gentlemen of high character, and that he agrees with them that by prompt and energetic action, combined with careful management, the property of the Ottawa Iron and Steel Company will prove to be a source of considerable profit.

Mr. Fraser, the Secretary of the above company has returned within the last few days from England where he has been for the past six months endeavouring to place the company's property on the London market. He states that he has succeeded in organizing a new company with a capital of £350,000, that they will begin operations this fall and that it is the intention of the company to engage in the manufacture of steel rails.

The Robert's Iron Company of Robertsville, Frontenac County, has suspended operations in its mine owing to the depression of the iron trade and the consequent falling off in the demand for ore on the other side of the border. This company has for some time past been raising about 100 tons of ore daily and employing a number of experienced miners. It is to be hoped that this trade may soon revive in order that active operations may be resumed

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ECONOMIC MINERALS

IN THE

PROVINCES OF ONTARIO AND QUEBEC.

COPPER.

Copper constitutes one of the most important of the mineral treasures of the Dominion of Canada, and is destined to occupy a very important rank among its resources. Its ores are distributed over vast tracts of country in Ontario, in the Eastern Townships of Quebec, in Nova Scotia, British Columbia, and traces of it are met with in New Brunswick.—Thus writes Dr. Small in his hand-book for 1882.

ONTARIO. — The richest copper producing section of this Province is that embraced by the northern shores of Lakes Superior and Huron. The north shore of the former, specially, is very rich in this mineral, where it frequently occurs in the form of native or metallic copper. Excavations of aboriginal mines are occasionally met with, and the stone implements used are also found in them. An open cutting, supposed to have been made by the early French explorers, was found near Mamainse Point, the marks of the drills being still visible, and old shafts are here and there met with, but its history is completely lost. On the south shore of Bachewaning Bay, the cliff is stained with blue and green carbonates of copper; at Mamainse Point, veins of gray sulphurate occur, and prisms are met with nearly filled with native copper; at Pointe Aux Mines, numerous veins occur; and at Mica Bay considerable money was spent in testing a vein, which, though rich in ore, was not lasting enough to be productive of results that would warrant a continuance of mining operations. A number of localities on Michipicotin Bay and Island are rich in copper; among them is Fletcher's Mine, from which large quantities of ore have been extracted, and veins appear along the coast east and west of Otter Head, The Island of St. Ignace, Black Bay, Flour Island, Simpson's Island, Point Porphyry, Edward's Island, Thunder Cape, Prince's Bay and Spar Island, on the north-west shore, are all rich in copper, native copper being abundantly found in these localities. Pigeon River and the district south-west of the Kaministiquia River give evidence of the existence of copper in large quantities. It is asserted that the Superior district contains the most extensive copper deposits in the world, capital being the one thing necessary for their development. Along the shores of Lake Huron, copper is abundant, in fact no very large area within this region is destitute of copper-bearing veins. The Bruce Mines, the Wellington Mine, and the Huron Copper Bay Mine are here situated, and have produced a large amount of very rich ore. Numerous veins occur at the mouth of Whitefish River, and at Spanish River, and the district contiguous to it; at Echo Lake, on the east branch of Cariboo River, at Limestone Point and at Root River, there are abundant shows of copper. The ore found at the above named points is chiefly pyrites and yellow sulphurets, and the indications are rich enough to lead to the belief that ere long the Lake Huron district will be one of the most important mining sections of this country.

In Eastern Ontario, in the County of Hastings, in Hungerford Township, and Anglesea, west of the Addington road, and occasionally scattered elsewhere, traces of copper in the form of pyrites have been found, but of no economic value as far as known at present.

