sled and went on after the herd. It was a long chase, for Lopp was traveling late to make up for the time they had lost in the blizzard, and it was not until 8 in the evening that I caught up with them. The herd was going along in good condition, but the sled deer were not. While the feed along this portion of the route was poor, enough was found to keep life in the herd. All the boys showed marks of the blizzard of the 15th, but there had been no accidents beyond the freezing of their faces.

March 18.—Last night three wolves got into the herd and killed one deer before they were discovered and driven off. This is the first time we have encountered wolves or seen signs of them. From the carcass I replenished my stock of dog feed and went back to our camp on the sand spit, and with the doctor followed along after the herd and caught up with it again at night. The weather seemed to improve and we were going along at a very good rate, and must have traveled 20 miles, which was a good day's journey for our condition and for this part of the country.

March 19.—We thought our blizzards were about done with, but soon found that they were almost of daily occurrence and we must make the best of them, and the most of what time we could travel in between. As usual, we were off this morning as soon as it was light, but after going half a day the wind breezed up from the northeast and the snow began to fly, blinding us so there was no use trying to face it, and we had to camp where we were. We had to dig a hole in the snow and build a barricade around it before we could pitch our tent in safety. The wind lasted the rest of the day and night and until noon of the 20th, when it suddenly let go, and we were able to make half a day's travel before night again shut in, and, though it was not as much as could be desired, it all counted in the right direction. The sand spits were so low and so hard to follow we dared not go on at night.

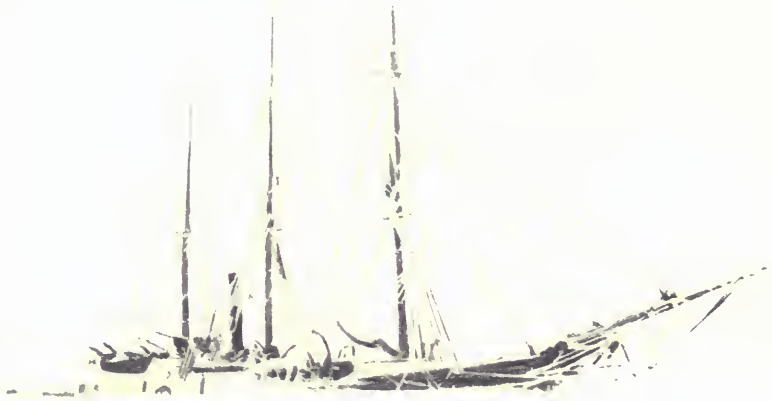
March 21.—More snow and very thick this morning, but we made fair travel and soon passed the "Thetis beacon," south of Icy Cape. On the back of this I left a note for Lopp and then went on to an old

abandoned house just north of Blossom Shoals, where we had planned to meet and make our final arrangements before going the last stretch to Point Barrow. We had been looking for this beacon the last two days, and almost every twig or stick that stuck up through the snow stood out against the extreme whiteness of the surrounding country and seemed exaggerated into the size of a telegraph pole at least. This is a striking feature of the uncertain light of a snowy day or a moonlight night. Every little ridge or unevenness in the snow seems at first a hill or mountain in your path, and it is not until you get very close to the rise that you are finally convinced of your error. It snowed hard during the night after we had reached the old house and all the next day, and there was no finding anyone, for, as it turned out, Lopp had passed up the lagoon on the afternoon of the 22d, within half a mile of our camp, and was unable to find it.

March 24.—It was clear this morning, and as I was doubtful of the position of the herd I set out early to the southward to look them up. I had not gone far, however, before I came across their trail leading up the lagoon and to the northward. So I returned to the camp, where we packed our sleds as quickly as possible and were off after them. A mile or so up the beach we found where they had come in on the sand spit and buried some dog feed for us, for our supply of seal meat was quite low by this time and we needed this additional supply to carry us to Point Barrow, which was still about 140 miles distant. Although it had been snowing so much of late, this part of the sand spit was nearly bare. Being higher than the ice on the lagoon or on the sea, the wind had swept it clean and it had now only a light covering of ice that had formed in the fall. Over this was good traveling and we were not long in picking up the herd ahead. Here Lopp and I divided our stores of bread and tea and parted company for the last time before reaching our destination.

Wolves had been following them for the last few days and a strict watch had to be kept both day and night. There had been no wolves seen during the southern part of our trip, but we were now apprehensive of trouble, for we knew they were to be found in this region, though how numerous we could not say. A little care had kept them off thus far, but after this night they seemed to leave of their own accord. As the herd passed to the inshore of the lagoon for feed and a camp, we on the beach herd shots and saw what we supposed to be a band of wolves running off, but which afterwards turned out to be some wild deer, or caribou, that had almost gotten into the herd before discovering their mistake. They soon took off, and though the boys were after them as quickly as possible, they were not able to shoot any.

From the Siberian deer people I have heard stories of how the wild deer sometimes mingle with the herds of domestic deer in that country, and that the offspring resulting are longer limbed and have more stamina than the ordinary domestic animal, and these half-breed deer



are very much prized by the people. Such cases are very rare, however, and none has occurred in Alaska, for the wild deer have not been in the same part of the country as the domestic ones. We had our usual snowstorm at night and it lasted until the middle of the following day, the 24th. We traveled in the afternoon, passed the native village of Kilimantowruk, which was deserted, the people all being off in the interior deer hunting, and camped that night on the south shore of Wainwright Inlet. It was so late before the storm cleared away that the deer did not start to-day and we left them quite a distance behind.

March 25.—We were off early this morning and in good spirits. We had now not more than 100 miles to go and pushed on until night to make the native village of Sedaro, on Point Belcher. Here we met John Grubin, in the employ of the whaling station at Point Barrow, who had just come from that place. He reported everything going along all right when he left; the hunting in the spring had been good and yielded enough meat to keep the men for the present; but the men in the camp were growing restless and had run down in health from their miserable way of living. The vessels were all right so far and no danger was apprehended until the breaking up of the ice in the summer. I sent Grubin to the southward with his sled to find Lopp and help him along if it was necessary, and on the 26th we went on to the north. Pushing up the coast we crossed over the large lagoon back of the Sea Horse Islands about noon and raised the *Belvidera*, the first of the vessels we were sent to aid. She was the ship in company with the *Orca* and the *Jessie H. Freeman* when the former was crushed and the latter abandoned about 10 miles below here on September 22, 1897. At that time open water was seen to the southward, but the ice was coming in and it was all the *Belvidera* could do, after getting the crews of the other two vessels on board, to work into a comparatively safe place behind Point Franklin. Here the vessel was housed in and banked up outside with snow, and at the time we reached her very little was visible above the drift but her spars and rigging. We drew up alongside about 1 p. m., and going aboard announced ourselves and our mission, but it was some time before the first astonishment and incredulousness could wear off and a welcome be extended to us.

Captain Millard was a very sick man and looked as if he would hardly survive the winter. There were 30 men on board the vessel at that time, 15 of her crew having been sent to Point Barrow, together with the crews of the *Orca* and *Freeman*, in October, 1897. Provisions were very short, and but two small meals a day was the allowance. They were wholly dependent upon hunting for meat, and thus far had obtained about 3,000 pounds of deer meat and fish, but the hunting season was drawing to a close, and nearly five months had to be provided for before help could reach them from the outside. Our arrival was therefore a great relief, and there was now little fear of

the outcome. The crews of the *Freeman* and *Orca* were kept on board the *Belvedere* two weeks before the situation was generally known and then sent to Point Barrow. A small portion of the provisions were recovered later from the wreck of the *Orca*, but they hardly more than made up for what was drawn from the stores of the *Belvedere* to keep the increased number of men temporarily on board.

There had been no accidents to the vessel, and all precautions had been taken. A house had been built on the sand beach, and all the provisions and coal stored there, not more than one month's supply being taken on board at a time. A line was stretched from the vessel to the shore, a distance of about a mile, in case the vessel should have to be abandoned in the night or during a thick snowstorm, and night and day an armed guard was maintained over the provisions ashore. In November last a Siberian Eskimo, one of the crew of the *Orca*, had wandered off to go to his home in Siberia and was never heard of again. A man named Kelly, water tender of the *Orca*, who had been retained on board the *Belvedere* because he was not able to travel to Point Barrow, was a pitiable object from syphilis. He applied to Surgeon Call for treatment, but was beyond help, and a few days after we left, his body was found in the stern hole, where it was thought he had jumped to end his misery. There had been one case of scurvy on board during the winter, but having received proper attention the man was now nearly well.

There was no need of our stopping here, for they were in no especial need at present; so the next day, March 27, we left for Point Barrow. Our usual blizzard came up, and we were obliged to camp about 10 miles from the ship. Pushing on the next day, we hoped to reach our destination, but after traveling about 35 miles we camped at Ignavik, a small native village, and decided to wait until morning before surprising the people at the point. Our dogs were now very tired, and so were we, and the 35 miles we had traveled this day represented the limit of our endurance. We had come to within 15 miles of our journey's end without accident, and there was nothing to be gained by risking traveling at night.

We were so near our journey's end now that we could afford to look back with a measure of satisfaction. On starting out it was hardly thought or contemplated that we could reach Point Barrow before April, and, although I set that limit myself and stuck to it, there were many times, when, considering the difficulties and dangers, I had misgivings as to our being able to arrive within the limited time. Following the windings of the coast, as we had come, we had traveled something in the neighborhood of 1,500 miles or more. We had lived on the country, as we were directed, and had drawn from it all our means of travel, except a part of our camp gear and the small store we brought from the ship. The movements of the reindeer herd had far exceeded our expectations and were due to the extraor-

GOVERNMENT RESIDENCE AT [illegible] FORT [illegible] HARBOUR

[illegible] RESIDENCE AT [illegible] HARBOUR

dinary work of Mr. Lopp and his "boys." Our plans to overcome the many obstacles and difficulties had been carried out almost exactly as we had laid them down. Loss of life or serious accident, which were always imminent, had been averted by extreme care, and we were now within 15 miles of our destination and in good condition and ready to take up the control of the situation at Point Barrow, as we had been directed.

March 29 was a beautiful, clear morning, cold and sharp, but with a cloudless sky and little or no wind, and, when we drew up at the settlement at Point Barrow it seemed as if nature was trying to make amends at last for the hard trial she had given us from Point Hope up the coast. Passing rapidly by the village, and by the old shanty where the men were quartered, we drew up at the house of the Cape Smythe Whaling and Trading Company, of which Mr. C. D. Brower was manager. The camp was not really at Point Barrow, but at Cape Smythe, about 9 miles below. Point Barrow itself is a low, narrow sand spit, with the native village of Nuwuk at the extreme end of the point. At Cape Smythe is another large village, Ootkieawie, and as the land is higher than farther north and good water is found the whaling stations established by the white men were located there. It is all known as Point Barrow to the outside world, and the distinction is only local. All the population came out to see us go by and wondered what strange outfit it was, and when we greeted Mr. Brower and some of the officers of the wrecked vessels, whom we knew, they were stunned, and it was some time before they could realize that we were flesh and blood. Some looked off to the south to see if there was not a ship in sight, and others wanted to know if we had come up in a balloon. Though they had realized their dangerous situation last fall and had sent out Mr. Tilton and Mr. Walker for aid with the first opening of the ice, they had not thought it possible for anyone to reach them in the winter, and had not we and our positions been so well known, I think they would have doubted that we really did come in from the outside world.

All was excitement and relief in camp, and there was work to be done immediately. Engaging a runner, the mail for the schooner *Rosario* and the steamers *Newport*, *Fearless*, and *Jeanie* was sent to them, together with a letter to each one of their masters, telling them of our arrival and the purpose of the expedition, and asking of them their condition and prospects, so we could work intelligently for the best interests of all. Before I had gotten fairly in place there came a delegation of men requesting me to immediately look into their condition, which they thought should be remedied. Consulting with Mr. Brower, Captains Sherman and Porter, and E. A. McIlhenny and Dr. Marsh, I learned there had been no great suffering and that for the present there was no great need. Provisions were short, very short, and only by the strictest economy and hard work had they been

enabled to get along so far. They had figured as well as possible on the end of the season, but there was anxiety as to how it would end. There was flour enough now on hand to last into the month of August; meat they hoped also to have for the same period, but that was dependent upon the success of the hunters and what could be hauled in. The different vessels were practically in the same position and had about the same quantity of food, for, as far as practicable, an equal distribution had been made all around. Each vessel had a dog team, and these were constantly going from one to another, and coming to Point Barrow to Brower's to haul supplies both ways, besides going back into the interior to the hunters to bring in the game and the fish caught. This work had been going on since the vessels were first frozen in, and only by extraordinary labor had they been able to keep the men alive. All the supplies that were now being issued to the men in camp, and that had been secured for them until August, belonged to Mr. Brower, except some of the beef and pork, which had been placed in the old refuge station in the summer of 1889, and from the constant freezing and thawing of years had greatly deteriorated and now contained little nutriment. Four days in the week 1 pound of this was issued; two days, one-half pound of frozen deer meat, and one day, one-half pound of frozen fish. One-quarter pound of beans was issued on Sundays. This, with 1 pound of flour per day and a small allowance of coffee in the morning and tea at night, constituted the ration. A few ounces of sugar and a few ounces of potatoes saved from the *Navarch* were issued each week as long as they lasted.

I first gave my attention to the quarters of the men in camp. At present there were 78 in the old house mentioned, and the morning after we arrived Surgeon Call and myself inspected the place and the condition of the men. They were all in a horrible state. The house belonged to the Pacific Steam Whaling Company, and formerly was used as a whaling station, but was abandoned as such in the summer of 1895. When the men were first sent here from the *Belvedere* it was proposed that they all be quartered in the old refuge station, also owned by the Pacific Steam Whaling Company, but now occupied by Mr. E. A. McIlhenny with three assistants. This house had been designed to accommodate 100 men in an emergency, and this was about the number to be provided for, but Mr. McIlhenny refused to allow anyone but the officers in his house, and as these represented but a small part of the whole number, the only other place that would take the remainder for the winter was this old "Kelly" house, as it was known. Even then it was in a bad condition. The roof was open in places, and one end was nearly out; but taking what lumber he had, Mr. Brower, with the assistance of some of the men, patched it up, and inside fitted berths three deep on the walls and each berth to hold three men. A small cooking stove was put in the center. For a time a small heating stove was also used, and the walls were banked outside

SOME OF THE SHIPWRECKED MEN.

PRESBYTERIAN MISSION AT POINT BARROW

NATIVE HOUSES AT POINT BARROW VILLAGE

with snow. One window gave a feeble light, and there was little or no ventilation except through the door and cracks. From seventy-five to eighty men occupied the place, which was about 22 by 55 feet on the outside, but taking out the berths and stoves left scarcely enough room inside for them all to stand up.

All the cooking, except baking the bread, was done on the one small stove. It was only boiling meat and enough water for tea or coffee, but the steam generated gathered in frost overhead and on the sides, and the drippings from this kept the floors and walls continually wet and filthy. Lower down on the walls ice had formed 3 or 4 inches thick, and the drippings and meltings ran down over this into the berths, and even what little bedclothes the men had were never dry. In the endeavor to keep warm some of the men had boxed in their berths, and in these boxes kept improvised seal-oil lamps burning. The soot and smoke from these lamps covered everything, their clothes and bodies, with a black, greasy coating, so they were scarcely recognizable as white men. Some hardly left their berths at all, and all were in such a low, demoralized condition that only the cold weather prevented a serious outbreak of sickness. Filth and vermin were everywhere, and those inclined to keep clean and live decently could not accomplish it in such a place and under such conditions.

The masters of the two crews had done nothing for them in any way, either in seeing they were provided with food and quarters, or in exercising necessary control. This might have been done if properly started at first, but after the neglect was apparent the men refused to recognize any authority of the masters or officers over them, and Mr. Brower and Mr. McIlhenny were compelled to step in and assume charge. Later, owing to some trouble, the authority used was that of Mr. Brower only. It was always a question with so many men to handle how much control could be enforced, and it never went further than guarding against depredations and lawlessness. Matters of personal care, etc., were left to the men themselves.

Dr. H. R. Marsh had attended the sick, and so far there had been no deaths, but Surgeon Call reported four cases of scurvy and all hands more or less affected. They were much debilitated and run down, and if something was not done quickly the weaker ones would soon die from general debility, and serious sickness attack all. We had no antiscorbutics but the fresh meat we brought with us, but I determined that changes must be made at once, the men moved from their present quarters, their clothes and bodies cleaned, and proper rules of discipline, health, and exercise enforced. Though the old refuge station would take them all, it was not advisable in their present state to keep them together, for such a number would soon accumulate filth again. From Mr. Brower I obtained an old storehouse that was tight and well built, and fitted it with berths for 28 men. The native school at the house of the Presbyterian Mission

was not now in session, and Dr. H. R. Marsh gave me the use of the schoolroom. In this quarters were fitted for 25 more, and the remaining 25 were added to the 16 already in the old refuge station, making 41 in all there. These quarters were all light, dry, and warm, and could easily be inspected.

Mr. Lopp arrived by dog team on the 30th, having left the deer herd about 20 miles below, at Simra, which we had decided on for its present location if proper feed could be found there. It was away from the native settlements, and away from all danger of marauding of the white men were they so disposed. When the herd arrived in good condition and a good and sufficient supply of food was assured, it was a great relief, and the strain and anxiety about the final outcome of the situation under which everybody had been all winter was removed. In coming from Cape Prince of Wales the deer had traveled over 700 miles in fifty-five days, counting all the delays from storms and preparations, and Artisarlook's herd had come 100 miles farther, from Point Rodney. We were all grateful to Mr. Lopp and the "boys" for what they had done, and I can not speak too highly of the skill, courage, and persistent, untiring work they showed from the beginning to the end of that long journey.

We started with 448 in all, including the 7 Lieutenant Bertholf brought to Kotzebue Sound, and we arrived at Point Barrow with 382. The difference represents what we had to kill for food for ourselves, and what were killed by overwork and by dogs and wolves, 32 in all; and the 34 which strayed off in a blizzard near Cape Kruzenstern, but were afterwards recovered and driven to Lieutenant Bertholf at Point Hope. Considering the hurried time, the unknown and untried regions, and all the dangers incident to such travel and work, I consider the drive in every way a marked success. I selected Artisarlook and Utenna to remain behind and care for the herd, and made arrangements for the return of Mr. Lopp and the others to their homes, as I had promised them on engagement.

On account of the scarcity of food it was not advisable to keep any more to be fed at Point Barrow than absolutely necessary; so, after they had a few days' rest, I turned over to Mr. Lopp the dog teams which had brought Surgeon Call and myself, and they left, bound south, April 4. They had a small, light outfit, just enough to last them to the Pitmagea River, where Lieutenant Bertholf was to have supplies cached. Having heard from the vessels to the east of Point Barrow, I also sent the mail with Mr. Lopp and a report to you of the general situation. I gave Mr. Lopp instructions to forward the mail from Cape Prince of Wales to St. Michael, wishing some news of our arrival and the condition of affairs to be at that point, beyond all doubt, when the first steamers should arrive in the spring.

The return journey of Mr. Lopp was made in extraordinarily good time. Starting from Point Barrow April 4, he arrived at Cape Prince

of Wales May 5, though only twenty-two actual traveling days on the road. They were favored by good weather, a northeast wind at their backs, but had to face the sun, which was now high and shining most of the day and night. Crossing Kotzebue Sound, they were all severely afflicted with snow-blindness and compelled to lie over several days before they could see to go on. In this part of the country their trip has never been equaled.

