

selves indicate. A condition for example of the Atlantic basin in which the high land of Greenland should be reduced in elevation and at the same time the northern inlets of the Atlantic closed against the invasion of Arctic ice, would at once restore climatic conditions allowing of the growth of a temperate flora in Greenland. As Dr. Brown has shown,¹ and as I have elsewhere argued, the absence of light in the Arctic winter is no disadvantage, since, during the winter, the growth of deciduous trees is in any case suspended, while the constant continuance of light in the summer is, on the contrary, a very great stimulus and advantage.

It is a remarkable phenomenon in the history of genera of plants in the later Mesozoic and Tertiary, that the older genera appear at once in a great number of specific types, which become reduced as well as limited in range down to the modern. This is no doubt connected with the greater differentiation of local conditions in the modern; but it indicates also a law of rapid multiplication of species in the early life of genera. The distribution of the species of *Salisburya*, *Sequoia*, *Platanus*, *Sassafras*, *Liriodendron*, *Magnolia*, and many other genera, affords remarkable proofs of this.

Gray, Saporta, Heer, Newberry, Lesquereux and Starkie Gardner, have all ably discussed these points; but the continual increase of our knowledge of the several floras, and the removal of error as to the dates of their appearance must greatly conduce to clearer and more definite ideas. In particular, the prevailing opinion that the Miocene was the period of the greatest extension of warmth and of a temperate flora into the Arctic, must be abandoned in favour of the later Cretaceous and Eocene; and if I mistake not, this will be found to accord better with the evidence of general geology and of animal fossils.

NOTE.—While this memoir was passing through the press, the Report of Mr. Whiteaves, F. G. S., Paleontologist to the Canadian Survey, on the invertebrate fossils of the Laramie and Cretaceous of the Bow and Belly River districts appeared. (Contributions to Canadian Paleontology, Vol. i. Part 1, 89 pages and eleven plates). This valuable Report constitutes an independent testimony, based on animal fossils, to the age of the beds in question, and accords in the main very closely with the conclusions above derived from fossil plants. Unfortunately, however, no animal remains have yet been found in the Kodanic series, and the only fossil recorded from the Mill Creek beds is a species of *Inoceramus*, characteristic in the United States of the Niobrara and Benton groups, a position a little higher than that deduced from the plants.

¹ Florida Discoana.