

clays of similar origin in the basin of the great lakes and in the West, and are not Arctic plants, but members of the North Temperate flora.<sup>1</sup> These have been called "interglacial," but there is no evidence to prove that they are not truly glacial. Thus, while the arctic flora must have continued to exist within the Arctic circle in the Glacial age, we have evidence that those of the cold temperate and subarctic zones continued to exist pretty far north. At the same time the warm temperate flora would be driven to the south, except where sustained in insular spots warmed by the equatorial currents. It would return northward on the re-elevation of the land and the return of warmth.

If, however, our modern flora is thus one that has returned from the south, this would account for its poverty in species as compared with those of the early Tertiary. Groups of plants descending from the north have been rich and varied. Returning from the south they are like the shattered remains of a beaten army. This, at least, has been the case with such retreating floras as those of the Lower Carboniferous, the Permian, and the Jurassic, and possibly that of the Lower Eocene of Europe.

The question of the supply of light to an Arctic flora is much less difficult than some have imagined. The long summer day is in this respect a good substitute for a longer season of growth, while a copious covering of winter snow not only protects evergreen plants from those sudden alternations of temperature which are more destructive than intense frost, and prevents the frost from penetrating to their roots, but by the ammonia which it absorbs preserves their greenness. According to Dr. Brown, the Danish ladies of Disco long ago solved this problem.<sup>2</sup> He informs us that they cultivate in

<sup>1</sup> Pleistocene Plants of Canada, Dawson and Penhallow, *Bull. Geol. Socy.*, America, 1890. In Europe the Arctic flora extended, relatively to present climate, farther south.

<sup>2</sup> *Florula Discoana*, Botanical Society of Edinburgh, 1868.