

# International Code of Nomenclature for algae, fungi, and plants (Melbourne Code)

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## PREFACE

The XVIII International Botanical Congress held in Melbourne, Australia in July 2011 made a number of very significant changes in the rules governing what has long been termed botanical nomenclature, although always covering algae and fungi as well as green plants. This edition of the *Code* embodies these decisions; the first of which that must be noted is the change in its title. Since the VII International Botanical Congress in Stockholm in 1950, successive editions of the *Code* have been published as the *International Code of Botanical Nomenclature*, commonly abbreviated as *ICBN*. In Melbourne, reflecting the view, particularly amongst mycologists, that the word “Botanical” was misleading and could imply that the *Code* covered only green plants and excluded fungi and diverse algal lineages, it was agreed that the name be changed to *International Code of Nomenclature for algae, fungi, and plants*. In referring to the *Code* under its new title, we will use the abbreviation *ICN*.

The rules that govern the scientific naming of algae, fungi, and green plants are revised at Nomenclature Section meetings at successive International Botanical Congresses. As noted above, this edition of the *Code* embodies the decisions of the XVIII Congress in Melbourne in 2011. It supersedes the *Vienna Code*, published six years ago subsequent to the XVII International Botanical Congress in Vienna, Austria and like its immediate predecessors; it is written entirely in (British) English. The *Vienna Code* was translated into Chinese, Japanese, Portuguese, Russian, and Turkish; it is therefore anticipated that the *Melbourne Code*, too, will become available in several languages.

The *Melbourne Code* represents a much more substantial revision to the rules of nomenclature than has been the case with any other recent edition of the *Code*. This is not only due to the important changes accepted in Melbourne, but also because the Editorial Committee was instructed to re-organize the rules on valid publication of names in a more logical manner (see below), and took upon itself a more thorough examination of the overall clarity and consistency of the *Code*. However, despite this, the overall presentation and arrangement of the remaining text of the *Melbourne Code* remains broadly similar to that in the *Vienna Code*. A key is provided (pp. xxiii–xxviii) to the Articles, Notes, and Recommendations renumbered between the *Vienna* and *Melbourne Codes*.

More strikingly, it was agreed in Melbourne that the Appendices (other than App. I on the nomenclature of hybrids) need no longer be published along with the main text, and indeed may be published only electronically. Consequently this volume comprises only the main text of the *Code*, that is the Preamble, Division I Principles, Division II Rules and Recommendations, Division III Provisions for the Governance of the *Code*, Appendix I Names of Hybrids, the Glossary, the Index of scientific names, and the Subject index. A separate volume comprising Appendices II–VIII will be published later, both as a printed volume and electronically. Appendices II–VI will cover conserved and rejected names and suppressed works as in the *Vienna Code*, but App. VII and VIII are new and reflect a decision of the Melbourne Congress to include in Appendices the binding decisions under Art. 38.4 of this *Code* on whether or not to treat a name as validly published when it is doubtful whether a descriptive statement satisfies the requirement for a “description or diagnosis” and those under Art. 53.5 on whether or not to treat names as homonyms when it is doubtful whether they or their epithets are sufficiently alike to be confused.

In addition to the change in the title of the *Code* and the separation of the Appendices, there were five other major changes to the rules of nomenclature adopted in Melbourne: the acceptance of certain forms of electronic publication; the option of using English as an alternative to Latin for the descriptions or diagnoses of new taxa of non-fossil organisms; the requirement for registration as a prerequisite for valid publication of new names of fungi; the abolition of the provision for separate names for fungi with a pleomorphic life history; and the abandonment of the morphotaxon concept in the nomenclature of fossils.

The Nomenclature Section approved overwhelmingly the series of proposals prepared by the Special Committee on Electronic Publication set up by the Vienna Congress in 2005 (see Chapman & al. in *Taxon* 59: 1853–1862. 2010). This means that it is no longer necessary for new names of plants, fungi, and algae (and designations of types) to appear in printed matter in order to be effectively published. As an alternative, publication online in Portable Document Format (PDF) in a publication with an International Standard Serial Number (ISSN) or International Standard Book Number (ISBN) is permitted. The Special Committee had proposed 1 January 2013 as the starting date for the new rules (the beginning of the year following the expected publication of this edition of the *Code*), but the Section believed implementation so important that it decided to bring the date forward to 1 January 2012. As this was ahead of publication of the *Code* and because of the significance of the change, a paper reporting the details of the decision and incorporating a draft of the new rules was published in September 2011 almost simultaneously in 17 journals, and has been translated from English into eight languages (see e.g. Knapp & al. in *Taxon* 60: 1498–1501. 2011).

The provision for electronic publication by PDF in an online publication with an ISSN or ISBN is included in Art. 29, and the circumstances that do not constitute effective publication, both electronically and otherwise, are set out in Art. 30. In the case of electronic publication, these circumstances include the publication being a preliminary one, and any alterations made after effective publication. Article 31, dealing with the date of effective publication, includes matter peculiar to electronic publication. Recommendation 29A sets out a series of recommendations on best practice in electronic publishing, particularly with regard to

long-term archiving, and 12 new Examples are provided in Art. 29–31 addressing a number of situations that arise with electronic publication.

The requirement that for valid publication of the name of a new taxon a Latin description or diagnosis be provided goes back to the *Vienna Rules* of 1906 (Briquet, Règles Int. Nomencl. Bot. 1906). It was not, however, a feature of the rival *American Code* of 1907 (Arthur & al. in Bull. Torrey Bot. Club 34: 167–178. 1907) and so, when the schism was healed in 1930 at the V International Botanical Congress in Cambridge, U.K., the effective date was moved forward to 1 January 1935. Names of algae and fossils were initially exempt from the requirement; for the former it was later required from 1 January 1958, whereas for the latter, the first language restriction came at the Tokyo Congress of 1993, which specified that from 1 January 1996, the description or diagnosis must be in either English or Latin. A proposal was made to the Nomenclature Section in Melbourne to extend this requirement for names of fossils to names of fungi, but the Section decided to apply this rule to all organisms under the jurisdiction of the *ICN* and also decided that, like the rules on electronic publication, this more permissive provision would become effective on 1 January 2012. The general provisions are in Art. 39 (names in all groups being covered by Art. 39.2), whereas the special provisions for names of fossils are in Art. 43.1 and those of algae in Art. 44.1.

Since 2004, the online database MycoBank (<http://www.mycobank.org/>) has become increasingly used by mycologists to register new fungal names and associated data, such as descriptions and illustrations. Upon registration, MycoBank issues a unique number, which can be cited in the publication where the name appears. This number is also used by the nomenclatural database *Index Fungorum* (<http://www.indexfungorum.org/>) and serves as a Life Science Identifier (LSID). Many journals, including *Taxon*, already require inclusion of this identifier for acceptance of papers with nomenclatural novelties involving fungi. The Congress in Melbourne decided to make mandatory for valid publication of a new fungal name published on or after 1 January 2013 “the citation in the protologue of the identifier issued by a recognized repository for the name” (see Art. 42). This rule applies to names of new taxa, new combinations, names at new ranks, and replacement names.

Since the Brussels Congress in 1910, there has been provision for a separate name (or names) for the asexual (anamorph) state (or states) of fungi with a pleomorphic life cycle from that applicable to the sexual (teleomorph) state and to the whole fungus. The *Brussels Rules* (Briquet, Règles Int. Nomencl. Bot., ed. 2. 1912) specified that names given to states other than the sexual one (the “perfect state”) “have only a temporary value”, apparently anticipating a time when they would no longer be needed. At the Melbourne Congress, it was decided that this time had come – but not through disuse as may have been envisaged in Brussels. Throughout the various changes since 1912 to the rules on names of fungi with a pleomorphic life cycle, one element has remained constant: the correct name for the taxon in all its morphs (the holomorph) was the earliest applicable to the sexual state (the teleomorph). In Melbourne, this restriction was overturned and it was decided that all legitimate fungal names were to be treated equally for the purposes of establishing priority, regardless of the life history stage of the type. As a consequence the Melbourne Congress also approved additional special provisions for the conservation and rejection of fungal names to mitigate the nomenclatural disruption that would otherwise arise.

Article 59, which has dealt with names of pleomorphic fungi in all recent editions of the *Code*, is now limited to one paragraph establishing that names published prior to 1 January 2013 as applicable to one morph but including in the protologue a name (or names) applicable to a different morph are not made illegitimate on that account. There are also Notes clarifying the nomenclatural effect of all fungal names competing equally for priority. The main provisions adopted in Melbourne to minimize consequent nomenclatural disruption are to be found in Art. 14.13, by which lists of names may, after review by the appropriate committees, be conserved *en bloc* and included in Appendices to the *Code*. In addition, a new Art. 56.3 provides for similar lists of names to be rejected, while a new Art. 57.2 specifies that, where both kinds of names were widely used for a taxon, an anamorph-typified name that has priority is not to displace the teleomorph name(s) unless and until a formal conservation or rejection proposal has been submitted and rejected.

Since the *Stockholm Code* (Lanjouw & al. in Regnum Veg. 3. 1952) there have been special rules for names of fossils reflecting their frequent fragmentary occurrence. The details have changed over time, but, most recently, the *Code* has adopted the concept of “morphotaxa” that, for nomenclatural purposes, comprised only the one part, life-history stage, or preservational state represented by the corresponding nomenclatural type. The Nomenclature Section adopted a set of proposals (for details see Cleal & Thomas in *Taxon* 59: 261–268; 312–313. 2010) by which the concept of morphotaxa is abandoned, but with this the distinction is clarified between fossils, the physical objects that exist and to which the rules of nomenclature apply, and the organisms from which the fossils were derived but that no longer exist except as hypothetical reconstructions. As it is only the former that can generally be named, it was agreed that a morphotaxon concept was unnecessary, and in those cases in which two or more fossils can be shown to belong to the same organism, allowing their names to compete for priority in the usual way would not be destabilizing. Article 1.2 now defines what is meant by a fossil-taxon (rather than a morphotaxon) and Art. 11.1 establishes that the use of separate names is allowed for fossil-taxa that represent different parts, life-history stages, or preservational states of what may have been a single organismal taxon or even a single individual.

Other important changes to the rules were adopted in Melbourne, but these were of a more technical nature than the five outlined above all of which have broader implications for users of names of organisms covered by the *ICN*. Some of these more technical changes are described below.

Reference has been made to the restructuring of the section of the *Code* dealing with the requirements for valid publication of names. One of the major difficulties with this section in all recent editions of the *Code* was that the provisions for valid publication of names of new taxa and those for valid publication of renamings of existing taxa, i.e. new combinations, names at new ranks, and replacement names, were not clearly distinguished. In addition the placement of some matters such as misplaced ranks was rather illogical, and others, such as the provision for an illustration with analysis were to some degree duplicated. The new structure of this portion of the *Code*, now established as a separate chapter (V: "Valid Publication of Names") is much more logical, and, although it may take some of us a little time to get used to different numberings for frequently cited clauses (e.g. Art. 38.1(a) instead of 32.1(d) for the requirement for a validating description or diagnosis), we are convinced that this chapter will now be much easier to understand and to apply.

The chapter is divided into four sections. Section 1, General Provisions (Art. 32–37), contains the rules applicable to all names, such as the requirement for effective publication, the form of the name, the determination of date, the requirement for acceptance by the publishing author and for clear indication of rank, and the provision for names not being validly published by suppression of the work in which they appear. Section 2, Names of new taxa (Art. 38–40), covers their particular requirements such as the need for a description or diagnosis, the language of that description or diagnosis, and the requirement for type designation. Section 3, New combinations, names at new ranks, replacement names (Art. 41), encompasses all the provisions relating to such names, including permissible ranks of a basionym or replaced synonym, and the requirements, varying over time, for reference to that basionym or replaced synonym. Section 4, Names in particular groups (Art. 42–45), incorporates those provisions that are only applicable to names of fungi (Art. 42), fossils (Art. 43), algae (Art. 44), and taxa originally assigned to groups not covered by this *Code* (Art. 45).

Despite the rather dramatic changes accepted in Melbourne that are described above, taken overall, the Melbourne Congress like most of its predecessors, was rather conservative in that less than a quarter (24%) of the published proposals were accepted. Nevertheless, a small number of significant changes incorporating many useful clarifications and improvements to the *Code*, both in wording and substance, were adopted. Here we only draw attention to changes of some note. A full report on the Section's decisions has been published elsewhere (McNeill & al. in *Taxon* 60: 1507–1520. 2011).

Although not involving any change in the rules themselves, the Congress in Melbourne accepted a proposal for clear definition of the terms, "name of a new taxon", "new combination", and "replacement name" (Art. 6.9–6.11). This not only allows these concepts to be referred to more clearly throughout the *Code* and avoids cumbersome phrases such as "generic name with a basionym", but also facilitates the separation of the different rules for valid publication of names of new taxa from those for new combinations, names at new ranks, and replacement names referred to above. As a by-product, two paragraphs of Art. 7 were transposed, that dealing with typification of a new combination or a name at new rank (now Art. 7.3) has been, more logically, placed ahead of that of a replacement name (now Art. 7.4).

The Melbourne Section accepted the term "replacement name" as the preferred term in the *Code* over "nomen novum" and "avowed substitute", although use of the term *nomen novum* (or its abbreviation *nom. nov.*) is still recommended when publishing a replacement name (Rec. 32A.1).

The rules on typification of sanctioned names and of names in groups with a starting date later than 1753 are necessarily different from those for other names, but in changes to the *Code* over the years, such as the introduction of the definition of "original material", this has not always been taken fully into account. The Congress in Melbourne clarified typification of both these groups of name. Article 7.8 now addresses specifically the typification of names in groups with a later starting date. The typification of sanctioned names, resolved as a result of an *ad hoc* committee meeting during the Nomenclature Section in Melbourne, requires slightly different rules for names of species and infraspecific taxa from those for names of genera and subdivisions of genera and are to be found in Art. 9.10 and Art. 10.2(b) (with 10.5), respectively. The circumstances under which a sanctioned name excludes the original type of the name are set out in Art. 48.3.

The terms "isolectotype", "isoneotype", and "isoepitype" do not apply to any element that has particular significance under the rules, and so have not hitherto appeared in the *Code*. Their meaning is self-evident and there are situations (including the Appendices to the *Code*) in which their adoption is useful. Moreover their absence from the *Code* has apparently prompted some to question the appropriateness of their use. As a result of a proposal accepted in Melbourne, their use is now included in Rec. 9C.

It has long been established that a name that was illegitimate when published remains illegitimate unless it is conserved. There are, however, a significant number of family names in current use that, when published, were formed from illegitimate generic names that have since been conserved. Although the rules are retroactive, the effect of the rules is not, so that, under previous editions of the *Code*, the subsequent conservation of the generic name did not make legitimate the family name formed from it; this was only possible by conservation of the family name itself. Amendments accepted in Melbourne and included in Art. 18.3 and 19.6 establish that the conservation of the generic name now also makes legitimate the name of a family and the names of subdivisions of a family formed from it.

Three small but important changes were made to the rules on conservation of names. Because only names at the ranks of species, genus and family may be conserved, a problem has recently been recognized in the case of conservation with a conserved type of a generic name or species name based on the name of a subdivision of a genus or of an infraspecific taxon, respectively. As the latter could not be conserved, it would necessarily retain the type determined by the other rules of the *Code* and not the conserved type with the potential of defeating the purpose of conservation (although this was ignored in the entries in the Appendices of previous editions of the *Code*). For example, *Stipa viridula* var. *robusta* Vasey retained its type (applicable to *S. lobata* Swallen), even although *S. robusta* Scribn. was conserved at the St Louis Congress with a different conserved type, and as a result *Achnatherum robustum* (Vasey) Barkworth, a combination in current use, retained the type of the varietal name and not the intended conserved type. This was resolved in Melbourne by the addition to Art. 14.1 of the sentence: "The name of a subdivision of a genus or of an infraspecific taxon may be conserved with a conserved type and listed in App. III and IV, respectively, when it is the basionym of a name of a genus or species that could not continue to be used in its current sense without conservation." The Congress also made this provision apply retroactively for all such existing conserved names, so that, for example, *S. viridula* var. *robusta* is now conserved with the type that was conserved for *S. robusta*.

It has commonly been assumed that, just as the type of a conserved name is *de facto* conserved (by the application of Art. 14.8) regardless of whether the name is explicitly conserved with a conserved type, so also the spelling of a conserved name could not be altered. This has now been made explicit, also in Art. 14.8.

Whereas a name may be conserved to preserve its spelling and gender as well as its application, there has never been any provision to maintain its place and date of publication. As Art. 14 Note 1 put it, the *Code* did "not provide for conservation of a name against itself, i.e. against an isonym". Although this has been maintained in general, a special exception has now been provided for the family names of bryophytes and spermatophytes included in App. IIB. Article 14.15 provides that the places of publication cited for those names are treated as correct in all circumstances and consequently are not to be changed (except by a new conservation proposal), even when otherwise such a name would not be validly published or when it is a later isonym.

Although the name of any subdivision of a family that includes the type of the family name must be based on the same generic name as that of the family (Art. 19.4), there are often circumstances in which the earliest name for a subdivision of a family is not the most familiar one, particularly when long-established families are united. This prompted the acceptance in Melbourne of the provision that appears in Art. 19.5 by which a name of any subdivision of a family formed from the same generic name as a conserved family name listed in App. IIB has precedence over names not so formed (unless Art. 19.4 applies).

The rules on attribution of a name to an author or authors rely heavily on the concept of ascription (Art. 46.3) ("the direct association of the name of a person or persons with a new name or description or diagnosis of a taxon"). However, although the authorship of a description or diagnosis is commonly unambiguous (being, for example, the author of the publication) it is uncommon for the author's name to be directly associated with any single description or diagnosis. Accordingly it was agreed in Melbourne that Art. 46.2 be amended to add the words "or unequivocally associated with".

Article 48 has long established that adopting an existing name but definitely excluding its "original" type, establishes a later homonym, but in practice this has had limited application because very few early names, at least of species and infraspecific taxa, have an original type. The Congress decided to make the rule more practical, by deleting "original" and defining exclusion of the type in a way analogous to that adopted for inclusion of a type in Art. 52 for superfluous names (see Art. 48.2 of this *Code*).

Among the more narrowly focussed changes incorporated in the *Melbourne Code* are the following: It is made clear that the *Microsporidia*, although phylogenetically related to the fungi, continue to fall under the provisions of the *ICZN*. Names above the rank of family, like family names, are treated as derived from the name of an included genus (and not from a family name). The terminations of automatically typified names above the rank of family are now all incorporated within Articles (Art. 16.3 and 17.1), whereas previously most were dealt with indirectly through a Recommendation. A provision has been included in Art. 56 to make it clearer that once the rejection of a name under that Article has been approved by the General Committee, rejection of the name is authorized in the same manner as is ruled for conserved names in Art. 14.16; in previous editions, this was only

noted incidentally in Art. 14. It is also made clear (Art. 9.5) that reference to an entire gathering or a part thereof, is considered citation of the included specimens.

The Glossary, a new feature in the *Vienna Code*, has retained its basic structure but has been revised and updated. New entries in the Glossary include: “author citation”, “binding decision”, “element”, “isoeptype”, “isolectotype”, “isoneotype”, “name of a new taxon”, “organism”, “suppressed works”, and “type designation”, while some existing entries have been substantially revised, e.g. “basionym”, and “confusingly similar names”; for others, such as “name at new rank (status novus)” and “replacement name (avowed substitute)”, the primary entry has been changed to reflect the preferred term in the *Code*. Five entries have been deleted (“exsiccata”, “form taxon”, “holomorph”, “morphotaxon”, and “plant”), reflecting the fact that these terms are no longer used in the *Code* (or not in any special way). This reflects the role of the Glossary which is strictly to explain terms used in the *Code*, and where possible to do so using the precise wording associated with these terms in the *Code*. The Glossary does not seek to cover all terms useful in the nomenclature of organisms falling under the *Code*; for that users can refer to a work such as Hawksworth, *Terms used in Bionomenclature* (2010; see <http://bionomenclature-glossary.gbif.org/>).

In recent editions of the *Code* the text has used three different sizes of type, the Recommendations and Notes being set in smaller type than the Articles, and the Examples and footnotes in smaller type than the Recommendations and Notes. These type sizes, which have been maintained in this edition, reflect the distinction between mandatory rules (Articles), complementary information or advice (Notes and Recommendations), and explanatory material (Examples and footnotes). The *Melbourne Code* has, however, attempted to make this distinction clearer by including the numbers of each paragraph of the Articles (and of those of the Preamble and Principles) in white within a black background, but not doing so for the paragraph numbers of the Recommendations. Notes, which explain something that may not at first be readily apparent but is covered explicitly or implicitly elsewhere in the *Code*, are appropriately identified with an “i” (for “information”) highlighted in the same way as the Article numbers. A Note has binding effect but, unlike an Article, does not introduce any new provision or concept. Examples are distinguished, in addition to the smaller font size, by being indented.

Most Examples in the *Code* have been provided by successive Editorial Committees, some on the basis of suggestions made at a Nomenclature Section, but the majority emanating from the work of the Editorial Committees themselves. A number of Examples, however, are not of this type. These are prefixed by an asterisk (\*) in the *Code* and are termed “voted Examples”. They are Examples that were formally accepted by a Nomenclature Section of a Congress and contain material that is not fully, or not explicitly, covered in the rules. A voted Example is therefore comparable to a rule, as contrasted with other Examples provided by the Editorial Committee solely for illustrative purposes. In the *Melbourne Code*, the footnote (to Art. 7 Ex. 13) explaining the significance of the asterisk and the Glossary entry on “voted Example” have been elaborated to make the function of a voted Example clearer.

As in all recent editions, scientific names under the jurisdiction of the *Code*, irrespective of rank, are consistently printed in *italic type*. The *Code* sets no binding standard in this respect, as typography is a matter of editorial style and tradition, not of nomenclature. Nevertheless, editors and authors, in the interest of international uniformity, may wish to consider adhering to the practice exemplified by the *Code*, which has been well received in general and is followed in a number of botanical and mycological journals. To set off scientific names even better, the abandonment in the *Code* of italics for technical terms and other words in Latin, traditional but inconsistent in early editions, has been maintained.

Like its predecessors, this Editorial Committee has tried hard to achieve uniformity in bibliographic style and formal presentation. The titles of books in bibliographic citations are abbreviated in conformity with *Taxonomic literature*, ed. 2, by Stafleu & Cowan (in *Regnum Veg.* 94, 98, 105, 110, 112, 115, 116. 1976–1988; with Supplements 1–6 by Stafleu & Mennega in *Regnum Veg.* 125, 130, 132, 134, 135, 137. 1992–2000, and 7–8 by Dorr & Nicolson in *Regnum Veg.* 149, 150. 2008–2009), or by analogy, but with capital initial letters. For journal titles, the abbreviations follow BPH-2 by Bridson & al. (2004). In the editing of this edition, a more thorough review to ensure consistent usage in language and terminology has been undertaken. For example, whereas “specific rank” and “specific epithet” are used, the diverse use of “species name” and “specific name” has been standardised in favour of the former. Most of this work was accomplished by one of us (NJT), but we have been aided substantially by one member of the Editorial Committee (Werner Greuter) having occasion to review the wording of the *Code* in great detail and in so doing identified a number of other inconsistencies and possible ambiguities that have consequently been rectified.