QUEBEC.—In Eastern Canada, the native copper, which is so abundant in the Superior district, is met with but in few cases. Sir William Logan describes the copper deposits of this part of Canada as similar in point of structure and mode of occurrence to those of Norway and Sweden. In some of the localities in this Province the ore met with is a sulphuret, but these veins are seldom continuous for great distances. At the outset of copper mining in this section a great rush was made for mining rights; companies were formed, the majority of which sank a great deal more money than they could afford and had to yield to the pressure of the times before realizing any return on their outlay. Despite all this there has been sufficient development to prove that in several districts copper mining could be carried on successfully. The extraordinary number of 557 locations have been enumerated in the Eastern Townships where copper exists and has been traced. The Acton, the Harvey Hill, the Prince of Wales, the St. Francis and the Lower Canada Mines, as well as one at Garthby, were being worked at one time. The Coldspring, the Balrath, the Brompton Gore, the Ascot and Belvedere; Victoria, Reid Hill, Warrington, Griffiths and Ham Mines gave good evidences of copper, but were respectively abandoned. Copper has been traced through the Townships of Potton, Bolton, Stakeley, Oxford, Brampton, Melbourne, Cleveland and Shipton; and in numerous other localities, such as Wickham, Durham, St. Flavien, Sutton and Halifax, the existence of ore, in the form of sulphuret, rich in copper, has been discovered. In the Ascot district the Hartford, the Crown and the Albert Mines have been for some time worked, and the Sheffield and Hepburn Mines were opened under favourable auspices last year.

The Eastern Townships ores demand a peculiar metallurgical treatment, and to separate the copper gangue they require additional power and more sulphurous ore in the smelting works. It is stated that the quantity of fuel required by the present mode of treating the ores is such that the richer ores must be carried to the vicinity of coal; hence it is not unlikely that these from Eastern Canada will eventually find their way to the coal fields of the lower Provinces.

MICA.

Mr. H. G. Vennor in his published letters, thus speaks of this valuable mineral:—

"The constant new uses to which mica is being put year by year, keeps it continually in demand and ensures a good price always for a good article. A "good article" in mica must possess at least two qualities, viz., clearness of colour and size of crystals, characteristics not always found together. Clearness of colour alone is of little importance, if the size is insufficient; and the latter by itself is nothing without the former.

Mica occurs all through the stratified upper portion of the Laurentian series of rocks, but chiefly in a finely divided and disseminated form in the gneiss and schists. In fact it is as much a component part of the rocks as is the quartz, feldspar or hornblende.

The economic deposits, however, are all towards the summit of the series and in connection with the phosphate of lime rocks; but by some unaccountable process or agency the mica in these deposits has been "faulty" from its birth. For besides being in the majority of instances of a very dark colour it is affected by "joints" or cleavage planes at right angles to what may be termed the *plate cleavage*, which being often accompanied by a slight displacement or dislocation, produces a very uneven natural fracture. Wrinkles or corrugations likewise spoil very many of the large crystals and render them entirely unfit for the market. Hence, out of one hundred and more localities examined, where mica occurred in considerable quantities, only some two or three were found to yield anything like a suitable article."

As illustrative of the quality of mica required by mica men we give the following from the *Manufacturer and Builder* of a recent date:—

"This mineral, simple in itself, is but an aggregation of infinitesimal crystals, which by some unknown natural process have united in a massive form, with a laminated structure capable of being subdivided on a plane with its axis to such an extent that one cubic inch can be subdivided by the eye into about 180 superficial inches, and the same be again sub divided by the aid of the microscope until one cubic inch of mica is made to cover four or more superficial feet. This capability of subdivison in plates or laminæ is not its only peculiarity. It varies from transparency to translucency."

The demand for mica, for stoves alone, is greater than the supply, thus causing an uninterrupted demand. To the uninformed it may appear strange, but mica is a staple article of commerce, the fact that mica interiors must be placed almost annually creates a steady demand. Recently a man patented its application to stoves whereby soles and frilling expenses are rendered unnecessary. And whenever the quantity of mica produced is sufficient to supply the demand, and the market prices reduced, then new uses and applications of it will arise. As an insulator it stands pre-eminent owing to its non-frictional qualities

It will be thus seen that in mica mining we have an industry worthy of development, and one which requires no expensive manipulation of the product subsequent to excavation.

The largest and altogether the most important deposits of mica yet discovered in Canada occur in Ontario. Here the mica is without the usual association of phosphate of lime, and is of an unusually clear colour and suitable size.

In Ottawa County, Province of Quebec, the deposits are innumerable, and mica constitutes a large part of the *debris* thrown out of nearly every opening made in search of phosphate, but the majority of this is worthless stuff.

All of the large-plated mica occurs in one particular plane of bedding or horizon, which would appear to lie just between the apatite and plumbago-bearing rocks.

The neighbourhood of Gronville,