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Bentham and Hooker Classification



George Bentham (1800 – 1884)



Joseph Hooker (1817 – 1911)

It was Proposed by George Bentham (1800 – 1884) and Joseph Dalton Hooker (1817 – 1911) in their **Genera Plantarum** published during July (1862) & April (1883)

George Bentham (1800 – 1884) and Joseph Dalton Hooker (1817) – 1911) , the two British botanist who were associated with the Royal Botanic garden at kew (England) gave most important and easily workable system of classification of angiosperms and published it in three volume of ‘Genera plantarum ‘ The first part of Genera plantarum appeared in July 1882 and the last part in April 1883 . This was the greatest taxonomic work ever produced in the united kingdom and ever since been an inspiration to generations of kew botanists .

Although Bentham and Hooker’s system of classification was based on that of **A.P. de Candolle** but greater stress was given on contrast between free and fused petals . Their symptom was widely accepted in Britain and commonwealth countries but in Europe and North America it did not hold the much ground . Bentham and Hooker divided the seed plants into Dicotyledons, Gymnosperms and Monocotyledons. They placed Ranales in beginning and grasses at the end .

The following is the summary of Bentham & Hooker’s system.

DICOTYLEDONS :

A . **Polypetalae** (petals are free)

Series I **Thalamiflorae**

Order 1. Ranales eg. Ranunculaceae, Magnollaceae e.t.c

Order 2. Parietales eg. Papaveraceae , Cruciferae e.t.c

Order 3. Polygalineae eg. Polygalineae e.t.c

Order 4. Caryophyllineae eg. Caryophyllaceae

Order 5. Guttiferales eg. Guttiferae

Order 6. Malvales eg. Malvaceae , Tiliaceae

Series II **Disciflorae**

Order 7. Geraniales eg. Geraniaceae, Meliaceae e.t.c

Order 8. Olacales eg. Olacinae

Order 9. Celastrales eg. Celastrinaceae

Order 10. Sapindales eg. Sapindaceae Sabiaceae

Series III **Calyciflorae**

Order 11. Rosales eg. Rosaceae

Order 12. Myrtales eg. Melastomaceae , Myrtaceae

Order 13. Passiflorales eg. Passifloreae , Cucurbitaceae

Order 14. Ficoidales eg. Ficoideae

Order 15. Umbellales eg. Umbelliferae

B. **GAMOPETALAE** (Petal fused)

Series I **Inferae** (Overy inferior)

Order 16. Rubiales eg. Rubiaceae

Order 17. Asterales eg. Asteraceae

Order 18. Campanales eg. Campanulaceae

Series II **Heteromerae**

Order 19. Ericales eg. Ericaceae

Order 20. Prinulales eg. Primulaceae.

Order 21. Ebenales eg. Ebenaceae .

Series III **Bicarpellatae**

Order 22. Gentianales eg. Gentianaceae , Apocynaceae.

Order 23. Polemoniales eg. Polemoniaceae , Solanaceae .

Order 24. Personales eg. Scrophulariaceae , Acanthaceae

Order 25. Lamiales eg. Lamiaceae .

C. **Monochlamydeae** (petals absent)

Series 1. **Curvembryeae** eg. Polygonaceae, chenopodiaceae

Series 2. **Multiovulatae aquaticae** eg . Podostemaceae.

Series 3. **Multiovulatae terrestris** eg. Aristolochieae

Series 4. **Microembryeae** eg . Monimlaceae

Series 5. **Daphnales** eg. Proteaceae

Series 6. **Achlamydosporeae** eg. Oranthaceae

Series 7. **Unisexuales** eg. Euphorbiaceae Urticaceae.

Series 8. **Anomalous** eg. Salicaceae

GYMNOSPERMS - Families : 1. **Gnetaceae**

2. **Coniferae**

3. **Cycadaceae**

MONOCOTYLEDONS

Series 1 Microspermae	eg. Orchidaceae.
Series 2 Epigynae	eg. Irideae . Taceoaceae
Series 3 Coronarieae	eg. Liliaceae .
Series 4 Calycineae	eg. Palmae
Series 5 Nudiflorae	eg. Cyclanthaceae
Series 6 Apocarpeae	eg. Alismaceae
Series 7 Glumaceae	eg. Cyperaceae , Gramineae

Synopsis of Bentham & Hooker's system of Classification

	Order (families)	Genera	Species
Polypetalae	84	2,610	31,874
Gamopetalae	45	2,619	34,556
Monochlamydeae	36	801	11,784
Gymnosperms	3	44	415
Monocotyledons	34	1,495	18,576

Total : Order- 202 , Genera – 7569 , species- 97205

MERIT OF BENTHAM AND HOOKER'S SYSTEM OF CLASSIFICATION

1. Every genus and species was studied from the actual specimen available in the British and continental herbaria & their descriptive were based on their detailed studies and dissections
2. The work is not a mere compilation of the previous system but is in essence a refinement of those by de Candolle
3. In the division Polypetalae, the new series Disciflorae is placed between the Thalamiflorae & Calyciflorae.
4. Gymnosperms are treated as a third taxon and placed between dicots and monocots.
5. Every genus has been sub-divided into sub-genus.
6. Ranales has been placed first in dicots which is very reasonable.
7. It can be classified & criticised on the basis of Phylogeny
8. Monocots are derived from dicots

DEMERITS OF BENTHAM AND HOOKER'S SYSTEM OF CLASSIFICATION

1. Monochlamydeae is considered to be the most highly advanced and polypetalae the most primitive group among dicots, Gamopetalae is placed between the two, which is contrary to the evolutionary trends among plants.
2. Gymnosperms have been placed between dicots and monocots.
3. Monochlamydeae is not a well defined group as it includes several families.
4. Due to arbitrary selection of diagnostic characters some of the related orders are widely separated from each other.
5. Orchidaceae and Scitamineae in which the flowers were epigynous with a highly developed complicated form of corolla are considered to be the most primitive order of monocots while orders like Gramineae and Cyperaceae in which the flowers are hypogynous and simpler are considered as the most highly evolved.