3-19-1845

Report from the Secretary of War, communicating (in compliance with a resolution of the 15th instant) a report of John Stockton, superintendent of the mineral lands on Lake Superior, with map, &c.

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Recommended Citation
S. Doc. No. 175, 29th Cong., Sp. Sess. (1842)
REPORT
FROM
THE SECRETARY OF WAR,

COMMUNICATING
(In compliance with a resolution of the 15th instant)

A report of John Stockton, superintendent of the mineral lands on Lake Superior, with map, &c.

MARCH 19, 1845.
Read, and ordered to be printed, and the map engraved.

WAR DEPARTMENT, March 17, 1845.

Sir: In answer to a resolution of the Senate of the United States of the 15th instant, requiring the Secretary of War "to transmit to the Senate, at its present session, the report made by John Stockton, superintendent of the mineral lands on Lake Superior, with the map accompanying the same," I respectfully transmit herewith a report of the officer in charge of the Ordnance bureau, with the map and all the papers referred to in the resolution.

As there has not been time to copy either the map or papers, I have respectfully to request that they may be returned to this department when the Senate shall have no further use for them, to be replaced by copies for the files of the Senate.

Very respectfully, your obedient servant,

W. L. MARCY,
Secretary of War.

HON. GEORGE M. DALLAS,
Vice President and President of the Senate.

ORDNANCE OFFICE,
Washington, March 17, 1845.

Sir: I have the honor to transmit, herewith, the papers called for by a resolution of the Senate of the 15th instant, being the report made by John Stockton, superintendent of the mineral lands of Lake Superior, together with the reports addressed to him by his assistants, J. B. Campbell, G. N. Sanders, and A. B. Gray, and referred to by him, with a request that they may be considered as a part of his report. These papers are the originals,
there not being time to make copies of them, nor of the map, which is also sent.
The resolution is herewith returned.
I am, sir, with great respect, your obedient servant,
G. TALCOTT,
Lieutenant Colonel Ordnance.

Hon. W. L. MARCY,
Secretary of War.

WASHINGTON CITY, February 24, 1845.

Sir: I have the honor herewith to report to you the condition of the United States mineral lands on Lake Superior, together with a statement of proceedings under my superintendency.

On my arrival at Copper Harbor, I relieved General Cunningham, the special agent of the War Department, and received from him the property belonging to the United States.

Upon examination, it was found that, from the want of a proper survey and knowledge of Keweenaw point, there existed so many conflicting claimants for the same locations, it was rendered very difficult to carry out the instructions of the War Department contained in the revised permits, without increasing the existing embarrassments, by granting further permits before a survey of the country embraced in the point above mentioned, and an adjustment of previous claims. The most advisable course, therefore, under the circumstances, appeared to be, to suspend the further issue of permits, and refer the whole matter to the Ordnance bureau.

The survey of Keweenaw point has accordingly been satisfactorily performed by Mr. A. B. Gray, one of my assistants, aided by Mr. Schlatter; and the result of their labor is exhibited in the accompanying map, executed by Mr. Gray.

Under that part of the instructions to the special agent requiring him "to ascertain and designate the line of the mineral district," General Cunningham had, previously to my arrival, made arrangements to prosecute that duty; and accordingly the exploring party, under the direction of Messrs. J. B. Campbell and G. N. Sanders, being fitted out, proceeded, notwithstanding the lateness of the season, and faithfully performed the arduous enterprise; and the report of those gentlemen presents much information important to the Government.

I transmit herewith a list (marked B) exhibiting the names of persons whose applications have been received and filed, but further action suspended thereon; also, a list (marked C) exhibiting the names of persons applying for locations on Isle Royale. In regard to these latter locations, it is due to the Ordnance department, as well as to myself, to state that, from the proceedings heretofore had, much confusion exists, and most careful and laborious investigation will be required, to present such a statement of their condition as will enable us to form a correct opinion of the course most advisable to adopt. I am induced, however, to believe that I shall be enabled, at no distant day, to report definitively in the premises.

I have found it necessary, for the convenience of the agency and of those having business with it, to remove the office from Porter's Island, and fix it at Fort Wilkins. Access could only be had to the former place by a
ferry boat; while the present location, being directly at the entrance of Copper harbor, which is the great landing place for all vessels, can readily be reached without difficulty or delay. This was done with the approba- tion of Captain R. E. Cleary, the officer commanding at the fort, to whom I submitted my instructions from the War Department; and I cannot re- main from expressing my acknowledgments for the invariable kindness and courtesy which have characterized the intercourse between us on the part of Captain Cleary and the officers at the fort. It has now become clearly settled, that the mineral lands on Lake Superior contain copper, lead, and other ores, sufficient in quantity and richness to justify the investment of a large amount of capital, and furnish an ample revenue to Government. This will be established by the reports of my assistants, who were specially charged with the actual duties of exploration; to which reports, as part hereof, I respectfully refer you for more particular information.

A vein of copper has recently been opened on Keweena point, near Fort Wilkins, which has already yielded several tons of ore; specimens of which have been submitted to Dr. Houghton, State geologist of Michigan, who, by analysis, has found it to contain from seventy to seventy-four per cent. of copper. Specimens of the same ore have also been subjected to analysis by Doctor McClintock, assayer of the United States mint at Phila- delphia; and the result of the examination appears from the following extract of a letter from Doctor McClintock to William Pettit, M. D., who has kindly furnished it for my use:

"Having found leisure, since the receipt of your letter through Doctor Jones, to make an analysis of the copper ore from Lake Superior to which it refers, it affords me great pleasure to transmit the result.

"100 parts of the ore contains of—

"Silex - - 7.00
"Metallic copper - 70.00
"Oxygen - - 17.50
"Carbonic acid, &c. 5.50 = 3.81 carb. acid, 1.69 water, 4.13 carbonic acid, 1.37 water.

"The mass of the ore is a peroxide of copper, producing a rich blue color with aqua ammonia, which the protoxide fails to do. The blue carbonate of copper constitutes but a small portion of the specimen, and seems to dip into its interior. The carbonates always contain a portion of water, and you will therefore find the latter estimated with the carbolic acid, &c., 5.50 being the absent parts; and no trace of sulphur having been discovered, they are assumed to have been the carbonic acid of the blue carbonate, and the water necessarily associated with it.

"I send you the pure metallic copper precipitated from a solution of 500 grains of the ore; it weighs 35 grains parts, and is therefore equal to 70 parts in 100.

"The absence of iron, sulphur, &c., adds greatly to the value of the ore, by rendering the smelting much easier, and insuring a better article when smelted." Dated February 4, 1845.

In order to avoid further difficulties and confusion in the selection of land for mining purposes, and to prevent claims from conflicting with one another, I would suggest that one of my assistants be authorized to make the surveys of the locations as described in the permits issued, and to mark
the corners thereof; and that he make a report of the same, and append his certificate to each map, as having been properly surveyed. It might be provided, however, that all expenses of such survey be paid by the persons wishing to obtain leases; who shall be required, moreover, to be ready, when called on by the surveyor, to have the lines run and corners marked.

In conclusion, I would respectfully suggest the propriety of allowing any of the companies engaged in mining the privilege of erecting smelting furnaces at Saut Ste. Marie; and also that this point be made one of the depots for the rents due in ore to the Government. Certain restrictions would of course be concomitant with such privileges; as, for instance, it might be provided that all ores brought thither should be smelted in turn. Such facilities, afforded for a fair remuneration, would render efficient and indeed essential aid to practical miners whose pecuniary means are inadequate for any operations beyond the mere raising and transportation of the ore. It would serve to prevent monopoly, and a profitable field of enterprise would be opened for a most worthy and industrious class of citizens. It would perhaps be but just, moreover, to provide, in case such furnaces be permitted, that transportation of ore to other places should be prohibited, except in quantities sufficient merely for the purposes of analysis or test.

