ending on the 12th inst., was 8,958, and the receipts amounted to about £2,700. This, although the goods have scarcely yet commenced, already gives a very handsome return (about 7 per cent. net profit after deducting the sinking fund) on the cost to the Company of this portion of the line. The receipts of the Northern Railway did not increase during the same week (they were £6,800); but the Company is daily expecting the delivery of additional engines, carriages, and other working stock, so as to afford additional accommodation to the traffic, which is far beyond the means which they have hitherto had at their command. The goods, coals, &c., which are of an immense amount, are not yet carried at all by the railway.

LAKE SUPERIOR COPPER MINES.

The following is an abridged account, by Mr. Shepherd, of the Copper Mines on the South side of Lake Superior. It has already appeared, at greater length, in the *Herald* and *Courier*, but as a matter of reference it cannot be misplaced in the Railway and Mining Intelligencer:—

It must be evident to the sagacious observer, that the period has already arrived when the mines of the United States are becoming to its present population, what the most select and fertile soil was to the first settlers; namely, the foundation of permanent wealth to the proprietors and their children.

As an instance of this, men of middle age can well remember when the anthracite coal lands of Pennsylvania could all have been purchased for a trifle; and yet those same lands, so recently esteemed worthless, have sent two millions of tons of coal to market the present year, and have yet in store vast deposits of the same fuel, to give warmth, illumination, and motive power to generations yet unborn.

What is true of the coal, is also true respecting the iron banks of central and Western Pennsylvania, which now enable the city of Pittsburgh alone to manufacture more iron than all Great Britain at the close of the American revolution. The same remark will apply also to the great deposit of salt and lead west of the Alleghanies. Why should the land be worth one thousand dollars an acre in the valley of Kanawha, except for its mineral value? Such is the fact. Why may we not, then, in the length and breadth of our extensive country, including nearly every variety of rock formation, reasonably expect to find deposits of copper, which shall, ere long, become to the United States what Cornwall is to England, and what the Ural is to Russia; the centre of prodigious enterprise, and the source of individual and inexhaustible national wealth?

There is good evidence to believe that such a region is now opening on the southern shore of Lake Superior.

Many have denied, and even some intelligent Cornishmen, that there is any resemblance between Lake Superior formation and that of Devon and Cornwall. But if they will give themselves a little more time for careful inspection, and patiently penetrate the interior, in my opinion they will not fail to discover the killas, gossan and elvan of Cornwall and Devon, the granite of Godolphin, Tregoning, North Downs and Treskerby, the trap of Buckjustleigh, the green stone of Beerah and Comb Hill, the ash altered slates of Dartmoor, and the ash trappean conglomerate of Tavistock and Brent Tor. There, too, may they find the serpentine and diabase of Cuba, the chlorite, diorite, serpentine, trap and sandstone of the Ural, and lastly, on location No. 5, the predite of Orange river, richly stored with silver and copper, together with the dysclasite, so rare, and interesting to Sir David Brewster, from its polarizing light in all directions.

It appears, then, from the above facts, that the Lake Superior copper region does not suffer in comparison with the best mines yet discovered on the globe. On the other hand, it is clothed with such strong characteristic, exhibits such surprising magnetic intensity, and such positive improvement whenever mining is judiciously prosecuted, that, from an honest conviction, we are obliged to believe it altogether equal, if not superior, to either Cuba, Cornwall, or the Ural. If so, it will serve as the foundation of permanent wealth for ourselves and our children. And all we have to do is to see that the mines are worked with *skill* and *economy*. For be assured, the Lake Superior mines, as a general thing, are not going to fail for want of copper, or for the want of silver in the veins. If they fail, it will be only for the want of *capital*, or from capital *misapplied*. Let no one, however, suppose that he can purchase a few shares of stock in a company, and in a few weeks, or a few months, rush into a fortune. He must, in the exercise of good common sense, expect to sow before he can reap; and to allow time for the seed to germinate; and then time for the blade; and time for the ear; before he obtains a harvest of full corn in the ear. He must recollect that the country on Lake Superior is yet covered with a multitude of Indians, and a vast primeval forest; so that every substantial article of provision must be transported thither; that the entrance to this great inland sea is blocked up by a cataract, one mile in length; so that it will be one or two years before this construction, (which affords available water power nearly equal to Niagara,) will be obviated by a broad and deep ship canal; that the same length of time will be required to open roads, and bring into requisition hydraulic, steam, as well as horse power, as additional facilities for working the mines. When, cargoes of provisions, and all needful supplies can be cheaply freighted from Buffalo, Cleveland and Detroit without transhipment; and, in return, take copper, fish, lumber, &c., to Buffalo, or tide waters by adopting the route of the Welland Canal. Then may he be able to reap a plentiful harvest, from a comparative small amount of seed, or by being the owner of a few shares of stock, judiciously managed by some responsible and enterprising mining company.

