

exaggerated by extreme glacialists, and while it is certain that some vegetation, and this not altogether of Arctic types, continued to exist throughout this period, even in the now temperate regions of our continents, it is evident that a great reduction of the exuberance of the flora occurred by the removal of many species, and that the present flora of the northern hemisphere is inferior in variety and magnificence to that of the Middle Tertiary, just as it is found that the Mammalian fauna of our continents has since that time been reduced both in the number and magnitude of its species.

If the reader has followed this general sketch, he will be prepared to appreciate some examples of a more detailed character relating to the floras of different periods, and some discussions of general points relating to the genesis and vicissitudes of the vegetable kingdom.

The origination of the more important floras which have occupied the northern hemisphere in geological times, not, as one might at first sight suppose, in the sunny climates of the South, but under the arctic skies, is a fact long known or suspected. It is proved by the occurrence of fossil plants in Greenland, in Spitzbergen, and in Grinnell Land, under circumstances which show that these were their primal homes. The fact bristles with physical difficulties, yet is fertile of the most interesting theoretical deductions, to reach which we may well be content to wade through some intricate questions. Though not at all a new fact, its full significance seems only recently to have dawned on the minds of geologists, and within recent years it has produced a number of memoirs and addresses to learned societies, besides many less formal notices.<sup>1</sup>

<sup>1</sup> Saporata, "Ancienne Vegetation Polaire"; Hooker, Presidential Address to Royal Society, 1878; Thistleton Dyer, "Lecture on Plant Distribution"; Mr. Starkie Gardner, Letters in *Nature*, 1878, etc. The basis of most of these brochures is to be found in Heer's "Flora Fossilis Arctica."