SALIENT FEATURES OF HUTCHINSON SYSTEM

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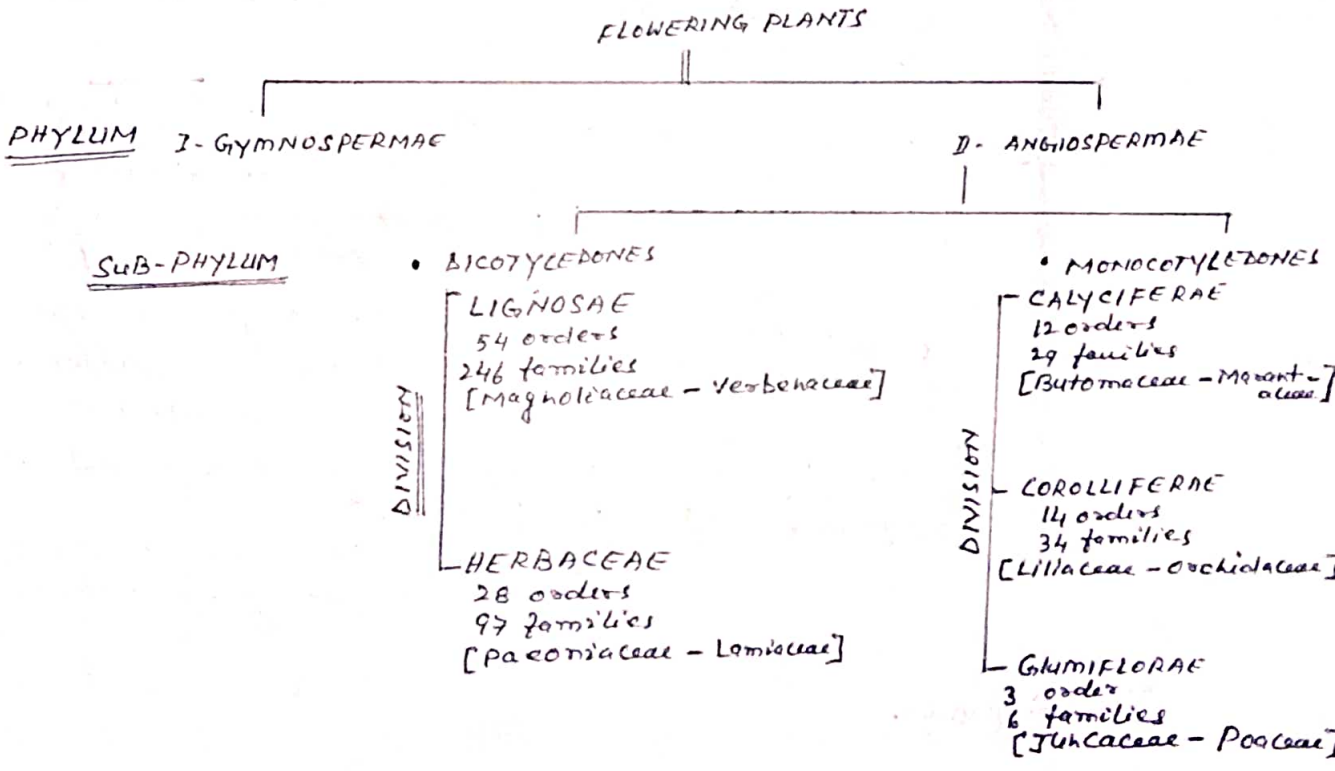
- The System proposed by John Hutchinson (1884 - 1972) was based on PHYLOGENETIC concepts.
- The system was published as "The families of flowering plants" in three editions comprising two volumes

  1st - 1926 vol. I dealing with Dicotyledons
  1934 vol. II dealing with Monocotyledons
  IInd 1959
  IIIrd - 1973

- The classification was based on 24 principles.
- He considers evolution to be both upward and downwards. The evolution does not necessarily involve all the organs of a plant at the same time; it is generally consistent and when a particular progression or retrogression has set in, it is persisted into the end of the phylum.

