

## THE GENDER OF GENERIC NAMES : A VINDICATION OF ART. 72 (2). T. A. SPRAGUE.

Dr. B. H. Danser of Groningen has recently contributed to *Blumea*, vol. I, No. 2, 1935, pp. 295-304, a paper entitled "Grammatical objections to the International Rules of Botanical Nomenclature, adopted at Cambridge in 1930." The first part of it consists of a criticism of the recommendations and rules concerning the formation of names adopted at Vienna in 1905, and does not call for immediate comment. The second part deals with Art. 72 (2) of the International Rules, adopted at Cambridge in 1930, and contains various statements which cannot be allowed to pass unchallenged. The following may be cited as examples: (1) "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" (p. 296); (2) "This part of a rule (alas, not only a recommendation) is a mixture of grammatically correct and incorrect remarks and opinions" (p. 300); (3) "The remark that *Aceras* and *Xanthoceras* were wrongly taken as feminine . . . is against all grammar."

It is proposed to show that there is no foundation for these statements, in so far as they concern Art. 72 (2).

Before dealing with Dr. Danser's criticisms in detail, it seems desirable to emphasize a few fundamental considerations and corollaries which he has apparently overlooked or failed to appreciate.

1. Generic names are *by their very nature* nouns (i.e. substantives)\* in the nominative singular, each with its own gender (Art. 25, 27).

2. Hence botanists who are forming generic names are recommended to avoid adjectives used as nouns (Rec. Xe).

3. A second reason for this avoidance is that Greek and Latin adjectives have three genders, and that it is not always possible to determine the gender from the ending. Thus many Greek adjectives end in *-os*, m.f., *-on*, n., and many Latin ones in *-is*, m.f., *-e*, n. The nominative form of the Latin adjectives *simplex*, *dispar*, etc., is the same in all three genders. The gender of a generic name which is a Greek or Latin adjective may therefore be ambiguous.

4. The scientific names of plants are largely drawn from medieval Latin, the international language of the Middle Ages. Hence "scientific names . . . taken from any language other than Latin, or formed in an arbitrary manner . . . are treated as if they were Latin"; and "Latin terminations should be used as far as possible for new names" (Art. 7).

5. It follows that *existing* names published with a medieval spelling, e.g. *Fagus sylvatica*, must not on that account be modified

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\* The word "noun" is used throughout this paper in the strict sense of "substantive" for brevity's sake.

or rejected (Art. 70), but that in the formation of *new* names such departures from classical spelling should be avoided (Rec. XLII). Botanical nomenclature contains many such names or epithets which offend the taste of classical scholars. These are retained, on grounds of practical convenience, but it is obviously undesirable to add to their number. The Rules, far from being "puritanical," are extremely tolerant. Dr. Danser apparently does not appreciate the basic difference between a "rule" and a "recommendation"; thus he writes that Rec. XL (a) and (b) "unnecessarily tie down botanists to stringent rules." The essential nature of a "recommendation" is that it is *not* binding. There is nothing to prevent him or any other botanist from publishing new specific epithets in the form *Hassleriana*, and once validly published they must not be altered to the recommended form *Hasslerana* (Art. 2, and Art. 70, examples of retention of original spelling). It was precisely because it was considered undesirable to tie botanists down to stringent rules in the formation of new epithets that these matters were dealt with by means of *recommendations*.

6. The primary object of the International Rules is purely practical: to save the time of botanists by establishing a uniform accepted nomenclature. The basis of this system was the general practice of botanists. The same principle is still in operation: "in the absence of a relevant rule, or where the consequences of rules are doubtful, established custom must be followed" (Art. 5).

7. There is fortunately no difference of opinion as to the correct genders of a great majority of generic names. There are many instances, however, where two (or even three) genders have been assigned by different botanists to the same generic name. Before the adoption of Art. 72 (2) at Cambridge in 1930, the linguistic and grammatical investigation of such cases occupied a great deal of valuable time that might more profitably have been devoted to taxonomic studies. Some guidance on this matter is evidently required by botanists, whether it be in the form of a rule or of a recommendation.

8. An ideal rule, governing the gender of generic names which are modern compounds of two or more Greek or Latin words, should satisfy five conditions: (1) its wording should be clear; (2) it should be easy to apply even by those possessing only a bare minimum of classical knowledge; (3) it should give the same gender to all generic names ending in the same element; (4) the gender assigned to each generic name should coincide with that of classical words ending in the same element, where such classical words exist; (5) the gender assigned should coincide with that already generally adopted for generic names ending in that element.

These five conditions may now be briefly considered in relation to Art. 72 (2), the text of which is as follows:—"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."



