Art. XXXIII.—*Notes on Radiolarian Cherts in Oregon;* by Warren D. Smith.

The age of certain cherts found in our West Coast stratigraphy has long been a matter of conjecture. Diller described occurrences of these in both the Port Orford Folio (U. S. G. S.) and that for Roseburg and assigned provisionally the rocks to the Cretaceous. No genera or species were given, as far as I know, nor were any very definite field relations mentioned, on account of the unsatisfactory nature of the exposures.

During the summer of 1915, the writer was in the field for the Oregon Bureau of Geology and Mines investigating some problems connected with the stratigraphy of the Cascades, during the course of which he obtained some data relative to these cherts which may be of interest now and are here given with the permission of the Director of that Bureau.

In the cow pasture back of Mr. Engles' house at Peel P. O., about 25 miles east of Roseburg on the Little River, a branch of the Umpqua, there is an almost hopeless mixture of rocks, hornblende schists with small patches of these cherts inclosed by them.

At the time of the writer's visit to Peel, he was fortunate in being able to see these outcrops after some excavating had been done for road metal. The value of this for road surfacing is due doubtless to the combination of the chert and the iron, for they are ferruginous at this place. An examination of the outcrops as opened up by them showed the stratification lines very plainly. The strike was found to be N. 8° E. and the dip 70°–90°. The direction of the dip varies, in places being to the N.W., and a few feet away, about the same amount in the opposite direction. About a quarter of a mile farther up the Little River, Eocene sandstone and shales were found dipping about 20° to the east (as already noted by Diller), so that if these beds do not reverse their direction of dip in the intervening distance (no outcrops visible to determine this) they would come far above these chert beds and there would be a marked angular unconformity between them.

Thin sections of these cherts were made which showed species of the following genera of radiolaria: Cenosphæra, Dictyomitra and Spongodiscus. In most cases, however, only small round areas filled with cryptocrystalline silica showed where the tests had been.

Identical forms have been found by the writer* in material lithologically similar and in about the same stratigraphic posi-

* Smith, W. D., Philippine Jour. Science, vol. v, No. 5, p. 327.

tions in the Philippine Islands. Not only do we find the same sort of formation in those islands, but in Borneo,* Java, Molluccas, Ceram,† etc.

Both Martin and Hinde have assigned these cherts to the Jurassic or Triassic and, following them, the writer has done the same in the Philippines. The radiolarian-bearing rocks of Roti and Savu (D. E. I.) are associated with beds of limestone containing Halobias and Daonellas. The cherts, as described, are strikingly similar lithologically to our West Coast rocks of this character.‡ We are nevertheless well aware that fossil radiolaria are far from being satisfactory index fossils.

These notes are here given in the hope that they will throw some light on this part of West Coast stratigraphy. To one who has dealt with geological problems on both sides of the Pacific, there is a remarkable similarity in the stratigraphic columns of the two.

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* Hinde, App. I, 9, Molengraaf's Borneo, 1902.
† Marten, K., Reisen in den Molukken, Leiden, p. 164, 1902.
‡ Hinde, Radiolarian rocks, etc. Jaerboek van het Mijnwesen in Nederl. Oost-Indie, xxxvii, 1, 2, 1908.