

BENTHAM AND HOOKER'S SYSTEM OF ANGIOSPERM CLASSIFICATION



B.Sc.-I, BOTANY
DEPARTMENT OF BOTANY

Dr. R.P. Jadhav

M.Sc., M.Phil., Ph.D.

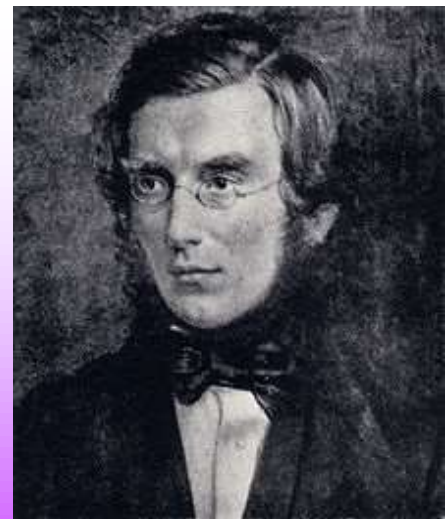
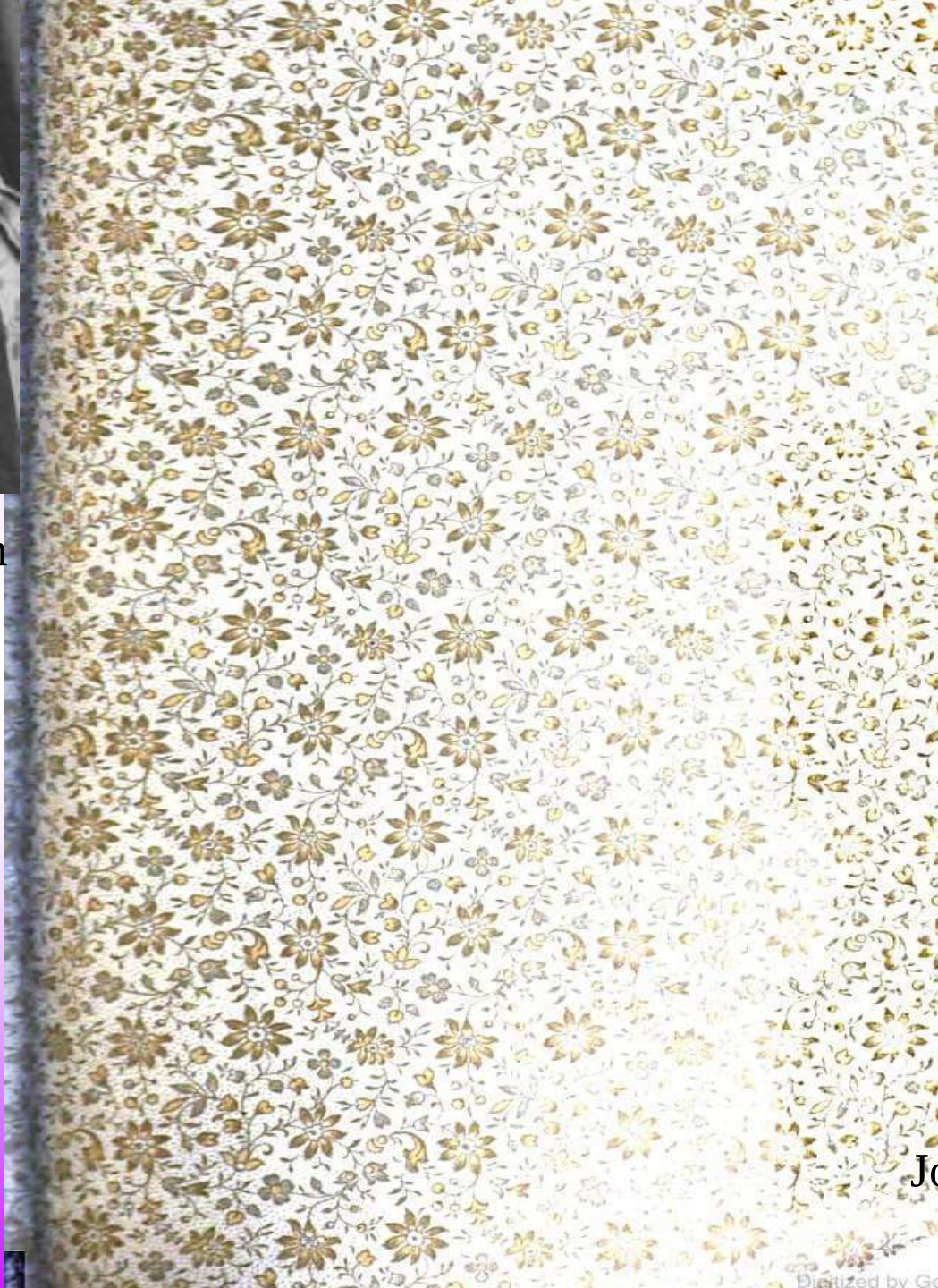
INTRODUCTION

