

surname, comes first. Family names mostly end in the termination—*aceae*. Families in their turn are grouped into still larger subdivisions of the vegetable kingdom.

A popular arrangement of the vegetable kingdom is that which divides all plant forms into phanerogams or cryptogams, the former being characterized by the possession of seeds, while the cryptogams have no seeds, but are propagated by minute or microscopic bodies known as spores.

Phanerogams.—The phanerogams are divided into: (1) gymnosperms in which the seeds, instead of occurring in a closed receptacle, are found without any covering or merely placed between the scales of the cone; and (2) angiosperms in which the seeds are contained in a closed structure which later becomes the fruit. The gymnosperms, moreover, are all shrubs or trees, while the majority of angiosperms are herbaceous. The latter group is further subdivided into monocotyledons and dicotyledons. In the monocotyledons the leaves are usually much longer than broad, with parallel veins, and the vast majority of the group are herbaceous, while the dicotyledons have net-veined leaves and a considerable number of species are shrubs or trees. Further subdivisions of these groups carry the classification down to families, genera, and species.

Cryptogams.—The cryptogams, according to popular rather than strictly scientific usage, may be considered as consisting of six groups: vascular cryptogams, mosses, liverworts, lichens, fungi, and algæ. The vascular cryptogams have a lignified or woody supporting tissue which serves at the same time to conduct the sap. In common with the two next lower groups—the mosses and liverworts—they exhibit in their life-history an "alternation of generations", that is, a sexual followed by an asexual generation. The mature plant in the vascular cryptogams is the asexual stage. This group has three leading subdivisions—the ferns, horse-tails (*Equisetum*), and club-mosses (*Lycopodium*, etc.).

In the mosses and liverworts the mature plant is the sexual generation. They are generally lowly plants occurring mostly on damp soil or in shady places. Lignified or woody tissue is almost entirely absent. The mosses are leafy plants with only a single mid-vein in the leaf except in the genus *Sphagnum* which has none. In the liverworts two types occur, namely: (1) the thalloid type in which there is no differentiation into stem and leaf, and (2) the leafy type in which the leaves occur in two rows on the stem and are devoid of a mid-vein.

The lichens are a combination of the two lowest groups of plants and consist of a fungus and an alga living together for their mutual benefit. They are mostly greyish in colour but sometimes orange, sometimes black. They occur on rocks, or the bark of trees, or sometimes on the surface of the ground and exhibit three leading forms—the crustaceous, the foliose or leafy, and the fruticose or shrub-like.

The most characteristic feature of fungi is the absence of the green colouring matter (chlorophyll) so characteristic of most groups of plants. In consequence they are not truly self-supporting but must derive their food materials from the decaying remains of other plants or animals, in which case they are known as saprophytes, or else they attach themselves to the bodies of other plants (rarely animals) as parasites, the plant attacked being known as the host. There are three main groups of fungi, namely, *Phycomycetes*, *Ascomycetes* (including such forms as blue mould and morels), and *Basidiomycetes* (including mushrooms, polypores, puffballs, etc.). Under the last group are usually included the rusts (*Uredineae*), while the *Pyrenomycetes* are a sub-group of *Ascomycetes*. Two other groups of