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PROCEEDINGS

OF THE

CALIFORNIA ACADEMY OF SCIENCES

AT ITS

REGULAR MEETING HELD JUNE 6TH, 1881

RECEPTION OF LIEUT. ROBERT M. BERRY, U. S. N.

COMMANDING

U. S. STEAMER RODGERS

OF THE

JEANNETTE SEARCH EXPEDITION

8252



SAN FRANCISCO, CALIFORNIA, U. S. A.

Reports re-printed from type of the DAILY ALTA CALIFORNIA, and other city papers.

1881.



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PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
AT A
RECEPTION GIVEN TO THE CAPTAIN AND OFFICERS
OF THE
JEANNETTE SEARCH EXPEDITION

When about to sail from this Port in the

UNITED STATES EXPLORING AND RELIEF STEAMER

RODGERS

LIEUTENANT ROBERT M. BERRY, U. S. NAVY, COMMANDING

INCLUDING

PAPERS READ, WITH THE DISCUSSION THEREON, BEFORE THE ACADEMY
AT ITS REGULAR MEETING HELD JUNE 6TH, 1881.



SAN FRANCISCO, CALIFORNIA, U. S. A.
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PROCEEDINGS

OF THE

CALIFORNIA ACADEMY OF SCIENCES.

Intentions of the Expedition—Instructions from the Secretary of the Navy—Proposed Exploration of Wrangel Land by sledge parties—Cairns to be sought for—Papers read—Telegraphy in Arctic Regions by James Gamble—Early Discoveries of Wrangel Land, by Charles Wolcott Brooks—Inquiry into conflicting claims to discovery—Evidence presented—Remarks by Lieut. R. M. Berry, U. S. N.—Capt. H. W. Howgate—and President George Davidson, Ph. D., of the U. S. Coast and Geodetic Survey.

[From the Daily *Alta California* published June 7th, 1881.]

The meeting of the California Academy of sciences last evening was literally packed to overflowing by our leading scientists and citizens, who met to receive the brave officers composing the *Jeannette* search expedition, and to give them words of hearty welcome and cheer in the good work they have undertaken. The President of the Academy, Professor George Davidson, occupied the Chair, and the following guests of the evening were seated around him on the platform: Lieutenant Robert M. Berry, U. S. N., commanding U. S. steamer *Rodgers*; Ensign Henry J. Hunt, U. S. N.; Assistant Surgeon Joaquin D. Castillo, U. S. N.; Col. W. H. Gilder, Pay Clerk, and correspondent New York *Herald*; Assistant Engineer Abraham V. Zane, U. S. N.; Past Assistant Surgeon Meredith D. Jones, U. S. N.; all officers detailed to sail in the *Rodgers*; also, Capt. Henry W. Howgate, of the Howgate Arctic Exploring Expedition, and Mr. James Gamble, General Superintendent Western Union Telegraph Company. The regular order of business was dispensed with, excepting elections of new members, when Hon. Geo. C. Perkins, Governor of California, and Hon. James G. Fair, U. S. Senator from Nevada, were unanimously elected life members of the Academy. President Davidson introduced the guests to the Academy in a few well-selected remarks, saying: The California Academy of Sciences feels a deep interest in the relief voyage of the *Rodgers*, and desires to manifest its good will and readiness to assist in every way possible the gallant officers in their brave undertaking, and avails of this opportu-

nity to wish them a hearty God-speed in all their humane and adventurous efforts. After which

CHARLES WOLCOTT BROOKS

Read a paper on "The *Jeannette* Relief Expedition, and Evidences Regarding Discoveries of Wrangel Land, and in the Arctic Ocean," in which he presented the official instructions given to this expedition by the Naval Board, of which Admiral John Rogers was Chairman, and of the Honorable Secretary of the Navy. He gave an abstract of all letters received from Lieutenant De Long, written from on board the *Jeannette*, since her departure from this port. He alluded to the currents in the Arctic, as testified to by whaling captains, spoke of observation balloons and signal bombs, and described Wrangel's first visit to Siberia, when, in 1820-24, at Cape Jakan, he heard from Indians that high land existed far north, but never saw it. He next gave abstracts of Captain Thomas Long's first actual discovery of the southern shore of Wrangel Land, when in the American bark *Nile*, August 14th, 15th, and 16th, 1867; also alluding to Captain Kellet's discovery of Herald and Plover Islands. He then gave a translation of a paper read by Captain E. Dallmann before the German Geographical Society at Bremen, wherein he claims to have

LANDED ON WRANGEL LAND

August 14th, 1866, when in command of the trading schooner *W. C. Talbot* of Honolulu, and there obtained musk-ox horns, finding green grass and a luxuriant arctic vegetation, with extensive fields of flowers. Mr. Brooks then produced a mass of highly interest-

9. F. N. 12 Jan. '05.

ing evidence received from Honolulu, going to show from the reports of Hawaiian newspapers, whaling captains, the *Talbot's* trading journals, invoices, etc., also from the testimony of Captain Dallmann's mate in the *Talbot*, that he did not land at Wrangel Land, as alleged. If he did, it is strange he should have kept the fact concealed from the public for fifteen years. He was at Honolulu, where, in 1867, the subsequent year, the credit of discovery was publicly awarded to Captain Thomas Long, and to this claim he then made no objection; hence his claim appears but poorly supported. Mr. Brooks' paper was frequently applauded, and the opinion of members seemed to be, that it is now Captain Dallmann's turn to rise and explain, why he got musk-ox horns without entering them on his trading-book, and failed to account for them to the owners at Honolulu, on his arrival there; also, how he found musk-oxen on a place so far from Greenland and Arctic America, the only place they are known to inhabit none being found in Siberia.

[Mr. Brooks' paper will be found published in full beginning at page 6.]

MR. JAMES GAMBLE

Then presented to the Academy a valuable paper on "Arctic facilities for running telegraph wires over frozen surfaces," thus retaining constant communication with parties when detached from the vessel, exploring northward by dog-teams. He recommended the use of No. 20 gauge steel wire, weighing about 20 pounds to the mile, to be coiled on reels and carried on sledges, paying out as the party advances. The ice furnishes perfect insulation, and telephones or telegraphic instruments could easily be attached and used, enabling the parties out to report constantly, or to call at any time for aid. With this connection, rendering intelligent relief more certain, parties could venture much farther away from their base of supplies.

He admitted Mr. George Kennan's experience in Arctic regions, when on the Collins Russian Overland Telegraph expedition, many years ago, but claimed later knowledge, and urged Lieutenant Berry to take a small quantity of wire and some instruments and telephones, and to make the trial, for at least a short distance. He did not believe steel wire was too brittle, but if it proved to be, copper wire could be used. The paper was full of interesting suggestions, and gave much valuable telegraphic experience, while constructing the overland telegraph lines across our continent, especially the Sierra Nevada Mountains, where such cold weather and heavy snow are met with every winter. He said that obstacles should prove stepping-stones to progress, and urged that some practical test should be made as early as practicable, that every possible facility might be afforded to our brave Arctic explorers in the future. These sentiments were freely applauded.

[Mr. Gamble's paper will be found published in full beginning at page 17.]

REMARKS BY LIEUT. BERRY.

Professor Davidson then called on Lieut. Berry to express his views regarding the landing of Capt. Dallmann on Wrangel Land, which the latter says he effected in 1866. To which he answered that at present he was of the opinion that Capt. Dallmann did not land there as is claimed; for he could scarcely imagine how any one could thus withhold so valuable a geographical fact from

public announcement for fifteen years. It was clearly his duty, as a navigator, to publish such information to the world at once, giving it to the nearest hydrographic bureau. While he thought it impossible that Dallmann could have landed there as alleged, yet he would not judge him too hastily, as he should be heard from again, and given opportunities for explanation, as he may possibly be able to bring forward other circumstances which tend to confirm his very late report. All whalers testify that ice usually extends off a great distance from the coast of Wrangel Land, and only one year in ten at least, is it possible to approach at all near to it. He traded there several years, and now claims his discovery the year before the remarkably open season, in which Captain Long made his observations and discoveries. He should most certainly have notified the public at once, and no right thinking man could possibly have kept quiet in regard to it fifteen years. One can scarcely say which is most culpable, his sin of omission, or of commission if his present report is erroneous.

Professor Davidson then made some interesting remarks on Captains Williams, Thomas and Long's reports of Herald and Plover Islands, showing how Dallmann's other statements of his vessel's course did not agree with facts which they had communicated to this Academy. Lieut. Berry offered some further remarks in answer to Mr. Gamble, agreeing to make trial of a limited amount of telegraphic wire and telephones, and began by saying: "I wish to take this occasion to thank this Academy for the information by which the Naval Relief Board and I have profited materially in making up the route by which we are to go out. It will be followed as strictly as practicable. In regard to the experiments with wire, I shall be very happy, indeed, to make those, testing them in every way. I think, however, that it will be very difficult on extended sledge journeys, for the reason that we have an immense weight to draw. When you speak of additional dogs to haul the wire, you must take into account that they will require additional food and additional material on board ship. We find that all Arctic ships, when starting from port, are overloaded with material. The *Jeannette* went out of here loaded to the water-line. I am fortunate in having a larger ship, but she is now crowded, and will be overcrowded when we get the other stores. It will be very difficult to take much wire. When you take that you must give up coal and other things which are very material. I also would be very happy to make those experiments with the signals that were referred to. I don't think it will be necessary to refer to my journey, as we have had it explained as far as I can explain it myself now, because after reaching Wrangel Land I shall have to be guided by circumstances. There I shall find a new country that has not been explored, and after reaching there I shall have to form new plans."