Having settled the men in their new quarters, I directed an increase of the fresh-meat ration to 2½ pounds per week. This much was not on hand, but it was necessary, as we had no antiscorbutics and must rely on flesh meat to stamp out the scurvy, and I could now fill any lack from the herd. I next began a thorough overhauling of the clothes of the men. The bedding was gotten out and aired, and such of it as could be cleaned was kept, but the rest of it had to be thrown away. All the heavy deerskins that could be found, and all that could be brought in from the hunters, were gathered and distributed to those most needing them. It was impossible to get enough at any time to properly provide all the men, and only the good, warm quarters they now had, prevented suffering. Personal clothing went through the same general overhauling, and it was fully as bad as the bedding. Only a few of those inclined to care for themselves had anything decent, and I was compelled to make a general search and take up collection of everything in the nature of clothing that could be found or spared from Mr. Brower's station and from the natives.

When it became generally known what I wanted, the natives began bringing to me a few odds and ends of woolen clothing they had stowed away for summer use, and in a short time they seemed to vie with one another in the number of articles of all kinds, furs as well, that they could give to clothe the "Kablonas"—i. e., white men. The native contributions kept up during all the remaining time we were at Point Barrow. Boots and boot soles were hardest to obtain, and it was almost impossible to provide enough to keep the men's feet dry. Toward the last of our stay these commanded fabulous prices when they could be obtained at all. Soap was the next consideration, and I immediately increased the allowance of this to 1 pound a month, depending upon making later what we lacked of this amount. I also required and saw that it was used to good effect on the persons and clothing of all. Cleanliness was an absolute necessity, but it was had with difficulty, for all water must be melted from ice, and we had not the stoves and facilities for doing this to any extent. It was difficult at first to get some of the men to make any effort to clean themselves; but later, after the majority saw they had the means to do it, and could, they united to compel the others and were quick to report any great neglect. It was not long before the general appearance of all was greatly improved. I instituted a system of daily inspection of the quarters and clothing by Surgeon Call and myself, and kept it

up until the men were finally put aboard the *Bear* and they were never allowed to lapse from the condition of order, discipline, good health, and cleanliness we instituted. Surgeon Call attended to the health of everybody, natives as well as whites, and his services were in constant demand. The scurvy patients were soon well, and there was no serious illness nor any accidents to the men after once getting them out of their previous bad state.

There was only coal enough on hand to do the cooking, and it was necessary to have fuel for the new quarters I had provided. To obtain driftwood for this was out of the question in the present condition of the men, and with the difficulty of providing them with clothing and foot gear. An attempt had been made in the fall to obtain some, but it failed, and I determined to use the old house I had moved the men out of, for fuel. It was only a mass of filth and could never be used again for quarters, and I tore it down and stored the wood for our stoves. Happily it kept us going until the warmer weather came and we could do without fires to a great extent. The mess arrangements were trying. There were but two stoves, and on these the cooking for about 130 people had to be done. By patience and hard work it was arranged satisfactorily, so that everything began to move smoothly. After it was once established there was little friction, and everything settled into one groove and kept into it.

For good order, to prevent complication and trouble, as well as to protect the natives, I required the men to keep away from the village as much as possible, and saw to it that they kept out of the houses there. I gave the natives to understand that they must not harbor the men in any way, and that they could expect the same treatment and protection from me that the white men received. The native supply of food was not only short, but had been greatly curtailed to keep the white men, as everything in the nature of "white men's" food had been kept from the natives, and their stock of walrus, whale, and seal meat had also been largely drawn on from sympathy, so there was hunger in many cases in the villages. Later on, in serious cases of illness among the natives, better food had to be provided for these patients, and they were fed from Mr. Brower's house on Surgeon Call's order.

After getting the camp in satisfactory order I turned my attention to the outlying vessels. The *Belvidera* we had already visited.

The schooner *Rosario* was 9 miles away at Point Barrow. Her crew was small, and fortunately she had a good supply of provisions when frozen in, and was able to carry her crew along without much assistance. She had divided her store of salt meat with the vessels to the east of Point Barrow, and was now compelled, like the rest, to depend upon hunting. By great labor they had been able to keep the crew going, but for the last month and a half I supplied them with meat from the herd. Fuel was most needed here, and every

TEARING DOWN THE "OLD HOUSE" FOR FUEL

WHALER ROSARIO BEFORE SHE WAS CRUSHED POINT BARROW.

HAULING MEAT TO THE VESSELS EAST OF POINT BARROW

[illegible] COAL FROM THE NAVARCH.

WHALERS NEWPORT AND FEARLESS IN THE ICE EAST OF POINT BARROW

HALE

expedient of getting wood was resorted to. Coal had to be hauled from the steamers *Newport* and *Fearless*, a distance of 40 miles, at such times as the teams could be spared from hauling meat. It was impossible to keep enough on hand in this way, and resort was had to the remains of an old wreck close at hand. Digging away the snow and ice the timbers were uncovered and blasted out. Not a great amount could be obtained, but it was something, and helped out the coal.

The steamers *Newport* and *Fearless* were off Pitt Point, about 40 miles east of Point Barrow. They each had a crew of 40 men, and when first closed in had barely enough provisions to last through the month of January. Their situation in this respect was so desperate that rigid order and economy had to be enforced immediately, and by great labor and sacrifices, and by Mr. Brower's excellent assistance, enough provisions were had from time to time to carry them along, though they were greatly dependent on the hunting—more so than at any other point. The very fact of their situation being so much worse than the others made the discipline here more severe, and in consequence better order and even better contentment prevailed than elsewhere.

The steamer *Jeanie* was off Point Ellice, about 40 miles east of the *Newport* and *Fearless*, and from all accounts was in the most dangerous position, as regards safety of the vessel, of any of the fleet. She was 4 miles from the land, and there seemed grave danger when the ice should break up in the summer. She had been fairly well provided when the winter set in, but had to share some of her stores with the other vessels. As with the other vessels, she was now dependent upon the hunters for meat, and being so far away had hard work keeping up the supply. Her crew, from all accounts, was in a bad state of discipline and discontent. I attributed this more to their being away from all travel, and being confined on the vessel all the long winter with little to do and almost nothing of outside interest.

Sleds were constantly going and coming from all the vessels, and I was thus in communication with the masters and advised of their condition. For the present they were going along as well as could be expected and no changes were necessary until I could visit them and learn the particulars to provide for the final distribution of food that would be necessary to carry all through on a satisfactory basis until your arrival.

I was prepared to visit these vessels April 12, when I had a severe attack of tonsilitis and had to lay over for some more favorable time.

April 18 Capt. George B. Leavitt, of the *Newport*, arrived at the station, and from him I received all the information in regard to their condition and prepared to leave with him on his return.

The bark *Wanderer*, which was one of the fleet that left Herschel Island with the others, had not been seen nor heard of since Septem-

ber 8, 1897. She was then about 100 miles west of Herschel Island, and from all the information I could gather, and in the opinions of the masters of the steamers, she could not, on account of the ice, have come any farther west. It was supposed, and I thought the same, that either she had returned to Herschel Island, where the steamer *Mary D. Hume* was wintering with two years' stores on board, or that at least she was in communication with that place, for nothing had been heard of her crew at this end.

Herschel Island is 400 miles from Point Barrow, and, as these two points were the only places where her crew could obtain supplies, they must make for one or the other. As they had not come to Point Barrow it was supposed they were nearer Herschel Island when finally beset by the ice and had gone back there. It was known she had only a small store of provisions, and as she was one of the vessels the expedition was sent to relieve I was anxious to fix her whereabouts beyond question and was on the point of organizing a search for her when a sled arrived at Point Barrow, April 22, from Herschel Island, bringing the welcome news that the *Wanderer*, immediately on being left by the other vessels, September 8, 1897, had returned to Herschel Island and her crew were wintering on the *Mary D. Hume's* supplies.

The sled was in charge of a boat steerer from the *Hume* and had left that vessel February 25. They had a very severe trip along an almost deserted coast and at times were compelled to go inland from the coast to hunt for food for themselves and dogs, and when they arrived at the *Jeanie* were in very bad straits. The sled also brought news that Mr. Walker, who had left Point Barrow in October, 1897, with mail and news of the perilous situation, and asking for aid as soon as possible, had arrived at Herschel Island safely, and from there on was put in charge of the Hudson Bay Company. He had last been heard from at Fort MacPherson, on Peel River, January 5, and from there would be passed on from one to another of the Hudson Bay posts until Edminton was reached.

The arrival of this sled removed the last doubtful point in the situation, and knowing just how many men we had to care for and just what we had to do it with, it remained now simply a question of making the best uses of what we had, and to hold everybody together in order and discipline until your arrival. I was anxious to not sacrifice any of the reindeer if it were not necessary, but found later in April that we could not feed the men so much of the old salt meat as they were getting without bringing back scurvy. The surgeon reported some slight indications toward the last of the month, and I directed an increase of the fresh meat to 4 pounds per week, bringing the use of the salt meat down to two days, and was prepared to increase the allowance on the vessels on visiting them. The hunting season was about closed, for the caribou had the first part of April gone back to the Meade River Mountains, preparatory to the fawning season, and

SLED WITH SAIL, FROM HERSCHEL ISLAND.

were out of reach of the hunters, who now began returning to the village and station. Two expeditions arrived after April 1, and each returning hunter brought in a small amount of meat and fish and all the heavy deer skins he could haul on his sled. In this way 5,000 pounds arrived in April, but 2,000 pounds of this had to be sent to the *Belvedere*, leaving us at Point Barrow about 4,000 pounds for all purposes. Hunters from the vessels to the east were kept out until June, but they got nothing after April.

Shortly after my arrival there became manifest a disposition among the crews of the different vessels to leave them as soon as warm weather came, with the thought that I, as the head of the situation, would have to receive and care for them at Point Barrow, and I was compelled to immediately define and maintain the relations they held to the vessels and the vessels to them. With the exception of the crew of the *Jeanie*, who were shipped for the voyage, all the others were shipped for stated periods, and all these periods had either expired or would expire in a short time. I held that the vessels were caught in a position of peril through no fault of their own, but through an act of Providence, over which they had no control. As long as they remained in that position and were not wrecked, and with chances of escaping the peril, the obligation of the crew to remain by them and save them could not be broken, and the obligation of the vessel to provide for the crew during the time they were held in this position through no fault or desire of theirs, was equally strong; so I caused it to be known that I should hold the crews to the vessels as long as they were not wrecked, no matter when the terms of shipment expired, and that I should recognize no discharges given after the vessels were first caught by the ice; that discharges could not properly be given here, in a desolate, inhospitable country, but only upon return to a proper port of discharge or upon your arrival in the open season, when the sick or disabled could be given transportation to civilization. I also held that it was the obligation of the vessel to provide for herself as far as she was able, and that I was there representing the Government to help them do this, to preserve order, and to prevent by all means in my power any distress, and would extend any aid necessary.

Aside from the safety of the vessels there were other strong reasons why the men should remain as they were on their vessels. All the food had been distributed with this in view, and it was impossible now to make any change in it. I could not care for any more at Point Barrow without cutting down an already too short allowance. Again, in the matter of exercising discipline and control, it was better that the men be divided into small groups, separated at good distances, as they now were, for so many idle men in one crowd would breed all manner of disturbances and troubles. I adhered to the above decision all through my government of the situation, and maintained that every man who came in a ship which was in existence still belonged

to that vessel, and only in some particularly exceptional cases that had occurred before my arrival did I allow the men to remain away from their vessels. I had no real difficulty in enforcing my decision in this respect, but there were continually cases and points coming up at variance with it, and I had to constantly insist on the points mentioned.

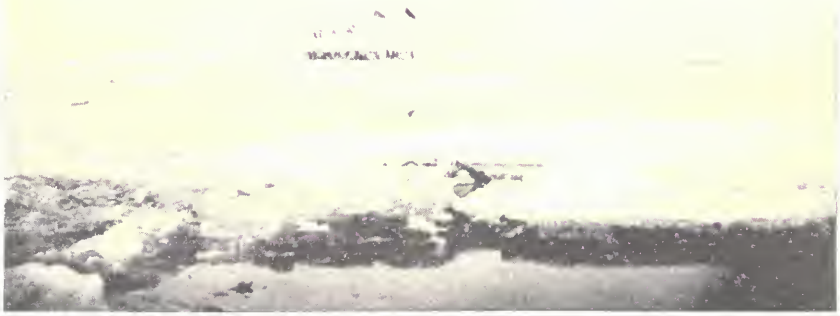
I found at Cape Smythe, on my arrival, J. A. Coffin, first mate of the *Jeanie*, who claimed to have been driven from his vessel by the master. Upon investigation I found this story of being driven away to be true, but the master represented that Coffin was troublesome and mutinous, and that he had to be gotten rid of or there would have been serious trouble with all hands. Though I held that Coffin still belonged to the vessel; that the act of the master was illegal, I also saw the necessity, in the extreme circumstances of the case, of keeping Coffin away from the vessel, and did keep him at Cape Smythe; and even there he caused more trouble than any of the men under my charge.

There was one man from the schooner *Rosario* whom I found at Cape Smythe, and who I learned had first deserted the vessel, and had then been discharged, to work in Mr. Brower's house, but having been troublesome, and having drawn a knife on one of the men there he had been put in the old house along with the others. Upon learning that he belonged to the *Rosario* I returned him to the vessel; but upon the master's representing the man as a disturbing element in his crew I again took him to Cape Smythe deeming it better to have all such under my immediate control. Fifteen of the crew of the *Belvedere* were also at Cape Smythe, having been sent there in October, 1897, because of shortness of provision and the impossibility of hauling enough to the vessel to feed them. I kept these men where they were and turned them over to you as part of the *Belvedere* crew.

April 3 Louis Rich, carpenter of the *Fearless*, arrived at Cape Smythe, reporting he had left his vessel on account of a dispute with the master, and asked that he be taken into the quarters with the shipwrecked men. Upon investigation, his cause for leaving was found to be so trivial that I returned him to the vessel the next day and admonished him to remain there. I suspected and subsequently learned that this man was put forward to try me and the situation, and if he had been allowed to leave his vessel all the other dissatisfied ones would soon have followed. As he had to walk 50 miles coming to me and 50 miles returning to the vessel, there were none others anxious to follow after that lesson.

[illegible] middle of April Mr. Brower and the natives of the village [illegible] preparations to commence the annual spring whaling. This [illegible] is done on the ice at some distance from the shore, often 5 to [illegible] miles, where the first lead of water is opened up by the easterly [illegible] The boats are hauled out on sleds and the people camp at the

GOING OUT ON THE ICE FOR WHALES IN APRIL.



RETURNING FROM SAKHALIN IN JUNE.

CUTTING UP WHITE WHALES.

edge of the ice and remain there until a general break up comes in June. The whales pass up this open lead, and, when caught, are brought to the inshore ice, where, if small, they are hauled out bodily, or, if large, the head is hauled up high enough to be cut off and the bone taken out. This is the principle article of trade and is largely sought, while the skin and meat are cut off and sent to the village ice houses for food during the coming summer and winter. The work is hazardous and entails a great amount of exposure and suffering. As the natives were denied any portion of the flour and deer meat on hand, it was necessary that this whaling should be successful enough to supply them food to last from now through the summer. All the hunters were coming in—eventually there were nearly 500 people to be provided for. Excepting his personal effects, Mr. Brower had given up the whole of his whaling and trading establishment to the vessels and men about. He had placed it all at my disposal and it had to last until the summer. At one time it was thought that he would have to give up whaling altogether. This was so serious an interference with his business that I sought to protect him and the natives in the prosecution of so much of it as they were able to do. About half the men under my charge wished to go out on the ice themselves and "whale it." This was neither advisable nor safe, and, besides, Mr. Brower objected, claiming that, as he had seriously crippled his business to keep the men from starving, they should not interfere with what he was able to do with his small remaining outfit. The men were inexperienced, were not at all fitted to stand the exposure, nor could they be provided with clothing, and besides would cause great confusion, and their indiscriminate use of firearms, etc., was likely to be dangerous.

I had now enough food on hand to last the season without resorting to whale meat, which would not answer for all the white men, and the most serious need now was that the natives secure enough to last them and provide us with dog feed, of which we were greatly in need. I did allow Mr. Brower to man two of his boats with some of the men on their coming to satisfactory arrangements and being under the control of him and his assistants, but was prepared to revoke this if there was any serious trouble. Many of the men wanted to go out with the natives, but this was not advisable, and I would not allow it. The men could be of no use to the natives, would only be a burden in the boats, and make no end of confusion and trouble. The natives had been able to run their own business heretofore and could do it now without the help of white men; and this was only a subterfuge of the men to share in the natives' catch. I adhered to my previous determination that the natives and whites should be kept apart as much as possible, and the white men should keep off the whaling ground, except those who went in Mr. Brower's boats. From these we could get enough whale and seal meat for our purposes. Once

the order was understood there was no trouble in enforcing it, though I had to stand off many ingenious propositions to get around it.

The schooner *Rosario* and the steamer *Belvedere* both engaged in the whaling, but the other vessels to the east of Point Barrow, being so far from the ground, did not. The season was the most successful in years, the catch being 42 whales, large and small. Most of them were quite small, but they furnished excellent food for the natives, and with so many to be provided for a small whale would seem to be eaten up in a few hours. Except the choice parts of fins and flukes, which go to the fortunate canoe catching the whale, the meat was common property and was shared in by the whole population. After the meager living of the winter, this was a feasting time for these natives, and, besides, a large store for the summer was laid in. It was not possible to save the bodies of some of the whales, and others were not recovered until days after being killed, and were then unfit for food.

The natives' catch of whalebone was about 10,000 pounds, that of Mr. Brower's station about 12,000 pounds, the *Belvedere* about 3,000 pounds, and the *Rosario* about 500 pounds.

All the men who were out on the ice kept themselves in food, except for a small amount of tea and coffee and some hard bread that had been reserved for the travelers and not used. In this way we saved 650 pounds of flour and small stores, which later were distributed to the vessels most needing them. The whaling continued until June when the ice began to break up on the edge of the floe, and the pack came grinding in, closing up the lead and keeping it closed until just before your arrival.

There were several accidents to the natives from carelessness, but no one was lost, nor was anyone carried off by the ice, as sometimes happens. It is very hard, rough, dangerous work at best, and only resolute, strong men can stand the exposure and heavy strain on the system.

May 21 I started with Captain Leavitt, of the *Newport*, to visit his vessels and the others to the east of Point Barrow. We went by the *Rosario*, and I authorized Captain Coffin to issue fresh meat to his men to the extent of 1½ pounds per day. A satisfactory ration table had been submitted to me here by Captain Coffin on my first visit, April 4, but small stores were now disappearing, and the increased quantity of meat was necessary to take their places.

The steamers *Newport* and *Fearless* were fully 50 miles from the station, and it was a long day's journey to reach them without camping, yet it was done day after day by the ship's travelers in keeping themselves supplied during the winter, and we did it ourselves in fourteen hours. There was now excellent order and contentment on these two vessels. They were not not more than 200 yards apart, and less than one-half mile from the shore. There was a heavy ridge of

grounded ice outside them which promised to keep off any crushing that might come later. The few provisions and supplies were kept in a house on shore to guard against loss of the vessels, by fire or crushing and, as in the case of the *Belvedere*, a line was stretched from each vessels to this house. Everything was equally divided, and the ration was reduced to 1 pound of flour per day and three-fourths of a pound of deer meat, with tea and coffee. This was not sufficient, and on my return from the *Jeanie* I authorized an increase of meat to 1½ pounds. These two vessels were in such desperate straits for food in the fall of 1897 that it took heroic work to keep them supplied, and Captains Leavitt and McKenna are deserving of great credit for the way they brought their crews through.