(1) Judging by Dr. Danser's criticisms, he seems to have misunderstood Art. 72 (2) in one respect, and the text of the rule may therefore have to be somewhat expanded in order to make it more explicit. The Article neither states nor implies that the *original meaning* of generic names which are modern compounds is necessarily that of a noun. The first sentence of Art. 72 (2) states that such names take the gender of their last element [provided that the ending is not altered]. Thus any generic name ending in *-carpos* is, *irrespective of its original meaning*, automatically treated as masculine, like the Greek noun *carpos* itself. This *convention* has two great practical advantages: it makes it unnecessary to investigate the precise meaning of a generic name, which may in many cases be doubtful; and secondly that all generic names ending in the *same element* (unaltered) shall have the *same gender*. Thus the modern compound *ochrocarpos*, according to its derivation, might be either a noun, meaning "pale yellow fruit," or an adjective meaning "with pale yellow fruits": in the former case it would be masculine, in the latter case it might be either masculine or feminine. Under Art. 72 (2), however, the gender of the generic name *Ochrocarpos* Thou. (Guttiferae) is masculine, because *carpos* is masculine. Similarly the modern compound *aspidosperma* might be a neuter noun meaning "shield-seed," or a feminine adjective (with a latinized ending) meaning "with shield-like seeds." Under Art. 72 (2), however, the generic name *Aspidosperma* Mart. (Apocynaceae) is treated as neuter, because the Greek word *sperma* is neuter. The same principle applies to generic names which are modern compounds ending in the neuter Greek nouns *broma*, *derma*, *loma*, *nema*, *stelma*, *stemma*, *stigma*, *stoma*, etc.: *Theobroma*, *Scleroderma*, *Tricholoma*, *Spironema*, *Zygonema*, *Metastelma*, *Agrostemma*, *Ceratostigma*, *Melastoma* are all treated as neuter. The practical convenience of this convention is obvious. The case of *Melastoma* L. is illuminating. Linnaeus made the generic name feminine, but so strongly do botanists feel that all names ending in *-stoma* should be neuter, that *Melastoma* is nowadays by common consent treated as neuter.

The second sentence of Art. 72 (2) states that if the classical ending is altered by the author of a generic name, the gender will follow it. For this purpose the ending *-us*, is accepted as masculine, the endings *-a*, *-ia* and *-aea* as feminine, and those in *-on*, *-um*, *-ion* and *-ium* as neuter.

Hence *Adenocarpus*, *Artocarpus*, *Balanocarpus* and *Orthocarpus* are treated as masculine; *Callicarpa*, *Cyrtocarpa*, *Myriocarpa* and *Rhamphicarpa* as feminine; *Amphicarphaea*, *Leptocarphaea*, *Megacarphaea* and *Polycarphaea* as feminine; *Dermatocarpon*, *Endocarpon* and *Rhizocarpon* as neuter (like the Greek name *Polycarpon*); *Neurocarpum*, *Ormocarpum* and *Platycarpum* as neuter; *Pisocarpium* as neuter.

Similarly, the Greek noun *clados* being masculine, *Ancistrocladus*, *Dasycladus*, *Eriocladus* and *Trichocladus* are also masculine;

*Calocladia*, *Comocladia*, *Di cladia*, *Microcladia*, *Orthocladia* are feminine; *Didymocladon* is neuter. *Acladium*, *Actinocladium*, *Eucladium*, *Fusicladium* and *Lachnocladium*, derived from the Greek neuter noun *cladion* with latinization of the final syllable, are also neuter.

As further examples let us take the derivatives of *anthē*, f., and *anthos*, n., both meaning flower, and of *anthion*, n., meaning little flower. As stated in the examples of Art. 72 (2), it is agreed to assign the masculine gender to modern compounds of *anthos* in which the ending is unaltered, in view of the fact that almost all such compounds have in the past been treated as masculine. In accordance with the rule, *Calanthe*, *Eremanthe* and *Pneumonanthe*, being compounds of *anthē*, are feminine. Similarly *Adenanthos*, *Asteranthos* and *Pituranthos* are treated as masculine in accordance with the special convention concerning unaltered compounds of *anthos* and *cheilos*. It is unnecessary to investigate whether their original meaning was that of a noun or of an adjective. Under Art. 72 (2), it is immaterial whether compounds in *-anthon* and *-anthum* are derived from *anthē* or from *anthos*. In both cases they are treated as neuter because of their neuter ending *-on* or *-um*. *Halanthium* and *Melanthium*, derived from the Greek neuter noun *anthion* with latinization of the last syllable, are also neuter.

Greek words ending in *-anthes* may be masculine or feminine or neuter, since *-es* is a Greek adjectival ending (*-ης*, m.f., *-ες*, n.). Strictly speaking, generic names in *-anthes* should take the gender first assigned to them. As this appears to be feminine in almost all cases (*Strobilanthes* was published as masc.), it is now suggested that all such generic names be treated as feminine. Examples are *Achyranthes*, *Acleisanthes*, *Acrosanthes*, *Agathisanthes*, *Aphyllanthes*, *Axanthes*, *Byrsanthes*, *Calyptranthes*, *Chloanthes*, *Ilysanthes*, *Limnanthes*, *Menyanthes*, *Micranthes*, *Nyctanthes*, *Polianthes*, *Prenanthes*, *Spilanthes*, *Spiranthes*, *Trichosanthes*, *Trochisanthes*.

