

Beaver Oil Basin.

Thirty miles east of the Shoshone oil basin, and fifteen miles east of Beaver, a tributary of the Wind River, an area of oil land occurs which is known as the Beaver oil basin. In many respects this basin differs from the Shoshone. This is true in regard to the oil, the physical appearance of the region, the character of the springs, and the geological age of the rocks from which the oil emerges.

Physical Appearance.

The form of this basin where the oil springs occur approximates to an irregular circle, within which and around its rim, the oil makes its appearance. True anticlinal folds have produced this peculiar structure modified greatly by decomposition of the rocks and erosion. On the southeastern side the rim has been cut down, and through this outlet a streamlet that rises within the cone flows during the spring months. The rim of this circle is an irregular ridge, which rises in places nearly one thousand feet above the bottom of the cone.

OIL PHENOMENA.

Near the center of the basin, a well sunk six feet square and twelve feet deep, through a peculiar light-colored magnesian shale, (which well was full of water during every visit paid to this basin), is remarkable for the amount of gas constantly escaping from it. It has the appearance, caused by the escaping gas, of a gigantic boiling cauldron. Every inch of surface was in commotion from the escaping gas. Wherever water was standing at the time around and in the basin, more or less gas was bubbling through it. Here in 1880, before any wells were sunken, a lighted newspaper put to one of these jets of escaping gas produced a brilliant illumination. The water in the well here is strongly alkaline. Oil formerly floated on the surface of the water. Oil constantly rises through the water, but part of it unites with the alkaline waters to form a kind of emulsion. Outside of the magnesian shale where this well was sunk, this phenomena was not observed. One hundred feet north-west of this well, another well was sunken (now caved in) four feet deep that contained two inches of oil on top of the water. One-fourth of a mile north and across the enfolding hogback ridge, where a canyon runs east and west, with a depression in the rim corresponding thereto, an immense quantity of oil crust exists from ten to twenty inches thick. This extends over a slope one hundred and fifty feet long and from fifteen to thirty feet wide. A shaft six feet square and ten

Mr. Taylor, chemist of the Standard Oil Company, pronounced its gravity to be fourteen and one-half Baume (nine hundred and sixty-eight gravity). My own determination made on the ground was thirteen and ninety one-hundredths Baume. The color resembles dark mahogany, and the odor appears to my senses, when the oil is first taken out, a cross between that of linseed and balsam.

Oil experts universally say that it has all the necessary characteristics of a superior lubricant. Even without manipulation it acts better than the majority of cylinder oils. If, however, it is filtered once and then has ten per cent of tallow added, it becomes the best of oils for this purpose. Even without the addition of tallow, it is superior to anything in the market. Cheap and easy methods of manipulation can readily be devised and employed to change it into such forms as might be the most useful. For common use on engines, etc., it would be more acceptable, owing to its high grade specific gravity, (fourteen and one-half Baume), if mixed with one-third of Seminole oil, whose gravity is thirty-two Baume. (This latter oil will be discussed presently.) By this and other simple methods the best of lubricators could be obtained for any kind of simple or complicated machinery in use.

Concerning the quality of the Beaver oil, H. K. Taylor, Esq. chemist of the Standard Oil Company, Cleveland, Ohio, thus speaks:

" In answer to your inquiries, I will say that the Beaver oil brought to twenty-eight gravity, Baume, with the Seminole oil would make a splendid axle oil, but unless the Beaver develops in very large quantity I would not advise you to use it as a basis for axle oil, but to use the Rattlesnake oil instead. The Beaver is the best natural oil for cylinder stock that I ever saw. It has a margin of ten or twelve degrees of gravity over the best cylinder stock made in the east. By filtration the gravity becomes lighter, but I am of the opinion that the lightest colored filtered Beaver would be heavier than the heaviest unfiltered eastern oil."

Everyone who knows the high character of Mr. Taylor will accept the above statement as conclusive.

feet deep had been sunk here which, before it caved in was full of water, with two inches of oil on top. Northwest from the well in the cone, and over the rim of the basin, is another oil escape surrounded with some hardened oil. It emerges in a spring of water and flows off of it. There are still other small oil escapes in and around this oil basin, and many small areas of oil cake.

In the fall of 1893, on sinking the well in the basin, aided by Mr. Haftile, a few feet deeper the escape of gas was largely increased, but very singularly the escape of oil in and around the basin decreased. This proves that the oil is forced out by gas pressure, since when an outlet is increased for the latter, the pressure on the oil is decreased and is no longer forced out. At least, since the large opening have been made for the escape of gas, not one-tenth of the oil emerges that formerly spontaneously flowed at this place.

