

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

NOTES ON EDEN RIDGE COAL FIELD

T. 33 <sup>5</sup> N., R. 11 W., W. M., OREGON

By

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This report is preliminary and has not been  
edited or reviewed for conformity with U. S.  
Geological Survey standards and nomenclature.

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## Township Report

**INTRODUCTION**Field Work.

The field work on which this report is based was done in August and September, 1914, by C. E. Leshar, assisted by Harry Hillis acting as guide and camp hand. Because of the heavy timber and dense underbrush, stadia and triangulation methods of mapping could not be used and all results were tied in by traverses, either foot-paced or measured by 300-foot linen tape and plotted on the scale of 4" = 1 mile on a small plane table (10" x 10") on camera tripod, using compass and opensight alidade. These traverses were tied to section corners established on a new survey made just prior to the field work here described. Streams, trails, and ridges were traversed in the search for outcrops. Elevations upon which are based the accompanying topographic map were all obtained from aneroid readings carefully checked for daily variations. It is believed that the horizontal locations are considerably more accurate than the vertical. Some check on the vertical control is obtained from the Port Orford (Topographic Map, 1898) sheet, which covers the western part of the township, but this topographic map is here so far off on horizontal control that it is not considered to be a trustworthy guide for elevations.

Only part of the township was examined in detail, the main effort being directed toward examining the part containing coal, and detailed work was done in that part only.

Land Surveys.

The township was surveyed by Fred Mensch, U. S. surveyor, of Grants Pass, Oregon, with a party of seven men in the months of June and July. The work appears to have been well and accurately done.

Distance from railroad.

The township is from 20 to 27 miles from the Southern Pacific Railroad at West Fork and more than 35 miles from the southern terminus of the Coos Bay, Roseburg, & Eastern Railroad at Myrtle Point. A logging road extending south from the latter place has its present terminus at Powers in Sec. 30 (?), T. 31 S., R. 32 W., 8 miles north of this township.

Surface Features.

The main topographic feature in this township is the Coquille-Rogue River Divide crossing from the northeast to the southwest corners. This divide is about 3500 feet above Rogue River which passes through Secs. 25, 35, and 36, and approximately 2000 feet above the south fork of the Coquille which enters the township in Sec. 9 and after passing around the south end of Eden Ridge again crosses the township line in Sec. 7. On the southeast side of this divide the edges of northwestward dipping massive sandstone ledges make prominent, and for the most part impassable, cliffs over which two trails have been established, one in Secs. 27 and 34, known as the Clay Hill trail, and the other in Sec. 32, known as the Ilahé trail, both leading from the crest of the divide down to Rogue River.

Between the divide and the South Fork of Coquille River the slopes are less steep and the surface is cut by sharp canyons from 50 feet to 100 feet deep through which flow the many small branches of Boulder, Fall, Squaw, and Rock creeks. The area drained by Fall and Squaw creeks is known as Squaw basin. In the northwestern part of the township the south end of Eden Ridge breaks off abruptly in a series of sandstone cliffs such as characterize the Rogue River side of the main divide.

The area tributary to Coquille River is heavily forested with a magnificent stand of Port Orford cedar, Douglas fir, and hemlock. The timber on the south of the divide though thick is not so well developed as on the north. Underbrush is everywhere abundant.

There are no roads and no permanent inhabitants in the township except along Rogue River. Travel is confined to trails. All the township is in the Siskiyou National Forest and during the dry summer weather the Forest Service maintains a fire guard on Bald Knob in the E $\frac{1}{2}$ , Sec. 30.

