

nous class. Still higher in the series, the strata abound in Dicotyledonous leaves, closely allied to those of the Dakota series of the United States geologists.

It is proposed to name the older series the KOOTANIE SERIES, after a tribe of Indians who hunted in the country in which it occurs. The upper series may be named, after a typical locality, the MILL CREEK SERIES, and the plants occurring between these two horizons may be termed for the present those of the INTERMEDIATE SERIES. There is good reason to believe that the Mill Creek series is somewhat older than that named in my former paper the Dunvegan group of Peace River.

Dr. G. M. Dawson has furnished the following notes as to what is known of the stratigraphy and distribution of these several groups of strata:—

"Where the Rocky Mountains are intersected by the forty-ninth parallel they form a compact range, entirely composed of Palaeozoic rocks, from their base at the eastern foothills to the great Kootanie-Columbia valley on the west.¹ About thirty miles further north, however, important masses of Lower Cretaceous or Jurasso-Cretaceous rocks become involved in the flexures of the older series, upon which they rest with more or less angular unconformity. These rocks also hold, at several stages, conglomerates composed of the underlying series which probably stood out in insular masses in many places. The Cretaceous rocks generally appear to occupy synclinals, which are either simple and narrow, or several miles in width, and hold a number of parallel, more or less closely compressed, folds, which in several cases have been observed to be overturned to the east or north-east. Similar sharp parallel folding occurs in the foot-hill country, which forms a belt along the eastern base of the range; and though, owing to the amount of disturbances, it has hitherto been found impossible to work out the structure in detail, it is probable that sections will ultimately be obtained embracing the entire thickness of the Cretaceous formation, together with a portion of the Laramie. In the region of the great plains, north of the forty-ninth parallel, none of the Cretaceous rocks yet known can be assigned to a position lower than that of the Benton group, and to the south and south-east, in the western states and territories, the basal beds of the Cretaceous, wherever exposed, are of the age of the Dakota group. In connection with the folding above described, however, while some beds probably referable to the Dakota period have been recognized by their fossils, there is evidence of the existence of a much earlier stage of the Cretaceous, which it is proposed to designate locally as the Kootanie series. These rocks consist largely of sandstones, interbedded with shales and shaly sandstones, and including occasional beds of conglomerate; and a zone containing coal seams, which are sometimes of considerable thickness, is represented at a number of different localities. While it is evident on stratigraphical grounds that the position of these beds is far down in the thick series of Cretaceous rocks here represented, no fossils have yet been obtained from them save the plants described in this paper, and on these alone their reference to any particular horizon in the Cretaceous must rest.

"The localities from which plants of this stage have already been collected are scattered over a considerable area north of the forty-ninth parallel and south of Bow River, the length of which may be stated as about 140 miles, with an extreme breadth of

¹There are, it is true, in several places, comparatively small areas of red rocks, believed to be Triassic, but these are conformable with the Devonian-Carboniferous limestone series beneath.