

## THE TYPES OF LINNAEAN GENERA

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There seems to be a rather general belief among botanists (and zoologists too) that Linnaeus nowhere did anything to indicate the type species of his genera. In fact, on occasion, I have heard botanists give expression to the statement that the concept of a Linnaean genus was not meant by him to be limited in any way by types as now understood, but that the word genus as he viewed it, included equally all species included under the name without any emphasis whatever to be put on the concept to single out a single species as a type species of that genus in the modern view. Whatever may or may not have been the Linnaean ideas, nothing is more certain however, than the fact that Linnaeus not only expected that future botanists with possibly different ideas of the term genus, might, and probably would, divide his groups differently than he had done. He even went so far as to formulate rules for this *process* of segregation, not arbitrarily made as do the botanical congresses of today, but based on sound reason and good judgment. I go so far as to assert that were the Linnaean standards observed, we should not need botanical congresses at all. These latter are too often swayed by motives of feasibility and fail to meet a problem face to face on a logical basis.

For the reason that such remarkable works as the "Critica Botanica" and the "Philosophia Botanica" contain no publication of new genera and species, botanists generally know nothing about them, or if they do, prefer to ignore them. In these works the great 18th century taxonomist gives all the reasons for his methods and at the same time explains the principles and laws of nomenclature and taxonomy, and that too, in a more comprehensive and logical way than the makeshift methods of our modern scientific nomenclatorial congresses.

Let me, at the outset, state that inasmuch as we live in an age of democracy, or I think it were better to say an age of voting, there seems to have arisen the idea that truth can be settled by ballot taxonomically, or, for that matter, politically. Of course, it is obvious that there is nothing more dogmatic than a truth or a principle, and yet, throwing facts and principles aside, congresses, since they have started, have tried to agree on things by the force and number of ballots although it is absolutely useless to do so unless the matter voted on is true, logical, a fact, or a principle. Moreover, if anything is a truth, a principle, a fact, and logically reasoned out, then no number of votes or ballots can make it untruth, illogical, or a guess. How often has a man with a truth stood against the world of ballots and opinions and won? I have said and repeated times without number that nomenclatorial problems will never be solved by legislation and votes. Logic

and reason alone will prevail in the long run, and the more nomenclatorial congresses we have, the more involved become the difficulties, the further off seems the solution of them.

Linnaeus, the opinion of many modern taxonomists to the contrary notwithstanding, left rules for the segregation of his own genera, and by implication, also indicated what we may call a way of determining his types.

On page 197 of his "Philosophia Botanica" (1751) (or page 197 of the second edition of 1755 of the same work), he says:

"246. Si Genus receptum, secundum jus naturae (162) et artis (164), in plura dirimi debet, tum nomen antea commune manebit vulgatissimae et officinali plantae.

CORNI genus supponatur dividi in tria:

- A. Arbor floribus involucratis umbellatis.
- B. Herba floribus involucratis umbellatis.
- C. Arbor floribus non involucratis cymosis.

Sic dicenda A. *Cornus*, B. *Mesomora*, C. *Ossea*, nec licet A dici *Mesomoram* aut *Osseam*."

Linnaeus' genus A is therefore clearly to be retained as *Cornus*, that is, as typified by *Cornus mas* which, by the way, was regarded as the typical *Cornus* since the time of Pliny and by all the writers to the time of Linnaeus, or most of those after, for that matter.

*Mesomora* Rudbeck has *C. canadensis* as type and has another species *C. Suecica*.

*Ossea* Rudbeck, contains the cymose flowering dogwoods containing the group with largest number of species, now called *Svida*, having most of our American shrubs. The type is *C. sanguinea* L.

In *Rhodora*, volume 34, page 29 (1932), Mr. Oliver Farwell discusses certain generic segregates or supposed generic segregates of Rafinesque<sup>1</sup>.

