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HYBRIDS AND TAXONOMY

by

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The 3rd edition of the Rules deals with the question: "What is a hybrid in taxonomic respect" in the following manner (Art. 10): "Every individual plant, *interspecific hybrids and chimaeras excepted*, belongs to a species" [italics mine]. According to this conception hybrids are not species. Indeed, further support of this idea may be found in the prepared new edition (Stockholm Rules) in which we read: "if the status of a taxon bearing a binary [= specific] name is changed from that of a species to that of a hybrid or inversally the name of the original author will be maintained but with the addition between brackets of *pro sp.* or *pro hybr.*" (*vide* Taxon **1** : 8, 1951; *quoad obs.* 20). Some time ago it has been shown, however, that some minor modification of Article 10 is necessary because of its partial untenableness in the light of modern plant science (*vide* Camp, W. H., Amer. J. Bot. **37** : 31, 1950). It has been proposed, therefore, to modify it slightly and to read: "Every individual plant, those of certain categories such as *interspecific hybrids, graft chimaeras, and others excepted*, belongs to a species" [italics mine].

Now, it is a well-established fact that species can and do arise by hybridization. Also, the hybrid organ of many species *having* specific status in modern taxonomic practice (or under the Rules themselves) is generally accepted. Some examples of such species are mentioned by H. W. Rickett and W. H. Camp (Bull. Torrey Bot. Club **75** : 498, 1948) and need not be repeated here. Hybridization among natural populations not only creates hybrid forms of doubtful or practically no taxonomic value, it produces sometimes stable and fertile races or species. If sufficient evidence, both morphological and genetical, for their taxonomic status is available, should then the bispecific ancestry be a hindrance to classify them as ordinary taxa?

The complexity of the polymorphic process by which species were and are produced makes it impossible to evaluate generally the different ways of genesis and evolution in taxonomy. If we accept the various forms of hybridization as a criterion for distinguishing between two "basic" series of taxa, i.e. specific (non-hybrid) and hybrid taxa, only a part of possible series of taxa seems to be covered herewith. To be consequent in logic, we must create a nomenclature which would respect all the different mechanisms proved experimentally to participate in the genesis of taxa; a job which seems to be absurd. In my view, the aims of taxonomy are concerned primarily with problems of the relationship and variation of the taxa, and only secondarily with their genesis. If a taxon *C* results from the fertilization of individuals of a taxon *A* by those of a taxon *B*, and the taxa *A* & *B* are well defined, nothing can be said *a priori* about the level of the taxon *C*. Terms like "hybrid" are *physiological* words of designation rather than the expression of *taxonomic* concepts. Of course, the auxiliary symbolics, including full formulae, as applied for similar "categories" should continue to be used for necessary information, especially in more complicated cases (for some discussion of these problems see also Cugnac, A. de, Bull. Soc. Bot. France **96** : 60, 1949).

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Accordingly, I think it quite unappropriate to advocate the proposed use of the terms "nothomorph" and "mixomorph". It has been said — in conformity with the criticized points of view — that the terms "variety" and "form" are properly inapplicable in the taxonomy of hybrid plants (*vide* Bull. misc. Inform. bot. Gard. Kew **1939** : 321, 1939). W. H. Camp (*vide* Amer. J. Bot. **37** : 33, 1950) himself questions somewhat that point: "One can but wonder whether the adoption of *nothomorpha* in addition to the present and long-accepted category of *forma* might not lead to unfortunate results". Moreover, many recognized *formae* are, in fact, the result of introgressive hybridization followed by normal genetic segregation.

Another purely terminological point appears to be closely related to the present questions. Recently, I was invited to send a comment on the "Proposed International Code of Nomenclature for Cultivated Plants" (J. Roy. Hortic. Soc. **77**: 157-173, 1952), including the new provisions of the International Code of Botanical Nomenclature (Appendix II). Apart from a note on the proposed terms *nothomorph* and *mixomorph* (*vide ibid.*, p. 169 & 172), the comment may be summarized as follows:

"The term *binary name* should be deleted throughout the Code. We use a *binary nomenclature* in biology so that any validly published name of a taxon is, in fact, a binary name, whether *uninominal* (as for supraspecific taxa), or *binominal* (as for species), or *trinominal* or *plurinominal* (infraspecific taxa). I propose to reject this term in favour of that of *specific name* which, by the way, has been in general use over a long period. — Thus, we should use the term *specific name* for combinations of a generic name and a specific epithet. It appears possible, however, that the term *binary name* was used in the Code because of an idiosyncratic idea that certain special taxa, primarily hybrids, must not be considered as proper *species*, and, accordingly, their names cannot be termed *specific names*."

RELAZIONE TRA NUMERO DEI GENERI E NUMERO DELLE SPECIE DELLE GYMNOSPERME E DELLE MONOCOTILEDONI CONSIDERATE NEL „NOMENCLATOR FLORAE ITALICAE".

da

R. Tomaselli (Pavia)

Il problema della relazione tra numero di generi e numero di specie o tra numero di specie e numero di individui ecc. di una popolazione animale o vegetale ha interessato parecchi studiosi, come Chamberlin, Fisher, Corbert e Williams, i quali, ed in particolare quest'ultimo, hanno constatato che tutti i dati riferiti da numerosi tassonomi, riportati graficamente, danno sempre lo stesso tipo di curva, molto simile ad un'iperbole.

Questo fatto molto interessante dimostra che dovrebbe esistere un ordine matematico che rappresenti qualcosa di reale nel complesso della Natura, che i tassonomi cercano di compenetrare, e che i risultati da essi esposti non sono quindi solo un prodotto della loro immaginazione. Tale considerazione ha suggerito quindi lo studio di elaborazioni matematiche per la definizione di distribuzioni teoriche simili a quelle realizzate. Tra esse, quella di Fisher (1943) sembra essere la più rispondente; infatti, dato il notevole accordo tra le curve teoriche e i valori reali riferiti dagli Autori che hanno studiato flore e faune di regioni più o meno vaste, si è portati a pensare che la serie logaritmica da lui proposta sia veramente una buona interpretazione della relazione sopra citata.

Abbiamo perciò voluto vedere se sussista questo accordo tra numero di generi e numero di specie anche nell'interpretazione dei dati esposti nel „Nomenclator Florae Italicae (Pars prima)" recentemente edito da Ciferri e Giacomini (vedi *Taxon*, 1952, **1** (3): 38-39).

Nella Flora esaminata abbiamo considerato separatamente le Gimnosperme e le Monocotiledoni e, in seno ai due gruppi, il numero di generi contenenti tutte le specie (spontanee e coltivate) e il numero di generi con le sole specie spontanee.

Il calcolo viene eseguito, come si è detto, sulla base di serie logaritmiche, con due incognite: x (caratteristica del campione, sempre inferiore a 0) e α (noto come "Index of Diversity")

αx; $\alpha x^2/2$; $\alpha x^3/3$; $\alpha x^4/4$ ..... ecc.

Il valore di α e di x viene calcolato, conoscendo il numero totale dei generi (S) e il