- **Classification denotes the arrangement of a single plant or group of plants in a distinct category following a system of nomenclature, and in accordance with a particular and well established plan.**
- **Some of the earlier systems of classification of angiosperms were artificial systems, since they used only certain superficial characteristics as the basis.**
- **With more and more detailed study on the morphological, physiological and reproductive aspects of angiosperms, the artificial systems of classifications were replaced by the natural systems of classification.**

- George Bentham and Joseph Dalton Hooker - Two English taxonomists who were closely associated with the Royal Botanical Garden at Kew, England have given a detailed classification of plant kingdom, particularly the angiosperms.
- They gave an outstanding system of classification of phanerogams in their Genera Plantarum which was published in three volumes between the years 1862 to 1883. It is a natural system of classification.
- They described 97,205 species of flowering plants grouped into 202 orders (now recognised as families).
- The system has the advantage of being the first great natural system of classification, which is very easy to follow.



George Bentham
1800-1884



Joseph Dalton Hooker
1817-1911

PLANT KINGDOM



CRYPTOGAMIA
(Non-flowering plants)

PHANEROGAMIA

CLASSES

DICOTYLEDONAE

GYMNOSPERMAE

MONOCOTYLEDONAE

(Two cotyledons in the seed)

(Seed not enclosed in fruit)

(One Cotyledon in the Seed)

SUB-CLASSES

POLYPETALAE

GAMOPETALAE

MONOCHLAMYDAE

SERIES

- * MICROSPERMAE
3 Families
- * EDIGYNAE
7 Families
- * CORONARIAE
8 Families
- * CALYCINAE
5 Families
- * NUDIFLORAE
5 Families
- * APOCARRAE
3 Families
- * GLUMACEAE
5 Families

SERIES

- * THALAMIFLORAE
6 Orders
34 Families
- * DISCIFLORAE
4 Orders
22 Families
- * CALYCIFLORAE
5 Orders
27 Families

SERIES

- * INFERRAE
3 Orders
9 Families
- * HETEROMERAE
3 Orders
12 Families
- * BICARPELLATAE
4 Orders
23 Families

SERIES

- * CURVEMBRYAE
6 Families
- * MULTIOVULATE
AQUATICAE
1 Family
- * MULTIOVULATE
TERRESTRIS
3 Families
- * MICROEMBRYAE
4 Families

- * DAPHNIALES
5 Families
- * ACHLAMYDO-
SPORAE
3 Families
- * UNISEXUALES
9 Families
- * ORDINA
ANAMOLI
9 Families

SUB-CLASS - POLYPETALAE
petals separate

Series

THALAMIFLORAE

Orders

Ranales

Parietales

Polygalineae

Caryophyllineae

Guttiferales

Malvales

DISCIFLORAE

Orders

Geraniales

Olacales

Celastrales

Sapindales

CALYCIFLORAE

Orders

Rosales

Myrtales

Passiflorales

Ficoidales

Umbellales



THALAMIFLORAE

Many stamens in the androecium.
Flower is hypogynous

Orders

Ranales

Families

Ranunculaceae

Dilleniaceae

Calycanthaceae

Magnoliaceae

Annonaceae

Menispermaceae

Berberidaceae

Nymphaeaceae

Parietales

Families

Sarraceniaceae

Papaveraceae

Cruciferae

Capparaceae

Resedaceae

Cistaceae

Violaceae

Canellaceae

Bixaceae.

