GRAMMATICAL OBJECTIONS TO THE INTERNATIONAL RULES OF BOTANICAL NOMENCLATURE, ADOPTED AT CAMBRIDGE IN 1930,

by

B. H. DANSER,
Botanical Laboratory of the Government University, Groningen, Netherlands.

It is generally known that botanical nomenclature, though sprung from mediaeval scientific Latin, and agreeing, in its orthography for the greater part, in its grammar as much as possible, with classical Latin, shows countless forms which not only from a classical-grammatical, but also from a mediaeval-grammatical point of view, must be looked upon as errors. These errors are for the greater part due to an inadequate knowledge of Latin and Greek grammar, or to indifference or lack of good taste on the part of botanists. And since a botanist cannot be expected to abstain from giving new names to plants until in the opinion of philologists he is sufficiently acquainted with Latin, Greek and other languages which he may have to use, it is unavoidable that the number of philological mistakes in botanical nomenclature should be steadily increasing. It may be disputed whether the mistakes should be corrected, or whether, granting the desirability, such a thing is impossible. The present author was at one time convinced that correction ought to take place systematically, but after some attempts to contribute to it he realised that it was impossible to carry it through in a consistent manner without detriment to botany, and that a non-consistent or a consistent-partial correction would also cause difficulties without giving satisfaction. In any case great indulgence is desirable towards the countless mistakes that have been made in good faith.

This, however, does not alter the fact that it is in all respects desirable to avoid such mistakes in future to the best of our knowledge.

The attitude, however, towards this question, as it is expressed in the International Rules of Botanical Nomenclature, is a remarkable one. In general they recommend a correct application of Latin and Greek grammar, be it now in classical [cfr. Art. 4, al. 3; Art. 7; Recomm. XI,

sub (*a*); Art. 27, last sentence; Recomm. 38; Recomm. XLII; Recomm. XLIV], then again in a mediaeval sense [Art. 25; Recomm. X sub (*c*); Recomm. XXXIX sub (*c*); Recomm. XL; Art. 71, sub (4)]. Nevertheless here and there rules and recommendations are found at variance with grammatical rules, irrespective whether the point of view is a classical or a mediaeval one. And contrary to the expectation that such rules will be noticed later on, and cancelled at following congresses, they are seen to increase slowly, and also at the last congress in 1930 new recommendations, and even a new rule, have been added, which not only recommend offences against Latin and Greek grammar, but make these even obligatory. As the knowledge of Latin and Greek grammar of botanists has been steadily deteriorating for the last half century, and is sure to deteriorate still further in the coming decades, the fear is justified that the present and future generations of botanists may take these rules and recommendations as a guide in forming new names, and that the number of mistakes in nomenclature may increase in a unnecessarily high degree. It is for this reason that it seems to me advisable to point out these grammatically incorrect rules and recommendations. The difficulties will be dealt with in the following in the same order in which they appear in the rules themselves. (International Rules of Botanical Nomenclature adopted by the Fifth International Botanical Congress, Cambridge, 1930; suppl. to the „Journal of Botany", June 1934; by Taylor and Francis, London).

Recommendation IX, first sentence: Orders are designated preferably by the name of one of their principal families, with the ending *-ales.*

In connection with this it should be observed that it is desirable to alter the ending *-alis* in *-aris,* when the root to which it is added contains a *l*, especially when this *l* occurs in the last syllable, but with exception of the cases, in which between the *l* of the root and that of the ending occurs a *r*. So one should write *Primulares, Selaginellares,* not *Primulales, Selaginellales.*

Art. 24. Names of subfamilies (*subfamiliae*) are taken from the name of one of the genera in the group, with the ending *-oideae,* &c.

