REPORT

OF THE CRUISE OF

THE U. S. REVENUE-STEAMER CORWIN

IN THE

ARCTIC OCEAN,

BY

CAPTAIN C. L. HOOPER, U. S. R. M.

NOVEMBER 1, 1880.

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REPORT.

U. S. REVENUE-STEAMER "CORWIN,"
San Francisco, November 1, 1880.

SIR: I have the honor to submit the following report of the cruise of the revenue-steamer "Corwin" in Behring Sea and the Arctic Ocean, made in obedience to Department orders, dated May 15, 1880, initials "E. W. C."

We sailed from San Francisco at 3.30 P. M. on May 22, and arrived at Ounalaska on June 3, after a rough passage of twelve days. We found in port at Ounalaska the bark "Henry Buck," discharging coal; the schooner "Isabel," laden with lumber for the Alaska Commercial Company, to be landed at Belkofsky; and the Alaska Commercial Company's steam-brig "Dora."

From Ounalaska the following report was submitted:

U. S. REVENUE-STEAMER "CORWIN,"
Ounalaska, A. T., June 7, 1880.

SIR: I have the honor to report my arrival at this port on the 3d instant, after a passage of twelve days from San Francisco, with stormy, disagreeable weather most of the time. The "Corwin," although deeply loaded and driven hard to make a good passage, proved herself an excellent sea-boat, and in every way staunch and seaworthy. Her engine and connections work well.

We find the season late here; the hills are still covered with snow, and the air is raw and cold. The indications are that the straits will open early this year. The first part of last winter was mild and pleasant as far north as we have any reports, and the latter part stormy, but not unusually cold. The ice did not leave the vicinity of the Seal Islands as early as usual, but this was probably due to the continued heavy northerly winds.

We found the bark "Henry Buck" in port, discharging a cargo of coal, six hundred tons of which is for the Treasury Department. We hauled alongside, and took on board fifty-three and a half tons. The balance of this coal is to be landed for the use of the revenue-vessels which may come to Alaska from time to time. As it is not likely that this amount will be used inside of two or three years, I respectfully recommend that a shed be built over it, not only to protect it from the weather, but to prevent the natives from stealing it, which they certainly will do if left in its present exposed condition. The Alaska Commercial Company have lumber here, and a shed that would answer the purpose could be built at comparatively small cost.

While at this place I have fitted out the crew with clothing of all kinds required for the cruise—rubber boots, underclothing, socks, mittens, blankets, coats, &c. We had some difficulty in getting a crew at San Francisco, from the scarcity of sailors, many of them coming on board with only one suit of clothes, and no money to buy more; they are now, however, comfortably provided. I have also taken on board one cask (90 gallons) of cranberries, an excellent anti-scorbutic, and a quantity of beef, pork, flour, tea, and sugar. I have taken this precaution in view of the possibility of getting caught in the ice and being compelled to winter in the Arctic; or, in case of falling in with the missing whalers, all right, we can furnish them with stores necessary to continue in the Arctic during the whaling season. If these things are not used they will be turned over to the company on our return and no charge made for them.

We leave here to-morrow morning for the Seal Islands, where we will remain one day, and proceed north as fast as the ice will permit. I hope to be at the straits by the 15th instant, and will push into the Arctic at the first opening.

In regard to leaving an officer and two men on Otter island, which is left to my discretion, I have to state that, in my opinion, in view of the unusual amount of work to be done, the interests of the Government will be best served by keeping all the officers and men on board the vessel.

I am, very respectfully, your obedient servant,

C. L. HOOPER,
Captain, U. S. R. M.

Hon. JOHN SHERMAN,
Secretary of the Treasury, Washington, D. C.

DEPARTURE FROM OUNALASKA.

We sailed from Ounalaska on the morning of June 8, and arrived at the Island of St. George on the morning of the 9th, and landed the mail; after which we steamed over to St. Paul's, where we arrived about 10 A. M. Here we were given a quantity of pup-seal skins by Dr. McIntire, agent of the Alaska Commercial Company, for Arctic clothing for the officers and crew, should they be needed. We were also furnished with a fine large surf-boat, in place of our cutter, which would be almost useless as a working-boat for boating coal, &c., especially if the water should be at all rough.

While at St. Paul's we secured our ice-breaker to the bows and prepared to encounter ice, although we hoped not to fall in with any great quantity south of Behring Straits. In this, however, we were mistaken.

FIRST ENCOUNTER WITH THE ICE.

At 8 P. M., of the 9th, we started north again, shaping a course for Cape Romanzoff, and making the best of our way. At daylight, (1 A. M.,) of the 11th, an ice-blink was seen to the eastward, and shortly afterwards what seemed a low, flat shore, covered with snow, but what a rapidly falling temperature of both air and water soon convinced us was ice, and such it proved to be. We followed its edge to the northwest about thirty miles, when it changed its direction to west, and soon after to southwest, with a bright ice-blink in that direction as far as could be seen from the mast-head. Seeing no prospect of getting around the ice to the northward, we stood back to the eastward, hoping to get inshore of it; but a gale from southwest coming on drove the ice close in to the land and packed it so that we were cut off in that direction. The heavy ice pitching and grinding along the edge of the pack rendered it unsafe to attempt to force our way through; so, to save fuel and make ourselves as comfortable as possible, we hauled up for Nunivak Island, and at 2.30 P. M., came to anchor in a good harbor for a southerly wind, on the north side, about twenty miles from the west end, off a native settlement, the inhabitants of which ran away to the hills on our approach.

NUNIVAK ISLAND AND ITS PEOPLE.

The next day, however, we succeeded in capturing them; one man, three women and three children. They were very much alarmed, and evidently thought they were to be killed. A present of some tobacco soon quieted their fears. The man was persuaded to come on board, and seemed very much interested in all he saw. A looking-glass astonished him more than all the rest. At first he was alarmed at it, and then, after overcoming his fears, was greatly amused. He did not know the taste of brandy or whiskey, and when offered some made a wry face and spat it out in evident disgust. He put his hands on the stove and seemed astonished that it burned him, and even tried it a second time, to make sure.

The houses of this settlement, ten in number, were built of mud, and all connected by a subterranean passage. They were arranged in a circle, with a common entrance to the covered way in the centre. From the main passage short ones branched off to each house. These afford the only means of entering the houses.

The gale continuing, we were compelled to remain at this place all day of the 12th. On the morning of the 13th, the gale having abated, we bade adieu to our troglodyte friends and steamed to the northward, until 7 A. M., when we again came to the ice, and followed the edge of the floe to the eastward, and found that it extended to the northeast point of Nunivak island. Being unable to get inshore of the ice, we determined to enter and work our way through it, which we did at 10 A. M. The ice, which at the edge was pretty well broken, thanks to the recent gale, was in thickness from two to eight feet above the water

to twenty-five to thirty feet under water. Soon after entering, a thick fog shut down, making it very difficult to find what few leads or openings there were in the ice. However, we kept at it all day, gaining a little at a time, and about 9 P. M. the fog lifted and gave us a fine view of Cape Romanzoff, bearing N. N. W. about forty miles.

The sun set at twenty minutes before ten, but it was light enough all night to read in the cabin without lamps.

On the 14th we worked our way through the ice all day, picking out clear leads from time to time, and making about twenty miles.

We saw quite a number of natives during the day sealing on the ice. One came alongside and asked for some tobacco. They live at a village called Askeenac, situated between the south branch of the Yukon and Cape Romanzoff.

On account of the shallow waters along this coast the traders avoid it, and in consequence the natives have seen very few white men. I think this is the first steamer they ever saw.

The badarka in use among these people differs somewhat from that used by the Aleutian Islanders; the former is shorter and has more beam, and is made to carry only one person. The natives venture out in all kinds of weather, but always in pairs, never going singly. Like the Aleutian Island badarkas, these are made of skin, seal or sea-lion, drawn over a light frame of wood, with a small round hole in the top, in which the native sits and paddles, and from which he shoots or spears game. When night comes on, he draws his badarka on the ice, crawls down out of sight, and, wrapping himself in his "parkie," or fur shirt, goes to sleep. They carry their rifles and a supply of seal-meat inside the badarka, and their spears and sled lashed on the top; thus equipped, they are prepared for land or water travel. If caught in a gale they lash two badarkas together and ride it out in safety.

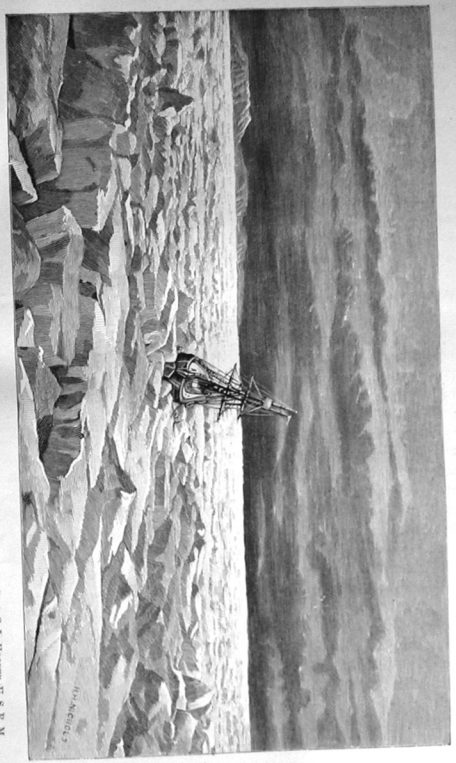
We endeavored to find out the number of people at the Askeenac village, from a native; but the only information he could give us on this subject was, that it contained two dance-houses. I think the settlement contained about thirty houses.

The same native informed us that the "shaman," or medicine-man, could break up the ice if we paid him well for it.

THE "CORWIN" BESET BY THE ICE.

On the morning of the 15th we found ourselves utterly helpless, drifting with the pack to the southward and eastward about two miles per hour. At first this caused no uneasiness, but about 8 A. M. it was noticed that we were among grounded ice. We had only five fathoms

THE CORWIN IN A "NIP" OFF CAPE ROMANZOFF.—June 16, 1880. From a sketch by Capt. C. L. Hooper, U. S. R. M.



of water, and many large pieces were hard and fast on the bottom. Coming in contact with some of these grounded pieces the vessel got some pretty sharp nips, which tried her strength. At one time she was lifted bodily up several feet, and held suspended for some minutes; coming in contact with one, "stern on," the rudder was forced over, the screw steering-gear carried away, and the wheel-chains parted. Happily the rudder-stock, which is of the best Oregon oak, stood the strain, although for a time it seemed as if nothing could save it.

With this experience of the danger to which the rudder was exposed, I saw the necessity of having it rigged so that it could be unshipped at short notice, and set to work accordingly. All hands piled sacks of coal on the forecastle until the vessel was tipped sufficiently to raise her stern and allow us to get at and split out the wood-lock. A piece of oak plank was secured across the rudder-head by means of four long iron bolts, in such a way as to keep the rudder from unshipping by the action of the sea, and to be readily removed should it become necessary. We next cut a piece on the apron the size of the rudder-casing, so that the rudder-head could go forward sufficiently to allow it to unship without removing the apron entirely, then rigged a pair of shears and rove off a purchase, so that the rudder could be taken in, out of the way of danger, in a few minutes.

On the 16th, we drifted helplessly in the pack all day.

On the morning of the 17th, clear water could be seen, from the mast-head, to the northward and westward. At the same time a slight roll of the sea was perceived, indicating that it was quite a large space. After working toward it all day, we succeeded in reaching clear water in the evening, having made about four miles in ten hours.

By the time we reached clear water, the wind, which had been increasing gradually all day, was blowing a moderate gale from north-east, and snow began to fall. Not caring to venture into the ice again in such weather, we hauled inshore and anchored under Cape Romanzoff, where we lay very comfortably all night, with a strong northeast gale and a blinding snow-storm. The wind drawing off shore, kept the drift-ice away from us and the sea smooth.

At 8 A. M. of the 18th, the wind suddenly backed to the northwest, and continued to blow hard, getting up a sea and setting the ice on shore. We got under way and tried to enter the floe, to keep from being driven ashore by it. For a while the floe presented such an unbroken front that it was impossible to enter it. The vessel was in less than three fathoms of water, when a small opening showing itself, we worked

into it, and continued to force our way through until we had six fathoms. We subsequently made fast to a large piece of ground-ice with a light anchor and hawser, and held on until afternoon, when, the wind moderating, we got under way and steamed to the northward through a lead three or four miles wide, with heavy ice on each side of us. During the night we passed many pieces of ice grounded in eight fathoms of water. These pieces of ice were therefore fifty to seventy five feet deep.

On the morning of the 19th, we made the high hills on the east side of Norton sound. At 2 P. M., when within about sixteen miles of St. Michael's, we were again stopped by ice. During the next two days we succeeded in getting within two miles of, and communicating with, the the settlement, where we found Mr. Newman, agent of the Alaska Commercial Company, and Mr. Nelson, signal-service observer. Mr. Ketcham, agent of the Western Fur and Trading Company, was living on the opposite side of the bay, but, owing to the partly-broken state of the ice, we could not reach his place without a good deal of difficulty, so we did not see him. These gentlemen, whom we found very kind and obliging, live quite comfortably. They have about half a dozen log-houses, which they use for dwellings and storehouses, enclosed in a stockade. Some of the more civilized natives are employed as domestics. The buildings and everything in and about them present a neat, cleanly appearance.

An Indian village, about half a mile from the trading-post, consists of about thirty houses or "topecks," and a dance-house, "karzhane." These houses contain two rooms. The first or outer one is built half under ground, and has a frame roof covered with earth. The inner room is entirely under ground, and is reached through a small opening in the back of the front room.

These natives are a lazy, worthless people. They hunt and fish only when forced to do so by hunger. The only sign of civilization among them is their fondness for whiskey and tobacco.

While at St. Michael's I learned that native traders, in the employ o the Alaska Commercial Company, had been back and forth between that place and Kotzebue sound, and even as far as Point Hope, during the past winter, but that nothing had been heard in regard to the missing whalers. The natives travel back and forth all winter for the purpose of trade, and if any vessels had reached the land anywhere south of Icy Cape, they would have known it at Point Hope.

From St. Michael's the following report was submitted:

U. S. REVENUE–MARINE STEAMER "CORWIN,"
Norton Sound, June 20, 1880.

SIR: In obedience to Department instructions to report progress of the cruise from time to time, as opportunity offers, I have the honor to state that we left Ounalaska on the 8th instant, and visited St. George's and St. Paul's Islands on the 9th. After communicating with the special agents on those islands, and taking on board a quantity of pup-seal skins for Arctic clothing for the officers and crew, and putting the ice-breaker in position, we proceeded north the same evening.

On the 11th we encountered ice a few miles north of Nunivak Island, in latitude 60° 45′ north, and longitude 166° 30′ west. A fresh southwest gale was blowing at the time, so we did not enter the ice until the 13th, after which we worked our way along to the northward, taking advantage of every lead or opening which showed itself.

We worked along in this way, sometimes making a few miles a day, and at others drifting helplessly in the pack, until the 17th instant, when a sharp northeast gale broke up and opened the ice, and started it off shore, allowing us to proceed on our way the following day. We arrived here this afternoon and found the sound filled with ice. We are now at anchor sixteen miles from St. Michael's. We will endeavor to get a boat ashore to reach there overland to-morrow, and deliver the mail which we have on board for that place, and continue our way north as fast as the ice will permit.

All hands are in good health and everything satisfactory. The "Corwin" has proved herself a very able vessel; although forced through very heavy ice for nearly a week, and at times lifted bodily up by the pack, she seems none the worse for it.

I hope to be in Kotzebue sound ahead of the whiskey traders, and break up their illicit traffic for the summer. I shall endeavor to get some tidings of the missing whalers from the natives in Kotzebue sound, and also from those on the Asiatic side, either in Plover bay or in the vicinity of East Cape, whichever the ice will permit us to visit first.

While in the ice off Cape Romanzoff, some natives visited the vessel, who report the past winter as the most severe ever known, and some sealers from Norton sound, who have just come on board, confirm the report. They say the ice in the sound only broke up yesterday.

I am, very respectfully, your obedient servant,

C. L. HOOPER,
Captain, U. S. R. M.

Hon. JOHN SHERMAN,
Secretary of the Treasury, Washington, D. C.

We remained several days at St. Michael's, in the vain hope that the ice would disappear. Finding no change for the better, we determined to try to work our way to the west shore and up the Asiatic side. Accordingly, the 23d, at 1 A. M., we got under way. The ice was still heavy, and navigation rendered still more difficult by a dense fog. In passing the outer point of the bay we kept too close in to the shore to avoid heavy ice and took the bottom, but backed off without damage. In passing the mouth of the northern branch of the Yukon, we found a strong northwest set or current, with dark-colored water. The tem-

perature of the water at the surface was 38°, at one fathom it was 36°, and at the bottom it was 32°.

We worked our way along through heavy ice, with thick fog until the 25th, when a change for the better took place. The fog cleared away and the ice became more open, making navigation less difficult and dangerous.

We saw our first walrus, and killed eight during the day, some of them very large. One of them, I think, would weigh two and a half tons.

STARVATION OF NATIVES AT ST. LAURENCE ISLAND.

Our course took us along the north side of St. Laurence Island, and having orders from the Department to investigate a report of the wholesale starvation of the natives, which had reached Captain G. W. Bailey last year, we improved the opportunity of doing so. I enclose a tracing from a Russian chart, showing the location of the villages and estimated number of natives that died at each. We stopped off the first village, marked "A" on tracing, about midnight of June 25, and found the village entirely deserted, with sleds, boat-frames, paddles, spears, bows and arrows, &c., strewn in every direction. We saw no dead bodies; probably missed them in the faint twilight, as we subsequently learned at the west end of the island that they had all died. From the number of houses, boats, &c., we estimated the number of those who had died to be about fifty.

On the 26th, we followed along the north side of the island, examining the villages as we came to them. At Cape Siepermo, (village marked "B,") we found the village deserted, not a sign of life remaining. I counted fifty-four dead bodies; and, as these were nearly all full-grown males, there can be no doubt that many more died. The women and children doubtless died first, and were buried. Most of those seen were just outside the village, with their sleds beside them, evidently having been dragged out by the survivors, as they died, until they, becoming too weak for further exertion, went into their houses and, covering themselves with skins, laid down and died. In many of the houses we saw from one to four dead bodies. One woman was found face down, just outside the door of a house; probably one of the last survivors, she had gone out to find relief from her terrible sufferings, and, overcome by weakness, had fallen and found that relief in death. The body of a boy of perhaps sixteen years of age was found in the village, about half-way down a small hill, he having fallen as he descended and died as he fell. I estimate the number of dead at this place at one hundred and fifty.

About fifteen miles west of Cape Siepermo we found another village, marked "C,") also entirely deserted. Here we saw twelve dead bodies, all full-grown males. As at the other villages, the women and children had probably been buried, for we saw none. The number of dead at this place was estimated at thirty.

At a large settlement on the northwest end of the island, (marked "D,") which we next visited, we found about three hundred alive. They confirm the report of wholesale starvation, and say that the inhabitants of the villages visited by us on the north side of the island, are all dead, not one escaping. At this settlement two hundred had died, and the entire number had barely escaped starvation by eating their dogs and the walrus-hides covering their boats and houses. At a settlement on the southwest end they said a large number had died, but how many they could not tell.

This general starvation occurred a year ago last winter; but few died last winter. The entire number, however, were again reduced to the necessity of eating their boat-covers, dogs, &c.

These people say the weather was cold and stormy for a long time, with great quantities of ice and snow, so that they could not hunt walrus and seal; and, as they make no provision for the future, but depend upon what they can get from day to day, of course failure means starvation.

They live directly in the track of vessels bound into the Arctic Ocean for the purpose of whaling or trading; they subsist upon whales, walrus, and seals, taking, as already stated, only so much as is actually needed for their immediate wants, never providing for the future. They make houses, boats, clothing, &c., of the skins of walrus and seals, and sell the bone and ivory to traders for rum and breech-loading arms. So long as the rum lasts they do nothing but drink and fight. They had a few furs, some of which we tried to buy to make Arctic clothing, but, notwithstanding their terrible experience in the past, they refused to sell for anything but whiskey, breech-loading rifles, or cartridges.

We saw thousands of walrus while passing the island, lying asleep on the ice, but not an Indian in sight; having a few furs and a small amount of whalebone, they were waiting for that curse of Alaska, a whiskey-trader. As near as I can learn, over four hundred natives had died of actual starvation on this island within the last two years, and, unless some prompt action be taken by the Government to prevent them from obtaining whiskey, they will in a few years become extinct.

The natives of this island are the best-looking men that I have seen in Alaska. They are tall, straight, and muscular, but perfect

slaves to rum, and will barter anything they possess to procure it, and remain drunk until it is gone. A more horrible state of affairs can not well be imagined than now exists on this island, and will continue until some active measures are taken by the Government to remedy it. From these natives we learned that several whalers had already passed up, and were probably in the Arctic.

Having completed our work at St. Laurence Island, we steamed to Plover bay, on the Asiatic side, in latitude 64° 21′ 37″ N., longitude 173° 18′ 30″ W., where we arrived on Sunday morning, June 27, and took on board twenty-five tons of coal belonging to the Russian government. We tried to water ship here, but found the small stream which usually furnishes water to ships many feet under the snow. This bay takes its name from Her Britannic Majesty's ship "Plover," which passed the winter of 1848–'9 here while on a cruise in search of Sir John Franklin, under the command of Commander Moore, R. N. The inhabitants, a part of the Tchuktchi tribe, are a drunken, worthless, lazy, dishonest lot. From Plover bay we steamed to the northward part of Cape Tchaplin, or Indian Point, as it is sometimes called. This is the place where the "Shenandoah" burned the whaling fleet in 1865.

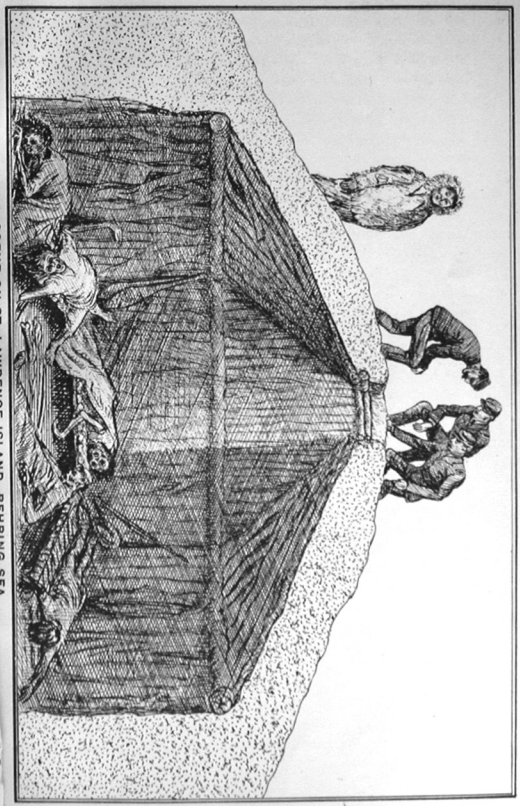
ST. LAURENCE BAY.

On the morning of the 28th, we arrived at St. Laurence bay, and watered ship from a fine, large stream which empties into the bay on the north side. While here, I went on shore and gathered a number of small, bright-colored, and very fragrant flowers. We found the climate here quite different from that of the eastern side of the sea. The snow, except in such places as had drifted heavily, was all gone.

St. Laurence bay was the last place visited by the Arctic exploring steamer "Jeannette," previous to entering the Arctic. She completed coaling here from the schooner "Fanny Hyde." The natives, both here and at Plover bay, said that nothing had been heard of the "Jeannette" or the missing whalers.

DIOMEDE ISLANDS.

After taking in what water we wanted, we got under way and steamed to the northward until noon, when we shaped a course for the Diomede Islands, passing between them and Fairway rock about 5 P. M. The Diomede Islands lie each side of the boundary line between the United States and Russia. Kruzenstern, or Igua-look, the smaller of the two, lies on the American side, and Ratmanoff, or Noo-nar-look, the larger, on the Asiatic side.



SCENE ON ST. LAWRENCE ISLAND, BEHRING SEA.

ENTERING THE ARCTIC.

About 6 P. M., we entered the Arctic Ocean, and a few hours later ran into a thick fog bank, that extended from the north end of the Dionedes to Cape Prince of Wales like a wall. We shaped a course for Kotzebue sound, but coming up to the ice soon after, we kept to the northward along the edge of the floe all night, sounding hourly. On the 29th, we continued to work along, picking our way through the ice in a dense fog, and trying to work toward Kotzebue sound. We hauled the dredge several times during the day, and brought up specimens of crustacea, radiates, and mollusks, which were put into alcohol for the Smithsonian Institution. Finding it impossible to enter Kotzebue sound until a break should occur in the ice, we kept to the northward, with a view to reach Point Hope, and communicate with the natives. On the night of the 29th of June, the sun remained above the horizon all night. At midnight, by observation of his altitude, the latitude was 77° 14′ N.