Polygalineae

Families

Pittosporaceae

Tremandraceae

Polygalaceae

Caryophyllineae

Families

Frankeniaceae

Caryophyllaceae

Portulacaceae

Tamaricaceae

Guttiferales

Families

Elatinaceae

Hypericaceae

Guttiferae

Theaceae

Dipterocarpaceae

Sarcolaenaceae

Malvales

Families

Malvaceae

Sterculiaceae

Tiliaceae



DISCIFLORAE

Hypogynous flowers with a cushion-like disc around or below the ovary



Orders

Geraniales

Families

Linaceae

Humiriaceae

Malpighiaceae

Zygophyllaceae

Geraniaceae

Rutaceae

Simaroubaceae

Ochnaceae

Burseraceae

Meliaceae

Dichapetalaceae

Olacales

Families

Olacaceae

Aquifoliaceae

Celastrales

Families

Celastraceae

Stackhousiaceae

Rhamnaceae

Vitaceae

Sapindales

Families

Sapindaceae

Meliosmaceae

Anacardiaceae

Coriariaceae

Moringaceae



CALYCIFLORAE

Flowers epigynous or perigynous
Thalamus is in the form of a cup

Orders

Rosales

Families

Connaraceae

Leguminosae

Rosaceae

Saxifragaceae

Crassulaceae

Droseraceae

Hamamelidaceae

Bruniaceae

Haloragaceae

Myrtales

Families

Rhizophoraceae