PROFESSOR DAVIDSON,

Of the United States Coast and Geodetic Survey, and President of the Academy, then said that Mr. Gamble's suggestions in regard to the use of telegraph wires over ice or snow, accorded fully with his own experience in field-work on the coast of New Foundland, where they suffered from imperfect insulation of their wires, the weather being wet and stormy. They, however, waited until December, when a cold snap covered everything

with ice, and telegraphic clock signals thenceforth passed with perfect satisfaction to all. He said Mr. Gamble could easily cite the experience of the Western Union Telegraph Company, who experienced no trouble on the Sierra Nevada, high up upon the range, even when the lines became imbedded under the snow, and that they found by practice that dry ice afforded perfect insulation; but it was only imperfect when the snow began to melt, and became slushy.

Professor Davidson then recalled in part what he had said in regard to Mr. Dall's alleged discovery that the Kuro Shiwo, or Japanese warm stream, did not pass into the Arctic through Bering Strait. [See Bulkley's letter p. 16.] He said he had conversed with Captains Thomas and Williams. The latter's views, founded on his personal experience, had been recorded in the Academy's proceedings for 1867.

Plover Island has been cut out of the U. S. Navy Charts by the Hydrographic Bureau. Admiral John Rodgers, when in the *Vincennes*, on the United States Exploring Expedition of 1855, landed upon Herald Island and from its top saw no signs of Plover Island, but Professor Davidson ascribed this to a false horizon.

SUCH PHENOMENA

He had himself observed in Santa Barbara Channel, off the coast of California, where he had seen islands lifted above the horizon, that belonged 1000 feet below it. He had also seen the reverse, when a rock in Santa Barbara channel disappeared to his view, owing to the aerial phenomena of a false horizon, which again appeared later in the day, when this false horizon broke away.

When Captain Fillebrown, on the John Rodgers' United States Exploring Expedition of 1855, failed to see Plover Island, the weather was good, and he was of the impression that the Island did not exist. Captain Kellett, in 1849, in the British ship *Herald*, says he made out Plover Island in dirty weather, and also discovered Herald Island and shoal, and saw the tops of high mountains on what has since been made out to be Wrangel Land. Captains Thomas and Williams say Plover Island is a low pyramidal hillock, from which the low coast trends N. N. W. and W. S. W., stretching as an extended plain of very low land far toward the Kellett Mountains. In 1867 Alaska had an unusual rainfall of 23 inches in July, which weather melted large bodies of ice, and an equal rainfall here would furnish all needed nourishment to vegetation. They did not attempt to land, for the entire coast or beach line was bordered with pack ice. The situation of this land

VARIES FROM CAPTAIN DALLMANN'S MAP,

Furnished the Bremen Geographical Society. If his course is correctly laid down, he appears to have run his vessel between Plover Island and the Kellett Mountains, across where Captains Williams and Thomas report this low land. It appears that Dallmann's claim is incorrect, and conflicts with the testimony of Captains Williams and Thomas, whom we know are careful and truthful and experienced navigators. They reported to us that they saw connecting land with Plover Island, and that it was low, swampy land, with grass.

Captain Henry W. Howgate, of the Howgate Arctic Expedition, said he had been the means of sending North two Arctic expeditions, and a third one is now fitting out in charge of Lieutenant Greeley, U. S. A., to go by Smith's Sound to Lady Franklin Bay, despatched by the War Department. This will carry telegraph wire, flag signals, candle bombs and other apparatus used in the U. S. Signal Service, taking all of these that will prove useful and can be easily transported. Lieutenant Greeley's instructions are to search for and assist, if necessary, Lieut. DeLong and party in the *Jeannette*, should they make their appearance in any of the sounds on the eastern shores of America.

He argued that Capt. Dallmann's statement made at this late day appears to him very doubtful, and hoped that Lieut. Berry and his party would bring us back some reliable information regarding Wrangel Land.

He then offered some interesting remarks on Arctic voyages, and the plan of exploration he referred to was once attempted on the Atlantic side, but failed through an accident to the exploring steamer; it is to establish colonies at short distances in the Arctic, and thus work up to the pole. One colony is to be established as far north as vessels can go, say at Lady Franklin Bay, lat. $81^{\circ}40' N.$, long. $64^{\circ}30' W.$, and from there a continuous chain of land stations, at short, but regular intervals, will be established, to form bases of communication and supplies, as the advancing party moves northward to approach the pole.

Col. W. H. Gilder, who goes with Lieutenant Berry as Pay Clerk, and who was a member of the Schwatka expedition last year, was then called upon and presented the Academy with a piece of bamboo, evidently part of a fishing pole, one of the relics of the Franklin expedition, of whose wrecked ship and records Lieutenant Schwatka went in search.

The Academy then adjourned, after a highly-instructive and most agreeable meeting.

EARLY DISCOVERIES
— OF —
WRANGEL LAND.

SOME EVIDENCE REGARDING CONFLICTING CLAIMS;
PLANS OF THE RODGERS' EXPEDITION.

A PAPER READ BEFORE THE ACADEMY JUNE 6TH, 1881.

BY

CHARLES WOLCOTT BROOKS,

Member of the California Academy of Sciences.

[From the Daily *Alta California* published June 8th, 1881.]

Two years ago, lacking ten days, this Academy met to receive Lieut. George W. De Long, with his staff of able officers, appointed to sail in the steamer *Jeannette* on an American Arctic Expedition, about to proceed from our port to approach the North Pole as nearly as possible by way of Bering Strait, and thence along the eastern coast of Wrangel Land. The following members of the Expedition were then our guests: Lieut. G. W. De Long, U. S. N., Commander; Lieut. O. W. Chipp, U. S. N., Executive Officer; Lieut. J. W. Dannheimer, U. S. N., Navigator; G. W. Melville, U. S. N., Chief Engineer; J. W. Ambler, Passed Assistant Surgeon; Jerome J. Collins, meteorologist and special correspondent of the New York *Herald*, and R. L. Newcomb, naturalist.

The sailing of the *Jeannette*, and subsequent cruise of the United States revenue steamer *Corwin*, Captain O. L. Hooper, in search for both the *Jeannette* and missing whalers *Vigilant*, Captain Smithers, and *Mount Wollaston*, Captain Nye, gave great interest to all information relating to Wrangel Land and those portions of the Arctic regions where these vessels were last reported to us as seen.

THE "JEANNETTE" SAILED FROM OUR PORT,

Escorted to sea by several steamers and our entire yacht fleet, July 8th, 1879, and steamed hence directly for St. Michael's, in Alaska. There she coaled and took on board 76 trained dogs, 7 dog sleds, fur clothing, and two experienced Inuit

hunters. The expedition thus admirably equipped for ice travel, with a liberal supply of pemmican taken from here, passed through Bering Strait, steering in the direction of St. Lawrence Bay, thence around East Cape to Cape Serdze, on the northeast coast of Siberia, in the Arctic Ocean, from which point—after landing a letter dated August 27th, 1879, which was about twelve months in reaching New York—Captain De Long intended to approach the southern end of Wrangel Land, in latitude $70^{\circ} 45'$ north, and near the prime meridian of 180° , touching, if practicable, at Koliutchin Bay. On the 2d of September, 1879, when about 50 miles or so south of Herald Island, Captain Barnes, of the American whale bark *Sea Breeze* saw the *Jeannette* under full sail and steam, and attempted to communicate with her, but both vessels were in heavy ice and a dense fog was setting in, which prevailed up to the following day. These vessels having approached to within less than four miles of each other, held their courses without communication. On the following day, September 3d, 1879, Captain Kelley, of the bark *Dawn*; Captain Bauldry, of the *Helen Mar*, and several others of the whaling fleet, then somewhat northward of the *Sea Breeze*, saw smoke issuing from a steamer's smoke-stack, in range of Herald Island, they being in latitude $70^{\circ} 51' N.$, longitude $174^{\circ} 30' W.$, in a narrow space of open water, and within 25 miles of Herald Island. The *Jeannette* having pressed forward was hull-down north of these whalers, hence they only saw her black smoke. The weather was quite clear

at this time. She was standing northward, and was herself a little east of due south from Herald Island. These are the last tidings of the *Jeannette* received at this port by any one, up to date. After doubling East Cape, she held a nearly due north course toward Herald Island, and was last seen steaming and carrying all sail abreast of

THE EASTERN SHORE OF WRANGEL LAND,

Some twenty miles or so, from its coast line, with a favorable prospect before her, and an open channel in the ice barrier, stretching northward as far as the eye could reach. She was making the utmost of her opportunities through this fortunate opening, then quite clear of old ice. That night was a cold one, but after this the wind blew from the south, and the weather continued favorable for several days. Captain Williams says the past two years appear to have been specially made for the success of the *Jeannette*. He cannot imagine any conditions better for her. One whaling Captain said the weather and chance seemed made expressly for her safety.

What more encouraging prospect could a brave explorer, such as De Long, desire? His intention, when he sailed, was to remain away three years, for which time his vessel was fitted. Thus, the *Jeannette* was last seen September 3d, 1879, and the missing whalers *Vigilant* and *Mount Wollaston* were last seen October 10th, 1879, within about eighty miles of the same spot. Since then, nothing has been heard from either, reports claiming to give later news have been proven to be wholly without foundation.