All which is respectfully submitted.

JOHN STOCKTON,
Superintendent U. S. Mineral Lands on Lake Superior.

Lieutenant Colonel GEORGE TALCOTT,
Ordnance Bureau.

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Report from J. B. Campbell, referred to in the foregoing report of John Stockton.

CHICAGO, December 4, 1844.

Sir: I herewith give you the result of my observations upon the soil and mineral features of the country upon the southern coast of Lake Superior, from the portage of Keweena point to the river Brulé, and thence (during a rapid journey) to the Mississippi, via the river St. Croix, during the months of September and October, 1844.

The severity of the weather and lateness of the season prevented as thorough an examination of the country between the portage of Point Keweena and the Ontonagon as I could have wished; but I find the mineral veins which passed under my observation equal to those of Point Keweena in apparent richness. The mouths of most of the rivers throughout this distance of coast (45 miles) are closed throughout the summer months (at low stages of water) by shifting sands, which remain during low periods of water, and are removed during the spring and autumn freshets, so as to admit the entrance of barges of small size. After passing these obstructions, however, many of the streams afford sufficient water for small boats for a distance of from 5 to 12 miles inland. The soil upon the coast, and for a distance of 2 to 3 miles into the interior, is generally sandy, and of indifferent character. After passing this distance, the country assumes a greater elevation, (the timber maple, principally,) and the soil becomes of good quality for cultivation—the prevailing character a sandy loam, ex-
cepting where the ranges of trap rock occur, where it becomes of superior quality, and produces well, as far as experiments have been made.

The valleys of most of these small rivers have bottoms of considerable extent, and the slight examinations which (owing to want of time) I was enabled to make presented evidences of superior caste.

The ranges of sedimentary rock upon the northern slope of the trap are of great thickness, and the few veins observed give evidence of valuable deposits of copper ores. The veins are of greater length than those of Keweena point. The usual quartz (vein stone) occurs, with native copper distributed in small masses throughout, and frequently of great richness.

Nothing new was observed upon the Ontonagon, or discoveries of importance, since the last year's explorations; but its superior soil and mineral features give the region a high value. The small experiments made by Mr. James Paul, an early pioneer, in growing wheat, corn, potatoes, &c., during the past season, prove the valley of this river to be very valuable as an agricultural district, in addition to its mineral deposits.

Iron river.—The valley of this river has been explored for a considerable distance, and the soil appears excellent. The small quantity of land cultivated at its mouth by the traders gives corn, potatoes, turnips, &c., of good quality. This river washes the eastern base of the Porcupine mountains, and in its course from south to north passes over the red sand rocks and slates which rest upon the trap hills of those ranges. Some few veins of copper ores were found upon the upper branches of this stream, presenting similar features to those in the eastern section of the mineral district.

The country embraced between this river and the Montreal shows similar features to that between the Portage and the Ontonagon, excepting that the soil of the valleys between the ranges of the Porcupine mountains is of a superior quality, mostly being composed of disintegrated trap and red sand rocks. The entire distance from the Ontonagon to the Montreal, the mineral veins are found, frequently presenting rich surface appearances; but more time is required to speak more fully of this region. The veins, generally, have a greater length, (as far as could be ascertained,) and appear better in the conglomerates and red sand rocks than those noticed further to the east; and I have no doubt but that this will be found to be a valuable section of the mineral country. The rivers between the Ontonagon and the Montreal (a distance of 70 miles) head near the coast, and make a rapid descent to the lake, and are not navigable for any thing but small boats or bark canoes.

The Montreal river enters the lake from the southeast; has a width of 20 to 50 yards near its mouth, and cuts through the red sand rock to the height of 100 feet above the lake. The entrance is quite shallow, and it is difficult for the smallest boats to make a harbor, excepting in calm weather. After passing over the bar, there is a good harbor for large barges. At two miles distance from the coast, the river breaks through the ranges of trap and conglomerate rocks in its course from the east, and forms two successive falls of some 50 feet each. For a distance of two miles below, the river winds its way through cliffs of conglomerate and sand rocks, frequently rising to the height of 200 feet. The average width is about 50 yards for a distance of five miles above its mouth; and
for a distance of five miles further, the bottoms are frequently quite large, and consist of a good soil, with a heavy growth of elm, ash, maple, &c.

The veins of copper ores discovered in the valley of this river are, many of them, large, and carry a vein stone of compact quartz, with native copper distributed in small particles through it; in many instances, the vein stone is of the width of two feet. The majority of the veins, however, vary from 4 to 12 inches, with similar general features as those described before—i.e., native copper and the green carbonate frequently appearing in considerable quantities.

The explorations already made indicate that the copper veins continue on towards the head of the lake, without any apparent diminution in value.

Bad river, twelve miles west of the Montreal, contains (with the exception of the Ontonagon) the most valuable lands of any upon the south coast west of Point Keweenaw.

The bottoms, after leaving the lake for a few miles, are wide, and of great productiveness. Grass, in large quantities, can be cut for a distance of six miles above its mouth; and above this point the soil is of excellent character, and will produce, with ordinary care and cultivation, good wheat, corn, and most of the vegetables of southern Wisconsin. The timber is ash, elm, and sugar maple, and the grape and hop vines were found in abundance.

The trap rock crosses this river at a distance of 25 miles inland; but the mineral character of this district could not be ascertained, owing to the freshets occasioned by the heavy rains of the equinox. Some few specimens of ore found, however, show that the mineral veins continue through this part of the country.

The portion of the country between Lapointe and the river Brulé (a distance of sixty miles) as far as explored into the interior, contains much good soil, particularly in the valleys. Upon the coast, and for a short distance inland, the soil is of sandy character, and unfit for cultivation. The coast presents frequent cliffs of red sand rock, and sand and gravel, with occasional deposits of red clay, to the depth of a few feet. Throughout a large part of this distance, the sugar maple is the prevailing timber for many miles inland, occasionally intermixed with aspen, white birch, pine, and cedar; and tamarack swamps are of small extent, and confined principally to the heads of small streams.

The rivers entering the lake, from Lapointe to the Brulé, have a character similar to those before described between the Portage and the Ontonagon, being obstructed at the mouth by shifting sands; after passing these, many of the streams can be ascended in canoes for several miles. Some few veins of copper ore were discovered in this part of the district, and a few specimens were obtained quite rich, affording good evidence that the ranges carry good veins between the Montreal and the Brulé, and very probably to the head of the lake.