The *Fearless* was formerly a Norwegian whaler, but was now under the Nicaraguan flag, though owned in San Francisco. I extended to her throughout our stay the same measure of assistance as to the others. There were on board the *Fearless* two of the men rescued from the *Navarch*. As they were without a ship and these vessels were so short of provisions, I took them into the camp at Cape Smythe.

After remaining on the *Newport* two days I went on to the *Jeanie* with Captain Mason, of that vessel, who had been visiting the *Newport*. It was a long journey of 40 to 45 miles over the ice of Smiths Bay, and it was well into the night before we arrived at the vessel.

The *Jeanie* was the tender to the Herschel Island fleet. She had discharged her cargo there and was caught by the ice on her way out. She was a large steam schooner, not as well fitted for ice work as the whaling vessels, and had fallen behind on the way. She was at Point Ellice, about 4 miles offshore, and, though there was heavy grounded ice about her, it seemed she was in a dangerous position and might suffer when the summer came. There were many complaints from the crew, and all hands seemed discontented and in a bad state of discipline. I think this was mainly due to the fact that the vessel was away from all travel but that of her own hunters, and the long winter of idleness had been more than her people could stand. Provisions were now very short, and there was scarcely enough fresh meat to last more than a month. Small stores were in more abundance than on the other vessels, though, and I arranged with Captain Mason a satisfactory ration, increasing the fresh meat to 1½ pounds per day, and promised to supply that amount from the herd. I was concerned about the safety of this vessel, and arranged with Captain Mason to send them a canoe and canoe sled for traveling over the broken ice in case of serious accident. Being so far offshore the danger of crushing was much greater, and should the wind come strong from the south during the break-up the vessel might go off with the whole field.

Returning by the *Newport*, *Fearless*, and *Rosario*, I arrived at Cape Smythe May 10. During my absence many disputes had arisen among

the men and other people, and I was occupied several days straightening them out. After I once assumed the authority the men would be amenable to no one but me, and while I was away reserved all their disputes for my return. The most serious one was between Mr. E. A. McIlhenny and Tukaloona, a native. The latter was running a whaling canoe for McIlhenny, who claimed the agreement was that he should get one-half the catch. A large whale was caught, and as Tukaloona gave him only one-fourth of this he took all the bone to his house, and the native appealed to me. After investigating the case thoroughly I learned beyond question that the agreement was to share alike, and taking all the bone in one pile I had it divided equally. The agreement was then dissolved to prevent further trouble. This was the same kind of trouble I had anticipated with the wrecked men if they were allowed to work in the native boats, and I felt relieved that I had not permitted it in the beginning of the season.

At Cape Smythe, waiting my return, was a sled from the *Belvedera* with a letter from Captain Millard saying his crew had refused duty. I was delayed several days by a storm, but May 14 I took the sled and started south for the vessel. The 60 miles was too far for one day's journey, and that night I camped at the deer herd. I had given Artisarlook and Utenna four boys to help them do the herding and tend the young which were now being born. There had been 197 fawns up to this date, and of these 33 had died. This was a larger proportion of deaths than usual, and I attributed it to the more severe weather here than that about Bering Strait, where the deer had been before. I continued on to the *Belvedera* on the 15th and arrived that night. The next day, after hearing what the master and the men had to say, I learned that they had refused to haul wood when the dog team was around, and complained they did not receive sufficient food, and that they also wanted to leave the vessel, as their terms of shipment had expired in March. I reiterated my previous decision that all men must stay by the vessel without regard to terms of shipment, and then turned the crew to. The food question I looked into, and directed an increase of meat to the same amount as at other places—1¼ to 1½ pounds per day.

At the different vessels I inspected the men's food and endeavored to see that it was well cooked and wholesome, for with the reduced amount they had to live on it was necessary that everything be properly prepared. Boiled deer meat gave a nourishing soup in addition to the solid matter, and it was generally prepared in this way. The question of the men's work was left with the master, for there really was little work to do and it was only put forward by the men to add to the number of disputes.

While at the *Belvedera* the weather suddenly grew very warm, the thermometer going above the freezing point, and as the sun was above the horizon all the twenty-four hours the snow began melting very

THE MIDNIGHT SUN.

BREAKING [illegible] THE ICE IN [illegible] POINT BARROW

fast. On the 19th I arrived back at Cape Smythe. The sudden rise of temperature compelled us to go to work immediately to clear away the snow from about the houses and drain the water down by the beach. Since our first arrival the thermometer had hovered about zero, sometimes in April going as low as —20° to —25° and the northeast wind prevailed almost the whole month.

It was not until May that the sun began to make any difference in the snow. The winter, as a rule, had been mild, but the fall of snow was heavy. This could hardly be estimated, for the wind kept it continually moving and piled it in heavy drifts wherever there was an obstruction. There probably was a fall of from 3 to 4 feet on a level, but the drifts in some places went right over the houses. When the sun began to eat away the snow, the water settled through the drifts and promised to flood the houses, and men were kept busy digging and making drains all over the beach. With the moderate weather it was possible for all of them to be gotten out of the houses and kept out most of the day, and though it was a heavy tax on our resources to provide them with water boots, it was necessary for the health of all. Baseball had been in vogue for exercise during the cold weather when the snow was hard enough to give good footing. It was excellent exercise and gave all something of interest to talk about and furnished a relief from the idle monotony. Later when the snow was off the ground the games were resumed, and I required the men to either play baseball or carry ducks from our shooting camp 5 miles away, the exercise grew more popular.

When once the snow started melting, it went so fast that by May 20 spots of bare ground began to show along the beaches. The water ran out on the sea ice and on the ice in the streams and soon the snow on top of all was a mass of slush and water. The snow grew softer and the water deeper until June 13 when the ice at the mouths of the small streams broke through and a flood of water covered the sea ice for several miles out. In a short time this water made holes through the weak places and ran off, leaving the hard sea ice bare, except in the hollows where streams of water still remained. Gradually these streams on top and the warm current from the south below ate through these weak places, but it was not until July that the ice inside the ridge began to break up into small cakes, and about the middle of that month it had all broken up and was floating about with the wind and current. The sun was now shining day and night, and though the thermometer at times lowered to about the freezing point the melting never stopped, and this continuous daylight and sun had a strong effect on both old and new ice.

During the winter, where there was no crushing the ice froze from 5 to 6 feet thick. There are no bergs in this part of the Arctic Ocean like those about Greenland, and the general character of the ice is that of great, rough fields and huge, irregular floating cakes that are

formed by the continual crushing and piling up of the fall and winter. From my own observations and from the experience of others here all the ice that forms on a level during the winter and does not shelve and pile up soon passes away in the following summer, together with much of the old, large ice that was left over from previous years; but this loss is about counterbalanced by the accumulations of the crushings of the fall and winter. All the ice formed in the rivers and lagoons melts there and has no effect on the amount in the ocean. In this way the ice in the open sea is kept at about the same point, continually stirring about, summer and winter, with the winds and currents, and seasons of greater or less ice are simply times when different winds prevail, keeping the fields closer to the shore or blowing them off and leaving open water.

The heavy crushings of the "ridge" are caused by the ice first grounding and piling up as it comes closer to the shore. This ridge forms a barrier to the pack outside and generally is solidly anchored by December or January. Attached to this and extending some miles offshore is what is known as the floe or, locally, "flaw." Even in the winter, when the wind blows off the land the pack drifts off, and a lead of open water is made outside the "floe." There is always a slight current in this lead running to the north, unless the wind is strong enough to stop and turn it. In the late spring and summer this northerly current increases at times to 2 and 3 knots, but the strength of it must be more or less local and confined close to the land, as evidenced by the drift of the *Navarch*. This vessel caught in the pack off Icy Cape in the latter part of July, 1897, gradually worked offshore and to the northward, passed Point Barrow in August, and during September was about 100 miles east of that point and about 20 miles from the land. In October she returned to a position about 40 miles east of Point Barrow, and then in November disappeared. Her next appearance, in the latter part of January, was at Refuge Inlet, about 20 miles to the south of Point Barrow, and going off from there she appeared again in February only 4 or 5 miles from the Point. Thus for six months she had been drifting back and forth within a distance of 250 miles with Point Barrow in the center, and all the time fast in the pack ice. This could not have happened if there was a continuous current in one direction. It would seem also that the strength of the current is close to the land, and while offshore there is a slight drift to the north in summer. In the winter season, however, the ice is moved about almost wholly by the wind.

During our winter journey we saw ptarmigan in large flocks in the Yukon district and in more scattered numbers farther north. Occasional ravens were seen until Point Hope was reached. I am told they are sometimes seen as far north as Cape Lisburne, but not beyond that point. These and Arctic owls were the only birds we saw, but

with the coming of spring there came great numbers of different birds to the Point Barrow region. A snowbird was first reported April 14, but it was not until May that any more than one or two a day were seen by the whole population. April 19 two eider ducks were reported flying by Ignavik; but during this month the birds of all kinds that appeared were but individual forerunners of the flights that were to come in May. In the early part of that month great flocks of eider ducks were moving northward along the lead of open water off shore. This flight continued all of May and June, and the men out whaling not only kept themselves in ducks, but from time to time furnished us ashore enough to augment our food supply and vary the monotony of the diet.

Just as soon as bare spots appeared on the land eider ducks, geese, jagers, owls, and loons began nesting in great numbers. For a short time in June quantities of eggs were gathered by the men ashore and by the vessels to the east. They did not remain fresh long, and with so many people as we had to care for they made but little addition to the general supplies, and each man was allowed to keep what he found. About the 1st of July the male eiders began their flight to the southward. They came from the east of Point Barrow along the lagoons, crossed the sand spit at the head of Elson Bay, and flew out over the ice beyond the ridge to the open water, which they followed until out of sight. When the wind was northeast, they flew by the shooting station established by H. B. M. ship *Plover* in the winter of 1853–54 in great masses—flocks of hundreds, and one flock following close on another. As soon as this flight began we established a camp at the shooting station, composed of First Mate J. L. Ellis, of the *Orca*, and Capt. E. Aiken, formerly in charge of the refuge station, and two natives. In ten days while this flight lasted they shot and recovered and sent to our camp 1,100 eider ducks. Our supply of fish had given out several weeks before, and these ducks not only filled the place on our weekly ration, but also furnished an excellent change and addition to the food. The natives also secured a large supply of ducks, and the question of food was ended, as we now had but one month to wait for your arrival.

I saw that the supply of meat secured from the hunters was used first, and reserved that killed from the herd to the last. I was anxious to protect the latter as far as possible and kill only enough to last us through the season. After supplying the vessels to the east, however, I kept our ice house filled with meat and ducks, while the *Belvedere*, being but a short distance from the herd, hauled her meat direct from there as she needed it. All hauling was finished by the end of June, for the snow was gone entirely from the land, and the sea ice was honeycombed and rotten and covered with streams of water that had to be waded.

The vessels to the east had to be stocked with meat to last until

August 10 or 15, as little hope could be had that they would be out of the ice before that time. All through June this work went on, and by unusual labor it was accomplished, together with the sending of a large canoe and sled to the *Jeannie* for the safety of the crew of that vessel.

This late hauling was very severe on the dogs, as the honeycombed ice lacerated their feet in a short time, and even the boots that were made for their feet saved them very little. They worked wonderfully, though, and many would arrive back in such a state they could hardly stand up. I know no more faithful, enduring, hard-working animal than an Eskimo dog. There is no snow too deep, no ice too rough, no hill too steep for them to face, and as long as there is life left in them they will pull and struggle to drag along. Ill fed and abused, they may seem snarling and snappish, but their faithfulness dwarfs all other considerations. For my own team, which traveled with different parts of the expedition more than two thousand five hundred miles during the winter, I have only an affectionate gratitude for the way they carried us through.

The work of the dogs and travelers from the ships and station and villages about Point Barrow during the long winter was heroic, and the hardships and struggles to maintain life there were grand beyond description. Some of the journeys to and from the hunters on the trackless tundra, often distances of more than two hundred miles, were almost inconceivable to even those who know the country.

Having seen that all the vessels were supplied up to the time we could expect relief from you, there was nothing left but to wait patiently for the break-up. Before it came, however, on July 2, we had a violent southeast gale which gradually worked round to the southwest and west, jamming the "pack" hard against the ridge, breaking and cracking it in many places, shoving it farther in, and sending crushes of the inside ice against the beach. One of these crushes struck the stern of the schooner *Rosario*, at Point Barrow, and raised her up on the ice above the level of the water. Passing under her, it took away her rudder and sternpost, tore her keel away, and stove a hole in her bow. All this happened in a few minutes, but as the vessel was close up to the beach the crew got ashore safely and saved the remaining store of provisions. I visited the vessel that night and found a camp had been made on the shore near the wreck. I arranged with Captain Coffin that the crew should remain where they were; but later, on account of some trouble with the men, I brought them to Cape Smythe, camping them in a tent on the beach, where they could be under my supervision.

The master and officers remained by the vessel until your arrival, when all her gear was saved and finally disposed of. Later I heard that the vessels had been greatly shaken up in this storm, but no [illegible] done them.

ROSARIO, CRUSHED BY THE ICE AT POINT BARROW

The *Belvedere* was carried out with the field of ice she was fast in and at one time was in danger of going off in the pack, but when the wind shifted to the west she was brought back to her original position.

The *Newport* and *Fearless* were badly jarred, but the heavy ground ice outside of them kept off the worst of the crush. The *Jeanie* remained fast in the field about her and it was all shoved bodily against the beach, where it piled up in places as high as 40 feet. Happily the height of the storm did not last long, and outside the damage to the *Rosario* the net result was to break up the ice so it could go off with the first favorable wind.

July 4 was made a real holiday in our isolated place. I made a special effort to collect and provide an ample, and what then was a luxurious dinner, to all hands. A few bottles of pickles that had been saved were given to the men, together with an extra allowance of flour and meat; and enough dried apples had been saved from Mr. Brower's stores to give everybody "pie." Some athletic sports and games were arranged and carried through, with such prizes as our straightened circumstances would permit, and an excellent spirit was infused into all. Such things make the government of men in trying circumstances easier, and mark a break in the dreary, monotonous imprisonment that buries the thoughts most of the hardships that have gone before.

I found the greatest craving of the men was for some seasoning in their food. The continuous boiled meat and bread would sometimes pall, and after my arrival I collected from the outlying vessels some tins of sage, savory, and thyme, and these seemed to make a great difference in the food. Pepper was most craved, but by spring there was little or none left anywhere.

After the whaling was finished the natives immediately began leaving for the east, to trade with the natives from the Colville River and others on the coast as far as Barter Island. This is a yearly trip made by the Point Barrow natives to secure deerskins for clothing, and also to fish in the rivers during the early summer. Taking a canoe and outfit on their sleds they started across the tundra back of the village at Cape Smythe, and after traveling about 10 miles struck a river, from which, with short portages, they were able to make their way through the network of streams and lakes until they reached Lake Teshekpuk. About the time they arrive this far there is sufficient open water for their canoes and the journey is continued along the shore. The return is made in the latter part of August or in September, before the young ice begins to make. Many of the Colville River people also come to Point Barrow in June and July to exchange furs for seal-oil and ammunition. A constant trade is thus maintained along this as well as other parts of the Alaskan coast, and in this way furs are passed along, in the ramifications of the trade, from as far east as the Mackenzie River, across the Bering Straits,

back through the Siberian wilds to the Russian outposts—mink, marten, beaver, and red fox skins being the principal articles going from Alaska, and, in return, reindeer skins for clothing come from Siberia. Formerly Russian tobacco and tea came to Alaska in this way, but these have now been driven out by the trade carried on by the whaling vessels and trading posts established in the country.

Early in July I planned and prepared an expedition in charge of Capt. A. C. Sherman, consisting of eight men and two natives, to go down the coast as far as Icy Cape or Point Lay to the *Bear*, with news of our condition. At Point Barrow we had supplies to last until August 20, and at the outlying vessels except the *Belvedere* until August 10, but there was always uncertainty as to the demands on the supply on the vessels, and after August 1 our provisions would be so limited that another distribution would be necessary, and more rigid economy than ever enforced.

The *Belvedere* supplies were designed to last until August 1, as she was farthest south and could expect relief sooner. However, on July 18, I sent her 500 pounds of the remaining flour that had been reserved for emergencies, as I was anxious that we should all fare as nearly alike as possible.

Water was making along the beach very fast in July, and on the 11th the expedition started with a canoe, sled, and two weeks' provisions. Their experience and arrival on the *Bear* you know of.

The reindeer herd was kept all this time between Sima and Refuge Inlet, moving about between the places as the moss was eaten off. Though not so plentiful as in the region about Cape Prince of Wales and Norton Sound, there is ample feed in this section to support a large herd. On account of our needs this herd was kept on the coast, yet from all reports I believe that farther back the moss is not only better but much more plentiful. The first fawns were born April 12, and births continued until the middle of June, making 254 in all, and of these 61 died or were accidentally killed after birth. It was first thought that these deaths were caused by the cold weather, but as they continued in the same proportion throughout, even in the early part of June, the weather could not be the cause. It was a greater number of deaths than usual, and it was observed that nearly all were fawns whose mothers were but 1 year old themselves, and I concluded that these half-grown mothers were not strong enough to stand the severe travel they had been subjected to so close to delivery, and still bear young with sufficient stamina to live.

Artisarlook and Utenna gave excellent and constant attention to the herd, and the four "boys" engaged to assist them soon adapted themselves to the work and became capable herders. At first the reindeer were regarded with curiosity by the natives, but later they began to see the great usefulness of the animals, and wonder how they

REINDEER HERD IN SUMMER AT POINT BARROW.

could be secured. I was constantly asked by the better class of the people if the reindeer were to be left there after we had used all we needed, and if in some way their sons could not work in the herd, learn the business, and eventually possess deer themselves. Our situation was too uncertain and I was too busily occupied to make this experiment, yet I do not doubt the willingness and the ability of these people to become good deermen, for they struck me as being the best natives on all the coast. It was not only at Point Barrow that the reindeer were appreciated and desired, but everywhere on our route from Cape Prince of Wales. The whole coast is well adapted for them, and I know of nothing that would be so beneficial as their introduction in large numbers throughout all the northern part of Alaska.

The wild deer or caribou will soon be a thing of the past there. The great demand of the miners for deerskin clothing will monopolize all the supply that can be had from Siberia, and in a very few years the natives will be great sufferers, for nothing can take the place of deerskins with them. When herds are scattered over the country at convenient distances there are great possibilities of transportation, and, for food, reindeer meat can not be equaled in that region. Upon the arrival of the *Bear* there were 391 left in our herd, old and young, and under your direction they were turned over to Dr. H. R. Marsh, representing the Presbyterian mission. Besides what was used for the members of the expedition I distributed 12,481 pounds of fresh meat from the herd among the people at Point Barrow, and the addition of this when most needed, made it possible to bring the men through without extreme suffering and sickness.

