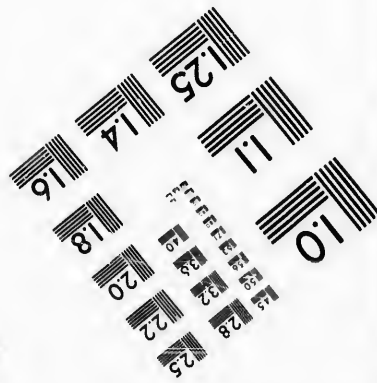
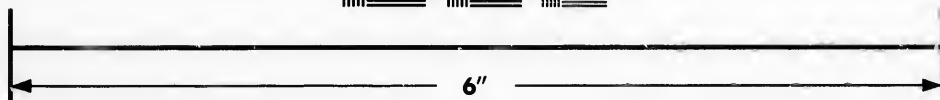
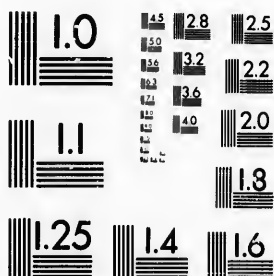


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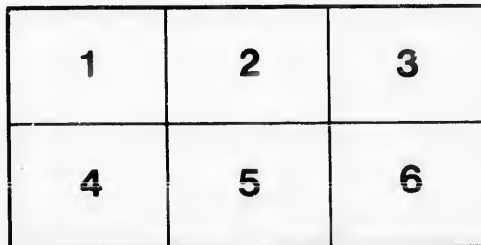
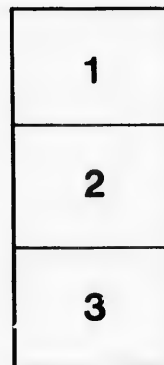
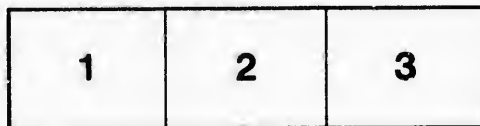
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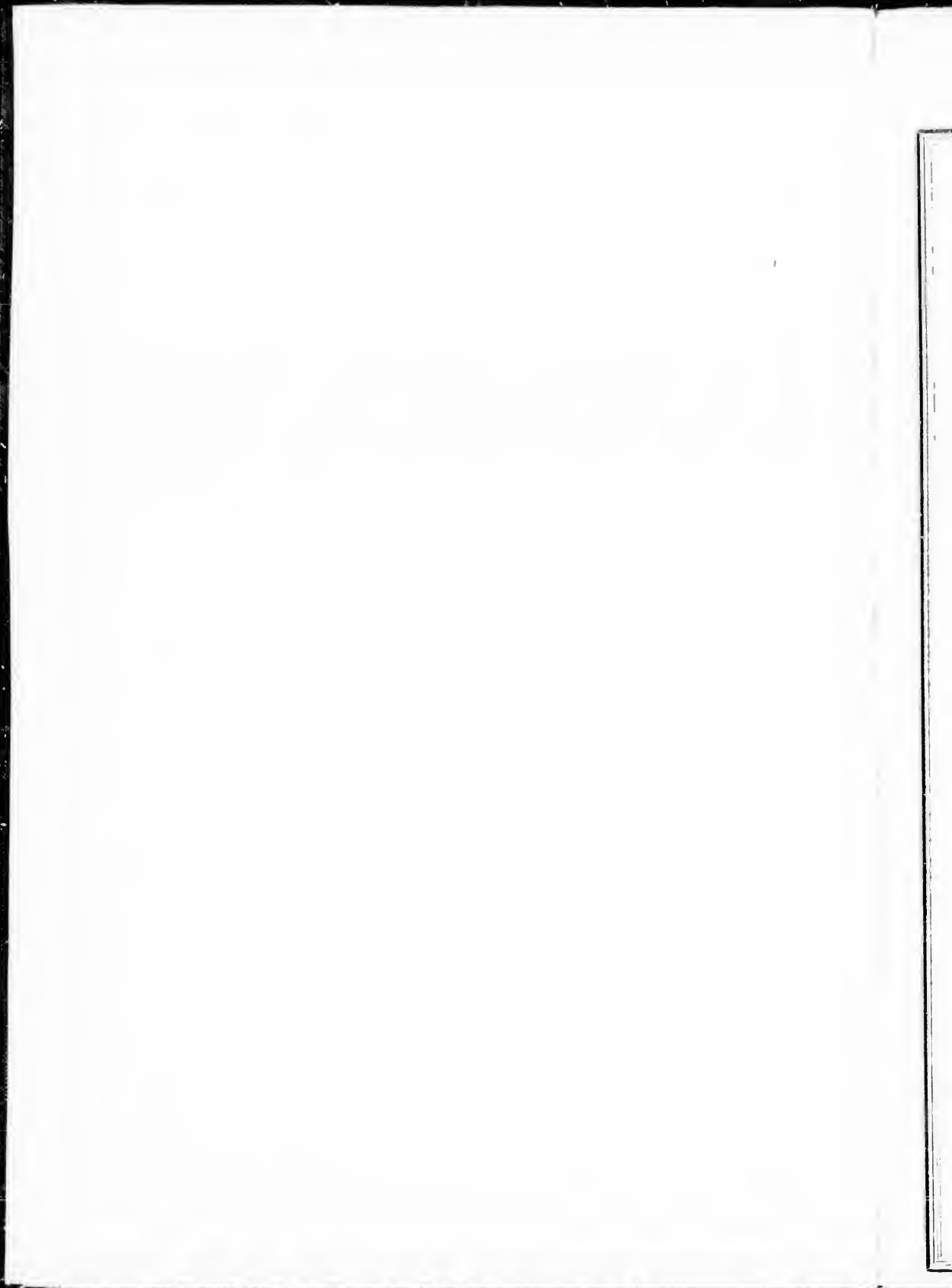
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REPORT