## Geology

Stratigraphy

The oldest rocks exposed are of igneous origin and are exposed along Rogue River in the southeastern part of the township. Resting on the igneous rock is a series of slates, conglomerates, and shales assigned by Diller to the lower Cretaceous and called in the Port Orford folio (*U.S.G.S., 1903*) (No. 89) the Myrtle formation. Unconformable on the Myrtle is a series of sandstones, shales, coal beds, and conglomerates of fresh water origin described by Diller as the Arago formation (Eocene). Of these rocks but the upper part of the Arago is coal bearing, and but little attention was given in the field to a study of the lower part of the Eocene, the Myrtle, or the igneous rocks. The following rough section of the lower rocks was made along Rogue River south of Sec. 34 and along the Clay Hill trail in that section:

	Approximate thickness Feet
Crest of divide at Clay Hill trail	
Shales and sandstones	110
Big Falls sandstones	110
Shales, somber colored with some thin sandstone	930
Massive sandstones with thin bedded shales	300
Shales and thin sandstones poorly exposed	900
Sandstones and shales	350
Conglomerate	50
Slates, dark and indurated	500
Conglomerate, pebbles small and mainly of sedimentary rocks	100
Igneous-basic granitics	
Rogue River	

It is not certainly known whether the Myrtle is represented in the above section. Diller in *U.S.G.S.* <sup>1914</sup> Bulletin 546, <sup>1914</sup> Plate VI, shows the Cretaceous cut out by overlay of Eocene on the igneous rocks north of Rogue River. The writer is, however, inclined to correlate on lithologic grounds, the conglomerate at the base of the sedimentaries at the mouth of Clay Creek on Rogue River with that on the West Fork of Mile Creek in Sec. 30, T. 35 S., R. 10 W., which Diller agrees in calling Cretaceous. The slates above this conglomerate are considered Cretaceous also and it thus appears that at least 600 feet of Cretaceous are present between the Eocene and conglomerate on Rogue River near the south line of T. 35 N., R. 11 W. The approximate distribution of the formations named is shown on the general map of the region herewith.

The strata above the Big Falls sandstone are shown in the following section measured on the south slope of Coal Butte in the NW $\frac{1}{4}$  of NW $\frac{1}{4}$ , Sec. 33:

	Feet
Sandstone capping Coal Butte	20
Shale, possibly some sandstone	180
Sandstone, massive	90
Shale, not well exposed	40
Coal, Squaw Camp bed	6
Shale	50
Shale, carbonaceous, and bony ccal	12

A section measured in the SE $\frac{1}{4}$  of SE $\frac{1}{4}$ , Sec. 17, above the Falls sandstone is as follows:

Top, blue conglomerate.	
	Feet
Shale	55
Sandstone	90
Shale	25 ?
Sandstone	15 ?
Shale	50
Sandstone, green	6
Shale	94
Sandstone	4
Shale	71
Sandstone	6
Shale ?	95
Falls sandstone	

Three members of the Eocene were traced more or less definitely throughout the township. The Falls sandstone, the best exposures of which are at Big Falls on the Coquille River in the SE $\frac{1}{4}$  of SE $\frac{1}{4}$ , Sec. 17, and at Hanging Rock in the SE $\frac{1}{4}$ , Sec. 36, T. 33 N., R. 11 W., is composed of two massive layers of sandstone, the upper 46 feet thick and the lower 60 feet thick, separated by about 10 feet of shale in part carbonaceous. From Hanging Rock to Coal Butte this member is prominently exposed on the southeast side and near the top of the main divide. It can be traced almost continuously throughout this distance by the sheer cliffs it forms on the steep hillsides. The double ridge formed by these sandstones is plainly visible at the head of Flea Creek near the center of the NW $\frac{1}{4}$ , Sec. 32, T. 33 N., R. 11 W., where the strike abruptly changes from almost east-west to about 30° west of north. In the NW $\frac{1}{4}$  of Sec. 32, and the SW $\frac{1}{4}$  of Sec. 29, these sandstones with a dip of over 50 feet to the northeast form a sharp ridge marking the divide between the West Fork of Squaw and

Billings creeks. Near the west quarter corner of Sec. 29, the strike changes to east of north and the sandstones, dipping nearly east, cross Squaw Creek near the north line of Sec. 20 and the river just above the mouth of Fall Creek in the SE $\frac{1}{2}$  of SE $\frac{1}{4}$ , Sec. 17. Both the river and Squaw Creek fall over vertical cliffs of these sandstones. From the river the sandstone with a general north-south strike and easterly dip outcrops on the steep west slope of the south end of Eden Ridge, crossing the township line about  $\frac{1}{2}$  mile west of the northeast corner of Sec. 7, at an elevation of 500 to 600 feet above the Big Falls.