July 21.—Mr. Thomas, first mate of the *Newport*, arrived at the station, having made his way in a boat from his ship to the head of Elson Bay. He reported that on the 12th instant the *Newport* and *Fearless* had been able to work free of the ice that had held them, and two days later came as far west as Point Tangent, then gradually to Cooper Island, but could get no farther. The *Newport* was leaking badly, but later on was taken into Elson Bay and the leak stopped. Their provisions were getting so low that I sent them 300 pounds of salt meat, as the fresh meat would not keep in the warm weather we were now having. On the 18th the *Jeanie* came in sight and worked to within 3 miles of the other vessels, but as yet there had been no communication between them. I learned later that the *Jeanie*'s stem was in bad shape and that she also was leaking badly. Both vessels were in such condition that it was necessary that they go to some port for repairs as soon as possible.

During the first half of July the wind blew from the southwest and kept the pack hard in with no sign of movement, but on the 14th it shifted to northeast and blew from that direction almost steadily until after your arrival. It was several days before any effect was visible

on the ice, but gradually a small lead began to show outside the ridge, and it kept spreading until the 26th instant, when the pack was out of sight from the land. During these days the men in camp were very uneasy and excited over the prospect of near relief from their long imprisonment.

After your arrival and the men were sent aboard, the quarters they occupied were cleaned and turned over to their owners in good condition, and the work of the overland expedition was ended. The orders of the Department were fully carried out and the imprisoned men at Point Barrow were relieved from the bad condition in which they were found, succored and governed, to the effect that they were turned over to you in the state of good health you must have observed. The only death after our arrival was that of Philip Mann, aged 48 years, native of New York, formerly seaman of the steamer *Jessie H. Freeman*, of heart disease, June 8, 1898. The particulars of his death and the post-mortem on his body are contained in Surgeon Call's report.

The final good outcome of the situation under which the vessels were imprisoned at Point Barrow seems providential. When first caught by the ice, in September, 1897, there were 275 men, with scarcely enough provisions to last them until January. Yet they were brought out of it in August, 1898, with no starvation and little suffering. A chain of fortunate, almost miraculous, circumstances, and extraordinary and heroic labor, contributed to this result; first of all, the intelligent work and good will of Mr. C. A. Brower, manager of the Cape Smythe Trading and Whaling Company, in giving the supplies and resources of his station to the relief of the men; the goodness and help of the natives who denied themselves and were denied, to support the white people; the miraculous coming in with the ice of the wreck of the *Navarch* with her provisions when they were most needed; the appearance of wild deer in the neighboring country in numbers before unheard of; the labors of the masters and traveling men of the vessels, and the opportune arrival of the overland expedition, with its supply of fresh meat, at the very time when the men required correction in the way of living, government, and an increase of fresh food. Despite some shortcomings, the work followed on successfully from the beginning to the end of the long year, and though there was disaster to property there was none to human life.

In detailing the work of the expedition, I have not dwelt upon the personal part of the travel with any intention to magnify the dangers or trials, but simply to show some of the difficulties we encountered, and which all people traveling in that country have to contend against. That we overcame them was due to the enthusiastic labor of all in the effort to carry out your orders; and to the help we received from those living in the country and from the natives. The help of the natives to us and to the people at Point Barrow is deserving of some substantial reward. I submit herewith reports of

SEALS.

FEEDING THE DOGS

Second Lieut. E. P. Bertholf and Surg. S. J. Call of independent operations carried on by them.

Very respectfully,

D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

Capt. FRANCIS TUTTLE, R. C. S.,
Commanding U. S. Revenue Cutter Bear.

REPORT OF LIEUT. E. P. BERTHOLF, R. C. S.

SEPTEMBER 1, 1898.

SIR: I have the honor to submit the following report of my movements while separated from the main expedition, in accordance with the written orders received from yourself, dated December 20, 1897.

On the evening of December 21, the day after you had departed from Kiyiliengamute, the dogs for which we were waiting returned to the village, and, having bargained for their use, we were enabled to resume our journey the following morning, taking Alexis and a native boy along with us for guides. We traveled along the same trail used by you and Dr. Call, receiving news of your arrival and departure as we came to the different villages along the route, and as advantage had been taken of our enforced stay at Kiyiliengamute to alter the heavy sled brought from the ship so as to bring the runners closer together and take the sag out of the after ends of them, I was not obliged to wait so often for Koltchoff to catch up with that sled, and we made very good progress.

When we reached Akoolukpugamute on the evening of the 22d, I wished to cross the mountains in order to save a day, and if possible catch up with you by the time we reached St. Michael, but having no tent for shelter in case we got caught in a storm on the mountain, Alexis thought it would be better to go around the range, and thus reach a village each night for shelter in case bad weather should set in unexpectedly.

Accordingly we followed your trail, which brought us to Chukwoktuliengamute on the 23d and to Kogerehtehmute on the 24th. By this time my dogs' feet were very sore, for the thin crust on the snow, which the dogs broke through at nearly every step, cut and lacerated the cushions of their feet so that some of the poor little fellows left a trail of blood behind them. Under ordinary circumstances when the dogs' feet become sore in this manner it is best to halt for a few days and allow them a rest, for the cuts seem to heal very quickly in this climate.

As we could not afford to lose any time, however, Alexis said he would have the native women in the village make "boots" for the dogs during the night. These boots are simply pieces of cotton drilling

sewed together in such a manner as to fit over the lower part of the dog's foot, and then tied on just below the knee. This affords the cushions of the feet protection from the sharp edges of the snow and allows the cuts a chance to heal; but even these cotton coverings would be worn through in the course of a day's travel, and new ones must be put on each morning. Alexis sent one of our native guides to call the women to our tent, but although he offered to pay well for the little sewing necessary to make a supply of these boots, not a woman in the village would work on them, because the previous day one of the village natives had died, and their superstition forbade them to work the four succeeding days after a death had occurred in the village. They said that whoever did any unnecessary work before the four days were up would surely fall sick and die also, and the only work that was necessary from their standpoint, was taking the fish from the traps and preparing the meals. They wouldn't even repair their own clothing during the four days, and not even the most liberal offers of tea, flour, and tobacco from Alexis could induce them to brave their superstitious fears, so we were obliged to make a set of boots ourselves, as best we could, to last until we reached Chukwoktulik the following day, where, as there had not been a recent death, we were enabled to have a supply made properly.

The day we reached Chukwoktulik was Christmas, and as we saw quite a number of ptarmigan, or arctic grouse, on the road I imagined I would have a fairly good Christmas dinner that evening; but as I had only a rifle with me I was unable to kill any, and when I reached the village I was obliged to content myself with the usual meal of pork and beans, hard bread, and tea.

All through this country I found the natives extremely kind and hospitable. Having no tent, we were, of course, obliged to sleep in the native huts, and invariably when we came to a village and entered the kazhime the best and cleanest corner was set aside for our use. The village people would lend a hand to unload the sleds, bring our things into the hut, and see everything beyond the reach of the dogs. If we asked for fish, it was immediately brought, even though their supply was scant, and if any of the natives had a seal they would cut out the liver and give it to us, although that is considered by them a delicacy and they are very fond of it. In fact, the best they have, such as it is, they will share willingly with the stranger, and when you leave the village, if you give them a few cups of flour or a little tea or tobacco, they seem greatly pleased and think you are very liberal.

I never took pains to keep track of my personal outfit or the food we had with us, yet I never missed a single article, and frequently when we were packing the sleds in the morning a native would bring us some article that had been left behind in the kazhime. Once or twice I was given some small article you or Dr. Call had discarded, for Alexis told them I belonged to the same party, and they thought

ON THE KOYUK RIVER.

you had forgotten the article in question and wished to restore it to the proper owner. For simple honesty and hospitality these natives might be equaled, but they surely can not be excelled by any race of people.

On the 26th we left Chukwoktulik and started the last day's journey before reaching to Andreafski. Having no thermometer, I had no means of ascertaining the degree of cold until we reached that place, when I was somewhat surprised to find the mercury registering 15° below zero, for up to that time the weather had not seemed to me to be very cold. Here we picked up the tent and stove you had left behind to lighten your load, and proceeded down the Yukon River the following day, but being obliged to lose half a day on the lower part of the river on account of a violent snowstorm we did not reach Cape Romanoff until late in the evening on December 29. Here Alexis first began to show signs of a serious illness, and during that night he was in great pain and was unable to sleep at all. For the previous three or four days he had frequently complained of a cold, with pains in the side, but neither he nor I thought seriously about it, and indeed I would have been unable to do anything for him, for I was not enough of a doctor to understand what was his trouble, and besides, I had no medicines with me. The next day he was unable to walk and was obliged to ride on the sled. Our other guide, having developed some sort of sore on both his knees, also had to be carried on the sled, so that all the running ahead of the dogs devolved upon Koltchoff and myself, and that night we got no farther than the steamer *Healy*, laid up in what is locally known as the "canal," about 12 miles from St. Michael, and did not reach the latter place until noon the following day, January 1, 1898.

Upon our arrival I requested Dr. Edie, the surgeon attached to the military post there, to examine the two guides and prescribe for them. The native boy's knees were attended to, and as they were not seriously affected he soon recovered the use of them, but Alexis was found to have developed a very bad case of pneumonia. He was therefore put to bed and turned over to the doctor's care, and for three months was confined to his room, but the doctor finally managed to pull him through and he left for his home some time in April. As Alexis had been very faithful and his illness was undoubtedly due to exposure while in the service of the expedition, I considered it my duty to see that he was properly cared for, and before I left St. Michael I gave an order to the agent of the Alaska Commercial Company at that place to furnish nurses for Alexis, and whatever else Surgeon Edie considered necessary to further his recovery.

As dogs were very scarce at this place and it was impossible to obtain fresh teams, I purchased from Alexis the best of the teams that had come with the expedition from Tunnuk, and remained at St. Michael until the cuts on the dogs' feet had healed.

In accordance with your letter, I delivered to F. Koltchoff your written order terminating his connection with the expedition and directing him to report to Col. G. W. Randall, United States Army, for duty in connection with the Government deer herd.

On January 6, having obtained from the company some necessary articles of clothing and provisions, I left St. Michael with one team and the native boy Fred for a guide, and proceeded to Unalaklik, reaching there on the evening of the 8th. A few hours after leaving St. Michael I fell in with the outfit of Mate George F. Tilton of the steam whaler *Belvedere*, who was on his way from Point Barrow to San Francisco, and who told me that he had met you and given you all the information he had concerning the state of affairs at Point Barrow. When I reached the house of Mr. Englestadt, the trader for the Alaska Commercial Company at Unalaklik, I found your order to carry 1,000 pounds of provisions across the country and meet you at Cape Blossom, but as I had only one team of dogs, and Englestadt was unable to furnish me with any more, I was obliged to remain there until your dogs returned.

Here I obtained boots, socks, a parkie, and a sleeping bag made properly of deerskin, and discarded the corresponding articles brought from the ship, as they were not adapted to the cold weather we were now experiencing. The outfit and provisions for myself and the necessary natives weighed a little over 300 pounds, and as there were no villages on my prospective route between the head of Norton Bay and Cape Blossom, 300 pounds of fish had to be carried also, with which to feed the dogs, so that, together with the 1,000 pounds of provisions, there was a load of about 1,600 pounds to be transported. This would require at least four sleds, with the corresponding number of teams, but as Englestadt informed me that I could get one team from his native trader at Koyuk, this, with the two teams you were to send back and my one team, would make up the necessary four, and as the 300 pounds of fish and 500 pounds of flour were already at Koyuk, thus leaving but 800 pounds for me to haul from Unalakleet, I concluded on the 10th to start for Koyuk, taking the 800 pounds on my team and a small native team Englestadt managed to engage to go that far, hoping to meet your dogs returning on the way.

Having been unable to obtain a thermometer at St. Michael, I was unable to keep a record of the temperature; but on the 10th, when I left Unalakleet, the mercury registered 30° below zero.

Following the same general trail along which you had traveled, we reached Egowik on the evening of the 16th, and on the 17th stopped at Shaktoolik, after having traveled during the afternoon in the face of a severe snowstorm, which increased during the night to such an extent that on the 18th it was impossible to see 20 yards ahead, and we were compelled to remain over at the village.

The morning of the 19th dawned clear, and we resumed our journey toward Koyuk. In the afternoon, about an hour before we reached

that village, I met your teams on their way to Unalaklik, but the dogs looked pretty well played out, and the two drivers declared they could not accompany me to Kotzebue Sound until they had gone to Unalaklik and obtained warmer clothing than they had on at the time, for they said it was much colder across the portage than in the vicinity of St. Michael. I therefore sent a note to Englestadt, asking him to send me at least one of these teams and an interpreter, and told him I would wait at Koyuk until I heard from him. We reached Unaktolik late in the afternoon, and on the following day crossed the head of Norton Sound on the ice and finally came to Koyuk, which is situated at the mouth of the river bearing the same name. Here I discovered that the team belonging to the native trader at this place and which I had expected to obtain had left the day before on a trip to Unalaklik, and as the native who accompanied me with the extra team refused to go any farther, I was obliged to allow him to return, and was thus left with one dog team with which to transport 1,600 pounds across country.

The following day, therefore, I set out for Golovin Bay, three days' journey to the westward, where there was another of the Alaska Commercial Company's trading stations, hoping to be able to procure the necessary dogs at that place. Again I was doomed to disappointment, however, for on my arrival I learned that all the dogs belonging to the station were absent on a trip into the interior of the country. A few miles from here was the herd of Government reindeer, and there I went next, Mr. Hultberg, the Swedish missionary at Golovin Bay, kindly accompanying me to act as interpreter with the Lapps, for the superintendent of the herd, Mr. Kettleson, had gone up the coast with you and Dr. Call.

Soon after leaving Golovin Bay I had an excellent demonstration of the powers and strength of the Alaskan dogs. Mr. Hultberg had loaned me two of his deer, which left the village some time before we did, and, as they were both harnessed to one sled, which carried but one driver, their load was a light one, and they traveled fast. My sled was very heavily loaded, as I was taking back with me some extra provisions, rendered necessary by my enforced delay and the two extra deer drivers I had now to provide for. I had with me two natives for guides. Having allowed the deer to get a good distance ahead, we started, but my dogs could see the deer, and they started after them at such a speed that the two natives and myself could scarcely keep up with them, and we all piled on the sled. The weight of we three, in addition to the heavy load the sled already carried, would have stopped a dog team short under ordinary circumstances, but in their eagerness to overtake the deer the dogs did not apparently mind the extra weight, and bowled along as fast as ever, and before the deer reached the base of the mountain we had to cross, the dogs had caught up with them, and it required the united efforts of the two

natives and myself to hold them in check. We now held the dogs back until the deer could get far in advance up the mountain, and, as there was another sled coming behind with a heavy load, I told one of my natives to wait for it and help the man who was driving it, for as long as my dogs kept the scent of the deer I knew they would not need much assistance. Owing to my imperfect knowledge of the language, however, the natives misunderstood me, and both of them started back for the rear sled. This released the dogs, and, though I dragged back with all my strength, they started up the mountain side—a rather steep grade—at a pretty good gait, howling and straining in their eagerness to catch the deer, which they imagined would afford them a meal, though by this time the wind had increased and the snow was driving so that I could not see 10 yards ahead, the dogs still had the scent.

Just as the dogs dashed ahead I saw the two natives start back, and shouted for one of them to come along, but I saw he could not catch us, and the blinding snow soon shut him from my sight. The dogs were now racing up a pretty steep grade, dragging a heavy load along, at a rate I would have thought impossible had I not actually seen it, and, as I did not know the proper trail and there was some danger of getting lost in the blizzard, I put forth every endeavor to overturn the sled, and thus stop the dogs until my native could catch up. I found I was unable to do it, however, and then tried the plan of running ahead and throwing myself down on the head dogs, but the rest of them soon dragged the traces from under me, and the whole team would start ahead again. Then I thought if I could get under the sled I could raise one side up sufficient to overturn it, so I waited until I had caught my breath, and then ran ahead, threw myself between the dogs, caught hold of the middle trace, and allowed myself to be dragged along over the snow. This made the dogs slacken their pace, but still did not stop them entirely, so I let myself back toward the sled, still holding on to the trace, until the whole of my body as far as my shoulders was under the sled between the runners. We were not going very fast now, and suddenly letting go of the trace, I dug my hands in the snow, and raised my back at the same time. This threw the sled over on one runner, which capsized it and brought the team to a full stop. As soon as I regained my feet and shook the snow out of my clothes I discovered I had lost my mittens, tobacco pouch, and cap, in the operation, but these articles were returned to me by my native, who soon loomed up through the driving snow. He had followed the track of the sled, running as fast as he could to catch me, and had picked up my missing articles as he came along. By this time the snow had covered the tracks of the deer and the dogs had lost their scent, and I soon felt almost sorry I had not let them keep on, for the rest of the trip up the mountain side was a case of "righting the sled."

When we reached the summit and started down the other side we found the blizzard was local and confined to the side of the mountain we had just come up, so we had a quick trip to the foot, where the Government deer camp was established. After considerable talking I managed to secure from the Lapp herder in charge, five deer, five sleds, and one driver, and as I had obtained two deer, one sled, and a driver from Mr. Hultberg, I returned to Koyuk with this outfit, reaching there on the 30th.

I found upon my arrival there two extra dog teams that the trader at Unalakleet had managed to send me, so I now had three dog sleds and four deer sleds to carry my load, for two of the deer sleds were for the use of the drivers, and no other weight could be put on them. The next two days a violent wind and snow storm prevailed, rendering traveling dangerous, and it was not until February 2d that we finally got started across the country bound for Kotzebue Sound.

On the hills along the shores of Norton Sound and Bay, and on the banks of the rivers flowing into these waters, there is scrubby pine and spruce in abundance, from Unalaklik to Golovin Bay. But after crossing this bay to the west shore no more timber is seen on or near the coast until Hotham Inlet is reached.

Two hundred pounds were put on each of the deer sleds and the remaining 800 divided between the three dog sleds, but the deer proved to be unequal to their task, and two days later we were obliged to reduce the load on the deer sleds to 150 pounds each, transferring the surplus to the dog sleds which were, of course, getting lighter all the time as the dog food was consumed. We traveled along the Koyuk River the first day, but, as the snow was so deep and soft that the dogs sank nearly out of sight, we were obliged to tramp back and forth on our snowshoes ahead of the dog teams, beating down the snow to enable them to drag the sleds along, so that we made but 15 miles during the day, and that night camped on the banks of the river where the brush was thick and plenty of dead sticks for firewood was available.

The next day, the 3d, we had much the same sort of road during the forenoon, but after we had stopped in the middle of the day for something to eat, the guide struck across the tundra to avoid a long bend in the river, and we found the going very much better, for the wind had blown away the loose snow during the night, leaving a fairly hard surface to travel over. We were now nearing the head waters of the Koyuk, and began to come across isolated clumps of scrubby pine trees, in one of which we made our camp for the night, having traveled about 20 miles since morning.

On the 4th we left the Koyuk River, after a few hours' travel, and struck across the country, reaching that night the banks of one of the small streams forming the head waters of the Buckland River, or, as the natives call it, the Kongak. From here we followed the gen-

eral course of this river to its mouth, keeping most of the time on the bank and cutting across the tundra to avoid the many bends and twists of this winding stream, and finally reached Escholtz Bay on the evening of the 8th.