At 5 A. M., June 30, we made two whalers to the northeast. I boarded the bark "Pacific," Captain Knowles, and delivered the mail for the whalemen, which we brought from San Francisco. Captain Knowles reports the season the most open he has ever known. He entered the Arctic on the day we left San Francisco, May 22, and thinks the straits were open even earlier than that. He also reports having communicated with the natives on Point Hope, but could learn nothing of the missing whalers.

We continued to work north as far as Point Hope, but finding the ice very solid, and having already heard from the natives, we did not attempt to reach the land.

CAPE SERDZE KAMEN.

It being impossible to proceed farther north, we stood across to the Asiatic coast. Arriving off Cape Serdze Kamen, ("The Stone Heart,") where Prof. Nordenskjold wintered in the "Vega" in 1878–'9, about noon July 1, we got good observations for latitude at noon, and verified them at midnight by observation of the sun below the pole. The results showed the land between Cape Serdze Kamen and Koliutchin bay to be laid down about fifteen miles too far to the north on the American hydrographic chart. We could not approach nearer than six miles to the land, on account of the heavy-packed ice lying along the shore. We stopped several hours at this place to do some necessary work on the engine, and, while waiting, hauled the dredge several times bringing up large quantities of crustacea, radiates, and mollusks.

From Cape Serdze we steamed north and west along the ice-pac
At midnight we spoke the bark "Seabreeze," Captain Barnes, and,
the morning of July 2, we spoke barks "Dawn," Captain Hickmo
and "Francis Palmer," Captain Williams; also, the brig "Hidalgo
Captain Williams. These vessels were engaged in shooting walrus
the ice.

POLAR-BEAR HUNTING.

Soon after passing the whalers we discovered two polar bears on t
ice and lowered a boat to shoot them, but did not succeed, as they to
fright and ran off before we could get within rifle-shot. Soon aft
however, we discovered four; three of them took to the water, and t
fourth, a big fellow, laid quietly down and went to sleep. We ga
chase to those in the water and killed them. Returning to look for t
large one we found him fast asleep, but on the approach of the vess
he roused up and took a long look at her, and was about to walk
when a couple of shots were discharged at him, wounding him in t
foot and side. He rolled over a few times then got on his feet and ca
toward the vessel evidently prepared to fight. A ball through t
brain, however, settled him. We took him on board and judge that
weighed 1,600 pounds. The skins were kept, but no one cared to t
the meat. It is said by those who have eaten it to be tough and stron

After our bear hunt we stood to the eastward along the pack. O
the morning of the 3d, we fell in with and boarded the bark "Rainbow
Captain Coughan, just working out of the loose ice on the edge of t
pack, with a large whale alongside. We continued to work to the eas
ward along the pack, and made another attempt to enter Kotzeb
sound, but failed, as the ice was still solid. We saw several vesse
along the ice, some hunting walrus and others evidently awaiting
opportunity to get into the sound to trade. As they were some thir
miles off shore we did not examine them.

Having a few days to spare, as we could get no farther north un
the breaking up of the ice, and the traders, for the same reason, cou
do no business, we decided to improve the time by returning to S
Michael's to fill our bunkers with coal, clean boiler, &c.

LATEST KNOWN OF MISSING WHALERS.

On July 4, we boarded the whaling-bark "Helen Mar," of New Be
ford, Bauldry, master. Captain Bauldry was the last who saw t
missing whalers last fall. He states that they were about forty mil
southeast from Herald Island, with clear water to the northward,

which direction they were steering. He is of the opinion that they will never be heard of again, and all the whalers are of the same opinion.

At midnight on the 5th, we passed out through the straits, near the Asiatic shore, being compelled to cross over to avoid a floe of ice coming through the straits from Norton sound, on the east side.

KING'S ISLAND—A NEW RACE OF CAVE-DWELLERS.

On the 6th, we stopped and communicated with the natives of King's Island, a small, high island about thirty miles S. S. E. from the Diomedes. It is about seven hundred feet high, with almost perpendicular cliffs, and bold water on all sides. It is composed of basalt, has an exceedingly rugged outline, and is entirely barren of tree or shrub. On the summits of the cliffs are a number of stone columns, resembling the remains of some old feudal castle. The most remarkable feature of the island is the village, composed of winter-houses, excavated in the side of the cliffs, and summer-houses, made of walrus-skins, stretched on poles, secured to the rocks outside. This village, which contains about forty houses, is built on a part of the cliff which rises from the sea at an angle of about forty-five degrees. Some of the houses are two hundred feet above the water. The natives of this Arctic Gibraltar are very expert with the "kyack." It is said that when the surf is breaking against the perpendicular sides of the island, should it be necessary to launch a canoe for any purpose, the native who is to embark takes his seat in his "kyack" as near the surf as he can approach with safety, secures his water-proof shirt, made of the intestines of the walrus, to the rim of the hatch, grasps his paddle, and, watching a favorable opportunity, gives a signal to two men who stand in readiness, and is thrown entirely clear of the surf. These "kyacks" are probably the finest in the world, but, owing to the rough service they have to perform, are made somewhat heavier than those in use in Kotzebue sound, and are covered with walrus-hide. The natives live almost entirely by walrus and seal-hunting. The skins of the walrus and seal are used for houses, boat-covers, and other purposes; the flesh forms the chief article of food, and the ivory is sold to traders for rum, tobacco, calico, arms, drilling, beads, and other articles. Many hair-seals are killed, the skins of which, when turned, are called "luvtahk," and form one of the principal articles of trade with the natives of the interior. They seem to be very prosperous, and, although they appeared glad to see us, could not quite understand why we had come among them, if we did not wish to trade. We visited the village by climbing the steep cliff, and, disregarding the sense of smell, we entered several of the houses,

where we were offered a lunch of walrus-meat by our hospitable ente
tainers, which we were compelled to decline. Not so, however, o
native interpreter, who had been obliged to live on "Governme
rations" for two weeks, and seemed, from his appetite, to be in a famis
ing condition.

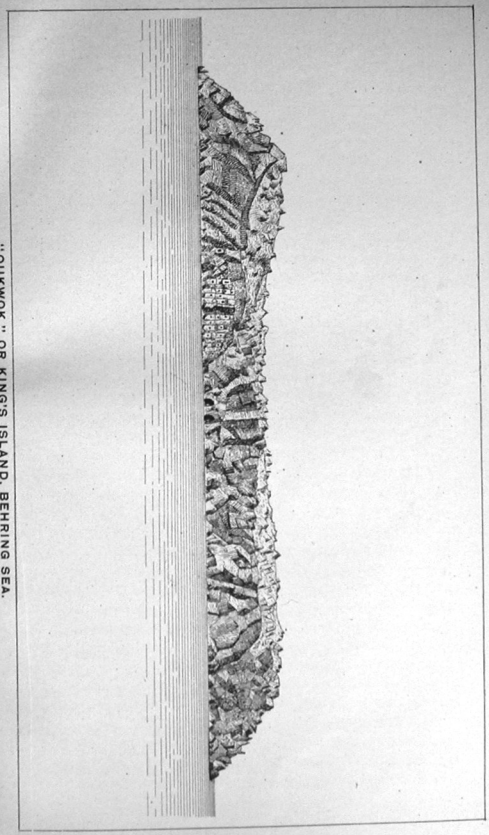
Near the village is a cave in the rock, where the natives store me
for winter food. The entrance, which resembles a huge gothic windo
during the summer can be reached by water only, the cliff being t
steep to climb, even for a native.

From King's Island we proceeded to St. Michael's, where we arriv
on the evening of the 7th. We found in port the Alaska Commerc
Company's steamer "St. Paul," and the schooner "Western Home," l
longing to the Western Fur and Trading Company. We found S
Michael's very much changed in appearance since our visit two wee
before. The ice and snow were all gone, the weather mild and pleasa
and the hillsides covered with wild flowers, while, to complete t
spring-like appearance, the air was thick with mosquitoes.

The traders of the two companies located here had arrived from t
interior, bringing the furs purchased during the winter. They we
accompanied by a number of Indians from the different trading-pos
on the Yukon and Tennenah rivers and other places in the interi
Some of these traders are located two thousand miles from the coa
They come in each spring, as soon as the ice breaks up in the river
bring in the furs purchased during the winter, get a new supply
trade-goods, and return apparently satisfied with their lot.

I was particularly impressed with the fine physique of the India
whom they brought down with them. They are very much superior
the coast Indians, resembling more in appearance those seen on t
plains, having piercing black eyes, long muscular limbs, and er
figures, showing courage, strength, and endurance. As they have h
dealings with the large trading companies only, they have not as y
acquired a taste for liquor, but all use tobacco. I had the honor of
call from two distinguished chiefs, one a "medicine-man," or "sh
man," and a large number of the "citizens." They seemed very mu
pleased with the appearance of the vessel. We discharged seve
shells for their benefit, the explosion of which greatly astonished the

These Indians live by hunting bears, moose, wolves, and reinde
and trap mink and foxes. In the summer they hunt with guns; in t
winter, when game cannot run fast, on account of the snow, the bo
and arrow are used. Black bears are killed with a knife or spear, it beli
considered disgraceful to shoot them. When an Indian meets a bla



"OUKWOK," OR KING'S ISLAND, BEHRING SEA.

Bearing N. (mag.), dist. 4 miles.

ear, he approaches within a few feet; the bear stops, faces him, nd rises on his haunches, prepared to give him a hug. The Indian raws his knife with great deliberation, and, addressing the bear, says, I know you are not afraid, but neither am I; I am as brave as you re." Then, advancing cautiously, he improves the first opportunity, hen bruin is off his guard, to give him a thrust with the knife in a vital pot, and the savage has one more deed of valor to boast of to his friends hen they gather in their dance-houses for the "Ung-to-ah"—a ceremony which consists of dancing around the fire and relating in a kind f song or chant, to the music of a drum, their deeds of daring in the ast, and indulging in promises of still more glorious ones in the future.

The result of the conflict, however, is not always entirely in the Indian's favor; the bear sometimes gets the best of it, and handles the avage very roughly. We saw several natives who bore the marks of ery severe scalp-wounds received in encounters with bears. One seen t Hotham inlet was terribly mutilated.

THE MURDER OF MRS. BEAN AND IVAN KOSHEOMIKOFF.

The natives of the Yukon and Tennenah country have been somewhat roublesome of late, and, unless checked, will, I fear, become more so. They have committed two murders, and the murderers are still at large. The circumstances of these murders, as nearly as I could learn, are as ollows: In the spring or early summer of 1878, a "shaman" on the Tennenah river prophesied that a white man would be killed that year. Later in the year, a Mr. Bean, with his wife and child, settled on the river, one hundred miles above its mouth, for the purpose of trading furs. One morning, about the middle of August, two natives, one the "shaman," came to Bean's house and stood outside, the "shaman" leaning against the doorway of a shed built over the house-door. The family were at breakfast, Mrs. Bean sitting with her back toward the door. The other native, stepping behind the "shaman," pointed his gun under the latter's arm and fired, striking Mrs. Bean in the back and killing her instantly. After shooting, the man turned and fled. The "shaman" then raised his gun and attempted to kill Bean, but in his excitement forgot to cock the gun. Bean retreated to another room, and the "shaman" also ran away. Bean gathered up his valuables and fled with his little son down the river to its mouth, where the Alaska Commercial Company have a trading-port. Upon learning of the murder, one of the traders went up and brought away the body of Mrs. Bean. He found everything as Bean had left it, with the exception of a few articles which had been stolen.

The murderers are well known by the other Indians, also by traders in the district. The natives say that the murder was commit at the instigation of the "shaman," in order to fulfil his prophecy. murder seems to have been entirely unprovoked. The Indians Mr. and Mrs. Bean were very much disliked by them.

The other murder was committed at Nulato, on the Yukon. murdered man was a Russian, Ivan Kosheomikoff by name. Althou a deliberate and brutal murder, the deed seems to have been perfor in revenge for the killing of another Indian by the son of the murde man. It appears that the Indian had threatened to take the life young Kosheomikoff on account of some difficulty which had occu at a settlement below Nulato early in the winter of 1879–'80, and in spring came to Nulato with some companions, all being armed. circumstances of the shooting are not definitely known; but it se to be generally believed that the act was done in self-defence; young Kosheomikoff was, or thought he was, in immediate danger, shot the Indian to save his own life. His father, the murdered m sent to a brother of the Indian killed and, according to Indian cust offered to pay for him. The brother agreed to this, and came wit number of companions to the trading-post, where they received the v of the forty marten-skins, and expressed themselves satisfied, thank him, and saying they were friends again. Kosheomikoff, accompanied the brother and two other relatives of the dead Indian, went to the t ing-post of the Western Fur and Trading Company, in charge of Napo Roberts, a Canadian, which was a short distance away, three of Indians being at Kosheomikoff's house. Kosheomikoff told Rob how matters had been settled, and the latter also made the India present, and brought out some whiskey of his own distilling, u which Kosheomikoff become very drunk, and was started for home a sled belonging to Roberts, accompanied by Roberts's interpr Half-way between the two stations, one of the Indians drew Koshe koff's revolver from his pocket and shot him in the back of the h firing several shots into him. Taking the body to the house, and th ing it in through a back window, they then joined their three panions, who had remained at the house, and all became very excited. They demanded the keys of the store, which were produ and, after helping themselves to guns and such other things as t wanted, they left.

These natives were joined by others, and remained in a village a thirty miles off all the spring, threatening to exterminate the w in the country if any attempt were made to arrest the murderers.

iendly Indian, who was living at the village, afterwards reported that he murder was all planned before the Indians went to Kosheomikoff's ouse, and that he was prevented from warning him by threats of in- ant death.

As in the case of the Tennenah-River murder, the guilty parties are ill at large. Unless some action be taken to bring them to justice, it ill soon be impossible for a white man to live in this section of the ountry. The delinquents are all well known, and can be easily reached. believe that they would be readily given up should an officer of the Government go and make a demand for them.

CENSUS-TAKING IN ALASKA.

At St. Michael's, I met Mr. Ivan Petroff, census agent of the Yukon district of Alaska, who was to leave on the 12th, in a badarka, to make a trip up the Yukon river to Tennenah, and make a portage to the Konskoquine, down which he would travel to the sea, and along the coast, around Cape Newenham, to the Toziak river, and from there, by a series of lakes and portages, to Fort Alexander, Nushegak river, which place he expected to reach about the first of September. From Fort Alexander, Mr. Petroff's route was down the coast of the Alaska peninsula to Ogajik, making a portage to Katmai, on the Shelikhoff Strait, and from there to Kodiak. From the latter place he hoped to reach Cook's Inlet and Prince William's sound by one of the trading schooners, after which he would return to San Francisco by the earliest conveyance.

The proposed route of Mr. Petroff has never been travelled by white men, and is both difficult and dangerous. To undertake such a journey requires both energy and courage of no ordinary kind.

SEARCHING FOR WHISKEY-TRADERS.

While at St. Michael's, it was reported to me that the American schooner "Leo," R. C. Walker, master, had been in port trading with the natives, selling whiskey, arms, ammunition, &c.; that she had more on board, and had gone north to trade along the northern shore of Norton sound. Having completed our work, we got under way again on the 10th, and, after discharging a few shells from the broadside guns for the benefit of the natives, proceeded north, to and along the north side of the sound, keeping a sharp lookout for vessels. We stopped and communicated with the natives at Cape Nome, Sledge Island, Cape

York, and King's Island, but could get no tidings of the "Leo" or oth
traders, although we subsequently learned that both the "Leo" a
the "Matthew Turner," a schooner belonging to the Alaska Commerc
Company, had been at Sledge Island and traded.

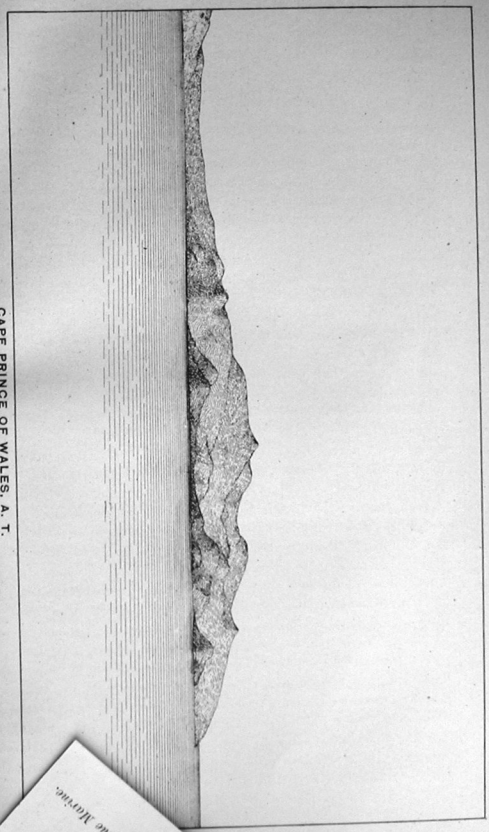
On the morning of July 11, we attempted to enter Port Clarence,
the purpose of watering ship, but found it still closed by ice.

CAPE PRINCE OF WALES—A SAVAGE PEOPLE.

On the 12th, we stopped and communicated with the natives at Ca
Prince of Wales. This place is the most western point of the contine
and is quite a remarkable promontory. It is high and ragged; one
its peaks rises over 2,500 feet above the sea. At a distance, owing
the low land behind, it has the appearance of being an island. On
southern side the mountain comes to the sea, but on the northern sid
strip of low land several miles in width projects from its base. Off the e
of the cape a dangerous shoal makes out to the northward, which
found at this time covered with ground-ice for some distance. T
whalers report this shoal to be making out farther each year.

The native settlement at the cape is at the extremity, and is divid
into two parts; one occupying an elevated position on the side of
hill, the other being on the beach. The natives are the worst on
coast. They have several times made trouble with the traders,
attempted to seize their vessels. They were taught a severe less
about two years ago by the Hawaiian brig "Wm. H. Allen," command
by a Kanaka half-breed named Gilly. The report is, that they
manded whiskey, which was refused, whereupon one of them attempt
to stab the captain. The mate, seeing the danger to which the capt
was exposed, shot the Indian dead. A general fight ensued, in whi
the Indians, although greatly superior in number, were badly beate
Many of them sought safety beneath the forecastle, where they we
killed by harpoons and whale-lances by the enraged Kanakas. O
thirty were known to be killed, and it is supposed that many more we
drowned by jumping overboard, their skin-boats having been cut ad
by the sailors as soon as the fight commenced.

We found the natives all along this coast afraid of these fello
They are great bullies, and travel in large numbers, compelling smal
bands to trade with them on their own terms. They cross over to E
Cape and buy from the Tchuktchis all the arms and whiskey th
want, and are said to carry both for trade with the other natives,
though at the time of our visit we saw no signs of liquor among the



CAPE PRINCE OF WALES, A. T.

Bearing S. S. E. (mag.) dist. 14 miles. Lat. 65° 35' N.; Long. 168° 04' W.
From a sketch by Captain C. Hooper, U. S. N.

SEIZURE OF THE "LEO."

From these people we learned that a schooner had passed north three ays previously. Believing this to be the "Leo," bound into Kotzebue ound, we proceeded in that direction, hoping to intercept her before he had time to dispose of her liquor. About midnight of the same late we sighted a vessel in-shore at anchor, and, on coming up, she roved to be the vessel we were in search of. We anchored near her, nd, after carefully noting our position by soundings and bearings, nd finding ourselves several miles within the limit of our jurisdiction, ent officers and seamen on board to search for contraband goods. The earch resulted in finding a quantity of alcohol put up in cases and labelled "Bay-rum," "Jamaica ginger," "Pain-killer," "Florida water;" a case of whiskey, three cases of wine, and five Henry rifles. Having, in addition to this, proof that she had sold liquor and arms at St. Michael's, I seized her, put Second Lieutenant W. H. Hand in charge, and sent her to San Francisco.

The following report of the seizure was forwarded to the Department:

ARCTIC OCEAN,
Latitude 66° 18′ 53″, *Longitude* 166° 20′, *July* 13, 1880.

SIR: I have the honor to report that I have this day seized the American schooner "Leo," R. C. Walker, master, for violation of articles 1955 and 1956 of the Revised Statutes of the United States, prohibiting the introduction and sale of distilled spirits and fire-arms within the Territory of Alaska.

The "Leo" was boarded and examined by officers belonging to this vessel and the following articles found on board, viz: Fifty gallons alcohol, slightly colored, and put up in cases containing twelve bottles each, marked as follows: Six cases marked "F. W," containing bottles labelled "Florida water;" six cases marked "B. R.," containing bottles labelled "Bay-rum;" six cases marked "P. K.," containing bottles labelled "Pain-killer;" four cases marked "J. G.," containing bottles labelled "Jamaica ginger;" one case whiskey; three cases wine; five breech-loading rifles.

With the exception of the bottles labelled "Pain-killer" none of the articles were shown on the manifest.

There were also found on board a large number of demijohns, of different sizes, not shown on the manifest.

I forward to the Department four bottles of the alcohol, one each of the different labels.

On the 7th instant, I visited St. Michael's with my command, for the purpose of taking in a supply of coal and doing some necessary work to the boiler. While there it was reported to me that the "Leo" had been in port trading with the natives, selling them liquor, breech-loading rifles, and that she had more on board.

After completing our work at St. Michael's, and taking on a supply of coal, we proceeded north on the 10th instant, touching at several places

on the sound to make inquiries in regard to the schooner "Leo." Cape Prince of Wales we were informed that a vessel resembling "Leo" had passed, bound north, two or three days previously. Belie ing her to be going to Kotzebue sound, we proceeded in that directi About 11.15 o'clock of the same evening, the "Leo" was discovered anchor, in nine fathoms of water, about eight miles from the shore. the latitude and longitude given above, Cape Prince of Wales bear S. 62° 35′ W., distant about sixty-one miles, and boarded and ex ined, as stated.

I forward the sworn statement of Elia Kajanakoff, in relation to ticles sold at St. Michael's, Norton sound.

There were also found on board the "Leo" several persons wh names were not upon the articles, crew-list, or manifest. One, a nat from St. Michael's, was employed as interpreter. Five were nati from Kodiak, employed, probably, for the purpose of taking seals aro the Seal Islands in the fall. C. L. Lienewski, who claims to be ag for the vessel, and Samuel Asztals, said to be a passenger, were on board.

The native from St. Michael's has been taken on board the "Corw to be landed at St. Michael's on our return.

Second Lieutenant W. H. Hand has been placed in charge of "Leo," with orders to proceed to San Francisco and report to the partment. He will touch at Ounalaska, if possible, to secure pass from there to Kodiak for the natives of that place; otherwise, he call at Kodiak and land them.

I am, very respectfully, your obedient servant,

C. L. HOOPER,
Captain, U. S. R. M.

Hon. JOHN SHERMAN,
Secretary of the Treasury, Washington, D. C.

—

ARCTIC OCEAN, *July* 13, 1880.

SIR: You will take charge of the seized schooner "Leo" and proc to San Francisco with all possible dispatch, and on your arrival rep to the Department by telegraph, and ask for instructions in the matt

You will stop at Ounalaska, and endeavor to obtain passage for t natives on board belonging to Kodiak to their homes. Should you unable to send them from that place, you will proceed to Kodiak a land them, without, however, entering the harbor, unless compelled stress of weather.

You will not permit anything to be taken out of the vessel unle authorized by the Department.

I am, very respectfully,

C. L. HOOPER,
Captain, U. S. R. M.

Lieutenant W. H. HAND.

—

ARCTIC OCEAN, *July* 13, 1880.

SIR: I have to inform you that I have this day seized the schoon "Leo," under your command, for violation of articles 1955 and 1956 the Revised Statutes of the United States, prohibiting the sale of di

lled spirits and breech-loading fire-arms within the Territory of Alaska, to wit: In having sold liquor to the natives in the Territory; in having board alcohol of high proof, falsely labelled Florida water, bay rum, amaica ginger, &c.; also for selling breech-loading arms and cartridges natives.

Second Lieutenant Wm. H. Hand has been detailed to convey the essel to the port of San Francisco, Cal., with authority to make such orts on his way as stress of weather or necessities incident to the voy- ge may require. I would therefore request that you will be governed y his orders.

In respect to details of ship's ordinary duties, Lieutenant Hand will ot interfere so long as you follow his instructions.

Until released by higher authority, all trading and traffic is hereby rohibited.

Wishing you a quick and pleasant passage, I am, very respectfully,

C. L. HOOPER,
Captain, U. S. R. M.

Captain R. C. WALKER,
Schooner "Leo."

—

CAPE ESPENBERG.

The following day, July 14, we got under way at 4 A. M., and proceeded to the eastward as far as Cape Espenberg, and, finding the sound still filled with ice, came to anchor for the night. A few natives came off to the vessel to trade, but learning that we had neither whiskey, breech-loading arms, nor ammunition, they soon left. We bought a few white and red fox-skins, paying in calico, drilling, and tobacco, at the value of about 80 cents per skin. These natives seemed to be very poor, owing, doubtless, to the fact that they are directly in the track of traders bound into Kotzebue sound, and can get all the whiskey they can pay for.

Cape Espenberg forms the western side of Kotzebue sound. It is a low, flat point, with occasional sand-dunes partly covered with grass and shrubs, and, at the time of our visit, was dotted with small, bright-colored, fragrant flowers. A short distance from the beach are several small lakes which abound in wild fowl. The native settlement, which is near the end of the cape, consists of about twenty houses.