The river Brulé enters Lake Superior from the southeast; has a width of about fifty yards for a short distance. In consequence of shifting sands at its mouth, the entrance is quite shallow, and the course of the stream, for several hundred yards, is parallel with the lake. After passing over the bar, the water deepens, and the current is moderate for the distance of a mile, when it becomes swift, and forms a succession of rapids for a distance of fifty miles, when the current again becomes more gentle, the stream contracted in width, and very crooked, winding its way through low, wet, and
stony bottoms, covered with alder, tamarack, and cedars. For the remaining distance of 21 miles to the Portage, occasional pine bowers appear, composed of low sandy ridges upon each side of the river, and the general course of which is southwest. For the first fifty miles, many of the bottoms are composed of excellent soil and timber, and a large portion of the more elevated lands bordering the river is a sandy loam of fair quality, with birch, white pine, and aspen, and sometimes the sugar maple appears in extensive groves; but the last or upper section of twenty-one miles of the river, the land is entirely unfit for cultivation throughout the entire distance to the Portage. At its head, trap rock appears for a short distance in the river; and about twenty miles above its mouth, some few specimens of ores were found in the river, but no veins were observed. The rocks approaching the river at this point being low, and covered with soil and a dense growth of timber, consequently little could be done to ascertain its direction. The river, throughout its entire length, is filled with boulders of granite rock, and no rock appeared in place until the St. Croix was descended some twenty miles. The Brule river heads in a boiling spring of some two acres in extent, and one mile above the head of canoe navigation, and seventy-two miles southwest from the lake. This spring is also the head of the St. Croix, the water discharging from it into Salt Lake, after passing southwest for one mile.

The general course of the St. Croix, in its descent, for a distance of twenty miles, is northwest; after which, it changes to the southwest for nearly its whole distance to the Mississippi. The first twenty miles the current is moderate and the water shallow, with a width of fifty to one hundred yards; and the land bordering the stream, from one-eighth to half a mile on either side, marshy, and covered with wild rice in abundance, backed by tamarack and cedar swamps. After passing the Macagan, which enters from the east, the whole aspect of the country changes—the bottoms are higher, and the timber burr oak, ash, elm, &c., and the soil of good fair quality. Occasionally the bottoms are subject to inundation by extreme freshets, but generally they are fit for all the purposes of agriculture to the Mississippi. No rock appears in place upon the St. Croix, until within about ten miles of Kettle river, where red sand rock occurs; and after passing a short distance, trap rock is seen, with strong evidences of carrying mineral veins.

This rock appears at many points between the place before mentioned and the Falls or Grand Rapids of the St. Croix, which is the head of steamboat navigation. The proprietor, Mr. James Purinton, who owns the mills at this point, showed me many specimens of the sulphures of copper, which he found in that vicinity; and I have no doubt that the entire country from Keweenao point, running in a southwestern direction, to the place above mentioned, will be found to abound in the ores of copper, of great practical value; and Colonel Jacobs, who accompanied me on my trip of exploration, and who, perhaps, knows more about the mineral region above described than any man except Dr. Houghton, is of the same opinion.

I would therefore recommend that a special agency be established at Lapointe, to embrace the mineral region from the Ontonagon to the head of the lake, and access to the Mississippi, including the St. Croix waters, as the miners belonging to that district of country will be too remote from the Copper Harbor agency to get their permits and receive the protection of the Government agent.
Accompanying this, I send you a map, drawn by Mr. William Slaughter, which embraces the country described in my report.

I am, with high regard, your obedient servant,

JAMES B. CAMPBELL,
Assistant Agent United States Mines.

General JOHN STOCKTON,
Superintendent U. S. Mines.

Report from George N. Sanders, referred to in the foregoing report of J. Stockton.

Sir: Previous to your arrival at Copper harbor, I was occupied in explorations on Keweena point. My observations were for the most part confined to the lake shore, and the washings of the Little Montreal, Eagle, and Trap rivers.

Copper harbor forms an oval two miles in length, parallel with the lake; the entrance about a third of a mile wide, near to the eastern end. In that part of the harbor sheltered by Porter island, upon which fronts the Government house, vessels of the largest size on the lakes may safely ride out the severest gales. The superiority of this harbor is such, that any other improvement than a light-house would be superfluous; this, however, is important.

On the lake shore, near the entrance to the harbor, on the eastern side, was a rich column of green carbonate of copper, visible for some miles out in the lake. It has, however, been reduced by miners and speculators to a small mound. There is a wide spar vein running from the mound into the lake, which can be seen to a considerable depth; on the brook conducting Lake Martha to the beautiful inisled valley lake Fanny Hooe is a large vein of manganese. Leaping several precipices, the dashing brook has wrought out for itself in the conglomerate a channel of more than a hundred feet deep. Its fine trout and romantic attractions make it a charming resort for visitors to the harbor.

Along the coast, from Copper harbor to the extremity of Keweena point, about ten miles, nothing is seen but the unsightly conglomerate and a few half-starved trees. The trap rock extends into the bay most of the distance between the point and Little Montreal river. Several wide veins of rock have here been found, which is estimated will yield from ten to fifteen per cent. virgin copper. Timber is abundant, and the falls at the mouth of the Montreal river give a profusion of excellent water power. Sandstone only appears from Montreal to Portage river. There are six feet water on the bar at the mouth of the latter river, as surveyed by Major Campbell, and not less than that any where between the mouth and Portage Lake, on which there are several very rich spots of maple land. At the mouth of Alder river there are Indian old fields of many acres in extent, situated on table land, nearly one hundred feet above the level of the lake. From hence is a rich view of Portage Lake and the high hills surrounding. The corn hills were still easily discerned, though the Indians had long since ceased to cultivate them, having gone to the station at the Ance. Our guide, who had visited these fields thirty years ago, informed me that the Indians were then very successful in the culti-
vation of corn; that it matured better here than at any place they had tried north of Mackinaw; and that they had experienced less disaster from the frost than at any other point on the lake.

Sturgeons crowd Sturgeon river and the Portage Lakes. Scores of them can be seen glittering at full length above the water; and multitudes of wild ducks flock here. But, amid much that is luxurious, these beautiful lakes are visited with the plague of the “Little Beaver,” a small hard black insect, to which, from its shape, the Indians have given this name. They move in swarms, with much rapidity, on the water. Their presence renders it dangerous to use the water for drinking without great precaution. Being once introduced into the stomach, they industriously work their way in any direction, causing great pain and almost certain death.

The trap range crosses Portage Lake at the mouths of “Going Home stream” and “Trap Rock rivers,” about ten miles from the Portage. The hills in the vicinity are very high and abrupt. Mineral indications of the most encouraging character are scattered over these hills. Some years ago, a pure copper rock of one hundred and fifty pounds weight was found a short distance up the Going Home stream. The Indians estimate the distance from the mouth of Portage river to the Portage at thirty miles. They pass in canoes from the Ance to Lake Superior in one day, via the Portage.

Whenever the mineral and agricultural productions of this section will authorize it, propellers may be employed with great advantage.

In reference to the geology of the country between the Portage and Copper harbor, I can add nothing to the excellent description given by Major Campbell, in his report of December, 1843.

I visited Eagle river, twenty miles west of Copper harbor. Mr. Gratiot, the enterprising agent of the company, had, up to that time, been entirely occupied in erecting comfortable winter quarters. On my recent visit to Boston, I obtained from Mr. Henshaw, late president of the company, the following statement of their operations:

“Eagle river vein has been worked by a company employing fifteen men. They have sunk one shaft, six feet by ten, forty feet, and one shaft twenty feet. They had raised, on the first of January, one hundred and fifty tons of ore. The ore yields about ten or twelve per cent. of metal, the metal being an alloy of ninety-five per cent. of copper and five per cent. silver.”

On the 8th of September, I left Copper harbor, under your instructions. Major Campbell took our supplies in a small boat to Iron river. I went by the Ance, for the purpose of procuring a good guide to make a thorough exploration of the country between the Portage and the Ontonagon.

The Indians at the Ance are nearly all embraced in the Methodist and Catholic missions. The emulation between the two establishments has tended greatly to the improvement of their condition. The Indians, cheerful and contended, are only anxious to secure their lands and improvements as an inheritance to their children. They besiege every Government agent with whom they come in contact, to represent them favorably to their great father at Washington.

