

OFFICE OF THE  
WINONA COPPER CO.  
KING PHILIP COPPER CO.  
OJIBWAY MINING CO.  
L. L. HUBBARD  
GENERAL MANAGER

PERSONAL CORRESPONDENCE

Please return to L. L. Hubbard  
Houghton, Mich.

June 13, '11

HOUGHTON, MICH.....19.....

Dr. L. Estivant,

Paris, France.

Dear Sir :

In accordance with your request I have examined the  
Exploration for Copper  
report of Mr. Henry R. Putnam on the ~~E. G.~~ on the Clark Property  
made by the U.S.S., R. & M. Company, August <sup>1st</sup> ~~first~~ 1910, to February  
<sup>the</sup> 10, 1911, and beg to submit the following comments thereon.

The report in question gives a comprehensive, and on the whole, accurate statement of the geology and general conditions of said property, discusses the results of the exploratory work thereon, and while leaving open the ultimate determination of value, concludes *that* the results hitherto obtained do not seem to warf-  
rant further expenditures — by Mr. Putnam's company.

In differing with Mr. Putnam's opinion as just expressed, I would say that my own conclusions are drawn largely from the evidence in Mr. Putnam's report. From time to time I have examined drill cores obtained both by the C. & H. <sup>Company</sup> ~~Company~~ and by Mr. Putnam, and am familiar with the area from which they were taken, and with its geology : but I have not personally *inspected* the various pits and shafts that in recent years have been sunk on the various beds, nor have I been able to make a critical study of all of the work done on the property.

At the outset I may say that in my opinion the function of a diamond drill <sup>hole</sup> is <sup>mainly</sup> ~~principally~~ to locate by the least expensive method the position of some particular bed or beds of recognizable character, and secondarily, to reveal the thickness, ~~character~~, mineral contents etc., of said bed or beds. This information is <sup>positive only for</sup> ~~applicable primarily~~ to the immediate surroundings of the drill hole : for the thickness of our lava flows, their character, and the amount of copper they may contain, may vary materially from

OFFICE OF THE  
WINONA COPPER CO.  
KING PHILIP COPPER CO.  
OJIBWAY MINING CO.  
L. L. HUBBARD,  
GENERAL MANAGER

PERSONAL CORRESPONDENCE

2

HOUGHTON, MICH.....19.....

point to point, both horizontally and vertically. It is, there-  
ore, often only by cumulative evidence that we feel justified in  
arriving at a favorable opinion of the probable commercial char-  
acter value of a cupriferous bed, or on the other hand <sup>in</sup> recommend-  
ing that a further expenditure of money in its exploration is  
not expedient. Moreover the willingness or unwillingness to  
risk such expenditure, either by the owner or by a possible purch-  
aser, <sup>depends</sup> may ~~be~~ more or less <sup>upon the</sup> justifiable ~~according to the attitude~~ <sup>confidence</sup> ~~of the owner,~~ <sup>in</sup> ~~or~~ <sup>circumstances of the case</sup> the purchase price of the property.

From the rather meagre evidence at hand <sup>on the other beds,</sup> it seems to me  
that for the present at least, we may well confine our discuss-  
ion to the so-called Montreal bed. The Mandan bed, where ex-  
plored to some depth further west, does not seem to show suf-  
ficient width (although it may widen again further down), or the  
Osceola bed enough mineralization, to make extensive present ex-  
ploration on either of them advisable, especially in view of the  
better prospects held out by the Montreal bed. The Mandan bed  
will naturally be disclosed in a further drill hole investiga-  
tion of the Montreal, and the Osceola may be left for <sup>future</sup> ~~further~~  
possible consideration. The Montreal bed is, or was supposed  
to have been intersected by drill holes Nos. 6, 7 and 8 by the  
C. & H. Company, and by holes A, B, C, and D by Mr. Putnam.  
The approximate vertical depths of these intersections as scaled  
from the maps are as follows :

No. 6, C. & H. 80 feet, No copper.

No. 7, (?) C. & H. 360 feet, No copper reported (?)

Mr. Putnam thinks that owing to a mistaken calculation  
of dip, the Montreal bed was not cut by the C. & H. drill in this  
hole.

OFFICE OF THE  
 WINONA COPPER CO.  
 KING PHILIP COPPER CO.  
 OJIBWAY MINING CO.  
 L. L. HUBBARD,  
 GENERAL MANAGER

PERSONAL CORRESPONDENCE

HOUGHTON, MICH.....19.....