On the 15th, the wind came from the eastward, and opened the ice sufficiently to allow us to reach Cape Blossom. We found the east side entirely free from ice, and reached Chamisso Island without difficulty the same night.

We came to, off the watering place, and made preparations for watering ship early on the following morning.

GLACIAL FORMATIONS AND FOSSILS AT ELEPHANT POINT.

On the 16th, I visited Elephant Point, about fifteen miles distant, Eschscholtz bay, near the mouth of the Buckland river. This place remarkable for a singular ice formation, which Kotzebue described "a glacier covered with soil six inches thick, producing the most lu uriant grass, and containing abundance of mammoth bones." Capta Beechy, of the Royal Navy, while cruising in the Arctic in 1826–7, clai to have fully established the fact that Kotzebue was mistaken; th what he called a "glacier" was occasioned either by the water from t thawing ice and snow trickling down the surface of the earthy cliff fr above, or by the snow being banked up against the cliff in winter, a afterwards converted into ice by alternate thawing and freezing, p ducing the appearance which deceived the Russians.

The cliffs in which this singular formation is found begin hal mile from the eastern extremity of Elephant Point, and extend westwa nearly in a direct line, about five miles. They are from forty to o hundred and fifty feet in height, and rise inland to rounded hills fr two hundred to three hundred feet high.

The eastern part, where the ice formation is found, is nearly perpend ular for about one mile; from thence to the western extremity, it slightly inclined and intersected by small valleys and streams of wat

I examined the ice, and, although not fully convinced that Beec has given the true explanation of it, I do not think it is a glacial form tion. In several places where water had run down over the face of t cliff, in small streams, from the melting snow above, I found ho melted at least thirty feet deep, showing solid walls of clear ice.

I also ascended the cliff and dug down from the top in several place and always came to solid ice, after digging through frozen earth for a fe feet. I searched the face of the cliff for fossil remains, but found non either in the ice or in the soil above it. I was more fortunate, howeve on the beach below, after the tide fell. There I found a large numb of mammoth bones and tusks, and some smaller bones belonging pro ably to the "Aurock" and musk-ox.

There are no natives living on Eschscholtz bay, but a number a located on the Buckland river and come down to the bay during th summer months to kill white whales, (*beluga catodon*,) catch salmon and gather berries, which they "cache" until the snow comes, whe they are taken to the settlement on sledges.

Like all Indians, these are very superstitious. While hunting th white whale they are not allowed to chop wood, dig in the earth, sew tan skins, and many other things, for fear the spirit that controls th

ovements of the white whales will take offence and not permit them return the next season. When the whaling is completed they collect e bones and burn them; those who can afford it burn the clothes rn while whaling, the poorer natives paying tribute to the "God of e White Whale," by cutting off and burning a small piece of some rment.

The "kyack" used by the natives on Kotzebue sound, and, in fact, ong the entire coast to Point Barrow, is a marvel of speed and beauty. is very narrow and light, and great skill is required in its manage- ent. In these fleet boats, the natives easily drive the white whale, a ery timid animal, into shallow water, where it is dispatched with strong, int-headed spears.

The Buckland river is a shallow stream, but navigable for small oats and canoes for a considerable distance. Natives from Norton ound ascend the Covearack river, at the head of Norton bay, and, aking a short portage to the Buckland river, descend to Kotzebue ound.

TRACES OF EARLY EXPLORATIONS AT CHAMISSO ISLAND.

Chamisso Island is in latitude 66° 13′ 11″ N., and longitude 161° 6′ W. We endeavored here to get observations for longitude and ariation, but the air was so filled with mosquitoes that it was found mpossible; they covered the lenses of the instrument and the artificial orizon, and attacked the observers with such vigor and in such num- ers that they were compelled to give up the attempt. The number f these pests that will spring into existence a few days after the disap- earance of the snow, is truly marvellous.

On the top of Chamisso Island we found a cross, erected by some of the early navigators, bearing the names of the "Blossom," "Plover," "Herald," and also the names of several Russian vessels. "U. S. Rev. Str. 'Corwin,' 1880," was cut beneath the rest.

The land around Kotzebue sound is generally characterized by rounded hills, from one hundred to one thousand feet in height, covered with coarse swamp-grass and a species of wild cotton, the latter being so plentiful as to give the distant hills the appearance of being covered with snow. A few stunted bushes grow in the ravines.

INDIAN TRADING-MARTS.

On July 17, we got under way and steamed up past Choris Peninsula to Cape Blossom, a cliff ten miles south of Hotham Inlet, where we found a large number of Indians congregated, waiting for trading-

vessels to arrive. Cape Blossom and the mouth of Hotham Inlet
the principal places of rendezvous for natives from the surround
country. The coast natives, from Cape Prince of Wales to Point H
including the Diomedes and King's Island, assemble here about the
of July to meet those from the interior, who come down the Koogar
Sulawick, Buckland, and another large river, which empties
Hotham Inlet on the north side, called by the natives "Noyatäg."
natives style themselves Noyatägameuts. The termination "ame
signifying "a native of," is derived from the word "innuit," the sl
change in the pronunciation being entirely euphonic, with no altera
of meaning; it is used by the natives all along the coast. At
Prince of Wales the natives style themselves "King-eegan-meuts;
Buckland river, "Kung-eeg-ameuts;" at Cape Espenberg, "Tup-
ameuts;" at Hotham Inlet and Cape Blossom, "Kee-kik-tag-ame
at Sulawick river, "Sulawig-meuts;" at Koogarook river, "Ko
ameuts;" Cape Kruzenstern, "Tee-kee-zaht-meuts;" Point Hope, "
kee-voga-meuts;" Icy Cape, "Oto-kog-ameuts."

The Noyatäg river is not shown on any chart, and very little is kn
of it. The natives say that it takes thirty days to return up the r
to their homes, and that the river is "wide and deep."

On the banks of the Koogarook river a few stunted trees ma
seen with the glass from the mouth of Hotham Inlet. These are
only trees seen by us inside the Arctic Circle.

These natives collect for the purpose of trading not only with ves
but also with each other. The coast natives bring oil, walrus-hi
and seal-skins; those from Cape Prince of Wales bring whiskey, a
tobacco, and skins of tame reindeer, which they purchase from
Tchuktchis. These articles are exchanged with the natives of
interior for furs—wolf, fox, marten, mink, &c.

NATIVE SPORTS.

In addition to their trading, the Indians indulge in a "big dan
and all kinds of athletic sports—running, jumping, wrestling, ky
racing, &c.

I detailed an armed boat's crew, under charge of Second Lieuten
Edmund Burke, who volunteered for the duty, to remain at Cape B
som and board all vessels that might arrive during our absence
search them for contraband goods. We explained, through the int
preter, to the natives collected here, and at all other places where
stopped, the object of our visit, and endeavored to impress upon th
minds the evils of whiskey-drinking. Generally they seemed to rea

at they would be better off without it, but freely acknowledged their
ability to refrain from drinking, when liquor was placed before them.

On the 18th, we attempted to work to the northward, but finding the
e heavy and close in shore at Cape Kruzenstern, anchored between
at place and Hotham Inlet, off a native settlement, the inhabitants
which came on board and wanted to trade, but as usual asked for rum
d Henry rifles, and would not part with their furs for anything else.

On the 19th, we succeeded in passing Cape Kruzenstern and steamed
the northward, keeping close in shore to avoid the ice, which lay in
heavy pack outside of us most of the day.

We stopped several times to communicate with the natives, who came
ff in their "oomiaks" to sell seal-oil. A number of them came off be-
ween the Mulgrave Hills and Cape Leppings. They informed me that
heir winter-houses were a few miles back from the coast, near the fort
ills. Judging from the amount of discolored water seen by us several
iles off shore, there must be quite a large river in this vicinity; prob-
bly, like all the rivers emptying into the Arctic, it is too shallow to
e of benefit.

On the evening of the 19th, we came to anchor off Cape Thompson,
o avoid running into a fog-bank which hung over Point Hope. Cape
hompson is a headland of remarkable appearance, about five hundred
eet in height, showing a face composed of stratified, fossiliferous rock,
ent and crimped into all conceivable shapes, and presenting a variety
of colors. A few poor, miserable natives live there. They told us that
coal could be found in abundance in the cliffs, and I engaged one for
some tobacco to point it out to me. After hunting until midnight, and
finding nothing but strata of shale, slate, and sandstone, I collected a
few pieces containing fossil shells, and gave up the search.

On the 20th, we reached Point Hope and anchored off the settlement.
A large number of the natives came on board, and a sharp lookout was
necessary, as they have the reputation of being great thieves. They
had taken five whales since the whaling-vessels were here last year.
Most of the bone had been sold to whalers, whom they reached by going
out over the ice early in June, drawing the bone on sleds.

After spending a few hours at Point Hope, we started north again,
but, finding the ice so heavily packed that it was impossible to pene-
trate it, we returned and anchored south of the point, about four miles
east of the settlement, where we remained for the night. The natives
again visited us, bringing a few fox-skins and some slabs of inferior
whalebone for trade. These natives are great liars, and it is only by
the most careful management that any information can be obtained

from them. In the evening six large "oomiaks" left the settlement started for Cape Blossom to join the others collected there; but as had only a small amount of bone and oil to trade, their trip was p ably more for pleasure than for business.

THE OOMIAK.

These natives are nomadic in their habits; although they have ter-houses, to which they return each fall, they travel all sum Their manner of travelling is peculiar to themselves; they use oomiak, in which is stowed everything belonging to the entire fa except the working-dogs.

An oomiak is a boat built of walrus-hide or seal-skin drawn ov wooden frame about thirty feet long, six feet wide, and two and a feet deep. The frame is fastened with seal-skin thongs, and made slip-joints, to allow it to work in a sea-way. They are flat-botto sharp at both ends, and with very little shear. The men use pad and the women oars; they carry a square sail. An ordinary oo contains, in addition to the stock-in-trade of oil, skins, &c., a te drilling or deer-skin, guns, traps, spears, bows and arrows, a kya seal-skin poke filled with water, a quantity of dried meat, a sled, eral pairs of snow-shoes, a fish-net, and several smaller nets for c ing birds, a large drum on a pole for the use of the "shaman," several seal-skin bags containing skin clothing.

The *personnel* consists of three or four men, about as many wom and two or three children. Add to these two or three dogs, each a litter of puppies, and some idea may be formed of what a travel oomiak contains.

The working-dogs are often left on the beach to follow on foot, wh they do, keeping up a continual and most dismal howl. If the w comes in ahead, and the natives desire, for any reason, to continue th journey, they paddle in near the shore, harness their dogs, and att them to the oomiak, after the manner of a canal-boat and horses, s themselves in the boat, and saying "nakouruck," (good!) go on th way at the rate of four or five miles an hour, with no other effort t steering with the paddle, wondering, probably, why white men will bu "oomiak-paks," (large vessels), when the native style of travel is much more simple and economical. When they wish to stop for a ni or day, they land, pitch their tent, take everything out of the oomi and turn it up on the beach, where they are quite as much at home in their winter-houses; men, women, children, and dogs forming happy, noisy, dirty family. They eat when they feel hungry, wh

ms to be nearly all the time, and sleep without regard to time. The gs eat when they can, and steal any thing they can get their teeth rough.

On the morning of the 21st, a fresh gale sprang up from the south- st, starting the ice off shore north of Point Hope. We got under ay, and shifted one anchorage north of the Point to make a lee. Here e remained during the day, and had the satisfaction of seeing the ice avel rapidly to the northward. During the afternoon, a party of unters from the vessel went out after reindeer and succeeded in get- ng a very fine one, weighing about three hundred pounds.

On the 22d, the wind was still blowing from southeast, with thick og; but, believing the ice had travelled sufficiently far to allow us to et north of Cape Lisburne, we got under way and ran up along shore, ounding our way. We fell in with the ice before reaching the cape, nt found it sufficiently open to work our way through.

Rounding the cape, we found comparatively clear weather, so that e had a good view of this somewhat remarkable headland. It is eight undred and fifty feet high, with almost perpendicular cliffs, and pre- ents an extremely rough, jagged appearance. It is composed of strat- ied limestone, schist, and flint, and is said to contain abundance of fossil emains of animals and shells. The end of the cape and the air in the mmediate vicinity seemed alive with myriads of murre and puffin.

On rounding the head we saw the steam-whaler, "Mary and Helen," f New Bedford, boiling out, she having taken eight whales. The master of the whaler reported the ice, to the northward, heavy but broken.

DISCOVERY AND LOCATION OF COAL DEPOSITS.

We came to about eight miles east of Cape Lisburne, but, after chang- ing our anchorage several times to avoid the drift-ice, we got under way at 4 A. M. of the 23d, and steamed to the eastward, keeping close in shore. About 8 A. M. we anchored off a coal mine, which, upon ex- amination, was found to consist of several veins, varying in thickness from one to four feet, lying in a N. N. W. and S. S. E. direction, and dipping to the S. S. W., at an angle of forty-five degrees. Six of these veins were found.

With the ice and snow out of the way, and the weather mild, this coal is comparatively easy of access. We experienced some difficulty at first, owing to ice and snow and a lack of proper appliances for mining, and, later in the season, on account of the surf on the beach. However, we succeeded at this time in getting about six tons, and found

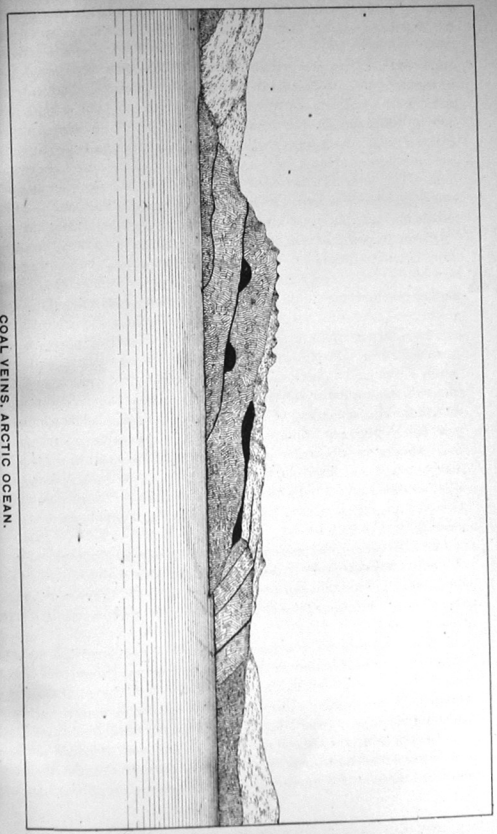
it to be of fair quality, very similar to the coal of Seattle, Wash
ton Territory. It burns freely, making very little smoke, but a l
amount of ashes; it burns well in the stove. The location of the
is, latitude, 68° 50′ N.; longitude, 164° 55′ W. It was reported t
by our ice-pilot, Captain E. E. Smith, who discovered it several y
ago. There is good anchorage, with a southerly wind, within h
mile of the shore, in four fathoms of water, and fair holding-gro
It is well marked by a peculiar headland, which terminates seawa
a perpendicular cliff of sandstone and shale, some four hundred
high. The veins of coal on the face of the cliff can be seen distin
at a distance of one mile. About eight miles east of this, at Cape H
fort, is a small vein of coal, which is marked on some of the charts

On the evening of the 23d, we steamed to the eastward as f
Cape Beaufort, where we came to heavy pack-ice. Unable to pr
farther in that direction, we stood to the westward. The dri
having set in around Cape Lisburne, we experienced some difficul
getting out, but, after a night's work, succeeded in reaching clear w
and stood to the westward along the edge of the northern pack to
Herald Island. During the day we spoke several whalers, and fo
them all doing well, having taken from four to nine whales each.
the 25th, we worked to the westward all day, speaking several wha
all doing well. The bark "Norman" had a whale alongside, which
were just "cutting in," and we lay by her to witness the operation.
the evening we worked into an opening to the northward, thro
heavy drift-ice, with the pack in sight from the mast-head on each s
We had thick snow-squalls all night, so that at times we were compe
to stop the engine and wait for a "light-up" to enable us to see
leads.

At 9 A. M. of the 28th, we were in latitude 70° 50′ N.; longitude 175°
W., only thirty-five miles from Herald Island, where we came to
solid pack again, and could proceed no farther. We then stood to
southward again, through drift-ice, keeping the western pack in si
from the deck.

The only signs of animal life we saw north of the seventieth para
of latitude were a few murre, a small black diver, two walrus, an
polar bear. The latter I shot from deck and took on board. The dre
was hauled several times, but the bottom was found equally barre
animal life, the only results being a few minute radiates.

After following the edge of the pack to latitude 69° 20′ N., we shap
our course for Cape Blossom, to pick up Lieutenant Burke, and the bo
crew left there on our way north. We had thick, foggy weather,



fresh northeast wind, blowing against the set of the current, raised a ort, heavy sea of considerable force, the first which we encountered the Arctic.

Owing to the small space of clear water, the sea, although quite eavy while a gale lasts, subsides with the wind, and does not leave roll, as is the case on the larger seas and oceans. During the night, ne of the wings of the ice-breaker, which had become bent and did ot fit the bow closely, was carried away by the action of the water. he breaker was taken in on deck, and subsequently repaired and laced in position.

On the 28th, we stood to the northward and eastward all day, with a resh northeast wind and thick fog. About 4 P. M. the fog lifted and e made Cape Thompson, bearing north, by compass, distant about ten iles. We had been set to the northward fifty miles in twenty-eight ours.

We arrived at Cape Blossom at about noon of the 29th, and, to our stonishment, saw neither our boat nor the natives that were encamped t that place when we left. The dead body of an Indian, found lying n the ground near the camp, seemed to indicate that they had had trouble mong themselves. It is a custom of these people to leave the bodies f the killed where they die, without burial. At first I felt some anxiety or our men, but, on following the land to the southward a few miles, we ell in with a small band of travelling natives engaged in catching salmon for winter use. By them we were informed that our men were a short distance south of this place, and all safe. An hour later we picked them up. Lieutenant Burke reported having had a rough, disagreeable time. The weather had been too stormy to allow him to take soundings or make tidal observations. He also confirmed our suspicions, that the natives had quarrelled among themselves, but he could not learn the cause. He had been informed by a native belonging to another band that it would be unsafe for him to remain in their immediate vicinity, and had therefore gone a few miles south. The Indians had broken camp several days before our return and gone in the direction of Cape Espenberg, some going around the head of the sound and others making directly across from Cape Blossom. No trading-vessels had been seen.

Our supply of coal being low, and there being but twenty-five tons at St. Michael's, with the season's work only half completed, it was decided to return to Plover bay and fill bunkers from the coal stored there by the Russian government. Accordingly we steamed to the westward, stopping at Cape Espenberg to see if any signs of liquor could be de-

tected among the natives there. We found quite a large number
gregated, but all perfectly sober and quiet.

On the morning of the 30th, a fresh gale sprang up from the s
ward, and having besides a three-knot current against us, we
away to the northward, determined to try to get sufficient coal fro
mine, previously mentioned, to enable us to make one more effo
reach Herald Island before going to Plover bay to fill up.

MINING COAL FOR THE "CORWIN."

We arrived at the mine on the morning of the 31st, and comm
coaling, but, owing to high winds and a rough sea, this was atte
with many difficulties, and but slow progress was made. At tim
were compelled to suspend coaling entirely, the wind blowing so
that the boats could not pull back and forth. The boats were m
stern to the beach, just clear of the breakers, and the coal, after
sacked, was carried out by the men through the breakers. In thi
we succeeded in getting some fifteen tons, working until the su
came so heavy that the men could not make way against it, b
frequently washed back upon the beach, coal and all.

On the evening of August 2, we got under way and stood to
westward. The following day we again fell in with the whaling
and spoke several. All reported the catch of whales unusually l

The next morning we sighted the western pack in latitude 70°
and longitude 173° 50′. We followed it north to latitude 70° 55′, w
we encountered heavy drift-ice, which we entered, and worked to
northwest. Shortly after, we made Herald Island, bearing W. by
N. by compass, distant about thirty-five miles. We continued to
toward it through heavy drift-ice until 1.30 P. M. when it was judge
be twenty miles distant. Finding it impossible to proceed far
through the heavy ice, which was packing around the vessel so that
could barely move, and a dense fog shutting down over the islan
was deemed unsafe to remain longer, and we reluctantly headed
clear water, which we reached some hours later.

While in sight of Herald Island, a lookout was kept from the mast-he
in the hope of seeing smoke or some sign that might indicate the p
ence of human beings, but nothing could be seen.

Soon after reaching clear water, I discovered and shot a large p
bear in the water. He was taken on deck and found to be a mons
weighing at least 2,000 pounds. His skin was so badly cut and scar
around the head and fore-shoulders, from fighting, that it was alm
worthless.

FOLLOWING THE PACK-ICE.

We kept to the southward along the ice-pack, in longitude 176° 15′,
that night and the next day, making slow progress on account of
e dense fog and broken condition of the ice along the edge of the
ck. At times, after running for hours without seeing anything, a
ght lifting of the fog would disclose to us the solid pack on each side,
d we would be compelled to run back ten or fifteen miles to get out
the "pocket" which we had entered. My object in following the
ge of the pack so closely was to ascertain if it were possible to get
ound its southern point and up to the southern extremity of Wrangel
and; also, to learn the condition of the ice in the straits between
rangel Land and the coast of Asia. I desired, also, to run a line of
undings along the Asiatic shore from Cape North to East Cape. A
nse fog prevented us from determining satisfactorily the condition of
e ice in the straits, although I am satisfied that we could not have
ached Wrangel Land, even had there been no fog. The ice, though
oken on the edge of the pack, was very close and heavy.

From latitude 68° 30′ N. to latitude 68° 10′ N. we found comparavely open water to the westward, and, had the weather been clear, should have followed it far enough to ascertain whether it was a assage or merely a "pocket." I am of the opinion that it was a pasge open through near the Asiatic shore, and that no great difficulty ould have been encountered in going through. I do not think, however, that the land could have been reached on either side.

After passing this open water, we came to another portion of the back, which had evidently broken off from the main body and swung around, its southern end going to the eastward. We were compelled to run to northeast over twenty miles to get round it.

After passing this point of ice, we continued on our course to the southeast until the morning of the 7th, when, in latitude 67° 45′ N., longitude 172° 15′ W., we came up to heavy ice, packed closely, and lying in an east and west direction. We followed its northern edge to the eastward until within thirty-five miles of Point Hope, before we were able to keep away to the southward again. We saw occasional breaks in the ice during the day, and it is possible that with clear weather we might have picked our way through. The dense fog, however, rendered such an attempt imprudent. There was also a strong "ice-blink" visible all day to the northward, whenever the fog lifted sufficiently to admit of our seeing any distance.

During the night of the 7th, the fog cleared away, or rather settled down. In these latitudes the fog does not blow away or lift up as in

other latitudes; it condenses and falls. The first indication of a "
up" is the fog falling from the rigging in large drops; this is soo
lowed by patches of blue sky breaking through overhead; these pa
continue to grow larger until they reach the horizon on all sides,
the fog is gone as if by magic. Under proper thermal conditio
forms again in the same magical way, following the changes in
perature so rapidly as to give rise to the saying among sailors,
"the fog travels to windward."

The night of the 7th was clear and pleasant, being sufficiently
to admit of the stars being seen for the first time since our entry w
the Arctic Circle on June 28. During this period we had constant
light, and, for over three weeks, constant sunlight. We found
long spell of uninterrupted daylight very trying to the eyes, and a
had some difficulty in sleeping. We soon grew accustomed to it,
ever, and found it of the greatest assistance in picking our way th
the ice.

On August 8, shortly after noon, we stopped a few minutes to
municate with the natives on the eastern or American Diomede Is
We found them a poor, miserable people. They had nothing to
but some walrus ivory and a few fox-skins, for which they wanted
key and tobacco. This island is called "Kruzenstern," after the
sian admiral of that name, an early Arctic voyager. The native
is "Igua-look." It is about eight hundred feet high, has almost
pendicular sides, and a flat top.

The settlement is on a low point, which projects a short dista
on the southwest side. We passed between the Diomedes, and
several lines of soundings in from seventeen to twenty-five fathoms
water. We found a strong northerly set between the islands w
temperature of 40 degrees.

Soon after leaving these islands the fog shut in again, and we
nothing more until we made the east head of Plover bay, about 9
of the 10th. We anchored near the coal-pile and commenced co
assisted by a number of natives, whom we paid for their services
"hard bread."

On the afternoon of the 11th, we finished coaling and got under
Soon after clearing the harbor we saw a vessel to the southward,
ran down to her. She proved to be the United States Coast-Su
schooner "Youkon," bound into the Arctic for the purpose of ma
magnetic observations, &c.

After speaking the "Youkon," we shaped our course for the
medes. A thick fog prevailed, and we passed through the strait

afternoon of the 12th, without having made land. About 6 P. M.,
wever, the fog lifting a little, we caught a glimpse of the top of the
stern Diomede Island, almost directly astern. We must have passed
thin half a mile of it, in the dense fog, without seeing it, although all
nds had been on the lookout.