  He also considered that trees and shrubs to be older than climbers; perennials older than biennials and annuals; aquatic habit to be more recent than terrestrial habit. Similarly other characters related to stem, leaves and flowers were also discussed in his principles.

- An outline of the classification as appeared in the 3rd edition of "The Families of flowering plants"



- Flowering plants were divided into phylum GYMNOSPERMAE and ANGIOSPERMAE, both were considered as distinct group.
  There are 111 orders and 412 families.

- Phylogenetic consideration:

- Hutchinson considered flowering plants to be monophyletic in origin, derived from hypothetical Proangiosperms.
- The dicotyledones and monocotyledones were given the rank of sub-phylum. The former is considered to be primitive.
- -Within dicotyledones, two evolutionary lines were recognised under Division - Lignosae (woody group mainly) and Herbaceae (herbaceous group mainly)

The Lignosae begins with Magnoliaceae, which is characterised by the presence of free sepals, free petals, numerous free stamens, and numerous free carpels arranged on elongated or conical floral axis. Verbenaceae is considered as the most evolved family of Lignosae, having Sympetalous corolla, zygomorphic flowers with 2 or 4 stamens and habit partially herbaceous.

The Herbaceae begins with Paeoniaceae of the order Renales followed by Helleboraceae and closely related Ranunculaceae - characterised by the presence of free petals & sepals, numerous free stamens & carpels. The division herbaceae ends with Lamiaceae as the most evolved family showing parallel floral structure resembling with the family Verbenaceae.

Hutchinson considers the similarity in primitive and advanced families of Lignosae and Herbaceae because of parallel evolution.

- -Within monocotyledones three evolutionary lines were recognised

Calyciferae (calyx bearers) - characterised by both whorls of perianth; begins with Butomaceae of order Butomales and ends in Marantaceae of Zingeberales.

Corolliferae (corolla bearers) - characterised by single Perianth whorl. begins with Liliaceae of Liliales and ends in Orchidaceae of orchidales.

Glumiflorae (glume bearers) - perianth is greatly reduced characterised by lodicules
begins with Juncaceae of Juncales and ends in Poaceae of Gramineales.

- According to Hutchinson, the woody to be primitive in dicots whereas he considers herbaceous habit in monocots to be primitive, and the woody forms derived from the herbaceous forms.
- Monocotyledons is considered to have derived from Ranales; Buttomales having a link with Helleboraceae and Alismatales with Ranunculaceae.

MERITS AND DEMERITS

MERITS:

1. The system is based on phylogenetic principles and formed the basis of some modern phylogenetic systems.
2. The treatment of Magnoliales as the starting point in the evolutionary series in Dicotyledoneae is in agreement with prevalent views.
3. The orders and families are of small size and several large families have been split to contain closely related genera. For example Euphorbiaceae of Bentham & Hooker has been split into Euphorbiaceae, Ricciaceae, and Buxaceae.
4. The arrangement of families within the monocots has been appreciated widely.
5. The derivation of monocotyledones from dicotyledones is widely agreed
6. The standard of description is very high. Useful keys are provided for the identification of families.

DEMERITS:

1. The division of dicotyledons into Lignosae and Herbaceae on the basis of habit is not considered appropriate because some closely related families are separated. For example - Araliaceae and Apiaceae, in Lignosae and Herbaceae, respectively. Lamiaceae and Verbenaceae are similarly very closely related and often placed in the same order in contemporary systems of classification.
2. The system derives angiosperms from proangiosperms, but does not provide information about the nature of hypothetical ancestral group.

3. The split of several families are not considered natural. For example - Ranunculaceae into Ranunculaceae and Helleboraceae on the basis of achene and follicle fruit, respectively.
4. The family Calycanthaceae is related to Laurales, but placed here in Rosales.
5. Hutchinson regards Magnoliaceae as the most primitive family of the dicotyledons, but most most contemporary authors consider vesselless Winteraceae to be the most primitive.
6. The system is not very useful for practical identification, as it does not proceed beyond the family level in the majority of taxa.

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Further Reading — Plant systematics by Gurcharan Singh
Taxonomy of Angiosperms by V. Singh & D.K. Jain.
Advanced plant Taxonomy by A.K. Mondal.

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