3.

No. 8. (?) C. & H. 520 feet. Copper 570 - 580.

Mr. Putnam for the above reason thinks that this hole did not reach the Montreal bed

- A. Mr. Putnam. 500 feet. Slightly cupriferosus.
- B. Mr. Putnam. 552 feet. Rich in copper.
- C. Mr. Putnam. 200 feet. Slightly cupriferosus.
- D. Mr. Putnam. 100 feet. Slightly cupriferosus.

Mr. Putnam thinks that the dip of the beds in the area under consideration is about 30 deg. (Report, page 13), which, from my general knowledge, without knowing how the flatter dip of 22 deg. was previously determined, I am inclined to believe is the more near<sup>ly</sup> correct. Besides holes 7 and 8, we may also attach relatively small weight to the evidence of holes 6, C and D. The bottom of the deepest of these three holes just reached the level of Lake Superior, and any negative inferences from their relative barrenness would not in my mind be necessarily conclusive. On the contrary the presence of any copper in them would tend to establish the susceptibility - if I may use the term - of these beds to the influence of circulating currents bearing copper in solution. Several copper beds in this district have shown a marked richness below Lake level. It is <sup>equally</sup> true, however, that many rich deposits occur above that <sup>horizon</sup> point, which shows that leaching has not always removed the copper from above the level of Lake Superior.

We are left then with two principal holes, one of which was almost barren, and the other very rich, where they respectively intersected what is supposed to be the Montreal bed. Inasmuch as our copper lodes are "bunchy", we are perhaps not justified in drawing any sweeping conclusion from either of these holes,

OFFICE OF THE  
 WINONA COPPER CO.  
 KING PHILIP COPPER CO.  
 OJIBWAY MINING CO.  
 L. L. HUBBARD,  
 GENERAL MANAGER

PERSONAL CORRESPONDENCE

4.

HOUGHTON, MICH.....19.....

but the presence of copper at several points in the Montreal bed, tends to assure us, as remarked above, that this particular bed afforded conditions favorable for copper deposition, and is like many productive beds in this district, poor in some places and rich in others. It then should seem wise to give <sup>it</sup> ~~this bed~~ an adequate examination.

In hole A this bed appears to have a thickness of 20 feet, while in B, the rich one, the mineral-bearing possibilities appear to extend from about 561 to 598, copper appearing at 561, 563-566, and again from 585 to 598. The non-mineralized part, 563-579 is according to my notes, <sup>a</sup> "brecciated, crushed amygdaloid", not greatly differing in character from the underlying, richly impregnated stratum. Even if we exclude the part <sup>between 563 and 579</sup> ~~above 585~~ we still have a bed 14 feet thick, well mineralized, and a further thickness of four feet, from 581 to 585, which I believe, after personal inspection, to be quite capable of carrying values.

If we exclude hole D <sup>as negligible</sup> ~~from consideration~~, the total <sup>area</sup> of the Montreal lode covered by the other six holes (projected to surface) is about 1200 feet north and south, and 1000 feet east and west. It has been tested to a depth of only <sup>about</sup> 550 feet. The width of your property in the area drilled is <sup>one</sup> ~~a~~ mile. I cannot, therefore, consider that the work done thus far, furnishes any convincing evidence that further explorations of the Montreal lode on this property would be unjustified. On the contrary, the prospects seem to me rather favorable for a possible ~~exploration-~~ successful outcome. Whether this work should be undertaken by the private owners or by <sup>exploration</sup> ~~an~~ company organized for the purpose, is a matter for those in interest to decide.

If further drill holes are to be sunk, they should be

OFFICE OF THE  
WINONA COPPER CO.  
KING PHILIP COPPER CO.  
OJIBWAY MINING CO.  
L. L. HUBBARD,  
GENERAL MANAGER

PERSONAL CORRESPONDENCE

5

HOUGHTON, MICH. .... 19 .....

located east of hole A and somewhat further north, in order to intersect the Montreal bed at a greater depth than heretofore. I believe that vertical holes could be conveniently located to cut that bed at at least a thousand feet vertically below the surface.

In conclusion I may add that the method of analysing drill cores for copper contents does not seem to me to promise results from which far reaching conclusions may justly be drawn. It is rather the form of the copper, its association with other minerals and the character of the bed that should be considered of <sup>paramount</sup> ~~greater~~ importance.

Respectfully submitted,

*Lucius L. Hubbard*