There is a good harbor just below the Methodist mission, and the whole country is exceedingly fertile. To the mineral district it must become the principal dependence for supplies. Potatoes, turnips, and beets, of great size and excellence, can be raised here in luxuriant abundance. The vegetables I saw, from the garden of Mr. Brockway, are not to be surpassed.
anywhere in the United States. Sulphuret of iron prevails here, and stones of superior properties for use as hones are numerous. At a distance of ten to twenty miles sweeps Sturgeon river, half encircling the Auve, and falling into Portage Lake. There are four feet water on the shoals in ordinary stages, and by the removal of a few fallen trees it would be navigable to within ten miles of the Menominee. The land between the Auve and Sturgeon river has a south-western aspect, and resembles very much the bear-grass lands of Kentucky. From the evidences I saw, I am induced to believe that blue grass can be cultivated with great success. The early fall of snow guards the soil from the severe winter season, as is shown by the fact that potatoes may sometimes remain in the ground all winter without injury. Thus blue grass would continue in a green and growing state the whole year. Mules are the best stock to be employed in this country for bearing burdens, ploughing, and travelling. It must be long before good roads can be established; and, in the interval, if the Indians at the missions were furnished with mules instead of oxen, they would gladly travel the country.

Crossed Sturgeon river ten miles west of the Catholic church. The Indians had here thrown a dam across the river, where they kill thousands of Sturgeons with the spear.

The ascent to the high ground, at the head of Gravort and Miserere rivers, is almost imperceptible. Scarcely any portion of the country is too uneven for the plough. The sugar tree is the predominant growth, with a few pine, elm, poplar, linden, oak, box, alder, and ash trees. The trap range crosses the head of Miserere river, and is about twenty miles from the lake. It forms the highest elevation of land. It is occasionally cut by a small stream, but more frequently indented by lakes from a half to two miles wide. Exposed veins of mineral are not as likely to be found here as upon Keweenawa point. The gentle laving of the water in the streams has made but little impression on the beds of mineral which doubtless exist underneath. From the trap range, the highlands at the head of the Menominee are in view, distance about fifty miles. Porcupines, partridges, and ducks, are the only kinds of game we saw. Indeed, with the exception of rabbits and an occasional bear and deer, I believe they are the only kinds ever found in this region. Martens, beavers, otters, minks, and muskrats are caught in large numbers by the Indians in the winter. Mr. James Paul has found many slabs of pure copper in the hills around the forks of the Ontonagon, varying in weight from five to fifty pounds. A specimen was given me by Mr. Paul, to be presented to the department.

From the forks of the Ontonagon to the mouth, the soil is of delightful fertility. Except maize, all the productions of the territory adjacent to Lakes Michigan and Erie can be equalled here, both in excellence and abundance. There is a good entrance at the mouth of the Ontonagon; from seven to twelve feet water on the bar.

At the Ontonagon agency, I met Major Campbell. He had examined a portion of the Porcupine mountains and the hills immediately west of the Ontonagon. Upon conferring with him, we thought it best, in view of your instructions, that I should examine the head and branches of the Menominee and Wisconsin rivers, and that he should follow the supposed mineral district west to the Mississippi. From my knowledge of this gentleman's intelligence and fidelity to the service, I doubt not that the department will have ample cause for approval of his investigations and report.

On the 27th of September, I left Copper harbor for the head of the Me-
nomie and Wisconsin rivers. By the politeness of Mr. Brush, sutler at Fort Wilkins, I was furnished with a full supply of provisions, and every thing necessary for the trip. An intelligent half-breed, Mr. George Bur­kett, of the Ance, acted as my pilot. By employing extra help, I had all my supplies carried at once to the head of the Menomonie. We were five days crossing the portage. Ten miles from the Ance, there is a table land prairie of about twelve miles in extent; it reaches to Sturgeon river, and is dotted over with numerous small lakes. At Sturgeon river, Bur­kett was taken sick, and returned home.

From the greatest elevation here, the highlands of Keweena point are full in sight. The waters of the small streams move almost imperceptibly over grass or gravel bottoms. Saw nothing but large white boulders, to indicate the existence of mineral. The boulders were all strongly impregnated with sulphur—the blow of a hammer creating a powerful sulphurous odor.

On the 9th of October I entered the Menomonee at its head, with my provisions, in two small canoes. For thirty miles, to the mouth of the Great Swamp river, the Menomonie, but for its acute angles and occasional rapids, might be taken for a canal. The bottoms are low, and covered with the finest grass. From this point the river changes its character, and the rapids become frequent.

In many shallow places we were obliged to lift the canoes over the rocks; stepping with bare feet over the chill slippery boulders at this season was very severe. Between the rapids, the river often widens into small lakes.

At fifty miles from its source, the Menomonie receives the waters of the Wabegog. The latter is nearly as large as the former. Its source is near the Old Garden Lake. It is navigable for canoes most of the way. Before reaching the Wabegog, we passed six falls; portage around them about five miles. Ten miles below the Wabegog, there are falls, around which we had to make two miles portage. There were large white boulders of the same character as those on the highlands.

Trout river comes in at about thirty miles below the Wabegog. It is chiefly a chain of lakes; as mouth also expanding into a lake. It is a favorite place of resort for the Indians; being famed for its fine trout, its wild fowl, and other game. I obtained specimens of the green silicate between the Wabegog and Trout river, that will yield about twenty-five per cent. Wood and water power ample upon the premises. Ten miles below Trout river, is a perpendicular fall of twelve feet, where I collected some rich specimens of iron ore. Five miles below Iron falls, commences the "Three Link portage." No. 1 Pine portage; on the right bank, two miles long. From this, in order to cross, you ascend the river a few hundred yards, to Ravine portage; on the left bank; a mile and a half in length; thence, down the river a short distance, to Maple portage. Here are extensive sugar camps, where large quantities of sugar are made by the Indians. The passage of Three Link portage is very hazardous and laborious. There are many perpendicular falls, some of them at least thirty feet. The entire fall of the river, in a course of nine miles, is about two hundred feet. Near the end of Maple portage, is the mouth of Brule river. Here the hills assume a new character; sharp, high, and rocky. Birch is the predominant growth. About six miles from the portage, we come to the Michegamican river. Just at the mouth of Michegamican, there is a perpendicular fall of fifty feet. Spar veins and white boulders innumera­ble could now be seen on either side of the river. The hills here di-
vested of trees long since burnt off, left the spar veins and white boulders in view for miles around. On these high hills, I found very many spar veins, running generally east and west—a few large veins, however, having their direction north and south. On the most elevated ridges, with a prospect unlimited but by the circle of the horizon, this wild country lies open before you, in all its grandeur of inexhaustible resource. Here, far from the fertilizing warmth of equatorial skies, the earth embosoms treasures that climates cannot affect.

Day after day I traversed these veins, seeking favorable places for obtaining specimens. I could only follow them over the hills, till they were lost in the rich alluvial bottoms. With my limited means, and a broken pick, I could not obtain the best specimens. I saw two veins, each fourteen inches wide, of deep blue translucent spar.

About eighty miles from the mouth of the Menomonie, in an indentation of one of these ridges, I found a vein of rock, showing itself at intervals for one hundred yards through the deep rich loam. The rock is more friable than that on Lake Superior, and will yield between thirty and forty percent, pure copper.