We continued our course north during the night and until the fol-
ving noon, when, at a distance of forty-five miles from Point Hope,
came up to the point of ice which we had rounded on our passage
wn. We were about to enter and make our way through when a
avy sea commenced to make up from the northeast, and in a few
nutes the ice was pitching and grinding so, that we were well pleased
be out of it.

We learned afterward, on coming up with the whalers, that the sea
as caused by a sharp northeast gale, which came on suddenly and
sted about five hours; only the sea raised by it reached us. The
des in the Arctic at this season, although very violent, cover but a
all area, and are of short duration; later in the fall they are more
neral and long-continued.

We hauled in and passed around the eastern end of the ice. In the
ening the fog lifted, and we had a view of the high hills back of
oint Hope, about forty-five miles distant. We continued on our course
the northward and westward during the night, and on the following
orning came up with, and spoke the bark "Abraham Barker," of
ew Bedford, whaling, off a point of ice in latitude 70° 30′ N., longi-
ude 171° 30′ W. This point is called "Post-office Point." It seems
remain in nearly the same position year after year, and formerly the
hips met here to distribute the mail. We continued to work to the
westward through a thick fog until about noon of the 15th, when we
ame to the ice-pack extending north and south. This we supposed to
e the western pack, and as the fog still continued thick, we hove to
nder sail, heading to the southward. On the 16th, the fog cleared
sufficiently to enable us to see three or four miles, and steaming to the
westward we sighted the ice. After running about twenty miles, we
ame to the western pack. What we had mistaken for it the day
efore was a point extending down from the northern pack.

The fog shutting in again, we hove to under sail at night, supposing
ourselves to be about thirty miles from the end of Herald Island.

HERALD ISLAND.

On the morning of the 17th of August, we spoke the barks "Pacific"
and "Helen Mar." These vessels reported having seen Herald Island
on the 15th, and supposed to bear west, about fifteen miles distant. An

hour or two later the fog cleared a little, and we made the island, ing S. S. W., about seven miles distant. We kept close to the pa several hours, with the island in sight, and all hands on the looko smoke or any signal from the island, but saw nothing. In the ev we came to with a kedge in thirty fathoms, to get the set of cu and found it to be S. S. W., (magnetic,) about half a knot per ho

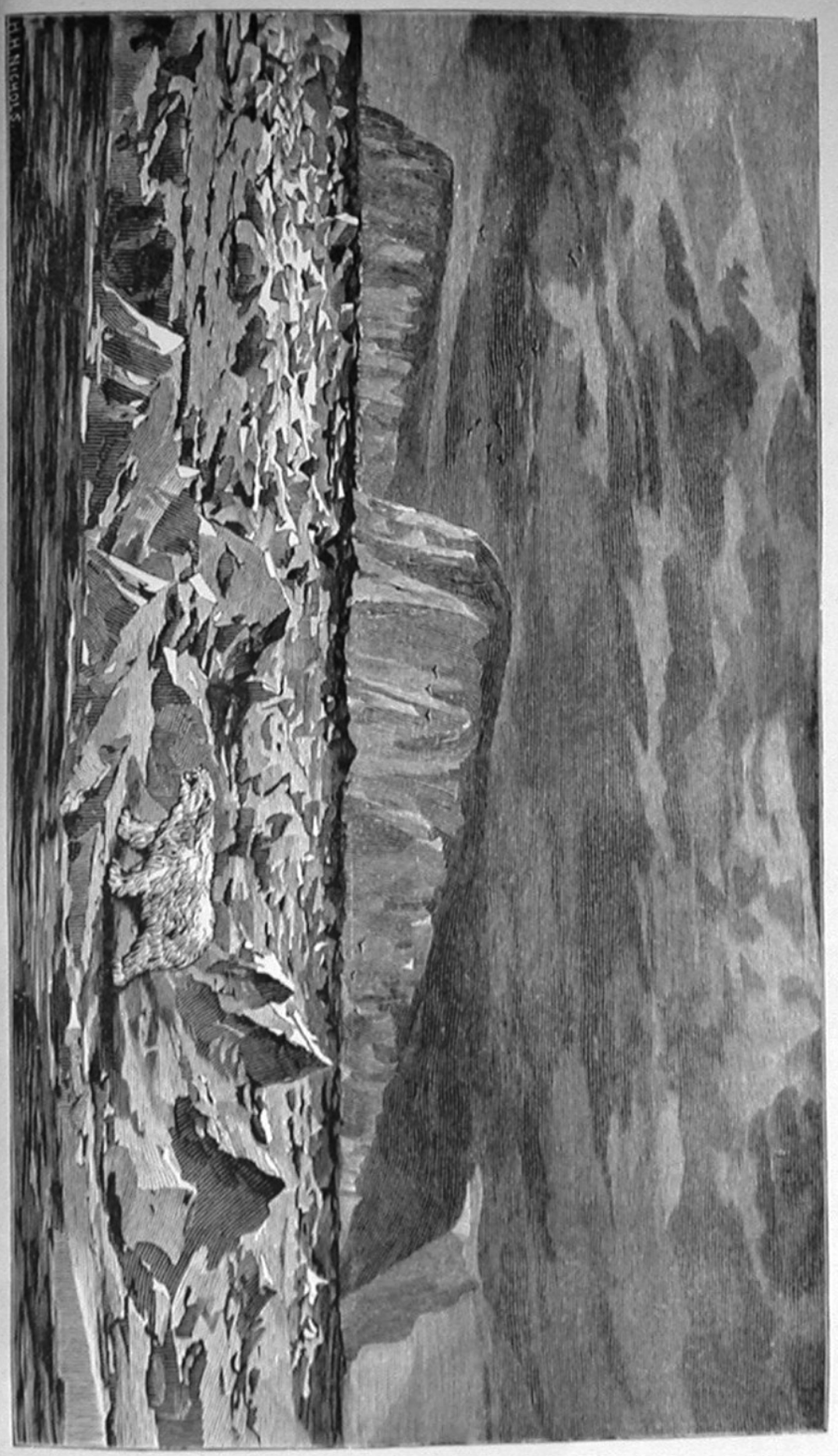
During the night, the fog shutting in again, we stood off to the east, under one bell, and back to the ice again in the morning. barks "Pacific," "Helen Mar," and "Rainbow" were sighted s times during the day through the fog. They reported that the re der of the fleet had gone to the eastward.

The fog continued dense until the 20th, so that we could not s a mile, and at times not the vessel's length. We kept near the sighting it occasionally, and noting its drift, and once a day run few miles to the eastward, to avoid getting caught by the ice, w constantly on the move. A tongue of ice will shoot out from th pack and swing around in a few hours, so that, unless a constant be kept, a vessel may find herself surrounded by heavy ice as im trable as a stone wall. As an illustration of the incessant shift the ice, it may be stated that the whalers, after shooting walrus floe, are often compelled to abandon their booty, without sec blubber or ivory, on account of the floe working back out of their into the pack. We found the general drift of the ice to be to the s ward from one-quarter to three-quarters of a knot per hour. I t however, that the drift of the ice in this vicinity is, to a certain e controlled by the wind.

On the morning of the 20th, our reckoning placed us to the n ward and eastward of Herald Island. We stood in to the ice, after following its edge to the southward for a few miles, made the through a break in the fog, bearing northwest, (magnetic,) distant ten miles. We hauled up for it, and entered the ice, which was open on the edge, and steamed in about six miles, where we stopped by a solid barrier of unbroken ice, extending nearly north south, and from twelve to forty feet in height.

After examining the island (which was only three or four miles tant) very carefully with the glass, and assuring ourselves of the i sibility of there being any human inhabitants, we worked our way to clear water.

The sides of this island are perpendicular cliffs, 800 feet high, its top, which was then covered with clouds, is said to be about 1 feet in height. Captain Kellett, R. N., who discovered it, and who ceeded in getting a foothold on a projecting rock, says:



"The island on which I landed is four and one-half miles in extent, st and west, and about two and one-half north and south, in the shape a triangle, the western end being its apex. It is almost inaccessible all sides, and a solid mass of granite. * * * The extent we had walk over was not more than thirty feet."

The icy barrier which we found surrounding the island had the ap-arance of being unbroken, and I am convinced that it was not of a cent formation. I have questioned the whalers closely in regard to and find that none of them went west of Herald Island last year. I n of the opinion that the ice did not leave it, and that it is no unusual currence for the ice to remain two and even three years without leav-g the island free. I believe, moreover, that the ice rarely breaks up tween Herald Island and Wrangel's sound.

After getting clear of the ice we steered to the southeast, and in the ternoon fell in with and boarded the bark "Fleetwing," of New Bed-rd, working up toward the island.

While cruising in this vicinity we hauled the dredge several times, t, as on previous occasions, found the bottom very barren of life, a w minute radiates and mollusks, and some pieces of broken shells ing the only things brought up. The bottom consisted of blue mud pebbles, and particles of broken shells, according to location. The undings were found to agree very closely with those given on the art.

While in the vicinity of Herald Island, a small land-bird, resembling snipe, flew on board. It was caught and caged, but died in a few ours, and was put into alcohol for the Smithsonian Institution.

Working to the eastward, we kept to the southward of Herald shoal, o avoid encountering, in the fog, any ice which might be aground on t. After passing the shoal we hauled up for Icy Cape. The wind was ight from the southwest the greater part of the day, and the weather hick. On the morning of the 22d, off Icy Cape, we saw the brigs "Hidalgo" and "Tropic Bird" to the northward; stood toward them nd spoke the latter. We saw many walrus during the day, and suc-eeded in killing four. I shot a young one, which I was anxious to secure for the Institution, but the old one drew it off the ice, and it sank. When alarmed the cow-walrus takes the young one on her back, and, in diving, always pushes it under first, by a dexterous movement of the flipper. I have pulled around among them in a boat and watched them many times, and have never seen the cow's head go under water until the calf was out of sight. If necessary, they do not hesitate to fight for their young.

During the night of the 22d, we uncoupled the engine and worked to

Still all his actions continue, as before, to be the result of his individu character. A true 'shaman,' therefore, is not an ordinary deceiver, b rather a psychological phenomenon, by no means unworthy of atte tion. Always, after seeing them operate, they have left on my mind long-continued and gloomy impression; the wild look, the blood-sh eye, the laboring breast, the convulsive utterance, the seemingly inv untary distortion of the face and whole body, the streaming hair, t hollow sound of the drum—all conspired to produce the effect; and can well conceive that these should appear to the ignorant and supe stitious savage as the work of evil spirits."

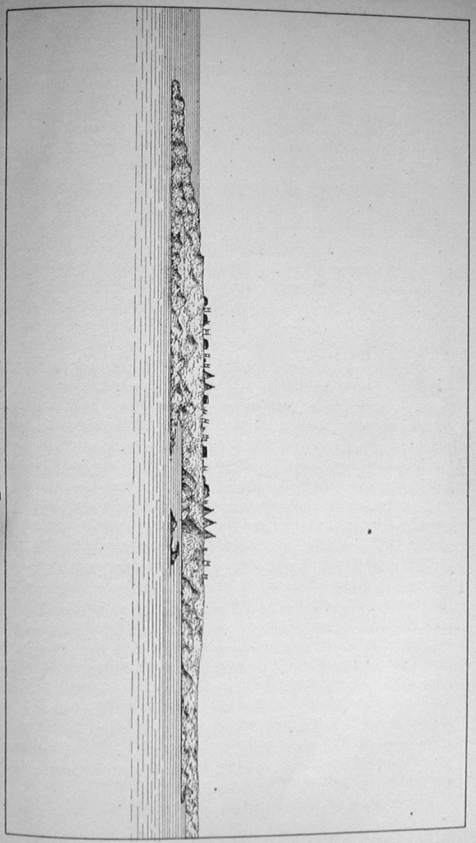
—

While at Point Barrow we measured the velocity of the current, a found it setting to the northward about two knots per hour. The te perature of the water was 40° F. We bought from the natives so eider ducks, which were found to have a strong, fishy taste, and so fish resembling shad, but smaller and very fat; they differ also fr the shad in having two double fins. We saw the same species in K zebue sound and at other places within the Arctic Circle. They a called by the natives "tupook." I preserved some specimens for t Smithsonian Institution.

Leaving Point Barrow, we steamed to the southward during the da keeping close inshore, with the lead going constantly. We found t soundings as laid down on the American hydrographic chart general correct. In the evening we anchored near False Cape, in Peard b This bay was named by Beechy after Lieutenant Peard, of her M jesty's ship "Blossom," and is erroneously called "Pearl Bay," on bo the English and the American charts.

On our passage to the northward along the shore, the natives at settlement on the Sea-horse Islands informed us that whales were oft seen inshore of the islands, and that the water there was deep. Thin ing that possibly this might afford a harbor for the whalemen, we e amined into it; but, although we found a deep hole inside, with seve fathoms of water, it was entirely surrounded by shoal water, the grea est depth being less than two fathoms, in a channel so narrow and i tricate as to be useless even for vessels of sufficiently light draught. W also made an examination of a shoal, reported to us by the whaler upon which the bark "Helen Mar" struck and remained six hour This shoal extends off from the northeast side of the outer Sea-hors Island, (called Cape Franklin on the charts,) and has two fathoms t miles off shore. Vessels entering Peard bay from the westward shou give Cape Franklin a berth of two miles and a half, and even at thi distance should keep the lead going constantly.

The Sea-horse Islands are a group of low, sandy, barren islands, co



POINT BARROW, A. T.

mencing about eighteen miles to the eastward of Point Belcher and extending several miles in a line with the coast, which at this point breaks off to the southward. They were named by Beechy on account of the number of those animals found on their shores when first visited by him in 1826.

After completing soundings in the vicinity of the Sea-horse Islands, we stood to the northward to sight the ice. We found the main pack only seven miles off the islands and nine miles off Point Belcher; it having worked inshore over ten miles since we sighted it on our way up the coast, only three days previously. The ice-pack seldom moves more than a few miles off shore between Icy Cape and Point Barrow, and is likely to close in at any time. A northeast wind, although it blows directly along shore, keeps the ice clear and allows the current to set up past Point Barrow. The heavy ice, when close inshore, stops the surface current entirely and lowers the temperature to 36° or less; so that a vessel working up this shore may readily tell if the ice is on the point by watching the set of the current and the temperature of the water. If the ice is clear of the shore, the current will be setting to northward from one to three knots per hour, with a temperature of 40°. A vessel going north of Icy Cape should sight the ice-pack frequently and keep close watch on its movements, and, in the event of its starting inshore, should get below Blossom shoal as soon as possible.

The coast-line from Cape Smyth to the Sea-horse Islands consists of a succession of clayey-looking cliffs from twenty-five to seventy-five feet high, with a shingle or sandy beach. The land in the rear is low and flat, and is covered with a swampy moss, or entirely barren. This section is said to abound in reindeer, but we saw very few, and these ran away on the approach of the vessel.

During the afternoon of the 26th, we spoke several whalers, and had the satisfaction of seeing two of them, the steam-whaler "Mary and Helen," and the bark "Hunter," each take a whale; the latter an unusually large one, which, it was said, would yield one hundred and fifty barrels of oil. The present season has been one of the most remarkable on record, not only as regards the number of whales taken, but also as regards their size. They are said to average twenty per cent. larger than usual. It is possible that there may be some connection between this and the fact that the whaling business on the Greenland coast was almost a failure last year, owing to the scarcity of whales. It is stated that only thirteen whales were taken by the entire Greenland fleet last year. I think the subject one worthy of investigation.

On the morning of the 27th of August, while running in a thick fog

in the vicinity of Icy Cape, we suddenly found ourselves among th
Blossom shoals, and hauled off to the northwest and westward to cle
them. These shoals consist of a number of banks lying parallel wi
the shore, about half a mile apart, having from two to four fathoms
water, with from five to six between them. They extend about s
miles off shore. Vessels rounding Icy Cape in thick weather shou
keep outside of ten fathoms; in clear weather, with a fair wind, a vess
may pass inside of the shoals, in three fathoms, by keeping close i
This channel is not recommended, however, when it is practicable
go around.

Soon after getting clear of Blossom shoals, the fog lifted and ga
us a sight of Icy Cape about eight miles off. This was the most nort
ern point reached by Captain Cook, and was given its name on accou
of the ice with which it was surrounded. The coast-line from Icy Ca
north to the Sea-horse Islands is low and flat, with occasional cliffs
moderate height. The back-land is also low, flat, and swampy. B
tween Icy Cape and Point Lay the shore-line is composed of a str
sand, two hundred or three hundred yards in width, and about six fe
high, behind which is a lake from two to six miles wide.

After passing Icy Cape, the wind having breezed up from the nort
east, we uncoupled the engine and ran down the coast under sa
During the night the wind increased to a fresh gale, and as it bl
directly on shore at the coal-vein, we were prevented from coaling,
we had intended. Standing on to the southward, we arrived at Poi
Hope about 10 o'clock P. M., and anchored for the night.

SEIZURE OF THE "LOLETA."

Early on the following morning, a sail was discovered to the nort
ward, standing down toward the point. An officer and boat's cre
were sent to the end of the point to intercept and board her. It prov
to be the schooner "Loleta," a well-known whiskey-trader and violat
of law on both the American and Siberian sides of the Arctic. Sh
was brought to anchor near the cutter, and a thorough search made
which resulted in the discovery of twenty-eight Winchester rifles an
twenty-four thousand cartridges. As these were contraband, I seiz
the vessel and placed Lieutenant John Wyckoff in charge, with order
to proceed to San Francisco without unnecessary delay, and report t
the Department by telegraph. I forwarded the following report of th
facts of the case to the Department:

ARCTIC OCEAN,
Point Hope, August 29, 1880.

SIR: I have the honor to report that I have this day seized, for violation of section 1955 of the Revised Statutes, in having introduced breech-loading arms within the Territory of Alaska, the schooner "Loleta," Dexter, master.

While lying at anchor on the south side of Point Hope, about 8 A. M. of this date, the "Loleta" was discovered rounding the point from the northward. An officer and boat's crew were sent on board, and the schooner brought to anchor near the vessel, where a thorough search was made, which resulted in finding twenty-eight breech-loading rifles, of the Winchester pattern, and twenty-four thousand rounds of ammunition.

The "Loleta" claims to be an American vessel and flies the American flag, but in reality belongs in the Sandwich Islands, one-fourth being owned by the master, and three-fourths by a man named Pfluger, a member of the firm of Hackfield & Co., Honolulu.

This vessel is the same which was seized at Saint Paul's Island and sent to San Francisco, last year, by Special Agent Otis, for having liquor on board. She is a well-known whiskey-trader and violator of law, both on the Asiatic and on the American sides of the Arctic. Her master acknowledges that he sailed from San Francisco with ten tierces of liquor, but claims to have sold it on the Asiatic side.

The "Loleta" has a large amount of trade-goods on board, in addition to the arms and ammunition, and was evidently bound into Kotzebue sound. At the time of seizure she was within three miles of one of the largest native settlements on the Arctic coast of Alaska.

I have placed Lieutenant Wyckoff in charge of the prize, with orders to proceed to San Francisco with all possible dispatch, and report to the Department by telegraph.

I am, very respectfully, your obedient servant,

C. L. HOOPER,
Captain, U. S. R. M.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

—

U. S. REVENUE-STEAMER "CORWIN,"
Off Point Hope, Alaska, August 29, 1880.

SIR: You are hereby detailed as prize-master of the schooner "Loleta," and will proceed with all possible dispatch with your prize to San Francisco, Cal., making no way-ports unless compelled to do so by stress of weather or other equally urgent cause. On arriving at San Francisco, you will communicate with the Department by telegram.

You will hold the vessel as a prize to the Government until legally released from custody thereof by the Department. You will allow nothing to be landed from the vessel beyond the personal effects of officers and crew.

C. L. HOOPER, *Captain.*

Lieutenant JOHN WYCKOFF.

U. S. REVENUE-STEAMER "CORWIN,"
Off Point Hope, Alaska, August 29, 1880.

SIR: In discharge of duty, I have to inform you that the schoone "Loleta," under your command, is this day seized in behalf of th United States, for violation of section 1955 of the Revised Statutes.

An officer of the U. S. Revenue-Marine Service, from this vessel, wi be placed on board to see that the vessel proceeds to San Francisco and there awaits the action of the Hon. Secretary of the Treasury, t whom I have submitted a full report of the case.

I am, very respectfully, your obedient servant,

C. L. HOOPER, *Captain.*

Captain DEXTER,
American Schooner "Loleta."

—

While we lay at anchor off Point Hope, the U. S. Coast-Surve Schooner "Youkon," was seen to pass in the direction of Kotzebu sound.

On the evening of the 29th, we got under way, and, with a fres northeast wind, stood down the coast under sail.

In the afternoon of the 30th, the wind died to a light breeze, and there being a strong northerly current, against which we could barely hold our own under sail, we anchored about fifteen miles to the north ward and westward of Cape Kruzenstern, in eleven fathoms of wate

Early the next morning, we got under way, with a light northerly wind, and ran in past the cape toward Hotham Inlet. In the afternoon we anchored, a few miles east of the cape, and sent all hands ashore t pack up and boat off wood. We succeeded in getting about six cords of inferior quality, which answered very well, however, for keeping the fires banked.

On the morning of September 1, we got under way with sail, and ra up toward Hotham Inlet, anchoring in three fathoms of water off a native settlement called "She-shore-lik," ("White-whale-town.") The inhabitants were constant visitors, and showed themselves very friendly They insisted upon making us presents of fish, reindeer-skins, and muskrat-skins, and had no hesitation in naming what they would like in return—generally powder and tobacco.

They said they had disposed of most of their furs to the Cape Prince of Wales natives. They were very anxious to purchase Winchester rifle cartridges; and when repeatedly told that we had none to sell, but had come to their country to prevent others from selling them, they offered to sell their rifles, which they said were of no use to them with out cartridges.

The enforcement of the law prohibiting the sale of breech-loading

arms and ammunition is a source of great hardship to the natives of Arctic-Alaska. Many had purchased their arms prior to the enactment of the law, and still have them, but can procure no ammunition. Having used these rifles for several years, they have become accustomed to them, while, through long disuse, they have lost much of their former skill with the bow and arrow, and depend entirely upon their guns for subsistence. This is particularly the case with those who hunt reindeer.

They buy cartridges occasionally from the Tchuktchis at fabulous prices. I am informed by the natives that some of the whalers furnish them with both rifles and cartridges.

At a settlement near Point Belcher it was reported that the steam-whaler "Mary and Helen" had purchased bone, and paid for the same in Winchester rifles. At Cape Smyth the natives reported that they had purchased arms of the same pattern from the schooner "Alaska." Having no further proof of these illegal transactions than the reports received from the natives, which may or may not be true, I could take no action in the matter.

We remained at She-shore-lik until the morning of the 3d of September, when a "southeaster" compelled us to get under way and stand off shore under sail. While at She-shore-lik, we sounded across the entrance of Hotham Inlet, hoping to find a channel of sufficient depth to enable us to enter the inlet, where the water is quite fresh, for the purpose of cleaning the boiler. We were disappointed, however, for, notwithstanding the natives had assured us that there was plenty of water, we found less than one fathom across the mouth of the inlet. Salmon were quite plenty here, and for sale by the natives at such low prices that we preferred buying to catching them ourselves in the seine. I obtained several articles of native manufacture—spears, bows, arrows, a stone adze, &c. I also received a present of a piece of greenish stone, resembling malachite. It has a fine grain, is very hard, and takes a high polish. The natives value it highly. The owner of this piece informed me that it was an heir-loom, and had been in his family for many generations, handed down from father to son. This act of generosity, of course, necessitated a present in return, and powder and caps were suggested by the native as most acceptable under the circumstances, whiskey and cartridges being tabooed.

I also purchased from an old man, two pieces of ivory, upon which were carved a number of scenes, representing some of the principal events in his life. This manner of keeping a record is quite common among them, although little importance seems to be attached to them, as their owners are always ready to dispose of them for a few plugs of tobacco.

On getting under way we stood to the westward, close-hauled, until about 2 P. M., when the course was shaped for Chamisso Island, the wind having hauled to the westward. Here we hoped to be able to fill up with fresh-water, as the supply was getting low. During the afternoon and night of the 3d, we had moderate westerly winds with rain-squalls, and made but little headway. At daylight on the 4th the wind hauled to the southeast and commenced to freshen, with indications of a "blow." Chamisso Island bearing E. S. E., by compass, distant twelve miles, to save time we coupled up the engine and steamed to an anchorage off our former watering-place on the north side of the island. To our great disappointment we found the stream dry.

The southeast wind continued to increase during the afternoon and night, until it reached a moderate gale. On the morning of the 5th, it hauled to the westward and brought in such a sea that we shifted anchorage under the southeast point of Choris peninsula, near a place which is designated on the English chart as "a place where water can be secured when the watering-place on Chamisso Island is dry;" but this place we also found to be dry.

Most of these small streams, and many of the larger ones also, are formed by the melting snow; when the snow is gone, and the water drained from the soft, sponge-like peat-moss which covers the hills, the streams run dry. We saw but few natural springs, although we examined the shore very thoroughly.

LOCATING DANGEROUS SHOALS NEAR POINT HARRIS.