The crews of these whalers numbered about 30 persons each. Reports indicate that the past Winter of 1880-81 was unusually severe in portions of Northern Siberia. The United States Revenue steamer *Corwin*, Captain Hooper, sailed hence May 4th, 1881, for a second cruise in the Arctic Ocean, around the southern portions of the Polar basin, and around the entire northern coast of Alaska. We trust she will run lines of soundings across this shallow sea, to increase our knowledge of its bed. The United States relief and exploring steamer *Rodgers*, 420 tons register, now in our harbor ready for sea, commanded by Lieutenant Robert M. Berry, United States Navy, is about to proceed with able officers to the coast of Wrangel Land upon the worthy errand, rendered doubly noble and approved by all, because undertaken in the great cause of human sympathy. The Honorable Secretary of the Navy, in his letter of instructions, dated Washington, May 20th, 1881, addressed to Lieutenant Berry, Commander of

THE "JEANNETTE" SEARCH EXPEDITION,

Writes as follows :

" You will pursue as nearly as practicable the course recommended by the Board of which Rear Admiral John Rodgers was President, for the search you are about to undertake. You will report to the Department your progress, and the condition of your vessel and command, by every available channel of communication during your voyage, making your reports as full and detailed as practicable. In the pursuit of your adventurous and arduous voyage, you carry with you the sympathy and entire confidence of the Department. Nothing that can be done to contribute to your well-being and success shall be omitted. As soon as you

are ready you will sail. The eyes of your fellow-countrymen, and of the scientific men of all the world, and especially of those interested in Arctic explorations, will follow you anxiously in your way through the unknown seas to which you go. May Heaven guard and bless you, and your officers and men, and crown your heroism with success and glory. Very respectfully,

" W. H. HUNT,
" Secretary of the Navy."

The members of this Academy heartily concur in every expression contained in our Country's instructions to our brave guest. [Great applause.] The " *Jeannette* " Relief Board, composed of naval officers, was organized, with Rear-Admiral John Rodgers as President, and Lieut. Robert M. Berry, our honored guest, acted as Recorder. Its report, filed March 26th, 1881, says :

" Captain De Long wrote to his wife at sea, under date of August 17th, 1879, that he proposed to proceed north by the way of the East Coast of Wrangel Land, touching at Herald Island, where he should build a cairn and leave records, thence landing on Wrangel Land, he should leave records on its eastern coast under cairns at about twenty-five miles apart."

This information of De Long's purpose to land on Wrangel Land and build cairns frequently, as the *Jeannette* moved northward along the eastern coast, is clear and very definite.

After leaving San Francisco, De Long wrote under date of July 17th, 1879, " In the event of disaster, we shall retreat upon the Siberian settlements or endeavor to reach natives around East Cape, and wait for a chance to get back to our depot at Saint Michael's. If a relief ship comes up to merely obtain tidings of us, let her look farther on the east side of Wrangel Land, and on Herald Island. If I find we are being carried eastward, against our efforts to get north, I shall try to push through into the Atlantic by way of the east coast of Greenland, if we are far enough north ; but if we are far south, then by way of Lancaster Sound and Melville Bay." This is about all the

POSITIVE INFORMATION OF DE LONG'S INTENTIONS

Now known. Captain Cogan, commanding an American whaleship, who has been many voyages in the Arctic, says : " There appears to be a strait between Wrangel Land and some land to the northeast, which forms a kind of sluice-way, through which the current sets northwesterly, about twenty miles a day. In whaling, we have to run south every day to hold our position, but farther to the eastward of Herald Island we get out of this current. The Naval Board recommend that the *Rodgers* leave San Francisco about June 1st, and, as preliminary work, should visit Petropaulovski for Arctic clothing, dogs, sledges, and dried salmon for dog food. Thence to Saint Michael's to coal, where the United States Signal Service have a meteorologist stationed, and the Alaska Fur Company have a trading post, onward to St. Lawrence Bay, to East Cape, to Cape Serdige-Kamen, to Kumotschin Bay, for tidings of the *Jeannette*; thence to Herald Island, arriving there about the middle of August, for it does not appear that any earlier arrival will be useful, as generally it is only late in the season that the ice leaves Wrangel Land. After endeavoring to examine Herald Island, the *Rodgers* should proceed thence to

the northeast coast of Wrangel Land for cairns, or other notices, and to examine harbors for Winter quarters on the south or southwest of Wrangel Land, or in Siberia, near some Tchuktchi village. She should not be caught in the ice, away from a harbor, except from accident beyond control. If she winters on the southeast coast of Wrangel Land, or along its southern shore she may easily return home next year, after having spent her time available for the purpose, in examining the coast, or exploring the interior by means of sledge journeys. The *Rodgers* was especially built for Arctic navigation, has a speed of about eight knots under steam, and has been so thoroughly strengthened and fitted as to be admirably adapted to the service intended. This we are positively assured by Naval-Constructor Fletcher, now at Mare Island Navy Yard Lieut. Berry, besides his experience on the *Tigress* in search of the missing members of the *Polaris* crew, has been a careful student of Arctic explorations and is passionately fond of the perilous duties assigned him. He was one of the five volunteer officers whose rank entitled them to command this expedition, and his selection meets with the warmest approval among older officers of the Navy, acquainted with his career. The *Rodgers* intends passing the Winter of 1881-82 at some harbor on the south or southeast end of Wrangel Land, as such a position will offer greater advantages than any other for examining the locality where people from the *Jeannette*, or missing whalers, are to be sought, if their vessels have been abandoned. Failing this, she will Winter at some secure place north of the coast of Russian Siberia, as near Wrangel Land as is possible, for purposes of making sledge journeys on its east coast, if the strait can be crossed by parties on ice. From the general character of ice usually fringing Wrangel Land,

SLEDGE JOURNEYS

Seem the most ready means for carrying out the purpose of this expedition, without inordinate risk of losing the relief vessel. The *Rodgers* is not to Winter in the Arctic, except to promote the search for which she is sent out, nor is she to remain more than one Winter away from home. Her mission will be finished when she has examined the points indicated, and the proposed sledge journeys have been made or attempted, and all possible information gained of the whereabouts of the *Jeanette*, and of the missing whalers *Vigilant* and *Mount Wollaston*.

We regret that an observation balloon has not been included among her outfit, for since the discovery of coal mines around the shores of the Arctic basin, necessary gas could readily be produced. The marvellous bombs of the signal corps will be sent up as signals in the still northern air, to attract notice at long distances, as paste-board bombs do in pyrotechnic displays. These answer well for rallying signals in case of need. A light telegraphic wire, as proposed by Mr. Gamble, would be another useful adjunct and is a scientific experiment well worth a practical test. In a former paper we have enumerated some advantages derived from Arctic voyages. [See page 13]

In addition to the relief which this expedition is planned to afford, it seems destined to give us a much better knowledge of Wrangel Land, and may go far toward settling the vexed problem of whether

at the North Pole is to be found an open polar sea, an extensive archipelago, or an Arctic continent. Hitherto there has been no exact information concerning Wrangel Land, save that brought by American whalers, whose observations were generally at a distance of 15 to 20 miles from the shore. The drawing of Cape Hawaii and the profile of the southern coast of this land made by Capt. Thomas Long in 1867, when in the whaling bark *Nile*, indicates a formation of outlying islands, forming fiords inshore of them. Capt. Cogan reported quite a harbor on the southeast end, but whether formed by an island or a deep bay, he was not sure. Baron, afterward Admiral Wrangel, the famous Russian explorer, when Lieutenant Ferdinand Wrangel communicated the first knowledge of the existence of this land to the civilized world, after his expedition of 1820-24 when he simply heard of it, as "extensive high land," from the Siberian Indians. One of the Tchuktchi chiefs said snow-covered, mountainous land could be seen at a great distance north from Cape Jakan, in clear Summer days, but in Winter it was impossible to see so far. His father told him a Tchuktchi elder once went there with a few followers in skin boats, but he was never told of their return. Still he maintained that this distant land was inhabited, and adduced in proof that some years before a dead whale found at Arsutan Island was pierced by spears pointed with slate. As the Tchuktchis have no slate weapons they supposed the whale must have been wounded by inhabitants of the northern land. This chief said, formerly herds of reindeer came across the sea on ice, probably from thence, but they were frightened back by hunters and wolves. He himself had seen a herd returning to the North in this way, in April, and he followed them for a whole day in a sledge drawn by two reindeers, until the rugged surface of the ice forced him to desist.

CAPTAIN THOMAS LONG,

Of the American whale bark *Nile*, personally well known to me, as well as to our President and to many members of this Academy, as a highly-educated shipmaster, having been trained as a United States Naval cadet, examined and sketched the entire southern coast of Wrangel Land on the 14th, 15th, and 16th days of August, 1867. The land is quite elevated, and near the centre has an extinct crater-cone. He named it Wrangel Land. The west point he named Cape Thomas, after the seaman on his ship who discovered it, and the southeast point he called Cape Hawaii. Geographers have since named the crater Mount Long, and the mountain range, of which Kellett saw only the detached peaks, have been named Kellett Mountains.

Captain Long, in his printed report, which he sent me, published in the *Commercial Advertiser*, at Honolulu, November 9th, 1867, says: "During my cruise in the Arctic Ocean this season, I observed land not laid down on any chart I have seen. It was first made out by a seaman named Thomas, from the American whaling bark *Nile*, under my command, on the evening of August 14th, and next day at half-past 9 o'clock A. M., the ship was eighteen miles distant from the west point of the land. I had good observations this day, and made this west point to be in latitude $70^{\circ} 46'$ north, and longitude $178^{\circ} 30'$ east. The lower parts of the land were entirely free from snow, and had a green appearance, as if

covered with vegetation. There was broken ice between the ship and land, but as there were no indications of whales, I did not feel justified in endeavoring to work through it and reach the shore, which I think could have been done without much danger.

"We sailed to the eastward along the land during the 15th and part of the 16th, and in some places approached it as near as 15 miles. On the 16th the weather was very clear and pleasant, and we had a good view of the middle and eastern portion of the land. Near the centre, or in about the longitude of 180° , there is a mountain which has the appearance of an extinct volcano. By approximate instrumental measurements I found it to be 2480 feet high. By excellent observations I made Cape Hawaii to be in latitude $70^{\circ} 47'$ north, and longitude $178^{\circ} 51'$ west. It is impossible to tell how far this land extends northward, but as far as the eye could reach we saw ranges of mountains until they were lost in the distance; and I learn from Captain Bliven, of the American whale ship *Nautilus*, that he saw land northward of Herald Island, continuing as far north as latitude 72° .

