

Co.). Milton L. Hersey has also made numerous analyses of these ores, which frequently gave high grade. Shipments from Breeches Lake have reached 55 per cent. In chemical industry, the ores which are poor in silica are preferred, and for certain uses buyers fix a limit of $12\frac{1}{2}$ per cent. of metallic iron and 8 per cent. of silica.

The existence of chromic iron in the serpentines of the Eastern Townships, of Quebec, has long been known, but until 1894 hardly any effort was made to develop the deposits. According to the geology of Canada for 1863, the first attempt in that direction was made in 1861, when about ten tons were extracted in the neighborhood of Lake Nicolet. Some twelve years ago, a small quantity was also taken out in lot III, 24 of Wolfestown, and in 1887 Dr. J. Reed shipped to Philadelphia 54 tons derived from lot X, 1 of Leeds. Lot IV, 16 of Thetford, also yielded four or five tons, but of low grade. About the same time, specimens sent to Antwerp Exhibition had attracted attention, and orders for ore had been received, but the known deposits did not appear to be rich enough to be worked with profit. In April, 1894, an unknown mineral having been discovered near Black Lake by a man named Provengal, a specimen of it was brought to the office of the Provincial Mining Engineer, who at once recognized it as chromic iron of a high grade, and advised that the mine should be worked, indicating at the same time where a market could be found for the product. The Nadeau-Provengal mine was thereupon opened; and the selling price of the ore being deemed remunerative, prospectors entered the field and other discoveries were made in the neighborhood, especially in the township of Colrairie, thus giving rise to an industry which promises to become prosperous.

The presence of these deposits is indicated by a sort of black spongy crust, of ferruginous aspect, appearing in spots on the serpentine and by the loose rocks found on the surface. Sometimes the crusts are only superficial, and at others they penetrate into the serpentine with a thickness of several inches, which may increase and attain several feet. In still other cases, the mineral shows itself at once on the surface with its metallic aspect and occasionally in its greatest thickness. But the deposits have a character of irregularity; they seem to be almost independent of each other, and sometimes suddenly disappear without leaving any trace to warrant further work. No defined walls except the planes of ordinary fracture in the serpentine are observable. The question of the depth to which these deposits extend has been mooted, and it has even been suggested that borings should be made to determine whether they cannot be found where they do not outcrop at the surface. Such deposits should exist and chromic iron has been found at a depth of 30 feet in an otherwise unproductive shaft sunk for asbestos by the Beaver Asbestos Co. on lot Colrairie C. 30. Geologists have given considerable study to the origin of this mineral, and have established, in the Quebec region at least, that while it occurs in the dark green serpentines of the Eastern Townships, it is absent from the buff or honey-colored serpentines of the Laurentian system.

Chromic iron is also further found on the west coast of Newfoundland, at Bluff Head, Port au Port Bay, where a very important bed is being worked by the Halifax Chrome Company, which during the summer of 1896 took out 1,500 tons and shipped about 200 gross tons, of which 145 went to Pittsburg, where it yielded 49.90 per cent. (Transactions of the American Institute of Mining Engineers, Geo. W. Maynard). The author of this paper says

that the ore gives from 39 to 50 per cent., and he mentions the discovery of a mass 97 feet long by 45 feet wide.

With these deposits in Canada, there seems no reason why a great chemical industry should not be built up in Canada, along with a considerable addition to our mining development. Chromic iron is used for the manufacture of bichromates of potash and soda, which are employed in the dyeing and printing of calicoes. These products form the bases of the chrome colors, yellow, orange, green, etc.; they are also utilized in the construction of certain batteries of electric piles, in the tanning of leather, in chemistry, and slightly in medicine. Chrome enters into the composition of the ferro-chromes, which are used to make the chrome steels that are noted for their very great hardness, and employed for the armor plating of vessels and forts, and for the making of shells, tools for cutting iron, shoes and dies in stamp mills, safes, etc. Ferro-chromes of different grades, ranging from 40 to 90 per cent of chrome, are made while the chrome steels contain from 1 to 10 per cent. of chrome. They are also employed in alloys with aluminium. Chrome imparts to the metals with which it is allied great hardness and inalterability, and increases their elasticity, these qualities varying with the grade in chrome. More recently low-grade chromic iron has been employed on account of its essentially refractory qualities, in the construction of certain parts of furnaces exposed to high temperatures, and especially in the construction of the inside parts of open hearth furnaces and of reverberatory furnaces for copper smelting. A certain quantity of it is regularly used for this purpose in the Pittsburg district, where also special chrome fire bricks are manufactured, two companies being engaged in this industry. In this case, the medium grades are preferred, on account of the price. In latter years about 2,000 tons have been used in the United States for these purposes. It is also employed by the European metallurgical establishments.

In the Province of Quebec there is a pretty extensive region in which chromic iron occurs in commercially workable quantities, and when it is considered that these deposits are located at distances ranging from several acres to five and nine miles from the line of the Quebec Central Railway, and on heights which render their working easy, that labor on the spot is cheap and fuel wood close at hand, it would appear that it would be difficult to find a more favored country as regards this industry. It has been prosecuted there since 1894, but by very primitive methods, not a single steam machine having been yet employed; nevertheless over 10,000 tons have been taken out to a value of about \$140,000. Nova Scotia coal is worth \$4 a ton at the Quebec Central Railway. Furthermore, the chromic iron ores of the region in question are concentratable and capable of furnishing a very large quantity of high grade. The Government still owns many lots, which can be fully bought out at \$400 per 100 acres. There have been no deep workings yet, and it is safe to conclude from what has been said that this district is destined to become an important factor in the production of chromic iron for many years to come.

ON TO HUDSON BAY.

Hudson Bay, Canada's great inland sea, is about 600 miles across from east to west, and measures about the same distance from north to south, or if you include James' Bay, its southern arm, it will be 1,300 miles long from its northern to its southern extremity. Its average depth is 600 feet, and its floor is so level and uniform that if it were raised out of the water it would form one vast prairie