Modern compounds in *-anthis*, e.g. *Eranthis*, are also treated as feminine, both by analogy with Greek words in *-is* and in accordance with general custom.

(2) All the classical knowledge required for the application of the rule is that botanists should be able to look up the final element of a generic name in a Latin or Greek dictionary. They should accordingly know the characters of the Greek alphabet. If the classical ending is altered, the terminations *-os*, *-us* are treated as masculine, *-e*, *-a*, *-is* as feminine, *-on*, *-um*, *-ion*, and *-ium* as neuter. In case of doubt, established custom should be followed, but such cases form a very insignificant proportion of the whole.

Lists of words used as final elements in the formation of generic names are given by Saint-Lager, *Réforme de la Nomenclature Botanique*, pp. 89-108 (Ann. Soc. Bot. Lyon, vii.: 1880). A list of Greek root-words from which many botanical names are derived is given in Nicholson's *Dictionary of Gardening*, iv. 356-361. The derivations of many botanical names are given in Jenssen's *Ordbog*



for Gartnere og Botanikere (Copenhagen, 1907), and in many botanical dictionaries. Wittstein's *Etymologisch-botanisches Handwörterbuch*, ed. 2 (1856) is useful to the more experienced worker, but the derivations supplied by him are in many cases incorrect, and on that account the book cannot be recommended to the beginner.

As a test of the application of Art. 72, let us take the 37 generic names mentioned on pp. 300–303 of Dr. Danser's paper. In Latin, the letters *ae*, *oe*, *u* and *y* replace the Greek *ai*, *oi*, *ou* and *u* respectively; *e* in Latin may represent either a short or a long *e* ( $\epsilon$  or  $\eta$ ) in Greek; and *o* in Latin may represent either a short or a long *o* ( $o$  or  $\omega$ ) in Greek. If these changes are remembered, no difficulty should be experienced in finding in the Greek dictionary the nouns *rhododendron*, *calamagrōstis*, *hyoscyamos*, *melilōtus*, *oenanthē*, *petroselinon*, *alōpēcuros*, *tragopōgōn*, *euōnymos*, *polycarpon*; and eight out of these ten words occur also in Latin. According to the present text of Art. 72 (1), such classical words adopted as generic names take the gender assigned to them by their authors.\*

Considering now the 27 *modern compounds* mentioned by Dr. Danser (l.c.), there should be no difficulty in tracing the final Greek elements of *Sarothamnus* (*thamnos*), *Ammochloa* (*chloa* or *chloē*), *Cephalotaxus* (*taxos*), *Chionodoxa* (*doxa*), *Cystopteris* (*pteris*), *Helosciadium* (*sciadeion*), *Liriodendron* (*dendron*), *Sciadopitys* (*pitys*), *Aegopodium* (*podion*), *Agrostemma* (*stemma*), *Ceratophyllum* (*phyllon*), *Lycopus* (*pous*), *Amorpha* (*morphē*), *Ampelopsis* (*opsis*), *Brachypodium* (*podion*), *Cephalanthera* (*anthēra*), *Ceratocephalus* (*cephalē*), *Chorispōra* (*spōra*), *Coeloglossum* (*glōssa*), *Dielytra* (*elytra*), *Dimorphotheca* (*thēcē*), *Diplotaxis* (*taxis*), *Echinops* (*ōps*), *Aceras* and *Xanthoceras* (*ceras*), *Tricholoma* (*lōma*), *Zygonema* and *Spironema* (*nēma*), *Calli-carpa*, *Polycarpaea* and *Ormocarpon* (*carpos*), *Pisocarpium* (*carpion*). Dr. Danser writes of *Chamaecyparis* as being a kind of "*cyparis*" (l.c. 301): actually the generic name is an abbreviated form of *chamaecyparissos*! It is treated as feminine since it ends in *-is*. *Equisetum* (*equisaetum*) is a Latin word, and the final elements of *Caprifolium* (*folium*) and *Biscutella* (*scutellum*) are obvious. In fact the only generic name which might conceivably puzzle the beginner is *Pseudotsuga*, a hybrid compound of the Greek *pseudo* and the generic name *Tsuga* which is of Japanese origin. The so-called "puritanical" objection to *nomina hybrida* seems to be justified on grounds of convenience as well as of good taste.