Before starting from San Francisco, a letter was received from Captain S. R. Franklin, U. S. N., hydrographer to the Bureau of Navigation, which contained the following:

"While on a cruise in Behring Sea, in command of the U. S. ship 'Mohican,' 1869, I was informed of the existence of a dangerous shoal between Cape Blossom and Point Harris, in about latitude 65° N. longitude 166° W., reported by Captain Redfield, of the trading-brig 'Victoria,' who said that a vessel was lost on the shoal, which lies about eight miles from Point Harris; and that on his Blunt's chart, Point Harris is incorrectly placed.

"On examining the existing chart, Point Harris cannot be found, and there is only one Cape Blossom in Kotzebue sound, to the north of which lies Cape Kruzenstern, and to the southward Cape Choris (Choris Peninsula.) The latter may be the point which Captain Redfield intended to name; but this locality lies more than one hundred miles to the northeast of the position given. Under such circumstances the shoal could not be indicated on the chart."

The letter contained also the request that this report be investigated during this cruise.

I was unable to see Captain Redfield before sailing, but made careful inquiries in regard to the shoal of the whalers and others, and ascertained that the bark "Louisiana," while trying to elude the Confederate privateer "Shenandoah," in 1865, ran ashore in Kotzebue sound between the south end of Choris Peninsula and Chamisso Island, and was lost.

This was, doubtless, the vessel referred to by Captain Redfield, as I can learn of no other having been lost in this vicinity.

The latitude and longitude given by Captain Redfield are evidently erroneous. The natives say that the "Shenandoah" was burned by her crew after she ran aground.

Choris Peninsula and Chamisso Island form the west side of Eschscholtz bay. I examined the place carefully, and found the soundings, as marked on the British Admiralty Chart No. 593, very nearly correct. A shoal makes off to the southward from the end of the peninsula, having two and three-quarter fathoms one mile from shore.

The soundings, however, are regular, and there are no outlying shoals or obstructions of any kind.

In entering Eschscholtz bay, with a fair wind, a vessel may pass between Chamisso Island and the peninsula by keeping within one-half or three-quarters of a mile of the island. After passing a line drawn from the centre of Chamisso Island to the east side of the peninsula, she may haul up to the northward and anchor within half a mile of the latter place, in five fathoms and good holding-ground. For a vessel beating in, however, the passage south of Chamisso is recommended. This bay is the only place on the Arctic coast of Alaska that can be termed a harbor. By shifting anchorage half a mile, good shelter may be found from all winds.

Being unable to obtain water at this place, it was decided to proceed to Cape Thompson, where we remembered we had seen, on a previous visit, a stream of fresh-water.

The wind hauled to the northward during the night of the 5th, and on the morning of the 6th we got under way with sail and stood out into the sound, where we found a fresh gale blowing and a heavy head sea. We tacked ship and stood back to the anchorage. At meridian, the wind having moderated, we got under way with steam and stood to the northward, in sight of the land. About 7 P. M. we passed Cape Blossom.

During the night the wind was moderate from the northeast, freshening to a moderate gale on the morning of the 7th.

We continued to work to the northward during the day, keeping in-

shore in smooth water, the wind blowing a fresh gale. About 6 P. M. we arrived at Cape Thompson and anchored. We had some difficulty in securing holding-ground, as the bottom is very hard and the north east wind blows down off the hills with great violence. In only seven fathoms of water our starboard anchor and seventy-five fathoms of chain had no effect, until, after repeated efforts, we succeeded in finding a place directly off the watering-place, close inshore, in four fathoms of water, where the anchor held.

We remained at Cape Thompson during the following day, and succeeded in boating off 1,260 gallons of water from the stream before mentioned. This water is very convenient to obtain and of fine quality. It comes from a spring a short distance back in the hills. Another much larger mountain stream passes a short distance from the sound of this one, emptying into the sea somewhere to the northward of Cape Thompson.

On the occasion of our previous visit, a small party of natives were encamped here, engaged in catching birds, with nets. At the present time the place is deserted. Their winter settlement was a few miles farther south, at a place called by the Russians "Cape Ricord."

Captain Beechy, in the voyage of the "Blossom," speaks of meeting natives at Cape Thompson who were very hospitably inclined, inviting him to eat and trying to tempt his appetite by offering the entrails of the seal, a dish of coagulated blood, and pieces of raw blubber.

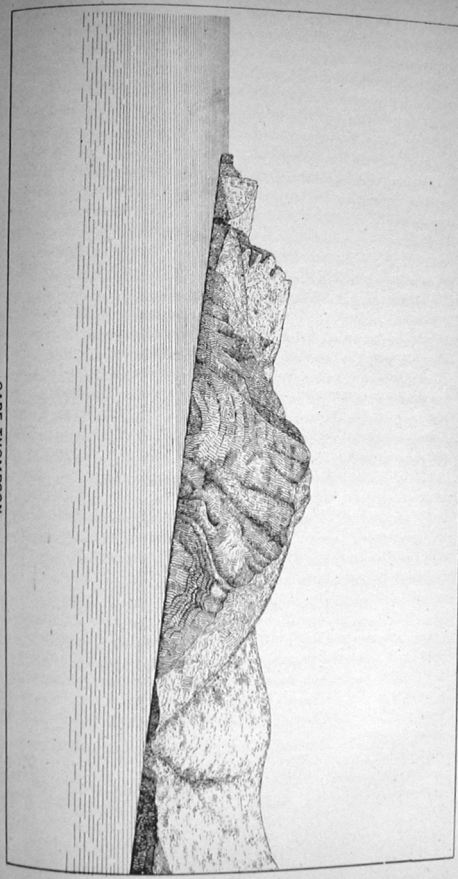
The geological formation of this place has already been referred to as presenting a most remarkable appearance. It contains a great abundance of fossil shells, "*terebratulæ*," and "*trilobites*." We secured some fine specimens for the Smithsonian Institution; also a piece of argillaceous rock, containing a remarkable number of segregated veins. This spot is well worthy the attention of a geologist.

CORRECTION OF LOCATION OF POINT HOPE.

On the morning of the 9th, the wind having moderated, we got under way and steamed to the northward, passing Point Hope about 8 A. M. Here we stopped and took several sets of sights for longitude, the results of which verified those obtained on a previous occasion, showing the point to be laid down on the American Hydrographic Chart seven miles too far west.*

On leaving Point Hope, we shaped a course for Herald shoal. The country had already assumed a wintry appearance. The high land in the vicinity of Point Hope and Cape Lisburne was covered with snow.

*Seven miles of longitude.



At the latter place the snow-line reached to the sea.

We passed a few miles to the southward of Herald shoal on the morning of the 10th. The temperature of the air was below freezing, and that of the water but little below. The air was filled with fine frost or frozen mist, which made it almost impossible to look to windward.

About noon of the 10th, we saw a bark under short sail, and immediately commenced to look for ice, which we saw an hour or two later. The sight of a whaler in the Arctic is a sure indication that ice is not far distant; the whaling-masters always look for whales close to its edge.

We ran along for an hour or two with the ice in sight from the mast-head to the northward. Soon we raised it ahead and on the port bow and beam. Taking in sail, we hauled up and ran to the southward several miles to get out of a pocket into which we had run.

We followed the general trend of the ice-pack to the westward until about 8 P. M., where it had become too dark to see ice far enough to clear it, and we lay by for the night.

On the following morning, we steamed ahead again, following the general trend of the pack as before, to the westward, until our reckoning placed us south of Herald Island, forty miles.

Since we left the vicinity of the island, on the 23d of August, the southern limit of the northern pack had so changed its position that we could not get as far north by fifty miles as we had at that time.

Whether this was due to a change in position of the main pack, or it had been augmented by loose ice brought out from the western pack, I am unable to say. As stated elsewhere, there is a quantity of loose ice along the edge of the pack at all times, and this is more or less subject to the action of the wind.

We spoke the whaling-bark "Tom Pope" the same morning, and learned from her that the northeast gale which we rode out under Cape Thompson, had been northwest in the vicinity of Herald shoal, and it is probable that in this locality it had been west or even southwest.

We found here a strong easterly set for the first time, and it is possible that the change in position of the southern edge of the pack is due rather to the accumulation of ice as above suggested.

WRANGEL LAND.

We continued to follow the pack, which gradually trended more to the southwest. At 1 P. M., the weather clearing up, we saw the high hills of Wrangel Land, bearing W. ¼ S., (true.) We ran in toward it until we came to the solid pack, the ice having the same general ap-

pearance as that we had previously encountered in the vicinity of Herald Island, except that it was covered with newly-fallen snow, and consequently white.

We judged the land to be about twenty-five miles away. The highest hills, which seemed to be more distant, were covered with snow; others were partly covered, and still lower ones were almost entirely bare.

The sight of this land repaid us, to a certain extent, for our disappointment in not finding Herald Island clear of ice, as we had hoped to do, in order that we might run lines of soundings and make a plan of the island.

That part of Wrangel Land which we saw covered an arc of the horizon of about 50 degrees, from N. W. ¼ N. to W. ¼ S., (true,) and was distant from twenty-five miles on the former bearing to thirty-five on forty miles on the latter. On the south were three mountains, probably three thousand feet high, entirely covered with snow, the central one presenting a conical appearance and the others showing slightly rounded tops. To the northward of these mountains was a chain of rounded hills; those near the sea being lower and nearly free from snow, while the back hills, which probably reach an elevation of two thousand feet, were quite white. To the north of the northern bearing given, the land ends entirely or becomes very low. The atmosphere was very clear, and we could easily have seen any land above the horizon within a distance of sixty or seventy miles, but none except that described could be seen from the mast-head.

There is a report that Sergeant Andrejew, a Cossack, reached this land in 1792, by crossing over from the main-land on the ice with dog-teams, and that he found it inhabited by a race of nomads called "Krahays." This report, however, is probably without foundation. Admiral Wrangel, who was the first to report the existence of this land, says:

"We endeavored to collect from the inhabitants (of Nishne Kolymsk) all the information they could give in relation to the country, and every thing that was remembered among them respecting early travellers having any bearing on the subject.

"They knew a great deal about the three officers who were here in 1767, but could tell us very little about Sergeant Andrejew, who was here only five years before, *i. e.*, in 1762. They had learned generally that he had been to the Indegirka and afterwards to the Bear Islands, but were ignorant of his supposed discoveries, which were included in our most recent charts; and when we spoke of a land north of the Bear Islands and traces of a nomad race in that direction, they treated it as a fable. Some of their own people had accompanied Andrejew on this journey; how, then, could the existence of a large inhabited land have been unknown or forgotten among them?"

I mention this, not to prove that Wrangel Land is not inhabited, but to show that if the Arctic exploring-steamer "Jeannette" has been fortunate enough to reach that country, as we have reason to hope, she is the first to do so, and her brave officers and crew should have the credit of it. Wrangel himself did not even see this land; he made his report of its existence from information obtained from the natives at Cape Jochan, "that on very clear days the tops of high mountains could be seen to the northward."

Captain Kellett, R. N., while cruising in the Arctic Ocean, in 1849, claims to have seen Wrangel Land on August 16. From his own statement, however, it appears that he merely caught an occasional glimpse of it through the clouds which covered it in numerous, immense masses. Under such circumstances, as he himself admits, a mistake could easily be made.

He describes the land seen by him as being from twenty-five to sixty miles distant, and at the same time speaks of "seeing distinctly" the columns and pillars which characterize the higher headlands in the Arctic Ocean, and refers, for example, to Cape Lisburne and East Cape. If what he saw was really land, the impossibility of distinguishing more than the general outline, at such a distance, must be apparent to all. There are numerous reports of whalers having seen this land, and having sailed along its shores with no ice in sight, and their tracks and positions are laid down on the American Hydrographic Chart, their exact position for each day being shown. The fact that the whalers keep no reckoning, and take no observations while whaling, will show how utterly unreliable these tracks must be.

They have a general knowledge of the part of the ocean they are in, and keep a close run of the ice-pack. Their object is to take whales, and to this they give their whole attention.

Although it is possible that there are times when the shores of Wrangel Land are free from ice, it is still very doubtful; it must certainly be but seldom.

The argument is advanced that Point Barrow, which is some miles north of the southern limit of this land, is, at times, entirely free from ice, and that, therefore, Wrangel Land must also be free. The answer to this is, that the immense body of warm water which is constantly pouring through Behring Strait into the Arctic, washes the shores of Point Barrow, but does not pass within 250 miles of Wrangel Land. The vast amount of heat diffused in this manner, and its wonderful effects, are too well known and understood to need repetition here. I believe, however, that it is possible, at times, for a strong vessel, prop-

erly equipped and fitted, to make her way inshore far enough to reach a safe harbor among the grounded ice, within easy travelling distance of the land, where she could remain in safety, and exploring parties be sent out to examine the land.

I am of the opinion that Wrangel Land is a large island, possibly one of a chain that passes entirely through the polar regions to Greenland. That there is other land to the northward there can be no doubt. Captain Keenan, then commanding the bark "James Allen," reports having seen land to the northward of Harrison's bay, a few degrees east of Point Barrow. He was "boiling out," and stood north under easy sail, during thick weather, eighty or one hundred miles. When the fog lifted high land was visible to the northward, "a long distance away, but perfectly distinct."

Large numbers of geese and other aquatic birds pass Point Barrow, going north, in the spring, and returning in August and September with their young. As it is well known that these birds breed only on land, this fact must, alone, be regarded as proof positive of the existence of land in the north. Another reason for supposing that there is either a continent or a chain of islands passing through the polar regions, is the fact that, notwithstanding the vast amount of heat diffused by the warm current passing through Behring Strait, the icy barrier is from six and one-half to eight degrees farther north, on this side, than on the Greenland side of the Arctic Ocean, where the temperature is much lower.

The Tchuktchis have a number of legends in regard to some of their people having left the main-land and crossed over the ice to "a great land," farther north; and, also, of herds of reindeer having crossed over from the north. There may or may not be foundation for these legends.

As already stated, the nearest point of this land was fully twenty-five miles within the ice-pack, and, as new ice had already commenced to form, there appeared no possibility of reaching it. Even to remain in sight of it was to expose the vessel to great danger of becoming embayed in the ice, as the large quantity of drift-ice, which lay outside of us, was likely to close in at any time and compel us to remain in the pack all winter. We therefore worked out to clear water and headed to the eastward under steam and sail.

Having visited every part of the Arctic that it was possible for a vessel to reach, penetrating the icy regions in all directions fifty to one hundred miles farther north than any vessel succeeded in doing last year, without being able to find the slightest trace, or gain the least

WRANGEL LAND.—Bearing N. W. ½ W., (true,) distant 25 miles.—September 11, 1880. From a sketch by Capt. C. L. Hooper, U. S. R. M.

tiding[illegible]e missing whalers, we were forced to the conclusion that they had been crushed and carried north in the pack, and that their crews had perished. Had any of them survived the winter, it seems almost certain that they would have been found, either by the "Corwin" or by some of the whalers, all of whom were on the lookout for them during the summer. It was thought possible that the crews might have escaped over the ice and reached Herald Island, but a sight of the perpendicular sides of that most inhospitable-looking place soon banished even this small hope. As already stated, Herald Island is inaccessible to all but birds of the air, and even were it possible for men, poorly provided for such work as they were, to reach the island, or to find shelter on it, starvation would be sure to follow.

THE "JEANNETTE."

In regard to the exploring-steamer "Jeannette," we were able to learn nothing. Such a variety of reports were in circulation concerning her that I was at first in doubt as to her safety. One report, to the effect that she had been seen by the whalers entering a "pocket" in the northern pack, to the northeast of Herald Island, which had shortly after closed and shut her in, was calculated to give the impression that she, too, had gone north in the pack. I investigated this report, however, and it proved to be without foundation. Several of the ships saw, during a partial clearing of the fog, what some supposed to be the smoke of a steamer, but what others are equally positive was "frost-smoke."

Captain Barnes, of the whaling-bark "Sea Breeze," reports having seen the "Jeannette" on the 2d of September, eighty miles south of Herald Island, in the position indicated on the American Hydrographic Chart transmitted herewith. This was only five days subsequent to the date of her arrival at Cape Serdze, from which point Captain DeLong wrote to the "New York Herald" that he should attempt to reach the southern end of Wrangel Land *via* Koliutchin bay. This being his intention, he would not be likely to go in an entirely different direction, and put his ship into the pack as early as September 2. His most natural course would be to keep to the westward, and, by taking advantage of every lead, work in and try to reach some point on the southern end of Wrangel Land, keeping his vessel out of the pack as long as possible, in order to profit by a favorable break in the ice, and gain even a few miles in the direction in which he wished to go. Failing to get sufficiently near Wrangel Land to find safe winter quarters,

he might push on and endeavor to reach the New Siberian Islands, which, although some degrees farther north, are often accessible, owing to their more favorable location.

Unlike the whalers, the "Jeannette" is a strong vessel, well fitted for such encountering the ice, and her crew were thoroughly equipped for such travelling over the ice, if necessary; so that, even should she become embayed in the ice, and her crew compelled to leave her, there would be no difficulty in reaching the main-land, or, if in the vicinity of Wrangel Land, in crossing over the ice with the boats which they have properly fitted for travel, and reaching the whaling-fleet. This, however, her commander would not be likely to do until he had completed his explorations, which, I am convinced, he will be compelled to make in dog-sleds, judging from what I have seen of the ice. To attain a high latitude with a vessel in this part of the Arctic would seldom be possible. The whalers follow the ice-pack very closely between Herald Island and Point Barrow, and none as yet have been able, so far as known, to reach the 74th degree of latitude, while only one or two claim to have been as far north as 73 degrees. In the Greenland seas, on the contrary, it is no uncommon thing for whalers to reach the 78th degree, or even higher. From what I can learn from the accounts of those who have travelled in other parts of the Arctic, and from my own observations in this part, I believe that nowhere else within the Arctic Circle does the ice remain permanently so far south as between Wrangel Land and Point Barrow.

I have no fears for the safety of the officers and crew of the "Jeannette." The fact that they have not been heard from seems to indicate that the vessel is safe, and that they consider themselves able to remain another year at least. Should they be compelled to abandon the vessel and cross over to the main-land during the winter, they would find no difficulty in reaching Plover or St. Laurence bay, where they would be well cared for by Tchuktchis, as, in fact, would be the case at any place on either the Asiatic or the Alaskan coast.

After bidding adieu to Wrangel Land, we steamed to the eastward, reaching Point Hope about 9 P. M., on September 12, and Cape Prince of Wales on the evening of the 13th. From the latter place we shaped a course for St. Michael's, where we arrived at 9 P. M. on the following evening, and anchored outside the harbor until daylight, when we steamed in and came to anchor off the town. We took on board the remainder of the coal landed at this place by the steamer St. Paul—some twenty-eight tons.

At the request of the Alaska Commercial Company's agent, Mr. Lorentz, I landed the extra stores taken on board at Ounalaska, and also furnished him, from the ship's stores, twenty sacks of flour (one thousand pounds) and five hundred pounds of sugar. Unusually large shipments of these articles to the traders in the interior, and the non-arrival of supplies from San Francisco, had left them without a sufficient quantity for their winter use.

On the morning of the 17th, we got under way, and, after stopping for an hour to communicate with the trading-post of the Western Fur and Trading Company on the eastern side of the bay, stood to the westward under steam and sail, with a strong northerly wind.

On the morning of the 18th, we sighted St. Laurence Island. I had intended to stop here to gain additional information in regard to the starvation of the natives, but, owing to the easterly gale which came on, and a heavy sea, was prevented from doing so. On the evening of the 20th, we arrived at St. Paul's Island and anchored off the south-east point near the village. The number of seals on the Seal Islands is said to be greater than ever before. The increase is particularly noticeable among the young seals, with which the beaches were literally covered. They are so fearless that they will scarcely move sufficiently to avoid being stepped upon. Special Agent H. G. Otis informed me that he had visited Otter Island several times during the summer, and that no vessels or unauthorized parties had been seen anywhere in the vicinity of the Seal Islands. In this connection I would respectfully state that, in my opinion, it is unnecessary for the cutter cruising in this district to leave an officer on Otter Island. The island is in plain sight of St. Paul's, and can easily be visited by one of the Treasury agents stationed there, should it be necessary.

We left St. Paul's early on the morning of the 21st of September, and shaped our course for St. George, which place we reached four hours later, but were unable to land owing to the heavy surf on the beach, and so kept away for Ounalaska. During the night we had a fresh southeast wind until midnight, when it shifted to northwest, and increased to a fresh gale, with heavy squalls. At 8 A. M. on the 22d, we sighted the island, and at 11 o'clock made fast to the buoy in Ounalaska harbor.

We remained at Ounalaska until the morning of October 2, during which time a supply of coal was taken in. On the morning of the 2d, we set sail for San Francisco.

At the request of the agent of the Alaska Commercial Company, the following articles from the ship's stores were transferred to him, to be replaced on our arrival at this port: 7 barrels beef, 5 barrels pork, 400 pounds rice, 700 pounds beans and 135 pounds coffee.

His Eminence, Bishop Nestor, of the Greek Catholic Church, desiring to reach San Francisco, and being unable to obtain transportation for some months, was invited to take passage on this vessel.

The weather on our homeward passage was most favorable, allowing us to make a remarkably quick run. We arrived here on the morning of October 12.

THE INNUITS—ILLICIT TRAFFIC—RECOMMENDATIONS.

I enclose a tracing from the British Admiralty chart, showing the location of the permanent Indian settlements in that part of Alaska bordering on the Arctic Ocean and Behring Strait, from Cape Douglas on the south, including King's Island and East Diomede, to the Mackenzie river on the north; also, a tabulated statement, showing the latitude and longitude of each settlement and the approximate number of inhabitants. Those marked with an asterisk were visited by us; the others I have estimated from Captain E. E. Smith, ice-pilot, and from other reliable sources.

According to Dr. Rink, the name "Eskimo," applied to these people, was first given to the natives of Southern Labrador as a term of derision by the inhabitants of Northern Labrador, and means "raw-fish-eater." I use the modern spelling of the word, although I can see no reason for the change, unless it be a step toward the general introduction of the phonetic style. The name with which they refer to themselves and to each other is "Innuit." They know no other name. It would seem much the better way to drop entirely the term of reproach applied by one tribe to another, and use the name properly belonging to them, rather than to soften down the former by a change in spelling.

The Innuits are a peculiar and very interesting people. Those found within the limits named above are totally unlike the "Esquimaux" described in books of travel. They are tall and muscular, many of them being over six feet in height; one seen at Cape Kruzenstern was fully six feet and six inches in height. Their remarkable physical development is, I presume, due to a mixture with the Indians of the interior, a race of large and powerful men, who come to the coast each year to trade, and with whom they intermarry.

They have low, narrow foreheads, small, dull-looking black eyes, high cheek-bones, large mouths and very thick lips. The hair, which is black and coarse, is cut short on the crown of the head. The men wear a piece of stone, ivory, or glass, according to the wearer's fancy, in the lower lip, under each corner of the mouth, through holes made for the purpose. These ornaments, called "tootacks," are made in a variety

of shapes, round, square and oblong being the most common. They are from three-quarters of an inch to two inches in diameter, and from one-eighth to one-half inch in thickness, and are made of a stone resembling gray granite, and a greenish stone resembling malachite, which takes a high polish. Those of glass are made from old bottles, which are broken in pieces as near the required shape as possible, and these pieces ground down by rubbing on flint. The women do not wear the "tootacks," their only ornaments being strings of beads worn in the hair and iron rings on the wrists, with occasionally a brass or silver finger-ring. They are much shorter and more fleshy than the men. Their dress consists of a shirt of reindeer or seal-skin, called "at-te-ghe;" trousers, called "ka-ko-leek," of the same material as the shirt; and seal-skin boots, called "koh-muck," which are partly filled with straw; these are also made of reindeer-skin. The costumes of male and female are alike, except that the "at-te-ghe" of the female is rounded at the bottom. The "at-te-ghe" is fitted with a hood, which covers the head completely, and is faced with some longer fur, generally wolf or wolverine. The latter is a favorite, being highly esteemed on account of some peculiar power it is supposed to possess in warding off evil. In the winter, a cap, "nah-shak," and mittens, "at-kum," of skin, are worn; also a shirt made of drilling, worn over all to shed the snow.

These people are remarkably free from any appearance of disease or physical deformity. At Point Hope, however, we noticed a few cases of a kind of scalp-disease, resembling "tenea capitis." It is said that, Spartan-like, the natives destroy all deformed children at birth. The women are not prolific; it is seldom that more than two or three children are seen in one family.

The infants and very young children are carried on the back, beneath the "at-te-ghe," in which position the child seems to be very comfortable, and the mother to be not at all inconvenienced. The operation of getting the child into this position, however, and also of removing it, requires some skill, and should a white mother attempt it, would possibly result in broken bones for the child. The parents are kind to their children, and show great affection for them. Punishment of a child is almost unknown among them.

When visiting the vessel, their first request would be for bread for the babies, and of any food given them the greater portion was invariably given to the children. They seem also to show great consideration for the aged.

Like all aborigines, the men are lazy and compel the women to per-

form all the manual labor. I saw two women, each with a child on her back, drawing a thirty-foot net for salmon, while the men stood by smoking, without offering to assist, although it was evident that the task was much too difficult for the women.