ON THE

Hatley Hill Copper Mine,

CANADA EAST.

BY

C. H. HITCHCOCK, ESQ.,

GEOLOGIST TO THE STATE OF MAINE.

AND

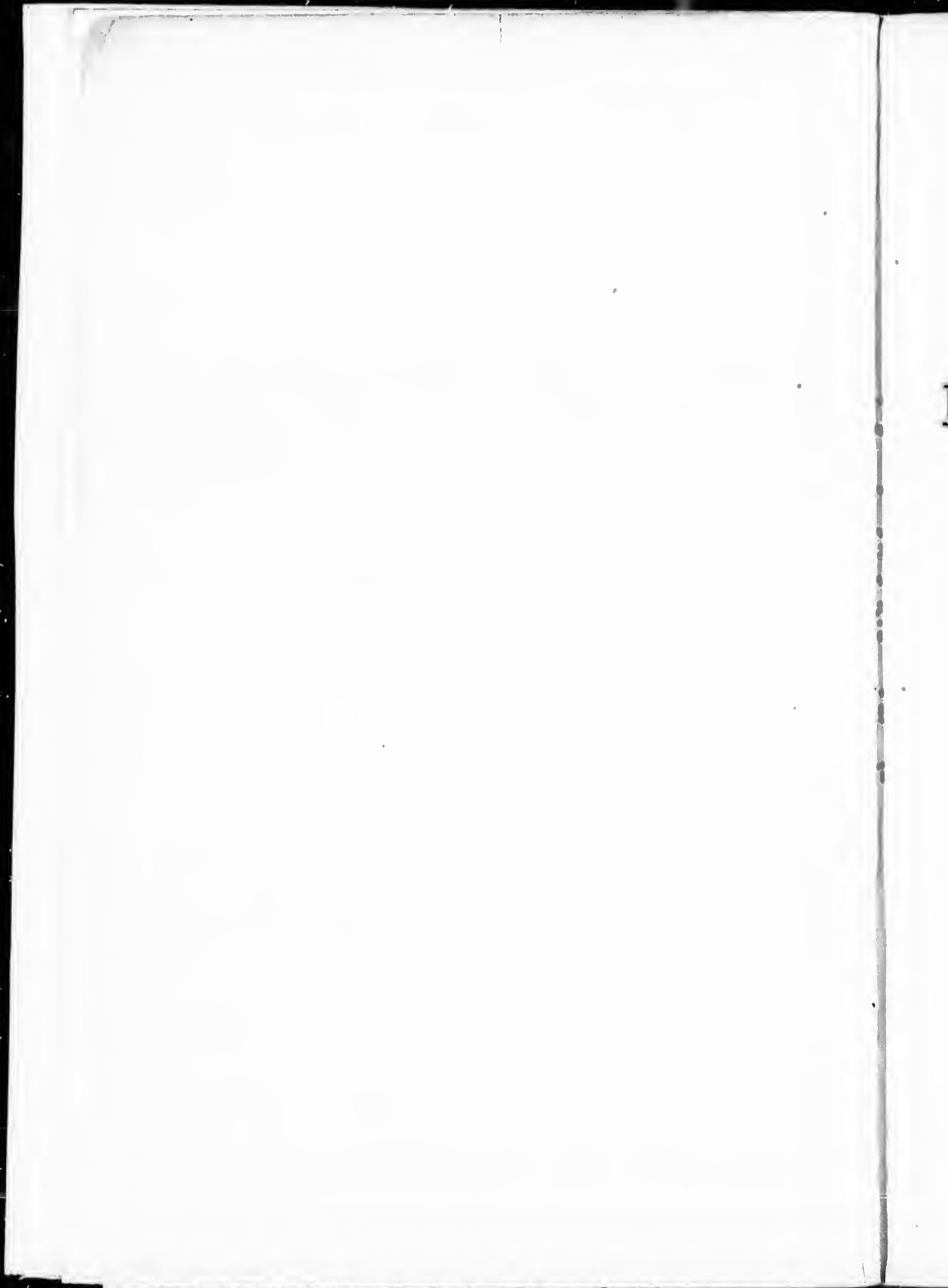
CHARLES T. JACKSON, ESQ., M. D.,

GEOLOGIST AND ASSAYER TO THE STATE OF MASSACHUSETTS.

BOSTON:

PRESS OF GEO. C. RAND & AVERY, 3 CORNHILL.

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1864.

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HATLEY HILL MINE.

This mine is situated in Sherbrooke county, Canada East. Its close proximity to established smelting works, and the railroad facilities, render the location eminently favorable. It is about 4 miles from the well-known Clarke and Ascot Mines, and occupying the same belt of copper-bearing rock.

For the purposes of developing the resources of this property, it is proposed to organize a corporation under the laws of Massachusetts, to be known as the "Hatley Hill Mining Company."

The Company will be organized with a capital of two hundred thousand dollars, divided into one hundred thousand shares, twenty thousand dollars to be reserved as a working capital, thus relieving stockholders from all liability to assessment, and furnishing a sufficient fund for the further development of the mine.

Reports on the present and prospective value of this property, made by gentlemen whose scientific attainments and extensive experience are an ample guarantee for the reliability of their statements, are herewith submitted.

BOSTON, March, 1864.

PROF. HITCHCOCK'S REPORT.

GENTLEMEN :—

The following is the result of my examination of the Hatley Hill Mine, in Hatley, C. E., made in your company, Feb. 24, 1864.

The property consists of 100 acres, mostly of improved land, composing the eastern portion of Lot No. 27, range 4, of Hatley. Adjacent to it, on the south, is the property known as the Massawippi Mine, while both on the north and south sides of it, near the eastern extremity, are other mining locations, where trial pits have been sunk with good success. The property is, therefore, so situated that important discoveries made upon any of these adjacent mining claims will also increase the value of the Hatley Hill Mine. A section running across the property from west to east shows a high, steep hill in the western part, and a second hill equally high but less steep, in the eastern part. A small brook runs in the valley between. These features are important, since it will enable you to drift into either or both hills from the valley; thus either securing drainage easily, or enabling you to work the veins by drifts for the present.