(3) Art. 72 (2) also satisfies the third condition: that all generic

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\* I personally should prefer to retain the classical genders, except where alteration of the ending indicates a corresponding alteration of the gender (*vide* M. L. Green in *Kew Bull.* 1935, 77, n. 32). If this view is accepted at Amsterdam, here again no difficulty will arise. The change of ending from *-os* to *-us* will in that case merely confirm the Greek masculine gender of *Hyoscyamus*, *Melilotus* and *Alopecurus*, and indicate that *Euonymus* also should be treated as masculine, though *euōnymos*, the spindle-tree, is feminine in Greek; and the change from *petroselinon* to *Petroselinum* will also merely confirm the neuter gender of that generic name.

names ending in the same element shall be of the same gender. Instead of having to remember *separately* the genders of more than 200† generic names ending in *-carpos* or *-carpus*, there is only one fact to remember, namely, that the Greek word *carpos* (καρπός) is masculine.

(4) According to Art. 72 (2) modern generic names ending in *-odon*, *-panax* and *-pogon* are masculine, and so are the corresponding Greek words *cynodōn*, *opopanax*, and *tragopōgōn*; those in *-daphne*, *-opsis*, *-pteris*, *-rhiza* and *-taxis* are feminine, and so are the Greek words *chamaedaphne*, *prosopsis*, *thelypteris*, *glycyrrhiza* and *epitaxis*; those in *-blepharon*, *-phyllon* or *-phyllum*, *-podium* are neuter, and so are the Greek words *calliblepharon*, *triphyllon*, *melampodion*. Enough examples have been given to indicate that where a noun with its ending unaltered formed the final element of a Greek compound noun, that compound usually retained the same gender. The question of *adjectival* compounds with the same ending has been dealt with above under condition (1). The cases of modern compounds in *-ceras*, *-opsis*, *-taxis*, *-odon*, *-podion* (or *-podium*) and *-ops* are discussed in greater detail below.

(5) In order to test how far the gender prescribed by Art. 72 (2) agrees with *established custom* we may take from the index to Dalla Torre et Harms, *Genera Siphonogamarum*, the first 100 generic names which are modern compounds (with unaltered ending) of the following Greek words: *anthos* (*anthus*), *chilos* (*chilus*), *odon*, *panax*, *pogon*; *achne*, *carpha*, *cephala*, *daphne*, *opsis*, *thrix*; *ceras*, *nema*, *sperma*, *stelma*, *stemma*, *stigma*, *stoma*. These 100 generic names are as follows:—*Acanthonema*, *Acanthopanax*, *Acanthosperma*, *Acanthostemma*, *Achilus*, *Achnodon*, *Aciachne*, *Acianthus*, *Acicarpha*, *Acronema*, *Acropogon*, *Acrostemon*, *Acrostigma*, *Actinanthus*, *Actinodaphne*, *Actinostemma*, *Actinostemon*, *Actinostigma*, *Adelanthus*, *Adelostemma*, *Adelostigma*, *Adenanthos*, *Adenochilus*, *Adenonema*, *Adenostemma*, *Adenostoma*, *Adopogon*, *Aegiceras*, *Aegopogon*, *Aeolanthus*, *Aeschynanthus*, *Aëtanthus*, *Aëthionema*, *Aethonopogon*, *Afrodaphne*, *Agelanthus*, *Aglaonema*, *Agrostemma*, *Airopsis*, *Airosperma*, *Aitopsis*, *Allaeanthus*, *Allosperma*, *Alseodaphne*, *Amblostoma*, *Amblyanthopsis*, *Amblyanthus*, *Amblysperma*, *Amblystigma*, *Ammosperma*, *Ampelodaphne*, *Ampelopsis*, *Amphianthus*, *Amphipogon*, *Amphistelma*, *Anagosperma*, *Ancistrochilus*, *Ancylanthos*, *Ancyrostemma*, *Androchilus*, *Andropogon*, *Androstemma*, *Anemanthus*, *Anemopsis*, *Anemonopsis*, *Anetanthus*, *Angelopogon*, *Angianthus*, *Angkatanthus*, *Angraecopsis*, *Anisanthus*, *Anisochilus*, *Anisopogon*, *Anisostemon*, *Anoectochilus*, *Anomalostemon*, *Anomianthus*, *Anomopanax*, *Anthanema*, *Anthericopsis*, *Antheroceras*, *Anthodon*, *Anthopogon*, *Antidaphne*, *Aparinanthus*, *Apatanthus*, *Aphanostemma*, *Aplostemon*, *Apodocephala*, *Apogon*, *Arabidopsis*, *Arachnopogon*, *Arachnothrix*,

† There are at least 21 such beginning with the letter A in the Phanerogamae, and the total number in the Phanerogamae alone may accordingly be estimated at 200, since botanical names beginning with A form about one tenth of the whole.



