mountains that any explanation was possible. On this point it is best to quote direct from Dr. G. M. Dawson, in the report of the Geological Survey for 1898:

"The geological structure of the Rocky Mountain ranges proper, or that part of the western mountain region that lies between the eastern foot-hills and the great Columbia-Kootenay valley on the west, assumes a great practical importance in view of the opening up and working of the coal beds included within its area. On the map accompanying my preliminary report on that portion of the Rocky Mountains between latitudes 49° and 51° 30', forming part of Volume I. (1885) of the new series of annual reports of the Geological Survey, the areas of the Cretaceous coal-bearing rocks are represented with approximate accuracy, and in so far as the work carried out up to that date allowed. Several sectional diagrams were also given; but at the time the explorations to which a gently inclined fault-plane for a distance of about seven miles, by pressure acting from the westward. This feature, as demonstrated in the vicinity of the Bow, is clearly shown in the sections accompanying the report cited.

"It had heretofore been supposed that a great normal fault, with downthrow to the eastward, defined the eastern base of the Rocky Mountains in this vicinity and separated the rocks of the mountain region from the wholly Cretaceous and Laramie rocks of the foot-hills; but the structural discovery above alluded to at once threw doubt on the earlier supposition, as well as upon several of the sketch sections drawn in conformity with it in other parts of the mountains.

"It further appears to be quite possible that overthrust of the kind referred to may serve to explain the otherwise somewhat anomalous occurrence of petroleum in the southern portion of the Rocky Mountains, between the Crow's Nest and South Kootenay pass-

| No. | Where Obtained. | Specific Gravity. | Degrees Beaume. | Remarks. |
|---|---|---|---|---|
| 1. | From tubing of bore-hole in Alberta, five miles east of summit | .879 | 30° | Dark-coloured heavy oil: commences to distil over at 90° C. |
| 2. | From surface seepage at same point | .879 | 30° | |
| 3. | From "Big Oil Spring," on Sage Creek, British Columbia | .828 | 40° | *Dark-green oil: commences to distil off at 90° C., 90% of oil distilled off below 200° C., leaving 10% of thick, dark oil containing tar, which latter is estimated at 5%. |
| 4. | From bed of Sage creek, near above (Leckie) spring | .818 | 42° | Light-amber coloured oil: commenced to distil off at 90° C.; 97.5% of oil distilled off at below 185° C., leaving 2.5% dark, heavy oil containing some tar. |
| | California Oils | .889 to .997 average .940 | 28° to 10° 19° | Commences to distil off at 150° C. |
| | Japan Oils | .82 .98 | 41° 12° | |

*Appliances were not available for complete or further fractional distillation.

this report relates were made, the existence of extensive 'overthrust faults' as a factor in mountain structure had scarcely been recognized by geologists. At a later date, the importance of such faults was very strikingly demonstrated, particularly in connection with the geology of Scotland, and it was realized that by tangential pressure, acting on the earth's crust, older beds may be bodily thrust forward upon newer formations for distances measured in miles.

"The position of the Cretaceous coal-bearing rocks at and within the eastern edge of the mountains on the Bow and Elbow Rivers appeared to indicate the existence of an overthrust of this kind, but it was not until Mr. R. G. McConnell made his detailed examination of the Bow Pass, in 1886, that it was actually possible to state that the Palæozoic rocks had, in that vicinity, along the eastern point of the mountains, been thrust forward over the Cretaceous beds and up es. The actual existence of small quantities of petroleum in several places in this portion of the mountains was verified, some years ago, by the personal observations of Dr. Selwyn. The petroleum was actually found in parts of the mountain region characterized at the surface by very ancient rocks, probably of Lower Cambrian age. If it may be assumed, however, that these rocks probably overlie, in some places, those of the Cretaceous series, by reason of overthrusts, it is easily conceivable that the petroleum in question may have originated in consequence of heat, at considerable depths in the earth's crust, acting upon the fixed hydrocarbons contained in the rocks of that series."

The so-called "Big Oil Spring" on Sage Creek occurs some 12 miles up from the mouth of the creek and about a mile above where the stream leaves the mountains and enters the flat depression of the Flat-