From the appearance of this land as we saw it, I feel convinced it is inhabited, as there were large numbers of walrus in the vicinity, and the land appeared more green than the main coast of Asia, and quite as capable of supporting human beings as the coast from Point Barrow to Mackenzie River, or the northern parts of Greenland, which are in a much higher latitude.

We examined with a telescope a large black place on the slope of one of the hills, which had a very

DISTINCT APPEARANCE OF COAL.

It glistened in the sun and appeared like a large surface which had been used as a deposit for heaps of coal. It was about one and a half miles in length and half a mile in breadth. The country surrounding it was covered with vegetation. Upon reaching Honolulu his chronometer was found to have an error of only one mile and a half." Captain Long further says: "I have named this northern land Wrangel Land, as an appropriate tribute to the memory of a man who spent three consecutive years north of latitude 69° , and demonstrated the problem of this open Polar sea (our present whaling ground) over forty-five years ago, although others of much later date have selfishly endeavored to claim the merit of this discovery."

Wrangel Land is distant about seventy miles from the coast of Russian Siberia. The strait between the two shores is usually blocked with ice, but it was quite clear in 1867. Captain Long thinks the land extends at least several hundred miles northward, and also that a propeller might readily have steamed far north, either on the east or west side of this land, at that time, and could easily have made full discoveries regarding its extent and character. Driftwood was seen floating in the water. In the channel north of Herald Island, the sea was clear of ice as far north as the eye could reach, from the whaleship that penetrated farthest into it. Last year the *Corwin* coaled twice from a coal mine within the Arctic Circle, near Cape Lisburne, Alaska. Specimens of this excellent coal are in the Academy's Museum. To Captain Thomas Long has always been accorded the discovery of the southern coast of Wrangel Land,

and credited with the first reports of an authentic nature. In the years 1848-9, Captain Kellett, of the British ship *Herald*, discovered Herald Island, which, with Plover Island, he supposed to be a part of the land described to Wrangel by the Tchukchi Chief.

In the *Pacific Commercial Advertiser*, published at Honolulu, Hawaiian Islands, November 9th 1867, Captain George W. Baynor, master of the American ship *Reindeer*, writes under date of November 1st, 1867, giving over his signature an account of what he calls a large tract of land, lying in the midst of the Arctic Ocean, hitherto more surmised than known. He says, until the present time, this land has been considered to be simply two small islands, one of which is marked on the English charts as Plover Island, and laid down W.S.W., of Herald Island. The other is marked extensive land with high peaks, reported by natives to Admiral Wrangel. On my last cruise I sailed along the south and east side of this land for a considerable distance, three different times, and once cruised along the entire shore. From reliable observations, I placed the extreme S.W. Cape in latitude $70^{\circ} 50' N$, longitude $178^{\circ} 15' E$. and the S. E. Cape in latitude $71^{\circ} 10'$ longitude $176^{\circ} 40' W$. *The South Coast appears to be nearly straight, with high rugged cliffs and entirely barren. Captain Bliven, and others of the whaling fleet, have this year traced this coast to latitude 72° , and believe it extends much farther north.

From formations of the ice, and ocean currents, we feel confident

THERE MUST BE ANOTHER LARGE ISLAND

Lying east of it, in about longitude 170° west, and northwest of Point Barrow, with a passage between it and the land just described. He then gives reasons for this opinion, saying: We always find ice southward of known land, extending farther south of it, comparatively, than we do eastward from it. There the current runs to the northwest from one to three knots an hour. In the longitude of 170° west we always find the ice barrier from fifty to eighty miles farther south than we do between that and Herald Island, and there is always a strong current, setting to the northwest, between these localities, unless prevented by heavy northerly gales, (for in such shoal water as the Arctic Basin, currents are easily changed by prevailing winds) which indicate there must be a passage in that direction, where waters pass between two bodies of land that cramp them, the one Wrangel Land, now discovered by Captain Long, and the other still unknown.

CAPT. DALLMANN'S CLAIMS.

Early in April of this year, 1881, members of this Academy were surprised at a statement made in a letter addressed to O. W. Brooks by Dr. M. Lindeman, one of the Council of the German Geographical Society at Bremen, wherein, under date of March 10th, 1881, he writes: "I send you our society's journal, just published, which contains the chief facts brought out by your inquiry regarding the *Jeannette* and missing whalers, read before your Academy in your paper of December 6th, 1880. On the sketch map you will find two points on Wrangel Land, where it has been visited by Captain E. Dallmann, on the 17th and 18th of August, 1846, with the Hawaiian schooner *Talbot*. He is a member of our Society, and has just contributed to our proceedings a paper on the subject of the discovery

of Wrangel Land. We feel sure Americans will not suffer this Summer to pass without sending a ship into that vicinity, with an order to land at Wrangel Land. I do not fear that the brave De Long and his companions are lost, although the ship may have been beset with ice and crushed in the pack. In the short report of Captain Dallmann you will find that on the coast of Wrangel Land there are plenty of traces of game, so that they probably obtained fresh meat enough. We do not know how far the coast stretches northward—Captain Hooper seems to believe not very far; but there may be other islands to which the *Jeannette* resorted, steaming up along the open water, which follows the east coast of the Arctic lands, close to the shore. We shall be very thankful to have forwarded as quickly as possible all important Arctic news."

While this letter shows the deep interest in Arctic explorations taken throughout Europe, it also reveals the fact that, after about 15 years of silence concerning a most important discovery, Captain Dallmann comes forward with his claim to have been the first individual of any civilized nation to land upon the shores of Wrangel Island. If this is indeed true, as he claims, he cannot be accused of any undue haste in the dissemination of knowledge regarding so important an exploration. He seems to have allowed his discovery and adventure to have remained unpublished, as a sealed secret in his bosom, unknown to his employers, the owners of the vessel, and to his most intimate friends. He has been very tardy in claiming the discoverer's medal of the Geographical Society.

We are not in a position to pass judgment upon Capt. Dallmann's claims, but he must readily admit that the peculiar circumstances surrounding his communication to a far distant society, first presented at this late date, warrant a close examination of his statements, which, if true, cannot be better established than by careful inquiry; and if otherwise, it is surely our duty to collect all possible evidence to establish the actual facts. What is here presented this evening is offered kindly for his explanation. All over the United States grave doubts exist, and objections are heard on every side; and the Academy being situated as the nearest scientific body to the scene of these explorations, and consequently best situated to collect evidence immediately available, would be derelict in its duty did it not make these enquiries; and we earnestly solicit any person having further light upon this mooted point, to lose no time in communicating it to some scientific society.

Eastern papers criticise Capt. Dallmann very severely for his long silence. Dr. Lindeman attributes it to the fact that he thought nothing of it, until Wrangel Land became prominent in connection with the *Jeannette* Arctic Expedition. Why he has never before publicly claimed credit does not appear. The following translation claims to have been an extract from Capt. Dallmann's journal of his voyage, as Master of the Hawaiian schooner *William O. Talbot*, in which he purports to have visited Wrangel Land in 1866:

"After I had cruised during the last half of the month of May, June, and the beginning of the month of July, 1866, along the eastern coast of Asia and the northwestern coast of America from Petropaulovski and Norton Sound to Bering Strait, visiting and trading with the native settlements

along those coasts, I passed Cape Prince of Wales and steered northeast to Port Hope, with the intention of trading with the natives in Kotzebue Sound. Early in August, I came out of Kotzebue Sound and again sailed to East Cape, on the southern and eastern sides of which I had visited settlements as early as July. I went there again in order to visit the large settlements on the northern and western side. After finishing my business there, I steered in a northwesterly direction along the North Siberian coast. I found that entire region free from ice and very open as far up as Cape Jakan, in latitude $69^{\circ} 42'$ north, longitude about 177° east. On the way I found several more settlements, where I bought walrus tusks, musk ox horns, and a number of glutton skins.

BEYOND HUMAN HABITATION.

"During the last fifty miles of this journey I found no more settlements, and therefore gave up the idea of proceeding any further to the northward, although there was still no ice to be seen. I desired then to try to get eastward to Point Barrow, which is the most northerly point of America. On the 16th of August I left the coast with a moderate southeast-by-east breeze, the weather being generally good, but with frequent fog showers. On the 17th, in the forenoon, the weather began to clear up and I got sight of Wrangel Land, extending from northwest to east-northeast. Our midday latitude was $70^{\circ} 28'$ north, and the supposed longitude about 180° . The wind was southerly and light and changeable. The land to the north was distant about 10 nautical miles. In the afternoon I steered east along the coast at a distance of about 5 nautical miles from the land, with a fresh breeze from the southwest. In the evening the wind died away to a faint air, and at 8 o'clock it was calm. We anchored near the land in six fathoms of water, lowered the boat and landed in latitude about $70^{\circ} 40'$ north and longitude $178^{\circ} 30'$ west. The land formed here on the southern side a rather deep, wide, open bay, lying west of a ridge about 500 feet high. To the eastward of this ridge the land stretched more to the northeast. The land, as far as I could see, had a narrow and level beach, like the southeastern coast of Siberia behind which it rose to heights of from five hundred to one thousand feet, the last-named elevation, however, occurring rarely. I saw no signs of human habitations, but found a great many tracks of animals, apparently those of polar bears, foxes and musk oxen.

A SECOND LANDING.