Author citations of scientific names appearing in the *Code* are standardized in conformity with *Authors of Plant Names*, by Brummitt & Powell (1992), as mentioned in Rec. 46A Note 1; these are also adopted and updated by the International Plant Names Index, and may be accessed at <http://www.ipni.org/ipni/authorsearchpage.do>. One may note that the *Code* has no tradition of recording the ascription of names to pre-1753 authors by the validating author, although such “pre-ex” author citations are permitted (see Art. 46 Ex. 35).

The *Melbourne Code* was prepared according to the procedures outlined in Division III, which have been operating with hardly any change since the Paris Congress of 1954. Altogether, 338 numbered proposals to amend the *Code* were published in *Taxon* between February 2008 and December 2010. Their synopsis, with comments by the Rapporteurs, appeared in *Taxon* (60: 243–286) in February 2011 and served as the basis for the preliminary, non-binding mail vote by the members of the International Association for Plant Taxonomy (and some other persons), as specified in Division III of the *Code*. Tabulation of the mail vote was handled at the Central Office of the International Association for Plant Taxonomy in Vienna by the then Managing Secretary of IAPT, Alessandra Ricciuti Lamonea, and her assistants. The results were made available to the members of the Nomenclature Section at the beginning of its meetings; they were also tabulated in the October 2011 issue of *Taxon* (60: 1507–1520), along with the actions taken by Congress.

The Nomenclature Section met in the Copland Theatre, Economics and Commerce Building, University of Melbourne (Parkville campus), Melbourne, Australia, from Monday, 18 July until Friday, 22 July. There were 204 registered members in attendance, carrying 396 institutional votes in addition to their personal votes, making a total of 600 possible votes. Although as in Vienna in 2005 this was a large attendance compared with many previous Congresses, it was substantially smaller than that at St. Louis in 1999, which had a record attendance (with 297 members carrying 494 institutional votes, making a total of 791 possible votes). The Section officers, previously appointed in conformity with Division III of the *Code*, were S. Knapp (President), B. J. Lepschi (Recorder), J. McNeill (Rapporteur-général), and N. J. Turland (Vice-Rapporteur). The Recorder was assisted by A. M. Monro. Each Nomenclature Section is entitled to define its own procedural rules within the limits set by the *Code*. As on previous occasions, at least a 60% assenting majority was required for any proposed change to the *Code* to be adopted. Proposals that received 75% or more “no” votes in the mail vote were ruled as rejected unless raised anew from the floor.

The Nomenclature Section also appointed the Editorial Committee for the *Melbourne Code*. As is traditional, only persons present at the Section meetings were invited to serve on that Committee, which as the *Code* requires is chaired by the Rapporteur-général and as is logical includes the Vice-Rapporteur as its secretary. The Nominating Committee of the Nomenclature Section in Melbourne decided to increase the size of the Editorial Committee from the usual 12 to 14 to provide for better international representation. The Committee convened on 5 December 2011 at the Natural History Museum, London, England, for a full week’s hard work. The Committee worked on the basis of a draft of the text of the main body of the *Code*, prepared by the Chairman to incorporate the changes decided by the Section, but also incorporating an initial draft re-organization of Art. 32–45 prepared by Werner Greuter. This draft of the new *Code* was distributed by e-mail shortly before the meeting; along with a preliminary version of the proceedings of the Section meetings, as transcribed by Pacific Transcription, Queensland, and edited by Anna Monro.

Each Editorial Committee has the task of addressing matters specifically referred to it, incorporating changes agreed by the Section, clarifying any ambiguous wording, ensuring consistency, and providing additional Examples for inclusion. The terms of the Committee’s mandate, as defined by the Section in Melbourne, included, in addition to the specific mandate to re-organize the section on valid publication, the usual empowerment to alter the wording, the Examples, or the location of Articles and Recommendations, in so far as the meaning was not affected; while retaining the present numbering in so far as possible.

The full Editorial Committee concentrated on the main body of the *Code*, including Appendix I (hybrids). A new electronic draft of these portions was completed following the Editorial Committee meeting, and provided to all members on 20 January for checking and for any further necessary clarification; as a result a revised draft was prepared and circulated to all members on 6 April. The implementation of the provisions on electronic publication on 1 January 2012 provided an opportunity to add clarifying examples on effective (and ineffective) electronic publication. The fortuitous attendance of five members of the Editorial Committee, including the Chairman and Secretary, at a meeting of the International Committee on Bionomenclature at the Berlin Botanic Garden from 26 to 28 April sponsored by International Union of Biological Sciences was particularly useful in finalizing this section of the *Code*. Subsequently a further, near-final, draft was circulated to the entire Committee on 6 June for further proofreading, followed by a final draft on 2 July for final proofreading. Several inconsistencies and a few errors were noted thereafter, and these were corrected during the subsequent formatting.

The Index of scientific names was revised by Franz Stadler and index by the Rapporteurs.

This is the proper place for us to thank all those who have contributed to the publication of the new *Code*: our fellow members of the Editorial Committee for their forbearance, helpfulness, and congeniality; Anna Monro, for making readily usable so promptly the raw transcription of the Nomenclature Section proceedings; all those who volunteered advice and suggestions, including relevant new Examples; the International Association for Plant Taxonomy and its successive Secretaries-General, Tod Stuessy and Karol Marhold, for maintaining IAPT’s traditional commitment to nomenclature by funding travel and some ancillary costs for the Editorial Committee meeting in London; and The Natural History Museum, London for facilitating that meeting by providing a meeting room and electronic access.

The ongoing implementation of the *Code* depends not only on those who have helped to make this new edition possible but also on the scores of members of the Permanent Nomenclature Committees that work continuously between Congresses, dealing principally with proposals for conservation or rejection of names, and also those who are members of Special Committees set up by the Nomenclature Section of the Congress to review and seek solutions to particular nomenclatural problems. The nomenclature of algae, fungi, and plants is remarkable for the large number of taxonomists who voluntarily work so effectively and so extensively to the immeasurable benefit of all those who use the names governed by this *Code*. On their behalf we express our sincere thanks to all who participate in this work.

The *International Code of Nomenclature for algae, fungi, and plants* is published under the ultimate authority of the International Botanical Congresses. Provisions for the modification of the *Code* are detailed in Division III (p. 141). The next International Botanical Congress will be held in Shenzhen, China from 23 to 29 July 2017, with a Nomenclature Section meeting in the preceding week (18–22 July). Invitation for proposals to amend this *Code* and instructions on procedure and format will be published in *Taxon* early in 2014.

Like other international codes of nomenclature the *ICN* has no legal status and is dependent on the voluntary acceptance of its rules by authors, editors, and other users of names that it governs. We trust that this *Melbourne Code* will make their work just that little easier.

Edinburgh and Saint Louis, 30 September 2012

John McNeill

Nicholas J. Turland



## Key to the re-numbering of Articles, Notes, and Recommendations

The Nomenclature Section in Melbourne instructed the Editorial Committee to re-organize the rules on valid publication of names (Art. 32–45) in a more logical manner. As a result the Articles, Notes, and Recommendations in what is now Chapter V have been substantially re-arranged. This key includes all these changes and also those in other parts of the Code. Examples are omitted as these can readily be traced via the Indices, through the scientific names mentioned.

### **1. Vienna Code to Melbourne Code**

Pre. 2–7	Pre. 3–8
Pre. 8–11	Pre. 11–14
Art. 1.3	deleted
Art. 1 Note 1	deleted
Art. 7.3	Art. 7.4
Art. 7.4	Art. 7.3
Art. 7.7	Art. 7.7–7.8
Art. 7.8	Art. 9.10 (see also Art. 9.2 and 10.2)
Art. 7.9	Art. 7 Note 1
Art. 7.10–7.11	Art. 7.9–7.10
Art. 7 Note 1	deleted
Art. 9.3–9.8	Art. 9.4–9.9
Art. 9.9–9.21	Art. 9.11–9.23
Art. 9 Note 2	Art. 9.3
Art. 9 Note 3–5	Art. 9 Note 5–7
Rec. 9A.4	deleted
Rec. 9A.5	Rec. 9A.4
Art. 11 Note 1–3	Art. 11 Note 2–4
Art. 11 Note 4	Art. 11 Note 1 and 5
Art. 13.5	Art. 13 Note 1
Art. 13.6	deleted
Art. 14.13	Art. 14.14
Art. 14.14	Art. 14.16

Rec. 16A.1–3	incl. in Art. 16.3
Rec. 16B.1	Rec. 16A.1
Art. 18 Note 1	Art. 18 Note 3
Art. 19.5–19.7	Art. 19.6–19.8
Art. 22.7	Art. 22 Note 2
Art. 25.1 sent. 2	deleted
Art. 29.1 sent. 2	Art. 30.1
Rec. 29A.1	deleted
Art. 30.1–30.5	Art. 30.4–30.8
Art. 30 Note 1–2	Art. 30 Note 3–4
Rec. 30A.1–3	Rec. 30A.2–4
Art. 31.2	Art. 31.3
Art. 31 Note 1	deleted
Art. 32.1 (a–c)	Art. 32.1
Art. 32.1 (d–e)	Art. 38.1
Art. 32.2–32.4	Art. 38.2–38.4
Art. 32.5–32.6	Art. 38.13–38.14
Art. 32.7–32.8	Art. 32.2–32.3
Art. 32.9–32.10	Art. 34.1–34.2
Art. 32 Note 1	Art. 32 Note 3
Rec. 32A.1	Rec. 38A.1
Rec. 32B.1	Rec. 38B.1
Rec. 32C.1	Rec. 38C.1
Rec. 32D.1–3	Rec. 38D.1–3
Rec. 32E.1	Rec. 38E.1
Rec. 32F.1	Rec. 34A.1
Art. 33.1	Art. 35.2
Art. 33.2–33.7	Art. 41.3–41.8

Art. 33.8	deleted
Art. 33.9–33.12	Art. 37.6–37.9
Art. 33 Note 1	Art. 41 Note 1
Art. 33 Note 2	Art. 41 Note 3
Art. 33 Note 3	Art. 37 Note 1
Rec. 33A.1	Rec. 41A.1
Art. 34.1–34.2	Art. 36.1–36.2
Art. 34 Note 1	Art. 59 Note 3
Rec. 34A.1	Rec. 50G.1
Art. 35.1–35.5	Art. 37.1–37.5
Art. 36.1	Art. 39.1
Art. 36.2	Art. 44.1
Art. 36.3	Art. 43.1
Rec. 36A.1	Rec. 39A.1
Art. 37.1–37.7	Art. 40.1–40.7
Art. 37 Note 1–4	Art. 40 Note 1–4
Rec. 37A.1	Rec. 40A.1
Art. 38.1 (amended)	Art. 43.2
Art. 38.2	Art. 43.3
Art. 39.1	Art. 44.2
Rec. 39A.1	Rec. 44A.1
Art. 40.1	Art. 32.4
Art. 40 Note 1	Art. 32 Note 2
Art. 41.1–41.3(a–b)	Art. 38.11
Art. 41.3(c)	Art. 38.12
Art. 41 Note 1	Art. 38 Note 1
Art. 41 Note 2	Art. 38.7
Art. 42.1–42.3	Art. 38.5–38.7

Art. 42.4	Art. 38.9
Art. 43.1	Art. 35.1
Art. 43 Note 1	Art. 35 Note 1
Art. 44.1	Art. 38.8
Art. 44.2	Art. 38.10
Art. 45.1–45.2	Art. 33.1–33.2
Art. 45.3	Art. 53 Note 1
Art. 45.4 sent. 1	Art. 45 Note 2
Art. 45.4 sent. 2–3	Art. 45.1
Rec. 45A.1	Rec. 32A.1
Rec. 45B.1	Rec. 31B.1
Rec. 45C.1	Rec. 31C.1
Art. 46.4–46.7	Art. 46.5–46.8
Art. 46 Note 2	Art. 46.4
Art. 46 Note 3–4	Art. 46.9–46.10
Art. 59.1	replaced
Art. 59.2–59.7	deleted
Art 59 Note 1	replaced
Rec. 59A.1–3	deleted
Art. 60.11–60.12	Art. 60.12–60.13
Rec. 60G.1(a)(3)	incl. in Rec. 60G.1(b)
Rec. 60G.1(b)	Rec. 60G.1(c), Rec. 60G.1 Ex. 4–5, Rec. 60G Note 1
Rec. 60G Note 1	incl. in Rec. 60G.1 (b)
Art. H.10.2	Art. H.10 Note 1
Art. H.10.3	Art. H.10.2
Art. H.10 Note 1	Art. H.10 Note 2

## Key to the re-numbering of Articles, Notes, and Recommendations

The Nomenclature Section in Melbourne instructed the Editorial Committee to re-organize the rules on valid publication of names (Art. 32–45) in a more logical manner. As a result the Articles, Notes, and Recommendations in what is now Chapter V have been substantially re-arranged. This key includes all these changes and also those in other parts of the Code. Examples are omitted as these can readily be traced via the Indices, through the plant names mentioned.

### **2. Melbourne Code to Vienna Code**

Pre. 2	new
Pre. 3–8	Pre. 2–7
Pre. 9–10	new
Pre. 11–14	Pre. 8–11
Art. 6.9–6.11	new
Art. 6 Note 3–4	new
Art. 7.3	Art. 7.4
Art. 7.4	Art. 7.3
Art. 7.7–7.8	Art. 7.7
Art. 7.9–7.10	Art. 7.10–7.11
Art. 7 Note 1	Art. 7.9
Rec. 8B.3	new
Art. 9.3	Art. 9 Note 2
Art. 9.4–9.9	Art. 9.3–9.8
Art. 9.10	Art. 7.8
Art. 9.11–9.23	Art. 9.9–9.21
Art. 9 Note 2–4	new
Art. 9 Note 5–7	Art. 9 Note 3–5
Rec. 9A.4	Rec. 9A.5
Rec. 9C.1	new
Rec. 9D.1	new

Art. 11 Note 1    Art. 11 Note 4 sent. 1

Art. 11 Note 2–4    Art. 11 Note 1–3

Art. 11 Note 5    Art. 11 Note 4 sent. 2

Art. 13 Note 1    Art. 13.5

Art. 14.13        new

Art. 14.14        Art. 14.13

Art. 14.15        new

Art. 14.16        Art. 14.14

Art. 16.3 (in part)    Rec. 16A.1–3

Rec. 16A.1        Rec. 16B.1

Art. 18 Note 1–2    new

Art. 18 Note 3    Art. 18 Note 1

Art. 19.5         new

Art. 19.6–19.8    Art. 19.5–19.7

Art. 22 Note 2    Art. 22.7

Art. 29.2–29.3    new

Art. 29 Note 1    new

Rec. 29A.1–2     new

Art. 30.1         Art. 29.1 sent. 2

Art. 30.2–30.3    new

Art. 30.4–30.8    Art. 30.1–30.5

Art. 30 Note 1–2    new

Art. 30 Note 3–4    Art. 30 Note 1–2

Rec. 30A.1        new

Rec. 30A.2–4     Rec. 30A.1–3

Art. 31.2         new

Art. 31.3	Art. 31.2
Rec. 31B.1	Rec. 45B.1
Rec. 31C.1	Rec. 45C.1
Art. 32.1	Art. 32.1(a-c)
Art. 32.2–32.3	Art. 32.7–32.8
Art. 32.4	Art. 40.1
Art. 32 Note 1	new
Art. 32 Note 2	Art. 40 Note 1
Art. 32 Note 3	Art. 32 Note 1
Rec. 32A.1	Rec. 45A.1
Art. 33.1–33.2	Art. 45.1–45.2
Art. 34.1–34.2	Art. 32.9–32.10
Rec. 34A.1	Rec. 32F.1
Art. 35.1	Art. 43.1
Art. 35.2	Art. 33.1
Art. 35 Note 1	Art. 43 Note 1
Art. 36.1–36.2	Art. 34.1–34.2
Art. 37.1–37.5	Art. 35.1–35.5
Art. 37.6–37.9	Art. 33.9–33.12
Art. 37 Note 1	Art. 33 Note 3
Art. 38.1	Art. 32.1(d-e)
Art. 38.2–38.4	Art. 32.2–32.4
Art. 38.5–38.6	Art. 42.1–42.2
Art. 38.7	Art. 41 Note 2, Art. 42.3
Art. 38.8	Art. 44.1
Art. 38.9	Art. 42.4

Art. 38.10	Art. 44.2
Art. 38.11	Art. 41.1–41.3(a–b)
Art. 38.12	Art. 41.3(c)
Art. 38.13–38.14	Art. 32.5–32.6
Art. 38 Note 1	Art. 41 Note 1
Rec. 38A.1	Rec. 32A.1
Rec. 38B.1	Rec. 32B.1
Rec. 38C.1	Rec. 32C.1
Rec. 38D.1–3	Rec. 32D.1–3
Rec. 38E.1	Rec. 32E.1
Art. 39.1	Art. 36.1
Art. 39.2	new
Rec. 39A.1	Rec. 36A.1
Art. 40.1–40.7	Art. 37.1–37.7
Art. 40 Note 1–4	Art. 37 Note 1–4
Rec. 40A.1	Rec. 37A.1
Rec. 40A.2–4	new
Art. 41.1	new (from Art. 33 and 41)
Art. 41.2	new (from Art. 41)
Art. 41.3–41.8	Art. 33.2–33.7
Art. 41 Note 1	Art. 33 Note 1
Art. 41 Note 2	new
Art. 41 Note 3	Art. 33 Note 2
Rec. 41A.1	Rec. 33A.1
Art. 42.1–42.3	new
Art. 42 Note 1	new



Rec. 42A.1–2	new
Art. 43.1	Art. 36.3
Art. 43.2	Art. 38.1 (amended)
Art. 43.3	Art. 38.2
Art. 43 Note 1	new
Art. 44.1	Art. 36.2
Art. 44.2	Art. 39.1
Art. 44 Note 1	new
Rec. 44A.1	Rec. 39A.1
Art. 45.1	Art. 45.4 sent. 2–3
Art. 45 Note 1	new
Art. 45 Note 2	Art. 45.4 sent. 1
Art. 46.4	Art. 46 Note 2
Art. 46.5–46.8	Art. 46.4–46.7
Art. 46.9–46.10	Art. 46 Note 3–4
Art. 46 Note 2–3	new
Art. 48.2–48.3	new
Rec. 50G.1	Rec. 34A.1
Art. 53 Note 1	Art. 45.3
Art. 56.3–56.4	new
Rec. 56A.1	new
Art. 57.2	new
Art. 59.1	replacement
Art. 59 Note 1	replacement
Art. 59 Note 2	new
Art. 59 Note 3	Art. 34 Note 1

Art. 60.11 new

Art. 60.12–60.13 Art. 60.11–60.12

Rec. 60G.1(b) Rec. 60G.1(a)(3), Rec. 60G Note 1

Rec. 60G.1(c) Rec. 60G.1(b) sent. 1–4

Rec. 60G Note 1 Rec. 60G.1(b) last sent.

Art. 62 Note 2 new

Art. H.10.2 Art. H.10.3

Art. H.10 Note 1 Art. H.10.2

Art. H.10 Note 2 Art. H.10 Note 1

## IMPORTANT DATES IN THE CODE

### *DATES UPON WHICH PARTICULAR PROVISIONS OF THE CODE BECOME OR CEASE TO BE EFFECTIVE*

1 May 1753 Art. 7.8, 13.1(a), (c), (d), (e)

4 Aug 1789 Art. 13.1 (a), (c)

1 Jan 1801 Art. 13.1(b)

31 Dec 1801 Art. 13.1(d)

31 Dec 1820 Art. 13.1(f)

1 Jan 1821 Art. 13.1(d)

1 Jan 1848 Art, 13.1(e)

1 Jan 1886 Art. 13.1(e)

1 Jan 1887 Art. 37.2

1 Jan 1890 Art. 37.4

1 Jan 1892 Art. 13.1(e)

1 Jan 1900 Art. 13.1(e)

1 Jan 1908 Art. 38.7, 38.8

1 Jan 1912 Art. 20.2, 43.2

1 Jan 1935 Art. 39.1

1 Jan 1953 Art. 30.4, 30.6, 30.7, 30.8, 36.2, 37.1, 37.3, 38.13, 41.3, 41.4, 41.5, 41.6, 41.8,

1 Jan 1958 Art. 40.1, 44.1, 44.2

1 Jan 1973 Art. 30.6, 33.1

1 Jan 1990 Art. 9.22, 40.6, 40.7

1 Jan 1996 Art. 43.1

1 Jan 2001 Art. 7.10, 9.15, 9.23, 43.3

1 Jan 2007 Art. 40.4, 41.5

31 Dec 2011 Art. 39.1, 44.1

1 Jan 2012 Art. 29.1, 39.2

1 Jan 2013 Art. 42.1, 57.2, 59.1

### **ARTICLES INVOLVING DATES APPLICABLE TO THE MAIN TAXONOMIC GROUPS**

All groups	Art. 7.10, 9.22, 9.23, 20.2, 29.1, 30.4, 30.6, 30.7, 30.8, 33.1, 36.2, 37.1, 37.2, 37.3, 37.4, 38.7, 38.8, 38.13, 39.2, 40.1, 40.6, 40.7, 41.3, 41.4, 41.5, 41.6, 41.8
Algae	Art. 7.8, 13.1(e), 40.4, 44.1, 44.2
Bryophytes	Art. 7.8, 13.1(b), (c), 39.1, 40.4
Fossils	Art. 7.8, 9.15, 13.1(f), 43.1, 43.2, 43.3
Fungi	Art. 13.1(d), 39.1, 40.4, 42.1, 57.2, 59.1
Vascular plants	Art. 13.1(a), 39.1, 40.4

### **ARTICLES DEFINING THE DATES OF CERTAIN WORKS**

Art. 13.1 (a–f) (see also Art. 13 Note 1)

# INTERNATIONAL CODE OF NOMENCLATURE FOR ALGAE, FUNGI, AND PLANTS

## PREAMBLE

1 Biology requires a precise and simple system of nomenclature that is used in all countries, dealing on the one hand with the terms that denote the ranks of taxonomic groups or units, and on the other hand with the scientific names that are applied to the individual taxonomic groups. The purpose of giving a name to a taxonomic group is not to indicate its characters or history, but to supply a means of referring to it and to indicate its taxonomic rank. This *Code* aims at the provision of a stable method of naming taxonomic groups, avoiding and rejecting the use of names that may cause error or ambiguity or throw science into confusion. Next in importance is the avoidance of the useless creation of names. Other considerations, such as absolute grammatical correctness, regularity or euphony of names, more or less prevailing custom, regard for persons, etc., notwithstanding their undeniable importance, are relatively accessory.