These people are remarkably good-natured, laughing heartily at every trifle, and always smiling when spoken to. They are very susceptible to ridicule, and to escape it will do many things not otherwise characteristic of them.

They have no marriage ceremony; when an Innuit brave desires a wife, he makes an offer of a present, generally an "at-te-ghe," to the maiden of his choice; if it is accepted she becomes his wife, and is taken to his "tupeck." This brief form of marriage seems to be quite as effective as the more elaborate form of civilization. They seem to live happily together, and separations are very unusual, especially if children have been born to them. In cases where there are no children by the first wife, it is not unusual for a second to be taken. The two wives are said to occupy the same "tupeck," without envy or jealousy.

The native language differs very materially in different localities. Our interpreter from St. Michael's was of no use to us north of Kotzebue sound, and even there it was difficult for him to understand the dialect. The change is gradual. At each settlement, from Cape Prince of Wales north, we observed a slight difference; the sound of words changed so as to be almost unrecognizable, or the words were dropped entirely and new ones substituted, until almost an entire change had been effected in the language; so that a vocabulary made at Cape Prince of Wales would be almost useless at Point Hope, and entirely so at Icy Cape or Point Barrow. A few substantives alone remain the same all along the coast.

The occupations of the natives consist principally in hunting seals and belugas and catching fish, and occasionally capturing a "bowhead" whale. They exchange seal-skins, oil, &c., with the Indians of the interior, for fox, marten, beaver, wolf, land-otter, and wolverine-skins, and these they in turn dispose of to traders, together with the bone of the "bowhead," receiving whiskey, tobacco, guns, ammunition, knives, calico, drilling, beads and other articles. The best furs are always reserved for the purchase of whiskey and breech-loading arms.

The seal may be called the mainstay of the Innuit of Arctic-Alaska. The flesh and oil form his chief articles of subsistence; the skin furnishes him clothing, tents and boats; cut into thongs, it is used to

make nets for catching fish and birds. The oil is also burned in lamps, ("nannue,") which light and warm the "tupecks" during the long, dark winter nights.

They hunt seals on the ice in the spring and fall, and show themselves marvels of patience, lying flat on the ice for hours, waiting for a seal to appear. The seal is very shy, and seldom moves far from the hole in the ice, which they keep open by scratching. The hunter approaches cautiously, by crawling over the ice, his body nearly prostrate, raised slightly on one elbow. He has a piece of bear-skin, about two feet long and a foot wide, which he attaches to his leg on the side upon which he rests; this enables him to slide more easily over the ice. The elbow rests upon a ring of grass. He carries a stick, to which is attached the claw of some animal or bird, to use in imitating the scratching of the seal on the ice. In the other hand he supports his rifle, in readiness for instant use.

Salmon and other small fish are taken in nets, either by a seine in the ordinary way, or by means of a gill-net, which is set from the shore in a very ingenious manner. This net of seal thongs is from thirty to forty feet in length and about five feet wide; floats of light wood are attached to one side, with pieces of stone for sinkers on the other side, and to the outer end is secured a stone somewhat larger than the rest, serving as an anchor; a number of short poles, about three inches in diameter, are lashed together to a length of sixty or eighty feet, and the end secured to the stone anchor by means of a loop, which allows the whole pole to be withdrawn after the net is set. This pole is used for pushing the net from shore into the desired depth of water; when let go the net naturally assumes a perpendicular position. The outer end is held in place by the stone anchor, while the inner end is fastened to a line of seal-thong leading to the shore, with which the net is drawn in.

The "beluga" are hunted in kyacks; a dozen or more natives take up a position near the entrance of some bay, where they can see them as they come in with the tide. As soon as they have passed, the natives paddle out behind them, and, by shouting and beating the water, drive them into shoal water, where they are easily dispatched with flint spears. According to their tradition, to kill the beluga with any other weapon, would entail endless misfortune upon the guilty party.

In hunting whales, the natives use the "oomiak." They use spears, with heads of flint or walrus ivory, pointed with iron; the pole is about six feet long, and attached to it by a line of seal-thongs, is a seal-skin poke. A number of these spears being thrown into the whale, the pokes prevent him from going far below the surface, and

enable the natives to track him, and be on hand to kill him when he comes up to breathe. The carcass, including flesh and blubber, is used as food, and is the property of every man, woman, and child in the settlement; the bone, however, belongs to those who took part in the capture. The maxillary bones of the whale are cut into strips and used for shoeing the runners of their sleds, and, for this purpose, are said to be superior to iron or steel.

One of the most remarkable traits of this peculiar people is their aversion to salt, which they will not eat in any form. I have seen them, when offered a choice piece of corned beef on the vessel, taste it, and, on finding that it had been salted, spit out the mouthful with a wry face, and throw the remainder on the deck in disgust. No matter how putrid a whale or seal may be, they eat it raw and unseasoned with evident relish. The odors exhaled from a party of Innuits after such a feast cannot be described.

The natives are inveterate smokers. I believe that every man, woman, and child in Arctic-Alaska smokes a pipe. They manufacture their own pipes of brass, copper, and iron. The stem is of wood, about ten inches long, and is in two pieces, bound together with strips of whalebone or sinew. The bowls are often made of two or three kinds of metal, as neatly joined as could be done by any jeweller. A small skin bag, hung from the neck, holds the pipe, and a smaller bag, tobacco, flint, and steel, also a quantity of wild cotton, soaked in a solution of gunpowder, which is used as tinder. A sharp-pointed piece of metal, used for cleaning the pipe, is attached to the stem with a thong. In using the pipe, a small quantity of hair from an "at-te-ghe," or other convenient skin, is put in the bottom of the bowl, and over this some finely-cut tobacco, the bowl holding only a small pinch. The pipe is lighted with flint, steel and tinder, and the native commences to draw vigorously, swallowing the smoke, which he retains in his lungs as long as possible. A fit of coughing follows, which I at first thought would certainly terminate the life of the smoker in several instances. It is not an unusual occurrence for a native, who has been without tobacco for a long time, to retain the smoke in his lungs until he falls over senseless, having the appearance of a person under the influence of opium. This state lasts but a few minutes, however, when the same performance is gone through with again.

The natives lead a nomadic life in the summer, but have permanent winter residences, to which they return before cold weather sets in. Their peculiar manner of travelling has been elsewhere described.

The religious belief of the Innuit is of a crude, indefinite nature, to the effect that there is a Power which rewards good Innuits and punishes bad ones, after death, by sending them to different places. At some localities they told us that the good went to a place above, while at others it was thought that the place was below. They have only a confused idea of the subject, however, and seemed anxious to avoid speaking of it any more than was necessary. Their belief evidently reaches nothing of truthfulness, honesty or other virtue, or that "cleanliness is next to godliness."

The traditions of this people are different at nearly every settlement. This is easily accounted for by the fact that they are seldom narrated, and, therefore, no one becomes sufficiently familiar with them to repeat them correctly. It seems to be considered a duty to repeat them to the children when old enough to understand them, and thus they are handed down from one generation to another. It is easily seen how imperfect memory, and the tendency to exaggerate, which this people possess, in common with all aborigines, eventually work such a change in the traditions of the race that the originals are entirely lost.

An instance of this tendency to enlarge and deal in the marvellous is related of a "shaman" or medicine-man from one of the tribes on the Yukon, who came with the traders to St. Michael's one season, and saw the Alaska Commercial Company's steamer, "St. Paul," lying at anchor. He was much astonished, and tried to measure her length and breadth with his paddle, but gave it up. On his return home he endeavored to give an idea of the size of the vessel by a comparison with distances over the ground, increasing it a little each time he told the story, until he made the steamer's length half a mile, and her height several hundred feet.

Our native interpreter gave the Innuits assembled at Cape Blossom, an account of our seizure of the "Leo" for selling whiskey. The story went from one settlement to another until it reached St. Michael's long before our return, but so exaggerated and overdrawn as to be quite unrecognizable, as it accused us of sinking vessels and shooting down their crews as they attempted to escape over the ice.

We endeavored to learn something of the sign-language in use among the natives, but succeeded poorly, owing to the briefness of our visits. To gain a knowledge of the speech, traditions, or sign-language of this people, that would be of any value, a residence among them would be absolutely necessary for several reasons; they dislike to talk of such things, and, even if inclined to do so, have not sufficient command of language to enable them to give a clear explanation. Another

great drawback is their dread of ridicule, owing to which they can only be drawn out little by little, and by dint of incessant questioning. They use signs continually. If one wishes to tell you that he has killed some "beluga," he imitates the blowing and motions of the animal, as it dives and comes up to the surface again, and his own motions in paddling the kyack, and throwing the spear, indicating the number by holding up his fingers. If they wish to speak of a Henry rifle, they go through the motions of loading and firing; for cartridges, they make the motions of loading only.

On first approaching a vessel, one native stands up in the bow of the oomiak, and extends his arms at full length, raises them until the hands meet above the head, then, with the arms still extended, he drops them to his side. This he repeats several times, each time saying "nakourueck," (good.) If the same sign is made in return, they approach the vessel at once without fear; if not answered, they approach cautiously, from time to time repeating the sign.

They have a "shaman," or doctor, who practises all kinds of trickery and deceit, much of it so transparent that it seems almost incredible that even the most ignorant or superstitious person could be deceived by it. They believe in witchcraft, and do many odd things to ward off its evil effects.

They have no laws. A few simple rules exist among them, which he who will may break, as there are no penalties imposed for their violation. There are no hereditary chiefs, but generally there is in the settlement one man, called the "omalik," who is recognized as a kind of leader.

The custom of exacting blood for blood prevails among them. It does not, however, seem to be necessary that, to observe this custom and avenge the death of a relative, an Innuit should run any risk to his own life; there is no haste, and he generally waits until he can accomplish his vengeance without danger to himself. This vengeance, though often long delayed, is almost certain to come at last. Instances are related of a young Innuit, after arriving at the age of manhood, avenging the murder of a parent or brother committed during his infancy. All things considered, however, murders and crimes of all kinds are remarkably rare among the Innuits. They are good-natured and kind-hearted when not under the influence of liquor, and could, in my opinion, be more easily civilized than any other Indians in America. At many places visited by us, on being informed of the object of our visit, they said that they would be glad to have the whiskey trade stopped, fully acknowledging their inability to resist the temptation to buy and drink it, if put in their way. The natives at Point Barrow,

several years ago, bought from a trader a large quantity of liquor; the result was, that they neglected to hunt seal for winter use, and many starved to death. Since then they have requested the traders, and those of the whalers who have been in the habit of carrying liquor to trade, not to bring any more. I am informed, moreover, that some of them even refuse to buy when it is offered to them. Instances of this kind, however, are rare, and it is only too probable that their good resolutions will not long remain proof against temptation if it be constantly thrown in their path.

In this connection I would most respectfully urge upon the Government the necessity for some prompt measures to prevent this great evil. The manner in which the whiskey trade is carried on is well known. Vessels clear from San Francisco with alcohol for the Siberian coast, giving bonds not to dispose of it on the American side, and on their return produce a certificate, signed by some of the ship's company, but purporting to be from some person at Plover bay or St. Lawrence, in Siberia, to the effect that the alcohol was landed at one of those places. In all probability they have not been within one hundred miles of either place.

Even admitting that the liquor was landed as they claim, the result is the same; it is drunk by the Tchuktchis or carried by them to the American side and sold. Other vessels clear from San Francisco with large quantities of bay-rum, Florida water, &c., which are sold to natives for drink.

Still another class, which includes many whalers, take in a supply of alcohol at the Sandwich Islands. In order to break up this illicit traffic, I respectfully offer the following recommendations: That the collector of customs at San Francisco be instructed to refuse a clearance to any vessel having on board bay-rum, Florida water, or any other alcoholic preparations, as all such are intended to be sold to the natives for drink; also, to all vessels having on board alcohol for the Siberian coast, as such commerce is in violation of the laws of a friendly power. A large portion of this whiskey, as before stated, finds its way to the natives of Alaska, either through fraudulent action on the part of the traders, or by native barter.

It is also respectfully recommended that all whalers clearing from San Francisco be notified that hereafter the laws relating to the introduction of fire-arms and liquor into Alaska, will be rigidly enforced. A revenue-cutter should be detailed each year to cruise in the Arctic Ocean, until the illicit trade is entirely broken up. The vessel should leave San Francisco early enough to reach St. Laurence Island in ad-

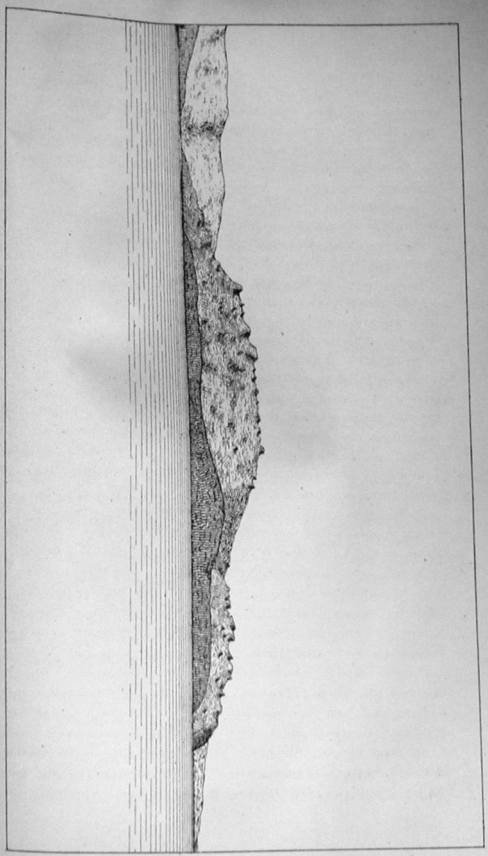
vance of whalers and traders, and should follow them into the Arctic, keeping a close watch on their actions, and searching them thoroughly, whenever found within the jurisdiction of the United States. With the co-operation of the Russian Government, this contraband trade might be wholly destroyed. Active measures on the part of Russia would not be necessary; the concession to the United States of the right to search suspected vessels for contraband goods on the Siberian coast would be sufficient. I would respectfully recommend that some action be taken by our Government with a view to obtaining this concession.

A glance at the chart will show the impossibility of one cutter protecting the entire coast of Alaska. The Arctic coast-line between Cape Prince of Wales and Point Barrow is some seven hundred miles in extent. This is fully as much as one vessel can attend to.

In regard to the breech-loading arms possessed by many of the natives, (some purchased prior to the enactment of the law prohibiting their sale to Indians, and others purchased since the enactment,) I would state that I did not feel justified in depriving the natives of one of their principal means of subsistence, although the possession of such arms is a violation of law. In case it should be deemed advisable to seize these arms, I would respectfully recommend that the natives be furnished with double-barrelled shot-guns and ammunition. The exchange can easily be effected by the commanding officer of the revenue-cutter. In my opinion, the change would be beneficial, as they have difficulty in procuring ammunition for their breech-loaders, and pay most exorbitant prices for them.

It is also respectfully recommended that some action be taken to bring to justice the murderers of the trader Kosheomikoff and Mrs. Bean, on the Yukon and Tennenah rivers. These are believed to have been deliberate murders, and the alleged perpetrators are still at large. They should be punished, not only on the plea of justice, but to insure the safety of the lives and property of other traders. The natives in that section are a bad lot, and only the fear of punishment will restrain them from committing crime against the whites.

The commanding officer of the revenue-cutter on the Alaska station next year might be authorized to detail an officer and ten men, with a Gatling gun, from the vessel, to make the arrests. For this purpose additional men should be allowed. The officer and men could make the passage up the river on the steamer belonging to the Alaska Commercial Company, or that of the Western Fur and Trading Company, taking one of the revenue-cutter's boats in tow. The return passage



CAPE SERDZE KAMEN, ASIA.

Bearing W. (mag.) 40 dist. 7 miles. Lat. 67° 05' N., Long. 171° 40' W.

could be made in a few days in the boat. I am convinced that such a course would have a most salutary effect, and prevent much serious trouble in future.

ZOOLOGICAL DATA.

Of animal life in Arctic-Alaska, the fo'lowing species are known to exist. I made close observations and careful inquiries, and believe the list to include every species, although it is possible that some varieties may be omitted. Following is the list:

Mammals.

Bowhead whale	*Balæna Mysticetus.*
California gray whale	*Rhæhianectes Glaucus.*
Fin-back whale	*Balænoptera Velifera.*
White whale	*Beluga Catodon.*
Walrus	*Trichechus Rosmariis.*
Large hair seal	*Phoca Greenlandica.*
Small hair-seal	*Phoca Vitulina.*
Leopard seal	*Phoca Pealii.*
Polar bear	*Ursus Maritimus.*
Brown bear	*Ursus Arctos.*
Black bear	*Ursus Americanus.*
Gray wolf	*Canis Lupus.*
Wolverine	*Gulo-Luscus.*
Red fox	*Canis Fulvus.*
Blue fox	*Canis Lagopus.*
Silver-gray fox	*Canis Argentata.*
Black fox.	
White fox.	
Cross fox.	
Lemming.	
Lynx	*Felis Lynx.*
Otter	*Lutra Mollis.*
Ibex	*Cabra Ibex.*
Mink.	
Pine marten	*Mustella Americana.*
Reindeer	*Tarandus Greenlandicus.*
Marmot	*Arctomys Marmota.*
Squirrel	*Sciurus.*
Ermine	*Mustella Erminea.*
Muskrat	*Fiber Zibethicus.*

Porcupine	*Erethizon Dorsatum.*
Beaver	*Castoride.*
Moose	*Alce Machlis.*
Badger	*Meles Labradoria.*
Rabbit	*Lepus Cumculus.*
Hare	*Lepus Timidus.*

Birds.

Swan, (two varieties.)	Old squaw.
Goose, (three varieties.)	Loon.
Eider duck, (two varieties.)	White owl.
Sprig-tail duck.	Sparrow, (two varieties.)
Teal duck.	Bee-bird.
Snipe.	Wren, (two varieties.)
Curlew, (straight-beak.)	Raven.
Godwit.	Auk.
Sandpiper.	Crested auk.
Plover.	Lesser auk.
Peewit.	Bowhead bird.
Ptarmigan.	Tern.
Spruce grouse.	Robber-bird.
Hawk, (three varieties.)	Guillemot.
Murre.	Swallow.
Puffin, (two varieties.)	

Fish.

Salmon.	Flounder.
Salmon-trout.	Whitefish.
Herring.	Tom cod.
Smelt.	Sculpin.

Insects.

Bee.	Beetles.
Butterfly.	Mosquito.
Horse-fly.	Gnat.
Sand-fly.	Spider.
Common house-fly.	

Whales are found in all parts of the ocean. They enter as soon as ice breaks up, and remain until compelled to leave by the sea closing up again.

The natives affirm that they are most numerous after the departure of the whaling-fleet in the fall. As stated elsewhere, they are most frequently found in the vicinity of ice.

A variety of Balæna Mysticeta, called by the whalers "bowhead," is the most common. The California gray whale and fin-back whale are much more rare; in fact, are seen only occasionally in the Arctic. The white whale, although confined to no particular part of the Arctic, is most numerous in the vicinity of the fresh-water rivers which empty into Kotzebue sound. The grampus, like the California gray whale and fin-back whale, is not found in numbers in the Arctic.

The walrus, like the whale, is found generally in the vicinity of ice. It enters this ocean in the spring, as soon as the straits open, and remains until driven out by the ice, when it retires to the Behring Sea. The young are brought forth on the ice during the spring months.

Walrus collect on the ice in large numbers. These groups are called by the whalers "pods." We saw hundreds of these animals drifting through the straits on ice-floes, during the month of June. They are found in the greatest numbers along the western ice-pack near the Asiatic shore, early in the season. Later they are found along the northern pack, between Herald shoal and Point Barrow. They seldom haul out on the main pack, but select detached floes, the better to observe the approach of their natural enemy, the Polar bear.

Seals are met with in all parts of the Arctic. The common hair-seal, (Phoca Vitulina,) and the large hair-seal, are the most numerous. The latter I believe to be the large seal of Greenland, (Phoca Greenlandica,) both from appearance and from the similarity of the native names, that in Greenland being Ou-üke, and that in Alaska, U-jüke.

The leopard seal is not so common; still it is met with in all parts of the ocean.

While cruising to the westward of Herald shoal we saw two seals of a different variety from others mentioned. They were smaller than the small hair-seal, with a slender body and pointed head; the color was dark. Our attempts to secure them were unsuccessful.

Polar bears are found distributed over nearly the entire ocean. They are generally on the ice, or in its vicinity, although instances are recorded of their being found at sea fifty miles from any land or ice. They grow to an enormous size; of six killed by us during the cruise, the smallest would weigh at least nine hundred pounds and the largest some two thousand pounds. They swim rapidly when pursued, and seek to escape by diving, but can remain under the surface only a

few seconds. When wounded they almost invariably turn and show fight.

The other mammals are generally distributed throughout the country. Reindeer are said to be most numerous in that section lying between Point Belcher and Point Barrow, although they often change their habitation, at times migrating in great numbers to regions hundreds of miles distant.

Moose do not come down to the coast, but are numerous in the interior. The ibex is found back in the hills, and is said to be plentiful, but, owing to the difficulty in getting at them, few of them are killed, and their skins are seldom seen among the natives.

Muskrats and squirrels are very numerous all over the coast. The natives offered large quantities of these skins for sale. They are seldom made up into wearing apparel, the skins of reindeer and seal being the favorite materials.

At Point Barrow we saw a small animal resembling the lemming.

Of birds, we saw at the Diomedes myriads of gulls, with black-tipped wings; many crested auks; lesser auks; two varieties of puffins, in great numbers, and a few pigeon guillemots.

These birds are said to breed on the island. I endeavored to get specimens of their eggs, both here and elsewhere, but failed, the period of incubation having passed before we arrived in the Arctic.

At Cape Espenberg, numbers of large eider ducks were seen; also, a few sprigtail ducks, old squaws, plover, and two varieties of snipe. Cape Thompson and Cape Lisburne are breeding-places for murre, puffin, and gulls. At every visit to these localities the face of the cliffs, and the air itself, seemed alive with birds.

At Wainwright Inlet and Point Belcher we saw hundreds of large white owls, and many large gulls, robber birds, and tern, and a few sparrows.

At Point Barrow we saw large numbers of small birds, called by the whalers "bowhead birds;" also, gulls, tern, eider ducks, robber birds, and ravens. The last-named were seen all along the coast.

The smaller birds and insects, although seen at all points on the coast, were most plentiful at Kotzebue sound. In the vicinity of Herald Island we saw many murre, a few large white gulls, robber birds, and pigeon guillemots.

The salmon is the only variety of fish in the Arctic that is of any value. Although smaller than the salmon caught farther south, they are of fine flavor. They are quite plentiful, and the coast natives cure large quantities of them by smoking and drying, for winter use.

THE ICE AND ITS HABITS.

Before closing my report, a few words in regard to the ice, in a general way, may not be out of place. In that part of the Arctic visited by the "Corwin," the ice is quite different from that in the vicinity of Greenland. No immense icebergs raise their frozen peaks hundreds of feet in air. The highest ice seen by us during the season would not exceed fifty feet in height. The average height of the main pack is from ten to fifteen feet, with hummocks that rise to twenty or thirty feet. Occasionally, however, fields are met with which rise forty or even fifty feet above the water. The specific gravity of sea-ice is .91; hence only about a tenth is visible above the surface of the water. A field twenty feet in height may have a depth of nearly 200 feet. This enormous thickness is caused by one layer being forced upon another by the action of wind and current. The greatest thickness it attains by freezing is about eighteen feet; at that depth ice ceases to be a conductor of temperature. The maximum depth reached in a single winter is, according to Parry, Wrangel, and other Arctic travellers, about nine and one-half feet.

The ice of the Arctic Ocean is never at rest. Even in the coldest winters it is liable to displacement and pressure by the currents of air and water. The expansion and contraction, due to changes in temperature, also assist in this disturbance. Owing to these combined causes, the surface of the ice always presents a rough, uneven appearance.

Along the edge of the pack, during the summer, is generally found a belt of drift-ice, varying in width according to the direction of the wind. When the wind blows off the pack, drift-ice is frequently found fifteen or twenty miles from the main body. At times the pack itself opens in leads, by which it may be penetrated for several miles. In venturing within the limits of the pack, however, a sharp watch must be kept on the movements of the ice and a retreat made at the first indication of its closing.

A vessel beset in the pack is as helpless as if she were as far inland, while there is imminent danger of being crushed at any moment.

When the wind blows on the pack, the drift-ice becomes as close as the pack itself.

In addition to the constant twisting, turning, breaking, and piling-up of the ice, by the causes mentioned, the whole body has a northeasterly set, moving very slowly, but none the less surely. An idea of the dangers of ice-navigation may be formed from the fact that since 1871 fifty-four out of the small fleet of vessels engaged in whaling have been lost in this part of the Arctic. Of this number thirty-three have been

beset in the pack and drifted to the northeast, carrying with them sixty men, who remained by their ships in the vain hope of saving them, and of whom nothing has ever been heard or seen. The above estimate does not include the "Mount Wollaston" and "Vigilant."

