

that of the Laramie, which at present is held by Cope and others, on the evidence of its animal fossils, to be Cretaceous, while by Lesquereux its flora is regarded as Eocene. On this question I may remark that as far back as 1875, (when my attention was first called to the flora of this group, by the collections made by Dr. G. M. Dawson in his explorations on the 49th parallel,) I held, on the evidence of the plants, though contrary to what I then believed and still believe to be inaccurate conclusions of certain European paleobotanists, that it should be regarded as a transition group connecting the Cretaceous and the Eocene, and at the same time I stated reasons for believing that the so-called Miocene of Mackenzie River, and of the Fort Union group in the United States, was probably of the same age. I have since that time seen no reason to change my opinion, but on the contrary have found evidence to show that the Laramie flora, or several of its species, may be traced downward into the Cretaceous as far as the beds known as the Pierre group of the geologists of the United States, and those called the Belly River group by the officers of the Geological Survey of Canada. I have been pleased to observe that in Vol. VIII of the Reports of the U. S. Geological Survey of the Territories (1883), Lesquereux now admits that the Laramie is Lower Eocene; and I have no doubt that, as the evidence accumulates, he will come over to the opinion that its flora is really that of the newest Cretaceous; as it has long been held to be in the Canadian territory. It is to be observed, however, that this will carry with it important modifications of opinion as to the Cretaceous and Tertiary floras of the whole northern hemisphere,—points to which I am glad to see that Mr. Starkie Gardner has recently called attention in Great Britain, and to which I shall refer in the sequel of this paper.

I shall now proceed to describe the new plants which have been obtained from the Kootanie and Mill Creek series and the intermediate beds, and to discuss their relations to those elsewhere known in the Mesozoic and Tertiary. With reference to the generic names assigned to these plants, I would desire it to be understood that they are intended to indicate, in the case of leaves, more especially, their resemblance to modern genera, but without any dogmatic assertion as to precise affinities. Many dicotyledonous leaves of the Cretaceous might be referred with almost equal probability to several modern genera, and since we know that, in modern times, certain genera present in their different species modifications of foliage more or less imitative of those of other groups, we may well hesitate in affirming that a particular type of leaf was, in Cretaceous times, associated with precisely the same kind of fructification as that which accompanies it in modern times. At the same time it is well known that many kinds of foliage, especially in the case of trees, are markedly characteristic of particular groups; and, since we cannot fairly conclude that the connection of a certain type of leaf with a certain structure of stem and character of fruit is an accident, but must believe that it depends on some law of physiological correlation, we have good reason to rely on this when other evidence is absent. I may state, however, as the result of my experience in many cases, that the conclusions deduced from the leaves have often been confirmed, by the subsequent discovery in association with them of the tissues of their stems, and of the forms of their fruits. It is also to be observed that, plants afford indications of climate and other physical conditions, even more trustworthy than those which can be obtained from animal fossils. From a geological point of view it is to be observed, that while the names assigned to particular leaves may be disputable, the occurrence of the leaves themselves in certain strata over wide areas affords