

Engler and Prantl's System of Classification:

Salient features of classification system:

- Engler and Prantl produced the monumental *Die Natürlichen Pflanzenfamilien* between 1887-1915.
- Original classification was 'natural' and based on many characters.
- By 1915 their system had a phylogenetic flavor with simple plants listed first and progressing to more complex plants.
- Engler - Prantl classification system became the standard to arrange herbaria and floras by early 20th century
- They stressed that "simple" flowers - that is with few or no parts - were "primitive" e.g., "Amentiferae" - a group with reduced flowers were considered primitive

Engler and Prantl's System of Classification:

Adolf Engler (1844-1938), a German botanist who served as Professor of Botany in the University of Berlin for thirty years and director of Botanical Gardens from 1889 to 1921. His phylogenetic system of classification was first published as a guide to the botanical garden of Breslau in 1892. Later on the system expanded in a monumental work called "Die Natürlichen Pflanzenfamilien" with means for the identification of the genera of whole plant kingdom. This publication continued with 23 volumes, many supplements, syllabi and revisions from 1895 to the present day. They have classified 303 flowering families in their classification system. This system has been the dominant one of the plant classification in most of the scientific world since 1900. Most of the prominent herbaria of the world are arranged according to this system. This great work was completed in the collaboration of his associate worker Eugen Prantl (1849-1893). According to this system the families were arranged in accord to the increasing complexity of the flower, fruit and seed development.

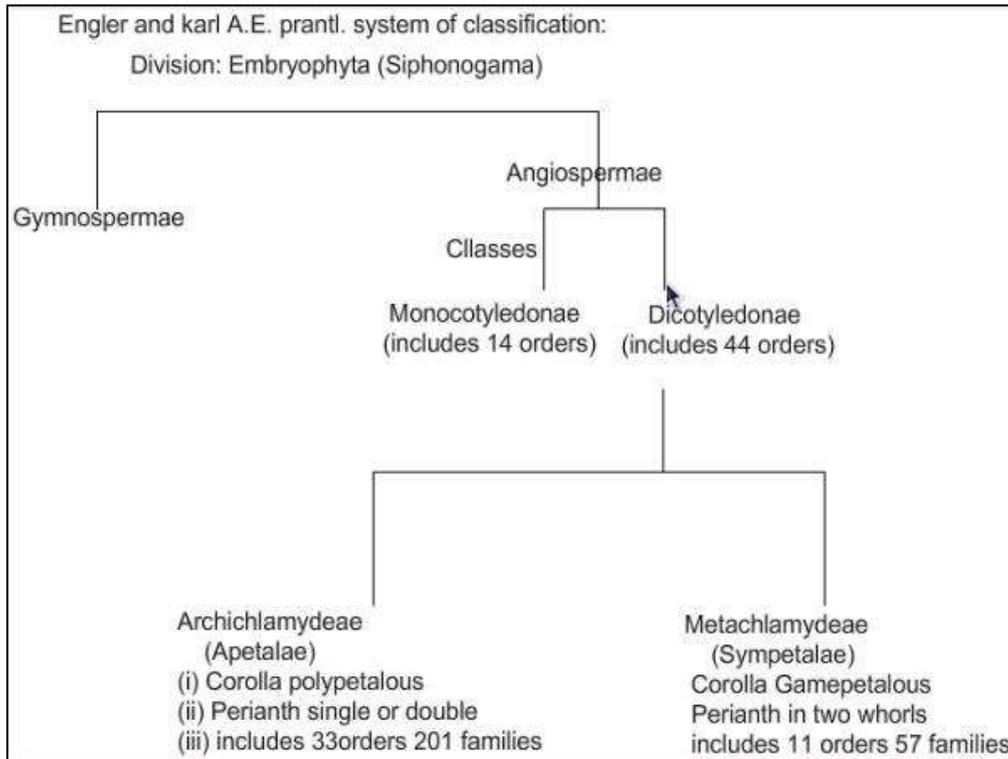
The general outline of the system proposed by Engler and Prantl is given below:

1. This system is based on Eichler's system, who was the first person to propose evolutionary system of classification.
2. It is an evolutionary system proposed subsequent to the acceptance of Darwins Theory of evolution, based on the assumption that the flowering plants where perianth is absent are evolutionary primitive.
3. The Gymnosperms are considered to be more primitive and hence were placed before Angiosperms.
4. The Monocotyledons precede the Dicotyledons, an idea which gets little support from recent work on fossil data. They never thought that the former group is derived from the latter.
5. The class Dicotyledoneae was divided into two subclasses namely, Archichlamydeae and Metachlamydeae or Sympetalae.