On the western hill there are two powerful veins, with smaller patches of copper ore in the schists. It is in one of these (No. 1), projected southerly, that the Massawippi shaft is being sunk. I have obtained specimens of copper ore from this and other veins upon your property

early in the winter, before the snow came. The rock near your west line is a chloritic schist, carrying veins of quartz with yellow copper, mundie, and chlorite, or "peach." In this lies No. 1 vein, chiefly composed of saccharoidal quartz, carrying copper uniformly disseminated through it. To the east of this, the schists are considerably dolomites, and then succeeds a hard, chocolate-colored quartzite, carrying specks of copper. It slightly resembles elvan. Passing by several schistose layers, we come to three distinct bands of rock, closing with the eastern edge of the hill. They are,—1st. A decomposing quartzose schist, and containing much mundie, with a little copper. This is vein No. 2, and will prove a very important one for exploration; its course is nearly north and south, and is 12 feet wide just over the fence. 2d. A soft, nacreous schist, spotted with crystals of brown spar and mundie; this is not wide. 3d. A dolomite, quite rusty in its decomposition, and holding specks of copper. This runs irregularly about N. and S., and even N. 25° E. Beyond, the hill is very steep, and the next rock is hard chloritic schist.

Passing now up the eastern hill the ledges are concealed by the soil, and near the top is the shaft now being worked by yourself upon vein No. 3; it has already been sunk 10 feet. The vein carries copper ore for a width of two feet, with the general course N. E. and S. W., dipping from 20° to 60° S. E. The ore is chiefly the yellow sulphuret, with blue and green carbonates. The gangue is a mixture of quartz and nacreous shaly matter; in the pure quartz the copper is often condensed into nodular masses. The vein is sometimes parted by seams of quartz; and leaders of white quartz, carrying spangles of ore, occasionally drop into the principal vein. I should estimate the amount of copper

present to be about 4 per cent. of metallic copper for a width of 16 inches. Some parts of the vein carry crystals of dolomite, a matter of considerable importance. This vein (No. 3) is remarkably well defined, and gives promise of yielding very rich ore in its future working. There is a fine lot of specimens taken from it in the tool-house, and fair samples of them have been exhibited in Boston. In the very eastern portion of the property the rock is a thick-bedded chlorite schist, carrying veins of white quartz and chlorite. No. 4 vein crosses it, or the one explored upon the Johnston and William Emery lots; dolomite is mixed with the copper and mundie in greater amount than in vein No. 3. This will make the best smelting ore upon the property. The hill is higher here than elsewhere upon the property.

The rock is pretty hard to drill on vein No. 3, and for the depth of eight fathoms will cost \$80.00 per fathom; stopping will cost \$1.25 per square yard at least. It will be softer at veins 2 and 4. The amount of copper in No. 3 (viz., 16 inches width of 4 per cent. ore) is sufficiently great to render the working profitable. A well-built dwelling-house and barn is situated upon, and belongs to, the property. One road from the Massawippi outlet to Sherbrook passes through your property. You are 8 miles from Sherbrooke, 7 from the Lennoxville Smelting Works, and 2 miles from the proposed outlet station of the Massawippi R. R., which is to connect the Passumpsic R. R. at Newport with the Grand Trunk R. R. at Waterville, C. E.; you are thus conveniently situated with respect to the transportation of your ores to Boston or the Lennoxville Smelting Works. (See the map accompanying this Report). Any one of the four veins can be conveniently drained by adits, — Nos. 1 and 2 by the same one. I am inclined to believe that these two

veins at the outset can be worked with the least expense. No. 3 vein will require a longer adit, which may run towards the shaft along the course of the vein. Perhaps the brook upon the property will be hardly sufficient for the washing of the ores. But there are other streams in the vicinity at no great distances, which are large enough for the purpose.

CONCLUSIONS.

1st. There are certainly four veins of copper upon the property, belonging to the cupriferous portion of the Quebec Group of the Lower Silurian Formation.