2 Algae, fungi, and plants are the organisms<sup>[1]</sup> covered by this *Code*.

3 The Principles form the basis of the system of nomenclature governed by this *Code*.

4 The detailed provisions are divided into rules, which are set out in the Articles (Art.) (sometimes with clarification in Notes), and Recommendations (Rec.). Examples (Ex.)<sup>[2]</sup> are added to the rules and recommendations to illustrate them. A Glossary defining terms used in this *Code* is included.

5 The object of the rules is to put the nomenclature of the past into order and to provide for that of the future; names contrary to a rule cannot be maintained.

6 The Recommendations deal with subsidiary points, their object being to bring about greater uniformity and clarity, especially in future nomenclature; names contrary to a Recommendation cannot, on that account, be rejected, but they are not examples to be followed.

7 The provisions regulating the governance of this *Code* form its last Division (Div. III).

8 The provisions of this *Code* apply to all organisms traditionally treated as algae, fungi, or plants, whether fossil or non-fossil, including blue-green algae (*Cyanobacteria*)<sup>[3]</sup>, chytrids, oomycetes, slime moulds, and photosynthetic protists with their taxonomically related non-photosynthetic groups (but excluding *Microsporidia*). Provisions for the names of hybrids appear in Appendix I.

9 Names that have been conserved or rejected, suppressed works, and binding decisions are given in Appendices II-VIII.

10 The Appendices form an integral part of this *Code*, whether published together with, or separately from, the main text.

11 The *International Code of Nomenclature for Cultivated Plants* is prepared under the authority of the International Commission for the Nomenclature of Cultivated Plants and deals with the use and formation of names applied to special categories of organisms in agriculture, forestry, and horticulture.

12 The only proper reasons for changing a name are either a more profound knowledge of the facts resulting from adequate taxonomic study or the necessity of giving up a nomenclature that is contrary to the rules.

13 In the absence of a relevant rule or where the consequences of rules are doubtful, established custom is followed.

14 This edition of the *Code* supersedes all previous editions.

<sup>[1]</sup> In this *Code*, unless otherwise indicated, the word “organism” applies only to the organisms covered by this *Code*, i.e. those traditionally studied by botanists, mycologists, and phycologists (see Pre. 8).

<sup>[2]</sup> See also footnote to Art. 7 \*Ex. 13.

<sup>[3]</sup> For the nomenclature of other prokaryotic groups, see the *International Code of Nomenclature of Bacteria (Bacteriological Code)* [Although renamed in 1999 as the *International Code of Nomenclature of Prokaryotes* (see Labeda in *Int. J. Syst. Evol. Microbiol.* 50: 2246. 2000), the current edition, published in 1992, retains the previous name.]

## DIVISION I. PRINCIPLES

### Principle I

The nomenclature of algae, fungi, and plants is independent of zoological and bacteriological nomenclature. This *Code* applies equally to names of taxonomic groups treated as algae, fungi, or plants, whether or not these groups were originally so treated (see Pre. 8).

### Principle II

The application of names of taxonomic groups is determined by means of nomenclatural types.

### Principle III

The nomenclature of a taxonomic group is based upon priority of publication.

### Principle IV

Each taxonomic group with a particular circumscription, position, and rank can bear only one correct name, the earliest that is in accordance with the rules, except in specified cases.

### Principle V

Scientific names of taxonomic groups are treated as Latin regardless of their derivation.

### Principle VI

The rules of nomenclature are retroactive unless expressly limited.

## DIVISION II. Rules and Recommendations

### CHAPTER I. Taxa and their ranks

#### Article 1

1.1 Taxonomic groups of any rank will, in this *Code*, be referred to as taxa (singular: taxon).

1.2 A taxon (diatom taxa excepted) the name of which is based on a fossil type is a fossil-taxon. A fossil-taxon comprises the remains of one or more parts of the parent organism, or one or more of their life history stages, in one or more preservational states, as indicated in the original or any subsequent description or diagnosis of the taxon (see also Art. 11.1 and 13.3).

*Ex.1. Alcornopteris hallei* J. Walton (in *Ann. Bot. (Oxford)*, ser. 2, 13: 450. 1949) is a fossil-species for which the original description included rachides, sporangia, and spores of a pteridosperm, preserved in part as compressions and in part as petrifications.

*Ex.2. Protofagacea allonensis* Herend. & al. (in *Int. J. Pl. Sci.* 56: 94. 1995) is a fossil-species for which the original description included dichasia of staminate flowers, with anthers containing pollen grains, fruits, and cupules, and thus comprises more than one part and more than one life-history stage.

*Ex.3. Stamnostoma* A. Long (in *Trans. Roy. Soc. Edinburgh* 64: 212. 1960) is a fossil-genus that was originally described with a single species, *S. huttonense*, comprising anatomically preserved ovules with completely fused integuments forming an open collar around the lagenostome. Rothwell & Scott (in *Rev. Palaeobot. Palynol.* 72: 281. 1992) have subsequently modified the description of the genus, expanding its circumscription to include also the cupules in which the ovules were borne. The name *Stamnostoma* can be applied to a genus with either circumscription or to any other that may involve other parts, life-history stages, or preservational states, so long as it includes *S. huttonense*, but not the type of any earlier legitimate generic name.

#### Article 2

2.1 Every individual organism is treated as belonging to an indefinite number of taxa of consecutively subordinate rank, among which the rank of species is basic.

#### Article 3

3.1 The principal ranks of taxa in descending sequence are: kingdom (regnum), division or phylum (divisio or phylum), class (classis), order (ordo), family (familia), genus (genus), and species (species). Thus, each species is assignable to a genus, each genus to a family, etc.

*Note 1.* Species and subdivisions of genera must be assigned to genera, and infraspecific taxa must be assigned to species, because their names are combinations (Art. 21.1, 23.1, and 24.1), but this provision does not preclude the placement of taxa as *incertae sedis* with regard to ranks higher than genus.

*Ex.1.* The genus *Haptanthus* Goldberg & C. Nelson (in *Syst. Bot.* 14: 16. 1989) was originally described without being assigned to a family.

*Ex.2.* The fossil-genus *Paradinandra* Schönenberger & E. M. Friis (in *Amer. J. Bot.* 88: 478. 2001) was assigned to "*Ericales* s.l." but with respect to family placement it was given as "*incertae sedis*".

3.2 The principal ranks of hybrid taxa (nothotaxa) are nothogenus and nothospecies. These ranks are the same as genus and species. The prefix "notho" indicates the hybrid character (see App. I).



## Article 4

4.1 The secondary ranks of taxa in descending sequence are tribe (tribus) between family and genus, section (sectio) and series (series) between genus and species, and variety (varietas) and form (forma) below species.

4.2 If a greater number of ranks of taxa is desired, the terms for these are made by adding the prefix “sub-“ to the terms denoting the principal or secondary ranks. An organism may thus be assigned to taxa of the following ranks (in descending sequence): kingdom (regnum), subkingdom (subregnum), division or phylum (divisio or phylum), subdivision or subphylum (subdivisio or subphylum), class (classis), subclass (subclassis), order (ordo), suborder (subordo), family (familia), subfamily (subfamilia), tribe (tribus), subtribe (subtribus), genus (genus), subgenus (subgenus), section (sectio), subsection (subsectio), series (series), subseries (subseries), species (species), subspecies (subspecies), variety (varietas), subvariety (subvarietas), form (forma), and subform (subforma).

*Note 1.* Ranks formed by adding “sub-“ to the principal ranks (Art. 3.1) may be formed and used whether or not any secondary ranks (Art. 4.1) are adopted.

4.3 Further ranks may also be intercalated or added, provided that confusion or error is not thereby introduced.

4.4 The subordinate ranks of nothotaxa are the same as the subordinate ranks of non-hybrid taxa, except that nothogenus is the highest rank permitted (see App. I).

*Note 2.* Throughout this *Code* the phrase “subdivision of a family“ refers only to taxa of a rank between family and genus and “subdivision of a genus“ refers only to taxa of a rank between genus and species.

*Note 3.* For the designation of special categories of organisms used in agriculture, forestry, and horticulture, see Pre. 11 and Art. 28 Notes 2, 4, and 5.

*Note 4.* In classifying parasites, especially fungi, authors who do not give specific, subspecific, or varietal value to taxa characterized from a physiological standpoint but scarcely or not at all from a morphological standpoint may distinguish within the species special forms (formae speciales) characterized by their adaptation to different hosts, but the nomenclature of special forms is not governed by the provisions of this *Code*.

## Article 5

5.1 The relative order of the ranks specified in Art. 3 and 4 must not be altered (see Art. 37.6 and 37.9).

### Recommendation 5A

5A.1 For purposes of standardization, the following abbreviations are recommended: cl. (class), ord. (order), fam. (family), tr. (tribe), gen. (genus), sect. (section), ser. (series), sp. (species), var. (variety), f. (forma). The abbreviations for additional ranks created by the addition of the prefix sub-, or for nothotaxa with the prefix notho-, should be formed by adding the prefixes, e.g. subsp. (subspecies), nothosp. (nothospecies), but subg. (subgenus) not “subgen.“

## CHAPTER II. Status, typification, and priority of names

### SECTION 1. Status definitions

#### Article 6

6.1 Effective publication is publication in accordance with Art. 29-31.

6.2 Valid publication of names is publication in accordance with Art. 32-45 or H.9 (see also Art. 61).

*Note 1.* For nomenclatural purposes, valid publication creates a name, and sometimes also an autonym (Art. 22.1 and 26.1), but does not itself imply any taxonomic circumscription beyond inclusion of the type of the name (Art. 7.1).

6.3 In this *Code*, unless otherwise indicated, the word “name” means a name that has been validly published, whether it is legitimate or illegitimate (see Art. 12; but see Art. 14.15).

*Note 2.* When the same name, based on the same type, has been published independently at different times perhaps by different authors, then only the earliest of these “isonyms” has nomenclatural status. The name is always to be cited from its original place of valid publication, and later isonyms may be disregarded (but see Art. 14.15).

*Ex.1.* Baker (Summary New Ferns: 9. 1892) and Christensen (Index Filic.: 44. 1905) independently published the name *Alsophila kalbreyeri* as a replacement for *A. podophylla* Baker (1881) non Hook. (1857). As published by Christensen, *A. kalbreyeri* is a later isonym of *A. kalbreyeri* Baker without nomenclatural status (see also Art. 41 Ex. 19).

*Ex.2.* In publishing “*Canarium pimela* Leenh. nom. nov.”, Leenhouts (in *Blumea* 9: 406. 1959) re-used the illegitimate *C. pimela* K. D. Koenig (1805), attributing it to himself and basing it on the same type. He thereby created a later isonym without nomenclatural status.

6.4 An illegitimate name is one that is designated as such in Art. 18.3, 19.6, or 52-54 (see also Art. 21 Note 1 and Art. 24 Note 2). A name that according to this *Code* was illegitimate when published cannot become legitimate later unless Art. 18.3 or 19.6 so provide or unless it is conserved or sanctioned.

*Ex.3.* *Anisothecium* Mitt. (1869) when published included the previously designated type of *Dicranella* (Müll. Hal.) Schimp. (1856). When *Dicranella* was conserved with a different type, *Anisothecium* did not thereby become legitimate.

*Ex.4.* *Skeletonemopsis* P. A. Sims (1995) was illegitimate when published because it included the original type of *Skeletonema* Grev. (1865). When *Skeletonema* was conserved with a different type, *Skeletonemopsis* nevertheless remained illegitimate and had to be conserved in order to be available for use.

6.5 A legitimate name is one that is in accordance with the rules, i.e. one that is not illegitimate as defined in Art. 6.4.

6.6 At the rank of family or below, the correct name of a taxon with a particular circumscription, position, and rank is the legitimate name that must be adopted for it under the rules (see Art. 11).

*Ex.5.* The generic name *Vexillifera* Ducke (1922), based on the single species *V. micranthera*, is legitimate. The same is true of the generic name *Dussia* Krug & Urb. ex Taub. (1892), based on the single species *D. martinicensis*. Both generic names are correct when the genera are thought to be separate. Harms (in *Repert. Spec. Nov. Regni Veg.* 19: 291. 1924), however, united *Vexillifera* and *Dussia* in a single

genus; the latter name is the correct one for the genus with that particular circumscription. The legitimate name *Vexillifera* may therefore be correct or incorrect according to different taxonomic concepts.

6.7 The name of a taxon below the rank of genus, consisting of the name of a genus combined with one or two epithets, is termed a combination (see Art. 21, 23, and 24).

*Ex.6. Combinations: Mouriri subg. Pericrene, Arytera sect. Mischarytera, Gentiana lutea, Gentiana tenella var. occidentalis, Equisetum palustre var. americanum, Equisetum palustre f. fluitans.*

6.8 Autonyms are such names as can be established automatically under Art. 22.3 and 26.3, whether or not they actually appear in the publication in which they are created (see Art. 32.3, Rec. 22B.1 and 26B.1).

6.9 The name of a new taxon (e.g. genus novum, gen. nov., species nova, sp. nov.) is a name validly published in its own right, i.e. one not based on a previously validly published name; it is not a new combination, a name at new rank, or a replacement name.

*Ex.7. Cannaceae Juss. (1789), Canna L. (1753), Canna indica L. (1753), Heterotrichum pulchellum Fisch. (1812), Poa sibirica Roshev. (1912), Solanum umtuma Voronts. & S. Knapp (2012).*

6.10 A new combination (combinatio nova, comb. nov.) or name at new rank (status novus, stat. nov.) is a new name based on a legitimate, previously published name, which is its basionym. The basionym provides the final epithet, name, or stem of the new combination or name at new rank. (see also Art. 41.2).

*Ex.8. The basionym of Centaurea benedicta (L.) L. (1763) is Cnicus benedictus L. (1753), the name that provides the epithet.*

*Ex.9. The basionym of Crupina (Pers.) DC. (1810) is Centaurea subg. Crupina Pers. (Syn. Pl. 2: 488. 1807), the name of which the epithet provides the generic name; it is not Centaurea crupina L. (1753) (see Art. 41.2(b)).*

*Ex.10. The basionym of Anthemis subg. Ammanthus (Boiss. & Heldr.) R. Fern. (1975) is Ammanthus Boiss. & Heldr. (1849), the name that provides the epithet.*

*Ex.11. The basionym of Ricinocarpaceae Hurus. (in J. Fac. Sci. Univ. Tokyo, ser. 3, Bot., 6: 224. 1954) is Ricinocarpeae Müll.-Arg. (in Bot. Zeitung (Berlin) 22: 324. 1864), but not Ricinocarpos Desf. (1817) (see Art. 41.2(a); see also Art. 49.2), from which the names of both family and tribe are formed.*

*Note 3. The phrase “nomenclatural novelty”, as used in this Code, refers to any or all of the categories: name of a new taxon, new combination, name at new rank, and replacement name.*

*Note 4. A new combination can at the same time be a name at new rank (comb. & stat. nov.); a nomenclatural novelty with a basionym may be neither of these.*

*Ex.12. Aloe vera (L.) Burm. f. (1768), based on A. perfoliata var. vera L. (Sp. Pl.: 320. 1753), is both a new combination and a name at new rank.*

*Ex.13. Centaurea jacea subsp. weldeniana (Rchb.) Greuter, “comb. in stat. nov.”(in Willdenowia 33: 55. 2002), based on C. weldeniana Rchb. (1831), was not a new combination because C. jacea var. weldeniana (Rchb.) Briq. (Monogr. Centaurées Alpes Marit.: 69. 1902) had been published previously; nor was it a name at new rank, due to the existence of C. amara subsp. weldeniana (Rchb.) Kušan (in Prir. Istraž. Kral. Jugoslavije 20: 29. 1936); it was nevertheless a nomenclatural novelty.*

6.11 A replacement name (avowed substitute, nomen novum, nom. nov.) is a new name based on a legitimate or illegitimate, previously published name, which is its replaced synonym. The replaced synonym, when legitimate, does not provide the final epithet, name, or stem of the replacement name (see also Art. 58.1).

*Ex.14. Caulerpa pinnata* C. Agardh (1817), based on the illegitimate *Fucus pinnatus* L. f. (1782), a later homonym of *F. pinnatus* Huds. (1762). – *Centaurea chartolepis* Greuter (2003), based on *Chartolepis intermedia* Boiss. (1856), the epithet *intermedia* being unavailable in *Centaurea* because of *Centaurea intermedia* Mutel (1846). – *Cyanus segetum* Hill (1762), based on *Centaurea cyanus* L. (1753), the epithet *cyanus* being unavailable in combination with *Cyanus* (Art. 23.4). – *Mycena coccineoides* Grgur. (2003), based on *Omphalina coccinea* Murrill (1916), as *M. coccinea* (Murrill) Singer (1962) is an illegitimate later homonym of *M. coccinea* (Sowerby) Quél. (1880).

## SECTION 2. Typification

### Article 7

7.1 The application of names of taxa of the rank of family or below is determined by means of nomenclatural types (types of names of taxa). The application of names of taxa in the higher ranks is also determined by means of types when the names are ultimately based on generic names (see Art. 10.7).

7.2 A nomenclatural type (typus) is that element to which the name of a taxon is permanently attached, whether as the correct name or as a synonym. The nomenclatural type is not necessarily the most typical or representative element of a taxon.

7.3 A new combination or a name at new rank (Art. 6.10) is typified by the type of the basionym even though it may have been applied erroneously to a taxon now considered not to include that type (but see Art. 48.1).

*Ex.1. Pinus mertensiana* Bong. was transferred to the genus *Tsuga* by Carriere, who, however, as is evident from his description, erroneously applied the new combination *T. mertensiana* to another species of *Tsuga*, namely *T. heterophylla* (Raf.) Sarg. The combination *T. mertensiana* (Bong.) Carriere must not be applied to *T. heterophylla* but must be retained for *P. mertensiana* when that species is placed in *Tsuga*; the citation in parentheses (under Art. 49) of the name of the original author, Bongard, indicates the basionym, and hence the type, of the name.

*Ex.2. Delesseria gmelinii* J. V. Lamour. (1813) is a legitimate replacement name for *Fucus palmetta* S. G. Gmel. (1768), the change of epithet being necessitated by the simultaneous publication of *D. palmetta* (Stackh.) J. V. Lamour. (see Art. 11 Note 2). All combinations based on *D. gmelinii* (and not excluding the type of *F. palmetta*; see Art. 48.1) have the same type as *F. palmetta* even though the material possessed by Lamouroux is now assigned to a different species, *D. bonnemaisonii* C. Agardh (1822).

*Ex.3. The new combination Cystocoleus ebeneus* (Dillwyn) Thwaites (1849) is typified by the type of its basionym *Conferva ebenea* Dillwyn (1809) even though the material illustrated by Thwaites was of *Racodium rupestre* Pers. (1794).

7.4 A replacement name (Art. 6.11) is typified by the type of the replaced synonym even though it may have been applied erroneously to a taxon now considered not to include that type (but see Art. 41 Note 3 and 48.1).

*Ex.4. Myrcia lucida* McVaugh (1969) was published as a replacement name for *M. laevis* O. Berg (1862), an illegitimate homonym of *M. laevis* G. Don (1832). The type of *M. lucida* is therefore the type of *M. laevis* O. Berg (non G. Don), namely, *Spruce 3502* (BR).

7.5 A name that is illegitimate under Art. 52 is typified either by the type of the name that ought to have been adopted under the rules (automatic typification), or by a different type designated or definitely indicated by the author of the illegitimate name. However, if no type was designated or definitely indicated and the type of the earlier name was included (see Art. 52.2) in a subordinate taxon that did not include the evidently intended type of the illegitimate name, typification is not automatic. Automatic typification does not apply to names sanctioned under Art. 15.

*Ex.5. Bauhinia semla* Wunderlin (1976) is illegitimate under Art. 52 (see Art. 52 Ex. 9), but its publication as a replacement name for *B. retusa* Roxb. (1832) non Poir. (1811) is definite indication of a different type (that of *B. retusa*) from that of the name (*B. roxburghiana* Voigt, 1845) that ought to have been adopted.

*Ex.6. Hewittia bicolor* Wight & Arn. (1837), which provides the type of *Hewittia* Wight & Arn., is illegitimate under Art. 52 because, in addition to the illegitimate intended basionym *Convolvulus bicolor* Vahl (1794) non Desr. (1792), the legitimate *C. bracteatus* Vahl (1794) was cited as a synonym. Wight & Arnott's adoption of the epithet "*bicolor*" is definite indication that the type of *H. bicolor*, and therefore the type of *Hewittia*, is the type of *C. bicolor*, not that of *C. bracteatus*, the epithet of which ought to have been adopted.

*Ex.7. Gilia splendens*, when validly published by Mason & Grant (in Madrono 9: 212. 1948), included, as "a long-tubed form of the species", *G. splendens* subsp. *grinnellii*, based on *G. grinnellii* Brand (1907), and is therefore illegitimate under Art. 52. Mason & Grant, who believed that *G. splendens* was already validly published, did not indicate its type, which is not automatically that of *G. grinnellii*; the specimen that has since been adopted as the conserved type could have been selected as lectotype.

7.6 The type of an autonym is the same as that of the name from which it is derived.

*Ex.8.* The type of *Caulerpa racemosa* (Forssk.) J. Agardh var. *racemosa* is that of *C. racemosa*; the type of *C. racemosa* is that of its basionym, *Fucus racemosus* Forssk. (1775), i.e. Herb. Forsskal No. 845 (C).

7.7 A name of a new taxon validly published solely by reference to a previously and effectively published description or diagnosis (Art. 38.1(a)) is to be typified by an element selected from the entire context of the validating description or diagnosis, unless the validating author has definitely designated a different type, but not by an element explicitly excluded by the validating author (see also Art. 7.8).

*Ex.9.* Since the name *Adenanthera bicolor* Moon (1824) is validated solely by reference to the description associated with an illustration devoid of analysis, "Rumph. amb. 3: t. 112", cited by Moon, the lectotype of the name, in the absence of the specimen(s) on which the validating description was based, is the illustration associated with that description, i.e. t. 112 (in Rumphius, Herb. Amboin. 3. 1743). It is not the specimen, at Kew, collected by Moon and labelled "*Adenanthera bicolor*"; since Moon did not definitely designate the latter as the type.

*Ex.10. Echium lycopsis* L. (Fl. Angl.: 12. 1754) was published without a description or diagnosis but with reference to Ray (Syn. Meth. Stirp. Brit., ed. 3: 227. 1724), in which a "*Lycopsis*" species was discussed with no description or diagnosis but with citation of earlier references, including Bauhin (Pinax: 255. 1623). The accepted validating description of *E. lycopsis* is that of Bauhin, and the type must be chosen from the context of his work. Consequently the Sherard specimen in the Morison herbarium (OXF), selected by Klotz (in Wiss. Z. Martin-Luther-Univ. Halle-Wittenberg, Math.-Naturwiss. Reihe 9: 375-376. 1960), although probably consulted by Ray, is not eligible as type. The first acceptable choice is that of the illustration, cited by both Ray and Bauhin, of "*Echii altera species*" in Dodonaeus (Stirp. Hist. Pempt.: 620. 1583), suggested by Gibbs (in Lagasalia 1: 60-61. 1971) and formally made by Stearn (in Ray Soc. Publ. 148, Introd.: 65. 1973).

