

## PLANT TAXONOMY

### 1.1 INTRODUCTION

Taxonomy is the lawful arrangement of things (taxis- arrangement, nomos- law, rule). Plant taxonomy means classification of plants following certain rules or principles. It is basic to other sciences and at the same time depends on information of other branches of such as morphology, anatomy, embryology, cytology, phytochemistry, ecology, genetics, physiology, phytogeography etc.

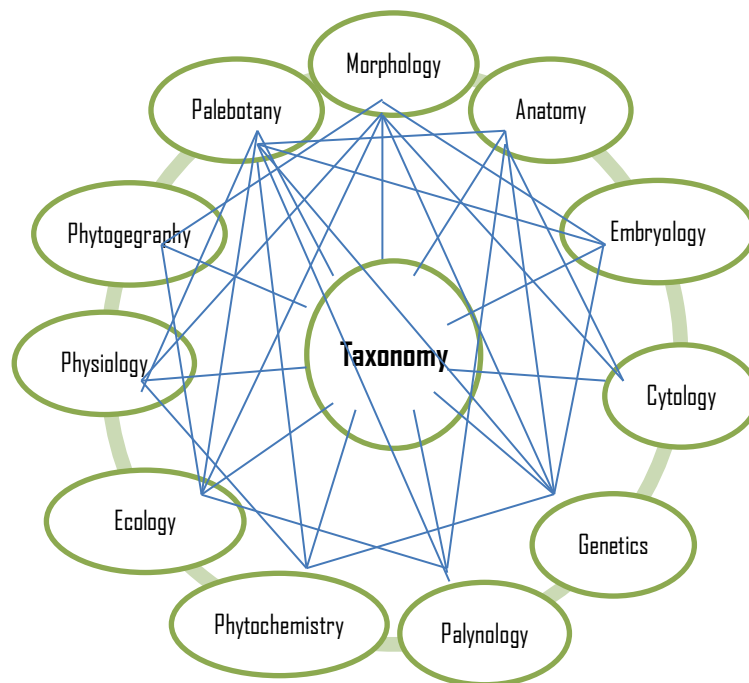


Fig: Showing the relationship of various disciplines with taxonomy

### 1.2 AIMS AND OBJECTIVES OF TAXONOMY

Taxonomy has following aims

1. To provide a convenient method of identification and communication,
2. To provide classification which is based on natural affinities of organisms,
3. To provide an inventory of plant taxa by means of flora,
4. To detect evolution at work, discovering its processes and interpreting its results,
5. To provide an integrating and unifying role in the training of biology students.

These are based on certain well defined principles for the fulfillment of the objectives.

### 1.3 PRINCIPLES OF TAXONOMY

The basic principles of taxonomy are (Cronquist, 1986)

1. Taxa are properly established on the basis of multiple correlation of characters,
2. Taxonomic importance of a character is determined by how well it correlates with other characters.
3. An important feature of the taxonomy is its predictive value.

The first principle states the importance of correlation of characters. It implies that no character of a taxon should be considered singly for establishment of its relationship with other characters. Secondly, the characters chosen for should exhibit maximum correlation with other characters. The importance of a character depends upon the degree of correlation. A character with no apparent correlation with other character is often taken to be an anomalous one and it is usually not taxonomically important. So, a zygomorphic flower in Ranunculaceae; only five stamens in Tilliaceae, alternate leaves in Oleaceae, actinomorphic flowers in Scrophulariaceae, simple leaves in Bignoniaceae and numerous such characters are taken to be anomalous since they are not correlated with other characters of the taxa. Hence, they are not taxonomically significant. They may however be considered important from their diagnostic point of view, but the relationship must be considered on overall resemblances.

### 1.4 FUNCTIONS OF TAXONOMY

The main functions of taxonomy are

1. Identification
2. Nomenclature
3. Classification

### 1.5 EVOLUTIONARY TRENDS IN TAXONOMY

Taxonomy has the longest history among all botanical sciences dating back to the very beginning of botany itself, with Theophrastus (370-285 BC) classification of all plants into trees, shrubs, under-shrubs, herbs ( annual, biennial, perennial). Starting from such humble and early beginnings, taxonomy has come a long way. It is now a full-fledged science with wide ramifications touching every other branch of botany and thus has enriched itself, with knowledge

of the most diverse kinds of plants, using it effectively in evolving progressively improved systems of classification.