About 500 feet above the Falls sandstone is a massive conglomerate 40 feet thick and having a characteristic blue color, from which it has been designated the "blue conglomerate." A description of this conglomerate is found in *U.S.G.S. Bull. 541, 1914, p. 403*. In the brief examination of Squaw Basin in 1913 the conglomerate was not found and it was assumed that the coal beds outcropping in the south half of T. 33 S., R. 11 W., were stratigraphically below the blue conglomerate, or that if the same, there was a fault with down-throw on the south. Both assumptions were found to be incorrect by the finding in 1914 of the blue conglomerate below the coal beds in Squaw Basin.

The outcrop of the blue conglomerate is easily traced through Secs. 10, 15, 16, 17, and 7, the best exposure being on the river in the NW $\frac{1}{4}$ , Sec. 16. The best exposures of this bed in Squaw Basin are on Fall Creek in the SW $\frac{1}{2}$  of SW $\frac{1}{4}$ , Sec. 16, near the head of Fall Creek in the south half of Sec. 15, near the head of Counts Creek in the W $\frac{1}{2}$  of SW $\frac{1}{4}$ , Sec. 22, on a branch of Squaw Creek in the NE $\frac{1}{4}$ , Sec. 28, on Coal Butte in the NW $\frac{1}{4}$  of NW $\frac{1}{4}$ , Sec. 33 and the NE $\frac{1}{4}$  of NE $\frac{1}{4}$ , Sec. 32, and on a fork of Squaw Creek on the W $\frac{1}{2}$  of SE $\frac{1}{4}$ , Sec. 29. The outcrop of this conglomerate between these known locations, as shown on the accompanying map of T. 33 S., R. 11 W., has been inferred from the structure, its position above the Big Falls sandstone, and from "float" observed.

The importance of determining as nearly as possible the outcrop of the conglomerate lies in the fact that the coal bed or beds in this area are immediately above it stratigraphically, and it is the only key rock that may be positively identified in connection with the coal.

The third member that may be identified with more or less certainty is a massive sandstone above the conglomerate and separated from it by a shale bed of varying thickness. The sandstone is well exposed on the face of the Bluff on Secs. 15 and 16, in the bed and canyon of Counts Creek across Sec. 21, in the bed of the West Fork of Squaw Creek in the NE $\frac{1}{4}$ , Sec. 29, and in Coal Butte in the NE $\frac{1}{4}$ , Sec. 32, and NW $\frac{1}{4}$ , Sec. 33. Whether the sandstone exposed on the face of the Bluff is the same as that on Coal Butte is not certain, and on a determination of this point rests the correlation of the Squaw Camp coal bed in Squaw Basin and the Anderson bed in Eden Ridge. This question will be discussed later.

#### Structure

The Eocene rocks in this township are folded into a northward plunging syncline, the axis of which crosses the township in a direction nearly north and south in the east half of Secs. 8, 17, 20, 29, and 32. The amount of pitch to the north is shown by elevations on the blue conglomerate which under Coal Butte in the NE $\frac{1}{4}$  of NE $\frac{1}{4}$ , Sec. 32, is 3200 feet above sea level and at Forty Foot Falls where it crosses the river in the SE $\frac{1}{4}$  of NW $\frac{1}{4}$ , Sec. 16, is but 1950 feet above sea level, a difference in elevation of 1250 feet. The average inclination of the axis of the syncline between these points is 5°. However, the dip of the conglomerate at Coal Butte is 8° northward indicating a flattening toward the north line of the township. Data obtained in 1913 in the township to the north (T. 32 S., R. 11 W.) shows that the axis reaches its lowest point about a mile north of the township line and then rises. The elevation of the conglomerate in the SE $\frac{1}{4}$ , Sec. 20, T. 32 S., R. 11 W., is approximately 2500 feet above sea level. This syncline extends northward at least as far as T. 32 S., Rs. 9 and 10 W., a distance of more



than 25 miles from the area under consideration.