*Ex.11. Hieracium oribates* Brenner (1904) was validly published without accompanying descriptive matter but with reference to the validating description of *H. saxifragum* subsp. *oreinum* Dahlst. ex Brenner (in Meddeland. Soc. Fauna Fl. Fenn. 18: 89. 1892). As Brenner definitely excluded the earlier name itself and part of its original material, *H. oribates* is the name of a new taxon, not a replacement name, and may not be typified by an excluded element.

7.8 A name of a taxon assigned to a group with a nomenclatural starting-point later than 1 May 1753 (see Art. 13.1) is to be typified by an element selected from the context of its valid publication (Art. 32-45).

*Note 1.* The typification of names of fossil-taxa (Art. 1.2) and of any other analogous taxa at or below the rank of genus does not differ from that indicated above.

7.9 For purposes of priority (Art. 9.19, 9.20, and 10.5), designation of a type is achieved only by effective publication (Art. 29-31).

7.10 For purposes of priority (Art. 9.19, 9.20, and 10.5), designation of a type is achieved only if the type is definitely accepted as such by the typifying author, if the type element is clearly indicated by direct citation including the term “type” (typus) or an equivalent, and, on or after 1 January 2001, if the typification statement includes the phrase “designated here” (hic designatus) or an equivalent.

*Note 2.* Art. 7.9 and 7.10 apply only to the designation of lectotypes (and their equivalents under Art. 10), neotypes, and epitypes; for the indication of a holotype see Art. 40.

*Ex.12. Chlorosarcina* Gerneck (1907) originally comprised two species, *C. minor* and *C. elegans*. Vischer (1933) transferred the former to *Chlorosphaera* G. A. Klebs and retained the latter in *Chlorosarcina*. He did not, however, use the term “type” or an equivalent, so that his action does not constitute typification of *Chlorosarcina*. The first to designate a type, as “LT.”, was Starr (in ING Card No. 16528, Nov 1962), who selected *Chlorosarcina elegans*.

\* The phrase “standard species” as used by Hitchcock & Green (in Anonymous, Nomencl. Prop. Brit. Botanists: 110-199. 1929) is now treated as equivalent to “type”, and hence type designations in that work are acceptable.

#### Recommendation 7A

It is strongly recommended that the material on which the name of a taxon is based, especially the holotype, be deposited in a public herbarium or other public collection with a policy of giving bona fide researchers access to deposited material, and that it be scrupulously conserved.

\* Here and elsewhere in the *Code*, a prefixed asterisk denotes a “voted Example”, accepted by an International Botanical Congress in order to govern nomenclatural practice when the corresponding Article of the *Code* is open to divergent interpretation or does not adequately cover the matter. A voted Example is therefore comparable to a rule, as contrasted with other Examples provided by the Editorial Committee solely for illustrative purposes.

### Article 8

8.1 The type (holotype, lectotype, or neotype) of a name of a species or infraspecific taxon is either a single specimen conserved in one herbarium or other collection or institution, or an illustration<sup>1</sup> (but see Art. 8.5; see also Art. 40.4 and 40.5).

8.2 For the purpose of typification a specimen is a gathering, or part of a gathering, of a single species or infraspecific taxon made at one time, disregarding admixtures (see Art. 9.14). It may consist of a single organism,

parts of one or several organisms, or of multiple small organisms. A specimen is usually mounted on a single herbarium sheet or in an equivalent preparation, such as a box, packet, jar, or microscope slide.

*Ex.1. "Echinocereus sanpedroensis" (Raudonat & Rischer in Echinocereenfreund 8(4): 91-92. 1995) was based on a "holotype" consisting of a complete plant with roots, a detached branch, an entire flower, a flower cut in halves, and two fruits that, according to the label, were taken from the same cultivated individual at different times and preserved, in alcohol, in a single jar. This material belongs to more than one gathering and cannot be accepted as a type. Raudonat & Rischer's name is not validly published under Art. 40.2.*

8.3 A specimen may be mounted as more than one preparation, as long as the parts are clearly labelled as being part of that same specimen. Multiple preparations from a single gathering that are not clearly labelled as being part of a single specimen are duplicates<sup>2</sup>, irrespective of whether the source was one organism or more than one (but see Art. 8.5).

*Ex.2. The holotype specimen of Delissea eleeleensis H. St. John, Christensen 261 (BISH), is mounted as two preparations, a herbarium sheet (BISH No. 519675) bearing the annotation "fl. bottled" and an inflorescence preserved in alcohol in a jar labelled "Cyanea, Christensen 261". The annotation indicates that the inflorescence is part of the holotype specimen and not a duplicate, nor is it part of the isotype specimen (BISH No. 519676), which is not labelled as including additional material preserved in a separate preparation.*

*Ex.3. The holotype specimen of Johannesteijsmannia magnifica J. Dransf., Dransfield 862 (K), consists of a leaf mounted on five herbarium sheets, an inflorescence and infructescence in a box, and liquid-preserved material in a bottle.*

*Ex.4. The holotype of Cephaelis acanthacea Steyerm., Cuatrecasas 16752 (F), consists of a single specimen mounted on two herbarium sheets, labelled "sheet 1" and "sheet 2". Although the two sheets have separate herbarium accession numbers, F-1153741 and F-1153742, respectively, the cross-labelling indicates that they constitute a single specimen. A third sheet of Cuatrecasas 16572, F-1153740, is not cross-labelled and is therefore a duplicate.*

*Ex.5. The holotype specimen of Eugenia ceibensis Standl., Yuncker & al. 8309, is mounted on a single herbarium sheet at F. A fragment was removed from the specimen subsequent to its designation as holotype and is now conserved at LL. The fragment is mounted on a herbarium sheet along with a photograph of the holotype and is labelled "fragment of type!". The fragment is no longer part of the holotype specimen because it is not permanently conserved in the same herbarium as the holotype. It has the status of a duplicate, i.e. an isotype.*

8.4 Type specimens of names of taxa must be preserved permanently and may not be living organisms or cultures. However, cultures of algae and fungi, if preserved in a metabolically inactive state (e.g. by lyophilization or deep-freezing to remain alive in that inactive state), are acceptable as types.

*Ex.6. "Dendrobium sibuyanense" (Lubag-Arquiza & al. in Philipp. Agric. Sci. 88: 484-488. 2005) was described with the statement "Type specimen is living specimen being maintained at the Orchid Nursery, Department of Horticulture, University of the Philippines Los Banos (UPLB). Collectors: Orville C. Baldos & Ramil R. Marasigan, April 5, 2004". However, this is a living collection and, as such, is not acceptable as a type. Consequently no type was indicated and the name was not validly published (Art. 40.1).*

*Ex.7. The strain CBS 7351 is acceptable as the type of the name Candida populi Hagler & al. (in Int. J. Syst. Bacteriol. 39: 98. 1989) because it is permanently preserved in a metabolically inactive state by lyophilization (see also Rec. 8B.2).*

8.5 The type, epitypes (Art. 9.8) excepted, of the name of a fossil-taxon of the rank of species or below is always a specimen (see Art. 9.15). One whole specimen is to be considered as the nomenclatural type (see Rec. 8A.3).

#### Recommendation 8A

8A.1 When a holotype, a lectotype, or a neotype is an illustration, the specimen or specimens upon which that illustration is based should be used to help determine the application of the name (see also Art. 9.15).

8A.2 When an illustration is designated as the type of a name under Art. 40.5, the collection data of the illustrated material should be given (see also Rec. 38D.2).

8A.3 If the type specimen of a name of a fossil-taxon is cut into pieces (sections of fossil wood, pieces of coalball plants, etc.), all parts originally used in establishing the diagnosis should be clearly marked.

8A.4 When a single specimen designated as type is mounted as multiple preparations, this should be stated in the protologue<sup>3</sup>, and the preparations appropriately labelled.

#### Recommendation 8B

8B.1 Whenever practicable a living culture should be prepared from the holotype material of the name of a newly described taxon of algae or fungi and deposited in at least two institutional culture or genetic resource collections. (Such action does not obviate the requirement for a holotype specimen under Art. 8.4.)

8B.2 In cases where the type of a name is a culture permanently preserved in a metabolically inactive state (see Art. 8.4), any living isolates obtained from it should be referred to as “ex-type” (ex typo), “ex-holotype” (ex holotypo), “ex-isotype” (ex isotypo), etc., in order to make it clear they are derived from the type but are not themselves the nomenclatural type.

8B.3 When a culture is designated as a type, the status of the culture should be indicated, including the phrase “permanently preserved in a metabolically inactive state” or an equivalent.

<sup>1</sup> Here and elsewhere in this *Code*, the term “illustration” designates a work of art or a photograph depicting a feature or features of an organism, e.g. a picture of a herbarium specimen or a scanning electron micrograph.

<sup>2</sup> Here and elsewhere in this *Code*, the word duplicate is given its usual meaning in curatorial practice. A duplicate is part of a single gathering of a single species or infraspecific taxon made by the same collector(s) at one time. The possibility of a mixed gathering must always be considered by an author choosing a lectotype, and corresponding caution used.

### Article 9

9.1 A holotype of a name of a species or infraspecific taxon is the one specimen or illustration (but see Art. 40.4) used by the author, or designated by the author as the nomenclatural type. As long as the holotype is extant, it fixes the application of the name concerned (but see Art. 9.15).

*Note 1.* Any designation made by the original author, if definitely expressed at the time of the original publication of the name of the taxon, is final (but see Art. 9.11 and 9.15). If the author used only one element, it must be accepted as the holotype. If a name of a new taxon is validly published solely by reference to a previously published description or diagnosis, the same considerations apply to material used by the author of that description or diagnosis (see Art. 7.7; but see Art. 7.8).

*Ex.1.* When Tuckerman established *Opegrapha oulocheila* Tuck. (1866) he referred to “the single specimen, from Schweinitz’s herbarium (Herb. Acad. Sci. Philad.) before me”. Even though the term “type” or its equivalent was not used in the protologue, that specimen (PH) is the holotype.



*Ex.2.* The name *Phoebe calcarea* S. K. Lee & F. N. Wei (1983) was validly published with the holotype designation “*Du’an Expedition 4-10-004, IBK*”, but no specimen with this collection number exists at IBK. However, a specimen at IBK annotated with this name, “sp. nov.,” “Typus”, and matching all other details of the protologue bears the collection number “*Duan Exped. 4-10-243*”. Therefore the original type citation is obviously erroneous and is to be corrected.

9.2 A lectotype is a specimen or illustration designated from the original material as the nomenclatural type, in conformity with Art. 9.11 and 9.12, if no holotype was indicated at the time of publication, or if the holotype is missing, or if a type is found to belong to more than one taxon (see also Art. 9.14). For sanctioned names, a lectotype may be selected from among elements associated with either or both the protologue and the sanctioning treatment (Art. 9.10).

9.3 For the purposes of this *Code*, original material comprises the following elements: (a) those specimens and illustrations (both unpublished and published either prior to or together with the protologue) upon which it can be shown that the description or diagnosis validating the name was based; (b) the holotype and those specimens which, even if not seen by the author of the description or diagnosis validating the name, were indicated as types (syntypes or paratypes) of the name at its valid publication; and (c) the isotypes or isosyntypes of the name irrespective of whether such specimens were seen by either the author of the validating description or diagnosis or the author of the name (but see Art. 7.7, 7.8, and 9.10).

*Note 2.* For names falling under Art. 7.8, only elements from the context of the protologue itself are considered as original material.

*Note 3.* For names falling under Art. 7.7, only elements from the context of the validating description are considered as original material, unless the validating author has definitely designated a different type.

*Note 4.* For names falling under Art. 9.10, elements from the context of the protologue are original material and those from the context of the sanctioning work are considered as equivalent to original material.

9.4 An isotype is any duplicate of the holotype; it is always a specimen.

9.5 A syntype is any specimen cited in the protologue when there is no holotype, or any one of two or more specimens simultaneously designated in the protologue as types (see also Art. 40 Note 1). Reference to an entire gathering, or a part thereof, is considered citation of the included specimens.

*Ex.3.* In the protologue of *Laurentia frontidentata* E. Wimm. (see Art. 40 Ex. 2) a single gathering in two herbaria was designated as the type. There must exist, therefore, at least two specimens and these are syntypes.

*Ex.4.* In the protologue of *Anemone alpina* L. (1753), two specimens are cited under the (unnamed) varieties  $\beta$  and  $\gamma$ , as “Burs. IX: 80” and “Burs. IX: 81”. These specimens, which are extant in the Burser Herbarium (UPS), are syntypes of *A. alpina*.

9.6 A paratype is any specimen cited in the protologue that is neither the holotype nor an isotype, nor one of the syntypes if in the protologue two or more specimens were simultaneously designated as types.

*Ex.5.* The holotype of the name *Rheedia kappleri* Eyma (1932), which applies to a polygamous species, is a male specimen, *Kappler 593a* (U). The author designated a hermaphroditic specimen, *Forestry Service of Surinam B. W. 1618* (U), as a paratype.

*Note 5.* In most cases in which no holotype was designated there will also be no paratypes, since all the cited specimens will be syntypes. However, when an author designated two or more specimens as types (Art. 9.5), any remaining cited specimens are paratypes and not syntypes.

*Ex.6.* In the protologue of *Eurya hebeclados* Y. Ling (1951) the author simultaneously designated two specimens as types, *Y. Ling 5014* as “typus, ♂” and *Y. Y. Tung 315* as “typus, ♀”, which are therefore syntypes. Ling also cited the specimen *Y. Ling 5366* but without designating it as a type; it is therefore a paratype.

9.7 A neotype is a specimen or illustration selected to serve as nomenclatural type if no original material is extant, or as long as it is missing (see also Art. 9.16).

9.8 An epitype is a specimen or illustration selected to serve as an interpretative type when the holotype, lectotype, or previously designated neotype, or all original material associated with a validly published name, is demonstrably ambiguous and cannot be critically identified for purposes of the precise application of the name to a taxon. Designation of an epitype is not effected unless the holotype, lectotype, or neotype that the epitype supports is explicitly cited (see Art. 9.20).

*Ex.7.* The holotype of the name *Vitellaria paradoxa* C. F. Gaertn. (1807) is a seed of unknown provenance (P). It shows the characters of the species but cannot be assigned to either of its two currently recognized subspecies, which differ in characters of foliage and inflorescence. Hall & Hindle (in *Taxon* 44: 410. 1995) designated the type of *Bassia parkii* G. Don (1838), *Park* (BM), as the epitype of *V. paradoxa*. *Bassia parkii* thus becomes a synonym of *V. paradoxa* subsp. *paradoxa*, and the second subspecies retains the name *V. paradoxa* subsp. *nilotica* (Kotschy) A. N. Henry & al. (1983).

*Ex.8.* Podlech (in *Taxon* 46: 465. 1997) designated Herb. Linnaeus No. 926.43 (LINN) as the lectotype of *Astragalus trimestris* L. (1753). He simultaneously designated an epitype (Egypt. Dünen oberhalb Rosetta am linken Nilufer bei Schech Mantur, 9 May 1902, *Anonymous* (BM)), because the lectotype lacks fruits, “which show important diagnostic features for this species.”

*Ex.9.* The lectotype of *Lichen saxatilis* L. (1753), designated by Galloway & Elix (in *New Zealand J. Bot.* 21: 405. 1983), is a specimen from Sweden: Herb. Linnaeus No. 1273.62, second individual from bottom (LINN). No molecular sequence data could be obtained from the lectotype in order to ascertain whether it agrees with current usage of the name *Parmelia saxatilis* (L.) Ach. (1803) or is referable to the morphologically indistinguishable *P. serrana* A. Crespo & al. (2004). Therefore, Molina & al. (in *Lichenologist* 36: 47. 2004) designated an epitype, supporting that lectotype: a Swedish specimen of *P. saxatilis*, collected in 1998 (MAF 6882), for which sequence data were available.

9.9 The use of a term defined in the *Code* (Art. 9.1-2 and 9.4-8) as denoting a type, in a sense other than that in which it is so defined, is treated as an error to be corrected (for example, the use of the term lectotype to denote what is in fact a neotype).

*Ex.10.* Borssum Waalkes (in *Blumea* 14: 198. 1966) cited Herb. Linnaeus No. 866.7 (LINN) as the holotype of *Sida retusa* L. (1763). However, illustrations in Plukenet (*Phytographia*: t. 9, fig. 2. 1691) and Rumphius (*Herb. Amboin.* 6: t. 19. 1750) were cited by Linnaeus in the protologue. Therefore the original material of *S. retusa* comprises three elements (Art. 9.3), and Borssum Waalkes’s use of holotype is an error to be corrected to lectotype.

*Note 6.* A misused term may be corrected only if the requirements of Art. 7.10 (for correction to lectotype, neotype, and epitype) are met and Art. 40.6 (for correction to holotype) does not apply.

9.10 The type of a name of a species or infraspecific taxon adopted in one of the works specified in Art. 13.1(d), and thereby sanctioned (Art. 15), may be selected from among the elements associated with the name in the protologue and/or the sanctioning treatment.

9.11 If no holotype was indicated by the author of a name of a species or infraspecific taxon, or when the holotype or previously designated lectotype has been lost or destroyed, or when the material designated as type

is found to belong to more than one taxon, a lectotype or, if permissible (Art. 9.7), a neotype as a substitute for it may be designated.

9.12 In lectotype designation, an isotype must be chosen if such exists, or otherwise a syntype if such exists. If no isotype, syntype or isosyntype (duplicate of syntype) is extant, the lectotype must be chosen from among the paratypes if such exist. If no cited specimens exist, the lectotype must be chosen from among the uncited specimens and cited and uncited illustrations that comprise the remaining original material, if such exist.

9.13 If no original material is extant or as long as it is missing, a neotype may be selected. A lectotype always takes precedence over a neotype, except as provided by Art. 9.16.

9.14 When a type (herbarium sheet or equivalent preparation) contains parts belonging to more than one taxon (see Art. 9.11), the name must remain attached to the part (specimen as defined in Art. 8.2) that corresponds most nearly with the original description or diagnosis.

*Ex.11.* The type of the name *Tillandsia bryoides* Griseb. ex Baker (1878) is *Lorentz 128* (BM); this specimen, however, proved to be mixed. Smith (in Proc. Amer. Acad. Arts 70: 192. 1935) acted in accordance with Art. 9.14 in designating one part of Lorentz's specimen as the lectotype.

9.15 The holotype (or lectotype) of a name of a fossil-species or infraspecific fossil-taxon (Art. 8.5) is the specimen (or one of the specimens) on which the validating illustrations (Art. 43.2) are based. When, prior to 1 January 2001 (see Art. 43.3), in the protologue of a name of a new fossil-taxon of the rank of species or below, a type specimen is indicated (Art. 40.1) but not identified among the validating illustrations, a lectotype must be designated from among the specimens illustrated in the protologue. This choice is superseded if it can be demonstrated that the original type specimen corresponds to another validating illustration.

9.16 When a holotype or a previously designated lectotype has been lost or destroyed and it can be shown that all the other original material differs taxonomically from the lost or destroyed type, a neotype may be selected to preserve the usage established by the previous typification (see also Art. 9.18).

9.17 A designation of a lectotype or neotype that later is found to refer to a single gathering but to more than one specimen must nevertheless be accepted (subject to Art. 9.19), but may be further narrowed to a single one of these specimens by way of a subsequent lectotypification or neotypification.

*Ex.12.* *Erigeron plantagineus* Greene (1898) was described from material collected by R. M. Austin in California. Cronquist (in *Brittonia* 6: 173. 1947) wrote "Type: *Austin s.n.*, Modoc County, California (ND)", thereby designating the Austin material in ND as the [first-step] lectotype. Strother & Ferlatte (in *Madrono* 35: 85. 1988), noting that there were two specimens of this gathering at ND, designated one of them (ND-G No. 057228) as the [second-step] lectotype. In subsequent references, both lectotypification steps may be cited in sequence.

9.18 A neotype selected under Art. 9.16 may be superseded if it can be shown to differ taxonomically from the holotype or lectotype that it replaced.

9.19 The author who first designates (Art. 7.9 and 7.10) a lectotype or a neotype in conformity with Art. 9.11-13 must be followed, but that choice is superseded if (a) the holotype or, in the case of a neotype, any of the original material is rediscovered; the choice may also be superseded if one can show that (b) it is in serious conflict with the protologue and another element is available that is not in conflict with the protologue, or that (c) it is contrary to Art. 9.14.

*Ex.13.* Baumann & al. (in *J. Eur. Orch.* 34: 176. 2006) designated an illustration cited in the protologue of *Gymnadenia rubra* Wettst. (1889) as "lectotype". Because Wettstein also cited syntypes, which should have taken precedence, this designation was not in conformity with Art. 9.12 and must not be followed.

The name was correctly lectotypified, designating one of the syntypes, by Baumann & Lorenz (in Taxon 60: 1775. 2011).

9.20 The author who first designates (Art. 7.9 and 7.10) an epitype must be followed; a different epitype may be designated only if the original epitype is lost or destroyed. A lectotype or neotype supported by an epitype may be superseded in accordance with Art. 9.19, or in the case of a neotype with Art. 9.18. If it can be shown that an epitype and the type it supports differ taxonomically and that neither Art. 9.18 nor 9.19 applies, the name may be proposed for conservation with a conserved type (Art. 14.9; see also Art. 57).

*Note 7.* An epitype supports only the type to which it is linked by the typifying author. If the supported type is superseded, the epitype has no standing with respect to the replacement type.

9.21 Designation of an epitype is not effected unless the herbarium or institution in which the epitype is conserved is specified or, if the epitype is a published illustration, a full and direct bibliographic reference (Art. 41.5) to it is provided.

9.22 On or after 1 January 1990, lectotypification or neotypification of a name of a species or infraspecific taxon by a specimen or unpublished illustration is not effected unless the herbarium or institution in which the type is conserved is specified.

9.23 On or after 1 January 2001, lectotypification or neotypification of a name of a species or infraspecific taxon is not effected unless indicated by use of the term “lectotypus” or “neotypus”, its abbreviation, or its equivalent in a modern language (see also Art. 7.10 and 9.9).

## Recommendation 9A

9A.1 Typification of names for which no holotype was designated should only be carried out with an understanding of the author’s method of working; in particular it should be realized that some of the material used by the author in describing the taxon may not be in the author’s herbarium or may not even have survived, and conversely, that not all the material surviving in the author’s herbarium was necessarily used in describing the taxon.

9A.2 Designation of a lectotype should be undertaken only in the light of an understanding of the group concerned. In choosing a lectotype, all aspects of the protologue should be considered as a basic guide. Mechanical methods, such as the automatic selection of the first element cited or of a specimen collected by the person after whom a species is named, should be avoided as unscientific and leading to possible future confusion and further changes.

9A.3 In choosing a lectotype, any indication of intent by the author of a name should be given preference unless such indication is contrary to the protologue. Such indications are manuscript notes, annotations on herbarium sheets, recognizable figures, and epithets such as *typicus*, *genuinus*, etc.

9A.4 When two or more heterogeneous elements were included in or cited with the original description or diagnosis, the lectotype should be so selected as to preserve current usage. In particular, if another author has already segregated one or more elements as other taxa, one of the remaining elements should be designated as the lectotype provided that this element is not in conflict with the original description or diagnosis (see Art. 9.19).

