

PHILADELPHIA, *November 12, 1851.*

SIR: We transmit to you our second and final report on the geology of the Lake Superior Land District, accompanied with sections and illustrations, and a general map on which the range and extent of the several systems of rocks are defined. Our observations have been extended over an area of little less than one hundred thousand square miles; and, although the whole of this area is not strictly within the limits of the district, yet a description of it is deemed necessary to its complete elucidation.

Nearly the whole of this area is an unbroken wilderness, interspersed with tangled thickets, almost impassable marshes and inland lakes, which retard the progress of the explorer; and, even along the mountain ranges where the rocks approach the surface, their presence is often concealed by a thick covering of moss. It is only on the precipitous cliffs, or along the beds of streams, that their true characters are revealed. Even in a densely populated district, every road that is constructed, every shaft that is sunk, and every quarry that is opened, reveals some interesting fact in geology; and it is by an attentive observance of these artificial excavations, rather than of the accidents of the soil, that the geologist is enabled to draw correct conclusions. In the prosecution of our labors, we have been enabled to avail ourselves of few of these extraneous aids. Passing weeks in succession in the midst of the forest, with no trace of the works of man around us, except the surveyors' lines, we have encountered difficulties unknown and unappreciated by geologists in a more civilized and less inhospitable region. Under these circumstances, it would not be surprising, if, hereafter, when the country becomes more thoroughly opened, and the means of communication more direct, it were found necessary to alter, in some respects, the boundaries of the several systems of rocks. Each year will develop new facts and fresh materials for illustration.

There is another circumstance to which we deem it proper in this connection to allude. It was the desire of the department to be placed in possession of the results of these explorations at the earliest period practicable. We were instructed to press forward the work with all due diligence to completion. We have been in charge of the survey a little more than two years. During the first year, we prepared a report on the "Geology of the Copper Region," in which we endeavored to define the boundaries of the cupriferous belts, and exhibit the principal phenomena of veins. We now transmit the concluding portion of the work, embracing in the main the results of our explorations during the second year.

It will be seen that there are, in this region, two great metalliferous belts, distinct in age and in the character of the products; to wit, **COPPER** and **IRON**.

There is already a large interest invested in the copper mines, and their products are to be found in the principal markets of the United States. It is believed that the supply from this source will soon meet the national consumption.

The Iron Region will ultimately prove of equal value. From the details incorporated in this report, it will be seen that the specular and magnetic ores are here developed on a scale of magnitude, and in a state of purity, almost unprecedented.

While our main object has been to trace out the boundaries and determine the quality of these economic materials, we have also endeavored to