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COMMENTS ON THE GEOLOGIC MAPS OF THE CAMAS VALLEY AND ROSEBURG, OREGON, QUADRANGLES

Introduction

The work on these two 15-minute quadrangles was done during portions of August and September 1956 as a contribution to the State Geologic Map project. The primary purpose in mapping this area was to outline the Tertiary - pre-Tertiary contact, the nature of the contact, and to determine, if possible, the identity of the pre-Tertiary units.

My investigation was of a reconnaissance nature and mostly consisted of examining road cuts and outcrops exposed along creeks and streams. Most of the time was spent examining and checking the Tertiary - pre-Tertiary contact, especially in the Camas Valley quadrangle on which there is no published information. The contacts between the various units are shown as solid lines on the maps, but this was done only for convenience and clarity. The faults are shown as slightly wider, dashed lines. On the Roseburg quadrangle most of the contacts between the various units were taken directly from Diller's map, but were checked wherever possible as time allowed. You will note that I could find little to correct as far as the location of Diller's contacts is concerned.

Previous work

The only previous published work on this area was that done by J. S. Diller (1898) on the old Roseburg 30-minute quadrangle. In it, Diller grouped all of the pre-Tertiary sedimentary rocks into the "Myrtle formation" of probable Cretaceous age. Later, when Diller mapped the Riddle quadrangle,

which borders the south edge of the Roseburg 30-minute quadrangle, he subdivided his old "Myrtle formation" into two Jurassic units (Galice and Dothan formations) and two Cretaceous units (Knoxville and Horsetown formations).

Dole and Inlay recently studied Diller's Cretaceous Knoxville and Horsetown units, and, on the basis of lithology and fossil content, have proposed two new formational names: the Riddle formation of late Jurassic age (middle-upper Portlandian) and the Days Creek formation of early Cretaceous age (middle Valanginian - middle Hauterivian). The type localities for these formations are along the South Umpqua just upstream from Days Creek in the Days Creek quadrangle of the old Riddle 30-minute quadrangle.

Stratigraphy

The oldest rocks in the area are the serpentine and "metagabbro" (Diller) occurring as a northeast trending belt in the southeast corner of the Roseburg quadrangle. "Windows" of metagabbro" are also found in the central portion of the Roseburg quadrangle and scattered through the southeast quarter of the Canas Valley quadrangle. Lenticular bodies of amphibole schist accompany the "metagabbro" but because of minor extent were not mapped separately. Where I have examined it in this area, the "metagabbro" is actually a fine-grained siliceous greenish metavolcanic probably basaltic or andesitic in composition, and does not have the coarse-grained texture typical of what is commonly termed a "gabbro". Diller later apparently changed his mind on the nature of this unit as it is indicated as "greenstone" on the adjoining Riddle quadrangle. Later work by Wells has shown that most of "greenstones" can be correlated with the Rogue formation that separates the Galice and Dothan formations. However, Dole, who has mapped the Dutchman Butte quadrangle, believes that the "greenstones" associated with the Dothan in the northeast corner of the Dutchman Butte

quadrangle, northwest corner of the Canyonville quadrangle, and all of that occurring in the Camas Valley and Roseburg quadrangles is older than the Regue formation and lies at the base of the Dothan formation.

The general lithology of the large belt of "Myrtle formation" that passes through the central portion of the Roseburg quadrangle and extends westward for a short distance into the Camas Valley quadrangle indicates that it is all part of the upper Jurassic (Callebian) Dothan formation. The rocks are mostly highly sheared and intensely folded fine to coarse grained graywackes with minor shale and pebbly conglomerate. The upper Jurassic (upper Oxfordian - lower Kimmeridgian) Galice formation which is younger than both the Dothan formation and the Regue volcanics apparently does not crop out in either the Camas Valley or Roseburg quadrangles.

No lithologies characteristic of either the Riddle or Days Creek formations were found in these sediments. The only definite outcrops of the Riddle and Days Creek formations occur in the southeast corner of the Roseburg quadrangle in the Myrtle Creek valley and the adjacent South Umpqua valley. The general structure there is synclinal with Days Creek siltstone and shales occupying the center of the syncline and Riddle conglomerate and graywacke exposed on the flanks.