2d. Two of these veins contain lime, with mundie, thus forming an ore of easily smelting properties,—a fact of the greatest consequence in mining operations.

3d. All the veins can be drained by cheaply excavated adits; and perhaps in some instances a drift can be run in on the course of the vein.

4th. The property is advantageously situated, with respect to proximity to a railroad and smelting works.

5th. Its central location among other mines may afford some advantages in the working not enjoyed were it isolated.

6th. It is in a region where labor is cheap, and the cost of living not expensive.

Respectfully,

Your obedient servant,

C. H. HITCHCOCK,

Geologist to the State of Maine

HATLEY, CANADA EAST, Feb. 24, 1864.

DR. JACKSON'S REPORT.

Boston, March 19, 1864.

GENTLEMEN:—

In accordance with your request I have recently visited and examined the Hatley Hill Copper Mine, situated on the G. Emery lot, No. 27, 4th range, in the township of Hatley, Canada East, and have now to report my observations.

LOCALITY OF THE MINE.

The Hatley Hill Copper Mine is situated between Little Magog and Massawippi Lakes, and is two miles north of the latter. It is southwest from the copper mines in Ascot, and is seven miles southwest from Lennoxville furnace, and two miles from the projected Massawippi Railroad. It is in a moderately hilly, but not mountainous region, and the mine is on a hill-side, so that it can be easily drained.

CHARACTER OF THE ROCKS AND ORES.

Nacreous argillaceous slate rocks, with numerous veins and beds of white quartz, is the mining "country" of your copper ore. These rocks belong to the well-known copper belt of Canada East, which extends from Vermont to Megantic county, below Quebec, and shows copper ores in many places. Yellow copper pyrites with some purple copper ore or erubescite are the working ores of this mine. Some green carbonate of copper is

seen where the rocks have undergone decomposition by agency of air and water, and this serves to guide the miners in their search for the outcrops of the copper ores. Iron pyrites, as usual, is also contained admixed more or less with the copper pyrites, but is not too abundant at this mine.

THE MINE AND ORES RAISED.

At present only a shallow pit, or incipient shaft, 10 feet in diameter and 15 feet deep has been excavated in order to prove the vein.

A belt of copper-bearing slate, with some thin quartz seams also containing copper pyrites, the whole thickness of which is 5 feet 3 inches, has been discovered. This bed dips with the general strata, southeast 40° , and it has been traced to some distance, not less than 500 yards in length, on to another mining property to the southwest, where a pit 4 feet deep has been sunk upon the vein, and is now in process of developing the ore.

Soon as the snow is off from the ground the outcrop of the ore may be easily traced, only a little soil covering the rocks.

At present the mining operations are mere explorations, and a sloping shaft is to follow the ore as it goes down with the strata.

I examined the selected ore stored in the blacksmith's shop on the premises, and found the heap to be three feet square and high, and to contain about 2 per cent. of the metallic copper, as near as I could judge; pieces cobbled clean as they can be for the furnace, I brought to Boston and have assayed the lot and found the yield of copper to be 4.44 per cent.

On washing 315 grains of the same sample, I obtained 112 grains of nearly clean copper ore and iron pyrites, which I think will yield from 15 to 20 per cent. of copper.

I have been informed that gold has been found not far from this mine by washing the sand and gravel of the small streams, but I have not seen any of it got out, and the season was not favorable for such explorations as would be required to search out deposit gold, the snow covering much of the land and the streams being frozen.

I am informed that the area of land belonging to the Hatley Hill Mine purchase is 100 acres, and that the lot is nearly square. A linear survey is required. I would advise you to have this lot searched for other copper veins by trenching the shallow soil across the strata of rocks, for all the veins are embedded between the strata and follow their course, hence these cross-cuts will bring their outcrops to light. There may be richer veins on the lot, which may thus be discovered very cheaply. I believe that this will turn out a valuable mine.

Respectfully,

Your ob't serv't,

CHARLES T. JACKSON, M. D.,

Geologist and State Assayer.

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