

PRESS BULLETIN NUMBER 11.

August 16, 1921.

-0-

G. B. Morgan
State Geologist
Cheyenne, Wyoming.

-0-

THE FOSSIL OIL FIELD.

The Fossil oil field is located in Lincoln County about 6 miles west of Kemmerer and about 4 miles east of Fossil. Generally speaking it lies in the eastern part of T. 21N., R., 117 W., but future development may extend it north into the southeastern portion of T. 22N., R. 117 W. The field, as developed so far, occupies a portion of Section 11, 14 and 23 T. 21N., R. 117 W. However, gas has been encountered in a well as far south as Section 35 of this township. The Oregon Short Line, a branch of the Union Pacific System, runs through the north end of the field and there are good roads giving access to the field from the towns of Fossil and Kemmerer, and there appears to be plenty of water for domestic use and for drilling purposes.

The geology of the southwestern portion of the State is somewhat different from that of the balance of the State, especially in the matter of terminology. However, we expect to find the oil producing horizons in the Cretaceous formations in this as in other fields of Wyoming. The particular difference lies in the fact that the oil-bearing sands are apparently found at much higher horizons in the Cretaceous system in southwestern Wyoming than in other portions of the State, notably central Wyoming or the Salt Creek district, and the Big Horn Basin. In the Fossil field and also in the Dry Piney-LaBarage districts, oil has been found in the Evanston, Adaville, and Hilliard formations, which correspond roughly to the Mesaverde and Pierre formations in other parts of the State. So far no oil has been found in the Mesaverde formation in central or northern Wyoming and only very little oil has been found in the Shannon sand of the Pierre formation. On the other hand, the principal oil-producing sands of central, northern, and eastern Wyoming are found in the Frontier, and lower formations of Colorado age and in the Cloverly or Dakota sands of lower Cretaceous age. This condition indicates a change in the character of the upper Cretaceous formations going west and southwest from central Wyoming. It has also been noted that the Frontier formation, which contains the famous Wall Creek sands of the Salt Creek oil field, tends to become likewise less productive as one goes west from central Wyoming and the oil appears to have collected above the Frontier formation and below it. For instance, in the Ferris Field, Carbon County the producing horizons are in the Pierre or Niobrara formation above the Frontier and in the Muddy and Dakota sands below it. Therefore, going southwest to the Lincoln County fields, it is believed that the principal oil production will be found in the upper Cretaceous formations, such as the Adaville and Hilliard, rather than in the Frontier formation.

In the Fossil field the Evanston formation, which is the upper member of the Cretaceous system, is exposed in a small area in

Sections 14 and 23, Underlying this will be found the Adaville and Hilliard formations, both of which are quite likely to carry oil in commercial quantities. In and surrounding the field are escarpments composed of Tertiary deposits, such as the Green River, Knight and Almy Formations. Structurally, there is an anticline running in almost a north and south direction through Sections 2, 11, 14, and 23 of this township. The north and south extensions of the anticline are covered and concealed by the Tertiary formations which are unconformable with the underlying Cretaceous.

Judging from the development that has taken place, it is believed that the axis of the anticline extends from about the northeast corner of Section 35, T. 21N., R. 117 W., to the southeast corner of Section 34, T. 22N., R. 117 W. There appears to be two oil horizons and one gas horizon so far developed. A number of shallow wells have been drilled in this field and these the first sand has been found at depths ranging from 100 feet to 250 feet and the second sand at depths ranging from 250 feet to 450 feet. The first sand is a thin sand containing a heavy black oil, which is reported to be a high grade lubricating oil of about 24 degrees Baume. The wells in this sand are pumped and the production is only a few barrels per day per well. The second sand produces a high grade oil of paraffine base, having a greenish brown color and containing a high percentage of gasoline. The Baume gravity of the light oil is 42 degrees, and it contains about 42 per cent gasoline and 15 per cent kerosene. The wells in this sand are pumped and will produce from 5 to 25 barrels per day.

There are also a number of oil seeps in this small area, especially in Section 23. These seeps probably come mostly from the upper or black oil sand. In Section 35 of this township are several gas wells reported to be about 800 feet deep. These wells are no flowing gas and sulphur water. Without knowledge of the logs, it is impossible to state from what sand the gas is derived. Very little practical and systematic development has taken place in this field so far. A number of shallow holes have been drilled, but in a great many places they were not deep enough to reach the second sand. No doubt the field will be enlarged by further development, especially to the north. The oil so far discovered in this field occurs probably in the lower Evanston and the upper Adaville formations. As no deep test well has been put down, the remaining portion of the Adaville and underlying Hilliard have not been tested and therein appears to lie the opportunity for the future development of this field. It has been advanced by some geologists that the Fossil oil is migratory in character and has come up from the lower formations, such as the Aspen and Bear River. Whether that is the case or not there seem to be strong possibilities that more prolific lower sands may be encountered in a deep well drilled in this field.

It is believed that a well 4000 feet deep would test out the Adaville and the upper portion of the Hilliard formations. It would seem to be a good policy on the part of any operator, owning or controlling a fairly large acreage in this field, to put down a deep test well near the axis of the anticline, while at the same time developing the shallow sands for fuel and for running expenses. Because of the lack of intensive development in southwestern Wyoming not so much is known of the oil-bearing qualities of the upper Cretaceous as in other parts of the State, but it is believed that the theory that the oil will be found above the Frontier, rather than in it, is worthy of grave consideration. The Fossil oil field appears to be an ideal location for testing this theory for the reason that oil has already been found in small quantities in the shallow sands, indicating a closed structure, and for the additional reason that most of the possible oil-bearing sands of the upper Cretaceous would be within workable depth from the surface.