The country between Norton Sound and Escholtz Bay is very hilly and mountainous, but when not traveling on the rivers our guide escaped climbing any of the mountains by leading us along gentle rolling valleys, from which we could see the hills and mountains surrounding us, apparently, in all directions, but the guide appeared thoroughly familiar with the country, for he wound in and out among these hills, and generally managed to keep to a pretty level road. We crossed and sometimes followed for a while quite a number of small streams, all of which I learned were tributary to either the Koyuk or the Buckland river. Deer moss was abundant along our entire route, and the guide declared that the whole of the surrounding country was of the same character. Indeed, native tradition has it that in past years the wild deer were plentiful in that section of the country, and even of late years small scattering herds are sometimes seen. Along the rivers brush is plentiful, and a considerable number of small scrubby pine trees grow on the hills and on the banks along the upper part of these streams near their head waters.

Although the country through which the guide led us was practically uninhabited, but two isolated and migratory families being met with, we came across several clusters of old, half-destroyed native huts, which the guide told me used to be villages, and for each of which he had a name. The people who used to live here were either all dead or had removed to some distant part of the country, so that now no one lived permanently on these two rivers. This seemed strange to me, for there were plenty of trees for firewood, and I saw hundreds of tracks of fox, beaver, martin, and other animals, and in the summer there must be plenty of fish in the rivers, but the guide offered no explanation as to why the natives had left such good hunting grounds, except that he guessed they wanted to go somewhere else.

When we left Koyuk I was anxious as to how the combination of deer and Eskimo dogs would work, for the latter have not yet learned to appreciate the difference between the domestic and the wild deer, and their instinct teaches them to attack a deer whenever they come across one of them. It was all right during the day, for then the dogs were harnessed to the sleds and could be restrained, but at night, when the dogs were turned loose, there was some danger of them getting among the deer and either killing them or causing a stampede. This difficulty was surmounted, however, by driving the deer train a mile or two to the leeward of our camp and picketing the deer with long ropes at a good feeding ground, as by this arrangement the dogs could not scent the deer and would remain quietly at the camp all night.

During this trip across the peninsular I was much surprised to find that the performance of the deer was not nearly up to the expectations I had formed from hearing of their powers, for there was not a single day that the deer train was able to keep up with the dog teams, and frequently we were in camp and had the supper prepared long before the deer hove in sight. The load on the deer sleds was very light (but 150 pounds), and the moss was plentiful; yet I was obliged to remain in camp one day on the Buckland River to allow the deer to rest, and when we reached the mouth of the river the drivers informed me that the deer would give out unless they had another day's rest before going on.

At the mouth of the Buckland River, on the west bank, are the remains of an old and deserted village called Inooktut, and about a mile farther up the river on the same side is an old log house built by a white trader some years ago, which was occupied, when we arrived, by an old native man and woman, together with their one son. We camped in this house on the night of the 8th and remained there for the whole of the 9th in order to allow the deer to rest, but on the evening of the latter day, when I began to make arrangements for the next day's move, the natives with me refused to go any farther. They would give no reason for their refusal, which was quite in keeping with the native custom, for when they make up their minds to do or not to do a certain thing, they do not see the need of offering any reason for their action, if, indeed, they have a reason save that of following the bent of their inclinations. Here was a serious state of affairs, for there were yet some 80 or 90 miles to be traveled before reaching Cape Blossom, my provisions were badly needed at that place, and I was behindhand as it was, owing to the delay in getting transportation at the head of Norton Bay; and the nearest village at which I would be able to procure more dogs was several days' journey from here.

My interpreter, a half-breed Russian, had been listening to the conversation among the natives, and he informed me he drew from their talk that they realized I was unable to obtain other means of transportation in that out-of-the-way place, and thought it was a good time to force me to increase their pay, thus showing a marked similarity to the actions of some of their more enlightened white brethren in civilization. But there was no help for it, as I was obliged to have their teams, so I was forced to listen to their demands. They finally decided to go on with me to Cape Blossom if I would agree to pay them about double the original consideration, and, in addition, engage the sled and team belonging to the old man in whose house we were staying. Being anxious to go on, and feeling myself entirely dependent upon the assistance of their teams, for the deer had shown their inability to carry much of a load, I agreed to their conditions, but made a mental reservation to hold them to their original agreement when we had reached the point I was aiming for and I could dispense with their sleds and services.

On the morning of February 10, therefore, we were again on the move, and after traversing Escholtz Bay on the ice we crossed the narrow neck of land on the southern end of the Choris Peninsula, and camped for the night on the shores of Kotzebue Sound, on the site of a deserted village, which furnished us with firewood. The next day we proceeded along the shore to the northward, and as the ice was smooth we made splendid time, reaching the native village of Kikiktaruk, about 15 miles north of Cape Blossom, on the evening of the 11th, having made a little over 50 miles during the day. The deer were unable to travel that distance in one day, so the drivers camped on the way and reached the village the following forenoon. Here I found Rev. Robert Samms, a Quaker missionary, with his wife and young lady assistant, and, having learned from them that neither you nor the deer herd had as yet passed that way, I proceeded to make myself as comfortable as was possible in my tent, for their house was so very small that it barely served for those who already occupied it.

At this place there are but five native huts, with a population of some thirty people, the remnants of a once numerous and prosperous people, but the scarcity of food in later years has compelled the migration of this tribe also, so that now there are but few of the old inhabitants left, and they are so very poor that starvation almost continually stares them in the face. A few miles to the southward of this place is what is known as the "Rendezvous," where the natives from all over the country assemble during the summer months to trade among themselves and with the vessels that happen along. They even come from as far as East Cape, on the Siberian coast; but of late years the influx of white men into the country has lessened the necessity for the natives coming so far to trade among themselves, and where in former times there were at this summer encampment many thousands of people, now 1,000 is a large number, and this number is growing less each year.

I had intended to settle with my natives the next day and send them back, but as you arrived the next evening I turned over my whole outfit to you at that time. After you and Dr. Call left for Point Hope on the 15th, I occupied the time, while waiting for Lopp and the deer herd, by hauling firewood from the mouth of the Noatuk River to replace that which we had used from Mr. Samm's supply, for there was no driftwood nearer to the village, than over on the mainland at the mouth of the above-mentioned river. Mr. Samm's thermometer was now registering between 35 and 45 below zero, and as I was obliged to live in my tent, waiting was very disagreeable under these conditions, and I was very glad when Lopp arrived on the 18th. He had crossed on the ice with the deer herd from Cape Espenberg to Cape Krusenstern, reaching the latter place the previous morning.

At the village of Anyok, near Krusenstern, he was given your letter telling him where I was waiting for him, and he had come over to

Kikiktaruk with dog teams, leaving his deer behind for a rest. As all my natives and their teams had been sent back to Koyuk, and you had taken my own team with you, I traded with the natives of Kikiktaruk for a sled and a few dogs, upon which I carried my personal outfit and camp gear, and on the 19th Lopp and I started for Anyok, packing the provisions on the dog teams he had brought, and the deer train I had brought with me, which, according to your instructions, I still retained and now turned over to Lopp for service with his herd. He was very glad to get these seven extra deer, for several of his own sled deer had died since leaving Cape Prince of Wales.

We reached Anyok on the evening of the 19th, and as the weather did not look promising it was decided not to start from that place until the 21st, by which time the deer herd would be pretty well rested. On the morning of the 21st the sled deer were caught and harnessed, the sleds packed, and the whole outfit moved up the coast to the westward, I keeping with Lopp, but having my own dog team and guide, so as not to add to his load. The next few days we had a succession of violent blizzards, rendering it impossible to make much headway, and causing us to lose two whole days, during which time it was impossible to travel at all, in consequence of which it was not until the 27th that we reached the mouth of the Kivalena River. During one of these storms a small number of deer became separated from the main herd and were lost, but were afterwards recovered and cared for as set forth in my report to Captain Tuttle, dated July 15, 1898.

In accordance with your instructions I now parted from Lopp and the deer herd and proceeded up the coast toward Point Hope. When I reached Cape Seppings on the 28th I learned from some natives that you had gone back to the Kivalena River to meet Lopp, so I waited there until your return on March 2, when I accompanied you to Point Hope.

From Cape Kruzenstern to Point Hope the shore is lined with an almost continual succession of lagoons from two to five miles in width, except where the mountains come down to the sea at Capes Seppings and Thompson. These lagoons are separated from the sea by a narrow sand spit, which, being covered with snow during the winter, forms an excellent trail along which to travel from the sound to Point Hope. Some of these lagoons are connected by small openings with the sea, but the most of them are entirely isolated and are really lakes. On the inside, where the foothills begin, the deer moss is abundant and brush is plentiful, especially along and near the numerous small streams that empty into these lagoons; but while there are plenty of trees about the mouths of the Noatuk and Kowak rivers and on the hills as far as Cape Kruzenstern, no timber is seen after leaving that cape. Even along the Kivalena, Kookpuk, and Pitmegea rivers there is no timber, though there also the brush is plentiful. All along the sand spit from Kruzenstern to Point Hope driftwood is abundant, and is replenished each year by the trees that the

rivers flowing into the sound bring down during the freshets after the ice breaks up in the summer. This is nature's provision for the fuel for the Eskimo.

Though the coast from Kruzenstern to Cape Seppings is uninhabited, we came across the remains of several old and deserted villages scattered at intervals along our route, and my guide informed me that in former years many people lived along these shores, and gained their living by hunting the seal, walrus, and whale; but as the whale and walrus have been gradually driven north by the vessels hunting them, these people have been obliged to migrate to better hunting grounds, and are now scattered about in different parts of the country.

An account of my movements and services from the time of my arrival at Point Hope until I rejoined the *Bear* the following July is detailed in the report to Captain Tuttle, already referred to, which report was made in accordance with the written instructions with which you furnished me, prior to your departure from Point Hope for Point Barrow.

Respectfully, yours,

E. P. BERTHOLF,
Second Lieutenant, R. C. S.

First Lieut. D. H. JARVIS, R. C. S.,
Commanding Overland Relief Expedition.

REPORT OF SURG. S. J. CALL, R. C. S.

SEPTEMBER 1, 1898.

SIR: In accordance with your instructions, I have the honor to submit the following medical report of the Overland Relief Expedition during the eight months of travel and isolation from the time we were put upon the beach at Cape Vancouver, December 16, 1897, until the U. S. Revenue Cutter *Bear* arrived and returned with us August 16, 1898.

Knowing from past experience in the Arctic that all whaling vessels, before leaving San Francisco, were furnished with a medical chest containing most of the ordinary medical and surgical supplies, I did not deem it necessary to take more medicines than were needed for our own immediate use and that of any special case met with on the tramp. My outfit, therefore, consisted of a small leather grip containing, besides a few general remedies in tablet form, the following:

1 pocket surgical case.
1 hypodermic case.
1 stethoscope.
1 pound lint.
1 roll rubber adhesive plaster, 1 inch.
1 fever thermometer.
1 dozen assorted surgical bandages.
1 roll isinglass plaster.
1 dozen surgical sponges.
1 dozen pair snow glasses.
1 dozen toothbrushes.

On account of the prospective low temperature the liquid preparations were reduced to a minimum, and were, 8 ounces A. C. E. mixture,

NATIVE VILLAGE, YUKON DELTA, IN WINTER

4 ounces tincture chloride of iron, 4 ounces Friar balsam, and one-third dozen extract ginger.

The medicine grip was an object of considerable care, and was always given the warmest and most protected part of the sled, tent, or kazheem. By taking this precaution none of the liquid medicines was destroyed by freezing.

At Tununak, the people were in the midst of an epidemic of influenza, varying in intensity from the nasal and laryngeal catarrh to the more serious complications of bronchitis and pneumonia. This was quite serious and interfered to some extent in the selection of our guides, as in the case of Kalenin's son, whose attack of pneumonia compelled him to remain behind.

The start was made on the 18th of December, 1897, and while those in charge of the expedition continued well, the natives on the third and fourth day began to show signs of exhaustion. Their coughs grew worse, and after a short run or spell at the lead, they would return to the sleds complaining of pains in the head and chest and remain until almost driven again to their work. Quinine during the day and Dover's powders at night, with an occasional dose of tincture of ginger, enabled them to reach Andreafski, where Karpa, our leading guide, was left in the hands of friends.

At the Kennedy River, a branch of the Yukon, where the steamers *Alice*, *Mercur*, and *Dwyer* were in winter quarters, the two remaining natives who had come with us from the coast were pronounced unfit for further travel and left there. This epidemic of influenza must have spread throughout the whole Yukon delta, as Lieutenant Bertholf reports that he, too, was much annoyed in the same way as ourselves, and before reaching St. Michael Alex. Kalenin's attack had resulted in pneumonia and became so serious that the patient was carried on the sled from Cape Romanoff to St. Michael, where he remained for two months under the care of Dr. Edie, the post surgeon.

Unaktolik, January 5.—An interesting case of native surgery was met with here. There were three persons, an old man, his wife, and his son, occupying two small huts. Noticing that the old man's legs were off at the middle third, I inquired the cause, and was told by the old woman that a few years ago he was caught out in a blizzard and had his feet and legs frozen, and that later she had chopped off the frozen part with a long knife. From Unaktolik across and along the shores of Norton Sound to Golovin Bay and on to Point Rodney, Artisarlook's home, there was no call from the expedition for my services.

The following day after your departure from Point Rodney your instructions were attended to, and the reindeer herd and equipment gotten under way to join you northeast of Cape Prince of Wales. In these eleven days nothing serious occurred. Among the minor incidents and frostbites that gave but little trouble there was one, how-

ever, on January 17, which taught me a lesson that I did not soon forget, and by which others may profit. We were slowly advancing along the coast, just north of Apiktalluk, in one of those indescribable blizzards with the thermometer 30° below zero and the velocity of the wind about 40 miles an hour. The deer lines attached to my left arm became loose, and to tighten them I removed my deerskin mit. My hand was moist and warm, but in about twenty seconds after coming in contact with the cold air it had lost all sensation, and required ten or fifteen minutes of vigorous slapping to restore the circulation.

Sin ruzot, February 6th.—This marks the beginning of a few of the most interesting days of our tramp. Perninyuk, an Eskimo doctor, was engaged as guide to Point Hope. His reputation as a "big medicine man" extends from Port Clarence to Point Hope, and before many "sleeps" had passed I was made aware of my insignificance. All along the route he was asked for his professional services, and on several occasions, you remember, he became so eloquent and demonstrative that we were compelled to retire. "Shamanism" is fast losing its attraction, and superstitious power upon the younger generation, being practiced now mostly by the older generation and by those having little intercourse with the white people. Formerly this Eskimo astrologer was all powerful, and often used his calling as a means of gratifying his own personal desires and ambitions. For example, at Point Barrow a native was taken sick; he called in his "devil driver," the doctor, and though he had paid him well for the few seances, he did not recover, and was then informed by the doctor that the compensation was too little and unless he paid more he would never recover. The "shaman" levied another tax of whalebone, ammunition, fur, and clothes, and soon his patient was able to be around. Then the medical attendant informed the poor man that unless he served him for two years, body and soul, giving all he possessed at the time and all he might earn during his two years of slavery, he would again suffer, and finally die. The poor, deluded patient served his time without a murmur, and even if the demand had been made for his wife or daughter there was no alternative but to submit.

As to the shaman's or Eskimo's belief in a future state there is little known. Their customs sometimes lead one to think they expect to return to earth after death, as the following incident will illustrate: A Point Hope woman died before giving birth to her child. Three days afterwards, three or four old women, armed with their flint knives, repaired to the place of burial, removed the body of the child, and buried it. Being asked why they did this, they answered that if a woman died under the above circumstances she could not return to the earth again after death. They have no conception of the Deity, their one fear being the devil's power, and the one great thought and desire is to appease the wrath of his satanic majesty. If this fails, then they resort to means to frighten him, and this accounts for those

terrifying dancing costumes, fits, trances, tricks, and sleight-of-hand performances which characterize one of these howling meetings.

Point Barrow, April 1.—At the *Belvedere*, when we arrived on the 26th ultimo, there were seven or eight cases of disease treated, the most serious being Captain Millard, who had been dangerously ill all winter with chronic cystitis.

On the 30th, the next morning after our arrival at Point Barrow, the shipwrecked men and their quarters were inspected. Those few occupying quarters with C. D. Brower and E. A. McIlhenny were in fairly good health. Coming to the old "Kelly house," the worst state of affairs existed. The 70 or 80 men were in a most pitiable condition. Their white, emaciated faces looked like specters as they peered at us from their cold, dark, and frosty berths. They were in all stages of weakness, exhaustion, and despair. Four cases of scurvy had developed, two of which were in a dangerous stage of the disease; others complained of dysentery, loss of appetite, and insomnia. The remedy was close at hand, and consisted of removal, better food and clothing, and the enforcement of hygienic regulations and exercise. The scurvy cases were put upon an increasing diet of fresh meat, and tincture of iron and lime juice prescribed. This last remedy, being on hand in limited quantities only, was reserved for such cases as they occurred. Under this new régime and the medical treatment, the beneficial results were quickly apparent, and before the month of April had passed all the seriously sick men were able to be out and take the prescribed exercise.

Dr. Richmond Marsh, the Presbyterian missionary, up to this time had furnished medicines and services whenever called upon. The doctor received me kindly, and though our schools differed materially, he extended to me, both professionally and personally, during my stay at Point Barrow, many courtesies, without which I would have worked to a great disadvantage. He was well supplied with medicines and surgical apparatus, all of which he freely placed at my disposal.

Another source of medical supplies was due to the forethought of Mr. C. D. Brower, who secured from the wrecked ship *Navarch*, on one of her almost miraculous visits, the well-filled medicine chest she had on board and transported it to his house. There were also a few medicines at the old refuge station, the remains of the Government supply before the station was abandoned. These were handed over to me by Mr. McIlhenny. I note this with much satisfaction, as the people in almost every village, as we journeyed overland to Point Barrow, required my professional services and had drawn so heavily on my medical supplies that very little remained.

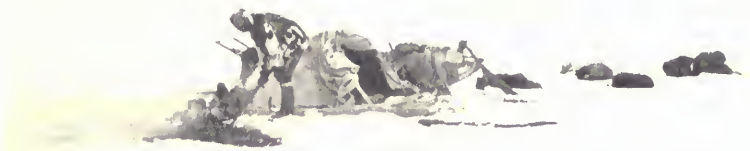
About April 10, while tearing down the old "Kelly house," some of the boards containing rusty nails were left lying around, and the result was that several of the crew were seriously crippled with punctured feet.

The tooth forceps were very useful, and many of the men escaped nights and days of torture by the removal of an offending "grinder."

Sunday, May 1. The first month of Government and medical supervision showed a most gratifying change in the health and spirits of the shipwrecked crews, and the only serious case of sickness was that of Lieutenant Jarvis, who was attacked on the 11th instant with tonsilitis. It proved to be quite serious and continued for a week, necessitating the postponement of his tour of inspection of the vessels to the eastward.