In T. 33 S., R. 11 W., the westward dips on the east flank of the syncline are gentle, averaging not over 10° to 15°, whereas in the west flank beds below the conglomerate have dips to the east and northeast as high as 53°.

#### Faults.

But one fault was observed in this township. In the 1913 report on the area (in T. 32 S., R. 11 W.), <sup>USGS BULL. 541, 1914, p. 403 and pl. 24</sup> this was described as the Little Falls fault. It occurs in the  $W_2^1$ , Sec. 9, T. 33 S., R. 11 W., but little could be learned of its extent either horizontally or vertically. The river channel apparently follows the fault line from Little Falls to Maple Camp; on the east bank at Little Falls shales are exposed in which the Anderson coal bed has been opened at water level; on the opposite side of the river a massive sandstone is exposed. It is believed that the throw of the fault is down on the west and that it is not over 75 to 100 feet, dropping the sandstone normally overlying the shales containing the Anderson bed to a position even with that bed. There is no evidence of the continuation of the fault southwest of the Meyers coal prospect opposite Maple Camp in the northeast corner of Sec. 17.

#### COAL

The location of the outcrop of the Anderson coal bed in Secs. 9 and 10, as shown on the accompanying map, has been changed, as a result of the field work in 1914, from that shown on the map of the 1913 examination. No new data were obtained in 1914 regarding the thickness and character of this coal bed. Descriptions of the measured sections numbered 13, 14, 15, and 16, will be found in the previous report. (U.S.G.S. BULL. 541, 1914, p. 405-406, pl. 25)

In the Squaw River area no new data were obtained on the thickness and character of the coal beds exposed at locations 29 and 30. (U.S.G.S. BULL. 541, 1914, p. 406, pl. 25)

The section measured at No. 31 represents the only new data obtained in 1914 on the character of the coal in Squaw Basin. Considerable development work was done in the Basin in the fall of 1913 and spring and summer of 1914, but at no place was the coal exposed other than at Nos. 29, 30, and 31. A drift was run in on the NW $\frac{1}{4}$  of Sec. 22 in an effort to reach at depth the bed exposed in the old drift at 29. This was not completed. In the SW $\frac{1}{4}$  of SW $\frac{1}{4}$ , Sec. 16, Harry Hillis drifted in on what was supposed to be the main coal bed. When examined in 1914 this drift was in 90 feet and showed only a bed of carbonaceous shale less than 2 feet thick. A long drift was run in through loose material in the N $\frac{1}{2}$  of SE $\frac{1}{4}$ , Sec. 21. Some loose pieces of coal were found in the mud taken out, but no coal or rock in place, and it appears that this work was ill advised. The location is such that nothing would have been demonstrated had rock been encountered, for the work was so directed that it would have, if continued but a short distance, pierced the hill and come out at creek level in the NE $\frac{1}{4}$  of SE $\frac{1}{4}$  of Sec. 21. Several attempts were made to find the coal bed in place in the east fork of Squaw Creek in the SW $\frac{1}{4}$  of SW $\frac{1}{4}$ , Sec. 21, on the west fork in the S $\frac{1}{2}$  of SE $\frac{1}{4}$ , Sec. 20, but the difficulty of driving drifts through soft unconsolidated material rendered the limited attempts fruitless.

The section of the coal bed exposed on the south face of Coal Butte is as follows:

Section of upper bed on Coal Butte, NW $\frac{1}{4}$  of NW $\frac{1}{4}$ , Sec. 33.  
In.