## Recommendation 9B

9B.1 In selecting a neotype, particular care and critical knowledge should be exercised because the reviewer usually has no guide except personal judgment as to what best fits the protologue; if this selection proves to be faulty it may result in further change.

## Recommendation 9C

9C.1 Duplicate specimens of a lectotype, neotype, and epitype should be referred to as isolectotypes, isoneotypes, and isoeotypes, respectively.

## Recommendation 9D

9D.1 Specification of the institution of deposition (see Art. 40 Note 4) should be followed by any available number permanently and unambiguously identifying the lectotype, neotype, or epitype specimen (see also Rec. 40A.3).

<sup>3</sup> Protologue (from Greek *πρώτος*, *protos*, first; *λόγος*, *logos*, discourse): everything associated with a name at its valid publication, e.g. description, diagnosis, illustrations, references, synonymy, geographical data, citation of specimens, discussion, and comments.

## Article 10

10.1 The type of a name of a genus or of any subdivision of a genus is the type of a name of a species (except as provided by Art. 10.4). For purposes of designation or citation of a type, the species name alone suffices, i.e. it is considered as the full equivalent of its type.

*Note 1.* Terms such as “holotype”, “syntype”, and “lectotype”, as presently defined in Art. 9, although not applicable, strictly speaking, to the types of names in ranks higher than species, have been so used by analogy.

10.2 If in the protologue of a name of a genus or of any subdivision of a genus the holotype or lectotype of one or more previously or simultaneously published species name(s) is definitely included (see Art. 10.3), the type must be chosen from among these types, unless (a) the type was indicated (Art. 22.6, 40.1, and 40.3) or designated by the author of the name; or (b) the name was sanctioned, in which case the type may also be chosen from among the types of species names included in the sanctioning treatment. If no type of a previously or simultaneously published species name was definitely included, a type must be otherwise chosen, but the choice is to be superseded if it can be demonstrated that the selected type is not conspecific with any of the material associated with either the protologue or the sanctioning treatment.

*Ex.1.* The genus *Anacyclus*, as originally circumscribed by Linnaeus (1753), comprised three validly named species. Cassini (in Cuvier, *Dict. Sci. Nat.* 34: 104. 1825) designated *Anthemis valentina* L. (1753) as type of *Anacyclus*, but this was not an original element of the genus. Green (in Anonymous, *Nomencl. Prop. Brit. Botanists*: 182. 1929) designated *Anacyclus valentinus* L. (1753), “the only one of the three original species still retained in the genus”, as the “standard species” (see Art. 7 \*Ex. 13), and her choice must be followed (Art. 10.5). Humphries (in *Bull. Brit. Mus. (Nat. Hist.)*, Bot. 7: 109. 1979) designated a specimen in the Clifford Herbarium (BM) as lectotype of *Anacyclus valentinus*, and that specimen thereby became the ultimate type of the generic name.

*Ex.2.* *Castanella* Spruce ex Benth. & Hook. f. (Aug 1862) was described on the basis of a single specimen collected by Spruce and without mention of a species name. Swart (in *ING Card No.* 2143. 1957) was the first to designate a type (as “T.”): *C. granatensis* Planch. & Linden (Dec 1862), based on *Linden 1360*. As long as the Spruce specimen is considered to be conspecific with Linden’s material, Swart’s type designation cannot be superseded, even though the Spruce specimen became the type of *Paullinia paullinioides* Radlk. (1896), because the latter is not a “previously or simultaneously published species name”.

10.3 For the purposes of Art. 10.2, definite inclusion of the type of a name of a species is effected by citation of, or reference (direct or indirect) to, a validly published species name, whether accepted or synonymized by the author, or by citation of the holotype or lectotype of a previously or simultaneously published species name.

*Ex.3.* The protologue of *Elodes* Adans. (1763) includes references to “*Elodes*” of Clusius (1601), “*Hypericum*” of Tournefort (1700), and *Hypericum aegypticum* L. (1753). The last is the only reference to a validly published species name, and neither of the other elements is the type of a species name. The type of *H. aegypticum* is therefore the type of *Elodes* even though subsequent authors designated *H. elodes* L. (1759) as the type (see Robson in Bull. Brit. Mus. (Nat. Hist.), Bot. 5: 305, 336. 1977).

10.4 By and only by conservation (Art. 14.9), the type of a name of a genus may be a specimen or illustration, preferably used by the author in the preparation of the protologue, other than the type of a name of an included species.

*Note 2.* If the element designated under Art. 10.4 is the type of a species name, that name may be cited as the type of the generic name. If the element is not the type of a species name, a parenthetical reference to the correct name of the type element may be added.

*Ex.4.* *Physconia* Poelt (1965) was conserved with the specimen “‘*Lichen pulverulentus*’, Germania, Lipsia in *Tilia*, 1767, *Schreber* (M)” as the conserved type. That specimen is the type of *P. pulverulacea* Moberg (1979), the name now cited in the type entry in App. III.

*Ex.5.* *Pseudolarix* Gordon (1858) was conserved with a specimen from the Gordon herbarium (K No. 3455) as its conserved type. As this specimen is not the type of any species name, its accepted identity “[= *P. amabilis* (J. Nelson) Rehder ... ]” has been added to the corresponding entry in App. III.

10.5 The author who first designates (Art. 7.9 and 7.10) a type of a name of a genus or subdivision of a genus must be followed, but the choice may be superseded if (a) it can be shown that it is in serious conflict with the protologue (or with the sanctioning treatment in the case of names typified from the sanctioning work, Art. 10.2(b)), or (b) that it was based on a largely mechanical method of selection.

*Ex.6.* Fink (in Contr. U.S. Natl. Herb. 14(1): 2. 1910) specified that he was “stating the types of the genera according to the ‘first species’ rule”. His type designations may therefore be superseded under Art. 10.5(b). For example, Fink had designated *Biatorina griffithii* (Ach.) A. Massal. as the type of *Biatorina* A. Massal.; but his choice was superseded when the next subsequent designation, by Santesson (in Symb. Bot. Upsal. 12(1): 428. 1952), stated a different type, *B. atropurpurea* (Schaer.) A. Massal.

*Ex.7.* Authors following the *American Code of Botanical Nomenclature*, Canon 15 (in Bull. Torrey Bot. Club 34: 172. 1907), designated as the type “the first binomial species in order” eligible under certain provisions. This method of selection is to be considered as largely mechanical. Thus the first type designation for *Delphinium* L., by Britton (in Britton & Brown, Ill. Fl. N. U.S., ed. 2, 2: 93. 1913), who followed the *American Code* and chose *D. consolida* L., has been superseded under Art. 10.5(b) by the designation of *D. peregrinum* L. by Green (in Anonymous, Nomencl. Prop. Brit. Botanists: 162. 1929).

10.6 The type of a name of a family or of any subdivision of a family is the same as that of the generic name on which it is based (see Art. 18.1). For purposes of designation or citation of a type, the generic name alone suffices. The type of a name of a family or subfamily not based on a generic name is the same as that of the corresponding alternative name (Art. 18.5 and 19.8).

10.7 The principle of typification does not apply to names of taxa above the rank of family, except for names that are automatically typified by being based on generic names (see Art. 16), the type of which is the same as that of the generic name.

*Note 3.* For the typification of some names of subdivisions of genera see Art. 22.6.

## Recommendation 10A

10A.1 When a combination in a rank of subdivision of a genus has been published under a generic name that has not yet been typified, the type of the generic name should be selected from the subdivision of the genus that was designated as nomenclaturally typical, if that is apparent.

### SECTION 3. Priority

#### Article 11

11.1 Each family or taxon of lower rank with a particular circumscription, position, and rank can bear only one correct name, special exceptions being made for nine families and one subfamily for which alternative names are permitted (see Art. 18.5 and 19.8). However, the use of separate names is allowed for fossil-taxa that represent different parts, life-history stages, or preservational states of what may have been a single organismal taxon or even a single individual (Art. 1.2).

*Ex.1.* The generic name *Sigillaria* Brongn. (in Mém. Mus. Hist. Nat. 8: 222. 1822) was established for fossils of “bark” fragments, but Brongniart (in Arch. Mus. Hist. Nat. 1: 405. 1839) subsequently included stems with preserved anatomy within his concept of *Sigillaria*. Cones with preserved anatomy that may in part represent the same biological taxon are referred to as *Mazocarpon* M. J. Benson (in Ann. Bot. (Oxford) 32: 569. 1918), whereas such cones preserved as adpressions are known as *Sigillariostrobus* Schimp. (Traité Paléont. Vég. 2: 105. 1870). All these generic names can be used concurrently in spite of the fact that they may, at least in part, apply to the same organism.

11.2 A name has no priority outside the rank in which it is published (but see Art. 53.4).

*Ex.2.* *Campanula* sect. *Campanopsis* R. Br. (Prodr.: 561. 1810) when treated as a genus is called *Wahlenbergia* Roth (1821), a name conserved against the heterotypic (taxonomic) synonym *Cervicina* Delile (1813), and not *Campanopsis* (R. Br.) Kuntze (1891).

*Ex.3.* *Solanum* subg. *Leptostemonum* Bitter (in Bot. Jahrb. Syst. 55: 69. 1919) is the correct name of the subgenus of *Solanum* L. that includes its type, *S. mammosum* L., because it is the earliest available name in that rank. The homotypic *S.* sect. *Acanthophora* Dunal (Hist. Nat. Solanum: 131, 218. 1813), the inclusion of which caused the illegitimacy of *S.* sect. *Leptostemonum* Dunal (in Candolle, Prodr. 13(1): 29, 183. 1852), has no priority outside its own rank.

*Ex.4.* *Helichrysum stoechas* subsp. *barrelieri* (Ten.) Nyman (Consp. Fl. Eur.: 381. 1879) when treated at specific rank is called *H. conglobatum* (Viv.) Steud. (1840), based on *Gnaphalium conglobatum* Viv. (1824), and not *H. barrelieri* (Ten.) Greuter (1967), based on *G. barrelieri* Ten. (1835-1838).

*Ex.5.* *Magnolia virginiana* var. *foetida* L. (1753) when raised to specific rank is called *M. grandiflora* L. (1759), not *M. foetida* (L.) Sarg. (1889).

*Note 1.* The provisions of Art. 11 determine priority between different names applicable to the same taxon; they do not concern homonymy.

11.3 For any taxon from family to genus, inclusive, the correct name is the earliest legitimate one with the same rank, except in cases of limitation of priority by conservation (see Art. 14) or where Art. 11.7, 15, 19.4, 56, or 57 apply.

*Ex.6.* When *Aesculus* L. (1753), *Pavia* Mill. (1754), *Macrothyrsus* Spach (1834), and *Calothyrsus* Spach (1834) are referred to a single genus, its correct name is *Aesculus*.

11.4 For any taxon below the rank of genus, the correct name is the combination of the final epithet<sup>1</sup> of the earliest legitimate name of the taxon in the same rank, with the correct name of the genus or species to which it is assigned, except (a) in cases of limitation of priority under Art. 14, 15, 56, or 57, or (b) if the resulting combination could not be validly published under Art. 32.1(c) or would be illegitimate under Art. 53, or (c) if Art. 11.7, 22.1 or 26.1 rules that a different combination be used.

Ex.7. *Primula* sect. *Dionysiopsis* Pax (in Jahresber. Schles. Ges. Vaterländ. Kultur 87: 20. 1909) when transferred to *Dionysia* Fenzl becomes *D.* sect. *Dionysiopsis* (Pax) Melch. (in Mitt. Thüring. Bot. Vereins 50: 164-168. 1943); the replacement name *D.* sect. *Ariadna* Wendelbo (in Bot. Not. 112: 496. 1959) is illegitimate under Art. 52.1.

Ex.8. *Antirrhinum spurium* L. (1753) when transferred to *Linaria* Mill. is called *L. spuria* (L.) Mill. (1768).

Ex.9. When transferring *Serratula chamaepeuce* L. (1753) to *Ptilostemon* Cass., Cassini illegitimately (Art. 52.1) named the species *P. muticus* Cass. (1826). In that genus, the correct name is *P. chamaepeuce* (L.) Less. (1832).

Ex.10. The correct name for *Rubus aculeatiflorus* var. *taitoensis* (Hayata) T. S. Liu & T. Y. Yang (in Annual Taiwan Prov. Mus. 12: 12. 1969) is *R. taitoensis* Hayata var. *taitoensis*, because *R. taitoensis* Hayata (1911) has priority over *R. aculeatiflorus* Hayata (1915).

Ex.11. When transferring *Spartium biflorum* Desf. (1798) to *Cytisus* Desf., Ball correctly proposed the replacement name *C. fontanesii* Spach ex Ball (1878) because of the previously and validly published *C. biflorus* L'Hér. (1791); the combination *C. biflorus* based on *S. biflorum* would be illegitimate under Art. 53.1.

Ex.12. *Spergula stricta* Sw. (1799) when transferred to *Arenaria* L. is called *A. uliginosa* Schleich. ex Schtdl. (1808) because of the existence of the name *A. stricta* Michx. (1803), based on a different type; but on further transfer to the genus *Minuartia* L. the epithet *stricta* is again available and the species is called *M. stricta* (Sw.) Hiern (1899).

Ex.13. *Arum dracunculus* L. (1753) when transferred to *Dracunculus* Mill. is named *D. vulgaris* Schott (1832), as use of the Linnaean epithet would result in a tautonym (Art. 23.4).

Ex.14. *Cucubalus behen* L. (1753) when transferred to *Behen* Moench was legitimately renamed *B. vulgaris* Moench (1794) to avoid the tautonym "B. behen". In *Silene* L., the epithet *behen* is unavailable because of the existence of *S. behen* L. (1753). Therefore, the replacement name *S. cucubalus* Wibel (1799) was proposed. This, however, is illegitimate (Art. 52.1) since the specific epithet *vulgaris* was available. In *Silene*, the correct name of the species is *S. vulgaris* (Moench) Garcke (1869).

Ex.15. *Helianthemum italicum* var. *micranthum* Gren. & Godr. (Fl. France 1: 171. 1847) when transferred as a variety to *H. penicillatum* Thibaud ex Dunal retains its varietal epithet and is named *H. penicillatum* var. *micranthum* (Gren. & Godr.) Grosser (in Engler, Pflanzenr. IV. 193 (Heft 14): 115. 1903).

Ex.16. The final epithet in the combination *Thymus praecox* subsp. *arcticus* (Durand) Jalas (in Veröff. Geobot. Inst. ETH ETH Stiftung Rübel Zürich 43: 190. 1970), based on *T. serpyllum* var. *arcticus* Durand (Pl. Kaneanae Groenl. 196. 1856), was first used at the rank of subspecies in the combination *T. serpyllum* subsp. *arcticus* (Durand) Hyl. (in Uppsala Univ. Arsskr. 1945(7): 276. 1945). However, if *T. britannicus* Ronniger (1924) is included in this taxon, the correct name at subspecific rank is *T. praecox* subsp. *britannicus* (Ronniger) Holub (in Preslia 45: 359. 1973), for which the final epithet was first used at this rank in the combination *T. serpyllum* subsp. *britannicus* (Ronniger) P. Fourn. (Quatre Fl. France: 841. 1938, "S.-E. [Sous-Espece] *Th. Britannicus*").



*Note 2.* The valid publication of a name at a rank lower than genus precludes any simultaneous homonymous combination (Art. 53), irrespective of the priority of other names with the same final epithet that may require transfer to the same genus or species.

*Ex.17.* Tausch included two species in his new genus *Alkana*: *A. tinctoria* Tausch (1824), a new species based on "*Anchusa tinctoria*" in the sense of Linnaeus (1762), and *A. matthioli* Tausch (1824), a replacement name based on *Lithospermum tinctorium* L. (1753). Both names are legitimate and take priority from 1824.

*Ex.18.* Raymond-Hamet transferred to the genus *Sedum* both *Cotyledon sedoides* DC. (1808) and *Sempervivum sedoides* Decne. (1844). He combined the epithet of the later name, *Sempervivum sedoides*, under *Sedum*, as *S. sedoides* (Decne.) Raym.-Hamet (1929), and published a replacement name, *S. candollei* Raym.-Hamet (1929), for the earlier name. Both of Raymond-Hamet's names are legitimate.

11.5 When, for any taxon of the rank of family or below, a choice is possible between legitimate names of equal priority in the corresponding rank, or between available final epithets of names of equal priority in the corresponding rank, the first such choice to be effectively published (Art. 29-31) establishes the priority of the chosen name, and of any legitimate combination with the same type and final epithet at that rank, over the other competing name(s) (but see Art. 11.6; see also Rec. 42A.2).

*Note 3.* A choice as provided for in Art. 11.5 is effected by adopting one of the competing names, or its final epithet in the required combination, and simultaneously rejecting or relegating to synonymy the other(s), or homotypic (nomenclatural) synonyms thereof.

*Ex.19.* When *Dentaria* L. (1753) and *Cardamine* L. (1753) are united, the resulting genus is called *Cardamine* because that name was chosen by Crantz (Cl. Crucif. Emend.: 126. 1769), who first united them.

*Ex.20.* When *Claudopus* Gillet (1876), *Eccilia* (Fr. : Fr.) P. Kumm. (1871), *Entoloma* (Fr. ex Rabenh.) P. Kumm. (1871), *Leptonia* (Fr. : Fr.) P. Kumm. (1871), and *Nolanea* (Fr. : Fr.) P. Kumm. (1871) are united, one of the generic names simultaneously published by Kummer must be used for the combined genus. Donk (in Bull. Jard. Bot. Buitenzorg, ser. 3, 18(1): 157. 1949) selected *Entoloma*, which is therefore treated as having priority over the other names.

*Ex.21.* Brown (in Tuckey, Narr. Exped. Zaire: 484. 1818) was the first to unite *Waltheria americana* L. (1753) and *W. indica* L. (1753). He adopted the name *W. indica* for the combined species, and this name is accordingly treated as having priority over *W. americana*.

*Ex.22.* Baillon (in *Adansonia* 3: 162. 1863), when uniting for the first time *Sclerocroton integerrimus* Hochst. (1845) and *S. reticulatus* Hochst. (1845), adopted the name *Stillingia integerrima* (Hochst.) Baill. for the combined taxon. Consequently *Sclerocroton integerrimus* is treated as having priority over *S. reticulatus* irrespective of the genus (*Sclerocroton*, *Stillingia*, or any other) to which the species is assigned.

*Ex.23.* Linnaeus (1753) simultaneously published the names *Verbesina alba* and *V. prostrata*. Later (1771), he published *Eclipta erecta*, an illegitimate name because *V. alba* was cited in synonymy, and *E. prostrata*, based on *V. prostrata*. The first author to unite these taxa was Roxburgh (Fl. Ind., ed. 1832, 3: 438. 1832), who adopted the name *E. prostrata* (L.) L. Therefore *V. prostrata* is treated as having priority over *V. alba*.

*Ex.24.* *Donia speciosa* and *D. formosa*, which were simultaneously published by Don (1832), were illegitimately renamed *Clianthus oxleyi* and *C. dampieri*, respectively, by Lindley (1835). Brown (in Sturt, Narr. Exped. C. Australia 2: 71. 1849) united both in a single species, adopting the illegitimate name *C.*

*dampieri* and citing *D. speciosa* and *C. oxleyi* as synonyms; his choice is not of the kind provided for by Art. 11.5. *Clianthus speciosus* (G. Don) Asch. & Graebn. (1909), published with *D. speciosa* and *C. dampieri* listed as synonyms, is an illegitimate later homonym of *C. speciosus* (Endl.) Steud. (1840); again, conditions for a choice under Art. 11.5 were not satisfied. Ford & Vickery (1950) published the legitimate combination *C. formosus* (G. Don) Ford & Vickery and cited *D. formosa* and *D. speciosa* as synonyms, but since the epithet of the latter was unavailable in *Clianthus* a choice was not possible and again Art. 11.5 does not apply. Thompson (1990) was the first to effect an acceptable choice when publishing the combination *Swainsona formosa* (G. Don) Joy Thomps. and indicating that *D. speciosa* was a synonym of it.

11.6 An autonym is treated as having priority over the name or names of the same date and rank that established it.

*Note 4.* When the final epithet of an autonym is used in a new combination under the requirements of Art. 11.6, the basionym of that combination is the name from which the autonym is derived, or its basionym if it has one.

*Ex.25.* The publication of *Synthyris* subg. *Plagiocarpus* Pennell (in Proc. Acad. Nat. Sci. Philadelphia 85: 86. 1933) simultaneously established the autonym *Synthyris* Benth. (1846) subg. *Synthyris*, If *Synthyris*, including subg. *Plagiocarpus*, is recognized as a subgenus of *Veronica* L. (1753), the correct name is *V. subg. Synthyris* (Benth.) M. M. Mart. Ort. & al. (in Taxon 53: 440. 2004), which has precedence over a combination in *Veronica* based on *S. subg. Plagiocarpus*.

*Ex.26.* *Heracleum sibiricum* L. (1753) includes *H. sibiricum* subsp. *lecokii* (Godr. & Gren.) Nyman (Consp. Fl. Eur.: 290. 1879) and *H. sibiricum* subsp. *sibiricum* automatically established at the same time. When *H. sibiricum*, so circumscribed, is included in *H. sphondylium* L. (1753) as a subspecies, the correct name of that subspecies is *H. sphondylium* subsp. *sibiricum* (L.) Simonk. (Enum. Fl. Transsilv.: 266. 1887), not "*H. sphondylium* subsp. *lecokii*".

*Ex.27.* The publication of *Salix tristis* var. *microphylla* Andersson (Salices Bor.-Amer.: 21. 1858) established the autonym *S. tristis* Aiton (1789) var. *tristis*, dating from 1858. If *S. tristis*, including var. *microphylla*, is recognized as a variety of *S. humilis* Marshall (1785), the correct name is *S. humilis* var. *tristis* (Aiton) Griggs (in Proc. Ohio Acad. Sci. 4: 301. 1905). However, if both varieties of *S. tristis* are recognized as varieties of *S. humilis*, then the names *S. humilis* var. *tristis* and *S. humilis* var. *microphylla* (Andersson) Fernald (in Rhodora 48: 46. 1946) are both used.

*Ex.28.* In the classification adopted by Rollins and Shaw, *Lesquerella lasiocarpa* (Hook. ex A. Gray) S. Watson (1888) is composed of two subspecies, subsp. *lasiocarpa* (which includes the type of the name of the species and is cited without an author) and subsp. *berlandieri* (A. Gray) Rollins & E. A. Shaw. The latter subspecies is composed of two varieties. In that classification the correct name of the variety that includes the type of subsp. *berlandieri* is *L. lasiocarpa* var. *berlandieri* (A. Gray) Payson (1922), not *L. lasiocarpa* var. *berlandieri* (cited without an author) or *L. lasiocarpa* var. *hispida* (S. Watson) Rollins & E. A. Shaw (1972), based on *Synthlipsis berlandieri* var. *hispida* S. Watson (1882), since publication of the latter name established the autonym *S. berlandieri* A. Gray var. *berlandieri*, which, at varietal rank, is treated as having priority over var. *hispida*.