Tuesday, June 7.—About 9 p. m. an Eskimo arrived from the ice pack and reported to Dr. Marsh that one of their boat headers had been accidentally shot through the arm with a whale bomb. The doctor immediately repaired to the scene, about four miles away, and found the patient almost dead from hemorrhage, the bomb having passed through the wrist of the left hand. The "shaman" had been called, and after applying a tourniquet around the arm between the shoulder and elbow, outside the heavy fur clothing (being loosely applied, it failed to stop the flow of blood), he began his customary incantations. Seeing that the devil was getting the better of him, he had sent the dog team for help, but left the patient alone on the ice. Dr. Marsh quickly applied another and more efficient bandage, placed the patient on the sled and brought him in; but by the time he reached me he was nearly dead from shock and loss of blood. In a short time, after the hypodermics of strychnine and brandy, the old fellow slowly raised his head and feebly announced that he would die. The wound was partially examined, dressed, and the man made comfortable for the night, and the next morning, after a thorough examination, it was decided not to amputate. About a week later, being obliged to make a trip to the eastward to inspect the vessels there, the patient was left in charge of Dr. Marsh. When I returned, the first visit was to see the injured man, and upon asking the doctor how he was, he replied that, against his instructions, his charge had consulted a "devil driver," and he had decided not to do anything more for him. The patient's wound showed the want of daily dressing, and, removing him near my quarters, he was fed and treated until our departure, when he had so far recovered that he had a fairly useful hand. In order to understand the nature of such an accident, it is necessary to know just what a whale bomb is. These projectiles are made of brass, and are about 10 inches long and one inch in diameter. The point is triangular and has three sharp cutting edges, the head having a one-eighth inch projecting rim. Considering the relation of the eight small bones of the carpus with the branches of the radial and ulnar arteries and nerves, it seems incredible that such an instrument should pass through these parts without severing one of the main arteries and causing death from hemorrhage.

Often one is sorely tempted to adopt the Dr. Marsh's plan of dealing with the Eskimo in reference to shamanism, for while there is no



WHILE ON A SICK CALL

question that it is useless and very often does much harm, one can not in a day change or destroy the native habits and traditions by such methods of opposition, any more than can one expect his missionary views to be accepted by many of the white residents, if one adopts a spirit of antagonism. I believe the final result of medical treatment and care of this man did more to weaken his faith in the "devil driver" than the refusal to do anything for him. When he afterwards brought me several valuable slabs of whalebone as payment for my services, it was, of course, refused, and he then realized that the "white doctor" was an improvement in many ways over his native "devil driver."

On Friday, May 20, Lieutenant Jarvis returned from an inspection tour of the vessels, and soon after felt an "itching and tightness" about his forehead. He applied a cooling lotion containing, among other ingredients, gum tragacanth and glycerine, but his forehead became in a few hours twice its original size, yet without a symptom of pain. This condition continued to increase for a few days, and before it disappeared the affection had attacked the whole face and at one time closed his eyes completely. The affection was one of local cellulitis and was due to the fact that all winter his forehead had been protected from exposure, while on the day of his arrival from this last trip, the weather being unusually warm, he had thrown back the hood of his "artigge," thus permitting the direct rays of the sun to beat down upon his brow. The treatment was left to nature entirely, and when the affection reached the numerous lymphatics of the neck it soon disappeared.

Thursday, May 26. —At 12.45 p. m. I left the house on a sick call to the vessels in the ice 100 miles to the eastward. There were three sleds, two of which were loaded with deer meat, and the third, to which I was assigned, carried food for the dogs, consisting of white whale meat obtained during a recent hunt. The weather had been mild and the snow was soft and slushy, and for many miles we were compelled to make our way over hummocks of ice and to wade through depressions filled with water. We finally reached the first vessel on the third day, and after an inspection of the ships I found the general health of the crews fairly good, the only cases requiring my attention being one of nasal polypus, two of dysentery, and three of influenza. The care and cleanliness observed on these vessels, especially on the *Newport*, showed that their captains had taken every precaution against sickness and disease.

Leaving the *Newport* and *Fearless*, the two nearer ships, on the night of the 5th, I arrived at Point Barrow about midnight on the 6th, having been away on this sick call twelve days.

Tuesday, July 1. —The usual daily medical inspection indicated a vast improvement in the men, and though I seldom returned without being consulted, it was for some slight acute gastric or intestinal affection, which was of temporary duration only. Two cases of pneumonia

among the Eskimos occurred, but as in each case only a small area of one lung was affected, they recovered. I mention this because never yet among these people have I met with a case of double pneumonia that was not fatal.

The only death at Point Barrow which I have to report is that of Philip Mann, who died suddenly on the ice about 7 p. m. June 8. He was about 50 years of age and, having symptoms of heart trouble, had been cautioned against engaging in any violent exercise. Immediately after eating an unusually hearty meal he assisted in starting a sled and began running along with the outfit, when he suddenly fell upon the ice and expired. At the autopsy, which I performed the next day, assisted by Dr. Marsh, it was ascertained that he died of fatty heart.

On Saturday, June 25, at 9.30 a. m., with one Eskimo, I set out on a sick call to the *Belvedere*, lying in the ice 60 miles to the southward. My equipment consisted of five dogs and a sled, carrying our sleeping bags, food, medicines, shotgun, and ammunition. There being no snow on the land, we were compelled to take to the ice along the coast. The past warm weather, melting the snow and breaking out the lakes and lagoons, had covered the shore ice with water and broken it up to such an extent that our progress was slow and the work very hard, so that we were three days in reaching the ship.

Captain Millard had improved greatly since our arrival on the 26th of last March. There were only two other cases requiring treatment, one of dysentery and the other of heart trouble. Remaining here three days, I left on the morning of the 30th of June, and, after another four days of hard hauling through the rain and sleet, I arrived at Point Barrow July 3, having been gone nine days.

Thursday, July 28. In the past four months there have been several childbirths among the Eskimos, and their management of an accouchement, when compared with our civilized methods, is extremely interesting, if not instructive.

As a rule parturition among a people so purely natural is attended with no bad results, but when customs and traditions prevent them from extending to their women the care and kindness they give to their dogs, it is often attended with fatal consequences. Every woman, married or single, must rely upon herself entirely, in the lying-in snow house. When the time arrives, she must retire to some hut or tent, sometimes previously prepared for her, and there go through the ordeal absolutely alone. It may be many degrees below freezing, or in the fog, rain, and sleet of a summer blizzard; but the superstitions of death, bad luck, and disaster, are so firmly grounded in the minds of these simple folk, that not one will venture near her while she is in trouble. She assumes a squatting position, with her knees apart and sometimes slightly raised by means of a block of wood. The legs are flexed upon the thighs, supporting the hips. Thus she awaits, and, during the intervals of uterine spasms she pulls from

her head eight or ten hairs and plaits them into the ligature which she will use in tying the umbilical cord. Unless some previous interference with the life of the child has been attempted, complications seldom arise, and the first stage is not of long duration. She takes the human-hair string and ties the cord in one place, and cuts it with a flint knife, it being considered bad luck to use any other kind of knife. The baby is rolled in a piece of deerskin and laid aside until the placenta appears, which latter is disposed of by hiding it away. The mother seems to have suffered little, for she is soon up, and, the devil's spell being broken, she is now permitted to receive the assistance of her friends. But it is not always thus, as the following authentic cases will show:

Case 1: Cripple, the result of frostbite; age, 28; pregnant; unmarried; bright and industrious. Both legs off at the middle third; walks on her knees, making sometimes four or five miles a day. She occupied a hut together with an old native, and, when her time had come, he hustled her out in a blinding snowstorm and closed the door. Securing three sticks and a piece of canvas she quickly made herself a rude shelter, where her child was born, which soon froze to death. The next morning she was assisted back into the hut by the whites, when the old Eskimo quickly retired through the window, bag and baggage, declaring that he would soon die; and strange to say he actually did die within three weeks' time from that day, thus verifying the native prediction of death to all who assist a woman in childbirth or remain in the same place as the woman during any part of that time.

Case 2: While a party of natives were coming from the interior to the coast, one of the women, being pregnant, was unexpectedly taken sick. Instantly all hands deserted her, and she was left alone on the plain. Her child was born, but the placenta failed to be delivered. Both mother and child died, and the scene was never again visited.

Case 3: Woman returning home along the beach gave birth to a child. She removed the placenta, placed the child to one side of the trail, and then proceeded to the village and engaged in her usual duties. Some parties afterwards found the child, which had died, and buried it.

These horrible customs are no respecter of persons, and the most influential are often subjected to this same inhuman treatment. The maternal instinct of every Eskimo woman, married or unmarried, generally prevents any desire to destroy her offspring before or after birth, and consequently abortions are rare. When, however, the destruction of the fetus is attempted, it is done by jumping on or kneading the abdomen, or by giving a stroke or slap over these parts. Violent exercise, work, or sport, will sometimes cause this unintentional loss, the most frequent cause being the blanket tossing.

Surgery is crudely practiced by the medicine men, and their treatment of simple fractures is deserving of considerable credit. Placing the limb in as natural a position as their ignorance of anatomy will

admit, they apply strips of thin wood or whalebone and secure them with bandages, or by tying. Dislocations fare badly, and their management is similar to that of a fracture, the result being very often a useless limb.

Hemorrhage from an extremity receives a constrictor of some sort, but often it is loosely and improperly applied, and death is the result. Nature in surgery, as in many other instances, comes to their rescue. There are now natives hobbling around at Point Barrow with the loss of one or both legs, hands, or arms, who had no assistance from white men or a surgeon, and I might say that almost all of these cases are due to frostbite. In time, the dead and frozen stump having no sensation, is cut and chopped away by some member of the family, and after a long and slow process of granulation and sloughing, healing follows. For some reason the Eskimo refuses to wear artificial limbs. Cases operated on nearly ten years ago are still on their knees, and the amount of work and traveling they do is astonishing.

Before closing this interesting subject, I must speak of some of the amputations performed by one or two of the captains of the whaling fleet. Their fearlessness and the results are sometimes remarkable, and would call forth the praise of our most expert operators. I mention in this connection Capt. George B. Leavitt, who lately commanded the steam whaler *Newport*, who wrote as follows:

I am glad I have the dates of most of the amputations since the ships began wintering at Herschel Island. The first was on a man belonging to the *Mary D. Hume* in March, 1891. Half the right foot was taken off, the instruments used being a butcher knife and a hack saw, Captain Tilton bossing the job. It was the first attempt of the kind up there, and putting the patient under chloroform (which was out of our line) was a slow process. We placed the bottle under the man's nose, and after he had taken a whiff we would ask him if he were sleepy. This was kept up for half an hour without any effect. We then made a paper cone, put in some waste saturated with chloroform, and the man went right off. It was a cut square across the foot. After the cutting, the edges were drawn together as far as they would come and gauze, well greased, placed over the cut, followed by absorbent cotton saturated with Friar's balsam. After ten days the bandages were removed and fresh ones put on in the same manner. For a wash we used carbolic acid. It turned out well, but the big toe, or the bone the big toe grows on, was a long time healing. Two large toes and three fingers were amputated the same month: Tilton "head surgeon," and Bodfish and myself assistants.

March [illegible].—Both feet, or the best part of both feet, were amputated from a man belonging to the *Narwhal*. These feet were taken off well back, the same way as with the other amputations, with the difference that after the foot was cut to the bone, a piece of canvas was put on and the flesh hauled back and the bones then cut off. In this way a flap was formed, and the whole business turned out very well indeed.

December [illegible].—Six fingers and three toes were amputated from a man belonging to the *Thrasher*. Captain Tilton was the head surgeon, while Bodfish and myself were the assistants.

December [illegible].—Amputated a finger from the right hand of Mr. Tilton, the second officer of the *Alexander*.

February 5, 1896.—Amputated a finger from a man belonging to the *Jeannette*.

February 12, 1896.—Amputated part of one foot from a man belonging to the *Beluga*. From the time this man was put under the influence of chloroform until he came to, only thirty minutes intervened. Iodoform was the only antiseptic I used in all my surgery. After such operations as these I used cocaine or morphine (whichever I happened to have) to deaden the pain, using from half to a full grain, as was necessary. My next big contract was taking off the right arm of Mr. West, the third officer of the *Navarch*, on June 20, 1896. The arm was amputated a few inches below the shoulder, cleaning off all the burnt flesh. In putting a ligature on the large artery, gut was used. The small veins were touched with caustic. After bandaging the arm, a compress was kept on, in case of accident, until the ligature was removed. On the 28th of June I had to make a second operation, this time laying open the whole shoulder, and taking the bone off to within an inch of the joint. Disarticulation, as I understand it, means unjointing. Well, I did not do that, but left, I should say, one inch clear of the joint.

The other case of amputation of the arm was in the case of the native boy you saw. Outside of a few fingers and toes, these are all the amputations I know of on white men.

From December 28, 1895, all surgical work was done by me, with Captains Bodfish, Cook, and McKenna assisting. Chloroform was used in every case, with no bad results.

All the subjects we worked on have turned out well, and some of them better than the case you saw. I have not studied medicine nor done any dissecting, nor had I ever seen anything of the kind done, until I was compelled to do it while at Herschel Island.

Yours, sincerely, GEORGE B. LEAVITT.

Snow blindness is the most troublesome and frequent acute affection of the long Arctic day. The first cases were met with about the 1st of May, and occurred as often on the moist, hazy days as in the bright, clear weather. The onset is sudden and intensely painful. Photophobia and ecchymosis are always present in a marked degree. The treatment consists of rest, smoked glasses of different degrees, and a mixture composed of cocaine, grs. viii, and boracic acid (powdered) grs. x, and water, ℥i. Use 4 or 5 drops in the eye every two or three hours. Most of the cases treated were natives occupied in hauling deer meat from the interior or whaling on the ice floe.

Rheumatism, I believe, is rare, the most pronounced case coming under my observation being that of a native called "McGinty." He had been confined to his bed with the chronic articular variety, for two and a half years. Little remained of him save a skeleton of large and distorted joints covered with skin, reminding one of an Aleutian mummy.

Influenza attacks the natives soon after the snow disappears and again just before the cold and frosts of winter. Not only does this occur at Point Barrow during these months, but it is so throughout the whole coast of Alaska from Attu to the Mackenzie River. Like the "grip," unless complications arise it runs a short and mild course. At Cape Prince of Wales, however, I understood from Mr. Lopp that the attacks were quite fatal, 19 men having died this spring. For the

cough, rinitis, and headache, so troublesome in this affection. I have found the following prescription an excellent one, and carry it on board in large quantities: Ammo. mur., ʒi; codeine, grs. iii; spts. chloroform, ʒiii; mistura glycyrrh comp., ad. ʒvi. A tablespoonful three times a day.

Scurvy seems to confine its attacks, so far as my observations go, to white people entirely. I quote from a recent authority, who says: "It is a constitutional malady, due to the consumption of improper diet, and especially to the employment of a diet characterized by the absence of vegetables;" and again, "absence of variety of diet, bad water, poorly ventilated quarters, and insufficient exercise favor the development of this disease," all of which is true enough when speaking of the highly developed nervous organization of the white race; but for the phlegmatic, indifferent, nerveless Eskimo these theories do not hold good. Their diet is not a varied one, and vegetables are comparatively unknown to them. Their houses have scarcely any ventilation, winter keeps the majority close indoors without exercise, and the water in summer is often quite bad. Among them and the natives of the Aleutian Islands I have met with less than a dozen cases approaching this disease. These were in children from one to six years of age, and there was some doubt about the diagnosis being correct. Neither do these people have any opportunity of using sodium or potassium salts, the absence of which is given as one of the causes of the malady. The consumption of quantities of uncooked food, oils, fats, and their poorly developed nervous organization are certainly important factors in producing immunity from scurvy among the Eskimo.

Syphilis, except in the sequelæ, was not seen among the wrecked people. There was one case of neglected specific iritis, which had passed through the acute stage, resulting in the loss of vision and adherent iris. The patient did not improve under treatment. Among the Eskimo this disease, in the primary stage, is not met with as often as the profession and laity are led to believe. My experience on this coast of Alaska, from Point Barrow to Attu, dates from 1885, and I must confess that I never yet have seen, in a native of either sex, the initial lesion of this disease. While at Unalaska for nearly five years, I visited once and sometimes twice a year, professionally, every village from Attu to St. Michael. The only cases of this nature were two (neither of them natives), one of the soft and one of the hard variety, the latter being on the lower lip of a Portuguese on a passing whaler. Those large, deep, destructive, and foul-smelling ulcers so frequently seen in the villages on the coast of the Aleutian Islands may be the result of hereditary syphilis; yet the life, habits, quarters, and food of the people in these sections of Alaska are productive of the very worst forms of the scrofulitic lesions.

The treatment consists in keeping the ulcers clean, the application of basilicin ointment to the ulcers, and the internal use of iodide of

potassium. Very few cases resist this treatment if conscientiously carried out, but the good results of summer are only temporary, and often during the cold and inactive winter the glandular and cellular tissues again break down, only to run the same destructive course.

Sunburn is a troublesome affection of summer only, attacking usually those on the "flaw" engaged in whaling. The first calm, bright, warm day, with the glare and reflection of the sun on the ice, the face and lips are scorched. The following day may be one of dampness and fog, which detaches the burnt epidermis and leaves the true skin exposed. This, again, before twenty-four hours, may receive the bites of a cold, icy wind, which cracks deeply this tender surface of the face and lips, until they have the appearance of having been slashed with a knife. The dark skins of the Eskimo resist the attacks of the sun; yet they, too, show considerable peeling.

Suicides are not confined to warmer climates, for we had three cases in our midst to record. The first was ——— Kelly, one of the men of the *Belvedere*. He had been suffering from an incurable malady, which, with the gloomy prospects before him, had so worked upon his mind, that in a fit of despondency he jumped into the stern hole of his vessel and was drowned. The second was "McGinty," the Eskimo mentioned above. Afflicted with chronic articular rheumatism for nearly three years, he had often begged his friends and relatives to kill him or furnish him with the means to accomplish the end himself. After months of waiting his opportunity came. His little brothers were playing with a knife near him and left it lying within his reach. Anchylosis of his elbows, wrists, and fingers prevented his using the knife upon any other part but the supra-clavicular space. Here he forced it downward, and, severing the subclavian artery, soon expired. The third case of suicide is related by Mr. C. D. Brower, and was one of the ill-fated crew of the *Navarch*. Thirty of these men, after abandoning their ship, had attempted to reach the shore, and all but fifteen had died from exhaustion and starvation before they were finally rescued. The one in question wrote a note to his sister, and then gradually fell back to the rear, where he soon after shot himself.

The Eskimo has no marriage ceremony. The children's future in this respect is arranged at an early age by the parents, and at the age of 14 or 15 the girl joins her husband, usually at his home. If children are born, this relation is faithfully adhered to until the end; but if the union is childless the man seeks another wife. If there is no betrothal, the mother of the young man seeks a bride for him, and, when found, takes her home, where for a time the prospective bride assumes the part of a servant, under the direction of her future parents-in-law. If the young man is pleased with the domestic capabilities of the girl, the compact is sealed, and with the dogs and sled the couple set out on a wedding trip into the interior to engage in the annual fishing and hunting.

Sometimes, if the wife is sulky and disobedient, the husband administers to her a sound thrashing, which often, instead of improving matters, causes her to run away, never to return.

This seldom occurs, however, for the woman is too valuable a part of the Eskimo's household to receive any other than the best of treatment. She has a voice in all the home councils, and no trading or disposition of goods takes place without her wishes having been consulted.

Polygamy is not common, though if a man is influential and well to do he may take an extra wife, who is subject to the whims and control of his first choice, which latter always remains the ruling queen of the establishment and the mother of his children. The Eskimo is quite generous in his domestic relations. For instance, if his brother's wife dies, he willingly consents to a division of his own household, and presents his brother with one of his wives. Again, if a man wishes to go the interior to hunt and fish, and his own wife is not strong enough to endure the hardships and give him all the help required, he changes wives with a friend, and all goes well during the temporary separation.