Just below the White rapids is a north and south vein of pyritous copper, crossing the river, the white spar making it conspicuous as you pass. I obtained over forty varieties of specimens, some of which I purchased from the Indians of the Old Gardens; but they were unfortunately lost in crossing McLeod’s mill dam, eighteen miles from the mouth of the Menomonie. The canoe capsized in the mill stream, and it was with the utmost difficulty the men reached shore. I made many efforts to recover the specimens; but the deep foaming rapids proved too much for the most skilful Indian that could be found. I had designed having an analysis of these specimens imbedded in this report. Many of them were to me entirely new in their character, and I am unable to supply their loss.

In view of the waterpower of the Menomonie being used for mineral purposes, it would be well for Government to prohibit the erection of dams without ample locks. I would also suggest, that the owners of the present dams be required to erect suitable locks, and in a reasonable time; and, upon non-compliance, that the dams be removed by the Government, at the owner’s expense. There are extensive saw mills now in operation two miles from the mouth of the Menomonie, to which is attached a valuable fishery. The water on the bar, at the mouth of the river, I am told, is never less than six feet.

My design, when I left Copper harbor, was to descend the Menomonie to the Burnt district, and, after examining that, to proceed to the Lake of the Old Gardens, in quest of the much-talked-of copper rock—then to pass down the Wisconsin to Fort Winnebago; but Burkett’s sickness, and my want of success, owing to the early cold weather, in persuading any other person to accompany me in the trip, obliged me to abandon the project.

I would here remark, that the Indians of the Old Gardens, and of the Ontonagon and the Ance, all affirm, in the most positive manner, that there is a copper rock, full ten feet square, between the Lake of the Old Gardens and Trout Lake. I purchased specimens from the Old Garden Indians of this reported rock. They were cut out with a tomahawk, evidently with much labor. From the character of these, I am led to believe that it is similar to the rocks I found on the Menomonie. I have no doubt
as to the existence of a very large rock; and, if not pure copper, that it is
richly impregnated with large and small pieces of the native metal. Evi-
dently, it has been an object of worship with these Indians; and no doubt
summary punishment would still be inflicted on any of the tribe who
would be rash enough to betray it to a white man. They will keep the
exact location a secret among themselves, till the temptation of handsome
presents to all shall overcome their lingering veneration for their ancient
Manitou. Serious difficulties were near arising, from the few specimens
sold to me.

A change in the manner of granting leases, by the adoption of rules in-
uring more certainly to the benefit of miners, might lead to great advan-
tage in many ways. I would respectfully suggest the propriety of not re-
quiring security from the applicant, and for the first three years to levy no
taxes. The leases should be renewable, at their expiration, for only that
portion whereon discoveries had been made, or that would be requisite
for a necessary supply of fuel and water power. This system would en-
courage enterprise, and stimulate to promptness. At the end of three
years, ample security should be required for the payment of ten per cent.
of the ore, for a definite number of years. At first, there is propriety in a
large grant. The miner has so much the more field for discovery; and
his researches would be made with additional vigor, under the conscious-
ness of security to his labors.

At the end of three years, Government, having already exercised suffi-
cient liberality for full justice to the miner or other operator, might then
rightfully, and with profit to itself, resume its power over the unemployed
quarter, and again offer it to the active and patient, for researches. By
this change in the existing system, discoveries, I am persuaded, would be
made known in a ratio much exceeding the present. During the past
season, several miners of limited means were forced to abandon their per-
mits on Keweeea point, being unable to give the required security. In
consequence, much of Keweeea point has been swallowed up by three
or four rich companies—the actual discoverers, in some instances, losing all
that they supposed they had secured by their labor and privations. I risk
nothing in declaring, that to the industrial miners the Government must
look for the development of the inexhaustible mineral wealth of this vast
country. Continuing this aim with a still more practical bearing, I strongly
recommend the intersection of the country by trails eight feet wide, begin-
ning at Green bay; thence, in a pretty direct line, to the Menomonie,
about one hundred and twenty-five miles from its mouth; thence, via
Trout river and the Auce, to Copper harbor—distance about two hundred
and fifty miles. Also, a trail to commence at the Little Bull falls, on the
Wisconsin river; thence, between Trout Lake and the Lake of the Old Gar-
dens, intersecting the trail from Green bay, about twenty miles from the
Auce—distance about two hundred miles. Also, a trail from the Lake of
the Old Gardens to the mouth of Montreal river—distance about one hun-
dred miles. Also, a trail from the Montreal river, following the trap range
until it intersects, near the Portage, the trail from Green bay to Copper
harbor—distance about one hundred and twenty-five miles. Also, a trail
from the mouth of the Menomonie, to continue on the north side of the
river, up to the trail from Green bay—distance one hundred and twenty-
five miles. Making, in all, a chain of trails of not more than eight hundred
miles.
The present mode of exploration, as practised in that country, is both
unsatisfactory and expensive—three-fourths of the travel being by water,
in small boats and canoes. Indeed, without trails, it must continue impos-
sible to travel in any other way. For example, it is considered two good
days work to cross Keweena point, from Copper harbor to the mouth of
the Little Montreal river—distance only six miles; whereas eighteen miles
round by water is only half a day’s journey. Male trails would be pre-
erable to wagon roads, because they can be carried over the highest
land, where the mineral is most likely to be found. After the richest mineral
districts shall be certainly ascertained, other improvements for transporting
the metal may come into use.

By the aid of these trails, active, laborious men, from the mines of Wis-
sconsin and Illinois, could enter the mineral lands at any point. A mule or
pony would carry the necessary tools and provisions, (with aid from a good
gun) for two or three months. With moderate travel, mules will improve
on any of the routes from May to November, by grazing at night and being
allowed a short rest at noon.

At Chicago, I employed Mr. William Schlatter, a competent artist, who
has himself made an accurate survey of Keweena point, to make a map
from notes of my own, and sketches and notes obtained from Major Camp-
bell, and Mr. John Bell, Indian trader at Iron river, and Mr. James Paul,
miller from the forks of the Ontonagon; also, sketches from Burbett, and
the chiefs of the Ontonagon and Lake of the Old Gardens bands. The whole
has been examined and approved by Indian traders who have passed
through every part of the country. As soon as Captain Cram’s survey of
the Michigan and Wisconsin line shall be added, together with Mr. A. B.
Gray’s coast survey of Lake Superior, I believe that it will be the most
accurate map of the whole country that can be had without an actual sur-
vey. On it I have marked the mineral and best agricultural districts, to-
gether with the proposed trails.

Very respectfully, your obedient servant,

GEORGE N. SANDERS, Assistant.

Superintendent for the Mineral Lands on Lake Superior.


WASHINGTON, January 27, 1845.

Sir: I have the honor to report to you the following results of the
duties assigned me the past season, in the mineral district upon the south-
ern shore of Lake Superior.

After receiving instructions to join the agency established at Copper
Harbor, I proceeded, after procuring the requisite stationery and articles
for the office, without any unnecessary delay, to that place, where I arrived
on the 27th of July. By the direction of General Walter Cunningham,
then special agent of the Government, I was immediately occupied in
making a survey of the reserved piece of land upon which the office of
the agency was established; a map of which, with the general character of
the ground laid down, has been submitted.

On the 2d of August, I was instructed to proceed to “Lapointe,” near
the head of the lake, to attend the meeting of the different bands of the Chippewa Indians, at which place they were to assemble to receive their annual payment, and at which time the misunderstanding existing on their part regarding the cession of Isle Royale in the late treaty, would be settled. I left in Mr. Schoolecraft's barge, and, after encountering severe gales, and being wind bound several days along the coast, arrived there and found that upwards of three thousand Indians had already assembled, and awaiting the arrival of the superintendent of Indian affairs, who was hourly expected in the American Fur Company's brig the Astor.