"On the 18th, at five o'clock in the morning, we got a north-northwest breeze, weighed anchor and sailed to the northeastward along the coast. During the day we saw several polar bears on the land. In the afternoon at five o'clock we saw Plover Island (on the east side of Wrangel Land—so called by Kellett in 1849). We were about ten nautical miles from the coast, and the island bore east-northeast. At ten o'clock at night we anchored in ten fathoms of water, and landed again in about latitude $71^{\circ} 5'$ north, longitude $177^{\circ} 45'$ west, where the land extended more to the north and northwest. At the latter place the land was not so high as at the place where I had landed on the day before, or as the land along which I had coasted. I had also found at the first landing place more moss, grass and field flowers, and the low land was entirely free from

snow, while at the second landing place there was a great deal of snow. On the 19th of August, at noon, a fresh north-northwest wind sprang up and we weighed anchor. We passed Plover Island in the afternoon and Herald Island at eight o'clock in the evening. On the morning of the 20th of August I saw the northern ice boundary, and, steering along the ice, I reached Port Franklin (Sea Horse Islands) on the evening of August 24th.

"E DALLMANN."

By this it appears that a year before Captain Long, in the bark *Nile*, sailed along the south coast of Wrangel Land, Captain Dallmann, then trading in a schooner out of Honolulu, claims to have seen and visited it. He now reports, at this late day, the most important fact, if true, that he

SAW TRACKS OF MUSK-OXEN

At the points where he claims to have landed on Wrangel Land, August 17th, 1866, and says, also, that he bought horns of musk-oxen from the inhabitants of the North Siberian coast. We invite especial attention to this claim, not only as it would go far toward showing a terra-firma connection, possibly, an Arctic Continent, connecting Wrangel Land with Greenland, but for other reasons, which require explanation. The musk ox is a native of Arctic America, on the Greenland side, and is entirely unknown in Siberia, where he reports them so plenty. If the natives of the North Siberian coasts were in possession of the horns of musk-oxen, says George Kennan, a gentleman who assisted in building the Collin's Siberian telegraph line in 1866-67, it shows that those natives must have crossed Long's Strait, and hunted the animals where Captain Dallmann now reports he saw their tracks on Wrangel Land.

Musk-oxen, deer, and marmots, were killed for food in large numbers by the intrepid Arctic Explorer, Charles F. Hall, in his residence among the Eskimos this same year around Repulse Bay, on the coast, opposite Greenland. Careful inquiry of persons who have lived many years in Siberia, fails to learn of any musk-oxen on the Asiatic coast.

Desiring to establish or explain these very remarkable claims of Captain Dallmann, we wrote to Rev. Samuel O. Damon, Pastor of the Seamen's Bethel at Honolulu, and also editor of *The Friend* for the past 39 years. This paper is considered very accurate, and publishes the arrivals of all vessels, especially whaleships, and gives interesting memoranda of their voyages, which it takes extraordinary pains to solicit and collect. Father Damon, who is authority on all matters connected with the Arctic whaling fleet, writes under date of Honolulu, April 19th, 1881:

"I remember Capt. Dallmann; in 1866 he was in command of the *W. C. Talbot*, owned by H. Hackfeld & Co. The vessel returned from the Arctic, and arrived at Honolulu October 19th, 1866, but the Captain's report makes no mention of landing on Wrangel Land, or of any discovery or visit to land not laid down in the charts. I have carefully examined the full files of all newspapers published here, viz: the *Hawaiian Gazette*, *Commercial Advertiser* and *The Friend*, covering the arrival of the Arctic fleet that year, and find no mention or allusion to such an occurrence as he now claims.

"I have this day called upon Mr. J. C. Pfluger, managing partner of the house of H. Hackfeld & Co., and we have together looked over the records, trad-

ing-journals, invoices, etc., of that voyage of the *W. C. Talbot*, but do not find anything to confirm the account, as published by Capt. Dallmann in the proceedings of the Bremen Geographical Society. Mr. Pfluger and myself think Capt. Dallmann was a man to note down in his log-book everything relating to his voyage. Mr. Pfluger exhibited a journal of Capt. D's for the year 1865, thinking he may have made a mistake in the year, for it is hard to think he would have allowed the statement to go forth to the world unless it was based on truth. But although kept apparently with great accuracy, we found no mention of the information you desire. After Capt. D. left the *W. C. Talbot*, he took command of the *Bismarck*, owned by the same firm. He is now sailing out of Bremen to the coast of Russia. I hope soon to meet a mate of Capt. Dallmann's; when I find him, will write you again."

The years 1865 66 and 67 appear to have been remarkably open seasons in these cold latitudes.

In the published report of Capt. G. H. Soule, master of whale ship *St. George*, which arrived at Honolulu on November 6th, 1867, he says: "This season is the most remarkable one known by whalers, for the scarcity of ice and good weather prevailing during the first and middle part of the season. Otoken, a very intelligent native of Indian Point, told me they had

TWO ENTIRE MOONS OF SOUTH WIND

Last Winter, which I think accounts for the openness of the season. The *Ontario* cut-in a whale in December, off the Diomedes, last year.

Capt. J. B. Wilslow, master of bark *Tamerlane*, reports mostly fine weather in the Arctic during August and September, 1867. Near St. Paul's Island he took a whale that yielded when tried out, by actual measure, 310 barrels 19 gallons of oil. This is one of the largest ever taken.

Under date of Honolulu, May 4th, 1881, Father Damon again writes: "Since receipt of your letter of April 8th I have been looking up the subject with Mr. Pfluger, who also has received letters of inquiry from Washington, but we cannot learn of anything very satisfactory to confirm Captain Dallmann's assertion. There is an old whaler here who was mate with Captain Dallmann on the next voyage after he claims the discovery. When asked, 'Did you ever hear Captain Dallmann speak of landing on Wrangel Land?' his answer was *he did not*."

Father Damon writes: "Does Captain Dallmann make the assertion on the authority of his log? If he does, my impression must be, that probably he may have done so, even if he has not so recorded in the vessel's log, for I cannot think he was a man to make erroneous statements, although I must say, that musk-ox story rather staggers me, and I shall take great pleasure in looking carefully into the subject still farther. As soon as the whaling fleet are due back from the Arctic, I shall publish your letter of enquiry for the purpose of gleaned information from old whaler. I was in Bremen less than a year ago, and regret I had not known this then, for I would have hunted up Captain Dallmann."

"No mention is made in the books and invoices of the *W. C. Talbot*, of the musk-ox horns, etc., which Captain Dallmann's narrative says he purchased from the natives. No such trading is recorded, neither had she any musk-ox horns in her cargo when she returned and entered at the Honolulu Custom House. During

three years of subsequent voyages with this old whaler, who acted as his mate, and while cruising around the same ocean, where everything would tend to remind him of his extraordinary discovery, which then had already been publicly accredited to Captain Long at the port from whence his vessel sailed at a time one year later, this mate states that he made *no allusion* to his ever having landed on Wrangel Land. This nearly

FIFTEEN YEARS OF SILENCE

is most remarkable, especially when observed in a bright, ambitious, and aspiring member of so well-known, active and enterprising a scientific body as the Bremen Geographical Society, who is industriously searching about to obtain records and to publish just such facts as Captain Dallmann claims to have had to offer. Fifteen years of silence were allowed to pass before this nautical Rip Van Winkle broke his long silence at a city on the opposite side of the earth, from where his adventure is alleged to have occurred. So long, and many will say apparently improbable, a concealment, must naturally cast suspicion on any such statements. In the *Commercial Advertiser* of November 9th, 1867, and in all other Hawaiian newspapers, appears long laudatory articles, minutely describing the discoveries of Captain Thomas Long, giving him full credit as the first actual observer of the southern coast of Wrangel Land, on the 14th, 15th and 16th of August, 1867, just a year after Dallmann now

claims to have landed there. When we consider this fact and also that the entire Arctic whaling and trading fleet arrive at Honolulu about the same time to refit, principally about November 1st to 15th, and that all whalers are thus brought into close contact and usually communicate to each other all they have learned, and that in 1867 all gave unanimous credit to Captain Long as the discoverer, it is a little peculiar, at least, that Captain Dallmann, who at this late day aspires to the honor, fifteen years later, did not then speak out and mention his claim to some one, or in some way record or communicate it, or dispute the claim of priority universally accorded to Capt. Thomas Long. If true, why did not his officers or crew mention the fact to some one? It seems almost like folly to suppose that in so small a place as Honolulu, where nautical news is a current topic of conversation, that he could have avoided being aware of the honor, which all American whalers yet accord to Long as the discoverer. Without desiring to offer any argument, one way or the other, we simply report the result of these investigations, leaving to our respected President to sum up the evidence thus far obtained, and to members of this Academy to draw such conclusions as they may deem alike just to Capt. Dallmann and to Capt. Thomas Long.

CHARLES WOLCOTT BROOKS.

ADDENDA

BY

PROFESSOR GEORGE DAVIDSON

President of the California Academy of Sciences.

*NOTE.—[See page 9.]

SAN FRANCISCO, Cal., June 10, 1881.

Since the meeting of the Academy, I have examined more carefully the statement of Captain George W. Baynor, master of the American whaler *Reindeer*, dated Honolulu, November 1st, 1867, and published in the *Commercial Advertiser* of November 9th, 1867, and in *The Friend*, December 2d,

1867; and it would seem that the geographical position which he gives for the South East Cape of Wrangle Land, [Lat. 71° 10' N., Long. 176° 40' W.,] may be no other than Kellet's Plover Island; thus confirming the statement which Captains Williams and Thomas communicated verbally to me in 1867.

GEORGE DAVIDSON.

THE
OBJECT OF ARCTIC EXPLORATIONS

EXTRACT FROM A PAPER READ BEFORE THE ACADEMY
AT A PREVIOUS MEETING

BY

CHARLES WOLCOTT BROOKS,

[Referred to on Page 8 of this Bulletin.]