When American ingenuity shall have been fully directed to the working of mines, the present high price of labor will be overcome by the skillful application of machinery; just as it is in ginning cotton, and making pins, and making clocks. Not long since, fifty tons of iron were purchased at once in New York, and all to make clock weights, for clocks to be sent to England. So in pin making; one woman in Connecticut performs the labor of sixty persons in England. Thus will it be found in mining, that, in all open excavations and proving of veins, &c., Scovill's drilling machine, with the aid of two or three horses, will do the work of one hundred men. And even in running adits and levels under ground, the same machine may be so addpted, that a blind horse, upon a single inclined plane, or endless chain, will execute the work of twelve or twenty industrious German miners. So also in regard to the reduction of the ores of copper. Notwithstanding the experience of centuries at Swansea, and in Cornwall, the total ignorance of almost every thing relating to the sciences of geology, and above all, of chemistry, in the conductors of mines, and their agents, (Remarks of Wm. Philips on veins of Cornwall Gaol. Transactions, vol. II,) it is not only matter of regret, but it can scarcely be doubted is also the cause of much loss to the adventurers in mines, to the lords of the soil, and the buyers of the ore; if a spirit of enquiry had existed, which some knowledge of the sciences could not have failed to produce, much cobalt would not have been thrown away on the heaps of Dolcouth, and some other mines, nor would bismuth, in Huel Sparnon, have been mistaken for cobalt, nor would the roads have been mended with copper ore, nor would the ponderous ore, which contained silver in the Herland mine, have been left to the chance that discovered its value. H. T. De La Beche remarks, in his Economic Geology, page 595, that "chemistry has as yet made little progress among the assayers of Cornwall; the mode of assaying frequently being the same with that given by Price, sixty years since." And, according to M. Strom, State Officer of Mines in Norway, the slags thrown away at the copper works at Swansea, and taken indiscriminately for examination, contain (30) thirty per cent. more copper than the average slag at Roros in Norway. This goes to show that there is yet room for improvement in this most important branch.

Native copper is found in the conglomerate along the shore of the harbour at Fort William. In the course of last summer, a mass was dug up within the walls of the Garrison, weighing, as I was informed, several pounds. This was in conglomerate, cemented with carbonic of lime. In what is called the "Wallace vein," eleven inches and upwards in diameter, I found native copper associated with lanmonite and beautiful crystals of analcime. The specimens which I subjected to careful washing yielded, at different times, upwards of thirty per cent. of pure metallic copper. This vein has not been explored, except by two slight cuts to the depth of ten or fifteen feet, yet it is deserving of great attention. Near the native copper last named, is found also the red oxide of copper, finely crystalized in octohedral crystals, imbedded in a soft aluminous earth of a dull white color. This is the richest of all ores of copper, yielding from eighty-five to ninety per cent. The whole appearance of the vein is favourable, and should be investigated without delay. More or less of black oxide is found in the above vein, but its main deposit is a few yards eastward, in a vein running nearly north and south, and varying from a few inches to more than one foot in thickness. This is certainly the most interesting of all the ores of copper, both on account of its richness and easy reduction. Its specific gravity is 5,59, it is easily mined, and yields readily about seventy per cent. of fine copper. So far as history goes, this ore is peculiar to this location. No other deposit of any importance having been, as yet, discovered on Lake Superior, or even throughout the whole range of the mineral kingdom. Two shafts have been sunk, five feet by seven, on the last mentioned vein. One to the depth of about forty-five feet, the other to the depth of about sixty feet. Upwards of twenty thousand pounds of this excellent ore were raised from the former shaft, during the month of August last. The vein, as seen beneath the surface, consisting *entirely* of this compact, peroxide of copper, was about one foot in diameter, and descended from the bottom of the shaft to an unknown depth. The latter shaft, which slightly yielded black oxide on the surface, had every appearance of opening into a rich vein of this excellent ore, when I last saw it, in the month of October. There are two or three parallel veins, eastward of the above, as yet unexplored.

Many bowlders of black oxide have been discovered in the immediate vicinity of these veins, and also within the walls of the Fort, and even traced so far in the Garrison Lake as to leave little doubt that this extraordinary ore extends into the high hill on the opposite side. In order to ascertain so desirable a fact, an adit was driven into the hill, by the advice of Capt. Matthew Staples, conductor of the mining operations at Copper Harbor, and I had the unspeakable satisfaction of seeing the black oxide make its appearance in this opening before I left Copper Harbor. In a recent letter from the vigilant superintendent, Dr. Wm. Pettit, I am informed that the vein, which is very similar to the "Wallace vein," and about the same magnitude, "shows better daily." It is almost impossible to estimate the quantity of black oxide of copper already obtained here. One soldier alone, confessed to me that he had collected and sold three thousand five hundred pounds, (3,500,) (at twenty-five and even fifty cents per lb. (in the form of bowlders.

When we reflect that no small number were following the same profitable business, and also, that there were about four thousand visitors at Copper Harbor during the past summer, who, as a matter of course, took away with them one or two pounds each, I do not deem it an extravagant estimate to suppose that this locality has already furnished (60,000) sixty thousand pounds weight; although only about (40,000) forty thousand appeared on the shipping list in September last.—The extent of ground from which this amount has been taken, will not probably cover a surface of five acres, including bowlders and all. Now, as there are more than five thousand acres in location No. 4, it follows that not one thousandth part of the tract has been properly tested for the discovery of this most valuable ore. And as this ore is found to exist in a well defined vein in the hill south of the Garrison Lake, I would respectfully recommend a careful, but economical exploration of that range through the entire tract.

The following is an extract from a letter, dated January 6th, written by a practical Cornish miner of great experience—the Captain of the mines in the neighbourhood of Eagle River, belonging to the *Pittsburgh and Boston Copper Harbor Mining Company*, addressed to the Treasurer of that Company, residing in this city:

"Since I last wrote to you, the most astonishing prospect has opened upon us suddenly here, that perhaps ever cheered the most romantic adventurer after mineral wealth! If present qualities and quantities of ore continue, we may have here fallen in with the richest *silver mine* perhaps in the