*Araliopsis, Argostemma, Argyropsis, Ariopsis, Arnopogon, Artanema.*

Taking the genders assigned to them in the Index Kewensis as being, on the whole, those usually accepted by botanists, we find that 74 of the 100 generic names have the gender prescribed in Art. 72 (2), another 13 include some species of the gender prescribed and some of other genders, and only 13 generic names are recorded in the Index as being of different genders from those prescribed. *It is evident that the rule follows established custom*, in so far as that exists for the genders of generic names. If all modern compounds of Greek words were taken, the percentage of agreement would be found to be even higher, as the eighteen final elements selected for the test include three masculine nouns ending in *-on*, and six neuter ones in *-a*, which are apt to deceive those ill-acquainted with the Greek language.

Dr. Danser argues that names in *-opsis* and *-daphne* need not necessarily be feminine, as he considers that they may be adjectival: if he is right, it is very strange that botanists not only attribute the feminine gender to the 12 names in *-opsis*, and the 5 in *-daphne* contained in the test list, but—so far as I am aware—treat all generic names with these endings as feminine. Similarly, of the 7 generic names in *-nema*, 6 are treated as neuter and only 1 as feminine; and of the 9 names in *-stemma*, 8 are treated as neuter, and only 1 as feminine. It is evident that most botanists treat such generic names as nouns.

#### THE ORIGINAL GRAMMATICAL NATURE OF MODERN GREEK COMPOUNDS USED AS GENERIC NAMES.

Although generic names, *as such*, are nouns, yet their *original grammatical nature* may of course have been adjectival. Three classes of generic names may be distinguished as regards their origin: (1) those which, judging both by their ending and by comparison with similar compounds in the Greek language, were nouns, e.g. names in *-ceras*, *-opsis* and *-taxis*; (2) those which may have been either nouns or adjectives; e.g. names in *-odon*, *-podion*, and *-ops*; (3) those which were adjectives, e.g. names in *-anthes*, *-ceros* and *-ides*.

##### A. *Compounds ending in -ceras and -ceros.*

Dr. Danser lays great stress on the case of *Aceras* (l.c. 302), actually going so far as to write of "a herba aceras, a flos aceras, a semen aceras." He states that *aceras* is an adjective meaning "hornless." What are the facts? There is no Greek word *aceras*. "Hornless" in Greek is *aceratos* (ἀκέρατος). Apart from *calli-ceras*, dealt with below, the only Greek words ending in *-ceras* which I have found are *aigoceras*, lit. "goat-horn" and *bouceras*, lit. "ox-horn," both being names for fenugreek (*Trigonella Foenum-graecum*), and *diceras*, meaning a "double horn"; all three are *neuter nouns*. The corresponding *adjectives* are *aigocerōs*, *bouceraos* and *boucerōs*, *diceraios*, *diceratos*, and *dicerōs*. "Horned" in Greek is *ceraos* (κεραός), and the usual adjectival terminations corresponding to "horned" are *-ceratos* (-κερατος) and *-ceros*

(-κερως), additional examples of Greek adjectives being *monocerōs*, *triceratos*, *tricerōs*, *oxyceratos*, *oxycerōs*, *orthoceratos*, *orthocerōs*, *polycerōs*, *chrysocerōs*, *megalocerōs*, *callicerōs*. The adjective *monocerōs*, one-horned, was used also as a masculine noun meaning a unicorn, or animal with one horn. The masculine noun *rhinocerōs* doubtless had a similar origin. All these facts, which may be verified in any good Greek dictionary, indicate that modern compounds in *-ceras* should, in accordance with the principles of Greek word-formation, be treated as *neuter nouns*. The word *calliceras*, employed as an adjective in a single passage in Bacchylides, is apparently a poetical variant of the usual form *callicerōs*. This solitary exception hardly justifies Dr. Danser's assertion that, according to Greek grammar, *Aceras* and other compounds of *-ceras* (unaltered) are adjectives and can be masculine, feminine and neuter.

On the other hand, the generic names *Anthoceros* (Hepaticae), *Diceros*, *Helicodiceros*, *Tragoceros* and *Triceros* are clearly adjectival in origin, being compounds of *-cerōs* (-κερως), -horned. As far as their Greek form is concerned, they might be either masculine or feminine. The corresponding neuter forms, where known, end in *-cerōn* (-κερων), e.g. *megalocerōn*. Actually the first four have been treated as masculine by botanists, and the gender of the fifth may be either masculine or feminine, the two specific epithets hitherto published under it being *cochinchinensis* and *xalapensis*.

If the termination *-cera* is used in a botanical generic name, that is regarded as feminine: thus *Ampelocera*, *Calycera*, *Dicera*, *Tetracera* are all treated by botanists as feminine.

Some generic names ending in *-ceras* are treated as neuter in the Index Kewensis, e.g. *Aegiceras*, *Coccoceras*, *Carpcoceras* Link, *Otoceras* and *Styloceras*; on the other hand, *Aceras*, *Buceras*, *Carpcoceras* Rich. and *Antheroceras* are treated as feminine in the Index. Art. 72 (2) supplies a simple method of arriving at the correct\* gender in cases of this kind where different genders have been assigned by botanists to generic names terminating in the same noun.