Here we may observe that, strictly speaking, the ending *-oideae* does not exist in Greek or Latin. There are compounds in *-ειδησ,* in Latin ending in *-ides,* which retain *-ides* in the feminine plural. It is an incorrect usage to change the ending *-ides* into *-idea* and *-ideum* in the feminine and neuter, or even to form the ending *-ideus* if transferring such names to the masculine gender. Therefore the formation of words in *-ideae* is incorrect.

Recommendation X, (e), (f), and (g): Botanists who are forming generic names show judgment and taste by attending to the following recommendations:

(*e*) To avoid adjectives used as nouns.

(*f*) Not to give a genus a name whose form is rather that of a subgenus or section (e.g. *Eusideroxylon,* a name given to a genus of *Lauraceae.* This, however, being legitimate, cannot be altered).

(*g*) Not to make names by combining words from different languages (*nomina hybrida*).

Sub (*e*) probably only Latin genus-names are meant, as *Mirabilis, Gloriosa* and *Impatiens,* and not the far more numerous Greek ones. Although no one takes offence at those names, and even the Romans used names as Crispus and Rufus, and in later Latin names as Clemens and Felix are numerous, the introduction of genus-names as *Pennatus* and *Glandulosus* is certainly not to be recommended. In Greek, however, the case is entirely different. Cfr. the discussion of art. 72.

With regard to (*f*) it may be pointed out, that the names referred to, namely those with *Eu-,* denoting a subgenus or section, are grammatically wrong, and that it would be unfair to avoid correctly formed names, as *Eusideroxylon, Eucalyptus, Euonymus,* &c. on account of this paragraph. See further discussion of Recomm. XI.

As to (*g*) it may be said that the formation of *nomina hybrida* (rectius *hibrida*) occurred already in classical Latin, and that it was far from rare in mediaeval Latin. The puritanical point of view, expressed in the above recommendation, is inconsistent with the further grammatical tendency of the rules for nomenclature.

Recommendation XI, (a) and (b): Botanists constructing names for subgenera or sections will do well to attend to the preceding recommendations and also to the following:

(*a*) To give, where possible, to the principal division of a genus a name which recalls that of the genus with some modification or addition. Thus *Eu-* may be placed at the beginning of the generic name when it is of Greek origin, *-astrum, -ella* at the end of the name when Latin, or any other modification consistent with the grammar and usages of the Latin language: e.g. *Eucardamine* (from *Cardamine*), *Drabella* (from *Draba*).

(*b*) To avoid giving to a subgenus or section the name of the genus to which it belongs, with the ending *-oides* or *-opsis*: but on the contrary to reserve this ending for a section which resembles another genus and by then adding *-oides* or *-opsis* to the name of that other genus, if it is of Greek origin, to form the name of the section.

As to (*a*) it should be noticed that the formation of subgenera and sections by means of prefixing *Eu-* to genus-names is a misuse in a grammatical sense, and that either lack of grammatical knowledge or lack of good taste underlies the formation of such names. In the first place because Greek εὐ does not mean „genuine" (this ought to be γνησιοσ), and secondly because the formation of compounds by fusing

a qualifying adjective with a qualified noun is not permissable in Greek (in Sanskrit, however, and in German, this is possible). The names referred to, formed by means of prefixing *Eu-* (cfr. e.g. Engl. & Prantl, Nat. Pflanzenfam., Register zu II—IV, p. 156—171) have either no meaning whatever or a meaning entirely different to what is intended. An *Eualoë* is nothing, and a plant cannot be *eualoë*; an *Euarabis* is nothing, and a plant cannot be *euarabis*. *Euloranthus* does not mean a genuine *Loranthus*; *Gnesioloranthus* would be an incorrect formation. *Euloranthus,* however, means a flower with fine or large straps, or a plant having flowers with fine or large straps. *Euartocarpus* means a fruit yielding good bread, or a plant yielding good bread-fruit. *Gnesio-aloë* or *Gnesiarabis* would be an un-Greek formation, though γνησιος would at least mean „genuine".