Shale.	
Bony coal	1 $\frac{1}{2}$
Shale	1
Coal	14
Soft shale	$\frac{1}{2}$
Coal	12
Bone	$\frac{1}{4}$
Sandstone	$\frac{1}{2}$
Coal	22
White clay parting	3
Coal	8 $\frac{1}{2}$
Bone	2 $\frac{1}{2}$
Coal	24
Bone	$\frac{1}{2}$
Coal	2
Coal, wet and crushed	5
Shale.	

This represents the best exposure of coal in the field, that is, in either T. 32 S., or T. 33 S. No sample was taken and no analysis of this exposure is available. In the fall of 1914 the coal claimants started to open this up but did not complete the work. The following extract from a letter from H. E. Hillis to C. E. Leshar, dated November 16, 1914, describes this work:

We ran tunnel 40 feet on Rogue River side. Coal was still weathered and checked. We are now running still farther. Think we will have to go until we get under big sandstone bluff (about 70 or 80 feet) to get unweathered coal.

#### CORRELATION AND EXTENT OF COAL BEDS.

The outcrop of a coal bed above the conglomerate is shown in the map of T. 33 S., R. 11 W., herewith. This outcrop is inferred and is based on the locations of exposure at 29, 30, and 31, "float" or broken pieces of coal in loose, unconsolidated material on creek banks and shown in numerous short drifts, and on the assumed stratigraphic position of a bed above the blue conglomerate.

This correlation of the exposures on Squaw Basin, though believed to be the most reasonable, is not certain. In making this correlation it is assumed that the heavy sandstone immediately above the blue conglomerate previously described as exposed in the bluff and along the river in the NW $\frac{1}{4}$ , Sec. 16, is the same as that overlying the conglomerate and the coal bed at Coal Butte in Secs. 32 and 33. At Coal Butte the interval between the conglomerate and this sandstone is about 150 feet. In the bluff the massive sandstone is separated from the conglomerate by from 5 to 10 feet of shale, containing a thin bed of carbonaceous shale not over 18 inches thick, well exposed in a small waterfall in the S $\frac{1}{2}$  of NW $\frac{1}{4}$ , Sec. 16.

On the basis of this correlation of beds above the conglomerate it follows that the 150 feet of strata between the conglomerate and the sandstone at Coal Butte thin to 5 or 10 feet in a distance of 2 miles or less; that the thick coal bed at 29, 30, and 31 changes to a thin bed of carbonaceous shale between location 29 and the bluff in the SW $\frac{1}{4}$ , Sec. 15, a distance of half a mile; and that the carbonaceous bed exposed in the drift in the SE $\frac{1}{4}$  of SW $\frac{1}{4}$ , Sec. 16, is the same

as the 8-foot coal bed at Coal Butte.

On a correlation of this kind, using the blue conglomerate as the key horizon, the Anderson bed of Eden Ridge is higher stratigraphically than the Squaw Camp bed, represented by a thin carbonaceous shale bed that underlies the massive sandstone below the Anderson bed on Eden Ridge. On the other hand, if the 90-foot massive sandstone above the coal bed on Coal Butte is used as the key horizon and is correlated with the 100-foot sandstone bed 10 feet above the Anderson coal bed on Eden Ridge, thereby correlating the Squaw Camp coal bed with the Anderson coal bed, it follows that the 320 feet between the conglomerate and this massive sandstone on Eden Ridge thins toward the south to 150 feet at Coal Butte and that the 100-foot sandstone overlying the blue conglomerate in the bluff section thins on going south to the Coal Butte locality to 4 feet or less in about 2 miles.

Evidence on this important point is difficult to obtain, but it can no doubt be secured by further field examination. The classification and valuation of the land in this township already promulgated is based upon the first interpretation given above.

C. E. Leshar

Associate Geologist

December, 1914.

FIGURE 1

Section 2 Squaw Camp  
Core 1 bed. ~~WE~~ WE WE 2452  
33 S 11 W Oregon.  
By O. E. Beckman

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