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IDAHO BUREAU OF MINES AND GEOLOGY

A. W. Fahrenwald, Director

COAL IN IDAHO

by

W. W. Staley

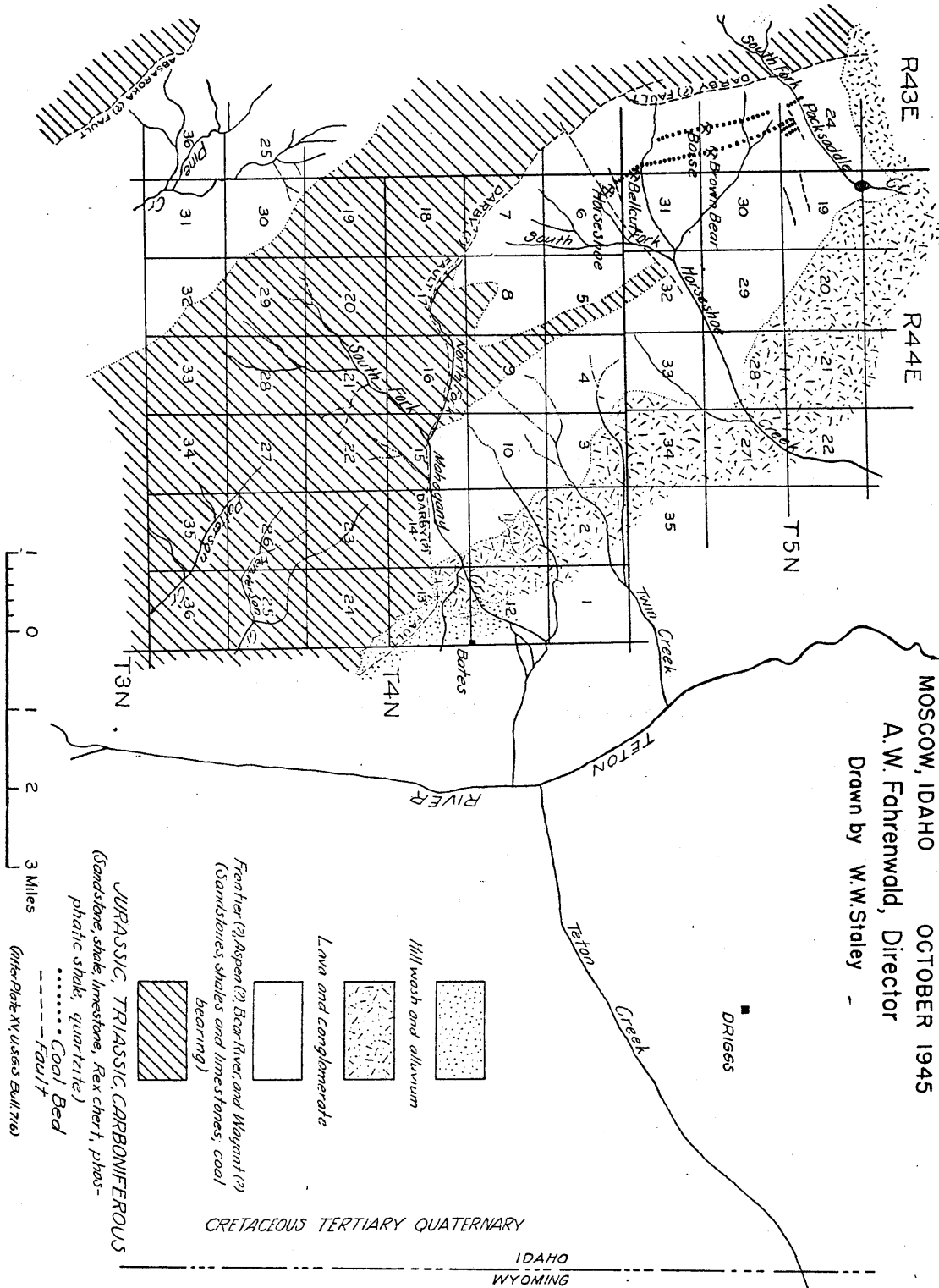
University of Idaho
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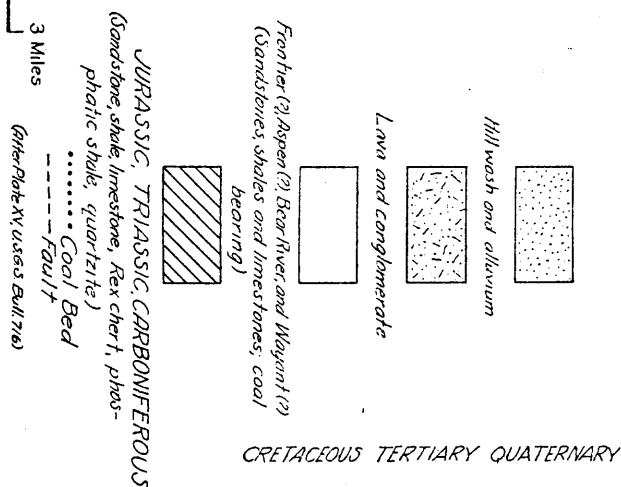
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Drawn by W. W. Staley