The burial of the dead among these northern tribes differs very much from that of the natives of southeastern Alaska, where cremation was once universally practiced. There was one exception, however—that of the medicine man. He being possessed of a power and spirit which they wished to preserve, his body was hidden in the cliffs. Wherever civilized teachings and influences have been introduced, the dead are placed beneath the surface, and though the ceremony of disposing of the remains of the Eskimo may differ, there is one thought which seems to be uppermost in their minds, and that is to place the body where it may not be seen and is protected from their dogs and the wild animals.

At St. Lawrence, King, and the Diomede Islands the dead are hidden among the rocks and cliffs, wrapped in their deerskins, and all their belongings, such as beads, finger rings, bracelets, and tobacco, are strewn about the body.

The Chuckche deermen of northeastern Siberia place the corpse and all its belongings on the sled, and after slaughtering the dead man's best deer, the horns are added to the outfit and hauled several miles from the village. Here the horns are placed at one end of an oblong formation of rocks surrounding the body, which lies on the top of the ground. Several of these oblongs are also seen near the base of the granite cliffs about a mile from the present village on St. Lawrence Island.

On Sledge Island, which is a short distance from the mainland of Alaska, is found the nearest approach to a coffin. The bodies are hidden in boxes made of poles and logs of driftwood, and slightly elevated. Several masks of the medicine men can be found around the graves.

Along the beach of the coast of the Bering Sea and the Arctic

NATIVE VILLAGE ON SLEDGE ISLAND

Ocean one sees poles and logs of driftwood set up on end in conical piles. Each of these piles surrounds an Eskimo body. These monuments are sacred, and will not be disturbed or used for fuel unless the native, from association with white people, has lost his fear of the consequences.

The most interesting graveyard in Alaska is at Point Hope. It is situated about a mile from the village, on slightly elevated ridges of sand and gravel covering the undulations of an extinct glacier. Most of the bodies are raised four to six feet from the ground and supported with structures made preferably of the jaws and ribs of the whale, while others are constructed of driftwood. Should a death occur in winter, when the snow lies on the ground hard and deep, the bodies are laid out on the surface until the summer, when the snow disappears and enables the relatives to find material to build one of their scaffolds, on which the body is then placed. The most reasonable explanation for this method of disposing of the dead and that of leaving them on the surface is that the ground is always frozen hard even in summer and the thaw never extends deeper than 12 to 18 inches. These elevated graves are in all stages of ruin and decay, and scattered about beneath them, almost entirely hidden by the beautiful forget-me-nots, are the bones and skulls of the dead of many past generations.

At Point Barrow the bodies are now generally inclosed in boxes made of lumber furnished by whites, and, owing to the influence of the missionaries a few are buried.

Some of the most serious cases treated at Point Barrow from March 29 to August 1, 1898, are: Abscess, pelvic, 1; abscess, axillary, 1; anaemia, 3; bronchitis, 7; corneitis, 5; constipation, 15; dysentery, 2; heart disease, 2; influenza, 26; iritis, specific, 1; laryngitis, chronic, 1; nasal polypus, 1; neuralgia, 6; pneumonia, 3; rheumatism, 4; snow blindness, 13; suicide, 2; syphilis, hereditary, 9; scurvy, 4; diseased teeth extracted, 11; tonsilitis, 4; wounds, gunshot, 1; wounds, punctured, 6; wounds, incised, 7.

It is not alone in city offices hung with gilded pictures, or waiting rooms filled with rich and appreciative patients, that the pleasure and comfort of the practice of medicine is found. There is no portion of the habitable world, from the most learned and scientific of the Old to the simple and primitive of the New, but that recognizes and receives with gratitude the services of a true and conscientious physician, and though the good-natured and docile Eskimo may not be able to express in words his pleasure for what you have done, he possesses facial expression and gestures which are unmistakable, and tell you without doubt that for your services, if he possessed it, he would lay at your feet the whole world, and therein lies your compensation.

Respectfully, yours,

S. J. CALL, *Surgeon, R. C. S.*

First Lieut. D. H. JARVIS, R. C. S.,
Commanding Overland Relief Expedition.

MOVEMENTS OF THE BEAR SINCE JUNE 23, 1898.

UNITED STATES REVENUE CUTTER BEAR.
Seattle, Wash., September 15, 1898.

SIR: I have the honor to report the arrival of the U. S. revenue steamer *Bear* at Seattle, Wash., at 11 a. m., September 13, 1898, from Point Barrow, Alaska, with the members of the overland relief expedition and the officers and seamen from the wrecked whalers *Orca*, *Jessie H. Freeman*, *Rosario*, *Navarch*, and the schooner *L. A. Kenyon*, of Seattle, wrecked at Point Hope, Alaska, August 19, 1898, and I respectfully submit the following report of the movements of the *Bear* since my letter of June 23, dated at St. Michael:

Such articles as Lieutenant Jarvis had mentioned as being indispensable were, so far as obtainable, procured at St. Michael, and Rev. Father Barnum, of the Catholic mission, came on board at that place for passage as my guest. Having information that the mail was to be delayed at Unalaska for an indefinite time, I concluded to start for the north, and left St. Michael at 4.30 p. m., July 7.

On the 8th a short stop was made at Kings Island, where the natives were found in good condition. From Kings Island proceeded to Port Clarence, which was reached at 5.50 a. m., July 9. Four vessels of the whaling fleet and three for Kotzebue Sound that were found at anchor there were boarded and examined.

On the 10th, while on the way to the watering place, a stop was made at the reindeer station. Mr. Brevig had given out so much of his provisions on orders of the overland expedition that he was now short himself, so I gave him 500 pounds of flour and 5 pounds of tea, credit for which will be given in his bill against the overland expedition. From the reindeer station proceeded to the watering place to the southward of Cape Riley, reaching there 11.30 a. m. The boiler was blown down and watering ship commenced. Boiler was refilled and the fresh-water tanks were full a. m. of the 12th. Steam was raised and at 2.05 p. m. got under way for Point Spencer, anchoring there at 4.25 p. m.

During our absence from the watering place the steamer *Thrasher*, from San Francisco, with supplies for the whalers in the north, and the schooner *Bonanza*, with supplies for H. Liebes's trading stations in the north, arrived. Mr. Koltchoff, who was landed with the overland expedition at Cape Vancouver, came up on the *Thrasher* and

HAULING SUPPLIES FROM THE BEAR TO THE WHALE SHIPS

came on board the *Bear* to report. I had heard incidentally while at St. Michael that Lieutenant Berthoff, in obedience to orders from Lieutenant Jarvis, had discharged Koltchoff at St. Michael on January 1. Instead of reporting at the reindeer station at Unalaklik as ordered, he had gone overland with Mr. Tilton, who came down from the wrecked whalers. Koltchoff said Lieutenant Berthoff had given him a paper, the contents of which he claimed to be ignorant, which he had given to Lieutenant-Colonel Randall, United States Army, commanding at Fort St. Michael, and that Lieutenant-Colonel Randall, with Mr. Shepard, agent of the North American Trading and Transportation Company at Fort Get There, had sent him to assist Mr. Tilton to carry out the mail. I told Mr. Koltchoff that he had better go to the Port Clarence reindeer station and await the arrival of Dr. Jackson, who was daily expected.

On the *Bonanza* were two natives from Point Hope who had accompanied Mr. Tilton from Point Hope to San Francisco. H. Liebes & Co. had provided for them after their arrival at San Francisco and sent them back on the schooner *Bonanza*. As the ice might prevent the *Bonanza* from getting to Point Hope for some time, transportation was given them on the *Bear*.

At 11.30 p. m. July 12 got under way and stood for Cape Prince of Wales. Anchor was let go off the cape at 5.15 a. m. July 13, when Rev. Mr. Lopp and natives came on board. Delivered to them such articles as we had been able to procure at St. Michael. An account of all articles purchased or delivered from the ship's stores, also of what is now due to people in the north on account of services rendered to the overland expedition, is being prepared by Lieutenant Jarvis, who can not finish it until he has conferred with H. Liebes & Co., at San Francisco, in regard to prices, as their agent at Point Barrow had instructions not to set any prices. That would be done at San Francisco when his account of expenditures to the shipwrecked men reached the office. H. Liebes & Co.'s agent at Point Hope charged some prices that appeared too high. Lieutenant Jarvis has a copy of his bill and will endeavor to have Liebes & Co. make some reduction.

At 9.10 a. m. July 13 got under way and stood into Bering Straits. At noon stood to the eastward for Kotzebue Sound, which place was reached and an anchorage made off Cape Blossom at 2.30 p. m. Three barks at the anchorage were boarded and examined. They were loaded with prospectors and their supplies, bound for the rivers flowing into Hotham Inlet. A native presented an order from Lieutenant Jarvis, which was filled. I could not learn that there were any more natives on board who had orders, but heard that some on shore had them. As it was about 10 miles to the village, I could not wait for them to come off, so at 6.20 p. m. got under way and stood for Point Hope. At 6.20 p. m. July 15 anchored off Nelson's trading station, between Cape Thompson and Point Hope, where Lieutenant Berthoff

reported on board. He had made Nelson's house his headquarters since his arrival at the station. The two natives brought from Port Clarence were landed here. Lieutenant Bertholf had carried out his instructions (a copy of which is appended) in a manner which met my entire approbation. In addition to caring for the strayed deer he had destroyed the stills used by the natives in manufacturing liquor, and his presence prevented any of the white residents from entering into the manufacture of it.

At 9.05 a. m. July 16 got under way and steamed for Point Hope, anchoring off the village there at 11.05 a. m. Communicated with the Rev. Dr. Driggs, in charge of the Episcopal Mission. No whales having been taken in the spring whaling, the natives would be very short of food during the coming winter, and nearly all of them had gone down the coast to endeavor to catch a supply of salmon for winter use. At 4.25 p. m. steamed to the Liebes' station and anchored for the night.

At 9.45 a. m. July 17 steamed to Nelson's station and took on board a native, who asked to be taken to Point Barrow, and at 1.35 steamed to the northward around Point Hope. At 11.16 p. m. passed Cape Lisburne and sighted the first drift ice seen in the Arctic. Laid course to make the land between Point Lay and Cape Beaufort, in order to meet any boats Lieutenant Jarvis might have sent from Point Barrow.

At 2 p. m. July 18 made the land to the southward of Point Lay and steamed along in sight of the beach, keeping a good lookout for signals or boat. At 4.20 p. m. anchored off a native village to southward of Point Lay, where natives came on board and reported that no white men had passed by.

At 2.15 a. m. July 19 under way to the northward, and at 6 a. m. sighted a native boat coming off through the ice. It came alongside at 6.30, and contained a party from Point Barrow, sent by Lieutenant Jarvis, in charge of Capt. A. C. Sherman, of the wrecked steamer *Orca*. The party was taken on board, with their boat, and the vessel proceeded to within 5 miles of Icy Cape, where we came to anchor at 2.35 p. m. on account of heavy ice ahead.

Lieutenant Jarvis informed me that the schooner *Rosario* had been crushed by the ice on July 2; crew all saved. His last information from the vessels to the eastward of Point Barrow was on June 19, and at that time they were all right. The *Belvedere* was all right on June 10, but short of provisions, and Lieutenant Jarvis hoped I could get some to her, where she lay, at the Sea Horse Islands, some 80 miles from Icy Cape. The men at Point Barrow were all right, with provisions enough to last until August 15. If the *Bear* did not arrive by August 1, he thought it best to start some of them down the coast to meet the vessel.

At 4.35 a. m. July 20 made an attempt to get through the ice to

the northwestward. Worked until 2.20 p. m., when the attempt was given up, and stood to the southward until 10 p. m. before getting clear of the ice; 11.10 p. m. anchored to the southward of Point Lay.

On the 21st fresh northerly winds and drift outside kept us at anchor throughout the day.

At 8.30 a. m. July 22 worked through the ice to Icy Cape, anchoring there at 12.55 p. m. Ice still heavy to the northward and westward.

On July 23, there appearing to be little or no change in the ice, concluded to send Lieutenant Hamlet in the native boat to carry provisions to the *Belvedere* and then proceed to Point Barrow and communicate with Lieutenant Jarvis. At 9.55 a. m. Lieutenant Hamlet started with 400 pounds of flour, 96 pounds of corned beef, and 85 pounds of beans for the *Belvedere*, and some small stores for Lieutenant Jarvis.

Remained at anchor off Icy Cape until July 26, the ice frequently compelling us to shift anchorage to keep clear. At 4.25 a. m. July 26, the ice appearing to have opened, stood around Blossom Shoals, and at noon laid course for Point Belcher; 6.20 p. m., a dense fog setting in and the water shoaling, came to anchor; 11 p. m., the fog lifting, found we were off Wainwright Inlet. Got under way and stood along the coast. Snowing at intervals.

At 2.55 a. m. July 27, off Point Belcher, went behind the ground ice and anchored to await the drifting by of the floe ice; 6.40 p. m., the ice looking more favorable, stood for Point Barrow outside the ground ice. We passed through fields of heavy ice until 11 p. m., and then found comparatively open water. Saw the *Belvedere* in Pearl Bay, but the ice would not allow us to approach within 10 miles of her, and therefore did not stop.

At 5 a. m. July 28 sighted the relief station at Point Barrow. Heavy ground ice, with open water inside, extended from Point Sheldon to Point Barrow. There being no opening through it, at 8 a. m. made fast on the outside, at a point a mile to the southward of the station, the *Bear* being the first vessel to arrive this season. Lieutenant Jarvis and a large party came across the ice to the vessel. As he had issued rations to the wrecked men until the 30th of July, I directed most of them to remain where they were, ashore, until the rations were consumed. Twenty-six, however, were taken on board immediately.

On the 29th the steam whaler *Jeanette* arrived and made fast to the ice to the southward of us. The steamers *Fearless* and *Newport* appeared to the eastward of Point Barrow, but could not get around the point on account of the ice. Received news from the *Newport* that she was leaking badly and needed oakum, spikes, and nails to make repairs. These articles were furnished immediately. Nothing was heard of the *Jeanette*, still to the eastward. If it had been known she was out of danger, the wrecked men could have been taken on

board and the *Bear* could have started on the return trip at once. As it was, I thought it would not be prudent to leave until I was assured of her safety. On July 30, 66 more of the shipwrecked men came on board, increasing the number to 97. In the afternoon of the 30th there were large pieces of ice drifting along with the current. Fearing they might strike the vessel and part the mooring lines, got under way and steamed into an indentation in the ground ice where the steamer *Jeannette* was made fast. A suitable mooring place was found and the vessel made fast to the ground ice. On the 30th Lieutenant Hamlet arrived. He had delivered the supplies to the *Belvidere*, and reported that as soon as a southwest wind came to clear away the ice she would start for Port Clarence for coal. The vessel was in good condition.

On August 1st and 2d loose ice would drift in and pack around the vessel where she lay in the indentation in the ice. As there was only a trifling pressure, no danger was anticipated. At 2 p. m. August 3 came a sudden pressure of the ice, the four forward fasts carried away, and the vessel forced astern about five feet. The pressure then coming against the starboard side forced the port side against the ground ice. A point of ice under water abreast the engine room, the weakest place in the vessel, as there are no athwartship timbers there, forced the port side in sufficiently to buckle the engine-room floor plates. Men were immediately sent with ice chisels and the ice cut away. As soon as the ice was removed the pressure at that point ceased and the floor plates dropped back into place. The after section of the rudder was sprung about an eighth of an inch. The ice was cut from around the rudder and the pressure on that removed. So far as can be seen (while the vessel is in the water) no material damage was done by the nip. A vessel less strongly constructed would have been crushed at once.

When the weather cleared up it could be seen that the pack had swung in upon the ground ice. Being in the indentation was the only thing that saved the *Jeannette* and the *Bear*. Knowing that if a southwest gale sprung up the pack would again move and nothing could save the vessel, I had a large quantity of provisions brought on deck and placed so they could readily be passed to the ground ice in the event of another nip. The ship's papers and books were also packed ready for removal. From the 3d until the 14th of August we remained in suspense. On the morning of the 3d the *Jeannette* came in sight to the eastward of Point Barrow. During the forenoon the *Jeannette*, *Fearless*, and *Newport* got around Point Barrow and came down inside the ground ice to abreast where we were. These vessels were all short of provisions; the *Newport* and *Fearless* short of coal. They were supplied with such quantities as could be spared from the *Bear*. Bills for the same have already been sent to their owners.

PRYING OFF ICE AFTER A BLAST, AUGUST 7TH, POINT BARROW.

Several days were spent in dragging the articles over the very rough ice on sleds.

On the 5th, 391 reindeer were transferred to Dr. Marsh, Government school-teacher, who also represented the Presbyterian mission. As he was without provisions to maintain the herders, and the camp equipage was worn out, no provision having been made for their support by the mission, the following articles were given them from the ship's stores: 1,000 primers, 100 cartridges (.45–.70), 12½ pounds powder, 2 brooms, 50 pounds soap, 2 axes, 1 shovel, 1 box copper rivets, 1 tent, 1 camp stove, 200 pounds pork, 36 pounds coffee, 176 pounds beans, and 140 pounds sugar.

On the 7th an attempt was made to blast a channel through the ground ice to the clear water inside. After expending 150 pounds of powder (100 pounds borrowed from the *Newport*) the attempt was given up. The effect upon the ice, which averaged 30 feet in thickness, was so slight that sufficient powder could not be procured to blast out a channel. While the blasting was going on, Captain McKenna, of the *Fearless*, got his vessel under way and endeavored to help by ramming the ice. His efforts were, however, useless.

On the 14th the ice offshore commenced to move rapidly to the northward. On the morning of the 15th, commenced using small blasts of powder to remove spur pieces of ice near the ship. During the morning a lead broke through the ground ice to the southward of us. In the afternoon the ice offshore commenced to disappear, and the pressure on the vessel diminished considerably, but there was still several yards of ice heavily packed between us and clear water. A strong northeast wind coming up, all sail was made and thrown aback to help press the vessel off. At 6.15 p. m. the *Fearless* and *Newport* got under way, steamed out through the lead, and came down abreast of us with the intention of pulling out the pieces of ice until we were free. Just as they were commencing a dense fog came up, and large quantities of heavy drift ice commenced to come in, obliging them to stop and seek shelter from the ice.

The morning of the 16th the fog lifted, showing clear water about 250 yards distant, and blasting was again commenced to clear away the ice. Lieutenant Jarvis and Dr. Call came on board with the part of the *Bear*'s crew that had been at the station. At 7.25 the *Jeannette* was clear of the ice and steamed to the southward. I was surprised to see her leave without offering to assist us, but I afterwards learned from Captain Newth that he was ill in his bunk at the time. When informed that the *Jeannette* was clear, he had asked the mate about the *Bear*, and had been told by him that she would be clear in about fifteen minutes. Under these circumstances he told the mate to take the *Jeannette* to a safe place.

The *Newport* was at anchor at Wallapi, 5 miles distant, and when

at 10 o'clock Captain Leavitt saw that the *Bear* had not moved, he got his vessel under way to come to our assistance. He arrived in time to make fast to one piece of ice, and when that was out of the way the *Bear* was free, and steamed to an anchorage off Refuge Inlet, which she reached at 1.55 p. m. Here the *Fearless* came alongside and was given 15 tons of coal. Captain Newth of the *Jeanie*, being too ill to continue with his vessel, was taken on board for passage home. Mr. C. D. Brower, Liebes's agent at Point Barrow, desired to accompany Lieutenant Jarvis to San Francisco to satisfactorily adjust the claims on account of the shipwrecked men, and was also given passage. The deer herders who accompanied Mr. Lopp were also given passage to their homes.