You will note that I have located on the Roseburg quadrangle some late Jurassic (Portlandian) and early Cretaceous (Valanginian-Hauterivian) fossil localities that lie within the area of the Dothan formation. These localities were originally found by Diller and his assistants during the time he was mapping in this area. Some time was spent in trying to find these localities but without success. With one or two exceptions no Mesozoic fossils have been reported from the adjacent Camas Valley quadrangle. The consensus is that most of these occurrences are: (1) remnants of younger sediments preserved in

downfolded or faulted zones within the older series, and (2) float in stream beds derived from Days Creek and Riddle deposits to the south. The occurrence of both Aucella piochii and A. crassicollis localities on the ridges in the southwestern portion of the Roseburg quadrangle shows that there is some Riddle formation and Days Creek formation present in that area. The "chopped up" nature of the rocks in that vicinity makes it impossible to draw any definite contact (see map). A. piochii have also been reported in or near the massive sandstones I have called "Umpqua" in the NW $\frac{1}{4}$ sec. 4, T. 29 S., R. 7 W., Camas Valley quadrangle, but may actually have come from the pre-Tertiary graywacke also present in that area. Imlay reports a Valanginian locality originally collected by Diller on "Olalla Creek just below Dickinsons Rocks." "Dickinsons Rocks", now called Dickerson Rocks, is the hill of Eocene Umpqua conglomerate in the SWSE sec. 16, T. 29 S., R. 7 W., Camas Valley quadrangle. The Tertiary - pre-Tertiary contact crosses Olalla Creek approximately 1 mile downstream from here. The pre-Tertiary along Olalla Creek is composed of fine to coarse grained graywacke sandstone and pebble conglomerate. One outcrop in NWSE sec. 8, T. 29 S., R. 7 W. is a fine-grained, well indurated greenish sandstone that may perhaps be a small sliver of Days Creek formation, but no fossils were seen in it.

Probably the oldest Tertiary rock in the Roseburg-Camas Valley area is the basalt unit called "Diabase" by Diller. This unit is very extensive throughout much of the Roseburg quadrangle north of the Tertiary - pre-Tertiary contact, but pinches out westward a short distance into the Camas Valley quadrangle (see map). One of the most distinguishing characteristics of the basalt is the pillow structure locally developed in it indicating much of it flowed out under water. The rock is typically dark gray to black and fine grained. The pillows are usually rimmed with palagonite. The exact age of the basalt cannot be determined, however it has been reported (oil geologists - verbal) that foraminifera of lowermost Eocene (Meganos) age have been found in shales and siltstones supposedly interbedded with the lavas.

There is a marked angular unconformity between the Tertiary and pre-Tertiary rocks in this area and in addition they are often in fault contact with each other. It is interesting to note also that the contact between the Eocene basalt and the younger Umpqua formation is a fault contact wherever it is well enough exposed to reveal the true relationship.

The thickest section of Tertiary sedimentary rocks present in this area are the massive marine sandstones, conglomerates and rhythmically bedded siltstones and shales of the middle Eocene Umpqua formation. This formation, one of the most widespread in southwestern Oregon, can be traced from the foothills of the Western Cascades westward to the coast. In the Camas Valley quadrangle where it is the most widely exposed, the formation can be divided into at least three and perhaps four distinct members. The lowermost is a light-colored medium to coarse grained, massive, fairly friable, fairly well sorted arkosic sandstone. It usually contains a minor amount of biotite which tends to give it a "speckled" appearance. Typical exposures of this sandstone can be seen in the hill in the $SE\frac{1}{4}$ sec. 27, T. 28 S., R. 7 W.

The massive conglomerates of the Umpqua formation probably overlies the massive sandstone described above, but the two were not seen in actual contact. The conglomerate is usually poorly sorted with well rounded cobbles ranging up to as much as one foot in longest dimension. They are predominantly gray-wackes and metavolcanics with subordinate chert, quartzite, schist, and ultrabasics. Typical exposures of Umpqua conglomerate can be seen on Alexander Butte in $NE\frac{1}{4}$ sec. 23, T. 28 S., R. 7 W., and on ^{Bushnell} Dickinson Rocks ~~(*)~~ in $NE\frac{1}{4}$ sec. 24, T. 28 S., R. 8 W.