As briefly as I can state the situation, Farwell says that certain segregated genera of Rafinesque have no valid standing. There seems, perhaps, a chance that the context and type of print, order, etc., might lend force to quite a different conclusion, Farwell to the contrary notwithstanding. Had Farwell made a photostatic print in *Rhodora* of the original of pages 58 and 59 of that work, perhaps the matter might look otherwise especially to such readers as are habituated by long study to Rafinesque's rather suggestive ways of proposing new genera. This may, however, well be a matter of opinion, and I am not here concerned with the question whether anyone may or may not consider Rafinesque's "groups" genera. Moreover, the name *Mesomora*, for example, has been badly misinterpreted by Rafinesque and he himself has made some rather unfortunate mistakes in grouping the species in the reference quoted by Farwell.

On page 30, *Rhodora*, Farwell, referring to Rafinesque, makes the following interesting statement:

"Under the international rules, the name Eukrania must be re-

<sup>1</sup> Rafinesque. *Alnographia Americana*, pp. 58-66 (1838).

tained for the group having the largest number of species, hence I choose *Cornus canadensis* Linn. as its type."

To select arbitrarily a type of a Linnaean genus, where that author has already done so, leads to taxonomic anarchy. Rafinesque combines the bracted cornels, namely the tree *Cornus mas* (*C. mascula* Raf.) with the two herbaceous cornels *C. canadensis* and *C. suecica*. These three are the only species in A "group". If Farwell is selecting *C. canadensis* as the type of the Linnaean aggregate genus *Cornus*, he is presumptive, because Linnaeus himself picked *his own type C. mas.* as I shall show presently. If Farwell means, in spite of his own statements to the contrary, that he selects *C. canadensis* as the type of the group Eukrania containing *C. canadensis*, *C. mas* and *C. suecica*, it still will not do, because *Eukrania* does not have precedence over *Chamaepericlymenum*, the latter having been proposed by Hill in 1756. I called attention to this as early as 1909, and Farwell might have found this in his own library with only a few minutes search, although the Kew Index, as sometimes happens, did not take cognizance of the report.

We may sum up the question in the following manner. Linnaeus had five species in the 1st edition of the *Species Plantarum* of 1753.

*C. mas*, is the *Cornus* of Pliny, Columbella, Vergil, and the other authors before him, and therefore the type of his genus. *C. sanguinea* is the type of *Ossea* Rivinus (or, as we call it now, *Svida*). *C. canadensis* and *C. suecica* are in *Mesomora* now called *Chamaepericlymenum*. J. Hill (1756) *British Herba*, p. 331. *C. florida* L. had not been segregated before Linnaeus, but was associated with *C. mas*. We here append Linnaeus' further discussion in the "*Philosophia Botanica*": "*Sic dicenda A. Cornus B. Mesomora C. Ossea. nec licet A dici Mesomoram aut Osseam.*"

Linnaeus' genus A. is therefore clearly to be retained as *Cornus*, that is, as typified by *Cornus mas* which, by the way, was regarded as the typical cornus since the time of Pliny and by all the writers to the time of Linnaeus, or after, for that matter.

*Mesomora* Rudbeck has *C. canadensis* as type, and has another species, *C. suecica*. *Ossea* Rudbeck contains the symose flowering dogwoods, containing the group with largest number of species. Even more convincing and explicit is the rule that Linnaeus proposed in the "*Critica Botanica*". I quote the passage in full because of its importance to the matter under discussion. The meaning is obvious.

"246. Si genus receptum Secundum jus naturae et artis, in plura dirimi debet, tum nomen antea commune manebit vulgatissimae et officinali plantae.

Varia nomina plantis imposuere veteres, rarius observantes genera. Systematici nullo habito respectu ad veterum divisiones, quae fructificatione convenerunt, ad idem genus idemque nomen commune reduxerunt; reliqua omnia nomina ejecerunt. Cum haec reductio, secundum assumpta principia systematica artificialia, saepe erronea evaserit, diviserunt iterum haec genera recentissimi Systematici secundum principia naturalia in plura, tumque revocata fuere prius expulsa nomina: quae, si aliis, quam olim, nunc connectierentur plantis, inextricabilis inde oriretur confusio. Exemplis res clarior evadet.

