

fossil plants that changes of this kind have occurred so great as, on the one hand, to permit the plants of warm temperate regions to exist within the Arctic Circle ; and, on the other, to drive these plants into the tropics and to replace them by Arctic forms. It is evident also that in those periods when the continental areas were largely submerged, there might be an excessive amount of moisture in the atmosphere, greatly modifying the climate, in so far as plants are concerned.

Let us now consider the history of the vegetable kingdom as indicated in the few notes in the right-hand column of the table.

The most general subdivision of plants is into the two great series of Cryptogams, or those which have no manifest flowers, and produce minute spores instead of seeds ; and Phænogams, or those which possess flowers and produce seeds containing an embryo of the future plant.

The Cryptogams may be subdivided into the following three groups :

1. *Thallogens*, cellular plants not distinctly distinguishable into stem and leaf. These are the Fungi, the Lichens, and the Algæ, or sea-weeds.

2. *Anogens*, having stem and foliage, but wholly cellular. These are the Mosses and Liverworts.

3. *Acrogens*, which have long tubular fibres as well as cells in their composition, and thus have the capacity of attaining a more considerable magnitude. These are the Ferns (*Filices*), the Mare's-tails (*Equisetaceæ*), and the Club-mosses (*Lycopodiaceæ*), and a curious little group of aquatic plants called Rhizocarps (*Rhizocarpeæ*).

The Phænogams are all vascular, but they differ much in the simplicity or complexity of their flowers or seeds. On this ground they admit of a twofold division :

1. *Gymnosperms*, or those which bear naked seeds not enclosed in fruits. They are the Pines and their allies, and the Cycads.