

### **Principle of Classification of Plants:**

Diverse forms of plants, ranging from the smallest bacteria to the gigantic forest trees, exist on the earth. They are not only numerous but varied in nature. It has been mentioned that 340,000 plants have been identified, described and named by the botanists.

The number is increasing, as newer ones are being discovered. Quite a large number of them possibly still remain unknown. The main object of systematic botany is to bring about an orderly system out of chaos by classifying the plants into groups, on the basis of their relationship.

Even the early Greek naturalists devised classifications. They used as their bases arbitrary characters like utility, habit, etc. So their systems were artificial. The present system of classification began with Carolus Linnaeus, the famous Swedish botanist of the 18th century, who was referred to as the ‘father of classification’.

He classified plants into groups on the basis of reproductive or sexual characters, particularly on the characters of the stamens.

This classification was also artificial, as it was based on one character. It can be compared to the arranging of books in a library in alphabetic order of the names of authors, disregarding altogether the subject matters.

In the nineteenth century George Bentham and Joseph Hooker introduced a natural system based on a number of characters and attempted to trace the ‘blood relationship’ amongst the plants through common descent. Though other systems have since then been suggested, Bentham and Hooker’s classification is widely accepted in our country and is followed in the herbaria.

According to this system, the plant kingdom is divided broadly into two sub-kingdoms: Cryptogamia or flowerless plants and Phanerogamia or Spermatophyta, or the flowering plants.

Flowerless plants reproduce by simple fission or by minute, usually unicellular spores; and the flowering ones reproduce by seeds containing multicellular embryo. Cryptogamia, again, are divided into three classes, viz. thallophyta, bryophyte and pteridophyta. Thallophyta include

the lowest plants. The plant body of a thallophytes an undifferentiated mass of cells called thallus.

The green aquatic thallophytes like pond-scum, sea-weeds are called algae; and the non-green ones like moulds and mushrooms are fungi. Bryophytes like mosses may have small stems and simple leaves but not true roots.

Hairy bodies called rhizoids, carry on the functions of roots. They always lack in vascular tissues, and usually live in moist situations. Some bryophytes have thalloid bodies with rhizoids to fix them on the substrata. Pteridophytes are the highest cryptogams.

They are primarily land plants with the plant bodies well-differentiated into roots, stems, and leaves which flourish well in moist and shady places. They possess distinct vascular bundles. Ferns belong to this group. Phanerogams or Spermatophytes are the highest plants which bear flowers and reproduce by seeds. They possess complex vegetative organs and very well-developed vascular tissues.

Spermatophyte are divided into Gymnospermia or naked-seeded plants (e.g. pine, cycad, etc.) and Angiospermia or covered-seeded plants. In gymnosperms ovules remain exposed and are directly fertilised; whereas in angiosperms ovules remain within the ovary and which, as we know, with the stimulus of fertilisation develops into the fruit containing seeds.

Angio- sperms are dicotyledonous (e.g. pea, mango) and monocotyledonous (e.g. maize, rice), according to the number of cotyledons in the embryo. They are, again, divided into a number of sub-classes.

Darwin's doctrine of evolution, which is certainly the most epoch-making event in the history of biological studies, maintains that the higher forms have been derived from the simple ones that lived in the past.

That doctrine prepared the way to natural classification based on relationship through common descent. The above system shows, beyond doubt, a gradual ascent in the complexity of structures from the lowest to the highest plants indicating, at the same time, gradual adaptation from aquatic to terrestrial or land habit.