To the few who question

THE VALUE OF ARCTIC VOYAGES

A brief outline of their utility may be needed. Dr. Benjamin Franklin, one of the wisest men born on this continent, was in 1753 one of their earliest advocates. Abroad we have seen British, Germans, Austrians, Swedes, Norwegians and Dutchmen taking part in Polar Explorations. Their results are very varied. Their constant observations aim at the discovery and seek needed information to aid the correct demonstration of great physical laws, necessary to advance almost every department of science, astronomy, navigation, hydrography, meteorology, including electricity and magnetism. Specimens collected for students of natural history furnish new data for drawing correct geological analogies and ascertaining the geographical distribution of species. The observed variations in the movement of pendulums within the Arctic Circle, gauge the extent that earth is flattened at the poles. Great laws are world wide, and a knowledge of the whole earth is essential to their perfect understanding. Such knowledge increases the effective power of man by augmenting his knowledge, and thus accelerates scientific discoveries, useful in arts, agriculture, commerce and manufactures. In the climate and winds of Polar regions, the world has obtained a partial clue of fundamental laws regulating the motor agencies of atmospheric currents, and the equalizing

influence of warm, gulf and icy streams, that traverse oceans as arterial rivers. How general will be the benefits bestowed, when our National Weather Bureau, assisted by such knowledge, is able to apply wider rules of judgement, and more surely predict the probabilities of approaching storms and seasons, one week in advance, more certainly than it now ventures to forecast a single day. In Boothia, the two Rosses found the magnetic pole, whose mysterious influence the mariner's compass obeys. The mass of observations collected on all sides of this magnetic pole have assisted science to perfect our knowledge of the laws of magnetic declination and dip. Providence has peopled these high latitudes with human beings, who Winter and Summer there, as do all animals upon which they subsist. Each successive voyage has swept away some old error and brought to light new phenomena, tending to advance human knowledge. The problem of a northwest passage around North America, is not one of any direct utility, although the gain to commerce through such scientific explorations has doubtless been very great, yet difficult for the masses to always discern. Their authentic surveys are valuable to our whaling interests, annually representing many millions. The Northeast passage around Asia, accomplished by Nordenskjöld in 1878-79, promises large rewards to both science and commerce.

DESCRIPTION OF THE RODGERS.

Construction of the Vessel—Her Machinery—Armament and General Outfit—Preparations for Scientific Work—Complete List of Officers, and number of her crew—Outline of her intended Cruise, and probable period of absence—Unanimous approval of the Vessel and endorsement of the expedition by Scientific Societies, and the Public generally—Her Commander's previous Arctic record—Arctic experience among the crew
Mention of Polar Currents and Herald Island—Sailing of the Rodgers.

[From the Daily *Alta California* published June 10, 1881.]

The U. S. Arctic relief steamer *Rodgers*, now lying in this port, will probably sail for the north next Tuesday morning. The following important and interesting particulars of the construction, outfit and contemplated movements of the vessel, together with an accurate list of the officers and crew, will prove of great general interest at this time:

The *Rodgers*, 420 tons register, was built at Bath, Maine, and her machinery was constructed in New York City. She has a full poop, extending nearly 'midships, with a short half-deck, forming aft a lazarette, into which is let an encased wheel-house, thoroughly enclosed. She has built lower masts, coaged and doweled, and is a full-rigged bark with two royals and double topsail yards. Her rigging is hemp and she carries five whale-boats and an ice dingy, also used as Captain's gig. She has a house on deck forward, in which is situated the Apothecary's dispensary, bath-room, and room with bunks for the native Inuit guides and interpreters. She is

HEAVILY SHEATHED

With three-inch oak plank. Her frame has been properly strengthened by the addition of bilge streaks, and a very large number of extra hooks and knees, and her bow is made solid with a heavy timber backing, for a considerable distance from the stem. Her kitchen is on deck just forward of the cabin, and on the starboard side in front of the poop opening on deck, is the mess-room of the petty officers. Her fore-castle for seamen is below in the fore peak. She has a steam windlass to get her anchor, and new patent capstans. Her fore and main hatches will remain closed in rugged weather, and all provisions, etc. can be reached through the booby hatch aft. Her propeller is two bladed, and she carries a spare one on deck. A ten-pound boat howitzer mounted on a patent gun carriage stands forward, while aft are racks of boarding pikes, and in the cabin over-

head are breach-loading rifles, pistols and cutlasses. When she sails, there will be thirty-five souls on board, all told, consisting of nine officers, one carpenter, three machinists, three firemen, two cooks, one steward, one store-keeper, and fifteen able-bodied seamen. The only live stock on board in the shape of provision, are two pigs. She will have a number of dog-teams on board after leaving Petropaulovsky. Among her stores which are laid in to last four years, and may be eked out to last five years if necessary, are large supplies of lime-juice pemmican for men, and another quality of coarser pemmican for dog food, on

LONG SLEDGE JOURNEYS.

It is made of beef and fat pressed together, in about the ratio of two pounds of fat to one of beef, for dogs, and the reverse proportion for men. She carries several cases of stoves, in addition to those in place. She carries a French cook, and her negro steward is also a good cook. They expect to shoot a plenty of reindeer meat, also ducks and geese in their season, as they carry a large supply of ammunition. She has an upright engine, 22 inch cylinder, and 22-inch stroke, a single low pressure engine, connecting directly with the shaft, which is 6½ inches in diameter. Her single horizontal tubular boiler is jacketed, and has two furnaces with grates now fitted for anthracite coal. She has a jet condenser, and Kingston valves for taking water, and in addition to her regular stationery ship's pumps she carries two auxiliary steam pumps, one a Cameron pump, ready to connect in any way with anything at a moment's notice, and a Davidson pump for

DISTILLING FRESH WATER,

And for fire purposes. All pumps are rigged with iron hand brakes to work them by hand when there is no steam up. She carries a small donkey engine and independent boiler forward, and a pair of hoisting engines for getting the anchor, handling stores, taking in coal, wharving ship, etc., also four bilge pumps and one steam syphon bilge pump. Her

engines and boilers, although small, are now in first-class order. At low pressure she carries forty pounds of steam, but takes with her an extra exhaust pipe so that she can be run at high pressure, with from sixty to seventy pounds of steam if necessary. She has coils of steam heating pipes with radiators in the saloon, cabins, dining and mess rooms and fore-castle, and it is intended to keep a slow fire and steam for this purpose all the time during the long Arctic Winter. Her exhaust pipes are copper, and she carries a spare rudder, with duplicates of important parts of her machinery, to replace others in case of breakage. She carries a liberal supply of spare spars on deck, and lumber for roofing over her deck in winter, which will also be felted, and with snow packed over that, will form a good

WARM COVERING AND CLOSE PROTECTION

Against the cutting cold without. Her main saloon is finished in chestnut-oak and her after cabin laurel and bird's-eye maple. She carries a large outfit of ship's lanterns of various colors, barometers, spare compasses and instruments. In the commander's room is a safe, and a fine library of well-selected standard works on Arctic matters and scientific and useful mechanical text-books covering a great variety of branches, and apparently a full set of the proceedings of the American Geographical Society of New York. She is provided with a dip-circle, theodolite and fine collection of instruments for general scientific work, including an alcohol tank for preserving rare fishes and other Arctic varieties of animalculæ and smaller animals. Observations of magnetic currents and earth magnetism will be taken and all meteorological phenomena will be carefully noted. They will survey all coasts and headlands and make especial geodetic triangulations with observations of currents and soundings, and the altitudes of mountains and headlands. Fossils will be collected for the Smithsonian Institute and everything relating to paleontology as well as the Arctic Flora and Fauna.

They will make careful collections of the Arctic flora for our botanists to classify, and will gather all possible scientific information that will not interfere with the main object of the expedition, which is to

SEARCH FOR THE "JEANNETTE,"

And to rescue, if possible, the crews of the missing whalers, *Vigilant* and *Mount Wollaston*. Many of the crew have had considerable Arctic experience. Joseph Hodgson, the Paymaster's yeoman, was on board the whaleship *Acors Barnes*, Captain Hickmott, one of the fleet which got caught in the ice-pack about 1872, beyond Point Barrow, when so many whalers abandoned an entire fleet and escaped in their boats, which they dragged over the many low sand bars just beyond Point Barrow, between that place and the mouth of Mackenzie River. He returned to San Francisco in the bark *Florence*, which brought to our city over six hundred shipwrecked whalers. Mr. Hodgson has lived ashore

AMONG THE INDIANS AT PLOVER BAY,

And made six voyages all told into the Arctic. He also landed on Herald Island, which he describes as a barren rock, around which whales are usually plenty in October and November. The Innuits have told him that they have seen natives land on Herald Islands from canoes, to fish and also to

capture whales. He has seen Wrangel Land from a distance of thirty or forty miles, when ice intervened, and he describes the land as presenting the appearance of very high mountains, abreast of Herald Island, around which the water is shallow, but on the off shore side it soon grows deeper, and a little to the eastward there is a deep water channel through which a two or three knot current sets northerly. During the latter part of the season, the weather becomes overcast, just before the clear, cold Winter weather sets in. The *Rodgers* is provided with a full complement of sheep-skin clothing, and fur clothing will be procured, with dog teams, at Petropaulovsky. A car load of stores, delayed by the floods and washouts in the Platte Valley, and by the strike of railway hands in Chicago, will arrive on Sunday, and the expedition will sail at 10 A. M. on Tuesday next. Cases containing their entire outfit of rubber clothing were shipped long since by railroad from Washington, but as these have not arrived, and nothing is yet heard from them, the expedition will be obliged to sail without waiting longer for them. At Plover Bay, not far from where the schooner *Newton Booth* was wrecked, just behind the spit, opposite shoal water, there are still large quantities of telegraph poles and several thousand tons of coal, thought to have been landed there by the Collins overland telegraph expedition, and subsequently abandoned to the Russians.

