

Natural system of classification

This system is based on natural affinities. Bernard and Antonie Laurent DeJussieu and Apdcandolle made significant contribution in this direction (the basis similarities in morphology).

A.L.Dejussieu(1748-1846) published a natural system of classification of plants in his book "Genera plantarum". He divided the plants into fifteen classes which were further divided into hundred natural orders (now called families).

He divided the plants into three main groups 1) Acotyledon (algae, fungi, mosses) 2) Monocotyledon (one cotyledon) 3) Dicotyledon (two cotyledon)

He mainly emphasised on the number of cotyledons and their presence and absence number of petals and their presence or absence, position of stamens.

A.P.decandolle(1778-1841) he classified 58,000 species and 161 families. He divided plants into two groups 1) cellulares (non vascular) 2) vascular plants.

Bentham and Hooker classification- The most important and the last of the natural system of classification of seed plants was proposed by two British taxonomists, George Bentham(1800-1884) and Joseph Dalton Hooker(1817-1911), the first director of Royal Botanical garden, Kew.

Their monumental work which took about quarter of century for completion was described in the volumes of "Genera Plantarum" published in Latin during July 1862 and April 1883. Bentham and Hookers classification is still used and followed in several herbaria of the world.

Bentham and Hooker divided plant kingdom into two divisions **Cryptogamia** (non flowering) and **Phanerogamia** (flowering plant). The division **Phanerogamia** divided into three classes **Dicotyledon**, **Gymnosperm** and **Monocotyledon**.

**(A) Class Dicotyledon** - this group includes include angiosperms in which the seed bears two cotyledons and leaves exhibit reticulate venation. It is divided into three subclasses - **Polypetalae**, **Gamopetalae** and **monochlamydae**.

**Subclass- Polypetalae** –The flower contain distinct non essential whorls calyx and corolla. In the corolla petals are free. This subclass includes three series Thalamiflorae, Disciflorae and Calyciflorae.

- 1) Series Thalamiflorae –Thalamus drum shaped, many stamens in the androecium, flower is hypogynous ex- michellachampara
- 2) Series disciflorae –Thalamus expanded and disc present. Hypogynous flower with cushion like disc around glycomisarboorea.
- 3) Series Calyciflorae-Flowers epigynous or perigynous. Thalamus is in the form of a cup ex- sennasophera.

**Subclass-Gamopetalae**-Corolla of united petals

- 1) Series Inferae—Ovary inferior .It includes three cohorts
- 2) Series Heteromerae –Ovary superior, stamens as many or twice as many as corolla lobes ,carpel more then two. It has three cohorts.
- 3) Series Bicarpellatae –Ovary superior ,stamen as many as corolla lobes or fewer,carpels usually two. It has four cohorts.

**Subclass- Monochlamydeae** - Petals are absent .

- 1)Series Curvembryeae –Embryo curved around the endosperm.Ovule usually one.
- 2)Series Multiovulatae – Aquatic with numerous ovules.
- 3)Series Multiovulatae –Terrestrial with numerous ovules .
- 4)Series Microembryeae –Embryo very small in copious endosperm .
- 5)Series Daphnales --Ovary usually with one carpel and single ovule.
- 6)Series Achlmydosporeae—Ovary usually inferior,unilocular and one to three ovulated.
- 7)Series Unisexuales- Flowers unisexual.

8) Series Ordines anomaly – The families of uncertain relationship were placed in this series .

(B) Class Gymnospermae –

(C) Class Monocotyledons –

- 1) Series- Microspermae-ovary inferior seeds very small.
- 2) Series Epigynae-ovary usually inferior, seeds large.
- 3) Series Coronarieae-perianth petaloid, ovary superior.
- 4) Series Calycinae- perianth sepaloid ovary superior.
- 5) Series Nudiflorae- Perianth mostly lacking, ovary superior
- 6) Series Apocarpeae- Carpels free
- 7) Series Glumaceae-Perianth small scale-like or chaffy.

#### Merit-

1. It is simple and easy to use for practical purpose.
2. Every genus and species were studied from the actual specimen.
3. Ranales is placed first in the dicot which is very reasonable.
4. Monocot followed dicot
5. Gymnosperm were treated by Bentham and Hooker as a third taxon and placed between dicot and monocot

#### Demerits-

1. Placing of gymnosperm between dicot and monocot is not accepted.
2. Artificial characters are considered here and there monochlamydeae is considered to be the most highly evolved.
3. Among polypetalae is most primitive groups among dicot.
4. Some of the related orders are widely separated from each other.
5. There is no uniformity in the arrangement of groups.

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