A characteristic phenomena of the rock masses constituting this basin is that they are all more or less charged with oil. The saturation is so complete that I have not been able, during any of my visits there, to find rock that did not emit the characteristic odor of oil. The extreme width of the basin is five-eighths and the length one and one-fourth of a mile. Gas is everywhere escaping. All the water is tainted by oil. During one visit in late autumn, not being able to get water free from oil, some of our party melted "the beautiful snow" thinking by that method to escape the omnipresent petroleum. Even that was a failure. The coffee made from the melted snow was also contaminated with oil. In fact, gas and oil were penetrating and tainting everything. And this corruption of the water will be the chief difficulty in developing the basin. The oil phenomena that are brought to light in this basin can be traced four miles southeasterly along the ridge that runs in that direction, until it runs beneath the overlying tertiary rocks, and even there at one point it cozes to the surface.

GEOLOGICAL CONDITIONS.

As already stated, the uplift forming the Beaver Basin forms an irregular circle. The dip of the rocks from at least three sides is away from the center. The fourth, or southern side, is made up of several almost vertical ridges of uplifts, dipping, however, apparently sutherly. The wearing down of their crests by erosion, and the covering of their sides by superficial materials has very much obscured their structure. On the eastern side the strata are almost vertical, dipping only slightly towards the east; on the north and west the dip approximates more or less closely to forty-five degrees. The highest point is Mount Rogers, five thousand six hundred feet above the sea.

The rocks that form this basin belong to the upper cretaceous or Fox Hills group. This group is here from five hundred and fifty to six hundred feet thick. As the Shoshone oil emerges from the triassic rocks, at least half way down the series, the Beaver oil escapes occur immensely higher up geologically. The whole of the Colorado group, Dakota group, the jurassic and at least the upper half of the triassic - more than two thousand feet of strata - are lying on top of the rocks from which the oil of this basin comes. For the evidence is strong, as will be shown hereafter, that the seat of all these Wyoming oils is the triassic, which is the one group underlying the entire territory where all basins occur. The Fox Hills sandstone are comparatively soft, light-colored, inter-collated with occasional shales. Outside of this basin, and only a few miles north are the strata of the Laramie group, containing immense beds of coal. One bed fourteen feet thick is remarkable for its high quality. The coal is filled with minute specks of rosin that partake partially of the chemical constitution of amber. Sometimes lumps of it appear as large as hazelnuts.

THE AMOUNT OF OIL.

In this basin is probably as great as in the Shoshone. If my theory is correct that the source of the oil is two thousand feet below in the triassic, the amount there must be great to be forced up through such a thickness of deposits. No oil escape could occur from so great a depth were it not that the strata here have been folded, broken and somewhat faulted. The gas pressure, which is here very great as we have seen, is, however sufficient to bring the oil from such depths where fissures in the strata have occurred. The immense quantities of the gas, the escape of oil and the vast extent of rock surface around and southeastward from the basin that is saturated with petroleum, all alike testify that there must be here, or close by, an immense quantity of oil stored.

QUALITY OF THE BEAVER OIL.

The Beaver petroleum is the best lubricating oil yet discovered in America. This statement will appear to those unacquainted with the facts as an exaggeration, but it is here made because the facts compel it. This oil has endured successfully the test of every experiment.

The determination of Mr. Taylor has been fully confirmed by Messrs. Wyner and Harland, public analysts of London, England, whose analysis I append:

" Specific Gravity 966.

Volatile (Lubricating Oil, specific gravity 842-847, flashing below below 650 F. (350 F. at 110 F.....	19.00
Volatile (Lubricating Oil, specific gravity 926-935, flashing above 650 F. (at 314 F.....	45.00
to a red heat(Lubricating Oil, specific gravity 957, flashing at 324 F.....	12.50
Coke.	14.50
Ash /	Trace
Loss by volatilization and decomposition	9.00
	100.00

These oils were mixed and tested for lubricating power. The mixture showed: Specific gravity, nine hundred and nineteen; Flashing point, one hundred and fifteen degrees Fahrenheit. Submitted to a cold test considerably below zero (centigrade) showed no signs of solidification. When properly treated by distillation, the products obtained would form lubricating oils, equal, if not superior, to the best vegetable or animal lubricants. "

Other testimonials could be presented testifying to the high character of these oils for lubricating purposes, but the preceding is deemed amply sufficient.

Development.

Reference has already been made to the development work that has been done at this basin. It is doubtful whether shafting can ever reach the source of the oil. It cannot unless at enormous expense, if the seat of the oil is in the underlying triassic rocks. Boring is the only proper method for prospecting this oil, and in engaging in this work provision should be at once made for going down at least two thousand feet. The boring, too, should be done at one side of the gas escapes and gas well, as it is well known that large volumes of gas usually lie on top of subterranean bodies of oil. Borings made immediately over oil often result in nothing but gas wells. But if the borings are made to one side, the effect of the gas is to force the oil out. At this writing the Omaha Oil and Transportation Company are engaged in boring at this place, but I am not advised as to the depth that has been reached. Owing to the extent of the basin, there is room towards the west and in other directions for a large number of prospect wells. While water has to be brought from a distance to supply the wants of men engaged at work, the adjoining coal beds supply an inexhaustible amount of fuel.