

with corals, of which we know no less than 150 species, and with other forms of life appropriate to warm seas. On the islands and coasts of this sea was introduced the Erian flora, appearing first in the north, and with that vitality and colonizing power of which, as Hooker has well shown, the Scandinavian flora is the best modern type, spreading itself to the south.¹ A very similar distribution of land and water in the Cretaceous age gave a warm and equable climate in those portions of North America not submerged, and coincided with the appearance of the multitude of broad-leaved trees of modern types which appeared in the early and middle Cretaceous, and prepared the way for the mammalian life of the Eocene.

We have in America ancient periods of cold as well as of warmth. I have elsewhere referred to the boulder conglomerates of the Huronian, of the early Lower Silurian, and of the Millstone-grit period of the Carboniferous; but I have not ventured to affirm that either of these periods was comparable in its cold with the later glacial age, still less with that imaginary age of continental glaciation assumed by the more extreme theorists. We know that these ancient conglomerates were produced by floating ice, and this at periods when in areas not very remote temperate floras and faunas could flourish. The glacial periods of our old continent occurred in times when the surface of the submerged land was opened up to the northern currents drifting over it mud and sand and stones, and rendering nugatory, in so far at least as the bottom of the sea was concerned, the effects of the superficial warm streams. Some of these beds are also peculiar to the eastern margin of the continent, and indicate ice-drift along the Atlantic coast much as at present, while conditions of greater warmth existed in the interior. Even in the more recent glacial age, while the mountains were covered with snow and the lowlands submerged under a sea laden with ice, there were interior tracts in somewhat high latitudes of America in which hardy forest-trees and herbage plants flourished abundantly, and these were by no means exceptional "interglacial" periods.² Thus we can prove that

¹ As I have elsewhere shown, a warm climate in an arctic region seems to have afforded the necessary conditions for the great colonizing floras of all geological periods.

² "Notes on the Post-Pliocene of Canada."