As to (*b*) it may be observed that here reference is made to the ending *-oides*. Grammatically it would have been better to speak of the ending *-ides*. This ending is often not understood even by botanists with a classical training. Otto Kuntze, for instance, changed all names in *-oides* into such in *-odes*. It would be preferable to speak of compounds with Greek εἶδος.

Recommendation XXXIV again mentions names compound with *Eu-*, about which the reader is requested to compare the discussion of Recommendation XI.

Recommendation XXXV goes still farther and recommends for subspecies and varieties names composed with *eu-*, as *eu-alpina,* which, if possible, is even more inconsistent with grammar and good taste than the cases dealt with in Recommendation XI.

Recommendation XXXVI mentions the ending *-oideae*, which is incorrect, and the ending *-ales,* without drawing the attention to the form *-ares*. Cfr. the discussion of Recommendation IX and Art. 24.

Recommendation XL, (a), (b), and (d). When a new specific or other epithet is taken from the name of a man, it should be formed in the following manner:

(*a*) When a name of the person ends in a vowel, the letter *i* is added (thus *Glazioui* from Glaziou, *Bureaui* from Bureau) except when the name ends in *a*, when *e* is added (thus *Balansae* from Balansa).

(*b*) When the name ends in a consonant, the letters *ii* are added (thus *Magnusii* from Magnus, *Ramondii* from Ramond), except when the name ends in *-er*, when *i* is added (thus *Kerneri* from Kerner).

(*d*) When epithets taken from the name of a person have an adjectival form they are formed in a similar way (e.g. *Geranium Robertianum, Verbena Hasslerana*).

As to (*a*) and (*b*) I will merely remark that in these paragraphs so little heed is paid to grammar that they are obviously only intended

as an aid to memory for those who do not know a word of Latin or Greek. Moreover, they unnecessarily tie botanists down to stringent rules, which in the middle-ages were not used. There is no single reason for adhering to this recommendation rigidly, so long as one is more or less acquainted with mediaeval Latin; for those, however, who are not, there is just as little reason to depart from it.

In (*d*), however, a mistake has crept in. Here the impression is made that the ending *-ianus,* with which *Robertianus* is formed, ought to be changed into *-anus,* when the name ends in *er*. It is true that the Romans themselves sometimes used *-anus* instead of *-ianus,* but in order to avoid confusion with the ending *-anus,* e.g. of *africanus,* which has a different meaning, this is in no case to be recommended to botanists, neither for names in *-er*, nor for other names. *Hassleriana* therefore is better than *Hasslerana.*

Art. 72, (2). The gender of generic names is governed by the following regulations:

(1) .....

(2) Generic names which are modern compounds formed from two or more Greek or Latin words take the gender of the last. If the ending is altered, however, the gender will follow it.

Examples of names formed from Greek words: The generic name *Andropogon* L. was treated by Linnaeus as neuter, but it, like all other modern compounds in which the Greek masculine word *pogon* is the final element (e.g. *Centropogon, Cymbopogon, Bystropogon*), is now treated as masculine. Similarly all modern compounds ending in *-oodon, -myces, -odon, -panax, -stemon* and other masculine words are masculine. The generic names *Dendromecon* Benth., *Eomecon* Hance and *Hesperomecon* E. L. Greene are treated as feminine, because they end in the Greek feminine word *mecon,* poppy: the fact that Bentham and E. L. Greene respectively ascribed the neuter gender to the names *Dendromecon* and *Hesperomecon* is immaterial. Similarly all modern compounds ending in *-achne, -carpha, -cephala, -chlamys, -daphne* and other feminine words are treated as feminine.