Owing to the severity of the weather and head winds, she was double the usual time in making the trip from the Sault Ste. Marie.

On the 17th of August, a grand council of all the bands was held, and several of the chiefs spoke upon the occasion—among them, "Buffalo" and "White Crow." After explanations were made by the Indian superintendent, and some "talk," on the part of the Indians, the latter concluded to retire, and smoke the pipe, and return with their answer. An hour elapsed, when they again assembled in council, and finally decided that Isle Royale should be considered as included in their late treaty, and signed a paper giving up all further claim to the island. Some presents were then made them from the Government, through the agent, in consideration of the misunderstanding, and their willingness to agree to the words of the treaty; whereupon the council was dissolved, and I shortly after returned to Copper Harbor, bringing with me the intelligence of this amicable adjustment.

During my stay amongst the Indians, I found them to be exceedingly orderly and friendly, not showing the least manifestation to be otherwise; and I was particular in visiting their different wigwams and camping grounds, in noticing their manners and customs, and in procuring from them all information in regard to the mineral district and the character of their country. From one chief, whose band inhabits that portion near the extreme head of the lake on the St. Louis river, I obtained several beautiful specimens of ores. A piece of native copper which he had, and which seemed to have been lately cut from a larger piece, was perfectly pure, of much greater value than the copper of commerce; and the specimens of the sulphuret of lead, or galena, were equal to any found in Illinois or Missouri. He told me that he brought them from his part of the country, that he could load his canoe with it, and that it was found in large quantities, but would give me no further information respecting its locality.

The Indians generally, I found, were exceedingly cautious when questioned upon the subject of metals, and often deceive us in their answers; consequently, you cannot rely with any certainty upon what they tell you. A superstition prevails amongst them, and I am told it has been handed down for many generations, never to show or make known to a stranger the place where they may have procured any metal, believing that the "Gichee Manitou," or "Great Spirit," will become displeased, and some calamity befall them.

From fur traders and others who had been through this section of country, I learned that veins of lead and copper ores had been seen, and that native copper was frequently met with amongst the Indians. I was led, therefore, to believe that the metal was to be found there, and in large quantities, though, from their description of the locality, I should judge it was west of the line of the treaty, and in the Indian territory. It made
me more anxious to explore that portion of the mineral district, but my
time being limited by the advanced stage of the season, and I wishing to
return to the agency as soon as possible with the decision of the Chippe-
was in regard to Isle Royale—it being understood by the agent that per-
sons were deterred from commencing operations for mining on that island,
on account of a belief that a difficulty would arise with the Indians.

Many indications have been observed along the coast, and the country
immediately bordering thereon, in the vicinity of Lapointe and the Madal-
line islands, which prove it also to be of a mineral nature. Among other
ores and specimens of metal, I saw one of copper, weighing twenty-five
or thirty pounds, which was found at this point; and I understand that
silver is also found along some of the small streams, but of itself of not
very great practical value, on account of its diminutive quantity; though
possibly, when the country becomes more thoroughly examined, and fur-
ther explorations have been made, it may prove otherwise.

The information procured from persons who had been over and explored
many portions of Isle Royale proves it also to be rich in copper and other
metals. The veins upon this island are many of them to be traced upon
the surface to a considerable extent. Plates of native copper an inch in
thickness have been taken from between the rocks, the crevices and fis-
sures appearing to be filled with it; and some much greater in width
noticed along the shore, running into the water, getting wider the greater
the depth. From the specimens brought from this island, some of which,
among many others, I forwarded to the department, it will be seen that
the mineral district includes this island, and it may be considered a valu-
able portion of it. It lies near the north shore of Lake Superior, in a
northwest direction from the extremity of Keewena point, and distant
about sixty miles. The nearest approach to the island from the southern
shore is from Eagle harbor, and is about fifty miles, as will be seen by the
accompanying map of the mineral district. Isle Royale has also several
excellent natural harbors, affording safe and commodious anchorage for
vessels navigating the lake, and no obstacle in this way is offered to pre-
vent the shipment of the ores, or the copper and other metals, if smelte-
don the island. Some of them, formed by the different bays and indentations
along the coast, are protected at their entrances by numerous islands, with
deep and broad channels, sufficient for all practical purposes without any
further improvement.

In going and returning to the agency near Fort Wilkins, I noted, as far
as the limited facilities afforded me permitted, the courses of the different
bays and points of land along the shore, together with the general features
and mineral character of the country. At many places on and near the
coast, I procured specimens of copper and copper ore—giving the strongest
indications of the whole country, from Keewena point westward, abound-
ing in valuable minerals.

At “Grand Marais,” which lies between Agate and Eagle harbors, and
about twenty miles from the extremity of the point, I saw several large
and pure pieces of native copper, weighing ten and fifteen pounds, found
at that place. At Eagle harbor, distinct veins of the metal in thin sheets
were also noticed; and at Eagle river I visited the vein of virgin silver and
copper, which had been lately opened. This vein appears to be about six
feet wide, and was traced some distance upon the surface. In blasting, it
was found to become richer the deeper it was penetrated, and presents a
most beautiful appearance, the rock or vein stone being studded with
jumpl and minute particles of virgin silver and native copper.

A very great peculiarity in this lode is, that distinct pieces of silver
and copper are attached, without either being apparently impregnated
with the other. The vein is situated about a mile and a half from the shore of
the lake, and the full in the river being about fifty feet or more above the
level of its mouth, where the vein makes its appearance, offers every facility
in the way of water power for smelting.

At Iron river I obtained some pieces of ore, of a superior quality, which
came from the Porcupine mountains. This range of hills rises abruptly
from the shore of the lake, a short distance west of Iron river, and about
sixteen miles west from the Ontonagon, increasing to a height estimated at
twelve hundred feet above the level of the lake, and, pursuing a south-
westernly direction, is lost in the trap and conglomerate ranges extending
from Keweenas point.

Many strong indications of mineral were noticed along this section of
country, both near the shore and some miles inland. Veins of the grey
sulphur and carbonates of copper, of some extent, were discovered open
upon the streams and rivulets running into the lake, and I have no doubt
but that this district will be found to contain rich metalliferous beds of ores.

On the 18th of September, after making some further explorations and
surveys in the vicinity of Fort Wilkins, and after putting the Government
property in condition for its safe keeping during the winter, agreeably
to your instructions, I procured the necessary provisions, guides, and
voyageurs, (through the assistance of Mr. Brush, of the garrison, whose polites-
ness together with that of the officers of Fort Wilkins and Fort Brady, has
in every instance characterized them, in their endeavors to facilitate our
operations,) and, with Mr. Schlatter in company, embarked in a small boat,
and continued along the coast to the eastward, for the purpose of further
exploring, to ascertain the extent of the mineral lands on the south shore
of Lake Superior.

At the eastern cape, to the entrance of Copper harbor, called "Hayes's
point," and near its extremity, is to be seen a vein of the green carbonate
of copper, known to voyageurs and travellers on the lakes as the "green
rock."

This vein is visible on the surface, averaging eight feet in width, and is
traced into the water for forty or fifty feet, being lost sight of by the in-
creased depth of the lake. Its course is a little east of north, and termi-
nates in broken and abrupt cliffs, (of course conglomerate rock,) which let-
ter extends on either side along the coast for some distance. Some pieces
of this black oxide were picked up near the beach on the south shore of the
harbor, and almost in a direct line with the course of the vein; a lump,
also, weighing thirty or forty pounds, was taken out of the water some fifty
yards from the shore. This led to further researches, and shortly a well-
defined and distinct lode of the peroxide was discovered, traced near the
surface for a distance of one thousand feet, and varying from fourteen to
twenty inches in width, widening as it descends.

