HISTORY OF TAXONOMY

1. Moreover, the biologists considerably depend on taxonomic studies of fossils connecting links for drawing evolutional relationships among the organisms.

2. Theophrastus :.....

3. Dioscorides :

(A) He wrote a book **"Mteria Medica"**

(B) In this book he gives description of 600 medicinal plant species. This description includes identification and uses of medicinal plants.

(C) First of all Dioscorides rejected the **"Doctorine of signature"** which was given by **Paracelsus.**

(D) This principle was blind faith about medicinal plants. According to this principle signature of god is present in the form of special shape on every plant and shape shows medicinal importance of plant.

For Example : Liverwort is a plant, shape of this plant is liver like. According to "Doctorine of signature" this plant should be use in liver disease. But there is no any use of this plant in medicine.

4. John Ray - England :

(A) Time - 1627 - 1705

(B) He wrote the book "Historia Generalis Plantarum" and

(C) John Ray described more than 18,000 plants and animals in his book. "Methodus Plantarum"

(D) He gave the concept of species.

(E) He coined the term species for a group of morphologically similar organisms.

On the basis of growth habit he classified the plants in two groups

1. Herbae - Herbs **2. Arborae -** Trees and shrubs

5. Tournefort :

(A) Time - 1656 - 1708

(B) He proposed the **Modern concept of genus.**

(C) The term Genus was first proposed by Tournefort

6. Linnaeus :

Cari Von Linne was born in Sweden. As a child, the developed an interest in plants. On persuasion he joined the medical school, though this parents wanted him to be a minister. Medical course being closely related to plants then, Linne continued with the collection, study and description of plants. After completing medical degree in 1739, he went to Holland and became the personal physician of a wealthy government official. There he also studies and described all the plants of his emplyer's garden. At the age o 22, he published his first paper on sexuality of plants. Later he published 14 treaties and also brought out famous **Systema Naturae** from which all fundamental taxonomical researches emanated. Hit system of classification was a simple scheme for arranging plants for identifying them again. Linne with his lectures and publications of Latin become Carolus Linnaeus.

7. Adanson :

In his book "Families des planets, he first arranged 58 families of plants in a natural system.

8. De Jussie brothers - Antoine, Bernard and Joseph - France :

Book of De Jussie brother is “Genera Plantarum Secundum Orinnes Naturals Disposita”. De Jussie brother proposed the ***first complete natural classification*** of plant kingdom. They classified plant kingdom in three groups -

1. Acotyledonae 2. Monocotyledonae 3. Dicotyledonae

Note : De Jussie brothers employed the characters of embryo in taxonomy.

9. A.P. De Candolle : .....

10. John Lindley - England :

First distinguished the Cryptogams and Phanerogams. The name **cryptogames** was first used by **Linnaeus** and the name **phanerogams** was first used by **Therophrastus.**

11. Bentham and Hooker : .....

12. Eichler : .....

13. E. Bessey : Bessey proposed new name for dicot and monocot

Dicot - Oppositifolia
Monocot-Altermifolia
} These new names are based on phyllotaxy i.e. arrangement of leave on stem

14. Hutchinson (1926), England :

Hutchinson was also related with Royal Botanical Garden. Hutchison proposed phylogenetic classification of flowering plants. In his book “The families of flowering plants”, he described 411 families of flowering plants. Hutchinson for the first time states that monocots are more advance then the dicots.

15. Karl Menz : .....

16. Oswald Tippoo : .....

17. Takhatajan, 1966 (Russia) :

in his book “Flowering plants - Origin and dispersal,” he proposed new names to some plants groups -
Angiosperms = **Magnoliophyta**
Dicots = **Magnoliatae**
Monocots = **Liliatae**
There is one famous statement of Takhtajan about the importance of Phylogeny in taxonomy -

18. Willis, 1966 :

Book of Willis is “Dictionary of flowering plants and ferns”.