6. Flowers without perianth (achlamydeous), or those with one whorl of perianth (monochlamydeous) were considered to be primitive; and those with two-whorled perianth, distinguished into sepals and petals, as advanced.
7. Unisexual flowers were considered to be more primitive than bisexual ones.
8. Chalazogamy was considered to be more primitive character.
9. Epigynous condition is more advanced than hypogynous condition.
10. Apocarpy is regarded as a primitive feature and syncarpy as an advanced feature.
11. The evolution of angiosperms is regarded as polyphyletic.
12. The families, such as Casuarinaceae, Salicaceae, Betulaceae, Fagaceae, etc. with naked unisexual flowers and syncarpous gynoecia are placed before families, such as Magnoliaceae and Ranunculaceae.
13. The Polypetalae and Monochlamydeae were unified under the single group Archichlamydeae, while Metachlamydeae include those families with sympetalous corollas.
14. Flowering plants were divided comparatively in large groups on the basis of few characters and several allied families were separated.
15. The Monocotyledons start with the Pandanales which include those families devoid of, or with a very imperfect perianth. The Pandanales are now considered a very advanced group.
16. The Monocotyledons end with the Orchidaceae, a family highly advanced, but certainly not advanced over grasses Graminae.
17. Monochlamydeae is completely abolished as such and families are distributed in the large Series called Archichlamydeae.
18. The Engler and Prantl system dominates over all the previous natural systems of classification, but certainly is based on these systems.
19. It is based on the increasing complexity of plant parts particularly essential whorls of flowers.
20. Most primitive type of flowers has no perianth; in the next evolved type, two whorls of perianth then in highest evolved type there are two whorls of perianth in latter case two whorls are indistinguishable (Homochlamydous) or distinguishable (Heterochlamydous).
21. Gamopetalous condition considered more advanced than the polypetalous condition and the monocotyledons are primitive and placed before the dicotyledons.
22. Indefinite number of stamens and carpels are primitive to a definite number of stamens and carpels.

23. Monocotyledons have been classified into 11 orders and 45 families where as Dicotyledons classified into 44 orders and 258 families.

24. Dicotyledonae begins with family Casuarinaceae and ends in Compositae.



Merits and Demerits of Engler and Prantl's System of Classification:

- According to this system, the large artificial group of Bentham and Hooker's system, the Monochlamydeae has been completely abolished, and its families have been distributed among the related forms with free petals in the large series of this (Engler's) system, the Archichlamydeae.
- The Sympetalae of this system corresponds to the Gamopetalae of Bentham and Hooker's system.
- In this system the Gymnosperms are treated separately.
- The families with inferior ovary have been treated in the last, both in Archichlamydeae and Sympetalae. The advancement is marked from the hypogyny to complete epigyny. Engler considered the orchids to be more highly evolved than the grasses.

Demerits:

- In this system the Amentiferae or catkin bearers, (e.g., Salicaceae, Juglandaceae, Betulaceae, etc.) have been regarded as most primitive and precede petaliferous families, (e.g. Ranunculaceae and Magnoliaceae). The Amentiferae are a reduced

rather than a primitive group. According to Bessey and others the polypetaly was earlier, and apetaly was derived from it through modification.

- The acceptance of the derivation of dichlamydeous flowers (perianth in two series) from monochlamydeous ones (perianth in single series) is objectionable.
- Derivation of parietal placentation from axile placentation.
- Derivation of free-central placentation from parietal placentation.
- Derivation of bisexual flowers from unisexual flowers.
- Derivation of entomophily from anemophily.
- In this system Monocots have been considered to be more primitive than Dicots, which does not correspond to the present day knowledge.