*Cornus*, *Ossea*, *Mesomora* genere conjungi debent, adeoque excludi duo nomina, tertium persistere: non licet ex hisce tribus, si per se bona sint nomina omnia, quodcunque horum placeat, indifferente assumere; sed necessario vulgatissimum, antiquissimum, et officinale nomen; ergo nec *Ossea*, nec *Mesomora* sed *Cornus* retineri debet. Hisce positis; urgeat Ruppius ex autoritate Rivini, quod *Ossea* sit distinctum genus; *Rudbeckius*, quod *Mesomora*, cum herba sit, reliquae arbores; positus (non concessis) hisce, non licet vocare *Mesomoram Osseam*, vel vice versa, sed debet fingula retinere nomen quod antea gessit.

CENTAURIA. g. pl. 676 sic divisum.

| TOURNEFORTIO     | VAILLANTIO etc.   | PONTEDERAE     |
|------------------|-------------------|----------------|
| Centaur, maj. T. | Rhaponticum T.    | Cent. maj. Pn. |
|                  | Serratula Rp.     | Jacea          |
|                  | Crupina D.        |                |
| Jacea.....       | Jacea V.          | Cyanoides.     |
|                  | Crocodilium V.    |                |
|                  | Calcitrapa V.     |                |
|                  | Calcitrapoides V. |                |
| Cyanus.....      | Cyanus            | } Cyanus.      |
|                  | Amberboi V.       |                |

*Concludo*: Cyanoidem Pn. dici debuisse Jaceam; et Jaceam Pn. *Serratulam*."

It is evident from the even more lucid discussion of the "Critica Botanica" that not only the official and most common plant, but also the oldest, i. e., the one holding the name previous to Linnaeus' time should be considered the type. Moreover, let it be well understood that the author is speaking of general practice and only cites the case of *Cornus* as an example. Linnaeus wishes then, to go on record as taking the position that anyone splitting up his genera should logically do so in such a way that his genus names go to the plant group that before his time had that name applied to it. And also he insists that the segregates should have the names which they as groups previously had. This seems a rather unusually clear way to solve the problem of Linnaean types. One may argue that Linnaeus cannot force us to discuss pre-Linnaean attitudes of nomenclature, since the evident reason, according to some superficially minded botanists at present for the starting-point of nomenclature to have been put at 1753 is, that we may abandon all botanical nomenclature before that date. Be it remembered, however, that in the 1756 edition of the "Philosophia Botanica" (and the 1790 as well), Linnaeus still held to the rules he outlined before 1753.

The all-important point also is that Linnaeus, even if he did not quote types in each genus as we now do, he did, as a matter of fact, tell us the only obvious and logical way to do so.

We dare state that if his rule were used instead of the haphazard illogical ones of the congresses, over ninety per cent of the Linnaean

genus types could easily be definitely and immediately designated with very little difficulty.

In cases where Linnaeus substituted new names for the older ones in use, he did so because the name itself is objectionable to him as such, either as being non-Latin, barbarous, or inappropriate. We are told elsewhere in the "Philosophia Botanica" why he made such changes, and for which plants he substituted them. Therefore, the type can be determined readily in these cases. The better thinking botanists of today have for some time realized that a knowledge of plants prior to 1753 *is necessary* and to them there will be a minimum of difficulty in logically determining which plant in a genus Linnaeus had in mind when giving the genus a particular name. What else is this except to derive correctly the types of Linnaean genera? I might also call attention to the fact that the many other nomenclatorial rules of the "Critica Botanica" and "Philosophia Botanica" are quite as important for the stability and perfection of our present taxonomy, and that the decrees of voting botanical congresses have not, as a matter of fact, been able to compare in perfection to the principles enunciated by Linnaeus in these works that constitute his *apologia* for what he does in his practical works.

Finally, if we wish to avoid anarchy in botanical nomenclature, we have a right to insist that none but the author of a genus has a right to fix the type. Congresses have at least determined on this principle for present writers, but why anyone with incomplete information can arbitrarily be allowed to select at random Linnaean types by such makeshift methods as the theory of residues, as has been done for many years past, we are absolutely unable to comprehend.

