

Article 37.4 in the 2000 St. Louis *Code* contains material regarding illustrations as types that was not in that Article in the preceding edition of the *Code* (Tokyo *Code*; Greuter & al., *Regnum Veg.* 131. 1994), where that material was in Article 8.3. In transferring the statement to Article 37, the words “and only if” were added, clarifying that since 1 January 1958 illustrations may only be indicated as types if “it is impossible to preserve a type specimen”. It is not per se “impossible” to “preserve a specimen” of, say, a fossil pollen grain. “Impossibility” of preserving a specimen is too high a hurdle, and, for palaeopalynology, means in effect paying only token attention to typification. If the *Code* were amended to require that single-grain mounts of microfossils be specifically prepared for holotypes, all of the other problems – gradual disintegration of the specimens, discoloration of mounting media, difficulty of curation – would remain, and such action would do nothing to provide typification for the numerous names in the literature that now have no locatable types. In truth, opposition to use of illustrations as types for plant microfossils really means favouring a situation in which the type method is abandoned for the thousands of names of such entities. Nearly all of the time we will continue slavishly to cite types from the literature, although we suspect that they probably do not really exist, and we use, in fact, illustrations that are not officially types. Adoption of these proposals would save the type method for palaeopalynolog-

ical nomenclature under the *ICBN*, with type illustrations subject to all the rules of the *Code*, including conservation or rejection of some type illustrations, if deemed necessary.

Traverse presented proposals similar to these at the nomenclatural sessions at the 1999 IBC, but withdrew them when it became clear that the subject had not been sufficiently debated beforehand by the Committee for Fossil Plants. The nomenclatural body as a whole was not sufficiently advised to vote on the matter. We stress that the present proposals all contain “may” language. Those who wish to designate specimens as types may still do so. However, monographers would now have the option of citing illustrations as lectotypes, neotypes, and epitypes, when designated type specimens cannot be located, or meaningfully studied.

The proposed amendments to Art. 8.5, Art. 9.13 and Art. 38.2 would have the effect of making plant microfossils an exception to the prohibition of typification of fossils by illustrations, allowed for other plant taxa, pre-1958. The proposed amendment of Art. 37.4 will continue, for names published after 1 Jan., 1958, the exception of microfossils from the general prohibition of typification of fossils by illustration.

We intend that our proposals, if adopted, will take effect immediately and, where appropriate, will permit designation of illustrations as lectotypes or neotypes for existing names of microfossils.

## (213–214) Proposals to clarify the application of the term “morphotaxon” in Fossil plant nomenclature

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At the Saint Louis Congress, certain changes were made to those parts of the *Code* dealing with fossil plants. These aimed at tidying up some aspects of fossil plant nomenclature which had been the subject of conflicting views since the Stockholm Congress in 1951. The most important of these changes was to introduce a new nomenclatural concept, the morphotaxon, which in effect replaced some aspects of the two old terms, “organ genus” and “form genus”. Organ genus had been dropped from the *Code* back in 1975, while form genus had been retained up until the *Tokyo Code*. The new concept, the morphotaxon, was defined as “a fossil taxon which, for nomenclatural purposes, comprises only the parts, life history stages, or preservational states represented by the corresponding nomenclatural type” (Art. 1.2).

The term morphogenus was introduced by the Editorial Committee, in Article 7 dealing with typification, to explain (Art 7.9) that “typification of names of morphogenera of plant fossils (Art 1.2), of fungal anamorphs (Art. 59) and of any other analogous genera or lower taxa does not differ from that indicated above”. The reference to “lower taxa” is important in acknowledging that there is indeed a huge number of lower morphotaxa—fossil morphospecies—especially of angiosperm leaves, fruit and pollen.

Although the Saint Louis *Code* does not actually use the designation “morphospecies”, such fossil species are of course just that—species based on “only the parts, life history stages or preservational states represented by the corresponding nomenclatural type”.

We have many morphospecies of which the binomial is a

combination of a morphospecies epithet and a non-fossil generic name. An example of this is the Jurassic leaf compression fossil referred to by different authors either as *Ginkgo huttonii* (Sternb.) Heer (e.g., Harris, Millington & Miller, the Yorkshire Jurassic Flora Pt. 4, 1974) or *Ginkgoites huttonii* (Sternb.) M. Black (see Harris l.c.). Both have the same basionym, *Cyclopteris huttonii* Sternb. 1833 (*Flora der Vorwelt*, vol. 2). Both of the names in current use are in accordance with the *Code*, and either name can correctly be used, depending on whether this Jurassic morphospecies is regarded as rightly assigned to the living (non-fossil) genus *Ginkgo* L. or whether it is more appropriate to assign it to the morphogenus *Ginkgoites* Seward (type, *G. obovata* (Nath.) Seward, *Fossil Plants*, vol. 4, 1919, a Triassic leaf compression). The name *Ginkgo* applies to all parts of the living tree (or dead herbarium specimens derived from it) but this does not prevent an author who wishes to do so from attributing a fossil morphospecies (*G. huttonii*) to that non-fossil genus. However, the morphogenus *Ginkgoites* can only be used for fossil morphospecies based on the same organ (a leaf) and state of preservation (a compression) as those of the type of that genus.