THE CONTEMPLATED CRUISE.

From San Francisco Lieutenant Berry will proceed with the *Rodgers* to Petropaulovsky, under sail, which, with a favorable chance, will require 25 to 30 days; thence he will cross to Saint Michaels, in Alaska, to coal; then to Saint Lawrence Bay and along the coast of Northern Siberia, communicating with the natives in the hope of gaining some possible intelligence of the *Jeannette*; thence from Cape Serdge-Kamen, where letters will be left with some native Inuit or Tschukchi, northward to Herald Island, to land and hunt it well over for cairns. From here it is now the intention, if nothing definite is found to warrant a different course, to proceed toward the southern coast of Wrangel Land, along the shore discovered by Capt. Thomas Long in 1867, and by approaching as near as the ice will allow, to seek for a suitable harbor to winter the vessel. When the sea is frozen over and the ice hard and solid for the season, sledge parties will be sent out over the sea, along the shore line, following northward the East Coast of Wrangel Land, and should it prove practicable, the West Coast may also be thus examined. Unless Lieutenant Berry succeeds in obtaining information calculated to justify his remaining longer, it is his present intention to return here if possible by the second year, and the *Rodgers* may be due back any time after November or December, 1882, depending, however, on so many circumstances, that she is liable to be gone much longer. Probably the last letters she will attempt to send back to us, will be by either some whaling vessel, or by leaving them at Cape Serdge, to be forwarded by native messengers to the nearest Russian outpost. The Following is a list of the

OFFICERS AND CREW OF THE RODGERS:

Lieutenant Robert M. Berry, U. S. N., commanding United States steamer *Rodgers*, of the *Jeannette*

Search Expedition; Howard Scott Waring, Master, U. S. N., Executive Officer and Navigator; Dr. Meredith Dabney Jones, U. S. N., Passed Assistant Surgeon; William Frederick Halsey, Master, U. S. N.; Abraham V. Zane, U. S. N., Passed Assistant Engineer; Henry Jackson Hunt, U. S. N., Ensign; George Middleton Stoney, U. S. N., Ensign; Dr. Joaquin Demetrius Castillo, U. S. N., Assistant Surgeon; Colonel William H. Gilder, Pay Clerk, and New York *Herald* correspondent, [was with Lieut. Schwartzka's expedition to King William's Land.] Joseph Hodgson, Paymaster's yeoman and store-keeper; Scooby Willard Morrison, George Gardner, Jr., Patrick Cahill, machinists; Herbert P. de Tracy, acting carpenter. Also, 1 steward, 2 cooks, 3 firemen and 15 able-bodied seamen.

Lieut. Berry, the able Commander of the *Rodgers*, is a strong muscular, heavy but symmetrically built man, over six feet in height, of agreeable disposition, firm purpose, quick and thorough in the despatch of business, and very careful of details. As an accomplished officer of the United States

Navy, he is fitted by education, as well as by his character, pleasing manner, and deep interest in Arctic explorations and discoveries, to command such an expedition. It is rarely that a finer set of officers and men—all especially selected for this duty—are found aboard of any vessel, and they unanimously express themselves more than pleased with the *Rodgers* and her present outfit, as she swings at her anchor in our harbor, anxious to be off on her errand of mercy and of hope.

Lieut. Berry's well-known experience in the *Tigress* while searching for the *Polaris* gave him an ardent desire to undertake the present voyage, in which he seems to take the deepest interest, in common with all on board. One officer said yesterday: "You could not hire me to remain behind."

From personal observation we are well satisfied that a prettier modelled and better fitted vessel never sailed on an Arctic exploring expedition. May every success attend her, and her brave officers and gallant crew.

EXTRACT FROM A LETTER

ADDRESSED TO THE

CALIFORNIA ACADEMY OF SCIENCES

BY

COL. CHARLES S. BULKLEY

Late Engineer in Chief of the Collins Overland Telegraph.

Having noticed the statement that, in the opinion of Dr. William H. Dall, no part of the Kuro Shiwo or Japanese warm stream passes northward through Bering Strait into the Arctic Ocean, and claiming that the U. S. Coast Survey schooner *Yukon*, while in his charge, during the Summer of 1880, when anchored near the Diomed Islands, in the narrows of Bering Strait, swung with the tide, permit me to say in regard to tidal currents in Bering Strait, that it appears to me that he must have anchored his vessel in some eddy caused by the obstruction which the Diomedes present to the almost constant northerly flow of water which I observed setting into the Arctic Ocean in the Summer and early Autumn of 1865, when I thoroughly sounded and examined most carefully the bottom, and especially noted the currents of this Strait, for information necessary in selecting a telegraphic cable bed for this crossing.

Again, in the Summer of 1866, the investigation was renewed, and numerous crossings were carefully examined at different times, and the same nearly constant current moving northward was ascertained and measured. This seemed an increasing flow of warmer currents only, and checked in its surface by strong North winds. Through Senevaine Strait, which is part of Bering Strait, separated from the main body of waters by Kayne Island, the same northward current pursues its steady way. Dr. Dall may easily, have been led astray, for swinging at anchor in the whirling waters, under the lee of great rocks, like the Diomedes, might readily mislead the most wary.

Very Respectfully,
CHARLES S. BULKLEY.

SAN FRANCISCO, Cal., June 6th, 1881.

THE TELEGRAPH IN ARCTIC REGIONS

BY

JAMES GAMBLE

General Superintendent of the Western Union Telegraph Company.

A PAPER READ BEFORE THE CALIFORNIA ACADEMY OF SCIENCES,
ON MONDAY EVENING, JUNE 6TH, 1881.

[From the San Francisco *Mining and Scientific Press* of Saturday, June 11th, 1881.]

A few weeks ago I made a suggestion that the telegraph be used in Arctic explorations. The views I expressed in relation to the matter were published in the *Evening Bulletin* of this city. They have elicited considerable attention and a good deal of comment, particularly in the East. The plan I proposed was in substance as follows:

To use light steel wire, say number 20 gauge, weighing about 20 lbs. to the mile. The wire, coiled on reels, could be hauled on sledges, either by men or dogs, over the snow or ice, paying it out as the advance exploring party went along. By this means the party would keep in constant communication with their base of supplies. They would have no cause for uneasiness about getting lost or beyond means of rescue, as they would be able at any moment to call for aid. With this feeling of the certainty of relief in case of accident, they would not hesitate to push their explorations to a distance far beyond what would be considered safe in the absence of means of telegraphic communication with the main body. And should any accident happen to the advance party of explorers, or should they require a further quantity of supplies, the line of wire would serve to guide those going to the rescue straight to the spot where the explorers were camped. It would also serve as a guide for their return, materially lessening the chances of danger to life and loss of the party. Having established a base of supplies at some central point there would be nothing to prevent

several exploring parties being sent out at the same time in different directions, they reporting each night to the central station the progress and observations made during the day. Directed in this way, the practicability of one route over another could, from the telegraphic reports sent in, be determined upon and much time that would otherwise be wasted in vain endeavors to make way over barriers of ice be saved.

As hard frozen ground, dry snow or ice, is a perfect insulator, no poles to string the wire would be required. It could be paid out on the snow or ice by the party as they went along. The generally accepted theory of those familiar with the Arctic regions, is that the ice is seldom more than six or seven ft. in thickness—Captain Hooper, in his report, corroborates this—so that by boring through it with a common drill, or through frozen ground, there would be no difficulty in obtaining a good ground connection to complete the electric current. It would not be necessary to carry any battery material. One main battery at the central station would be all that is required. For a distance of 100 to 150 miles telephones could be used, dispensing with practical telegraph operators. Still, it might be advisable to have some of the party possessed of a practical knowledge of telegraphy.

At 20 lbs. to the mile, 100 miles of wire would only weigh 2,000 lbs. It could be wound on reels in size easy to handle. The cost of steel wire of that gauge is about 20 cents a pound, so that the total expense, including cost of reels, winding, etc., would not exceed \$1,000. Among those who have been good enough to notice my suggestion and mani-

fest an interest in it, is Mr. George Kennan, of Washington, a gentleman familiar both with the telegraph and the Arctic regions, having been connected with the Collins Overland Telegraph Co. He assisted in the building of that line during the period of construction and afterwards made a journey through Siberia. In a long letter to the *New York Herald* of May 26th he enumerates a series of difficulties that stand in the way of any profitable results being derived from the use of a telegraph wire in the polar regions. His objections to the practicability of the scheme are founded as he himself states "on the inadequacy of existing transportation facilities."

It possibly may not have occurred to Mr. Kennan that an inventor, to realize his idea, does not content himself with such means or facilities as may exist, but will provide himself with those necessary to its realization if such are to be had. He says, "I understand that Lieut. Berry does not expect to take more than 25 dogs from Petropaulovski on the *Rodgers*." If I had used only 25 men in the construction of the overland telegraph line, the probabilities are that the overland line would not be finished yet. The poles at one end would have had time to rot away before the poles at the other end could have been set. If only a sufficient number of sledges and dogs are used to carry the necessary provisions for the party, then, clearly, there will not be room for anything else. But if more dogs and sledges are used—even Mr. Kennan admits this—there would be room to carry something else besides food for the party.

And in connection with this point, he overlooks the fact that, as the exploring party advances, the load of wire is every moment becoming lighter. It is lightening up at the rate of 20 lbs. to the mile, and if the party make two miles an hour, they are unloading 40 lbs. an hour. Within a week, 100 miles of wire would be paid out. If they started out with 200 miles the different sledges could unload in part alternately so that after having accomplished 100 miles, each sledge would only be carrying a half load. When again, some had entirely unloaded they could return to the base of supplies, the wire being their guide back.