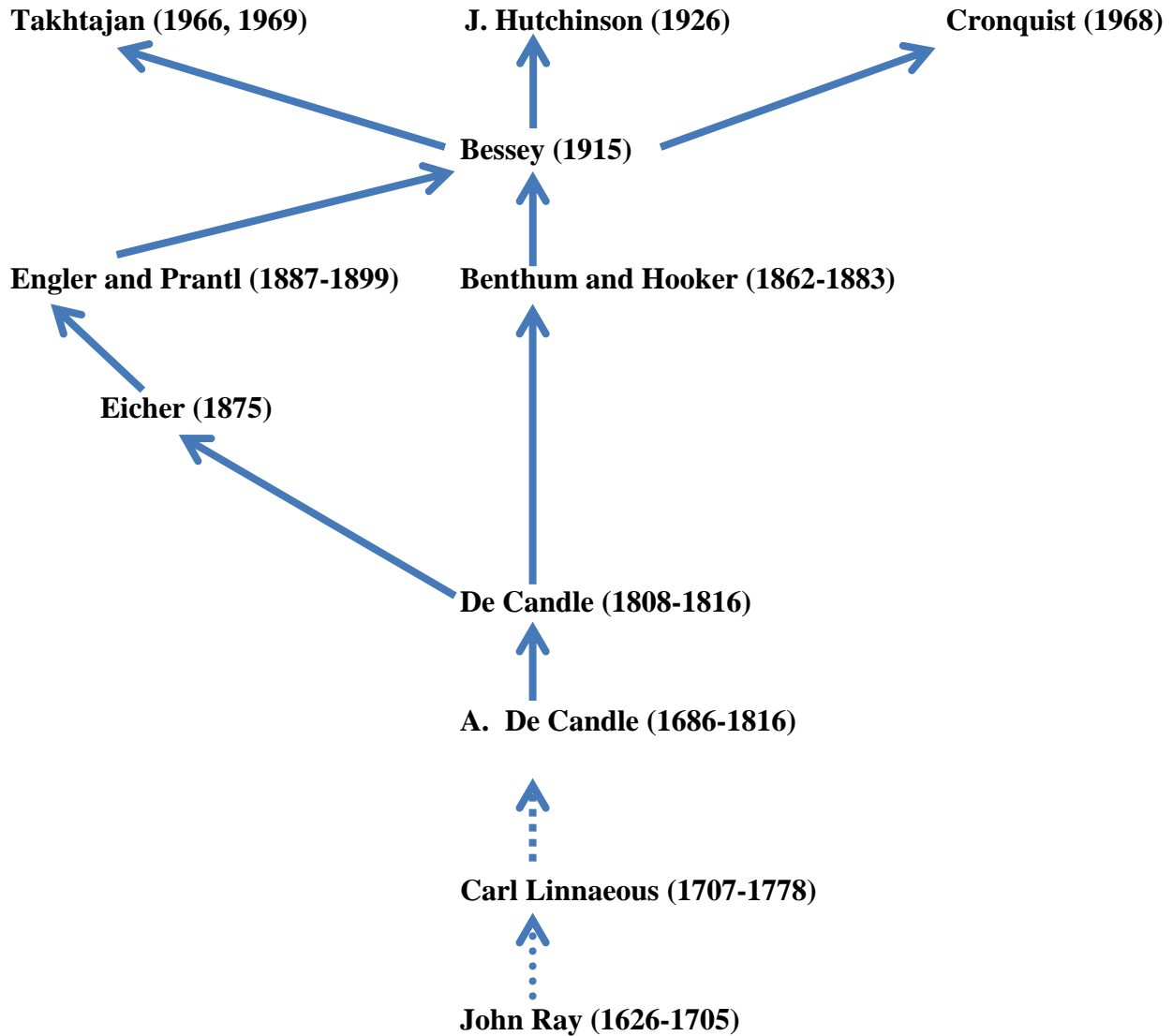


Fig: Schematic representation of how classification systems have progressed from the time of John Ray (1626-1705) to present day

**A perusal of the above chart illustrate that**

1. Classification systems are transient in nature
2. Continuously modified and improved time to time
3. All modern systems have a past and are essentially modifications of earlier ones.