Combretaceae

Myrtaceae

Melastomataceae

Lythraceae

Onagraceae

Passiflorales

Families

Loasaceae

Turneraceae

Passifloraceae

Cucurbitaceae

Begoniaceae

Datisceae

Ficoidales

Families

Cactaceae

Aizoaceae

Umbellales

Families

Umbelliferae

Araliaceae

Cornaceae



SUB-CLASS - GAMOPETALAE
petals fused

Series

INFERAE

Orders

Rubiales

Asterales

Campanulales

HETEROMERAE

Orders

Ericales

Primulales

Ebenales

BICARPELLATAE

Orders

Gentianales

Polemoniales

Personiales

Lamiales



INFERAE

Flowers with inferior ovary

Orders

Rubiales

Families

Caprifoliaceae

Rubiaceae

Asterales

Families

Valerianaceae

Dipsacaceae

Calyceraceae

Compositae

Campanulales

Families

Stylidaceae

Goodeniaceae

Campanulaceae



HETEROMERAE

Flowers with superior ovary
Number of carpels - more than two

Orders

Ericales

Families

Ericaceae

Clethraceae

Epacridaceae

Diapensiaceae

Lennoceae

Primulales

Families

Plumbaginaceae

Primulaceae

Myrsinaceae

Ebenales

Families

Sapotaceae

Ebenaceae

Styracaceae



BICARPELLATAE