The generic names *Aceras* R. Br., *Aegiceras* Gaertn. and *Xanthoceras* Bunge are neuter because they end in the Greek neuter word *ceras*; the fact that Robert Brown and Bunge respectively made *Aceras* and *Xanthoceras* feminine is immaterial. Similarly all modern compounds ending in *-dendron, -nema, -stigma, -stoma* and other neuter words are neuter. Names ending in *-anthos* (or *anthus*) and those in *-chilos* (or *-chilus*) ought strictly speaking to be neuter, since that is the gender of the Greek words *anthos* and *cheilos.* These names, however, have been with very few exceptions treated as masculine, hence it is agreed to assign that gender to them. Similarly those ending in *-gaster*, which should strictly speaking be feminine, are treated as masculine in accordance with botanical custom.

Examples of compound generic names where the termination of the last word is altered: *Hymenocarpus, Dipterocarpus* and all other modern compounds ending in the Greek masculine *carpos* (or *carpus*) are masculine. Those in *-carpa* or *-carpaea,* however, are feminine, e.g. *Callicarpa* and *Polycarpaea*; and those in *-carpon, -carpum* or *-carpium* are neuter, e.g. *Polycarpon, Ormocarpum* and *Pisocarpium.*

This part of a rule (alas, not only a recommendation) is a mixture of grammatically correct and incorrect remarks and opinions, and for that reason requires a somewhat ampler discussion, the more so because it is a complete innovation compared with the rules of nomenclature of 1910.

To begin with I will make a few remarks on grammatical composition of Greek names in general.

A tree (δενδρον) bearing roses (ῥοδον) may be called a rosetree (ῥοδοδενδρον), in Latin *Rhododendron* or *Rhododendrum*. *Rhododendrum* being a kind of *dendrum*, and *dendrum* being neuter, *Rhododendrum*, too, must be neuter. It is true that such compounds of two nouns of which one qualifies the other, are hardly permissable in classical Greek, but in later Greek they became more and more common and of Greek botanical vocabulary they form an important part.

A shrub (θαμνοσ) that has the shape of a besom, or of which besoms (ταροσ) are made, may be called a besom-shrub (ταροθαμνοσ), in Latin *Sarothamnos* or *Sarothamnus*; and a *Sarothamnus* being a kind of *thamnus*, and *thamnus* being masculine, *Sarothamnus*, too, must be masculine.

A leaf (φυλλον) consisting of a pair or yoke (ζυγον) of leaflets we may call a yoke-leaf (ζυγοφυλλον). For the reason mentioned above the name of that leaf must be neuter. But we can transfer the same name to the whole of the plant. In such cases we mention the leaf instead of the plant, and the whole plant is, as it were, a kind of *phyllum*, and the name must therefore be neuter. Such transferred plant-names, which, as a matter of fact, are but names for part of the plant (leaf, flower, fruit, seed) are known in many other languages.

We can, however, give a name to a plant by means of converting an adjective into a noun. Thus in many languages we can indicate plants by names corresponding with e.g. „long-leaved", „short-fruited", „small-seeded", &c., in Greek Μακροφυλλοσ or Μακροφυλλον, Βραχυκαρποσ or Βραχυκαρπον, Μικροσπερμοσ or Μικροσπερμον, according to what is meant by the name, a tree, δενδρον, a shrub, θαμνοσ, or some other thing. And transcribed into Latin these names are *Macrophyllus, -a, -um, Brachycarpus, -a, -um, Microspermus, -a, -um,* according to whether we indicate a *frutex,* or an *arbor,* or something else by it. It is therefore incorrect, if Recommendation X (*e*) advises to avoid forming genus-names by means of converting adjectives into nouns.

Classical Greek already was very rich in such names, and later Greek even more so. Φιλιπποσ, e.g., was not a kind of ἱπποσ, but some

one fond of horses (ἵππος). Τιμαρετη was not a kind of ἀρετη, but a woman honouring truth (ἀρετη). Νικολαος was not a kind of λαος, but some one conquering the people (λαος). Εὐβουλος was not a kind of βουλος, but some one giving good advice (βουλη). Ξανθιππος was not a yellow horse, but some one possessing a yellow horse and Ξανθιππη was a woman called after Ξανθιππος, or a woman possessing a yellow horse. Ἀνδρομαχος was not a kind of μαχος, but some one who fought with men, or about whom many men fought, just as Ἀνδρομαχη was a woman either simply called after a certain Ἀνδρομαχος, or a woman disputed by men.