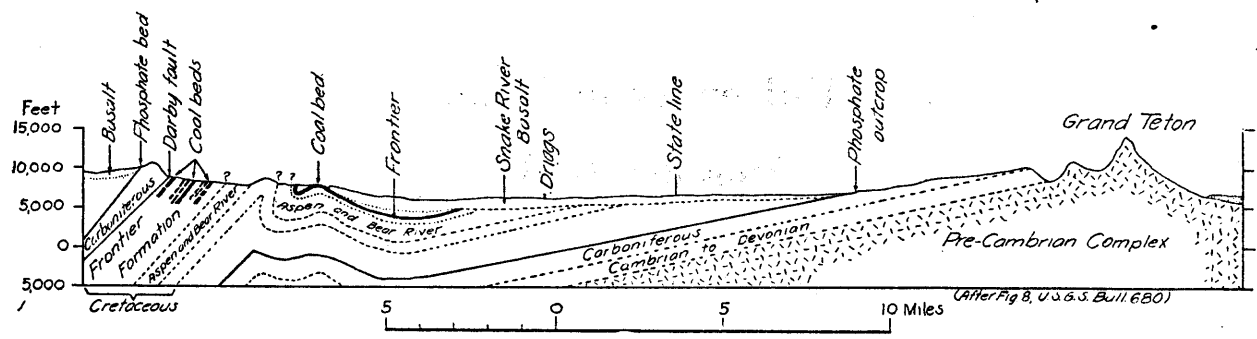
COAL DEPOSITS NEAR DRIGGS, TETON COUNTY, IDAHO

FIGURE 1



CRETACEOUS TERTIARY QUATERNARY

IDAHO
WYOMING



Section from about the Brown Bear Mine, Idaho, across Teton Basin to the Teton Mountains, Wyo.

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INTRODUCTION

With the exception of Nevada, all of the states bordering Idaho are large coal producers. This is of particular importance so far as Wyoming is concerned. The present known Idaho deposits are considered by geologists as being the same age as those at Kemmerer and Rock Springs, Wyoming. (The Frontier formation of upper Cretaceous age.)¹

In spite of the numerous references to the Idaho deposits the actual field investigations have hardly been more than of a reconnaissance nature.

The map accompanying the present report, Figure 1², shows coal bearing formations in the vicinity of Driggs. Two other areas outside the scope of this paper must be mentioned—the Willow Creek-Caribou district, about 25 miles southeast of Idaho Falls; and the Continental Divide district about 10 miles northeast of Kilgore, Clark County. Both of these areas are considered as being in the Frontier formation and have a certain amount of coal exposed.

DRIGGS AREA

The coal field west of Driggs is variously known as the St. Anthony, the Teton Basin, and the Horseshoe Basin coal field. It has been suggested that it be named the Horseshoe Basin coal field³.

The Horseshoe Basin coal field lies about 11 miles due west of Driggs. It is well into the mountains so that the topography is rather rugged. The elevation at Driggs is about 6000 feet; at the mines it is about 1000 feet higher.

The country surrounding the district is well timbered so there should be no lack of mine timber. Trackage for the railroad spur, that once connected the mines with the main line near Driggs, has been torn up. A good truck road is in the process of being constructed on the old railroad grade by the present operator (H. E. Samuels, Samuels Coal Mining Co., Driggs, Idaho.)

In spite of the rugged topography, no especial difficulties were apparent that would interfere with the development and operation of the area.

The coal beds occur in the Frontier formation, a member of the upper Cretaceous. This formation is made up of gray, buff, and yellow shales and sandstones, with coal beds. It is coal-bearing throughout western Wyoming and in eastern Idaho. In Wyoming it is the source of a very considerable tonnage of coal. The reserves there are large. In Idaho, lack of development and detailed geological field work limits our knowledge of the practical possibilities of the extension of the Wyoming field into the state.

From data given by Mr. Samuels, numerous coal beds have been identified. Some of these have been traced for as much as 2½ miles along the strike. On the northeast end of the system Henry Mikesell, of Driggs, has been mining a small amount of coal for some years. He is on land leased from the U. S. Forest Service.

The information supplied by Mr. Samuels is as follows:

Brown Bear—5 ft. thick. Considerable mining on this bed.
Progressive—9 ft. thick. Mined in 1925.
Blacksmith—5 ft. thick. Mined in 1938.
Teton—32 in. thick. Never mined.
Hillman—42 in. thick. A little work years ago.
The Unknown—3 ft. thick. Never mined.
Horseshoe—7 ft. thick. Amount of work indefinite.
Driggs—42 in. thick. A little early-day work.
Samuels—12 ft. thick. 200 tons mined in 1944.
Boise—42 in. thick. Worked in early days.

The coal is said to be low in soot; and to have a low ash and a high B. T. U. value.

During the summer of 1945 there were 4 men getting the mine in shape and a contractor working on the road.

