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THE NAMES IN NECKER'S ELEMENTA BOTANICA with special reference to *Dactylorchis* Vermeulen versus *Dactylorhiza* Necker

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For many years there has been doubt concerning the unitary names in Necker's 'Elementa' (1790). A great many botanists have accepted as validly published generic names those of the taxon which Necker called *species naturalis*. Others have said that since he called them "species" the term is misplaced in relation to the actual rank of the taxon concerned and the names may be discarded under the provisions of Art. 5 of the Code. A third school of thought rigidly applies the word species in the sense of the Code (and of Linnaeus) and regards Necker's unitary names as illegitimate under provision 3 of Art. 68. A fourth, and perhaps more practical group has asked when the argument is to end. Mansfeld (1958) has provided one solution — definitely to accept Necker's names as validly published by a suitable addition to the Code — an addition, incidentally, which would be unnecessary if Proskauer's (1958) argument were shown to be sound. Another way was suggested by the late A. J. Wilmott (1935). Like Mansfeld, Wilmott was quite arbitrary and merely asked Congress (Amsterdam 1935) to proscribe (nomenclaturally) Necker's 'Elementa'. Congress did not agree, but asked for a further report on the subject which was never produced owing to Wilmott's premature death.

An analysis of Necker's unitary names is at present in preparation to demonstrate the large number of name changes which might be required by acceptance of Mansfeld's proposal, and at the same time it will be shown that few if any changes will be required if those names of Necker which have been in general use by later authors as generic names are accepted as from the earliest author who made binary combinations under them. It seems, therefore, that some means of rejecting, as invalidly published, all the names concerned is the best solution of this problem.

The argument as to the use of the term "species" by Necker and an attempt to equate it to the Linnean "species" is a double-edged one, as has been most admirably demonstrated by Proskauer (1958). The word species is not unique to biology and merely refers to the fundamental unit in the classification of any collection of objects, natural or otherwise. Necker's "species" was applied to biology by the addition of the word "naturalis" and in effect he stated that in his view the fundamental unit in biology (*species naturalis*) was not the Linnean species, but the Linnean genus. It will be recalled that this view is held by a fair number of modern biologists (Laurence *et*

al. 1953), though not as a rule by taxonomists. This disagreement about the meaning of words cannot be regarded as a sound basis for discarding Necker's names and indeed has resulted in Mansfeld's proposal to retain them. His proposal is strengthened by the fact that some few of the Necker names are conserved and quite a large number appear among the *nomina rejicienda.*

As an example of the kind of thing which will occur if Mansfeld's proposal is accepted at Montreal, the case of *Dactylorhiza* Necker *versus Dactylorchis* Vermeulen may be cited: —

Article 52 requires the retention of a generic name when a genus is divided into two or more genera. Necker followed this (then unwritten) rule when he divided *Orchis* Linn. into the three parts *Orchis* Linn., *Dactylorhiza* Necker and *Abrochis* Necker. Following his description of *Abrochis*, he gave a clear statement of the constituents of the three genera by reference to Murray's (14th) edition of Linnaeus, Syst. Veg. of 1784. That work included (pp. 807—811) no fewer than 50 species referred to *Orchis* Linn., the last six being listed as imperfectly known ("*Bulbis etiamnum ignotis*"). The first ten ("*Corollae galea calcarata*") Necker referred to his *Abrochis*, the next twenty-three ("*Bulbis indivisis*") to *Orchis* and the remaining eleven ("*Bulbis palmatis*" and "*Bulbis fasciculatis*") to *Dactylorhiza.*

The following table gives essential details of these eleven species, showing how they are distributed in modern classifications. There are no data on the topic but it seems a fair assumption that the first six were well known to Necker as living plants; most of the remainder probably only by (inadequate) description. Without attributing a type method to Necker it seems fairly clear that the type of his name *Dactylorhiza* must be chosen from the first six, and since *Gymnadenia* was described by Robert Brown in 1813, from the first four.

Descr. (Murray)	Name (Murray)	Modern classifications	Geographic origin
Bulbis palmatis	*Orchis latifolia* *O. incarnata* *O. sambucina* *O. maculata*	*Dactylorchis*	Europe
	O. odoratissima *O. conopsea*	*Gymnadenia*	Europe
	O. flava	*Habenaria* (sens. lat.)*	North America
Bulbis fasciculatis	*O. fuscescens*	*Habenaria* (sens. lat.)*	Temperate E. Asia
	O. strateumatica	*Zeuxine*	Tropical Asia
	O. hyperborea	*Platanthera*	North America, Iceland
	O. abortiva	*Limodorum*	Europe and Orient

The methods of typification sanctioned in the Code are not by any means exhaustive. It is often necessary to assume that when a genus is split into two or more, or some of its species are transferred to other genera, the type at least remains. In the present case, none of the species transferred elsewhere has any special claim to be the type of *Dactylorhiza.* A lectotype must be sought among the four that remain.