From an analysis by the assayer of the United States mint at Philadel-
phia, it will be seen to yield seventy per cent. of pure metal.

Basing this conglomerate coast on the south, is a dyke of trap rock, cor-
responding with it in direction and dip, and similar veins will no doubt be
found traversing this range, and extending across the peninsula of "Ke-
weena point."
After rounding the point, and arriving at the "Little" or "Lower Montreal" river, which is about six miles from the extreme end, the country has a decided metalliferous character; and veins of native copper interspersed in the rock, and also those of an earthy green carbonate nature, were found.

Continuing along the coast, nothing further of a mineral character was observed till reaching the "Auce" settlement at the foot of Keweena bay, where a few surface indications were noticed, but nothing to justify the belief of its being valuable for the production of metallic ores.

A few miles to the westward of the Chien Jaune, or "Yellow Dog" river, broken knobs of trap and granite make their appearance upon the coast, traversed by numerous veins of calcareous spar, common quartz, and serpentine. Again: at "Presqu’Isle," "Granite point," and to within a short distance of Chocolate river, spurs of trap and granite, bearing the strongest indications of a metalliferous nature, are to be seen. Some of these knobs are of a very curious and singular formation, being thrown up, as it were, by themselves, and based on the south by metamorphic and sandstone rocks, and containing various and beautiful veins of the precious serpentine.

Large fissures were found in the perpendicular walls, capable of admitting boats to several times their length; and veins of the sulphuret of lead, yellow sulphuret of copper, and the sulphuret of iron, were noticed here in several instances.

These veins, though narrow where they show themselves, bear excellent symptoms of increasing richness, and the whole of this portion of the district presents a most favorable mineral aspect. Pieces of native copper were procured, together with other metallic ores, similar to that found on Isle Royale and the more western section; and I believe, when more thoroughly explored, and its hidden resources developed, will prove of great value.

No further signs of a metalliferous nature have been seen to the eastward of Chocolate river, and this may properly be called the eastern limit to the mineral district on the south shore of Lake Superior; although, at as early a period as 1762, the attention of operators was directed to this country, and one of the points fixed upon by them to commence their operations, was some fifty miles east of this river. A small stream upon which this company of miners located themselves, and from which circumstance is known as "Miners’" river, has cut its way through cliffs of red sandstone, and empties into the lake about one hundred miles west of the Sault de Ste. Marie.

As no mineral of any extent has ever been found to exist in the red sandstone formation upon Lake Superior, and this constituting the principal rock along the shore, it does not seem strange that no metal was found here, and the company obliged to abandon their undertaking. We saw, near the mouth of this river, traces of several names carved upon the rocks, and almost effaced by the action of the waves and the weather—memorials of a fallen enterprise, which might have proved more successful had a different course been pursued, and more attention paid to the geological structure of the country.

Commencing a little west of Miners’ river, and extending eastwardly for ten or twelve miles, is a high perpendicular wall of sandstone, rising to a height of three hundred feet, of horizontal strata several feet in thickness, colored with various bright and beautiful tints of vegetable and min-
eral matter, and forming one of the most picturesque and deeply interest-
ing natural curiosities in America. The water near its base is of a clear
emerald green, of great depth, allowing vessels to approach within a
few feet of the narrow pebbly beach here and there to be met with; and
elsewhere the rock itself rising immediately out of the lake. Successive
curves of half a mile in extent, caused by the wearing away of the soft
sand rock by the waves, appearing like the painted walls of an amph-
itheatre, are continuous for nearly the whole distance, only occasionally in-
terrupted by a small stream or cascade falling over the precipice; and
when near its base in a small boat, the projecting summit of this massive
structure presents a grand and awful sight.

Rotundos, caves, and domes, with arched entrances, curiously and beau-
tifully formed, are to be seen. One cavern which we sailed into with our
boat had an arched way of fifty feet in height and thirty in width, and
suddenly expands into a high and singularly constructed rotundo, of two
hundred feet in diameter.

The "Doric Rock," the "Pulpit," and "Les Portailles," are other fea-
tures of this portion of the southern coast of Lake Superior, called the
"Pictured Rocks;" altogether, constituting scenery of grandeur and beauty
unsurpassed.

The tops of these rocks are crowned with a small but very symmetrical
growth of the silver fir, spruce, maple, and birch; and during this month,
(October,) when visited by us, the rich and variegated foliage presented a
strikingly beautiful appearance.

Some twenty miles further on, in an easterly direction, we came to the
"Grand Sable" of Lake Superior.

This sand bank rises several hundred feet above the level of the lake,
at rather a greater angle than sand will usually lie, on account of its mois-
ture, and continues for about five miles along the coast, extending two or
three miles back into the country.

The ascent is somewhat tedious and tiresome, but not attended with
much danger; and, after several resting spells, we overcame it. We
found the summit to be a vast plain, almost level, of loose drifting sands,
with an occasional tree, but entirely barren elsewhere. Several agates
were found here, and one very fine cornelian; and but a short distance
from the coast, directly in the plain, is a small clear and transparent lake,
surrounded by a beautiful beach of various colored pebbles, and filled with
quantities of excellent fish. It is somewhat remarkable that this body of
water, occurring on the top of a sand bank, is not absorbed or entirely dis-
persed by evaporation—being about half a mile only in diameter, but
supposed to be of great depth; and I learn from the voyageurs that it never
has been known to dry up.

Nothing of a metalliferous nature was found along this section of coast
but the bare face of occasional discolorations in the sand, and in the grand
sandstone formation of the "Pictured Rocks," which does not at all jus-
tify a belief that the mineral district extends so far to the eastward.

The rivers of the south side of Lake Superior, though very numerous,
and affording shelter and protection to the coasting voyageur, are of but lit-
tle importance for the purposes of navigation; in but few instances ad-
mitting vessels drawing five feet of water over their bars, and navigable
but a short distance from the lake.

Chocolate river has a loose shifting sand bar at its mouth, making it dif-
ficult for barges of but light draught to enter; but when over it, great
depth of water is found, and the river is quite wide for several miles. The
rivers Des Morts, Huron, and Portage, which latter empties into Sturgeon
Lake, are the principal rivers eastward of Keweena point. The outlet
of this lake is also called Portage river; and canoes, in passing up to Fond
on Land, or Lapointe, usually enter here, and continue up to its head, where
a portage of three-quarters of a mile is made, and the voyageurs are again
upon the coast, having a distance of eighty miles, which they would other­wise
have to go around the peninsula.

The Ontonagon, Iron, Presqu’Ile, Black, and Montreal rivers, empty into
the lake west of Point Keweena.

The first of these is the most important, having six feet over its bar at
low stages of water, and navigable for several miles from its mouth.
Should it be found that the range of hills crossing this river at its upper
branches, some twenty miles from the coast, is rich in metallic ores, or
valuable for agricultural purposes, then the position at the mouth for an
assistant agency will be an advantageous one. The metal or other pro­duce
being brought along the open ridge to the forks of the river, and
thence descending to its mouth, returns can be made to the office, and ship­ments
immediately effected, which will prove more profitable than by at­
tempts a direct approach to the lake, where swamps of tamarack and
cedar, with almost impenetrable undergrowths, are frequently met with.

