

spring, and are located in the very midst of a village, near to some chemical works.

Asbestos mines on the Ural have been in operation for years, and, from the statistics available, the production is steadily increasing. Particularly well regulated is the asbestos manufacture at the asbestos mines at Korevo, thirty versts from Bajenovo Station on the Perm Railway. The entire district is covered with heavy drift material, containing auriferous sand and precious stones, such as emerald, amethyst, topaz, spinel, beryl, etc.; in fact some of the best emerald mines are situated in this district. The country is moderately flat. It is densely timbered, and for this reason prospecting is a difficult task. The formation is a weathered serpentine, much decomposed, and evidently has undergone many disturbances. The asbestos is found in cracks or fissures, similar to the slickensides in Thetford and Black Lake, and is, to some extent, discolored. It is of a fine and silky texture a true asbestos, a form of fibred tremolite and hornblende, and its principal value for manufacturers lies in its tensile strength.

It is not, however, as silky as the Canadian chrysotile. The fibre is a little coarser, of slightly yellow color, and is well adapted for spinning purposes. Most of the asbestos is short, fibre of two and two and a half inches in length being very rare. Two companies are working in the district, the "Poklewsky

Kosell" and the "Korrewo Company." The former is the largest company in the district, and employed at one time 5,000 men. But the drawbacks for a healthy and steady progress of the industry are great, the principal ones being the shortness of the season, which lasts only six to eight weeks, and the remoteness of the district.

The mines are remarkable for the fact that, even with a production of 1,500 to 1,700 tons of asbestos per season, the mining work is all done without the aid of machinery or explosives. The ground carries more asbestos to a given area than the Canadian mines, but the veins are not so thick, nor is the color very white. Mining operations are carried on upon a very antiquated system, while a proper milling plant does not exist. Experiments in milling are, however, in progress, and are vivid reminders of what occurred at the Quebec mines years ago. The working force at these mines numbers, as a rule, up to 1,700 men in the season, and is recruited from the Russian Muzhiks or peasants. The wages paid ordinary labor are about thirty-three to thirty-eight cents a day, with free sleeping quarters. These mines, as a rule, suffer from a scarcity of labor during the harvesting time. Adjacent lakes will prevent them from ever attaining the depths of our mines, owing to the very porous and disturbed nature of the rock, the lakes being on nearly the same level as the mines.

MINING POSSIBILITIES IN THE PROVINCE OF QUEBEC

(BY FRITZ CIRKEL, M.E., Montreal.)

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The establishment of a mining industry in the Province of Quebec is of long standing, and it were, therefore, reasonable to expect that mineral production from this Province should be proportionately considerable. But this is not the case. In 1905 the total value of the minerals produced amounted only to \$3,750,000, an insignificant aggregate in relation to the importance and the varied mineral resources of the area. The question arises, to what cause is this unsatisfactory state of affairs attributable?

The public as a rule finds ready explanation in blaming government for slow industrial progress; but in the present instance this can not be done in fairness. Enquiring into conditions connected with the Quebec mining industry, we find that the Provincial Government has done much to promote mining, and the laws governing the latter are as liberal as can be found in any other mining country, where conditions are similar; and we must, therefore, look elsewhere for reasons.

Meanwhile, if we examine statistics published annually by the Quebec Government, we will observe that the precious metals are absent from the list, and the entire production, practically, is that of minerals not classed as precious.

Thus we have, among others, mentioned:

Iron ore, with gross value of production of...	\$	35,268
Chromic iron	"	104,565
Copper ore	"	128,850
Asbestos	"	1,476,450
Asbestic	"	31,100
Mica	"	95,460

Considering the mineral potentialities of the Province of Quebec, this showing is most inadequate, and the reason thereof is solely attributable to the indifference of the public. Nowadays fabulously rich finds in other provinces of the Dominion have attracted wide attention, and it is not difficult to find capital for the exploitation of precious mineral deposits of even questionable value. But it is difficult to interest investors in deposits of base

minerals in this Province promising safe and fair returns on money invested. This point might be illustrated by numerous examples which have come under the writer's notice. But reference need only be made to the absence of interest in our magnetic iron resources by way of demonstration.

It is well known that the Province of Quebec is very rich in iron ores, especially in magnetic iron; these deposits are distributed along the banks of the St. Lawrence, Ottawa and Gatineau Rivers, and are of good quality, quite equal to the Swedish ores.

The magnetic sand deposits on the north shore of the St. Lawrence were discovered over forty years ago, but remain still undeveloped. These deposits are of considerable magnitude at certain points, such as at Moisie, Mingan, Betsiamits, Natashquan, Kagashka.

The magnetic sand is found almost on the surface in stratified beds from one-half inch to six inches thick, but sometimes attaining a thickness of from one and one-half to two feet. These deposits extend over large surfaces on the coast, in some instances for several leagues. Besides magnetic iron, this sand contains quartz, red garnet and titanite iron.

But the principal magnetic iron ores are located in the Township of Pontiac and in Hull, north of Ottawa. In each of these localities, mining operations were carried on some thirty or forty years ago; but work was discontinued, not on account of a falling off in the quality or quantity of ore, but in consequence of loss in handling. Separation methods for the purpose of freeing the iron ore from the gangue are of comparatively recent date; and by these means mines which formerly could not be profitably operated can now be made to pay handsome returns. Most people, acquainted with the early operations of these mines, when approached for an opinion regarding their present value, refer to former failures and express an unfavorable view, forgetting that conditions now have greatly changed for the better, and that these former failures were ascribable to the one cause already