The holotype of *Dactylorchis* Vermeulen (1947) is *Orchis incarnata;* there is no reason for avoiding this species as the lectotype of *Dactylorhiza* Necker (1790). *Dactylorchis* is in such circumstances a nomenclatural synonym of *Dactylorhiza*, and a superfluous illegitimate name.

* *Perularia* Schlechter, accepted by some authors.

Only one recent author (Nevski, 1937, in Acta Inst. Bot. Acad. Sc. U.R.S.S., Ser. 1, fasc. 4) appears to have adopted the name *Dactylorhiza* and only two binary combinations under it have been published. *Dactylorchis* has been adopted by Vermeulen (1947), by Heslop Harrison (various recent publications) and in the recently published list of British plants (Dandy, 1958); between thirty and forty binary combinations have appeared. Unless *Dactylorhiza* is proscribed, the only way to maintain these names, and to avoid a similar number of new ones under *Dactylorhiza*, is to place *Dactylorchis* on the list of *nomina conservanda*.

In this particular case, it is relatively simple to establish the circumscription, in terms of included species, of a 'generic' name by Necker. In many cases, however, this is extremely difficult or impossible; it may have been for this reason that Necker's work was often ignored by his contemporaries and by later botanists. It would certainly make generic nomenclature easier if the proposal of the late Mr. A. J. Wilmott were adopted in whole or in part, and Necker's 'Elementa Botanica' thrown into a nomenclatural waste paper basket, as suggested at the end of the first paragraph of this paper. But if Mansfeld's proposal is accepted, or Proskauer's view endorsed, it is to be hoped that all those in favour will carry out some of the work of typification and identification involved.

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ARCHAEOCALAMITES UND ARCHAEOCALAMITACEAE

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Asterocalamites Schimper und Asterocalamites Zeiller sind illegitim. Legitim ist Archaeocalamites Stur.

In Fossilium Catalogus II: Plantae, Pars 3: Equisetales II, 1914 führt Jongmans auf p. 55 und 56 die Gattung Archaeocalamites Stur mit ihrer Synonymik an. Er gibt auf p. 56, Absatz 2 eine richtige Beurteilung der Sachlage, entscheidet sich aber in Absatz 3 — wenn auch konjunktivisch — aus Rücksicht auf den Gebrauch der Autoren zu einer Stellungnahme gegen sein unmittelbar vorher bekundetes besseres Wissen. Er schreibt:

"Meiner Meinung nach ist mehr für Stur's Auffassung zu sagen, und würde auch ich als die erste richtige Abbildung der richtigen Pflanze *Calamites radiatus* Bgt. betrachten und Schlotheim's Abbildung als eine zweifelhafte Abbildung einer Pflanze fraglichen Alters.

Da jedoch die meisten späteren Autoren den Namen *Asterocalamites scrobiculatus* in ihren Arbeiten verwenden, wäre es vielleicht nicht zweckmässig, den gut eingebürgerten Namen jetzt noch umzuändern."

Hierzu verweise ich vorerst auf Art. 62 des Pariser Code [1]) und stelle ausserdem fest, dass vor der Veröffentlichung des relevanten Teils des Foss. Cat. der inkorrekte Gattungsname Asterocalamites von Bower, Fritel, Gothan, Jongmans, Kidston, Matthew, Nathorst, Potonié, Renier, Vaffier, Zalessky und Zeiller, der korrekte Gattungsname Archaeocalamites aber von Jongmans et Kukuk, Leyh, Lotsy, Saporta et Marion, Schimper et Schenk in Zittel, Scott, Solms-Laubach, Sterzel, Stur, Tondera, Toula und Weiss verwendet worden ist. Dazu gebrauchte ihn noch Seward, jedoch versehentlich. Nichtsdestoweniger scheint bei einem etwa paritätischen Verhältnis der Ausdruck "die meisten . . . Autoren"

[1]) Pariser Code steht für International Code of Botanical Nomenclature, 1956. Alle im folgenden erwähnten Grundsätze, Artikel, Empfehlungen etc. entstammen ihm.