The Montreal river has a fall of fifty feet over a steep and rugged pre­
cipice near its embouchure into the lake, and, from the shallowness of
the water over its bar, admits of only small boats and canoes. This stream
was originally supposed to head in the Lac Vieux Desert—a small but very
beautiful lake, which has since been found to discharge its waters into the
Menomonicie.

All of these streams and rivulets along the coast afford an abundance of
excellent white fish and trout; and the voyageur, provided with the gill net
or spear, is never at a loss for a maintenance during the season. On our
arrival at Presqu’Isle, we found some Indians encamped, one of whom had
just brought in some twenty of the brook trout, not one weighing less
than three pounds.

Natural harbors, some of great extent, are found at intervals upon the
coast, with deep and safe channels, and sufficient for all the purposes of
navigation on the lake.

Grand island affords an excellent harbor for any class of vessels; and when
driven by stress of weather to seek shelter, they could not find one more
convenient nor more completely landlocked.

On the northwest side of Granite Point or “Presqu’Ile,” is a very safe
one for those of lighter draught, and is known as “Talcott harbor.”

Between Huron river and Point Abbaye, which is about four miles
across, a deep bay, extending for ten miles, offers sufficient protection for
vessels when at anchor.

Copper harbor, Eagle and Agate harbors, are upon the northwest side
of Point Keweena, the former having over twenty feet of water at its
entrance.

Lapointe harbor, formed by one of the Madeline islands and the main
land, is taken advantage of by the American Fur Company, and a settle­ment
of two or three hundred inhabitants is established here. This is a
point of much importance, and affords a spacious and commodious harbor.

A singular discovery was made during the last year, of a rock, known
as “Stannard’s rock,” from his being the first to notice it, directly in the
track of vessels proceeding up or down Lake Superior. It is about fifty feet in circumference at its top, and about three or four out of the water, lying a little south of east, and about thirty miles from the extremity of Keewenaw point. Soundings were made with the lead for three hundred feet or more immediately on one side of it, and no bottom was found. On the other side, it slopes off at about an angle of 45 degrees. It is somewhat curious that it had never been noticed before, though the two vessels must have passed within a short distance of it frequently on their voyages from the Sault Ste. Marie. Means should be adopted for blasting it, or otherwise preventing vessels from striking it.

The whole distance along the coast, from Chocolate river to Fond du Lac, which are the eastern and western limits to the agency, was estimated at not far from four hundred miles, and lying between the meridians of 87° 30' and 99° 20' west longitude. The highest degree of latitude is 48° 15' north, and is the northeastern extremity of Isle Royale.

The explorations of the coast have been made under many disadvantages. The want of proper instruments, necessary for that purpose, the lateness of the season, together with the frequent storms occurring about this time of the year, often obliging us to lie by for several days; and the impossibility of our procuring guides and voyageurs sufficient for our safety compelled us to pass hastily over a portion of the work, which we otherwise should not have done. Many points of importance, however, were corrected, which, from erroneous supposition, had already caused some confusion in the locations selected under the permits granted.

Keewenaw point, instead of being nine miles across south of Fort Wilkins, was found to be not quite six, from actual measurement; and the rivers, as laid down on the published maps, were invariably found to be laid down wrong.

No doubt is now entertained of the superior richness of the ores, and their abundant quantities, upon the shores of this lake; several tons of the black oxide and green carbonate have been raised at Copper harbor, and also of the vein of silver and copper at Eagle river; and large forces are about to be placed upon the works by the different companies early in the spring, when before the close of the ensuing season, returns of metal will no doubt be made to the agency, at the disposal of the Government.

Coal was no where met with in our explorations, and, I believe, has not yet been found in the vicinity of the mineral lands upon Lake Superior. This may somewhat regard the operations of smelting immediately at the mines, until a canal is cut around the falls of the St. Mary, when vessels can pass through from the lower lakes. At the Sault Ste. Marie, great facilities are offered for the erection of furnaces and the reduction of the ores, the water power being equal to any found in the country, and where vessels have perfect access to, can land coal and other necessaries, and return with the metal to a market. The crystallized carbonate of lime is found in many places upon the lake, and, being an excellent flux, will aid the process of smelting; and timber for charcoal is in sufficient quantities all along its borders.

The land immediately on the coast is comparatively of small value for agricultural purposes, the coast in many places and for many miles presenting a bold and unbroken barrier of rock.

It is believed, however, that sufficient soil, of good quality, for the production of vegetables and other necessaries, will be found for the supply of the miners, fur traders, and other operators upon the lake.
At Lapointe, the Ontonagon river, and the Ance settlement, experiments upon the soil have been made, and it was proved to be very productive. At the latter, particularly, a gently undulating country appears, with a dark rich loamy soil, covered with groves of sugar maple, oak, and hemlock, advancing to a large size; and the vegetables raised here were of the finest kind, and growing in the most luxuriant manner.

The climate is said to be, by those who have experienced it, of a much milder and more uniform temperature than is usually met with in so high a latitude.

From the Government farmer, carpenter, and blacksmith, residing at the Ance, for the benefit of the Indians; we received the kindest and most hospitable attention on reaching the settlement, after having been several days on the coast during a violent equinoctial gale, with our provisions, camp equipage, boat, and every thing damaged.

From Messrs. Meade & Gillett and Mr. Paul we obtained a great deal of information respecting portions of the country which they had been over. The latter, an experienced miner, from Galena, was one of the first pioneers to this section of country upon Lake Superior, who came for the purpose of proving the value of the mines by digging for the ores, and had passed over a large portion of the territory. He frequently, on our account, would trouble himself to procure information from Indians and others, which we could not ourselves obtain.

This mineral district appears to be the northern extremity of a belt, as it were, extending in a southwesterly direction, and passing through Illinois and Missouri, and nearly in a line with the mineral range of Texas and Mexico. It seems also to be parallel, or approaching thereto, to the course of a range passing through the more easterly States.

When it is considered what an immense amount of capital has been expended (hundreds of thousands of pounds sterling) in sinking shafts, exploring, and making discoveries in England, and the average yield of the ores not being over eight per cent., and it found profitable raising it from a depth of 1,600 feet, it will be seen at once, from what has already been discovered on Lake Superior, and the small amount expended or required, comparatively, that this is one of the most valuable mineral regions in the world, for the production of silver, copper, and other metals.

To prevent any collision in the selection of locations for leases, I would suggest that two maps be made of the mineral district, as correctly as can be done from all the information that we now have of the country, and that one should be left with the Ordinance bureau, the other to remain in the office of the agency upon the ground. When a lease is granted by the department, it might be laid down upon the map, and the agent advised of the same, for the purpose of marking it down also upon his own; and when a selection is made by any other individual, under proper authority, a glance at the map will show if it interferes with any location previously made.

The map accompanying this will show the extent of the mineral lands upon the lake, acquired by the late treaty with the Indians, and the general features of the country. A more finished and correct one is now being made, from further information acquired, and, so soon as completed, will be properly submitted.

Very respectfully, General, I remain your obedient servant,

A. B. GRAY,
Assistant.

General J. Stockton,
U. S. Superintendent of Mineral Lands, Lake Superior.
Note: The Latitudes and Longitudes of the Coast of this Map through not precisely correct, are sufficiently so for the purposes for which it is intended.

The Boundary Line between Michigan and Wisconsin Territory follows along the Montreal River.

The general course of the Montreal and Ontonagon Rivers was laid down from a survey by Capt. Cranmer.

This Map was compiled partly from geographical data given by the Mineral Land Agency. Further data furnished under instructions from the Hon. W. H. Wilcox, Secretary of the Interior, and under information received from the late Stockton Dorr, under their supervision and direction.