The same may be applied to various plant-names.

Ammochloa is a kind of *chloa* (χλοη), *Calamagrostis* a kind of *agrostis* (ἀγρωστις), *Cephalotaxus* a kind of *taxus, Chamaecyparis* a kind of *cyparis, Chionodoxa* a kind of *doxa* (δοξα), *Cystopteris* a kind of *pteris* (πτερις), *Helosciadium* a kind of *sciadium* (σκιαδειον), *Hyoscyamus* a kind of *cyamus* (κυαμος), *Liriodendron* a kind of *dendron* (δενδρον), *Melilotus* a kind of *lotus* (λωτος), *Oenanthe* a kind of *anthe* (ἀνθη), *Petroselinum* a kind of *selinum* (σελινον), *Pseudotsuga* a kind of *tsuga. Sciadopitys* a kind of *pitys* (πιτυς). All these names should therefore have the gender of the last element of the compound.

By transference *Aegopodium,* too, can be a kind of *podium* (ποδιον), and similarly *Agrostemma* a kind of *stemma* (στεμμα), *Alopecurus* a kind of *urus* (οὖρος), *Caprifolium* a kind of *folium, Ceratophyllum* a kind of *phyllum* (φυλλον), *Equisetum* a kind of *setum, Lycopus* a kind of *πους, Tragopogon* a kind of *pogon* (πωγων). Therefore these compound names, too, should have the gender of the last element.

Amorpha, however, is not a kind of *morpha,* but a plant without (ἀ-) shape (μορφη); *Ampelopsis* is not a kind of *opsis,* but a plant of a certain appearance (ὄψις), *Biscutella* is not a kind of *scutella* but a plant with two *scutella, Brachypodium* is not a kind of *podium* but a plant with short stalks (ποδιον), *Cephalanthera* is not a kind of *anthera* but a plant with *antherae* of a certain kind, *Ceratocephalus* is not a kind of *cephalus,* but a plant with a certain kind of heads (κεφαλη), *Chorispora* is not a kind of *spora,* but a plant with *sporae* of a definite kind, *Coeloglossum* is not a kind of *glossum,* but a plant with a certain kind of tongue (γλωσσα), *Diëlytra* is not a kind of *elytra,* but a plant with a certain number of elytra (ἐλυτρον), *Dimorphotheca* is not a kind of *theca,* but a plant with two kinds of thecae (θηκη), *Diplotaxis* is not a kind of *taxis,* but a plant with double rows (ταξις), *Echinops* is not a kind of *ops,* but a plant having the appearance (ὠψ) of a

hedge-hog (ἐχινοσ), *Euonymus* is not a kind of *onymus* but a plant bearing a beautiful name (ὀνυμα).

There is no reason whatever for giving these names the gender of the last element; they must take the gender of the noun that is connected with them in our thoughts.

Sometimes the gender is to be recognised by the ending of the name, sometimes not. An example of a name where the gender is not recognisable is *Aceras*. Something having no horn we may call hornless, ἀκερασ, *aceras*, and irrespective whether by this name we mean a masculine, feminine or neuter noun, the name is *Aceras*. On the other hand it is not possible to know the gender by the ending. It may be a *herba aceras*, a *flos aceras*, a *semen aceras*, &c. To look upon *Aceras* as a neuter because the last element, κερασ, is neuter, is contrary to grammar.

A more difficult example is e.g. *Tricholoma*. Something having the appearance of a hair-fringe, e.g. an alga or a mould, we may call τριχολωμα, *Tricholoma*. As λωμα is neuter, *Tricholoma* must be neuter as well. However, to something having a hair-fringe we can also give the adjectival name *Tricholoma*, from Greek τριχολωμοσ or τριχολωμον, Latin *tricholomus, -a, -um*. The well-known toad-stool *Tricholoma* cannot very well be looked upon as a kind of *loma*, and therefore ought to be considered as feminine, not as neuter.