19. Haeckel : .....

20. Copeland : .....

21. R.H. Whittaker : . Five Kingdom classification was proposed in ***1969*** by R.H. Whittaker.

SOME SPECIAL POINTS

1. **(i) Cladogram :** Family tree (line diagram) representing evolutionary relationship (Ancestory of evolution) of organisms.
   (ii) Dendrogram : Family tree based on numerical taxonomy.

2. **Key -** A scheme for identification of plants and animals in known as a **Key.** Taxonomic keys are based on the contrasting characters. Separate taxonomic keys are required for each taxonomic category like family, genus or species. These are more useful in identification of unknown organisms. Being analytical in nature these are generally of **two types :** (a) Yoked or indented and (b) Bracketed.
   The **indented key** provides sequence of choices between two or more statement of characters of species. The user has to make correct choice for identification.

3. Based on these **structure of plant body** and the method of **sexual reproduction,** bryophytes are divided into three classes- Hepaticae (Hepaticopsia), Anthoceroatae (Anthoceropoida) and Musci (Bryopsida).
   The Pteriophyta is divided into four classes, viz. Psilopsid, Lycopsida, Sphenopsida and Pteropsida, on the basis of **organisation of plant body** including the nature of leaf, vascular system and location of sporangia. These are further divided into three classes - Cycadopsida, Coniferopsida and Gnetopsida on the basis of nature of leaves, wood, vascular system and reproductive structures.

4. A typical pteriodphyte are represented by fern has a plant body differentiated into distinct underground stem like rhizome, bearing roots, and aerial shoot with leaves. It helps the plant to regenerate if the aerial parts are **destroyed** by **fire** or animals. The pteridophytes have primitive vascular system. **Adiantum,** yet another well known fern shows a characteristic mode of multiplication. Whenever its leaf tip comes in contact with soil it develops adventitious roots and forms a new plant as such it is also called the **walking fern.** You might have observed a similar mechanism of vegetative propagation through runner s and suckers.
   The leaves are of two types. Some ferns have simple leaves with a single vein whereas the others have compound leaves, comprising several leaflets (pinnules) life the flowering plants. The compound leaves in **Adiantum** with black shining petiole are beautifully arranged to provide appearance of a maiden's hair. Hence it is also given the name **maiden hair fern.**

5. The common members of phycomycetes are ***Albugo, Mucor*** and ***Saporolegnia.***

6. ***Bacteria :***
   (i) ***Epulopisium fishelsoni*** whish was discovered in the intestine of the brown surgeon fish, in as large $600\,\mu m$ and wide as $80\,\mu m$.

   (ii) In bacteria, membranes are different from those in eukaryotic cells in that they lack sterols such as cholestrol. However, in some bacteria pentacylic sterol like molecules, termed as hopanoids, are present. These hopanoids re known to stabilise the bacterial membrane.

   (iii) The reserve materials of bacteria are stores in the cytoplasm an inclusion bodies or storage granules. These are not bounded by any granules. These are not bounded by any membrane systems and lie free in the cytoplasm e.g., ***phosphotae granules, cyanophycean granules*** and ***glycogen granules.*** Some other inclusion bodies may be surrounded by a single layer non-unit membrane, which is 2-4 nm thick, e.g., poly-b-hydroxybutyrate granules, sulphur granules, carboxysomes and gas vacuoles. Other remarkable organic inclusion bodes are the gas vacuoles, which usually occur in cyanobateria, purple and green photosynthetic bacteria and few other aquatic forms that re free-floating (plaktonic). These are basically aggregates of a number of small, hollow cylindrical gas vesicles. Gas vesicles are not permeable to water but are permeable to water but are permeable to atmospheric gases. Because of gas vacuoles, these bacteria keep floating on or near the surface of water. These vacuoles help the organisms in positioning themselves in the water column for trapping sunlight for photosynthesis, o for avoiding intense sunlight. The two major inorganic inclusions are the polyphosphate granules or the **volutin granules** and **sulphur granules.** These granules take different colours with basic dyes, therefore, they are also termed as **metachromatic granules.** The

volutin granules are phosphate polymers and function as a storage reservoir for phosphate. Some bacteria also store sulphur temerily as sulphur granules.