their number or complexity, vascular plants may be divided into the following classes, and each class contains distinct families :—

1. Without perfect flowers, the organs of fructification concealed (*cryptogamia*). To this class belong, in the fossil state, gigantic ferns, equisetum (*horse tail*), and other plants allied to ferns.
2. With flowers, the seeds naked or without capsules. To this class belong the families cycadeæ and coniferæ, or firs. This class is denominated phanerogamia gymnospermous.
3. Flowering plants with one cotyledon : phanerogamia monocotyledonous. It comprises water-lilies, palms, lilies, and canes.
4. Flowering plants with two cotyledons ; this comprises all forest trees and shrubs : Phanerogamia dicotyledonous.

None of the families of plants but those in the last class have the true woody structure, or produce perfect wood, except the coniferæ or firs, &c. ; but the wood of these differs from true dicotyledonous wood.

In tracing the distribution of vegetables through the different classes of rock, we shall find only the lowest or simplest forms of organization, in the most ancient formation.

1. Transition slate contains, occasionally, impressions of algæ or sea weed ; but, considering the frail texture of the cellular plants, we cannot expect the forms to be well or abundantly preserved in rocks, which have probably been subjected to heat and various disturbing agents. A few fronds or leaves of ferns have been found in some rocks of this class.
2. Coal-measures abound in vegetable remains of the first or lowest class of vascular plants. Gigantic ferns, large equisetums (horse tail), and lycopodia are of frequent occurrence. Palms and canes are more rare.
3. The secondary strata are, principally, marine formations ; but the beds of sandstone and clay frequently contain vegetable remains of plants of the second class (ferns and lycopodia, &c.), but of different species to those found in the regular coal measures. In part of this series, occur fossil remains of the third class, coniferæ and cycadeæ. In the marine strata, are occasionally found broken fossil stems, but the vegetable fossil remains, appropriate to them, are of algæ or sea weed. Plants of the fourth class sometimes occur in the upper secondary strata.
4. Tertiary strata contain fossil plants of the more perfect classes, which are rarely, if ever, found in the secondary strata. Some of the most recent tertiary beds contain remains of trees analogous to what now flourish in Europe.

The above brief outline may be taken, as a near approximation, to the distribution of the different classes of fossil vegetables. The instances of trees or plants of the highest class found in coal are doubtful ; for stems of large lycopodia, divided into two branches