In order to clarify the implications of these aspects of the morphospecies concept, the following two examples are proposed, to be included in the *ICBN* after Art. 11.7:–

### (213) Add the following example:

Ex 26 *bis*. Cleal and Thomas (Plant fossils of the British Coal Measures, 1994) illustrate what is generally believed to be pteridosperm foliage under the name *Lyginopteris hoeninghausii*. The

basionym of that name is *Sphenopteris hoeninghausii* Brongn. 1822, of which the type is a compression specimen of sterile foliage. The type of the generic name *Lyginopteris* Potonié is a structurally preserved pteridosperm stem, *Lyginopteris oldhamia* (Binney) Potonié. Although it is widely believed that that species bore leaves of the *Sphenopteris hoeninghausii* type, the leaf morphospecies *S. hoeninghausii* cannot be placed in the stem morphogenus *Lyginopteris* of which the type is a different plant part, in a different state of preservation. The Cleal and Thomas specimen should therefore be cited as *Sphenopteris hoeninghausii* Brongn.

### (214) Add the following example:

*Ex 26 ter.* A common Jurassic leaf compression fossil is referred to by different authors either as *Ginkgo huttonii* (Sternb.) Heer or *Ginkgoites huttonii* (Sternb.) M. Black. Both names are in accordance with the Code, and either name can correctly be used, depending on whether this Jurassic morphospecies is regarded as rightly assigned to the living (non-fossil) genus *Ginkgo* L. or whether it is more appropriate to assign it to the morphogenus *Ginkgoites* Seward (type, *G. obovata* (Nath.) Seward, a Triassic leaf compression).

## (215–217) Proposals offered by the Committee for Algae

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### (215) To avoid homonymy, permit formation of family names from the nominative singular of a generic name:

Insert the following sentence before the last sentence of Art. 18.1: “Likewise, when formation from the genitive singular of a generic name results in a homonym, -aceae is added to the nominative singular.”

Add new example: “*Ex. 3.* Family names formed on the nominative singular of a generic name to avoid homonymy: Dictyosphaeriumaceae G. S. West 1916 (from *Dictyosphaerium* Näg.) vs. Dictyosphaeriaceae Kütz. 1849 (from *Dictyosphaeria* Decne. ex Endl.), Trigoniumaceae Glezer 1986 (from *Trigonium* Cleve) vs. Trigoniaceae Endl. 1841 (from *Trigonia* Aubl.).”

In the absence of this orthographic exception, it would not be possible for a monogeneric family, such as that which is coextensive with *Trigonium* Cleve, to have a legitimate name.

### (216) Editorially improve Art. 18.1:

Change the last two words of the second sentence of Art. 18.1 from “full word” to “nominative singular”.

### (217) To avoid unnecessary nomenclatural complexity, add the following new sentence at the end of Art. 45.4:

“However, names generated in zoological nomenclature in accordance with the Principle of Coordination are not considered validly published under the present botanical code unless such a name appears in print and is applied to an accepted taxon.”

According to Art. 45.4, when a taxon originally assigned to a group not covered by the *International Code of Botanical Nomenclature (ICBN)* is treated as belonging to the algae, any of its names need satisfy only the requirements of the pertinent non-botanical Code for status equivalent to valid publication under the *ICBN*. Recently, Alexander Doweld (National Institute of Carpology, Moscow) called our attention to a previously unappreciated provision of the *International Code of Zoological Nomenclature (ICZN)*, namely, the Principle of Coordination. In accordance with this principle, a name established for any taxon simultaneously establishes names for all other taxa within the

same rank-group based on the same type. All coordinate names bear the same author and date as the initial name. The three rank-groups with their constituent taxa are as follows: family-group (superfamily, family, subfamily, tribe), genus-group (genus, subgenus), and species-group (species, subspecies). As an example of how this principle operates, publication of *Micrantholithus basquensis* subsp. *crassus* Bouché 1962 under the *ICZN* simultaneously established the species *Micrantholithus crassus* Bouché 1962. Similarly, publication of *Phacotina* (Phacotoideae) Bütschli 1884 as a subfamily of Chlamydomonadina (Chlamydomonadaceae) under the *ICZN* simultaneously established (along with other coordinate taxa) the family Phacotidae (Phacotaceae) Bütschli 1884, which has priority over Phacotaceae (‘Phacotae’) Francé 1894 published under the *ICBN*.

Although a system of nomenclature that embodies the principle of coordination has its merits, any attempt to superimpose it on traditional botanical nomenclature leads to unnecessary complication and confusion. If the present proposal is accepted, *Micrantholithus basquensis* subsp. *crassus* Bouché 1962, but not *M. crassus* Bouché 1962, will be treated as validly published under the *ICBN*. Similarly, Phacotoideae Bütschli 1884, but not Phacotaceae Bütschli 1884, will be treated as validly published under the *ICBN*. *Micrantholithus crassus* Bouché 1962 and Phacotaceae Bütschli 1884 are names of phantom taxa and as such should not be allowed to complicate botanical nomenclature. Should, however, an author publishing under the *ICZN*, say in this case Loeblich, consider *Micrantholithus basquensis* subsp. *crassus* worthy of specific rank and make it clear that *M. crassus* applies to a taxon that he accepts, the latter name would be treated as being validly published as of Loeblich. The authorship would be Bouché ex Loeblich or just Loeblich.

So-called bireginal taxonomic groups most affected by the Principle of Coordination include green flagellates, chrysophytes, coccolithophorids, silicoflagellates, raphidophytes, and cryptophytes.