11.7 For purposes of priority, names of fossil-taxa (diatom taxa excepted) compete only with names based on a fossil type.

*Ex.29.* The name *Tuberculodinium* D. Wall (1967) may be retained for a fossil-genus of cysts even though cysts of the same kind are known to be part of the life cycle of the non-fossil genus *Pyrophacus* F. Stein (1883).

*Ex.30.* A common Jurassic leaf-compression fossil is referred to as either *Ginkgo huttonii* (Sternb.) Heer or *Ginkgoites huttonii* (Sternb.) M. Black. Both names are in accordance with the *Code*, and either name can be correct, depending on whether this Jurassic fossil-species is regarded as rightly assigned to the non-fossil genus *Ginkgo* L. or whether it is more appropriate to assign it to the fossil-genus *Ginkgoites* Seward (type, *G. obovata* (Nath.) Seward, a Triassic leaf compression).

**11.8** Names of organisms (diatoms excepted) based on a non-fossil type are treated as having priority over names of the same rank based on a fossil type.

*Ex.31.* If *Platycarya* Siebold & Zucc. (1843), a non-fossil genus, and *Petrophiloides* Bowerb. (1840), a fossil-genus, are united, the name *Platycarya* is correct for the combined genus, although it is antedated by *Petrophiloides*.

*Ex.32.* The generic name *Metasequoia* Miki (1941) was based on the fossil type of *M. disticha* (Heer) Miki. After discovery of the non-fossil species *M. glyptostrobooides* Hu & W. C. Cheng, conservation of *Metasequoia* Hu & W. C. Cheng (1948) as based on the non-fossil type was approved. Otherwise, any new generic name based on *M. glyptostrobooides* would have had to be treated as having priority over *Metasequoia* Miki.

*Ex.33.* *Hyalodiscus* Ehrenb. (1845), based on the fossil type of *H. laevis* Ehrenb. (1845), is the name of a diatom genus that includes non-fossil species. If later synonymous generic names based on a non-fossil type exist, they are not treated as having priority over *Hyalodiscus*.

*Ex.34.* Boalch and Guy-Ohlson (in *Taxon* 41: 529-531. 1992) united the two non-diatom algal genera *Pachysphaera* Ostenf. (1899) and *Tasmanites* E. J. Newton (1875) (*Prasinophyta*). *Pachysphaera* is based on a non-fossil type and *Tasmanites* on a fossil type. Under the *Code* in effect in 1992, *Tasmanites* had priority and was therefore adopted. Under the current Art. 11.8, which excepts only diatoms and not algae in general, *Pachysphaera* is correct for the combined genus.

*Note 5.* In accordance with Art. 53, later homonyms are illegitimate whether the type is fossil or non-fossil.

*Ex.35.* *Endolepis* Torr. (1861), based on a non-fossil type, is an illegitimate later homonym of *Endolepis* Schleid. (1846), based on a fossil type.

*Ex.36.* *Cornus paucinervis* Hance (1881), based on a non-fossil type, is an illegitimate later homonym of *C. paucinervis* Heer (Fl. Tert. Helv. 3: 289. 1859), based on a fossil type.

*Ex.37.* *Ficus crassipes* F. M. Bailey (1889), *F. tiliifolia* Baker (1885), and *F. tremula* Warb. (1894), each based on a non-fossil type, were illegitimate later homonyms of, respectively, *F. crassipes* (Heer) Heer (1882), *F. tiliifolia* (A. Braun) Heer (1856), and *F. tremula* Heer (1874), each based on a fossil type. The three names with non-fossil types have been conserved against their earlier homonyms in order to maintain their use.

**11.9** For purposes of priority, names given to hybrids are subject to the same rules as are those of non-hybrid taxa of equivalent rank (but see Art. H.8).

*Ex.38.* The name  $\times$ *Solidaster* H. R. Wehrh. (1932) has priority over  $\times$ *Asterago* Everett (1937) for the hybrids between *Aster* L. and *Solidago* L.

*Ex.39.* *Anemone*  $\times$ *hybrida* Paxton (1848) has priority over *A.*  $\times$ *elegans* Decne. (pro sp.) (1852). The former is correct when both are considered to apply to the same hybrid, *A. hupehensis* (Lemoine & É. Lemoine) Lemoine & É. Lemoine  $\times$  *A. vitifolia* Buch.-Ham. ex DC. (Art. H.4.1).

*Ex.40.* Camus (in Bull. Mus. Natl. Hist. Nat. 33: 538. 1927) published the name *×Agroelymus* E. G. Camus ex A. Camus without a description or diagnosis, mentioning only the names of the parent genera (*Agropyron* Gaertn. and *Elymus* L.). Since this name was not validly published under the *Code* then in force, Rousseau (in Mém. Jard. Bot. Montréal 29: 10-11. 1952) published a Latin diagnosis. However, under the present *Code* (Art. H.9) the date of *×Agroelymus* is 1927, not 1952, so it antedates the name *×Elymopyrum* Cugnac (in Bull. Soc. Hist. Nat. Ardennes 33: 14. 1938).

11.10 The principle of priority does not apply above the rank of family (but see Rec. 16A).

<sup>1</sup> Here and elsewhere in this *Code*, the phrase “final epithet” refers to the last epithet in sequence in any particular combination, whether in the rank of a subdivision of a genus, or of a species, or of an infraspecific taxon.

## Article 12

12.1 A name of a taxon has no status under this *Code* unless it is validly published (see Art. 6.3; but see Art. 14.15).

## SECTION 4. Limitation of the principle of priority

### Article 13

13.1 Valid publication of names for organisms of different groups is treated as beginning at the following dates (for each group a work is mentioned that is treated as having been published on the date given for that group):

Non-fossil organisms:

(a) Spermatophyta and Pteridophyta, names at ranks of genus and below, 1 May 1753 (Linnaeus, *Species plantarum*, ed. 1); suprageneric names, 4 August 1789 (Jussieu, *Genera plantarum*).

(b) Musci (except *Sphagnaceae*), 1 January 1801 (Hedwig, *Species muscorum*).

(c) *Sphagnaceae* and *Hepaticae* (including *Anthocerotae*), names at ranks of genus and below, 1 May 1753 (Linnaeus, *Species plantarum*, ed. 1); suprageneric names, 4 August 1789 (Jussieu, *Genera plantarum*).

(d) Fungi (Pre. 8), 1 May 1753 (Linnaeus, *Species plantarum*, ed. 1). Names in *Uredinales*, *Ustilaginales*, and *Gasteromycetes* (s. l.) adopted by Persoon (*Synopsis methodica fungorum*, 31 December 1801) and names of other fungi (excluding slime moulds) adopted by Fries (*Systema mycologicum*, vol. 1 (1 January 1821) to 3, with additional *Index* (1832); and *Elenchus fungorum*, vol. 1-2), are sanctioned (see Art. 15). For nomenclatural purposes names given to lichens apply to their fungal component. Names of *Microsporidia* are governed by the *International Code of Zoological Nomenclature* (see Pre. 8).

(e) Algae, 1 May 1753 (Linnaeus, *Species plantarum*, ed. 1). Exceptions:

*Nostocaceae homocysteeae*, 1 January 1892 (Gomont, “Monographie des Oscillariées”, in Ann. Sci. Nat., Bot., ser. 7, 15: 263-368; 16: 91-264). The two parts of Gomont’s “Monographie”, which appeared in 1892 and 1893, respectively, are treated as having been published simultaneously on 1 January 1892.

Nostocaceae heterocysteeae, 1 January 1886 (Bornet & Flahault, “Révision des Nostocacées hétérocystées”, in *Ann. Sci. Nat., Bot.*, ser. 7, 3: 323-381; 4: 343-373; 5: 51-129; 7: 177-262). The four parts of the “Révision”, which appeared in 1886, 1886, 1887, and 1888, respectively, are treated as having been published simultaneously on 1 January 1886.

Desmidiaceae (s. l.), 1 January 1848 (Ralfs, *British Desmidiaceae*).

Oedogoniaceae, 1 January 1900 (Hirn, “Monographie und Iconographie der Oedogoniaceen”, in *Acta Soc. Sci. Fenn.* 27(1)).

Fossil organisms (diatoms excepted):

(f) All groups, 31 December 1820 (Sternberg, *Flora der Vorwelt, Versuch* 1: 1-24, t. 1-13). Schlotheim’s *Petrefactenkunde* (1820) is regarded as published before 31 December 1820.

13.2 The group to which a name is assigned for the purposes of Art. 13.1 is determined by the accepted taxonomic position of the type of the name.

*Ex.1.* The genus *Porella* and its single species, *P. pinnata*, were referred by Linnaeus (1753) to the *Musci*; since the type specimen of *P. pinnata* is now accepted as belonging to the *Hepaticae*, the names were validly published in 1753.

*Ex.2.* The designated type of *Lycopodium* L. (1753) is *L. clavatum* L. (1753), the type specimen of which is currently accepted as a pteridophyte. Accordingly, although the genus is listed by Linnaeus among the *Musci*, the generic name and the names of the pteridophyte species included by Linnaeus under it were validly published in 1753.

13.3 For nomenclatural purposes, a name is treated as pertaining to a non-fossil taxon unless its type is fossil in origin (Art. 1.2). Fossil material is distinguished from non-fossil material by stratigraphic relations at the site of original occurrence. In cases of doubtful stratigraphic relations, and for all diatoms, provisions for non-fossil taxa apply.

13.4 Generic names that appear in Linnaeus’s *Species plantarum*, ed. 1 (1753) and ed. 2 (1762-1763), are associated with the first subsequent description given under those names in Linnaeus’s *Genera plantarum*, ed. 5 (1754) and ed. 6 (1764). The spelling of the generic names included in *Species plantarum*, ed. 1, is not to be altered because a different spelling has been used in *Genera plantarum*, ed. 5.

*Note 1.* The two volumes of Linnaeus’s *Species plantarum*, ed. 1 (1753), which appeared in May and August, 1753, respectively, are treated as having been published simultaneously on 1 May 1753 (Art. 13.1).

*Ex.3.* The generic names *Thea* L. (Sp. Pl.: 515. 24 Mai 1753; Gen. Pl., ed. 5: 232. 1754), and *Camellia* L. (Sp. Pl.: 698. 16 Aug 1753; Gen. Pl., ed. 5: 311. 1754), are treated as having been published simultaneously on 1 May 1753. Under Art. 11.5 the combined genus bears the name *Camellia*, since Sweet (Hort. Suburb. Lond.: 157. 1818), who was the first to unite the two genera, chose that name, and cited *Thea* as a synonym.

*Ex.4.* *Sideroxylon* L. (1753) is not to be altered because Linnaeus spelled it “*Sideroxylum*” in *Genera plantarum*, ed. 5 (1754) usage of *Brunfelsia* L. (1753, orth. cons., ‘*Brunsfelsia*’), which Linnaeus adopted in 1754, has been made possible only through conservation (see App. III).

## Article 14

14.1 In order to avoid disadvantageous nomenclatural changes entailed by the strict application of the rules, and especially of the principle of priority in starting from the dates given in Art. 13, this *Code* provides, in App. II-IV, lists of names of families, genera, and species that are conserved (nomina conservanda) (see Rec. 50E.1). Conserved names are legitimate even though initially they may have been illegitimate. The name of a subdivision of a genus or of an infraspecific taxon may be conserved with a conserved type and listed in App. III and IV, respectively, when it is the basionym of a name of a genus or species that could not continue to be used in its current sense without conservation.

14.2 Conservation aims at retention of those names that best serve stability of nomenclature.

14.3 The application of both conserved and rejected names is determined by nomenclatural types. The type of the species name cited as the type of a conserved generic name may, if desirable, be conserved and listed in App. III.

14.4 A conserved name of a family or genus is conserved against all other names in the same rank based on the same type (homotypic, i.e. nomenclatural, synonyms, which are to be rejected) whether or not these are cited in the corresponding list as rejected names, and against those names based on different types (heterotypic, i.e. taxonomic, synonyms) that are listed as rejected<sup>1</sup>. A conserved name of a species is conserved against all names listed as rejected, and against all combinations based on the rejected names.

*Note 1.* Except as by Art. 14.15 (see also Art. 14.9), the *Code* does not provide for conservation of a name against itself, i.e. against an “isonym” (Art. 6 Note 2: the same name with the same type but with a different place and date of valid publication and perhaps with a different author). Only the earliest known isonyms are listed in App. IIA, III, and IV.

*Note 2.* A species name listed as conserved or rejected in App. IV may have been published as the name of a new taxon, or as a combination based on an earlier name. Rejection of a name based on an earlier name does not in itself preclude the use of the earlier name since that name is not “a combination based on a rejected name” (Art. 14.4).

*Ex.1.* Rejection of *Lycopersicon lycopersicum* (L.) H. Karst. (1882) in favour of *L. esculentum* Mill. (1768) does not preclude the use of the homotypic *Solanum lycopersicum* L. (1753).

14.5 When a conserved name competes with one or more names based on different types and against which it is not explicitly conserved, the earliest of the competing names is adopted in accordance with Art. 11, except for the conserved family names listed in App. IIB, which are conserved against unlisted names.

*Ex.2.* If *Mahonia* Nutt. (1818) is united with *Berberis* L. (1753), the combined genus will bear the prior name *Berberis*, although *Mahonia* is conserved and *Berberis* is not.

*Ex.3.* *Nasturtium* R. Br. (1812) was conserved only against the homonym *Nasturtium* Mill. (1754) and the homotypic (nomenclatural) synonym *Cardaminum* Moench (1794); consequently if reunited with *Rorippa* Scop. (1760) it must bear the name *Rorippa*.

*Ex.4.* *Combretaceae* R. Br. (1810) is conserved against the unlisted earlier heterotypic name *Terminaliaceae* J. St.-Hil. (Expos. Fam. Nat. 1: 178. 1805).

14.6 When a name of a taxon has been conserved against an earlier heterotypic synonym, the latter is to be restored, subject to Art. 11, if it is considered the name of a taxon at the same rank distinct from that of the conserved name.

*Ex.5.* The generic name *Luzuriaga* Ruiz & Pav. (1802) is conserved against the earlier names *Enargea* Banks ex Gaertn. (1788) and *Callixene* Comm. ex Juss. (1789). If, however, *Enargea* is considered to be a separate genus, the name *Enargea* is retained for it.

*Ex.6.* To preserve the name *Roystonea regia* (Kunth) O. F. Cook (1900), its basionym *Oreodoxa regia* Kunth (1816) is conserved against *Palma elata* W. Bartram (1791). However, the name *R. elata* (W. Bartram) F. Harper (1946) can be used for a species distinct from *R. regia*.

14.7 A rejected name, or a combination based on a rejected name, may not be restored for a taxon that includes the type of the corresponding conserved name.

*Ex.7.* *Enallagma* Baill. (1888) is conserved against *Dendrosicus* Raf. (1838), but not against *Amphitecna* Miers (1868); if *Enallagma*, *Dendrosicus*, and *Amphitecna* are united, the combined genus must bear the name *Amphitecna*, although the latter is not explicitly conserved against *Dendrosicus*.

14.8 The listed type and spelling of a conserved name (evident misspellings excepted) may only be changed by the procedure outlined in Art. 14.12.

*Ex.8.* Bullock & Killick (in *Taxon* 6: 239. 1957) published a proposal that the listed type of *Plectranthus* L'Hér. be changed from *P. punctatus* (L. f.) L'Hér. to *P. fruticosus* L'Hér. This proposal was approved by the appropriate committees and by an International Botanical Congress.

14.9 A name may be conserved with a different type from that designated by the author or determined by application of the *Code* (see also Art. 10.4). Such a name may be conserved either from its place of valid publication (even though the type may not then have been included in the named taxon) or from a later publication by an author who did include the type as conserved. In the latter case the original name and the name as conserved are treated as if they were homonyms (Art. 53), whether or not the name as conserved was accompanied by a description or diagnosis of the taxon named.

*Ex.9.* *Bromus sterilis* L. (1753) has been conserved from its place of valid publication even though its conserved type, a specimen (*Hubbard 9045*, E) collected in 1932, was not originally included in Linnaeus's species.

*Ex.10.* *Protea* L. (1753) did not include the conserved type of the generic name, *P. cynaroides* (L.) L. (1771), which in 1753 was placed in the genus *Leucadendron*. *Protea* was therefore conserved from the 1771 publication, and *Protea* L. (1771), although not intended to be a new generic name and still including the original type elements, is treated as if it were a validly published homonym of *Protea* L. (1753).

14.10 A conserved name, with any corresponding autonym, is conserved against all earlier homonyms. An earlier homonym of a conserved name is not made illegitimate by that conservation but is unavailable for use; if not otherwise illegitimate, it may serve as basionym of another name or combination based on the same type (see also Art. 55.3).

*Ex.11.* The generic name *Smithia* Aiton (1789), conserved against *Damapana* Adans. (1763), is conserved automatically against the earlier homonym *Smithia* Scop. (1777) – *Blumea* DC. (1833) is conserved automatically against *Blumea* Rchb. (1828-1829), although the latter name is not listed alongside the former in App. III.

14.11 A name may be conserved in order to preserve a particular spelling or gender. A name so conserved is to be attributed without change of date to the author who validly published it, not to an author who later introduced the conserved spelling or gender.

*Ex.12.* The spelling *Rhodymenia*, used by Montagne (1839), has been conserved against the original spelling *Rhodomenia*, used by Greville (1830). The name is to be cited as *Rhodymenia* Grev. (1830).

*Note 3.* The date upon which a name was conserved does not affect its priority (Art. 11), which is determined only on the basis of the date of its valid publication (Art. 32-45; but see Art. 14.9 and 14.15).

**14.12** The lists of conserved names will remain permanently open for additions and changes. Any proposal of an additional name must be accompanied by a detailed statement of the cases both for and against conservation. Such proposals must be submitted to the General Committee (see Div. III), which will refer them for examination to the committees for the various taxonomic groups (see also Art. 34.1 and 56.2).

**14.13** In the interest of nomenclatural stability, for organisms treated as fungi (including lichenicolous fungi, but excluding lichen-forming fungi and those fungi traditionally associated with them taxonomically, e.g. *Mycocaliciaceae*), lists of names may be submitted to the General Committee, which will refer them to the Nomenclature Committee for Fungi (see Div. III) for examination by subcommittees established by that Committee in consultation with the General Committee and appropriate international bodies. Accepted names on these lists, which become Appendices of the *Code* once reviewed and approved by the Nomenclature Committee for Fungi and the General Committee, are to be listed with their types together with those competing synonyms (including sanctioned names) against which they are treated as conserved (see also Art. 56.3).

**14.14** Entries of conserved names may not be deleted.

*Ex.13.* *Alternaria* “Nees ex Wallr. (1833)” was conserved against *Macrosporium* Fr. (1832) in the *Seattle Code* (1972), as Fries’s name had been used in the then starting-point work for fungi. Following the abolition of later starting-point dates for fungi at the Sydney Congress in 1981 and in the *Sydney Code* (1983), and the recognition that Nees’s name had been accepted by Fries in the introduction to the sanctioning work (*Syst. Mycol.* 1: xlv. 1821), conservation became unnecessary. As the entry cannot be deleted, *Alternaria* Nees (1816-1817) continues to be listed in App. III, but without a corresponding rejected name.

**14.15** The places of publication cited for conserved names of families in App. IIB are treated as correct in all circumstances and consequently are not to be changed, except under the provisions of Art. 14.12, even when otherwise such a name would not be validly published or when it is a later isonym.

**14.16** When a proposal for the conservation of a name has been approved by the General Committee after study by the Committee for the taxonomic group concerned, retention of that name is authorized subject to the decision of a later International Botanical Congress (see also Art. 34.2 and 56.4).

## Recommendation 14A

**14A.1** When a proposal for the conservation of a name has been referred to the appropriate Committee for study, authors should follow existing usage of names as far as possible pending the General Committee’s recommendation on the proposal (see also Rec. 34A and 56A).

<sup>1</sup> The *International Code of Zoological Nomenclature* and the *International Code of Nomenclature of Bacteria* use the terms “objective synonym” and “subjective synonym” for homotypic and heterotypic synonym, respectively.

## Article 15

**15.1** Names sanctioned under Art. 13.1(d) are treated as if conserved against earlier homonyms and competing synonyms. Such names, once sanctioned, remain sanctioned even if elsewhere in the sanctioning works the



sanctioning author does not recognize them. The spelling used by a sanctioning author is treated as conserved, except for changes mandated by Art. 60.

*Ex.1. Agaricus ericetorum* Pers. (1796) was accepted by Fries in *Systema mycologicum* (1821), but later (1828) regarded by him as a synonym of *A. umbelliferus* L. (1753) and not included in his *Index* (1832) as an accepted name. Nevertheless *A. ericetorum* Pers. : Fr. is a sanctioned name.

*Ex.2.* The spelling used in the sanctioned name *Merulius lacrimans* (Wulfen : Fr.) Schum. (1803) is maintained even though the basionym was originally published as *Boletus "lacrymans"* Wulfen (1781).

15.2 An earlier homonym of a sanctioned name is not made illegitimate by that sanctioning but is unavailable for use; if not otherwise illegitimate, it may serve as a basionym of another name or combination based on the same type (see also Art. 55.3).

*Ex.3. Patellaria* Hoffm. (1789) is an earlier homonym of the sanctioned generic name *Patellaria* Fr. (1822) : Fr. Hoffmann's name is legitimate but unavailable for use. *Lecanidion* Endl. (1830), based on the same type as *Patellaria* Fr. : Fr., is illegitimate under Art. 52.1.

*Ex.4. Agaricus cervinus* Schaeff. (1774) is an earlier homonym of the sanctioned *A. cervinus* Hoffm. (1789) : Fr.; Schaeffer's name is unavailable for use, but it is legitimate and may serve as basionym for combinations in other genera. In *Pluteus* Fr. the combination is cited as *P. cervinus* (Schaeff.) P. Kumm. and has priority over the heterotypic (taxonomic) synonym *P. atricapillus* (Batsch) Fayod, based on *A. atricapillus* Batsch (1786).

15.3 When, for a taxon in a rank from family to genus, inclusive, two or more sanctioned names compete, Art. 11.3 governs the choice of the correct name (see also Art. 15.5).

15.4 When, for a taxon in a rank lower than genus, two or more sanctioned names and/or two or more names with the same final epithet and type as a sanctioned name compete, Art. 11.4 governs the choice of the correct name.

*Note 1.* The date of sanctioning does not affect the date of valid publication, and thus priority (Art. 11), of a sanctioned name. In particular, when two or more homonyms are sanctioned only the earliest of them may be used, the later being illegitimate under Art. 53.2.

*Ex.5.* Fries (*Syst. Mycol.* 1: 41. 1821) accepted *Agaricus flavovirens* Pers. (1793), treating *A. equestris* L. (1753) as a synonym. Later (*Elench. Fung.* 1: 6. 1828) he stated "Nomen prius et aptius arte restituendum" and accepted *A. equestris*. Both names are sanctioned, but when they are considered synonyms *A. equestris*, having priority, is to be used.