¹Veatch, A. C., Geography and geology of a portion of southwestern Wyoming with special reference to coal and oil. U. S. Geol. Survey Prof. Paper 56, Plate III, p. 65, 1907.

Schultz, A. R., The southern part of the Rock Springs coal field, Sweetwater County, Wyoming. U. S. Geol. Survey Bull. 381, p. 226, 1908.

Schultz, A. R., A geologic reconnaissance for phosphate and coal in southwestern Idaho and western Wyoming. U. S. Geol. Survey Bull. 680, p. 28, 1918.

Mansfield, G. R., Coal in eastern Idaho. U. S. Geol. Survey Bull. 176, p. 130, 1921.

²The plan is from Mansfield, G. R., *Ibid.* Plate XV.

³Evans, C. W., Preliminary report on the Horseshoe District of the Teton Coal Basin, southeast Idaho. U. S. Bur. of Min. Bull. 166, p. 90, 1919.

A sample taken from a tunnel on the Brown Bear bed gave the following analysis (the condition of the coal, before analysis, was similar to the average coal as received by the consumer; probably best described as air-dried) :

Moisture	2.90 percent
Volatile matter (VM)	38.45 percent
Fixed carbon (FC)	55.69 percent
Ash	2.69 percent
	<hr/>
	100.00 percent
Sulfur (total)	0.50 percent
B.T.U. (Bomb calorimeter)	13,300

The above analysis checks closely those reported in the past.¹

FUTURE TONNAGE

According to Evans the following approximation may be assumed:

Horseshoe bed	4,992,000 tons
Brown Bear Bed	3,330,000 tons
Boise bed	2,912,000 tons

This gives a total of 11,000,000 tons.

To arrive at this an extension along the strike of 2 miles was assumed; along the dip $\frac{1}{2}$ mile; and a thickness of 6 ft., 4 ft., and $3\frac{1}{2}$ ft. respectively. Evans emphasized that such a tonnage has not been developed; but with the data available there is little reason to expect less than this.²

CHARACTER OF COAL

The coal of the Horseshoe Basin field is of bituminous rank. It is low in ash and sulfur. The heating value is relatively high—somewhat over 13,000 B. T. U.

Early investigators (25 years and more ago) were somewhat pessimistic because of the friability of the coal. Very careful mining was necessary to produce 30 percent in the form of lumps. Modern facilities for consuming coal does not make this such a drawback.

A large sample burned to ash gave a light colored flour-like residue.

The coal has been considered non-coking. This opinion does not check with a more recent inspection. A fair coke was obtained with very little soot on a sample taken recently from the mine.

FUTURE POSSIBILITIES

So far as the present known beds are concerned the future would seem to depend on competitive freight rates with coal from the Utah and Wyoming fields. So far as quality goes the Driggs coal is as good as that from either of those two fields. A comparison of ton-mile rates is very much to the disadvantage of the Driggs coal. This is not a fair comparison—if the rate per ton is taken, Driggs coal has the advantage. For example, town A is 300 miles from Driggs and 600 miles from B. The freight from Driggs to A is \$2.50 per ton; from B to A \$3.00 per ton. The cost per ton-mile from Driggs is $\frac{\$2.50}{300}$ equals \$0.0083 and from B, $\frac{\$3.00}{600}$ equals \$0.005. But the actual saving from Driggs is 50 cents.

Attention is called to Figure 1. The section shows a possible basin west of Driggs. If the upper part of the Frontier formation has not been eroded away, there is a good possibility of the coal beds occurring as shown by the drawing³. The strike of the synclinal axis is northwest-southeast. If the Frontier formation is present as indicated there would be a considerable coal field available. A few drill holes, at no great cost, would prove or disprove the presence of coal. As a matter of fact a well was drilled in 1903 on the old Breckenridge ranch in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 6 N., R. 44 E. A 10-ft. bed of coal is supposed to have been penetrated at a depth of 650 feet⁴. Oil was the ultimate object. The well was about 8 miles northwest of Driggs.

Several other wells about 8 miles west of Driggs have been drilled for oil and gas. Two of these did not go deep enough. The other may have been deep enough (+ 1300 feet). All three are said to have been colored in the Frontier formation. According to the section in Figure 1 they were probably too far west. Detailed logs of these wells are not available.

A comprehensive investigation of the Driggs area should be made. The present coal outcrops should be examined throughout this exposure. Especially should the possibility of a syncline west of Driggs be investigated.

While the Idaho coal fields do not begin to rank with those of neighboring states, they are natural resources which should not be neglected. A more thorough investigation may well develop a respectable tonnage.

¹Evans, C. W., Ibid. p. 97.

Mansfield, G. R., Ibid. p. 152.

Schultz, A. R., Ibid. p. 77.

²Evans, G. W., The Horseshoe Basin area of the Teton Coal Field in southeastern Idaho, Idaho Bur. of Min. and Geol. Pamphlet 10, p. 11, 1924.

³Schultz, A. R., Ibid. Fig. 8, p. 69

⁴Mansfield, G. R., Ibid p. 145. (Gives the depth as 600 ft.: the source of his information suggested the well might have been salted for coal).