#### B. Compounds ending in *-opsis*.

Dr. Danser maintains that the meaning of the generic name *Ampelopsis* is adjectival, and that it, and other compounds of *-opsis*, may therefore be masculine, feminine or neuter. What are the facts?

The generic name *Ampelopsis* is compounded from *ampelos*, a vine, and *opsis* (ὄψις), a feminine noun meaning "appearance." The only Greek compounds of *opsis* traced in a short search are *diopsis*, *catopsis*, *prosopsis* and *synopsis*—all *feminine nouns*.

*Ampelopsis* means, literally, "vine appearance" or "vine look." The corresponding adjectival form, if it had existed, would have been *ampelopsios*, these two words being analogous with the

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\* "Correct," firstly because it is in accordance with International Rules, and secondly because it is in accordance with similarly formed Greek words.



two existing Greek words *catopsis* view, and *catopsios* visible. No Greek adjective in *-opsis* has been traced. These facts suggest that Dr. Danser's view of the grammatical nature of compounds of *-opsis* is erroneous.

*Ampelopsis* and all other botanical generic names ending in *-opsis* have been treated as feminine, so far as I know, examples being *Anemonopsis*, *Castanopsis*, *Chrysopsis*, *Codonopsis*, *Coreopsis*, *Corylopsis*, *Cyamopsis*, *Dichopsis*, *Drimiopsis*, *Echidnopsis*, *Gynandropsis*, *Lycopsis*, *Meconopsis*, *Phalaenopsis*, *Sycopsis*, *Thermopsis*, *Thujopsis*. A single specific epithet in *Cyamopsis* and one in *Lycopsis* were, however, published as masculine.

### C. Compounds ending in *-taxis*.

All Greek words which I have found ending in *-taxis* are feminine nouns, like *taxis* (τάξις) itself, e.g. *diataxis*, *epitaxis*, *metataxis*, *parataxis*, *syntaxis*. None of these is used as an adjective: the corresponding adjectival forms (where they occur) end in *-tacticos* (*-τακτικός*) and *-tactos* (*-τακτός*), e.g. *tacticos*, *tactos*, *diatacticos*, *epitacticos*, *epitactos*. The adjectival form of *Diploaxis* would therefore have been *diploctacticos* or *diploctactos*, meaning "arranged in a double row." These facts are diametrically opposed to Dr. Danser's view that *Diploaxis* and other compounds of *taxis* are adjectives. Not only has *Diploaxis* the form of a Greek feminine substantive, but its meaning "double row" is also substantival. Furthermore, *Diploaxis* and all other botanical generic names ending in *-taxis* have been made feminine by their authors, so far as I am aware, examples being *Monotaxis*, *Ditaxis*, *Tritaxis*, *Triplotaxis*, *Tetrataxis*, *Heterotaxis*. On the other hand *Orthotactus* is clearly adjectival in origin.

### D. Compounds ending in *-odon*.

Dr. Danser suggests that compounds ending in *-odon* were probably mentioned by error as masculine in the examples of Art. 72 (2): he thinks that they "are probably adjectival, transcribed from Greek names in *-odon* derived from *ὀδός*". This is not the case. For very good reasons given below there appear to be no Greek words, terminating in *-odon*, that are derived from *ὀδός*. Greek adjectives ending in *-odos* (m.f.), *-odon* (n.), are derived, not from *odous* (*ὀδός*) m., a tooth, but from *hodos* (*ὁδός*) f., a way, path, road, e.g. *anodos*, *-on*, impassable, *euodos*, *-on*, easy to pass or travel. Examples of corresponding nouns are *diodos*, f., a way through, and *triodos*, f., a meeting of three roads.

On the other hand, Greek adjectives and nouns in which the final element is derived from *odous*, m., a tooth, end in *-odous* (m.f.—a neuter form does not seem to occur), e.g. the adjectives *monodous*, one-toothed, *oxyodous*, sharp-toothed, *triadous*, three-toothed, *megalodous*, with large teeth, *myriodous*, with a multitude of teeth, and the masculine nouns *triadous*, a trident or a triangular figure, and *cynodous* (*κυνόδους*), a canine tooth.

Thirdly, Greek adjectives and nouns in which the final element is derived from *odōn* (ὀδών), m., a tooth, end in *-odon*, e.g. the adjective *anodon* (ἀνόδων), toothless, and the masculine noun *cynodon* (κυνόδων), a canine tooth, and the name of a grass.

It was for these cogent reasons that generic names ending in *-odon* are treated in Art. 72 (2) as derivatives of *odōn* (ὀδών). Furthermore, it is at least probable that the ancient generic name *Cynodon* (κυνόδων) served as a pattern for the numerous modern ones with the same final element.

