

cover, it can be worked to a great advantage. With railroad facilities a great industry will be developed, for the raw material is of good quality.

Gold, Silver and Copper.—The mountains are crossed in all directions by mineral bearing veins; but to date the ores found are too low in grade to ship, the railroad being too far away, and they are not enough in quantity to pay to put a smelter on the ground to smelt them. Should a railroad be put up Jemez Valley, mining would at once become a paying business. Besides the ore in veins, placer gold is found in the Pleistocene deposits, but water for hydraulic mining is wanting. Could the necessary water be obtained, this region would without doubt become one of the leading placer mining districts of the west.

Medicinal Springs.—The springs of the region are numerous, most all are hot, and all possess medicinal properties. Among them are the famous Jemez Hot Springs, and the Sulphurs. These springs surpass those of Minnesota and California. They are visited by people from every part of the United States, and foreigners not infrequently visit them.

This region, with its building stone, with its gypsum, with its forests, with its medicinal springs, with its gold and silver veins and coal fields, and with its fertile soil and unequalled climate, is one of the best regions in New Mexico; and under proper handling, will become one of the wealth-producing regions of the country.

THE JEMEZ COAL FIELDS.

ALBERT B. REAGAN.

The Jemez coal fields are situated about twenty-five miles west of Bernalillo, thirty miles a little to the west of north of Albuquerque, and six miles south of the Jemez River at San Isidro in longitude $106^{\circ} 50'$ west, and in latitude $35^{\circ} 30'$ north. They cover an area of about twenty square miles.

The strata of this field show a predominance of soft yellow sandstones interbedded with clays and sandy shales. Interbedded with these are strata of brown coal which are freely exposed in the perpendicular walls of the mesas. These coal seams vary from two to twelve feet in thickness; and, along one fault in this respective coal area, seventy feet of coal are exposed at one view. In examining these coal fields, it was observed

that in many instances the strata had been destroyed by fire; and the coal being burned out, the roofs had caved in by a succession of faulting, or had collapsed under the pressure. That the destroying agent was fire is attested not only by the clay accompanying the seams being turned to brick, but also by heaps of slag composed of silicates of iron and aluminum. This coal is bitumenous and Fort Union, or Laramie. It is very brittle, somewhat laminated, dull luster.

These coal fields are quite a distance from the railroad, and until just recently only Mexicans and Indians knew of the coal outcrops there. This coal is a good quality and the seams, as we have seen, are thick. The time, no doubt, is not far distant when coal will be mined there on a large scale the same as at Gallop at the western limit of the same coal horizon.

SOME TOPOGRAPHIC FEATURES IN THE LOWER TIPPECANOE VALLEY.

FRED J. BREEZE.

In the valley of the Tippecanoe about a mile below the Carroll-Tippecanoe line are two features of relief which perhaps deserve some attention.

On the east side of the river is a long, narrow ridge of gravelly material, about twenty-five feet high, a few yards wide, and three-fourths of a mile long. (See A on map.) It starts from a hundred foot bluff, and in a short distance slopes down to an elevation of twenty-five feet, and for the remaining distance is nearly level. On the up-river side of the ridge is an abandoned channel of comparative recency. This ridge is evidently a remnant of a large spur of upland which was gradually made narrower by the southward movement of a river bend, of which the present abandoned channel marks the southern limit. Before the spur had been entirely removed, the river straightened its course, thus forsaking the bend; and the remnant of the upland spur is this narrow ridge.

Just west of the ridge, on the other side of the river, is a gap joining the valley of the Tippecanoe with that of Moot's Creek, a tributary which empties about a mile below. (See B on map.) The floor of this gap is forty feet above the river, is nearly 200 yards wide, and is bounded on the north and south by bluffs sixty feet high. At first sight it seems that this gap was formerly the mouth of Moot's Creek; but investigation justifies