The *Fearless* having been north several years, some of her crew desired to exchange with the shipwrecked men who were willing to remain. This they were allowed to do. At 9.25 a. m. August 17, got under way and stood toward the Sea Horse Islands. Fog set in and much drift ice was met, and at 4 p. m. stood to southward to make the land. At 7 the fog lifted, and at 7.06 sighted the whaling fleet at anchor to the eastward of Sea Horse Islands. At 8.55 anchored near the fleet, consisting of the *Alexander*, *Belvedere*, *Bowhead*, *Karluk*, *Wm. Baylis*, *Fearless*, and *Newport*. The men of the crew of the *Belvedere* brought by us from Point Barrow were put on board their vessel, and six of the shipwrecked men left to join whaling vessels. The *Bear* remained to give the people on the ships an opportunity to prepare mail.

On the morning of the 18th two sick seamen were received from the *Belvedere* for transportation to a hospital. At 12.10 p. m. got underway and stood to the westward, and at 12.40 anchored near the schooner *Bonanza*, supply vessel for Mr. C. D. Brower's station. Finding there was an ample supply of potatoes on the schooner, and the supply on the *Bear* being exhausted, I purchased twenty-five boxes for the crew and the shipwrecked men. They will be included in H. Liebes & Co.'s bill. At 1.55 got under way and stood for Blossom Shoals. At 7 a. m., being around the shoals, laid course for Point Hope, which was reached at 8.30 a. m. on the 20th.

Communicated with the shore and learned that on the previous day the schooner *Louise A. Kenney*, of Seattle, was in a dangerous position in the breakers near Cooper's station, 8 miles east of Point Hope. Started immediately for the place, and upon arriving there found the vessel broadside on the beach and in a position where the *Bear* could be of no assistance on account of the shoal water. The master of the vessel came on board and said the vessel was full of water and the cargo ruined. He requested passage for himself and crew to Seattle, and boats were lowered and sent ashore for them and their effects. A nasty surf was running, and it was with difficulty they were taken off. Two natives came on board with a communication from Dr.

THE BEAR GETTING FREE FROM THE ICE PACK, AUGUST 16TH, 1898

Sheldon Jackson, addressed to whoever was in charge of the reindeer near Point Hope, directing that the deer be turned over to the two natives, who were Government herders. Got under way and steamed to Nelson's whaling station, where Lieutenant Bertholf went ashore and directed that the deer be delivered according to Dr. Jackson's request. The three herders who had been in charge of the deer were taken on board for transportation to their homes.

The master of the wrecked schooner informed me that the year's supplies for the three missionaries at Cape Blossom, Kotzebue Sound, were lost with the rest of the cargo of the vessel. As they could not live through the winter without supplies, I deemed it my duty to call at Cape Blossom to inform them of their loss, and to offer them passage to St. Michael or elsewhere, and accordingly the vessel was headed for Cape Blossom, which place was reached at 12.20 p. m. on the 21st. Lieutenant Bertholf, knowing where the mission was located, was sent ashore to proffer the aid. The barks *Hayden Brown* and *Northern Light* were at anchor off the Cape, and Captain Whitesides, of the *Northern Light*, informed me that he was waiting for passengers and had nearly the full number engaged.

The Kotzebue Sound gold rush was a failure. He had been in the sound a couple of months and had not heard of any gold strikes. He estimated that at least three-fourths of the 2,000 people who were there, many of them with two years' provisions, would return. There were five barks at the southern end of Kotzebue Sound taking in ballast preparatory to taking passengers from Cape Blossom. In that case there will be no lack of transportation for those who desire to return.

The schooner *Etna*, of San Francisco, having lost her anchor, was given a 500-pound kedge, the owners at San Francisco to replace it on board the *Bear* upon her arrival. At 11.45 p. m. Lieutenant Bertholf returned on board. The missionaries, having obtained supplies from returning miners, were going to remain at their station during the winter. Some articles needed by Lieutenant Jarvis to pay off natives at Cape Prince of Wales for services in the overland expedition were purchased from Captain Whitesides, of the *Northern Light*.

Lieutenant Bertholf reported that he had met a number of men ashore who claimed to be stranded miners and who wished a passage on the *Bear*. As the vessel was already overcrowded and there were other means of transportation at hand, their request could not be granted.

At 1.20 a. m. on the 23d got under way for Cape Prince of Wales, which was reached at 10 p. m. the same day. Rev. W. T. Lopp came on board to settle accounts of the reindeer portion of the overland expedition. Mr. Lopp said that by the terms of the agreement with Lieutenant Jarvis the Treasury was responsible for the return of the

deer he drove to Point Barrow. If Lieutenant Jarvis had not made this agreement he would not have given up the deer or gone with them. Without the reindeer and the assistance of Mr. Lopp the relief expedition would have gone no farther, so Lieutenant Jarvis was obliged to accept the terms. As but 156 deer had been returned by the Interior Department agent, and there was no prospect of receiving any more from that source, he requested that the deer remaining at Point Barrow and Point Hope be returned to him and Charlie Artisarlook, 138 head, with increase, being due Charlie.

The captain of a whaling steamer that was to leave in a few days for Point Barrow had agreed to carry Mr. Lopp's herders to that place. I accordingly sent directions to Dr. Marsh to turn over the herd to Mr. Lopp's herders, who will start them south as soon as the weather is favorable. Mr. Lopp expects to be reimbursed for the expense of driving the deer back to his mission. The herders at Point Hope were sent orders similar to those sent to Dr. Marsh.

At 6.45 a. m. on the 23d got under way for Port Clarence, which was reached at 1 p. m. Found steamers *Jeanie*, *Newport*, and *Thrasher* and the bark *J. D. Peters* anchored in the bay. Captain Sherman, of the wrecked whaler *Orca*, came on board for passage down; also Anton Roderik, from the *Newport*. At 8.25 got under way for St. Michael. On the way made a call at Kings Island, and at Point Rodney to land Charlie Artisarlook.

St. Michael was reached at 3.45 a. m. on the 25th. The vessels in port were boarded and examined. Lieutenant Jarvis and Lieutenant Bertholf went on shore to arrange the bills owed by the overland expedition to the North American Trading and Transportation Company and the Alaska Commercial Company. Eight of the shipwrecked whalers, having obtained employment ashore, left the vessel. The business ashore being finished, at 11.15 p. m. August 26 got under way for Unalaska, which was reached, after rather a rough passage, at 1.05 p. m. August 31. H. M. S. *Pheasant* was found in port, and on the 2d of September H. M. S. *Amphion* and *Icarus* arrived. The usual courtesies were exchanged with each.

The boiler was blown down and preparations made for coaling and watering ship. At 1.15 p. m., having finished watering and coaling, and all preparations completed, cast off from the wharf and steamed out of the harbor. At 4.55 p. m., being through Unalga Pass, set course for Cape Flattery. Rough weather was experienced the first four days out; after that moderate and foggy. Waddah Island was sighted at 2.55 p. m. September 12, and a stop was made to communicate with the Department by telegraph. Port Townsend was reached at 2 a. m. 13th. A dense fog and thick smoke compelled us to anchor until 6 a. m. Then, the fog partially lifting, got under way for Seattle, which was reached at 11 a. m., September 13, after an absence of

nine months and sixteen days, most of the time spent in a dreary country and very inclement weather.

The officers and crew bore the monotonous isolation with the greatest patience, complaints being almost unheard of. The courage, fortitude, and perseverance shown by the members of the overland expedition is deserving of the highest commendation. Starting over a route seldom traveled before by dog sleds, with a herd of over 400 reindeer to drive and care for, they pushed their way through what at times seemed impassable obstacles, across frozen seas, and over snow-clad mountains, with tireless energy until Point Barrow was reached and the object of the expedition successfully accomplished.

I respectfully recommend that the heroic services of First Lieut. D. H. Jarvis, Second Lieut. E. P. Bertholf, and Surg. S. J. Call should meet with such recognition as the Department sees fit to bestow.

As mentioned in my letter of June 23, 1898, Rev. W. T. Lopp and Charlie Artisarlook, who gave up their herd of reindeer, left their families, and accompanied the expedition to Point Barrow, are deserving of substantial rewards for the sacrifices they made and the hardships they endured.

Respectfully, yours,

F. TUTTLE,
Captain, R. C. S.,
Commanding U. S. Revenue Cutter Bear.

The SECRETARY OF THE TREASURY,
Washington, D. C.

U. S. REVENUE CUTTER BEAR,
Seattle, Wash., September 15, 1898.

SIR: In accordance with verbal orders received from yourself, I have the honor to submit the following summary of medical reports for the time during which I have been in charge of that department, from December 15, 1897, to September 15, 1898, both inclusive:

Whites, male	518
Women and children, white	43
Natives, males	75
Natives, women and children	235
Officers and crew	686
Total number treated	1,557

The prevailing diseases were as follows: Consumption, pneumonia, pleurisy, heart disease, gastritis, tonsilitis, diarrhea, constipation, dyspepsia, neuralgia, muscular rheumatism, tubercular glands and joints, gonorrhea, syphilis, orchitis, synovitis, cystitis, eczema, pedic-

uli, minor injuries to limbs and head, uterine diseases, la grippe, nasal catarrh, conjunctivitis, and scabies.

One death at Unalaska, Mrs. Shaishnakoff, aged 65, cancer of the stomach and liver.

The crew at present are in excellent health, with none on the sick list.

Respectfully, yours,

E. H. WOODRUFF,
Assistant Surgeon, U. S. Revenue Cutter Bear.

Capt. FRANCIS TUTTLE, R. C. S.,
Commanding.

APPENDIX.

U. S. Revenue Steamer Bear,
Cape Vancouver, Alaska, December 16, 1897.

Sir: You are detailed to take charge of the overland party from the *Bear* for the relief of the whalers at Point Barrow. Lieut. E. P. Bertholf, Revenue-Cutter Service, Surg. S. J. Call, and F. Koltchoff will comprise the party from the vessel. Inclosed are instructions from the Department by which you will be guided as far as practicable. They are so full as to cover every point and leave me little to add. The party will be under your sole control, and you will make such disposition of them as may seem most advisable to you, under any and all circumstances.

Whenever it becomes necessary to employ natives and their outfits of dogs and sleds, or procure provisions from them, make a note of the articles and amounts promised for same; if practicable, give the natives a copy to present when the *Bear* is met, and the articles will be delivered.

The Department does not, in its letter, mention the whalers to the eastward of Point Barrow. If you hear from them, use your own judgment as to what can be done for their relief. At this distance and utter lack of knowledge of their circumstances, it is impossible for me to give any directions. I shall leave Unalaska as early as there will be any possible chance to get through the ice. If St. Michael be open I shall call there. If not, Port Clarence and Cape Prince of Wales will be visited in search of news of the expedition. I hope to reach Point Hope early in July. Should any of the whalers be there, will land provisions enough to last them until I return from Point Barrow. If any part of the expedition should be along the shores, I suggest you direct them to make smudges of heavy smoke to attract attention on board the *Bear*, should she be sighted. A good lookout will be kept from the vessel for such signals. In conclusion, any matters that may come up that are not covered by these instructions are left to your own judgment, and whatever you do will meet with the approval of the Department. If opportunity offers, communicate with me at Unalaska, and leave information as to your progress at Port Clarence, Cape Prince of Wales, Kotzebue Sound, and Point

Hope, to be picked up on the arrival of the *Bear* at these places. Also, if possible, send copies of all communications to the Department.

Respectfully, yours,

F. TUTTLE,
Captain, R. C. S., Commanding.

First Lieut. D. H. JARVIS, R. C. S.,
U. S. Revenue Steamer Bear.

OVERLAND RELIEF EXPEDITION,
Kigiluaganmute, Alaska, December 20, 1897.

SIR: Not being able to obtain dogs at this place, as expected, and the teams on yours and Koltchoff's sleds being nearly worn out, I will go on ahead with my sled and Dr. Call's sled and leave you and Koltchoff with Alexis Kalenin to come on as soon as the necessary dogs return. Lose no time in following and come direct to Andreafski, on the Yukon, and from there to St. Michael. I will make what arrangements I can for you at both places, and should you not reach either place before I leave, I will leave all necessary instructions for your guidance. Anything you may need for your journey can be obtained by drawing on the Alaska Commercial Company at both places.

Respectfully, yours,

D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

Second Lieut. E. P. BERTHOLF, R. C. S.

OVERLAND RELIEF EXPEDITION,
Unalakleet, Alaska, January 4, 1898.

SIR: I inclose a list of provisions that I have left with Mr. Erwin Englestadt, of this place, to be filled, and which are to be taken across the portage between Norton Sound and Escholtz Bay to Cape Blossom, Kotzebue Sound. I have engaged Mr. Englestadt and three teams for the trip, and upon your arrival you will take charge of the outfit and proceed with them to Cape Blossom. A little north of the Eskimo rendezvous at that place is Mr. Robert Samms, a Quaker missionary, and you will await there my arrival or such orders as I may send to you. I will leave here in the morning for Cape Prince of Wales.

Very respectfully,

D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

Second Lieut. E. P. BERTHOLF, R. C. S.

List of provisions to be taken to Cape Blossom.

	Pounds.
Flour	500
Butter	20
Rice	50
Beans	80
Sugar	50
Tea	50
Tobacco	40
Bacon	300
Coffee	30
Bread	100

One-half box baking powder.
One-half tin matches.
10 pounds smoking tobacco and cob pipes, for me personally.

OVERLAND RELIEF EXPEDITION.

Point Rodney, Alaska, January 20, 1898.

SIR: You will remain here until the arrangements to move Artisarlook's reindeer herd are completed, and will then proceed by way of Port Clarence with this herd to join me on the north side of Cape Prince of Wales at the point where the reindeer herd of that place is located, which is about 20 miles distant from the cape.

I will leave for that point this morning, and you will follow with as little delay as possible.

Respectfully, yours, D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

Surg. S. J. CALL, R. C. S.

OVERLAND RELIEF EXPEDITION.

Cape Blossom, Alaska, February 15, 1898.

SIR: You will remain at this place until the arrival of the reindeer herd in charge of Mr. W. T. Lopp, and consult with him as to its further progress to Point Barrow. Should the necessity arise you will proceed with the herd, but if not, after determining the route it shall take and seeing it well started, you will proceed to Point Hope for further instructions. I would suggest that the route along or near the coast to Kivalena and then across to the northward of Cape Beaufort would seem advisable, in that the herd at all times will be within reasonable communication with Point Hope. Turn over to Mr. Lopp the provisions at this place and make any other arrangements he may need. I will proceed to Point Barrow along the coast, and will endeavor to have communication opened between that place and Point Hope.

Respectfully, yours, D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

Second Lieut. E. P. BERTHOLF, R. C. S.

OVERLAND RELIEF EXPEDITION,
Point Hope, Alaska, March 5, 1898.

SIR: I will leave here to-day, together with Surgeon Call, for Point Barrow. You will remain here and care for all matters relating to the overland relief expedition in this region, and carry out the plans we have discussed for the return of Mr. W. T. Lopp and the deer herders in the spring, and also for the assistance of the members of the wrecked crews from Point Barrow to this place, and upon their arrival make arrangements for their care.

Give your attention to the illicit distilling of spiritnous liquor by the natives here, and take such action as you may deem necessary for the enforcement of law. A particularly noticeable murder was committed here last fall by two natives, Avnlik and Shukneana. Take such action as you may deem necessary for apprehending the murderers and collecting evidence. I will communicate with you from Point Barrow whenever possible, and keep you informed of affairs there if occasion offers. Upon the arrival of the U. S. revenue cutter *Bear*, report to Capt. F. Tuttle, commanding.

Respectfully, yours,

D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

Second Lieut. E. P. BERTHOLF, R. C. S.

CAPE SMYTHE, ALASKA, *March 29, 1898.*

DEAR SIR: The crews of the *Orca*, *Freeman*, *Belvidera*, and the survivors of the *Navarch* would respectfully entreat you, in company with the doctor of the *Bear*, to visit our quarters and inspect them, to do what lays in your power to obtain a change for us.

We think that some arrangement can be made. We have no facilities for keeping ourselves clean. There is one man at present under the care of Dr. Marsh for scurvy, and another man is confined to his bed with all the symptoms of scurvy. In justice to all we have no complaints to make, but there are evils which we can not avoid, but which you can rectify.

JAMES MCDONALD,
For the Orca.

PHIL. MANN,
For the Freeman.

JOHN KEEFFE,
For the Belvidera.

THOS. G. LORD,
For the Navarch.

POINT BARROW, ALASKA, *June 9, 1898.*

SIR: Herewith we have the honor to submit the result of the post-mortem examination held on the body of Phillip Mann, who died suddenly yesterday evening:

The brain, lungs, stomach, liver, kidneys, intestines, and bladder were normal. The heart was very much enlarged, pale, and non-resistant, with large accumulations of fat around the base, and the walls were twice the normal thickness. The auriculo-ventricular opening and mitral valve were defective and showed many calcareous deposits.

From the above conditions we conclude that the subject died of fatty heart.

Respectfully, yours,

S. J. CALL,
Surgeon, R. C. S.
H. R. MARSH, M. D.,
Assisting.

First Lieut. D. H. JARVIS, R. C. S.,
Commanding Overland Relief Expedition.

Account of the reindeer used on the overland expedition.

Received from Artisarlook	133	
Bought at Point Rodney	5	
Received from Mr. W. T. Lopp et al	292	
Bought at Cape Prince of Wales	9	
Received from Taotuk	2	
Received from Government herd	5	
Received from Golovin Bay herd	2	
		448
Lost and killed en route	66	
Killed for food at Point Barrow	180	
Died at Point Barrow	1	
		247
		201
Fawns born at Point Barrow	254	
Fawns died at Point Barrow	64	
		190
		391
Received at Point Hope	34	
Killed for food	5	
		29
Fawns born at Point Hope	25	
Fawns died at Point Hope	6	
		19
Remaining at Point Hope	48	
		48
Total deer remaining at Point Barrow and Point Hope		439

OVERLAND RELIEF EXPEDITION.

Point Rodney, Alaska, January 20, 1898.

Received from Artisarlook (Charlie), native of this place, 133 rei deer for the use of the overland relief expedition to Point Barrow.

These reindeer are given to the United States Treasury Departme with the understanding that they are to be replaced in the summer 1898, together with the estimated increase in the herd for the comin spring, about 80 fawns, thus making 213 reindeer in all to be replace

Should this not be done the coming season, the increase of the f lowing year will have to be considered in the settlement.

D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.

OVERLAND RELIEF EXPEDITION.

Cape Prince of Wales, Alaska, January [illegible], 1898.

Received from Mr. W. W. Lopp, representing the American M sionary Association, 292 reindeer for the use of the overland reli expedition to Point Barrow, Alaska.

These reindeer are given to the United States Treasury Departme with the understanding that they are to be replaced in the summer 1898, together with the estimated increase in the herd for the comin season, about 140 fawns, thus making 432 reindeer in all to replaced.

Should this not be done the coming season, the increase of the f lowing year will have to be considered in the settlement.

D. H. JARVIS,
First Lieutenant, R. C. S.,
Commanding Overland Relief Expedition.