Ovary superior, with 2 carpels

Orders

Gentianales

Families

Oleaceae

Salvadoraceae

Apocynaceae

Asclepiadaceae

Loganiaceae

Gentianaceae

Polemoniales

Families

Polemoniaceae

Hydrophyllaceae

Boraginaceae

Convolvulaceae

Solanaceae

Personiales

Families

Scrophulariaceae

Globulariaceae

Lentibulariaceae

Gesneriaceae

Bignoniaceae

Pedaliaceae

Acanthaceae

Lamiales

Families

Myoporaceae

Verbenaceae

Labiatae

Plantaginaceae

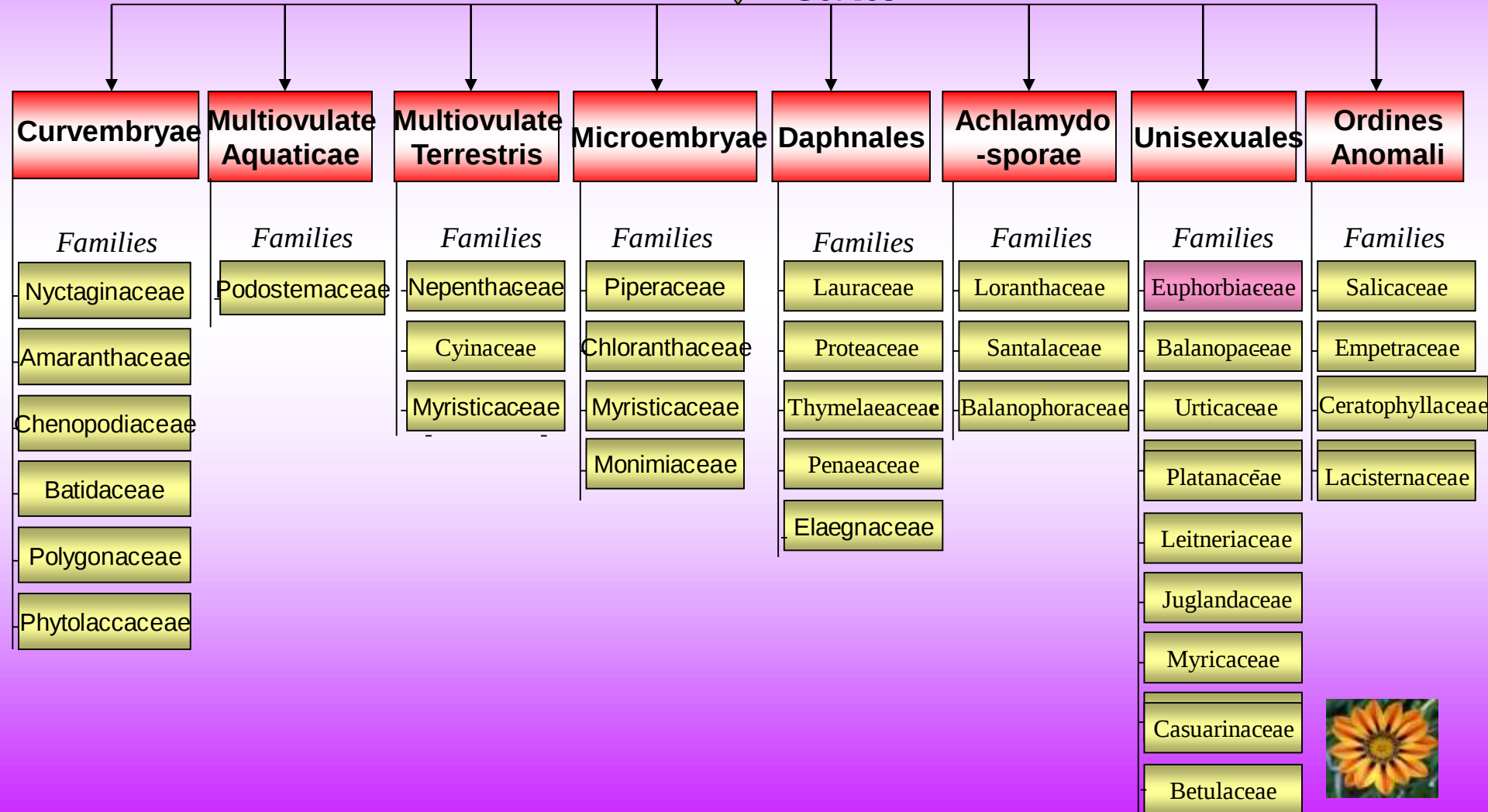


MONOCHLAMYDEAE

only 1 kind of perianth



Series

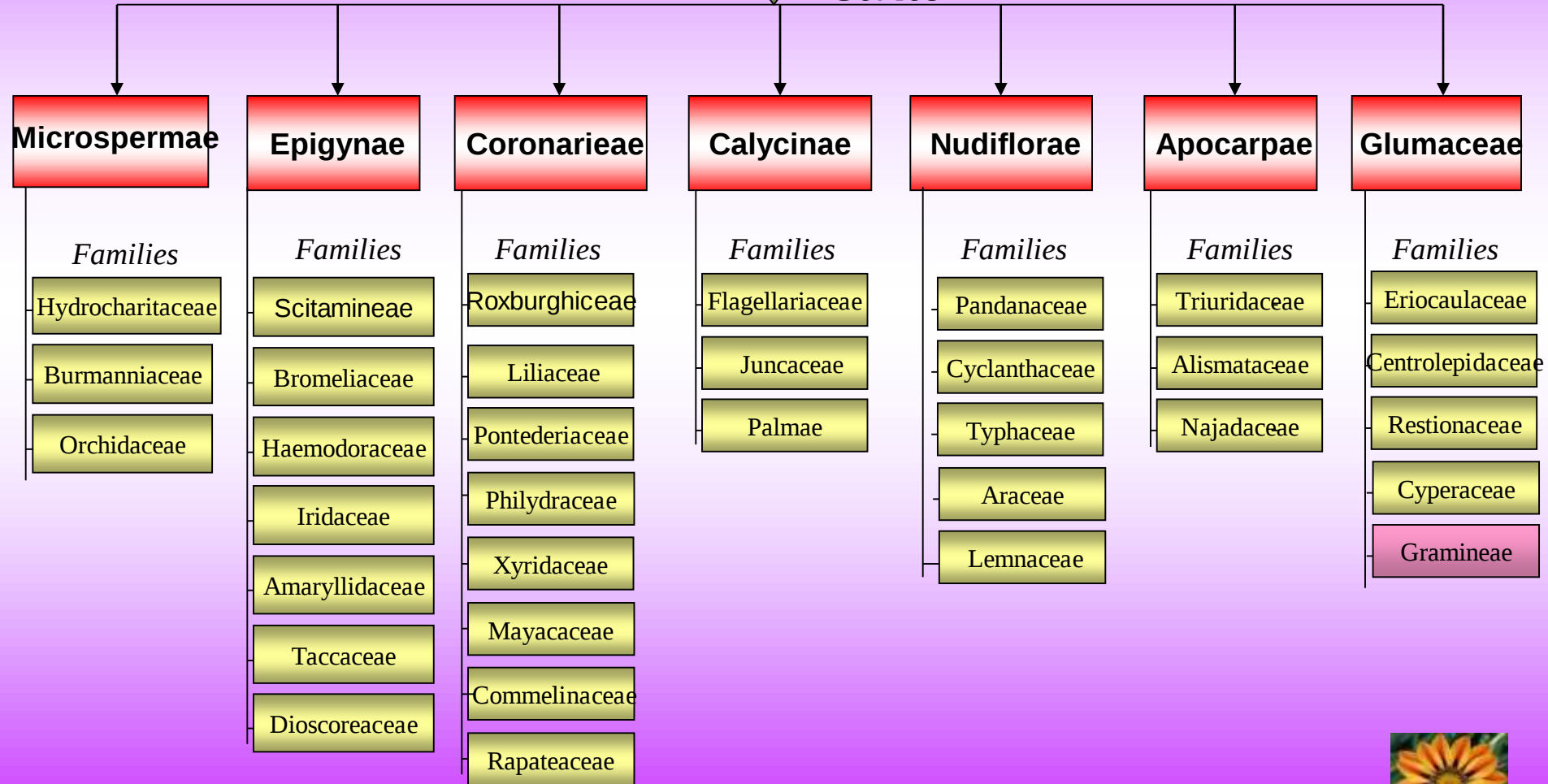


CLASS-MONOCOTYLEDONAE

1 cotyledon, flowers trimerous



Series



DRAWBACKS

- Gymnosperms were placed between Dicots and Monocots.
- Many important floral characters were neglected.
- It is not a phylogenetic scheme.
- Some of the closely related families have been separated and placed under different cohorts and a number of unrelated families put together.
- Some advanced families like *Orchidaceae* have been regarded as primitive by placing in the beginning.



THANK YOU