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Geological Report on Calgary Oil Strike

By R. W. BROCK, Dominion Deputy Minister of Mines.

Dr. Brock Explains the Recent Developments in the Black Diamond Field and Points Out the Dangers in Reckless Speculation on the Information at Present in Hand.

The strike of oil in the Dingman Well near Black Diamond in the Calgary district, Alberta, may be an event of some importance in the history of the development of the Province, as it strengthens, if it does not yet justify, the conviction that has always been held by the Geological Survey that the Northwest affords one of the most promising fields for oil prospecting which still remain undeveloped.

It does not, of course, establish the existence of an important commercial field; while much more profitable as a producer than a well of similar capacity or ordinary crude oil would be, it is not as satisfactory an "indication," but it does add materially to the already widespread evidence of oil in the Northwest, and justifies business-like, technically directed, intelligent prospecting.

At a depth of 2700 feet oil was struck, that quickly rose to a height of from 2000 to 2200 feet in the well. With it is some gas which occasionally causes a spurt of gas and oil from the mouth of the well. The oil is a "white-oil," like the small amount of oil encountered higher up in this well, last fall. It is about 64.5 Baume, almost pure gasoline, so that in its crude state it is a satisfactory substitute in motors for the refined gasoline of commerce.

At the time of my visit the well had not been equipped with a pump, or storage facilities, so that it was not known what the daily capacity would be, nor how it will stand up against pumping, but the small amount baled out has had no effect upon the level of the oil in the well.

The well is situated at the base of the foothills on the apex of a saddle-like fold in the rocks that makes a sort of lip to the great basin of rocks which underlie the plains. This fold is, roughly, a mile or so wide, dipping very steeply on both its eastern and western limbs. Its direction is north-westerly and south-easterly, or about parallel to the front of the mountains. It is cut off by a fault or break in the rocks on its western limb. This break is followed by

several small folds, before the rocks become badly folded and broken by mountain building forces toward the mountain front. These folds bring to the surface rocks lower in the geological scale than those that are found on the basins, thus while Tertiary rocks are found on the plains and on the Eastern and Western limbs of the Dingman fold, the surface rock on this fold is the underlying Cretaceous, an important feature, as the possible oil-bearing rocks are low down in the Cretaceous.

The structure or altitude of the rocks is favorable, for oil will rise to the highest point permitted by the conditions underground. The highest possible point if the oil can reach it would be the apex of a fold. This structure determined the location of this well. Last summer gas was struck that was almost wholly gasoline. This was considered a favorable indication, as it might represent the lighter, more volatile portion of oil that had been filtered from a main body. When "white-oil," almost pure gasoline, was encountered in small quantity last fall this hypothesis was strengthened. The present strike of similar oil in some volume leads naturally to the supposition that the drill has made an approach to the oil reservoir. There may perhaps be a notable quantity of this high grade oil itself, but this has still to be demonstrated, and the almost universal history of other fields has been that these white oils are rather limited in quantity. The strike therefore is encouraging, but has not demonstrated an important commercial field.

The area for prospecting is limited in an East and West sense, for immediately east of this anticline, not only is the structure unfavorable, but the possible oil-bearing rocks are too deeply buried for much hope of the oil horizon being reached by the drill. The belt of highly disturbed and broken ground in the foothills puts a western limit to any possible oil zone. It is therefore a relatively narrow belt with a trend roughly parallel with the mountains that affords any reasonable prospect for oil.

It is also to be remembered that drilling in these formations is unusually expensive, especially if the drillers have not had experience with these particular rocks; that at best oil prospecting is speculative, and that to reduce the speculative element to within commercial bounds it should be undertaken only under intelligent technical direction. There

CONTENTS

GEOLOGICAL REPORT ON CALGARY
OIL STRIKE
(Dr. R. W. Brock)

BRITISH COLUMBIA AND STEEL INDUSTRY
(N. Thompson)

OIL IN WESTERN CANADA
(R. C. Campbell-Johnston)

FINANCIAL STATEMENT OF VANCOUVER

MINERAL WEALTH OF BRITISH COLUMBIA
(F. J. Crossland, M. I. M. E.)

IMPENDING DECISION ON LIFE
INSURANCE

APRIL REPORT ON FORESTRY

RECENT ANNUAL REPORTS