The same reasoning holds good for all names in *-nema, -stemma, -gramma*, &c. All these names may either be taken as original nouns, and in this case must be considered to be neuter, or they may be taken as converted adjectives, in which case they must unconditionally be looked upon as feminine. To mention an example, the alga *Zygónema* will in all probability have to be taken as neuter, the Angiosperm *Spironema* as feminine, if we are to adhere to grammar.

From the above it becomes sufficiently evident that we cannot tell simply by the ending or by the last element of the compound what gender a name must have according to grammar. For this, knowledge and understanding of the formation of the name is necessary.

Another group of names which especially deserve our attention, are those having a Greek *s*-stem for their last element, as ἀνθοσ, ἀλγοσ, πενθοσ, σκελοσ, εἶδοσ, &c. They again can be either substantival or adjectival. As original nouns they can either end in *-os*, or this ending can be latinised into *-us*, in which case already in classical Latin the masculine gender could be used as well as the neuter gender. As adjectives, however, they must end in -ησ, ησ, -εσ, in Latin *-ēs, -ēs, -ĕs*. So names in *-anthes, -chiles, -penthes, -ides*, &c., are certainly adjectives,

names in *-anthos* or *-anthus, -chilos* or *-chilus,* &c., certainly nouns, if formed in a grammatical manner. Names in *-anthe, -antha, -anthon, -anthum,* can never be legitimately formed from ἄνθος, but at utmost from another word, e.g. ἄνθη.

After this introduction, which is required for a good understanding of the matter, Art. 72 can be dealt with shortly.

The following may be observed: As to its meaning *Andropogon* can be either a transferred noun or a converted adjective. In the first case it must be masculine, like πωγων; in the latter case it is equally possible that it is feminine or neuter. On the same grounds there is no single reason why other names in *-pogon,* and such in *-codon* (κωδων), *-myces* (μυκης), *-panax* (πανάξ), *-stemon* (στημων), should all be masculine. It should first be ascertained whether they are meant as transferred nouns or as converted adjectives, and whether the gender may be recognised by the ending. The names in *-odon* are probably mentioned here by error; although there exists an Ionian variant ὀδων of ὀδους, these names are probably adjectival, transcribed from Greek names in -οδον, derived from ὀδους, and for that reason neuter. The same considerations hold good for names in *-achne, -carpha, -cephala, -chlamys, -daphne, -gaster.*

The remark that *Aceras* and *Xanthoceras* were wrongly taken as feminine by Robert Brown, is against all grammar, and is a great injustice to this botanist.

For names in *-dendron, -nema, -stigma, -stoma, -anthos,* and *-chilos,* compare what has been said above.

Why *Callicarpa,* and *Polycarpaea,* indeed, must be feminine, *Polycarpon, Ormocarpon* and *Pisocarpium* neuter, is also evident from the above.

Summarising what seems to me the result of the above considerations as to the Rules of Botanical Nomenclature, I should like to propose to gather all the grammatical and quasi-grammatical rules into one chapter of grammar that meets the requirements both of botanists with, and of those without a classical training, and to take for a basis, that, equally in the orthography as in the definition of the gender of names, we should follow the first choice of the author for names already formed, but that for names yet to be formed we should as much as possible proceed on classical-Latin lines, and wherever this may be necessary on post-classical lines, but never on lines inconsistent with all grammar.

The late publication, alas, of the rules of nomenclature, agreed

upon in 1930, makes it impossible to make more concrete proposals here. The best plan would probably be to leave this question to a committee of botanists who are more or less competent in this matter, and to whom a period of five years should be allowed in order to discuss matters with philologists.
