

throughout a great part of Europe in the miocene period, and is very closely allied to the living *Sequoia sempervirens* of California. The same plant has been found fossil by Sir John Richardson within the arctic circle, far to the west on the Mackenzie River, near the entrance of Bear River, also by some Danish naturalists in Iceland to the east. The Icelandic surturbrand, or lignite, of this age has also yielded a rich harvest of plants, more than thirty-one of them, according to Steenstrup and Heer, in a good state of preservation, and no less than fifteen specifically identical with miocene plants of Europe. Thirteen of the number are arborescent; and amongst others is a tulip-tree (*Liriodendron*), with its fruit and characteristic leaves, a plane (*Platanus*), a walnut, and a vine, affording unmistakable evidence of a climate in the parallel of the arctic circle which precludes the supposition of glaciers then existing in the neighbourhood, still less any general crust of continental ice, like that of Greenland.\*

As the older pliocene flora of the tertiary strata of Italy, like the shells of the coralline crag, before adverted to, p. 210, indicate a temperature milder than that now prevailing in Europe, though not so warm as that of the upper miocene period, it is probable that the accumulation of snow and glaciers on the mountains and valleys of Greenland did not begin till after the commencement of the pliocene period, and may not have reached its maximum until the close of that period.

Norway and Sweden appear to have passed through all the successive phases of glaciation which Greenland has experienced, and others which that country will one day undergo, if the climate which it formerly enjoyed should ever be restored to it. There must have been first a period of separate glaciers in Scandinavia, then a Greenlandic state of continental ice, and thirdly, when that diminished, a second period of enormous

\* Heer, *Recherches sur la Végétation du Pays tertiaire*, &c., 1861, p. 178.