Names in *-odous*, if latinized, will receive the terminations *-odus*, m., *-oda*, f., *-odum*, n., e.g. *Anodus*, *Brachyodus* (Musci). *Anisodus*.

#### E. Compounds ending in *-podion* or *-podium*.

The generic name *Brachypodium* is considered by Dr. Danser to be an adjective which may be masculine, feminine or neuter, according to the noun with which it is associated in our thoughts. Greek words containing the same final element (unlatinized), namely *-podion*, are derived from the neuter noun *podion* (πόδιον) meaning a little foot. Examples of Greek nouns are *tripodion*, n., a tripod, *leontopodion*, n., little lion's foot, and *melampodion*, n., little black foot. Adjectives derived from the same final element end in *-podios*, m., *-podios* or *-podia*, f., and *-podion*, n., examples being *empodios*, *-on*, at one's feet, impeding, *epipodios*, *-a*, *-on*, upon the feet, and *peripodios*, *-a*, *-on*, going round the feet. A noun *peripodion*, n., also occurs.

As regards its form, *Brachypodium* may therefore be either a noun or an adjective, but it is clearly *neuter* in either case. The same holds for all other generic names in *-podium*, and for any in *-podion*, if such exist.

#### F. Compounds ending in *-ops*.

Modern generic names of plants ending in *-ops* were presumably modelled on the masculine Greek nouns *aigilops* (αἰγίλωψ), denoting *Quercus Cerris* and also *Aegilops ovatus*, and *cynops* (κύνωψ), a name for *Plantago lanceolata*. They may therefore be regarded as nouns derived from *ōps* (ὠψ), m.f. or n., meaning eye or face, hence facies or appearance, and not from *ōps* (ὄψ), f., a variant of *opsis* (ὄψις), f., which has much the same range of meaning. At least three corresponding *adjectival* forms are known, ending respectively in *-ōpos* (e.g. *asterōpos*, star-faced, star-eyed, *melanōpos*, black-looking, and *xanthōpos*, golden-looking), and *-ōpes* (e.g. *cynōpēs*, dog-eyed).

The word *cyclōps*, however, is used both as a masculine noun, and as an adjective, meaning round-eyed, and both *monōps*, one-eyed, and *chrysōps*, gold-coloured, shining like gold, are adjectives. As far as their *form* is concerned, modern generic names ending in *-ōps* might be either nouns or adjectives.

Under Art. 72 (2), since *ōps* itself may be masculine, feminine



or neuter, the gender of modern generic names ending in  $\delta\psi\varsigma$  may also be masculine, feminine or neuter. Each generic name in  $-\delta\psi\varsigma$  will accordingly take the gender originally assigned to it. Thus *Balanops*, *Dryobalanops*, *Gyrinops* and *Mimusops* will be treated as feminine, and *Echinops* and *Euryops* as masculine, since these were the genders adopted by the authors of the respective names.

### G. Compounds ending in $-\text{odes}$ and $-\text{oïdes}$ .

Such compounds are clearly adjectival, and it is not possible to tell the gender from their form since the masculine and feminine forms end in  $-\text{es}$  ( $-\eta\varsigma$ ) and the neuter in  $-\text{ēs}$  ( $-\epsilon\varsigma$ ). Hence, in modern compounds with these endings, the gender assigned by the author, or, if he has failed to indicate it, by the first subsequent author who has done so, must be retained. Thus *Omphalodes* Moench and *Nymphoides* Hill are both feminine, because the original species were *O. verna* and *N. flava* (an incidental binominal).

What justification exists for Dr. Danser's statement that Art. 72 (2) conflicts with Greek Grammar? As shown above in sections A, B, C, he appears to be mistaken in some of his facts: compounds of *ceras*, *opsis* and *taxis* are clearly nouns in the light of the evidence supplied, and their prescribed genders are in accordance with Greek grammar. A second class of modern compounds such as those ending in the unaltered elements  $-\text{odon}$ ,  $-\text{pogon}$ ,  $-\text{carpos}$ ,  $-\text{clados}$ ,  $-\text{loma}$ ,  $-\text{sperma}$ , may, by their form, be either nouns or adjectives. Nouns in  $-\text{carpos}$  will be masculine, adjectives with this final element either masculine or feminine, nouns in  $-\text{pogon}$  will be masculine, adjectives masculine, feminine or neuter; nouns in  $-\text{loma}$  and  $-\text{sperma}$  will be neuter, adjectives (with latinized ending) feminine. Since generic names are by their very nature nouns (Consideration I), how is it contrary to Greek grammar to assign to these modern compounds the gender proper to nouns with the same final elements?