15.5 A name that neither is sanctioned nor has the same type and final epithet as a sanctioned name in the same rank may not be used for a taxon that includes the type of a sanctioned name in that rank with a final epithet that is available for the required combination (see Art. 11.4(b)).

## CHAPTER III. Nomenclature of taxa according to their rank

### SECTION 1. Names of taxa above the rank of family

#### Article 16

16.1 The name of a taxon above the rank of family is treated as a noun in the plural and is written with an initial capital letter. Such names may be either (a) automatically typified names (Art. 10.7), formed from the name of an included genus in the same way as family names (Art. 18.1; but see Art. 16.4) by adding the appropriate rank-denoting termination (Art. 16.3 and 17.1), preceded by the connecting vowel *-o-* if the termination begins with a consonant; or (b) descriptive names, not so formed, which may be used unchanged at different ranks.

*Ex.1.* Automatically typified names above the rank of family: *Lycopodiophyta*, based on *Lycopodium*; *Magnoliophyta*, based on *Magnolia*; *Gnetophytina*, based on *Gnetum*; *Pinopsida*, based on *Pinus*; *Marattiidae*, based on *Marattia*; *Caryophyllidae* and *Caryophyllales*, based on *Caryophyllus*; *Fucales*, based on *Fucus*; *Bromeliineae*, based on *Bromelia*.

*Ex.2.* Descriptive names above the rank of family: *Anthophyta*, *Chlorophyta*, *Lycophyta*, *Parietales*; *Ascomycota*, *Ascomycotina*, *Ascomycetes*; *Angiospermae*, *Centrospermae*, *Coniferae*, *Enantioblastae*, *Gymnospermae*.

16.2 For automatically typified names, the name of the subdivision or subphylum that includes the type of the adopted name of a division or phylum, the name of the subclass that includes the type of the adopted name of a class, and the name of the suborder that includes the type of the adopted name of an order are to be based on the same generic name (see also Art. 16.4) as the corresponding higher-ranked name.

*Ex.3.* *Pteridophyta* Bergen & B. M. Davis (1906) and *Pteridophytina* B. Boivin (1956); *Gnetopsida* Engl. (1898) and *Gnetidae* Cronquist & al. (1966); *Liliales* Perleb (1826) and *Liliineae* Rchb. (1841).

16.3 Automatically typified names end as follows: the name of a division or phylum ends in *-phyta*, unless it is referable to the algae or fungi in which case it ends in *-phycota* or *-mycota*, respectively; the name of a subdivision or subphylum ends in *-phytina*, unless it is referable to the algae or fungi in which case it ends in *-phycotina* or *-mycotina*, respectively; the name of a class in the algae ends in *-phyceae*, and of a subclass in *-phycidae*; the name of a class in the fungi ends in *-mycetes*, and of a subclass in *-mycetidae*; the name of a class in the plants ends in *-opsida*, and of a subclass in *-idae* (but not *-viridae*). Automatically typified names not in accordance with these terminations or those in Art. 17.1 are to be corrected, without change of the author citation or date of publication (see Art. 32.2). However, if such names are published with a non-Latin termination they are not validly published.

*Ex.4.* “*Cactarieae*” (Dumortier, 1829, based on *Cactus*) and “*Coriales*” (Lindley, 1833, based on *Coriaria*), both published for taxa of the rank of order, are to be corrected to *Cactales* Dumort. (1829) and *Coriariales* Lindl. (1833), respectively.

*Ex.5.* However, *Acoroidées* (Kirschleger, Fl. Alsace 2: 103. 1853 - Jul 1857), published for a taxon of the rank of order, is not to be accepted as “*Acorales* Kirschl.”, as it has a French rather than a Latin termination. The name *Acorales* was later validly published by Reveal (in *Phytologia* 79: 72. 1996).

*Note 1.* The terms “*divisio*” and “*phylum*”, and their equivalents in modern languages, are treated as referring to one and the same rank. When “*divisio*” and “*phylum*” are used simultaneously to denote different non-consecutive ranks, this is to be treated as informal usage of rank-denoting terms (see Art. 37 Note 1 and 37.8).

16.4 In ranks higher than order, the word elements *-clad-*, *-cocc-*, *-cyst-*, *-monad-*, *-mycet-*, *-nemat-*, or *-phyt-*, being the genitive singular stem of the second part of a name of an included genus, may be omitted

before the rank-denoting termination. Such names are automatically typified when their derivation is obvious or is indicated in the protologue.

*Ex.6.* The name *Raphidophyceae* Chadef. ex P. C. Silva (1980) was indicated by its author to be based on *Raphidomonas* F. Stein (1878). The name *Saccharomycetes* G. Winter (1881) is regarded as being based on *Saccharomyces* Meyen (1838). The name *Trimerophytina* H. P. Banks (1975) was indicated by its author to be based on *Trimerophyton* Hopping (1956).

*Note 2.* The principle of priority does not apply above the rank of family (Art. 11.10; but see Rec. 16A).

#### Recommendation 16A

*16A.1* In choosing among typified names for a taxon above the rank of family, authors should generally follow the principle of priority.

### Article 17

*17.1* Automatically typified names of orders or suborders are to end in *-ales* (but not *-viales*) and *-ineae*, respectively (see Art. 17.1 and 32.2).

*17.2* Names intended as names of orders, but published with their rank denoted by a term such as “cohors”, “nexus”, “alliance”, or “Reihe” instead of “order”, are treated as having been published as names of orders.

#### Recommendation 17A

*17A.1* A new name should not be published for an order for which a name already exists that is based on the same type as the name of an included a family.

## SECTION 2. Names of families and subfamilies, tribes and subtribes

### Article 18

*18.1* The name of a family is a plural adjective used as a noun; it is formed from the genitive singular of a name of an included genus by replacing the genitive singular inflection (Latin *-ae*, *-i*, *-us*, *-is*; transcribed Greek *-ou*, *-os*, *-es*, *-as*, or *-ous*, and its equivalent *-eos*) with the termination *aceae* (but see Art. 18.5). For generic names of non-classical origin, when analogy with classical names is insufficient to determine the genitive singular, *-aceae* is added to the full word. Likewise, when formation from the genitive singular of a generic name results in a homonym, *-aceae* may be added to the nominative singular. For generic names with alternative genitives the one implicitly used by the original author must be maintained, except that the genitive of names ending in *-opsis* is always *-opsidis*.

*Note 1.* The generic name from which the name of a family is formed provides the type of the family name (Art. 10.6) but is not a basionym of that name (Art. 6.10; see Art. 41.2(a)).

*Ex.1.* Family names formed from a generic name of classical origin: *Rosaceae* (from *Rosa*, *Rosae*), *Salicaceae* (from *Salix*, *Salicis*), *Plumbaginaceae* (from *Plumbago*, *Plumbaginis*), *Rhodophyllaceae* (from *Rhodophyllus*, *Rhodophylli*), *Rhodophyllidaceae* (from *Rhodophyllis*, *Rhodophyllidos*), *Sclerodermataceae* (from *Scleroderma*, *Sclerodermatos*), *Aextoxicaceae* (from *Aextoxicon*, *Aextoxicou*), *Potamogetonaceae* (from *Potamogeton*, *Potamogetonos*).

*Ex.2.* Family names formed from a generic name of non-classical origin: *Nelumbonaceae* (from *Nelumbo*, *Nelumbonis*, declined by analogy with *umbo*, *umbonis*), *Ginkgoaceae* (from *Ginkgo*, indeclinable).

*Note 2.* The name of a family may be formed from any validly published name of an included genus, even one that is unavailable for use, although the provisions of Art. 18.3 apply if the generic name is illegitimate.

*Ex.3.* *Cactaceae* Juss. (1789) formed from *Cactus* L. (1753), now rejected in favour of *Mammillaria* Haw. (1812).

18.2 Names intended as names of families, but published with their rank denoted by one of the terms “order” (*ordo*) or “natural order” (*ordo naturalis*) instead of “family”, are treated as having been published as names of families (see also Art. 19.2), unless this treatment would result in a taxonomic sequence with a misplaced rank-denoting term.

*Ex.4.* *Cyperaceae* Juss. (1789), *Lobeliaceae* Juss. (1813), and *Xylomataceae* Fr. (1820) were published as “*ordo Cyperoideae*”, “*ordo naturalis Lobeliaceae*”, and “*ordo Xylomaceae*”, respectively.

*Note 3.* If the term “family” is simultaneously used to denote a rank different from “order” or “natural order”, a name published for a taxon at the latter rank cannot be considered to have been published as the name of a family.

*Ex.5.* Names published at the rank of order (“řad”) by Berchtold & Presl (*O přirozenosti rostlin ... 1820*) are not to be treated as having been published at the rank of family, since the term family (“čeled”) was sometimes used to denote a rank below order.

18.3 A name of a family based on an illegitimate generic name is illegitimate unless and until it or the generic name upon which it is based is conserved.

*Ex.6.* *Caryophyllaceae* Juss., nom. cons. (from *Caryophyllus* Mill. non L.); *Winteraceae* R. Br. ex Lindl., nom. cons. (from *Wintera* Murray, an illegitimate replacement name for *Drimys* J. R. Forst. & G. Forst.).

*Ex.7.* *Nartheciaceae* Fr. ex Bjurzon (1846), based on *Narthecium* Huds., nom. cons. (1762), became legitimate when the generic name was conserved over its earlier homonym *Narthecium* Gérard (1761) (see App. III).

18.4 When a name of a family has been published with an improper Latin termination, the termination must be changed to conform with Art. 18.1, without change of the author citation or date (see Art. 32.2). However, if such a name is published with a non-Latin termination, it is not validly published.

*Ex.8.* “*Coscinodisceae*” (Kützing 1844), published to designate a family, is to be accepted as *Coscinodisceaceae* Kütz. 1844 and not attributed to De Toni, who first used the correct termination (in *Notarisia* 5: 915. 1890).

*Ex.9.* “*Atherospermeae*” (Brown 1814), published to designate a family, is to be accepted as *Atherospermataceae* R. Br. and not attributed to Airy Shaw (in Willis, *Dict. Fl. Pl.*, ed. 7: 104. 1966), who first used the correct spelling, or to Lindley (*Veg. Kingd.*: 300. 1846), who used the spelling “*Atherospermaceae*”.

*Ex.10.* However, *Tricholomées* (Roze in *Bull. Soc. Bot. France* 23: 49. 1876), published to designate a family, is not to be accepted as “*Tricholomataceae* Roze”, as it has a French rather than a Latin termination. The name *Tricholomataceae* was validly published by Pouzar (1983; see App. IIA).

18.5 The following names, of long usage, are treated as validly published: *Compositae* (nom. alt.: *Asteraceae*; type: *Aster* L.); *Cruciferae* (nom. alt.: *Brassicaceae*; type: *Brassica* L.); *Gramineae* (nom. alt.: *Poaceae*; type: *Poa* L.); *Guttiferae* (nom. alt.: *Clusiaceae*; type: *Clusia* L.); *Labiatae* (nom. alt.: *Lamiaceae*; type: *Lamium* L.); *Leguminosae* (nom. alt.: *Fabaceae*; type: *Faba* Mill. [= *Vicia* L.]); *Palmae* (nom. alt.: *Arecaceae*; type: *Areca* L.);

*Papilionaceae* (nom. alt.: *Fabaceae*; type: *Faba* Mill.); *Umbelliferae* (nom. alt.: *Apiaceae*; type: *Apium* L.). When the *Papilionaceae* are regarded as a family distinct from the remainder of the *Leguminosae*, the name *Papilionaceae* is conserved against *Leguminosae*.

18.6 The use, as alternatives, of the eight family names indicated as “nom. alt.” (nomen alternativum) in Art. 18.5 is authorized.

## Article 19

19.1 The name of a subfamily is a plural adjective used as a noun; it is formed in the same manner as the name of a family (Art. 18.1) but by adding the termination *-oideae* instead of *-aceae*.

19.2 Names intended as names of subfamilies, but published with their rank denoted by the term “suborder” (subordo) instead of subfamily, are treated as having been published as names of subfamilies (see also Art. 18.2), unless this would result in a taxonomic sequence with a misplaced rank-denoting term.

*Ex.1.* *Cyrilloideae* Torr. & A. Gray (Fl. N. Amer. 1: 256. 1838) and *Sphenocleioideae* Lindl. (Intr. Nat. Syst. Bot., ed. 2: 238. 1836) were published as “suborder *Cyrilleae*” and “Sub-Order ? *Sphenocleaceae*”, respectively.

*Note 1.* If the term “subfamily” is simultaneously used to denote a rank different from “suborder”, a name published for a taxon at the latter rank cannot be considered to have been published as the name of a subfamily.

19.3 A tribe is designated in a similar manner, with the termination *-eae*, and a subtribe similarly with the termination *-inae* (but not *-virinae*).

19.4 The name of any subdivision of a family that includes the type of the adopted, legitimate name of the family to which it is assigned is to be based on the generic name equivalent to that type (Art. 10.6; but see Art. 19.8).

*Ex.2.* The type of the family name *Rosaceae* Juss. is *Rosa* L. and hence the subfamily and tribe assigned to *Rosaceae* that include *Rosa* are to be called *Rosoideae* Endl. and *Roseae* DC., respectively.

*Ex.3.* The type of the family name *Gramineae* Juss. (nom. alt.: *Poaceae* Barnhart, see Art. 18.5) is *Poa* L. and hence the subfamily, tribe, and subtribe assigned to *Gramineae* that include *Poa* are to be called *Pooideae* Asch., *Poeae* R. Br., and *Poinae* Dumort., respectively.

*Note 2.* Art. 19.4 applies only to the names of those subordinate taxa that include the type of the adopted name of the family (but see Rec. 19A.2).

*Ex.4.* The type of the family name *Ericaceae* Juss. is *Erica* L. and hence the subfamily and tribe assigned to *Ericaceae* that include *Erica* are to be called *Ericoideae* Endl. and *Ericaceae* D. Don, respectively, the priority of any competing names notwithstanding. The subfamily assigned to *Ericaceae* that includes *Rhododendron* L. is called *Rhododendroideae* Endl. However, the correct name of the tribe assigned to *Rhododendroideae* that includes both *Rhododendron* and *Rhodora* L. is *Rhodoreae* D. Don (1834), not *Rhododendreae* Brongn. (1843).

19.5 The name of any subdivision of a family that includes the type of a name listed in App. IIB (i.e. a name of a family conserved against all unlisted names, see Art. 14.5) is to be based on the generic name equivalent to that type (Art. 10.6), unless this is contrary to Art. 19.4 (see also Art. 19.8). If more than one such type is included, the correct name is determined by precedence in App. IIB of the corresponding family names.

*Ex.5.* A subfamily assigned to *Rosaceae* Juss. that includes *Malus* Mill., the type of *Malaceae* Small (1903), listed in App. IIB, is to be called *Maloideae* C. Weber (1964) unless it also includes *Rosa* L., i.e. the

type of *Rosaceae*, or the type of another name listed in App. IIB that takes precedence over *Malaceae*. This is so even if the subfamily also includes *Spiraea* L. and/or *Pyrus* L., because, although *Spiraeoideae* Arn. (1832) and *Pyroideae* Burnett (1835) were published earlier than *Maloideae*, neither *Spiraeaceae* nor *Pyraceae* is listed in App. IIB. However, if *Amygdalus* L. is included in the same subfamily as *Malus*, the name *Amygdaloideae* Arn. (1832) takes precedence as *Amygdalaceae* Marquis (1820) is listed in App. IIB with priority over *Malaceae*.

*Ex.6. Monotropaceae* Nutt. (1818) and *Pyrolaceae* Link (1829) are both listed in App. IIB, but *Pyrolaceae* is conserved against *Monotropaceae*. Therefore, a subfamily including both *Monotropa* L. and *Pyrola* L. is called *Pyroloideae* Kostel. (1834).

19.6 A name of a subdivision of a family based on an illegitimate generic name is illegitimate unless and until that generic name or the corresponding family name is conserved.

*Ex.7.* The name *Caryophylloideae* Arn. (1832), based on the illegitimate *Caryophyllus* Mill. non L., is legitimate because the corresponding family name, *Caryophyllaceae* Juss., is conserved.

*Ex.8. Thunbergioideae* T. Anderson (1860), based on *Thunbergia* Retz., nom. cons. (1780), became legitimate when the generic name was conserved over its earlier homonym *Thunbergia* Montin (1773) (see App. III).

19.7 When a name of a subdivision of a family has been published with an improper Latin termination, such as *ae* for a subfamily or *oideae* for a tribe, the termination must be changed to accord with Art. 19.1 and 19.3, without change of the author citation or date (see Art. 32.2). However, if such a name is published with a non-Latin termination it is not validly published.

*Ex.9. "Climacieae"* (Grout, Moss Fl. N. Amer. 3: 4. 1928), published to designate a subfamily, is to be changed to *Climacioideae* Grout (1928).

*Ex.10.* However, *Melantheen* (Kittel in Richard, Nouv. Elém. Bot., ed. 3, Germ. Transl.: 727. 1840), published to designate a tribe, is not to be accepted as "*Melanthieae* Kitt.", as it has a German rather than a Latin termination. The name *Melanthieae* was validly published by Grisebach (Spic. Fl. Rumel. 2: 377. 1846).

19.8 When the *Papilionaceae* are included in the family *Leguminosae* (nom. alt.: *Fabaceae*; see Art. 18.5) as a subfamily, the name *Papilionoideae* may be used as an alternative to *Faboideae*.

#### Recommendation 19A

19A.1 When a family is changed to the rank of a subdivision of a family, or the inverse change occurs, and no legitimate name is available in the new rank, the name should be retained, with only the termination (*-aceae*, *-oideae*, *-eae*, *-inae*) altered.

19A.2 When a subdivision of a family is changed to another such rank, and no legitimate name is available in the new rank, its name, Art. 19.5 permitting, should be based on the same generic name as the name in the former rank.

19A.Ex.1 The subtribe *Drypetinae* Griseb. (1859) when raised to the rank of tribe was named *Drypeteae* Hurus. (1954); the subtribe *Antidesmatinae* Müll. Arg. (1865) when raised to the rank of subfamily was named *Antidesmatoideae* Hurus. (1954).

### SECTION 3. Names of genera and subdivisions of genera

#### Article 20

20.1 The name of a genus is a noun in the nominative singular, or a word treated as such, and is written with an initial capital letter (see Art. 60.2). It may be taken from any source whatever, and may even be composed in an absolutely arbitrary manner, but it must not end in *-virus*.

*Ex.1. Bartramia, Convolvulus, Gloriosa, Hedysarum, Ifloga* (an anagram of *Filago*), *Impatiens, Liquidambar, Manihot, Rhododendron, Rosa*.

20.2 The name of a genus may not coincide with a Latin technical term in use in morphology at the time of publication unless it was published before 1 January 1912 and was accompanied by a species name published in accordance with the binary system of Linnaeus.

*Ex.2. "Radicula"* (Hill, 1756) coincides with the Latin technical term "*radicula*" (radicle) and was not accompanied by a species name in accordance with the binary system of Linnaeus. The name *Radicula* is correctly attributed to Moench (1794), who first combined it with specific epithets.

*Ex.3. Tuber* F. H. Wigg. : Fr., when published in 1780, was accompanied by a binary species name (*Tuber gulosorum* F. H. Wigg.) and is therefore validly published even though it coincides with a Latin technical term.

*Ex.4.* The intended generic names "*Lanceolatus*" (Plumstead, 1952) and "*Lobata*" (Chapman, 1952) coincide with Latin technical terms and are not therefore validly published.

*Ex.5. Cleistogenes* Keng (1934) coincides with "*cleistogenes*", the English plural of a technical term in use at the time of publication. Keng's name is validly published because the technical term is not Latin. *Kengia* Packer (1960), published as a replacement name for *Cleistogenes*, is illegitimate under Art. 52.1.

*Ex.6.* Words such as "*caulis*", "*folium*", "*radix*", "*spina*", etc., cannot now be validly published as generic names.

20.3 The name of a genus may not consist of two words, unless these words are joined by a hyphen.

*Ex.7. "Uva ursi"*, as originally published by Miller (1754), consisted of two separate words unconnected by a hyphen, and is not therefore validly published (Art. 32.1(c)); the name is correctly attributed to Duhamel (1755) as *Uva-ursi* (hyphenated when published).

*Ex.8.* Names such as *Quisqualis* L. (formed by combining two words into one when originally published), *Neves-armondia* K. Schum., *Sebastiano-schaueria* Nees, and *Solms-laubachia* Muschl. ex Diels (all hyphenated when originally published) are validly published.

*Note 1.* The names of intergeneric hybrids are formed according to the provisions of Art. H.6.

20.4 The following are not to be regarded as generic names:

(a) Words not intended as names.

*Ex.9.* The designation "*Anonymos*" was applied by Walter (Fl. Carol.: 2, 4, 9, etc. 1788) to 28 different genera to indicate that they were without names.

*Ex.10. "Schaenoides"* and "*Scirpoides*", as used by Rottboll (Descr. Pl. Rar.: 14, 27. 1772) to indicate unnamed genera resembling *Schoenus* and *Scirpus* that, as stated on p. 7, he intended

to name later, are token words and not generic names. These unnamed genera were subsequently named *Kyllinga* Rottb. and *Fuirena* Rottb., respectively.

(b) Unitary designations of species.

*Note 2.* Examples such as “*Leptostachys*” and “*Anthopogon*”, listed in pre-Tokyo editions of the *Code*, were from publications that are now suppressed (App. VI).

## Recommendation 20A

20A.1 Authors forming generic names should comply with the following:

(a) Use Latin terminations insofar as possible.

(b) Avoid names not readily adaptable to the Latin language.

(c) Not make names that are very long or difficult to pronounce in Latin.

(d) Not make names by combining words from different languages.

(e) Indicate, if possible, by the formation or ending of the name the affinities or analogies of the genus.

(f) Avoid adjectives used as nouns.

(g) Not use a name similar to or derived from the epithet in the name of one of the species of the genus.

(h) Not dedicate genera to persons quite unconnected with botany, mycology, phycology, or natural science in general.

(i) Give a feminine form to all personal generic names, whether they commemorate a man or a woman (see Rec. 60B; see also Rec. 62A.1).

(j) Not form generic names by combining parts of two existing generic names, because such names are likely to be confused with nothogeneric names (see Art. H.6)

## Article 21

21.1 The name of a subdivision of a genus is a combination of a generic name and a subdivisional epithet. A connecting term (subgenus, sectio, series, etc.) is used to denote the rank.

*Note 1.* Names of subdivisions of the same genus, even if they differ in rank, are homonyms if they have the same epithet but are based on different types (Art. 53.4), the rank-denoting term not being part of the name.

21.2 The epithet is either of the same form as a generic name, or a noun in the genitive plural, or a plural adjective agreeing in gender with the generic name, but not a noun in the genitive singular. It is written with an initial capital letter (see Art. 32.2 and 60.2).

21.3 The epithet in the name of a subdivision of a genus is not to be formed from the name of the genus to which it belongs by adding the prefix *Eu-* (see also Art. 22.2).

