

For THE CANADIAN ENGINEER.

THE MINERALS OF NEWFOUNDLAND.

BY AN OLD RESIDENT OF ST. JOHN'S.

Newfoundland as a field for legitimate mining, which, with intelligent management and moderate capital, would return handsome dividends, seems to have been hitherto almost entirely overlooked. In the December issue of THE CANADIAN ENGINEER, 1895, there were notes from the pen of the late Geo. Spotswood, C.E., on the petroleum fields which he had then partially examined, and of which a few months prior to his death he had been in charge, and had successfully developed. Unfortunately this was at the cost of a valuable life. Anxiety and exposure in getting the first well completed and the second started hastened the course of a disease he had contracted, and which resulted fatally in November, 1896.

The geology of the field as determined from his partial examination is shown in the report to the company which is operating the claim located by him in October, 1894: "The geological formation belongs to the Quebec group—consisting of limestone, limestone conglomerates, shales and sandstones, with dips from 30° to 80° and strikes varying from 220° to 250°."

An analysis of the crude oil was made by J. T. Donald, of Montreal, on September 27, 1894, and was as follows:—

Specific gravity885, or 28 B.	Burning oil..	14.50 per cent.
Water	traces.	Heavy or lub.	82.50 "
Gasoline	none.	Solid res	3.00 "
Naphtha	"	Sulphur098

This analysis was made from crude oil gathered from the surface depressions; when the wells were sunk it was found that the oil at 1,000 feet was much lighter, and gave a higher percentage of illuminating oil, as shown by the following report of Rufus Merrill, who refined a sample of the crude.

"Color, dark olive green; gravity, 36° B. at 60° F. Odor, aromatic. Yielded by destructive distillation.

Naphtha	7 per cent.
Ill. Oil	56 "
Lub. Oil	34 "
Coke	3 "
	100 "

"This oil belongs to the aromatic petroleum and is of the paraffine series; the products of distillation are of bland and pleasant odor, easily refined, and yield more readily to and require less acid and alkali than any of the oils found in the United States. The illuminating oils are high fire test water white, and burn with a clear lambent flame of great brilliancy and less tendency to smoke than the best United States oils. The crude oil is very free from grit and foreign substances, and with proper reduction would make a first class natural lubricant; finally, there is no known field which to-day produces an oil of equal quality."

The territory appears to cover about 250 square miles, but beyond the wells sunk by the Newfoundland Oil Company, which are producing, and one ten miles further north, there is no development. An English company is negotiating for the Newfoundland Oil Company's property, but whether they will finally close the deal cannot be stated; it is to be hoped that either an English or Canadian company will secure the territory, and not let the United States refiners step in, as usual, and gather the financial honey which our people should get. If the Newfoundland Oil Company does not sell it will probably refine the oil on the spot, and ship to England; they are on the seaboard, and

6½ to 10 miles of pipe will put the product of the wells at tide-water.

Asbestos properties on the west coast must very soon be a factor in the asbestos market. On a claim which the writer knows there is an inexhaustible quantity of low-grade and a very large quantity of high grade ore, which can be mined and sold, on account of the favorable situation, for very little more than it costs to mine in Quebec. I am aware that the Quebec miners are sceptical about the asbestos in Newfoundland, but some day they will have an object lesson that will open their eyes to the facts in this case.

The minerals, etc., so far found in Newfoundland, in economic—and probably economic—quantities, are gold, silver, lead, iron (both magnetic and hematite), coal, copper, nickel, asbestos, gypsum (no deposit in any known country so large), marbles of the most beautiful kinds, chromic iron, manganese, and molybdenum.

Mining in that country has suffered from two things—ignorant and most unskillful management and over capitalization, for both of which the English operators are principally to blame.

THE INDICATOR.*

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The indicator is an indispensable assistant to the engineer, and of late years it has become evident that intelligent and wideawake steam plant owners recognize the necessity for such a valuable instrument, and they are also appreciating the services of the engineer who is competent to use it properly.

The indicator diagram is actually the only means of showing on paper what really takes place in a cylinder. To read an indicator card correctly is not an easy matter, and in order to be able to do so, considerable study and practice are necessary. The handling of such a delicate instrument requires a great deal of care, and sometimes considerable skill and ingenuity must be employed in making the needed attachments. By its use many stumbling-blocks will be removed, while the calculations and geometrical work which the engineer will be impelled to make in connection with it will lead to the acquisition of a good general knowledge of the whole subject. Careful consideration of the diagrams from different engines, under varied conditions, cannot fail to lead to thought and investigation. A general knowledge of the law of gases (especially Mariotte's law) is needed, and a study of physics, mensuration and mechanics is most beneficial.

In order to determine the most economical plan of operating a steam plant, many tests are made. Such tests, if properly conducted, are valuable, and are much to be appreciated by steam plant owners, who will find it to their interest to give every encouragement and assistance to the engineer along this line. The diagrams traced by the indicator pencil will vary widely, and depend on the condition of the different engines from which they are taken, and it therefore becomes necessary to know how to interpret these variations correctly. This information the engineer can only acquire through the processes of reasoning and hard study. In attaching the indicator considerable skill is sometimes needed, and circumstances must determine what plan can best be employed. The reducing motion must be such that it will give to the paper barrel in its reduced scale an exact reproduction of the movement of the piston.

Examine your indicator, and see that every part of it is moving freely, has no lost motion, and is well oiled. A

*A paper read before the Canadian Association of Stationary Engineers' Annual Convention, Brockville.