Arctic ice is of four colors: white, brownish gray, green and blue. New ice, and that formed from snow, is white and generally opaque. The grayish ice is found in shallow, muddy water; this variety also is opaque, and often there is a deposit of sand and earth upon it, giving it a dirty appearance.

The salt is not wholly eliminated from the greenish ice; it has a bitter taste, and seems to be the intermediate state between the white ice and the blue, the latter being quite fresh and transparent. Layers of these different varieties are frequently seen heaped one on another; the colors are bright and distinct, and in a bright sunlight the effect is very beautiful.

Light reflected from the ice to the air above, shows at a distance a yellowish tinge; this is called an "ice-blink;" by it the observer may often determine the nature of the ice, whether pack or drift. The "blink" over drift-ice shows dark lines over the leads of open water, while that over the solid pack-ice is of a uniform yellow tinge to the horizon. The blink is often visible at a distance of thirty or forty miles, while the ice itself cannot be seen, even from the mast-head, farther than ten or twelve miles, and from the deck not more than five or six.

The general breaking up of the ice in this region, commences in May or June in the vicinity of Behring Strait, and continues until the first part of September, after which time new ice begins to form, although the sea is not entirely closed for some weeks later. The heavy gales keep the larger floes in motion and prevent them from uniting in one mass. After October 1, the water is so chilled that a general closing up of the sea is likely to occur at any time. Formerly the whale-ships did not remain in the Arctic later than the middle of September, but as whales grew scarcer they prolonged their stay each year, until last year they did not leave until after the middle of October. This resulted in the loss of three vessels and two entire crews; a fourth vessel, the bark "Helen Mar," Captain Bauldry, barely escaped, bringing with her the crew of the bark "Mercury," one of the lost vessels. Her escape was effected by carrying all sail with a strong, fair wind, and forcing a passage through the new ice, which was so thick that at times her headway was entirely lost until a stronger puff of wind started her again. In this way the vessel worked on a few miles each day, reaching Behring Strait about the 1st of November.

The "barrier," or that part of the ice which does not break up, varies slightly in position from year to year, but generally may be looked for near Icy Cape during September. It extends westerly as far as Herald shoal, where it takes a northwesterly direction to the vicinity of Herald Island. Here, in August and September, a lane of open water is generally found, extending to the northward. This space is at first filled with broken ice. On our second attempt to reach the island, we steamed up this lane over fifty miles, with the pack in sight from the mast-head on both sides. The last twenty miles we were compelled to force our way through drift-ice.

As stated elsewhere, the ice-barrier extends several degrees farther south between Point Barrow and Wrangel Land, than in any other part of the Arctic regions.

I am, very respectfully, your obedient servant,

C. L. HOOPER,
Captain, U. S. R. M.

Hon. JOHN SHERMAN,
Secretary of the Treasury, Washington, D. C.

INDEX.

ABSTRACT OF THE METEOROLOGICAL JOURNAL of the United States Revenue-Stea

Day of Month.	Wind. Direction.	Wind. Force.	Current. Set.	Current. Drift per 24 hrs.	Barometer. Max.	Barometer. Min.	Barometer. Av.	Magnetic Variation. (East.)	Temperatures. Air dry-bulb. Max.	Air dry-bulb. Min.	Air dry-bulb. Av.	Air wet-bulb. Max.	Air wet-bulb. Min.	Air wet-bulb. Av.	Sea-surface. Max.	Sea-surface. Min.	Sea-surface. Av.	Clouds—Lower. Form.	Clouds—Lower. Direction.	Squalls. Hours of— Direction.	Squalls. Light.	Squalls. Heavy.	Squalls. Very heavy.	Particulars Incidents of the Weather. Hours of— Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	State of Sea. (Symbols.)	State of Weather. Symbols.	State of Weather. Sky clear, 10ths.	Course
								° ′																										
1	Southerly	4	E. by N. ¼ N.	14	30.30	30.08	30.22	19 41	50	44	47							Nimb. cum. str.	Northerly					4						M.	o. m.	0	N. 56° W.
2	S. E.	6			29.93	29.30	29.50	19 41	44	42	43							Nimb. cum. str.	N.W.	S. E.		5		16	8						R.	o. m. r.	0	N. 70° W.
3	West	5			29.45	29.25	29.32	19 41	43	38	41							Nimb. cum.	Easterly					8							M.	o. r.	0	N. 73° W.
4	S. W.	4			29.60	29.50	29.52	19 41	44	40	43							Nimb. cum.	N. E.	S. W.	2			10								c. q. r.	0	
5	Variable	2			29.72	29.60	29.66	19 41	54	40	44							Nimb. cum. str.	N. E.					16								o. r.	0	
6	Variable	2			29.72	29.60	29.66	19 41	54	40	43							Cum. nimb.	N. E.					14								c. r.	0	
7	Variable	1			29.90	29.76	29.74	19 41	53	41	45							Cum. nimb.	Variable					10								o. r.	0	
8	Variable	1			30.05	29.90	29.98	19 41	48	44	46	48	44	46	40	40	40	Nimb. cum. cirr.	Variable					2							S.	b. c. r.	3	N. 31° W.
9	Variable	2			30.13	30.05	30.08	19 41	42	37	40	42	37	40	38	33	34	Cum. nimb.	Variable						10		16				S.	o. f. m.	0	
10	Variable	1	S. ¾ E.	8	30.25	30.09	30.19	19 41	50	34	39	50	34	39	38	32	34	Cum. nimb. str.	Variable						4		4				S.	o. f. m.	1	N. 20° E.
11	S. W.	5			30.45	30.18	30.28	19 41	40	31	35	39	31	34	34	29	31	Cum. nimb.	N. E.												M.	c.	0	N. 36° E.
12	S. W.	5			30.55	30.45	30.50	19 41	43	36	39	40	35	37	35	32	33	Cum. nimb.	N. E.						4		5				S.	o. f. m.	0	
13	N.W.	2	Eastward		30.54	30.50	30.52	19 41	43	30	37	42	30	35	34	30	31	Nimb. cum cirr. str.	S. E.						4	2	2				S.	b. c.	9	N. 30° E.
14	N.W.	2	Variable		30.40	30.25	30.33	19 41	48	31	38	45	30	36	35	30	31	Cum. cirr. str.	S. E.						7		4				S.	b. c.	9	N. 23° W.
15	Variable	2	Variable		30.40	30.25	30.33	19 41	48	31	38	45	30	36	35	30	31	Cum. nimb.	Variable						18		18				S.	f. m.	0	N. 42° W.
16	S. W.	2	Variable		30.20	30.04	30.11	19 41	42	29	35	38	29	33	31	29	30	Nimb. cum. cirr.	N. E.					4	8		8				S.	o. f. m. r.	0	
17	N. E.	0-6	Variable		30.05	29.79	29.88	19 41	41	34	36	37	33	35	33	30	31	Cum. nimb.	S. W.					8						16	S.	o. r. s.	0	
18	N. N. W.	5			29.95	29.80	29.87	19 41	50	33	40	45	32	37	36	30	32	Nimb. cum. str.	S. E.											8	S.	b. c. s.	0-8	
19	N.W.	5-0	N. by E.		29.90	29.80	29.84	22 30	44	34	38	41	32	36	37	34	34	Cum. cirr.	S. E.												S.	b. c.	9-1	N. 37° E.
20	Variable	4-0			29.91	29.77	29.86	22 30	48	35	42	44	35	39	35	33	34	Cum. cirr. str.	N. E.												S.	b. c.	0-6	
21	S. W.	2			29.97	29.85	29.93	22 30	46	37	40	44	35	37	33	31	32	Cum. cirr. str.	N. E.												S.	o. b. c.	1	
22	Variable	1			29.92	29.86	29.89	22 30	50	37	42	43	36	39	34	31	33	Cirr. str.	Variable									20			S.	b. c.	0-7	
23	Variable	2	North	12	30.10	29.80	29.97	22 30	47	37	42	46	36	40	41	36	37	Cum. cirr.	East						4		14				S.	b. c. f. m.	0-6	N. 34° W.
24	Variable	0-3	Variable		30.17	30.10	30.13	22 30	47	37	42	46	36	40	41	36	37	Cum. cirr.	North						12		23				S.	b. c. f. m.	0-5	N. 63° W.
25	Variable	2			30.10	30.04	30.06	22 30	44	36	41	42	35	39	42	35	37	Cum. cirr. str.	Variable						4		6				S.	b. c. f. m.	0-10	N. 88° W.
26	Variable	2			30.12	30.08	30.10	22 30	53	42	47	49	40	45	46	35	40	Cirr.	Variable												S.	b. c.	9	
27	S. W.	1-4			30.25	30.04	30.15	22 30	53	37	45	49	37	45	39	30	35	Cum. cirr. str.	N. E.								2				S.	b. c. f.	0-7	
28	Variable	0-5			30.10	30.05	30.07	22 30	48	35	42	47	34	41	42	31	38	Cum. cirr. str.	Variable								4				S.	b. c. f.	0-6	
29	N.W.	2-5			30.25	30.12	30.17	22 30	38	33	36	37	33	35	34	30	33	Cum. cirr. str.	S. E.						16		18				M.	b. c. f. m.	0-5	N. 42° E.
30	N.W.	2			30.30	30.25	30.27	22 30	56	37	42	49	36	36	42	33	36	Cum. cirr. str.	S. E.												S.	b. c.	2-9	N. 1° W.

GICAL JOURNAL of the United States Revenue-Steamer "THOMAS CORWIN," for the Month of June, 1880.

—Lower.	Squalls. Hours of—			Particulars Incidents of the Weather. Hours of—							State of Sea.	State of Weather.		Course.	Distance.	Latitude—North.		Longitude—West.		Deep-Sea Soundings.		Surface Observations.				Remarks.
Direction.	Direction.	Light.	Heavy.	Very heavy.	Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	(Symbols.)	Symbols.	Sky clear, 10ths.			Obs.	D. R.	Obs.	D. R.	Fathoms.	Bottom.	Drift.	Tide-rips.	Ice.	Discolored water.	
																	° ′	° ′	° ′	° ′							
Northerly						4						M.	c. m.	0	N. 56° W.	173	51 37	51 31	156 01	156 16							
N.W.	S. E.		5		16	8						R.	c. m. r.	0	N. 70° W.	235		52 56		162 02							
Easterly					8							M.	c. r.	0	N. 73° W.	146	53 54	53 28	165 19	164 59							Arrived at Unalaska.
N. E.	S. W.	2			10								c. q. r.	0													
N. E.					16								c. r.	0													
N. E.					14								c. r.	0													
Variable					10								c. r.	0													
Variable					2							S.	b. c. r.	3	N. 31° W.	68.5		54 57	166 58	167 35							Left Unalaska.
Variable						10		16				S.	c. f. m.	0													Touched at Saint George and Saint Paul.
Variable						4		4				S.	c. f. m.	1	N. 20° E.	126.5	59 03	59 12	169 07	169 10	18	F. b. s.	D.	T. R.			
N. E.												M.	c.	0	N. 36° E.	103.8		60 27	167 05						I.		2.15 A. M., sighted heavy field-ice.
N. E.						4		5				S.	c. f. m.	0											I.		At Nunivak Island.
str. S. E.						4	2	2				S.	b. c.	9	N. 30° E.	30.5		60 41		166 04					I.		Entered the ice-pack.
S. E.						7		4				S.	b. c.	9	N. 23° W.	28	61 05	61 06	166 10	166 27	5-6¼	Sand			I.		Working through the ice-pack.
Variable						18		18				S.	f. m.	0	N. 42° W.	5		61 10		166 19	5	Sand			I.		Working through the ice-pack.
N. E.					4	8		8				S.	c. f. m. r.	0							4½	Sand			I.		Working through the ice-pack.
S. W.					8						16	S.	c. r. s.	0											I.		Ice more open; heavy northeast snow-storm.
S. E.											8	S.	b. c. s.	6-8			61 50	61 48	166 15	166 22	3½-9	Sand	D.		I.		Steaming through heavy drift-ice.
S. E.												S.	b. c.	9-1	N. 37° E.	127	63 27	63 31	163 05	163 30	4-7½	Sand	D.		I.		In Norton sound. Heavy drift-ice.
N. E.												S.	b. c.	0-6											I.		In Norton sound. Heavy drift-ice.
N. E.												S.	o. b. c.	1											I.		In Norton sound. Heavy drift-ice.
Variable								20				S.	b. c. f.	0-7											I.		In Norton sound. Heavy drift-ice.
East						4		14				S.	b. c. f. m.	0-6	N. 34° W.	24.5		63 48		162 36	7-11	S. and g.			I.		In Norton sound. Heavy drift-ice.
North						12		23				S.	b. c. f. m.	0-5	N. 63° W.	53.5		63 24		164 24	8-9	Sand			I.		Working through heavy drift-ice; touched at Saint Laurence Isl
Variable						4		6				S.	b. c. f. m.	0-10	N. 88° W.	85.9	63 40	63 27	166 31	167 52	5-11	S. and m.			I.		Heavy drift-ice in sight; saw walrus; touched at Plover bay, As
Variable												S.	b. c.	9			63 49		170 59		9-14	S. and g.			I.		Saw large numbers of elder duck.
N. E.								2				S.	b. c. f.	0-7			65 36	65 37	170 27		7-24	S., g., and m.			I.		Touched at Saint Laurence bay; entered Arctic.
Variable								4				S.	b. c. f.	0-6			65 36	65 37	170 27						I.		Heavy ice-pack to northward and eastward; hauled dredge.
S. E.					16			18				M.	b. c. f. m.	0-5	N. 42° E.	142.7		67 01	167 17	166 55	14-24	M. and s.			I.		Steaming along the pack, various courses.
S. E.												S.	b. c.	2-9	N. 1° W.	83.2	67 41	68 24	166 31	167 20	22-25	M.			I.		Steaming along the pack, various courses.

ABSTRACT OF THE METEOROLOGICAL JOURNAL of the United States Revenue-Ste

Day of Month.	Wind. Direction.	Wind. Force.	Current. Set.	Current. Drift per 24 hrs.	Barometer. Max.	Barometer. Min.	Barometer. Av.	Magnetic Variation, (East.)	Temperatures. Air dry-bulb. Max.	Air dry-bulb. Min.	Air dry-bulb. Av.	Air wet-bulb. Max.	Air wet-bulb. Min.	Air wet-bulb. Av.	Sea-surface. Max.	Sea-surface. Min.	Sea-surface. Av.	Clouds—Lower. Form.	Clouds—Lower. Direction.	Squalls. Hours of— Direction.	Squalls. Light.	Squalls. Heavy.	Squalls. Very heavy.	Particular Incidents of the Weather. Hours of— Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	State of Sea. (Symbols.)	State of Weather. Symbols.	State of Weather. Sky clear, 10ths.	Cou
								° ′																										
1	Westerly	1–4			30.30	30.25	30.27	25 19	51	38	42	46	36	40	42	34	36	Cum. cirr	Easterly												M	b. c.	7-9	S. 71°
2	S. E.	0–3			30.32	30.05	30.16	22 30	49	37	42	44	36	39	39	32	36	Cirr. cum. str	N. W												S	b. c.	1-9	N. 39°
3	S. E.	0–3			30.00	29.90	29.97	22 30	62	41	48	56	39	46	46	36	39	Cirr. cum. str	N. W												S	b. c.	2-9	N. 88°
4	Variable	0–3			29.95	29.87	29.91	25 19	56	45	47	52	41	45	40	32	38	Cirr. cum. str	Variable												S	b. c	1-6	S. 60°
5	N. W	0–2			29.88	29.85	29.85	28 08	55	41	47	52	39	44	40	34	38	Cirr. cum. str	S. E												S	b. c	2-9	S. 10°
6	Variable	0–3			29.99	28.90	29.93	25 19	57	44	47	52	42	45	50	35	40	Cirr. cum. str	Variable												S	b. c.	8-9	S. 35°
7	West	1			30.07	29.98	30.03	22 30	76	46	57	64	45	54	54	44	49	Cirr. cum. str	East												S	b. c	1-8	S. 49°
8	S. W	0–3			30.27	30.14	30.20	22 30	64	52	57	58	48	53	52	52	52	Cirr. cum	N. E							3					S	b. c. f	0-9	
9	Variable	1–2			30.23	30.00	30.14	22 30	58	52	55	55	51	53	58	52	55	Cum. nimb. cirr	Variable												S	o. b. c	0-9	
10	Variable	2–3			29.95	29.88	29.90	22 30	63	52	55	57	50	53	55	51	54	Cum. nimb. cirr	Variable												S	o. b. c	0-4	
11	West	1–3			30.07	30.00	30.04	22 30	62	47	54	56	45	50	52	43	48	Cum. nimb. cirr	Eastward							2					S	f. b. c	0-9	N. 62°
12	Variable	0–4			30.00	30.00	30.05	22 30	56	43	50	53	42	47	46	32	40	Cum. nimb. cirr	Variable												S	b. c	7-8	N. 62°
13	Variable	0–2			30.22	30.12	30.17	29 10	65	45	50	56	43	47	42	34	40	Cum. nimb. cirr	Variable												S	b. c. f	0-8	N. 59°
14	Westward	1–4			30.27	30.08	30.17	30 56	51	41	46	47	39	43	44	38	40	Cum. nimb. cirr	Eastward							2					S	b. c. f	2-7	E. 4° S
15	Variable	1–4			30.19	30.00	30.08	30 56	53	42	49	51	40	47	46	36	42	Cum. nimb. cirr	Eastward												S	b. c	0-5	
16	Variable	0–5			30.15	29.98	30.07	28 08	64	48	55	58	46	52	48	44	45	Cum. nimb. cirr	N. W												S	b. c	2-4	
17	S. W	2–5			29.90	29.75	29.82	28 08	53	42	49	50	41	47	48	40	44	Nimb	N. E							2	6		22			S. M	b. c. f. m	0-7	N. 36°
18	S. W	2–6			29.75	29.54	29.63	27 47	46	37	42	45	35	41	42	30	36	Nimb. cum. cirr	N. E							8	2		7			S. R	b. c. f. m	0-8	N. 5°
19	N. W	4–7			29.92	29.80	29.84	28 00	42	36	38	39	34	36	31	28	30	Cum. cirr. str	S. E												M. S	b. c	2-8	N. 22°
20	N. W	2–5			29.98	29.90	29.95	25 50	52	33	40	46	31	37	32	29	31	Cum. cirr. str	S. E										4			S	b. c. f	0-9	N. 52°
21	S. S. E	4–7	Northward	48	29.94	29.82	29.89	25 50	44	37	41	42	34	39	32	32	32	Nimb	N. W								2		4			M	ç. f. m	0	N. 41°
22	S. E	7–0	Northward		29.98	29.88	29.95		42	35	39	41	34	39	34	32	32	Nimb	N. W							2	4		22			M. S	c. f. m. r	0	
23	S. W	1–0			29.98	29.95	29.97	31 09	46	37	42	44	35	39	36	31	33	Cirr. cum. str	N. E								2		2			S	b. c. f. m	0-3	N. 46°
24	S. W	2–6			29.97	29.85	29.90		42	35	42	49	35	39	41	30	33	Cum. nimb. str	N. E							2	2				3	S	b. c. m. s	2-0	N. 63°
25	West	2–6	Southward		30.00	29.85	29.92	23 10	40	35	38	38	33	36	36	32	34	Cum. nimb. str	Eastward										2		4	R. S	b. c. f. s	2-0	N. 69°
26	Southward	1–3	Southward		29.92	29.81	29.86		41	32	37	39	31	35	38	32	35	Nimb. cum	Variable										12		6	S	c. f. s	0	N. 39°
27	Variable	1–5	Variable		29.88	29.70	29.79		43	38	40	43	37	39	40	32	36	Nimb							12	12		22			S. M	f. m. r	0	S. 3° W
28	S. S. W	3–4	N. N. E	48	29.94	29.65	29.79		42	39	40	41	39	40	40	38	39	Nimb	N. E								24		6			M	o. f. m	0	S. 55° E
29	S. S. W	2	Northward	17	30.12	29.92	30.03		47	43	44	45	40	43	47	42	45	Nimb. cum. cirr. str	N. E							4	6					M. S	b. c. m. r	0-7	S. 44° E
30	S. S. E	2–5	N. N. E	8	30.14	30.05	30.10	28 08	47	42	45	47	41	44	42	38	40	Nimb. cum. cirr. str	Northw'd										4			S. M	b. c. f	0-8	N. 77°
31	S. S. E	5–8	N. E. ½ N	9	30.30	30.10	30.15	30 56	46	42	44	44	41	43	39	35	36	Nimb. cum	N. W	S. S. E			12			6					M. R	e. q. m	0	N. 23°

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Squalls. Hours of—			Particular Incidents of the Weather. Hours of—							State of Sea.	State of Weather.		Course.	Distance.	Latitude—North.		Longitude—West.		Deep-Sea Soundings.		Surface Observations.			Remarks.
ction.	Light.	Heavy.	Very heavy.	Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	(Symbols.)	Symbols.	Sky clear; 10ths.			Obs.	D. R.	Obs.	D. R.	Fathoms.	Bottom.	Drift.	Tide-rips.	Ice.	Discolored water.	
											M	b. c.	7–9	S. 71° 07′ W.	132.5	° ′ 67 03	° ′ 66 58	° ′ 171 40	° ′ 171 56	13–27	S. and m.			I.		Steaming along edge of pack; hauled dredge.
											S	b. c.	1–9	N. 32° 33′ W.	95.2	68 17	68 25	173 30	174 07	23–27	S. and m.			I.		Following edge of ice-pack to northward and eastward.
											S	b. c	2–9	N. 88° 29′ E.	64.5	68 35	68 18	171 27	169 42	27–30	S. and m.			I.		Following edge of ice-pack to northward and eastward.
											S	b. c	1–6	S. 60° 16′ E.	122.2	67 39	67 34	168 09	167 41	14–30	S. and m.			I.		Steaming along the pack to southward and eastward.
											S	b. c	2–9	S. 10° 57′ W.	103	66 01	65 48	167 51	166 47	9–15	Sand			I.		Following edge of pack to southward.
											S	b. c	8–9	S. 35° 11′ W.	57.8	65 11	65 14	168 15	169 11							Through Behring Strait and into Norton sound.
											S	b. c	1–8	S. 49° 17′ E.	146	63 30	63 34	164 34	163 51	7	Sand					Reached Saint Michael's.
							3				S	b. c. f	0–9													At Saint Michael's.
											S	o. b. c	0–9													At Saint Michael's.
											S	o. b. c	0–4									D.				Left Saint Michael's.
							2				S	f. b. c	0–9	N. 62° 55′ W.	123	64 22	64 25	165 47	166 16							
											S	b. c	7–8	N. 62° 16′ E.	36.9	65 30	65 28	168 00	168 00	5–10	Sand			I.		Heavy ice at Point Clarence and Cape Prince of Wales.
											S	b. c. f	0–8	N. 59° E.	29	66 19	66 15	166 20	166 37					I.		Heavy drift-ice passing to northward and eastward.
							2				S	b. c. f	2–7	E. 4° S	34	66 37	66 32		165 19	4–9	Sand			I.		Heavy pack-ice in entrance to Kotzebue sound.
											S	b. c	0–5			66 35		166 03						I.		Worked into sound and found clear water.
											S	b. c	2–4			66 14		161 46						I.		In Eschscholtz bay. Visited Elephant point, and obtained bones of mammoth elephant, &c.
				2	6		22				S. M	b. c. f. m	0–7	N. 36° W.	33		66 41		162 33	4–8	S. and m.			I.		Heavy ice along shore at Cape Kruzenstern.
				8	2		7				S. R	b. c. f. m	0–8	N. 5° W	35	67 05	67 03	163 24	163 26	3–8	M			I.		Drift-ice passing to northward and eastward along shore.
											M. S	b. c	2–8	N. 22° W.	36	67 32	67 37	164 59	164 16	4–8	Sand			I.		Steaming along Alaskan shore. Ice to seaward.
							4				S	b. c. f	0–9	N. 52° W.	81	68 18	68 27	167 03	167 07	7–10	Sand			I.		Ice-pack lying off shore.
					2		4				M	ç. f. m	0	N. 41° E	17		68 40		166 17	4	Sand		T.R.	I.		Heavy drift-ice passing up along shore.
				2	4		22				M. S	c. f. m. r	0				68 40		166 17	4	Sand		T.R.	I.		At Point Hope. Heavy drift-ice along shore.
					2		2				S	b. c. f. m	0–3	N. 46° W.	35		69 05		164 59	5–7	Mud			I.		Heavy drift-ice along shore. Stopped at a coal-vein, near Cape Sabine.
				2	2					3	S	b. c. m. s	2–0	N. 63° W.	79	69 39	69 41		168 24	10–31	Mud			I.		Steaming to westward. Heavy pack to northward and westward.
							2			4	R. S	b. c. f. s	2–0	N. 69° W.	117	69 58	70 23		173 47	28	B. m			I.		Following edge of pack to westward.
							12			6	S	c. f. s	0	N. 39° W.	49		70 39	175 05	175 10	21–28	S. b. m			I.		Worked through pack to within 35 miles of Herald Island.
				12	12		22				S. M	f. m. r	0	S. 3° W	74		69 25		175 16	28–30	S. and m.			I.		Vessel lying to off the pack until 8 A. M., then stood to eastward.
					24		6				M	o. f. m	0	S. 55° E.	163	66 42	66 54		169 15	16–19	S. and m					Sighted Cape Thompson.
				4	6						M. S	b. c. m. r	0–7	S. 44° E	131	66 42	66 24		162 19	3–11	S. and m					Barometer above 30 inches for first time since 16th.
							4				S. M	b. c. f	0–8	N. 77° W.	130	67 02	66 54	167 15	167 20	11–19	Sand					
S. E			12			6					M. R	c. ç. m	0	N. 23° E.	120		68 52		165 09							At coal-vein, near Cape Sabine.