"But," Mr. Kennan says in another place, "100 miles of wire, even if it could be carried without sacrificing every thing else, would be of very little use." That, in one sense, is a mere assumption, in another, it is incorrect. One hundred miles of telegraph would have been the means of saving many a life sacrificed to Arctic explorations. Ten miles is a very long distance in the Arctic regions, more than sufficient to prevent a famishing explorer returning to his party. To show the uselessness for exploring pur-

poses of 100 miles of wire or more, Mr. Kennan cites Lieut. McClintock's journey in 1853, of 1,200 miles, made on sledges with a party from the *Resolute*. Had Lieut. McClintock pursued this journey in anything like a straight line, he would have gone over the North Pole and down the other side. But as he did not do this, it is proper to suppose what in fact is a reality, that the 1,200 miles represent his wanderings forward and backward, hither and thither, on the ice between his leaving and return. The instance therefore cited by Mr. Kennan of 1,200 miles having been traveled and so little accomplished, so far as reaching a higher latitude is concerned, is a strong argument in favor of a telegraph wire. With it Lieut. McClintock and others who have succeeded him, would not have wasted so much time nor incurred so many risks to themselves and parties.

In point of fact, several hundred miles of wire could be taken as easily as 100 miles, the requisite number of sledges and dogs being provided—and without any difficulty whatever. Mr. Kennan says again: "It is very doubtful whether a steel wire of number 20 gauge could be unreel from a sledge in a temperature 50° below zero without snapping at every turn of the reel." The doubt here expressed seems at first sight a reasonable one. I have, however, supplemented my own opinion on this point with that of one of the best authorities here on the effect of cold on metallic substances, and especially the effect of a very low temperature on iron, steel and other wires. Under intense cold hardened steel is undoubtedly rendered extremely brittle and will readily break when subjected to a blow. But steel wire can be annealed to a degree making it as soft as iron wire, and as easy to handle from a reel in northern latitudes as in warmer ones.

It should also be remembered that the uncoiling is not a snappy or jerky movement. It is not uncoiled any faster than the progress made by the party, and which is about two miles an hour. Moving forward steadily and not faster than two miles an hour, annealed wire could be uncoiled without any trouble or danger of snapping off.

Even in the event of a prejudice existing against steel wire, copper wire could be used. In suggesting steel, I did so simply because of its greater strength and cheapness. But did such a danger exist, as supposed by Mr. Kennan, of the snapping off of the wire at the turn of the reel under a low temperature, how was it then that the wire for those portions of the telegraph line built across Northern Siberia towards Bering strait, to connect there by means of a cable with the Collins overland line on this side was uncoiled? Several portions of that Siberian line were built and the

wire strung during the winter, with the thermometer ranging down to 50° below zero, Fahr. The line running along the head waters of the Anadyr river and along the Okhotsk sea was also built, the wire uncoiled and strung during the winter months. It was the only time of the year, in fact, it could most successfully be done, it being difficult to haul the loads of wire over that part of the country, owing to the wet and swampiness of the land during the other periods of the year. Col. Bulkeley, Chief of the Collins overland telegraph expedition is my authority for this statement. That part of the line from Plover bay to Bering strait was also built during the winter. These are facts that Mr. Kennan ought to be familiar with and which, had he recollected, would have prevented him advancing such objections as he has.

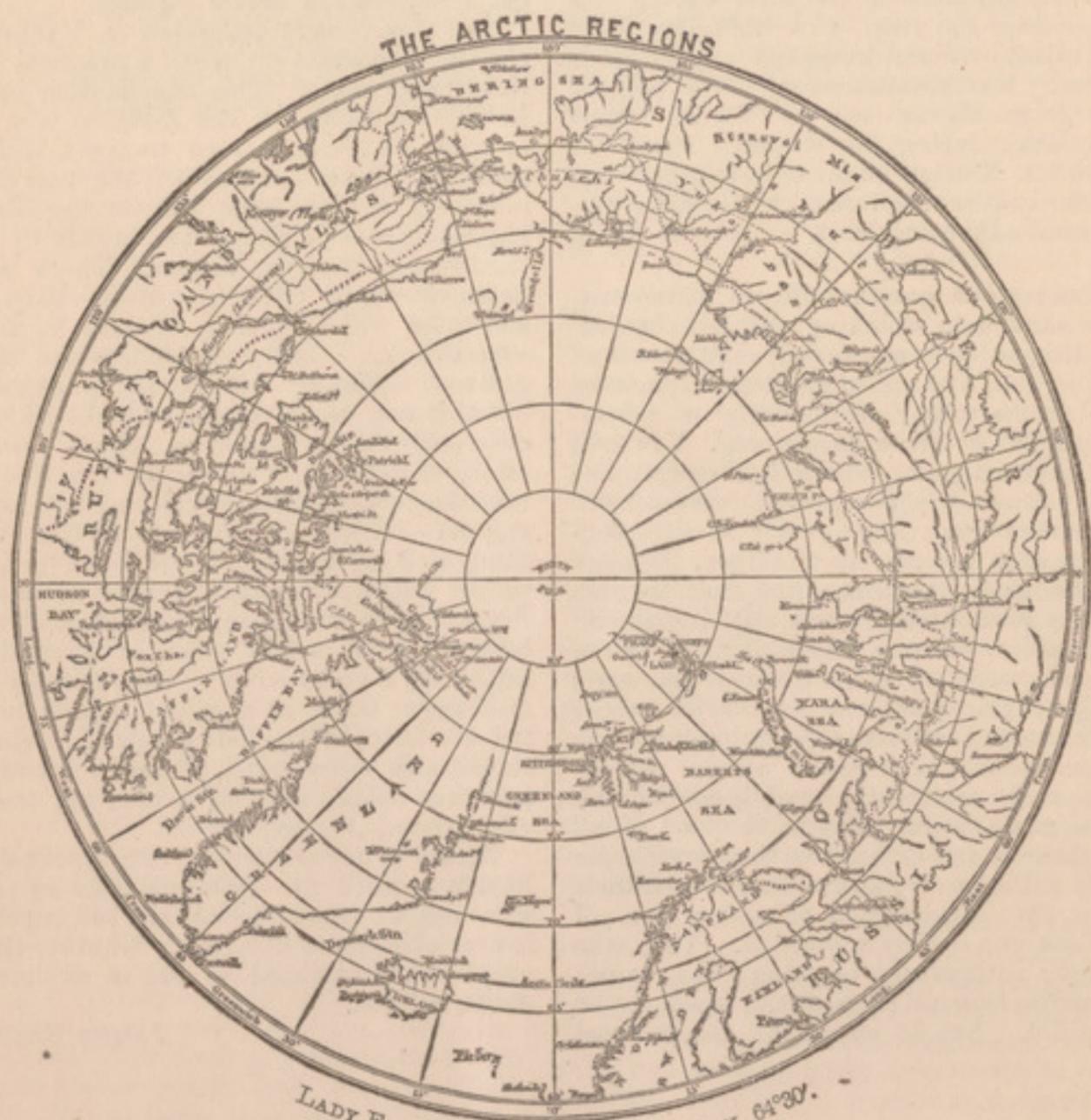
Mr. Kennan is a most intelligent gentleman, but I cannot help thinking that his observations on this subject are mainly the result of his imagination, and not of practical experience in regard to the utility or inutility of a telegraph line in Arctic explorations. You will recollect that when an overland telegraph line was first proposed in Congress it was considered impracticable. Among the earliest suggestions made was one by the Hon. Stephen A. Douglas, and notwithstanding that his plan was clearly elucidated, it was still considered an impossible scheme. The objections raised against the possibility of the construction were: Difficulty of transportation, scarcity of timber along the route, difficulty of protecting the line from Indians, and many others equally plausible and apparently well-grounded by those who made them. But in the face of all these objections and difficulties there were some who were willing to try and willing to risk their money in the construction of such a line. I need not ask you if they succeeded. You, who read in your newspapers, morning and evening, the dispatches from all parts of the world, know that they did. But it should be remembered

that they not only did succeed in constructing an overland telegraph line, but that through it they also succeeded in establishing the weakness and worthlessness of all the different arguments and objections raised against it when the idea was first suggested. But neither one nor the other would ever have been established had not a trial been made, and that is precisely what should now be done in respect to a telegraph wire in the Arctic regions.

The idea I have suggested is, I think, sufficiently important to merit a practical experiment being made. This can be done by Lieut. Berry, commander of the *Rodgers*, who honors us with his presence here to-night, and who is about to risk his own life and the lives of others in search of those who left on the *Jeannette*. If steel wire is rendered too brittle by the extreme cold, then try copper. There will not be any strain on either as strung out on the ice and there will be plenty of slack to allow for contraction. I can well understand that the greatest difficulty will be the transportation, but is it not worth while to make an effort to overcome this in order to better ensure the safety of the lives of the brave men who undertake the perilous task of exploring that unknown region? It will be impossible, from want of time, for Lieutenant Berry to have prepared a proper outfit for several hundred miles of wire. I would therefore respectfully suggest that he take with him a few miles of three different kinds, say 5 or 10 miles of steel annealed, iron, and copper wires, so as to try, during next winter, the effect of the cold on each. Telephones should also be provided, so that a practical experiment could be made of securing the necessary ground connections, etc.

Theory is not always correct; practical experiments furnish the most satisfactory proof of what can be accomplished, and the opportunity is now afforded to determine whether the telegraph can be utilized to aid in exploring the Arctic regions.

JAMES GAMBLE.



LADY FRANKLIN BAY, LAT. $81^{\circ}40'$. LON. $64^{\circ}30'$.