Probably the most typical lithofacies of the Umpqua formation is the rhythmically bedded siltstones and shales that overlies the massive conglomerate. This member is certainly the thickest of those within the formation and appears

to overlie the conglomerate conformably, although there is probably a slight erosional break between the two. It is from this unit that most of the fossils from the Umpqua formation have been obtained. A foraminiferal collection was taken from some dark gray Umpqua shales in Ten Mile Creek, in the NW-SW sec. 27, T. 28 S., R. 7 W. The shale crops out a few hundred feet west of a strong fault some marking the contact in this area between Dothan graywacke and associated metatoolites and the Umpqua formation. According to R. E. Stewart, based on a preliminary examination, the fauna is equivalent to the middle part of the Glilde Umpqua section at the Glilde fossil locality on the North Umpqua River, approximately 27 miles to the northeast. The age of these beds is therefore of probably middle Eocene age. Beds of this characteristic lithology can be traced ^{17 to} from the Arlanf quadrangle northeast of the Roseburg quadrangle and can also be seen west of this area along the Middle Fork of the Coquille River. It is well exposed in this area along State Highway 42 between Ten Mile Creek and Camas Valley.

The rhythmically bedded member of the Umpqua formation appears to grade upward into a more massive greenish claystone or siltstone. The unit is fairly soft and readily weathers down into subdued slopes. It is best exposed at the base of the Tyee escarpment that crosses the Camas Valley quadrangle from the northeast corner to the southwest corner.

Overlying the Umpqua formation is a series of massive, micaceous, fairly well indurated, fairly well sorted sandstones with subordinate interbeds of siltstone of probable upper Eocene age belonging to the Tyee formation. This series of rocks occupies the entire northwest half of the Camas Valley quadrangle. The contact between the fairly soft claystones and siltstones of the Umpqua formation and the relatively hard sandstones of the Tyee formation is well marked by an erosional escarpment several hundred feet high crossing the Camas Valley quadrangle in a northeast-southwest direction as noted above. The nature of

the contact, at least where I had an opportunity to examine it, appears to be gradational, although Diller shows the two to be in fault contact with each other. The apparent gradational relationship is well exposed along a logging road down the steep face of the escarpment in the center $N\frac{1}{2}$ sec. 19, T. 27 S., R. 7 W. Within a vertical distance of approximately 50 feet the lithology passes upward from a greenish shale to a micaceous sandstone with interbeds of greenish shale to a predominantly massive micaceous sandstone. The attitude of these beds appears to be the same although it is difficult to make any accurate reading because of the large amount of slumping along the face of the escarpment.

Structure

All of the pre-Tertiary formations show evidence of great deformation by their intense folding and shearing along a general northeast-southwest trending belt. The contacts between the various units appear to be faulted although direct evidence in the field was difficult to obtain. The highly disturbed and slickensided serpentine belt lying between the metavolcanics and the Riddle conglomerate almost certainly shows that the serpentine occupies a large fault zone. This same relationship is well illustrated in the Dutchman Butte quadrangle to the southwest where the Riddle formation is separated from Dothan sediments and volcanics by long narrow belts of serpentine which also appear to be in fault zones. The presence of Dothan graywackes as relatively thin lenses in the greenstone and serpentine indicate in-faulted "slivers" of younger material in older. Examination of these lenses showed the Dothan formation to be even more "chewed up" than usual and in some instances even to have undergone some low grade metamorphism which gave the sediments a semi-schistose texture. This deformation is to be expected as the graywackes, conglomerates, chert and volcanics of the pre-Tertiary units are typical of those associated

with unstable eugeosynclinal deposits. This area lies in the zone between the older Mesozoic Klamath Highlands to the south and the younger Tertiary marine basin to the north and has probably been an active orogenic area for a considerable period of geologic time. Highly compressive forces appear to have persisted into early Tertiary time as is indicated by the nature of the contact between the Tertiary and pre-Tertiary units. Wherever the contact was well exposed, the two were shown almost invariably to be in fault contact with each other. This was also true with regard to the relationship of the lower Eocene basalt to the middle Eocene Umpqua formation. The faults in the Tertiary units appear to die out northward in the Sutherlin and Anlauf quadrangles where they are represented as northeast trending folds in the Umpqua and younger Tertiary formations.

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