ABSTRACT OF THE METEOROLOGICAL JOURNAL of the United States Revenue-St

Day of Month.	Wind.		Current.		Barometer.			Magnetic Variation (East.)	Temperatures.									Clouds—Lower.		Squalls. Hours of—			Particular Incidents of the Weather. Hours of—						State of Sea.	State of Weather.	
	Direction.	Force.	Set.	Drift per 24 hrs.	Max.	Min.	Av.		Air dry-bulb.			Air wet-bulb.			Sea-surface.			Form.	Direction.	Direction.	Light.	Heavy.	Very heavy.	Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	(Symbols.)	Symbols.	Sky clear, 10ths.
									Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.															
					° ′																											
1	S. S. E.	5-8	N'd and E'd		30.12	29.85	29.97		56	44	49	54	43	47	36	36	36	Nimb	N. W	S. S. E		39	4		6						M. S	b. c. q. m	0-1
2	Variable	1-6	N'd and E'd		29.85	29.60	29.73		47	35	44	46	34	43	36	34	36	Cum. nimb. str	Variable	South	8				12		2				S. R	b. c. q. m	0-1
3	Westward	1-6			30.00	29.72	29.86	37 10	43	33	39	39	32	36	39	33	37	Cum. nimb. str	Eastward					2							R. M	b. c. r	0-3
4	Southward	2-5	S'd and E'd		29.88	29.60	29.70	25 12	43	35	40	42	35	39	36	34	35	Cum. nimb. str	Northward						8		4				M. S	b. c. f. m	0-1
5	Variable	0-5			29.95	29.75	29.89	22 40	39	35	37	38	34	36	39	34	35	Cum. nimb. str	Variable												M. S	b. c. f. m	0-1
6	S'd & E'd.	0-4			29.90	29.75	29.83	17 12	44	37	40	43	37	40	40	33	36	Cum. nimb. str	Westward						12		1				S	o. r. f	0
7	Southward	0-4	E. by N	22	30.05	29.88	29.96	22 30	46	39	42	45	38	41	40	36	39	Cum. nimb. str	Northward						2		4				M. S	b. c. r. m	0-6
8	S'd & W'd.	0-4	E. by N	22	30.00	29.80	29.94	22 30	55	43	49	53	42	48	46	40	42	Cum. cirr. str	Northward					8	4						S. M	b. c. r. m	9-0
9	S. E	2-3			29.82	29.80	29.80	23 10	45	40	44	44	39	41	42	35	37	Nimb	N. W					8	8		22				M	o. f. m. r	0
10	Variable	4-5			29.80	29.70	29.78		50	46	47	49	45	46	42	42	42	Nimb	Variable	Northward	6	4					4				S. H	c. f. q. r	0
11	Eastward	1-3	Northerly		29.90	29.75	29.84		51	47	48	50	42	47	42	42	42	Cum. nimb	Variable	Northward	4			10	8		4				S. H	f. m. q. r	0
12	Variable	0-2	N. E. by N	12	30.00	29.92	29.97	22 30	49	45	46	48	44	45	46	39	42	Cum. nimb	Variable	Westward				6	10		18				M. S	c. f. m	0
13	Variable	1-4	Northward	31	30.05	29.93	29.97	25 47	50	45	47	49	36	45	44	39	42	Cum. nimb. str	Westward					12			8				M. S	b. c. f	0-4
14	N. N. W.	1-3	Northward	31	29.98	29.95	29.96	25 47	49	40	45	49	37	43	36	42	39	Cum. nimb. str	S. E								3				S	b. c. f	0-2
15	Northward	2-5			29.90	29.88	29.90	22 48	40	34	37	39	33	36	40	33	33								24		24				S	f. m	0
16	E. N. E.	5-6			29.95	29.85	29.90	23 10	37	34	43	37	34	35	40	32	37								24		24				S. M	f. m	0
17	N. E.	2-6			29.90	29.80	29.84		35	33	34	35	34	34	38	30	33	Cum. nimb	S. W						20		14				M. S	c. f. m	0
18	Northward	2			29.93	29.88	29.89		36	33	34	35	33	34	35	30	32	Cum. nimb	S. W						20		20				S	c. f. m	0
19	Northward	2	Southward		29.98	29.88	29.92		41	34	36	40	34	35	38	32	34								24		24				S	f. m	0
20	Northward	3			30.04	29.98	30.01		38	34	36	37	34	35	40	34	37	Cum. nimb	Southward						12		24				S	o. f	0
21	Southward	1-3			30.30	30.05	30.19		43	37	41	43	37	40	46	36	39	Cum. nimb	Southward						12		16				M. S	c. f. m	0
22	Eastward	1-4	N. E	15	30.38	30.28	30.33	35 00	43	39	41	44	38	41	41	35	40	Cum. cirr. str	S. W						10		12				S. M	b. c. f. m	0-3
23	N. E	3-5	E. by N	20	30.30	30.08	30.16	38 27	45	35	39	44	35	38	40	38	38	Cum. nimb. cirr. str	S. W								2				S. M	c. m	0
24	Eastward	1-4			30.10	29.98	30.05	38 16	53	37	44	50	37	41	40	36	38	Cum. nimb. cirr. str	S. W					1	10		10				S	b. c. f. m. r	0-6
25	Westward	1-2			30.20	30.07	30.13		46	42	44	45	41	43	42	38	40	Cum. nimb. cirr. str	N. E												S	b. c	1-6
26	Eastward	2			30.24	30.18	30.20		50	46	43	48	41	44	43	40	42	Cirr. cum. str	Westward												S	b. c	0-2
27	Eastward	0-5	East	24	30.15	29.90	30.07		45	43	44	44	42	43	42	42	42	Cirr. cum. str	S. W	N. E	2						4				S. M	b. c. f. q	0-7
28	E. N. E.	3-7			29.90	29.80	29.84		44	40	43	44	40	43	47	42	44	Nimb. cum. cirr	S. W	N. E	2						2				M	b. c. f. q	0-6
29	Northward	5-6			30.05	29.90	29.96		47	43	45	46	42	47	48	42	46	Nimb. cum. cirr	S. W	Northward	2										M. S	b. c	0-5
30	Northward	1-5	N. W	37	29.90	29.82	29.86		47	46	46	45	43	46	48	44	47	Cum. cirr. str	S. W												M. S	b. c	1-8
31	Variable	2-5			29.80	29.70	29.73	27 50	49	44	46	47	41	44	50	45	47	Cum. nimb. cirr	Westward												S	b. c	0-7

JOURNAL of the United States Revenue-Steamer "THOMAS CORWIN," for the Month of August, 1880.

Squalls. Hours of—			Particular Incidents of the Weather. Hours of—							State of Sea.	State of Weather.		Course.	Distance.	Latitude—North.		Longitude—West.		Deep-Sea Soundings.		Surface Observations.			Remarks.
Direction.	Light.	Heavy.	Very heavy.	Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	(Symbols.)	Symbols.	Sky clear, 10=bk.			Obs.	D. R.	Obs.	D. R.	Fathoms.	Bottom.	Drift.	Tide-rips.	Ice.	Discolored water.	
															° ′	° ′	° ′	° ′							
S. S. E		30	4		6						M. S	b. c. q. m	0–1												At anchor off coal-vein.
South	8				12		2				S. R	b. c. q. m	0–1												Steaming to westward.
				2							R. M	b. c. r	0–3	N. 71° W	122. 5	69 31	69 33		170 33						Steaming to westward.
					8		4				M. S	b. c. f. m	0–5	N. 40° W	132. 5	71 04	71 04	174 40	174 38	22	Mud			I.	Steaming along ice-pack; sighted Herald Island, W. ½ N. 50 miles; unable to work up to it.
											M. S	b. c. f. m	0–1	S. 22° W	71	70 00	70 00		176 09	28	Mud				Steaming to southward and eastward along edge of pack.
					12		1				S	o. r. f	0	S. 3° E	109		68 11		175 59					I.	Steaming along edge of pack to southward and eastward.
					2		4				M. S	b. c. t. m	0–6	N. 86° E	101		68 18		171 28	19		D.		I.	Steaming through drift-ice to southward and eastward.
				8	4						S. M	b. c. r. m	9–0	S. 34° E	140		66 03		167 55		Hard		T. R.		Through Behring Strait.
				8	8		23				M	o. f. m. r	0	S. 47° W	118		64 45		171 22	26	Sand				Hove to in fog in Behring Sea.
Northward	6	4					4				S. H	c. f. q. r	0							18–25	Sh. and s				Reached Plover bay, Asia.
Northward	4			10	8		4				S. H	f. m. q. r	0												At Plover bay.
Westward				6	10		18				M. S	c. f. m	0	N. 55° E	103		65 14		170 05	25–29	Rocky				D. W	In Behring Sea; saw belt of discolored water of reddish hue.
				12			8				M. S	b. c. f. r	0–4	N. 5° E	104		67 29		168 29					I.	Entered Arctic. Large fields of ice to northward and eastward.
							3				S	b. c. f	0–2	N. 6° W	127. 5		69 37		168 55			D.			Saw patches of "whale-food" and "medusidæ."
					24		24				S	f. m	0	N. 44° W	170		71 35		174 37	23–26	B. m			I.	Working through drift-ice toward Herald Island.
					24		24				S. M	f. m	0	S. 1° W	30. 5		71 06		174 38					I.	Hove to in sight of pack.
					30		14				M. S	c. f. m	0	N. 46° W	23. 5		71 22		175 22	30–45	M			I.	Sighted Herald Island 7 miles to westward. Heavy pack-ice.
					20		20				S	c. f. m	0	S. 69° E	6		71 19		175 05	32–38	M. and g		T. R.	I.	Hove to, and standing off and on near pack.
					24		24				S	f. m	0	N. 28° E	15. 5		71 26		175 30	38–46	G. and m	D.		I.	Hove-to near ice-pack.
					12		24				S	o. f	0	S. 9° W	8		71 18		175 35					I.	Entered the pack and worked to within 3½ miles of Herald Island; stopped by heavy pack.
					12		16				M. S	c. f. m	0	S. 59° E	146		70 08		165 26	17–19	Sand	D			Standing to eastward; no ice in sight.
					10		13				S. M	b. c. f. m	0–3	N. 79° E	123	70 35	70 20		163 44	20–24	M. and s			I.	Sighted heavy ice-pack to the northward.
						2					S. M	c. m	0	East	72		70 35		160 36	7–23	Sand			I.	Saw drift-ice during morning.
				1	10		10				S	b. c. f. m. r	0–6	N. 62° E	30		70 48		159 25	6–10	Sand			I.	Saw drift-ice during night.
											S	b. c	1–6	N. 62° E	62		71 15		156 40	4–8	Sand				Steaming along shore to Point Barrow; ice well off shore; saw many whales.
											S	b. c	0–2	S. 65° W	47. 5		70 57		158 45					I.	Standing to southward along shore; saw "Aurora Borealis."
N. E	2						4				S. M	b. c. f. q	0–7	S. 62° W	65		70 35		161 40	9–22	S. and g				Standing to southward along shore.
N. E	2						2				M	b. c. f. q	0–6	S. 35° W	91		68 56		165 05	7–13	G. and s				At Point Hope.
Northward	2										M. S	b. c. q	0–5				68 17		166 35	18	G				Fine display of "Aurora Borealis."
											M. S	b. c	1–8	S. 34° E	62	67 29	67 11	165 00	164 00	3–7	G. and s				Off Cape Kruzenstern.
											S	b. c	0–7			67 10		163 15							Hauled seine, and caught a few salmon, trout, and smelt.

ABSTRACT OF THE METEOROLOGICAL JOURNAL of the United States Revenue-Steamer '

Day of Month.	Wind. Direction.	Wind. Force.	Current. Set.	Current. Drift per 24 hrs.	Barometer. Max.	Barometer. Min.	Barometer. Av.	Magnetic Variation. (East.)	Temperatures. Air dry-bulb. Max.	Air dry-bulb. Min.	Air dry-bulb. Av.	Air wet-bulb. Max.	Air wet-bulb. Min.	Air wet-bulb. Av.	Sea-surface. Max.	Sea-surface. Min.	Sea-surface. Av.	Clouds—Lower. Form.	Clouds—Lower. Direction.	Squalls. Hours of— Direction.	Squalls. Light.	Squalls. Heavy.	Squalls. Very heavy.	Particular Incidents of the Weather. Hours of— Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	State of Sea. (Symbols.)	State of Weather. Symbols.	State of Weather. Sky clear, 10ths.	Course.
								° ′																										
1	N. W	3-5			29.87	29.75	29.81	27 29	49	43	46	46	42	44	49	45	47	Nimb. cum. str	S. E												S. M	b. c	0-3	S. 53° E.
2	N. W	2-5			30.00	29.90	29.96		52	43	46	48	42	44	47	42	44	Nimb. cum. str	S. E					10							M. S	b. c. r	0-6	
3	Variable	2-5			30.00	29.90	29.93	27 30	45	41	43	44	39	42	45	42	43	Nimb. cum. str	Eastward					13							M. S	b. c. r	0-3	S. 78° W.
4	Southward	1-6			30.00	29.78	29.85		47	40	44	45	39	43	46	42	43	Nimb. cum. str	Northward	Southward	12			16								S	b. c. q. r	0-2	S. 43° E.
5	Variable	4-5			29.65	29.55	29.59	27 37	46	40	43	45	38	42	44	42	43	Nimb. cum. str	Westward	Variable	24			12								S	b. c. q. r	0-6	North
6	Northward	4-6			29.68	29.50	29.61		47	39	43	46	37	41	45	37	42	Cum. cirr. nimb. str	S. E												S. M	b. c	0-7	
7	N. N. E	5-9			29.87	29.70	29.78		46	33	42	43	32	39	42	34	40	Cum. cirr. str	Southward												R. S	b. c	8-9	N. 42° W.
8	N. N. E	6-8			29.98	29.84	29.94		42	32	35	42	30	34	40	35	37	Cum. cirr. str	S. W												S. M	b. c	8-9	N. 38° W.
9	N. N. E	1-4			30.00	29.98	30.00	27 40	37	29	33	35	27	33	40	29	34	Cum. cirr. nimb	S. W	N. E	4									4	S	b. c. q. o	0-9	N. 45° W.
10	Variable	1-4	N. W	9	30.05	29.96	30.00	24 06	38	32	35	37	31	34	38	32	35	Nimb. cum	N. E					1			4			4	S. M	b. c. f. r. s	0-2	N. 39° W.
11	S. W	1-4			30.10	30.05	30.07	23 04	36	35	36	36	34	35	38	32	35	Cum. nimb. str	N. E								4			4	S	c. f. s	0	N. 84° W.
12	S. W	2-3			29.98	29.80	29.90		36	34	35	37	35	36	40	38	39	Cum. nimb	N. E					4			1				S	c. d. f	0	S. 51° E.
13	Westward	0-4	E. by N. ¾ N	35	29.78	29.72	29.75		43	35	40	41	34	38	42	38	40	Cum. nimb	N. E								1				S	b. c. f	0-3	S. 22° E.
14	N. N. W	4-5			29.95	29.72	29.84		44	36	40	42	35	41	44	40	43	Cum. nimb. str	S. E	N. N. W	8			5							M. S	b. c. q. r	7-0	
15	S. S. W	0-5			29.93	29.84	29.89		45	42	43	47	39	42	44	40	43	Cum. nimb. str	N. N. E					12							M. R	b. c. r	0	
16	S. S. W	1-4			29.80	29.73	29.78		52	43	47	51	42	46	44	44	44	Cum. nimb	N. N. E					20							S	c. r	0	
17	Northward	2-6			30.00	29.80	29.90		44	38	41	43	36	40	44	42	43	Nimb. cum. cirr	Southward												S. R	b. c. r	0-3	
18	S. E	0-6			30.00	29.80	29.92		43	38	40	42	35	39	42	40	40	Nimb. cum. str	Variable	East	4			4							S. R	b. c. d. q	5-0	S. 67° W.
19	Variable	1-6	East	17	29.90	29.70	29.79		45	43	44	45	41	43	44	42	43	Nimb	West	East	4			4	8		20				M. R	c. d. f. m. q	0	S. 13° W.
20	Westward	3-5	East	18	30.25	29.95	30.14		51	45	45	49	44	45	44	44	44	Cum. str. cirr	Eastward	W. N. W	2										R. S	b. c. d. q	0-8	S. 4° E.
21	Southward	2-5			30.15	29.50	29.83		50	45	46	49	44	46	45	44	44	Nimb. cum. str	N. E					16							S. H	b. c. r	0-2	
22	Northward	6-8			30.00	29.53	29.80		47	41	44	45	39	43	44	44	44	Nimb. cum. str	Southward					12							S. R	b. c. r	0-4	

EXPLANATION OF SYMBOLS

CLOUDS.

Nimb....Nimbus.
Cum.....Cumulus.
Cirr.....Cirrus.
Str.....Stratus.

SEA.

H.....Heavy.
M.....Moderate.
R.....Rough.
S.....Smooth.

SOUNDINGS.

F. b. s....Fine black sand.
S. and g...Sand and gravel.
M.....Mud.
Sh.....Shell.

WEATHER.

b.....Blue sky.
c.....Clouds.
d.....Drizzling rain.
f.....Foggy.
m.....Misty.
o.....
q.....
r.....
s.....

of the United States Revenue-Steamer "THOMAS CORWIN," for the Month of September, 1880.

Particular Incidents of the Weather. Hours of— Very heavy.	Rain.	Mist.	Dew.	Fog.	Frost.	Hail.	Snow.	State of Sea. (Symbols.)	State of Weather. Symbols.	Sky clear, 10ths.	Course.	Distance.	Latitude—North. Obs.	Latitude—North. D. R.	Longitude—West. Obs.	Longitude—West. D. R.	Deep-Sea Soundings. Fathoms.	Deep-Sea Soundings. Bottom.	Surface Observations. Drift.	Tide-rips.	Ice.	Discolored water.	REMARKS.
													° ′	° ′	° ′	° ′							
								S. M	b. c	0-3	S. 53° E	12	66 58	67 00	162 53	162 52	4	M					At Hotham Inlet; sounded, but found no channel.
	10							M. S	b. c. r	0-6			66 58		162 53								At Hotham Inlet; saw wild duck, geese, plover, and curlew.
	13							M. S	b. c. r	0-3	S. 78° W	12.5		66 56		163 25	8-11	M					Standing up into Kotzebue sound.
	16							S	b. c. q. r	0-2	S. 43° E	57.5		66 14		161 45							At anchor near Chamisso Island.
	12							S	b. c. q. r	0-6	North	2		66 16		161 45							At anchor near Chamisso Island.
								S. M	b. c	0-7				66 16		161 45	5-10	M					At anchor near Chamisso Island—"Aurora Borealis."
								R. S	b. c	8-9	N. 42° W	120	67 43	67 42	165 08	165 10	16-19	M					Standing down the sound.
								S. M	b. c	8-9	N. 38° W	31	68 08	68 09	165 56	165 52							At Cape Thompson.
							4	S	b. c. q. o	0-9	N. 45° W	42.5	68 36	68 35	167 15	167 18					I		At Cape Thompson; ice made on deck.
	1			4			4	S. M	b. c. f. r. s	0-2	N. 39° W	159	70 48	70 39	172 33	172 17	39	M			I		Steaming to northwest; sighted ice-pack to northward and westward.
				4			4	S	c. f. s	0	N. 84° W	83	70 48	70 45		176 40	31-39	B. m			I		Working to westward through drift-ice, at 1 P. M. saw Wrangel Land W. by N. ½ N., 30 miles. Pushed to within 25 miles, but heavy ice stopped us from getting nearer.
	4			1				S	c. d. f	0	S. 51° E	165		69 04	170 32	170 26							
				1				S	b. c. f	0-3	S. 22° E	164		66 30		167 50	27-30	M					Standing to southward and eastward.
	5							M. S	b. c. q. r	7-0				64 07	164 15	164 22	6-23	S. and g					Standing to southward.
	12							M. R	b. c. r	0													Norton sound; "Aurora Borealis" seen.
	20							S	c. r	0				63 29	161 35								Saint Michael's, Norton sound.
								S. R	b. c. r	0-3			63 47			162 15	9-15	Sand					Left Saint Michael's, Norton sound.
	4							S. R	b. c. d. q	5-0	S. 67° W	184		62 35		168 32	16-26	Sand					Behring Sea standing to southward.
	4	8		20				M. R	c. d. f. m. q	0	S. 19° W	178.5		59 40		169 49	25-37	S. and m					Behring Sea standing to southward.
								R. S	b. c. d. q	0-8	S. 4° E	171	57 04		169 22	168 30	8-42	Sand					Behring Sea standing to southward.
	16							S. H	b. c. r	6-2				56 25		169 15							Touched at Saint Paul's Island.
	12							S. R	b. c. r	0-4			53 53										Arrived at Ounalaska.

EXPLANATION OF SYMBOLS.

SOUNDINGS.

F. b. s ....Fine black sand.
S. and g ...Sand and gravel.
M .....Mud.
Sh .....Shell.

WEATHER.

b .....Blue sky.
c .....Clouds.
d .....Drizzling rain.
f .....Foggy.
m .....Misty.
o .....Overcast.
q .....Squally.
r .....Rainy.
s .....Snow.

SURFACE OBSERVATIONS.

D .....Drift-wood.
T. R ....Tide-rips.
I .....Ice.
D. W ....Discolored water.

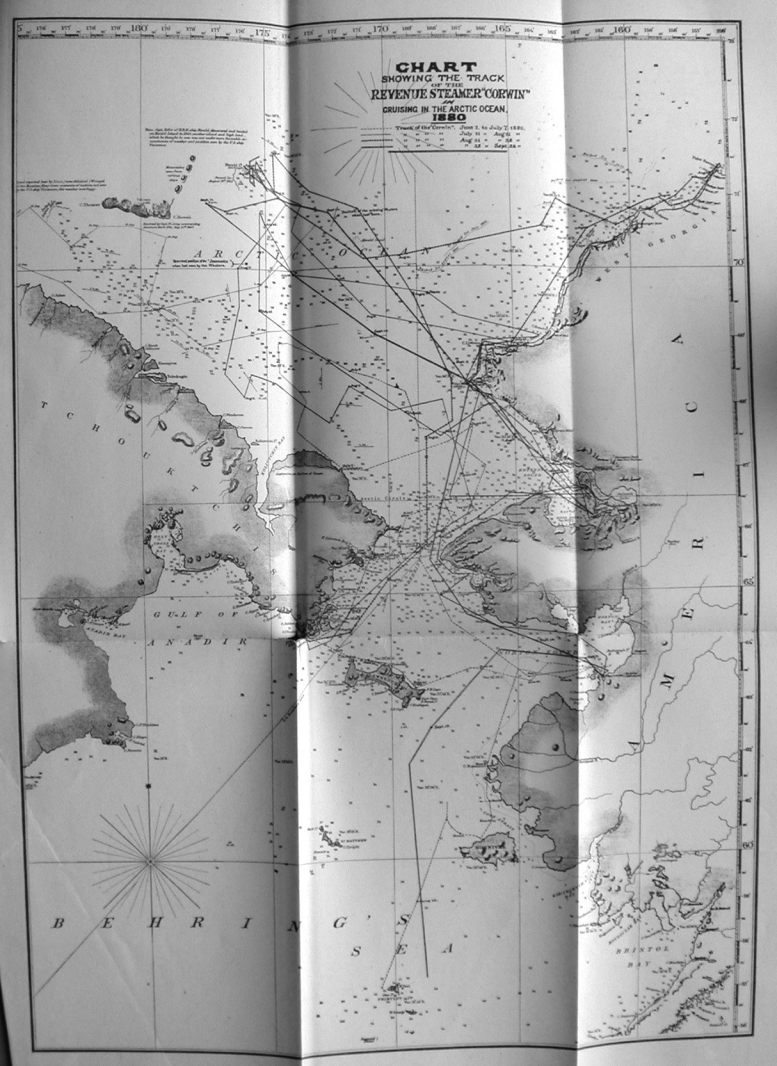
CHART
SHOWING THE TRACK
OF THE
REVENUE STEAMER "CORWIN"
CRUISING IN THE ARCTIC OCEAN,
1880
"Track of the Corwin", June 2, to July 7, 1880.
" " " July 31 " Aug 31 "
" " " Aug 31 " 28 "
" " " 28 " Sept. 24 "
ARCTIC OCEAN
TCHOUKTCHI
GULF OF ANADIR
BEHRING'S SEA
AMERICA
BRISTOL BAY
ST. GEORGE
ST. MATTHEW
PRIBILOF