Dr. Danser's contention that we ought to consider whether the noun form or the adjectival form has the *more appropriate* meaning would, if accepted, immediately introduce a *subjective* element, which would make the determination of the gender of a generic name a *mere matter of opinion* in many cases. It is only in rare instances that a precise grammatical explanation and translation of a new generic name is given by its author. On the other hand the acceptance of the convention that when a generic name, by its form, may be either a noun or an adjective, it is treated as a noun, enables us to settle the gender by means of facts. The Rules of Nomenclature are concerned with facts of publication, not with suppositions, however plausible these may be.

Where a generic name is clearly adjectival in form, the gender may or may not be indicated by the ending. Here again, a *minor convention* is helpful: that the Greek adjectival termination  $-\text{os}$  is treated as masculine, owing to the fact that it is so frequently

replaced by the Latin *-us*. The ending *-os* (*-us*) is thus accepted as masculine, *-e* (*-a*) as feminine and *-on* (*-um*) as neuter.

Taking modern compounds and variants of *cephale* (κεφαλή) as examples, *Acephale* is feminine because its last element coincides with the Greek feminine noun from which it is derived, *Polycephalos* and *Ceratocephalus* are masculine by termination, *Dasycephala* is feminine, and *Dracocephalum* is neuter. Could any rule be simpler?

Where the gender is not indicated by the form as in adjectival compounds ending in *-oides* or *-odes* (see Section G) the original gender assigned is accepted.

*Compounds formed by fusing a qualifying adjective with a qualified noun.*

Dr. Danser states (l.c. 297–8) that such compounds are not permissible in Greek. Has he never heard of *oxygala* (ὀξύγαλα), sour milk, or of *agrielaia* (ἀγριελεία), wild olive? Although such compounds are admittedly rare in classical Greek, other examples are known, and a large proportion of compound generic names of Greek origin are of this nature. If the authors of the generic names *Asterothrix*, *Calytrix* (*Calythrix*), *Cladothrix*, *Diplothrix*, *Leptothrix*, *Malacothrix*, *Oligothrix*, *Polythrix* and *Ulothrix* had regarded them as *adjectives* one would have expected to find some of these names masculine, others feminine, and yet others neuter, since Greek adjectives in *-thrix* are the same in all three genders. Actually, however, seven of these nine generic names appear to have been treated by their authors as feminine\*, and the gender of the remaining two is not indicated by the epithets of the original species or of subsequently described species. The original species of *Oligothrix* is *O. gracilis* which might be either masculine or feminine, and the two others are *O. Newtonii* and *O. xyridopsis* in which the gender is not indicated, since the specific epithets are nouns. The only species of *Polythrix* is *P. Stenandrium*, the specific epithet *Stenandrium* being the name of a related genus. All the facts taken together suggest that the authors of these nine generic names regarded them as *feminine nouns*, not as adjectives. This treatment is in accordance with established custom. In the Chlamydobacteriaceae, for example, the five generic names *Streptothrix*, *Phragmidiothrix*, *Crenothrix*, *Cladothrix*, *Thiothrix* are treated as feminine (Engl. u. Prantl, Nat. Pflanzenfam. 1, Abt. 1a, 35–40 : 1896).

#### SUMMARY.

1. The statement that Art. 72 (2) is *contrary* to Greek grammar has been shown to be without foundation.

2. Generic names are *by their very nature* nouns.

3. Where a generic name is a compound of two or more Greek words, the last of which is a *noun*, the compound may according to Greek grammar be *either* a noun or an adjective. The *convention*

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\* It has not been possible in one instance to refer to the original place of publication, but the author subsequently treated the name as feminine.



of treating such modern compounds as nouns with the same gender as the Greek noun with which they end is accordingly adopted in Art. 72 (2).

4. Where the ending of the final noun has been altered, the endings *-os*, *-us* are accepted as masculine, *-a*, *-ia*, *-aea*, *-is* as feminine, *-on*, *-um*, *-ion* and *-ium* as neuter. Those in *-os* might, according to Greek grammar, be *either* masculine or feminine in many cases (though only masculine in others). The minor *convention* of treating such names as masculine is adopted in Art. 72 (2).

5. Since the great majority of generic compounds ending in *-anthos* and *-chilos* have been treated by botanists as masculine this gender is retained, although such compounds should strictly speaking be neuter under the Rule. A similar *exception* is made in the case of compounds ending in *-gaster* which are treated as masculine in accordance with established custom, although the Greek noun *gastēr* is feminine.

6. It has been shown that Art. 72 (2) satisfies the following four requirements of an ideal rule governing the gender of generic names which are modern compounds of classical words:—

(1) It is easy to apply, even by those possessing little classical knowledge.

(2) It gives the same gender to all generic names ending in the same element.

(3) The gender given coincides with that of classical words ending in the same element.

(4) The gender given coincides with that already generally adopted by botanists for generic names ending in that element.

7. The extremely concise text of Art. 72 (2) may have to be somewhat expanded in order to make it more explicit.

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