*Ex.1.* *Costus* subg. *Metacostus*; *Ricinocarpos* sect. *Anomodiscus*; *Valeriana* sect. *Valerianopsis*; *Euphorbia* sect. *Tithymalus*; *Pleione* subg. *Scopulorum*; *Euphorbia* subsect. *Tenellae*; *Sapium* subsect. *Patentinervia*; *Arenaria* ser. *Anomalae*; but not *Carex* sect. “*Eucarex*”.



21.4 The use of a binary combination instead of a subdivisional epithet is not admissible. Art. 32.1(c) notwithstanding, names so constructed are validly published but are to be altered to the proper form without change of author citation or date.

*Ex.2. Sphagnum* "b. *Sph. rigida*" (Lindberg in Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 19: 135. 1862) and *S. sect. "Sphagna rigida"* (Limpricht, Laubm. Deutschl. 1: 116. 1885) are to be cited as *Sphagnum* [unranked] *Rigida* Lindb. and *S. sect. Rigida* (Lindb.) Limpr., respectively.

*Note 2.* The names of hybrids with the rank of a subdivision of a genus are formed according to the provisions of Art. H.7.

#### Recommendation 21A

21A.1 When it is desired to indicate the name of a subdivision of the genus to which a particular species belongs in connection with the generic name and specific epithet, the subdivisional epithet should be placed in parentheses between the two; when desirable, the subdivisional rank may also be indicated.

21A.Ex.1 *Astragalus (Cycloglottis) contortuplicatus*; *A. (Phaca) umbellatus*; *Loranthus* (sect. *Ischnanthus*) *gabonensis*.

#### Recommendation 21B

21B.1 Recommendations made for forming the name of a genus (Rec. 20A) apply equally to an epithet of a subdivision of a genus, unless Rec. 21B.2 4 recommend otherwise.

21B.2 The epithet in the name of a subgenus or section is preferably a noun; that in the name of a subsection or lower-ranked subdivision of a genus is preferably a plural adjective.

21B.3 Authors, when proposing new epithets for names of subdivisions of genera, should avoid those in the form of a noun when other co-ordinate subdivisions of the same genus have them in the form of a plural adjective, and vice-versa. They should also avoid, when proposing an epithet for a name of a subdivision of a genus, one already used for a subdivision of a closely related genus, or one that is identical with the name of such a genus.

21B.4 When a section or a subgenus is raised to the rank of genus, or the inverse change occurs, the original name or epithet should be retained unless the resulting name would be contrary to the *Code*.

### Article 22

22.1 The name of any subdivision of a genus that includes the type of the adopted, legitimate name of the genus to which it is assigned is to repeat that generic name unaltered as its epithet, not followed by an author citation (see Art. 46). Such names are autonyms (Art. 6.8; see also Art. 7.6).

*Ex.1.* The subgenus that includes the type of the name *Rhododendron* L. is to be named *Rhododendron* L. subg. *Rhododendron*.

*Ex.2.* The subgenus that includes the type of *Malpighia* L. (*M. glabra* L.) is to be called *M.* subg. *Malpighia*, not *M.* subg. *Homoistylis* Nied.; and the section that includes the type of *Malpighia* is to be called *M.* sect. *Malpighia*, not *M.* sect. *Apyrae* DC.

*Note 1.* Art. 22.1 applies only to the names of those subordinate taxa that include the type of the adopted name of the genus (but see Rec. 22A).

*Ex.3.* The correct name of the subgenus of the genus *Solanum* L. that includes *S. pseudocapsicum* L., the type of *S. sect. Pseudocapsicum* (Medik.) Roem. & Schult. (Syst. Veg. 4: 569 (*'Pseudocapsica'*), 584

(*'Pseudo-Capsica'*). 1819), if considered distinct from *S. subg. Solanum*, is *S. subg. Minon* Raf. (Autikon Bot.: 108. 1840), the earliest legitimate name at that rank, and not "*S. subg. Pseudocapsicum*".

22.2 A name of a subdivision of a genus that includes the type (i.e. the original type or all elements eligible as type or the previously designated type) of the adopted, legitimate name of the genus is not validly published unless its epithet repeats the generic name unaltered. For the purposes of this provision, explicit indication that the nomenclaturally typical element is included is considered as equivalent to inclusion of the type, whether or not it has been previously designated (see also Art. 21.3).

*Ex.4. "Dodecatheon sect. Etubulosa"* (Knuth in Engler, Pflanzenr. IV. 237 (Heft 22): 234. 1905) was not validly published since it was proposed for a section that included *D. meadia* L., the original type of the generic name *Dodecatheon* L.

*Ex.5. Cactus* [unranked] *Melocactus* L. (Gen. Pl., ed. 5: 210. 1754) was proposed for one of four unranked (Art. 37.3), named subdivisions of the genus *Cactus*, comprising *C. melocactus* L. (its type under Art. 22.6) and *C. mammillaris* L. It is validly published even though *C. mammillaris* was subsequently designated as the type of *Cactus* L. (by Coulter in Contr. U. S. Natl. Herb. 3: 95. 1894).

22.3 The first instance of valid publication of a name of a subdivision of a genus under a legitimate generic name automatically establishes the corresponding autonym (see also Art. 11.6 and 32.3).

*Ex.6. Publication of Tibetoseris sect. Simulatrices* Sennikov (in Komarovia 5: 91. 2008) automatically established the autonym *Tibetoseris* Sennikov sect. *Tibetoseris*. Publication of *Pseudoyoungia* sect. *Simulatrices* (Sennikov) D. Maity & Maiti (in Compositae Newslett. 48: 31. 2010) automatically established the autonym *Pseudoyoungia* D. Maity & Maiti sect. *Pseudoyoungia*.

22.4 The epithet in the name of a subdivision of a genus may not repeat unchanged the correct name of the genus unless the two names have the same type.

22.5 The epithet in the name of a subdivision of a genus may not repeat the generic name unaltered if the latter is illegitimate.

*Ex.7. When Kuntze* (in Post & Kuntze, Lex. Gen. Phan.: 106. 1903) published *Caulinia* sect. *Hardenbergia* (Benth.) Kuntze under *Caulinia* Moench (1802), a later homonym of *Caulinia* Willd. (1801), he did not establish the autonym "*Caulinia* sect. *Caulinia*".

22.6 When the epithet in the name of a subdivision of a genus is identical with or derived from the epithet in one of the originally included species names, the type of the higher-ranking name is the same as that of the species name, unless the original author of the higher-ranking name designated another type.

*Ex.8. The type of Euphorbia subg. Esula* Pers. (Syn. Pl. 2: 14. 1806) is the type of *E. esula* L., one of the species names included by Persoon; the designation of *E. peplus* L. (also included by Persoon) as type by Croizat (in Revista Sudamer. Bot. 6: 13. 1939) has no standing.

*Ex.9. The type of Cassia* [unranked] *Chamaecrista* L. (Sp. Pl.: 379. 1753) is the type of *C. chamaecrista* L., nom. rej., one of the five species names included by Linnaeus.

*Note 2. When the epithet in the name of a subdivision of a genus is identical with or derived from the epithet in an included species name that is a later homonym, the nomenclatural type is that of the later homonym.*

22A.1 A section including the type of the correct name of a subgenus, but not including the type of the correct name of the genus, should, where there is no obstacle under the rules, be given a name with the same epithet and type as the subgeneric name.

22A.2 A subgenus not including the type of the correct name of the genus should, where there is no obstacle under the rules, be given a name with the same epithet and type as the correct name of one of its subordinate sections.

22A.Ex.1 When Brizicky raised *Rhamnus* sect. *Pseudofrangula* Grubov to the rank of subgenus, instead of using a new epithet he named the taxon *R. subg. Pseudofrangula* (Grubov) Brizicky so that the type of both names is the same.

#### Recommendation 22B

22B.1 When publishing a name of a subdivision of a genus that will also establish an autonym, the author should mention this autonym in the publication.

### SECTION 4. Names of species

#### Article 23

23.1 The name of a species is a binary combination consisting of the name of the genus followed by a single specific epithet in the form of an adjective, a noun in the genitive, or a word in apposition, or several words, but not a phrase name of one or more descriptive nouns and associated adjectives in the ablative (see Art. 23.6(a)), nor any of certain other irregularly formed designations (see Art. 23.6(b-d)). If an epithet consists of two or more words, these are to be united or hyphenated. An epithet not so joined when originally published is not to be rejected but, when used, is to be united or hyphenated, as specified in Art. 60.9.

23.2 The epithet in the name of a species may be taken from any source whatever, and may even be composed arbitrarily (but see Art. 60.1).

Ex.1. *Adiantum capillus-veneris*, *Atropa bella-donna*, *Cornus sanguinea*, *Dianthus monspessulanus*, *Embelia sarasinorum*, *Fumaria gussonei*, *Geranium robertianum*, *Impatiens noli-tangere*, *Papaver rhoeas*, *Spondias mombin* (an indeclinable epithet), *Uromyces fabae*.

23.3 Symbols forming part of specific epithets proposed by Linnaeus do not prevent valid publication of the relevant names but must be transcribed.

Ex.2. *Scandix "pecten +"* L. is to be transcribed as *Scandix pecten-veneris*; *Veronica "anagallis s"* L. is to be transcribed as *Veronica anagallis-aquatica*.

23.4 The specific epithet, with or without the addition of a transcribed symbol, may not exactly repeat the generic name (a designation formed by such repetition is a tautonym).

Ex.3. "*Linaria linaria*" and "*Nasturtium nasturtium-aquaticum*" are tautonyms and cannot be validly published.

Ex.4. *Linum radiola* L. (1753) when transferred to *Radiola* Hill may not be named "*Radiola radiola*", as was done by Karsten (1882), since that combination is a tautonym and cannot be validly published. The next earliest name, *L. multiflorum* Lam. (1779), is illegitimate, being a superfluous name for *L. radiola*. Under *Radiola*, the species has been given the legitimate name *R. linoides* Roth (1788).

23.5 The specific epithet, when adjectival in form and not used as a noun, agrees grammatically with the generic name; when it is a noun in apposition or a genitive noun, it retains its own gender and termination irrespective

of the gender of the generic name. Epithets not conforming to this rule are to be corrected (see Art. 32.2). In particular, the usage of the word element *cola* as an adjective is a correctable error.

Ex.5. Names with adjectival epithets: *Helleborus niger* L., *Brassica nigra* (L.) W. D. J. Koch, *Verbascum nigrum* L.; *Rumex cantabricus* Rech. f., *Daboecia cantabrica* (Huds.) K. Koch (*Vaccinium cantabricum* Huds.); *Vinca major* L., *Tropaeolum majus* L.; *Bromus mollis* L., *Geranium molle* L.; *Peridermium balsameum* Peck, derived from the epithet of *Abies balsamea* (L.) Mill. treated as an adjective.

Ex.6. Names with a noun for an epithet: *Convolvulus cantabrica* L., *Gentiana pneumonanthe* L., *Lythrum salicaria* L., *Schinus molle* L., all with epithets featuring pre-Linnaean generic names. *Gloeosporium balsameae* Davis, derived from the epithet of *Abies balsamea* (L.) Mill. treated as a noun.

Ex.7. Correctable errors: the epithet of *Polygonum segetum* Kunth (1817) is a genitive plural noun (of the corn fields); when Small proposed the new combination *Persicaria "segeta"*, it was a correctable error for *Persicaria segetum* (Kunth) Small (1903). In *Masdevallia echidna* Rchb. f. (1855), the epithet corresponds to the generic name of an animal; when Garay proposed the new combination *Porroglossum "echidnum"*, it was a correctable error for *P. echidna* (Rchb. f.) Garay (1953).

Ex.8. When Blanchard proposed *Rubus "amnicolus"*, it was a correctable error for *R. amnicola* Blanch. (1906).

23.6 The following designations are not to be regarded as species names:

(a) Descriptive designations consisting of a generic name followed by a phrase name (Linnaean "nomen specificum legitimum") of one or more descriptive nouns and associated adjectives in the ablative.

Ex.9. *Smilax "caule inermi"* (Aublet, Hist. Pl. Guiane 2, Tabl.: 27. 1775) is an abbreviated descriptive reference to an imperfectly known species, which is not given a binomial in the text but referred to merely by a phrase name cited from Burman.

(b) Other designations of species consisting of a generic name followed by one or more words not intended as a specific epithet.

Ex.10. *Viola "qualis"* (Krocker, Fl. Siles. 2: 512, 517. 1790); *Urtica "dubia?"* (Forsskål, Fl. Aegypt.-Arab.: cxxi. 1775), the word "dubia?" (doubtful) being repeatedly used in Forsskål's work for species that could not be reliably identified.

Ex.11. *Atriplex "nova"* (Winterl, Index Hort. Bot. Univ. Hung.: fol. A [8] recto et verso. 1788), the word "nova" (new) being here used in connection with four different species of *Atriplex*. However, in *Artemisia nova* A. Nelson (in Bull. Torrey Bot. Club 27: 274. 1900), *nova* was intended as a specific epithet, the species having been newly distinguished from others.

Ex.12. *Cornus "gharaf"* (Forsskål, Fl. Aegypt.-Arab.: xci, xcvi. 1775) is an interim designation not intended as a species name. An interim designation in Forsskål's work is an original designation (for an accepted taxon and thus not a "provisional name" as defined in Art. 36.1(b)) with an epithet-like vernacular that is not used as an epithet in the "Centuriae" part of the work. *Elcaja "roka"* (Forsskål, Fl. Aegypt.-Arab.: xcv. 1775) is another example of such an interim designation; in other parts of the work (p. c, cxvi, 127) this species is not named.

Ex.13. In *Agaricus "octogesimus nonus"* and *Boletus "vicesimus sextus"* (Schaeffer, Fung. Bavar. Palat. Nasc. 1: t. 100. 1762; 2: t. 137. 1763), the generic names are followed by ordinal adjectives used for enumeration. The corresponding species were given validly published names, *A. cinereus* Schaeff. and *B. unguatus* Schaeff., in the final volume of the same work (1774).

Ex.14. Honckeny (1782; see Art. 46 Ex. 40) used species designations such as, in *Agrostis*, “*A. Reygeri I.*”, “*A. Reyg. II.*”, “*A. Reyg. III.*” (all referring to species described but not named in Reyger, Tent. Fl. Gedan.: 36-37. 1763), and also “*A. alpina. II*” for a newly described species following after *A. alpina* Scop. These are informal designations used for enumeration, not validly published binomials; they may not be expanded into, e.g., “*Agrostis reygeri-prima*”.

(c) Designations of species consisting of a generic name followed by two or more adjectival words in the nominative case.

Ex.15. *Salvia “africana coerulea”* (Linnaeus, Sp. Pl.: 26. 1753) and *Gnaphalium “fruticosum flavum”* (Forsskål, Fl. Aegypt.-Arab.: cxix. 1775) are generic names followed by two adjectival words in the nominative case. They are not to be regarded as species names.

Ex.16. However, *Rhamnus “vitis idaea”* Burm. f. (Fl. Ind.: 61. 1768) is to be regarded as a species name, since the generic name is followed by a noun and an adjective, both in the nominative case; these words are to be hyphenated (*R. vitis-idaea*) under the provisions of Art. 23.1 and 60.9. In *Anthyllis “Barba jovis”* L. (Sp. Pl.: 720. 1753) the generic name is followed by a noun in the nominative case and a noun in the genitive case, and they are to be hyphenated (*A. barba-jovis*). Likewise, *Hyacinthus “non scriptus”* L. (Sp. Pl.: 316. 1753), where the generic name is followed by a negative particle and a past participle used as an adjective, is corrected to *H. non-scriptus*, and *Impatiens “noli tangere”* L. (Sp. Pl.: 938. 1753), where the generic name is followed by two verbs, is corrected to *I. noli-tangere*.

Ex.17. In *Narcissus “Pseudo Narcissus”* L. (Sp. Pl.: 289. 1753) the generic name is followed by a prefix (a word that cannot stand independently) and a noun in the nominative case, and the name is to be corrected to *N. pseudonarcissus* under the provisions of Art. 23.1 and 60.9.

(d) Formulae designating hybrids (see Art. H.10.2).

23.7 Phrase names used by Linnaeus as specific epithets (“nomina trivialia”) are to be corrected in accordance with later usage by Linnaeus himself (but see Art. 23.6(c)).

Ex.18. *Apocynum “fol. [foliis] androsaemi”* L. is to be cited as *A. androsaemifolium* L. (Sp. Pl.: 213. 1753 [corr. L., Syst. Nat., ed. 10: 946. 1759]); and *Mussaenda “fr. [fructu] frondoso”* L., as *M. frondosa* L. (Sp. Pl.: 177. 1753 [corr. L., Syst. Nat., ed. 10: 931. 1759]).

23.8 Where the status of a designation of a species is uncertain under Art. 23.6, established custom is to be followed (Pre. 13).

Ex.19. \* *Polypodium “F. mas”*, *P. “F. femina”*, and *P. “F. fragile”* (Linnaeus, Sp. Pl.: 1090-1091. 1753) are, in accordance with established custom, to be treated as *P. filix-mas* L., *P. filix-femina* L., and *P. fragile* L., respectively. Likewise, *Cambogia “G. gutta”* is to be treated as *C. gummi-gutta* L. (Gen. Pl.: [522]. 1754). The intercalations “*Trich.*” [*Trichomanes*] and “*M.*” [*Melilotus*] in the names of Linnaean species of *Asplenium* and *Trifolium*, respectively, are to be deleted, so that names in the form *Asplenium “Trich. dentatum”* and *Trifolium “M. indica”*, for example, are treated as *A. dentatum* L. and *T. indicum* L. (Sp. Pl.: 765, 1080. 1753).

## Recommendation 23A

23A.1 Names of persons and also of countries and localities used in specific epithets should take the form of nouns in the genitive (*clusii*, *porsildiorum*, *saharae*) or of adjectives (*clusianus*, *dahuricus*) (see also Art. 60, Rec. 60C and 60D).

23A.2 The use of the genitive and the adjectival form of the same word to designate two different species of the same genus should be avoided (e.g. *Lysimachia hemsleyana* Oliv. and *L. hemsleyi* Franch.).

23A.3 In forming specific epithets, authors should comply also with the following:

- (a) Use Latin terminations insofar as possible.
- (b) Avoid epithets that are very long or difficult to pronounce in Latin.
- (c) Not make epithets by combining words from different languages.
- (d) Avoid those formed of two or more hyphenated words.
- (e) Avoid those that have the same meaning as the generic name (pleonasm).
- (f) Avoid those that express a character common to all or nearly all the species of a genus.
- (g) Avoid in the same genus those that are very much alike, especially those which differ only in their last letters or in the arrangement of two letters.
- (h) Avoid those that have been used before in any closely allied genus.
- (i) Not adopt epithets from unpublished names found in correspondence, travellers' notes, herbarium labels, or similar sources, attributing them to their authors, unless these authors have approved publication (see Rec. 50G).
- (j) Avoid using the names of little-known or very restricted localities unless the species is quite local.

## SECTION 5. Names of taxa below the rank of species (infraspecific taxa)

### Article 24

24.1 The name of an infraspecific taxon is a combination of the name of a species and an infraspecific epithet. A connecting term is used to denote the rank.

*Ex.1. Saxifraga aizoon* subf. *surculosa* Engl. & Irmsch. This taxon may also be referred to as *Saxifraga aizoon* var. *aizoon* subvar. *brevifolia* f. *multicaulis* subf. *surculosa* Engl. & Irmsch.; in this way a full classification of the subforma within the species is given, not only its name.

24.2 Infraspecific epithets are formed like specific epithets and, when adjectival in form and not used as nouns, they agree grammatically with the generic name (see Art. 32.2).

*Ex.2. Solanum melongena* var. *insanum* (L.) Prain (Bengal Pl.: 746. 1903, '*insana*').

24.3 Infraspecific names with final epithets such as *genuinus*, *originalis*, *originarius*, *typicus*, *verus*, and *veridicus*, purporting to indicate the taxon containing the type of the name of the next higher-ranked taxon, are not validly published unless they are autonyms (Art. 26).

*Ex.3. "Lobelia spicata* var. *originalis*" (McVaugh in *Rhodora* 38: 308. 1936) was not validly published (see Art. 26 Ex. 1), whereas the autonyms *Galium verum* L. subsp. *verum* and *G. verum* var. *verum* are validly published.

*Ex.4. Aloe perfoliata* var. *vera* L. (Sp. Pl.: 320. 1753) is validly published because it does not purport to contain the type of *A. perfoliata* L. (1753).

24.4 The use of a binary combination instead of an infraspecific epithet is not admissible. Art. 32.1(c) notwithstanding, names so constructed are validly published but are to be altered to the proper form without change of the author citation or date.

*Ex.5. Salvia grandiflora* subsp. “*S. willeana*” (Holmboe in Bergens Mus. Skr., ser. 2, 1(2): 157. 1914) is to be cited as *S. grandiflora* subsp. *willeana* Holmboe.

*Ex.6. Phyllerpa prolifera* var. “*Ph. firma*” (Kützing, Sp. Alg.: 495. 1849) is to be altered to *P. prolifera* var. *firma* Kütz.

*Note 1.* Infraspecific taxa within different species may bear names with the same final epithet; those within one species may bear names with the same final epithet as the names of other species (but see Rec. 24B.1).

*Ex.7. Rosa glutinosa* var. *leioclada* H. Christ (in Boissier, Fl. Orient. Suppl.: 222. 1888) and *Rosa jundzillii* f. *leioclada* Borbás (in Math. Term. Közlem. 16: 376, 383. 1880) are both permissible, as is *Viola tricolor* var. *hirta* Ging. (in Candolle, Prodr. 1: 304. 1824), in spite of the previous existence of *Viola hirta* L.

*Note 2.* Names of infraspecific taxa within the same species, even if they differ in rank, are homonyms if they have the same final epithet but are based on different types (Art. 53.4), the rank-denoting term not being part of the name.

#### Recommendation 24A

24A.1 Recommendations made for forming specific epithets (Rec. 23A) apply equally for infraspecific epithets.

#### Recommendation 24B

24B.1 Authors proposing new infraspecific names should avoid final epithets previously used as specific epithets in the same genus.

24B.2 When an infraspecific taxon is raised to the rank of species, or the inverse change occurs, the final epithet of its name should be retained unless the resulting combination would be contrary to the *Code*.

### Article 25

25.1 For nomenclatural purposes, a species or any taxon below the rank of species is regarded as the sum of its subordinate taxa, if any.

*Ex.1.* When *Montia parvifolia* (DC.) Greene is treated as comprising two subspecies, the name *M. parvifolia* applies to the species in its entirety, i.e. including both *M. parvifolia* subsp. *parvifolia* and *M. parvifolia* subsp. *flagellaris* (Bong.) Ferris, and its use for *M. parvifolia* subsp. *parvifolia* alone may lead to confusion.

### Article 26

26.1 The name of any infraspecific taxon that includes the type of the adopted, legitimate name of the species to which it is assigned is to repeat the specific epithet unaltered as its final epithet, not followed by an author citation (see Art. 46). Such names are autonyms (Art. 6.8; see also Art. 7.6).

*Ex.1.* The variety that includes the type of the name *Lobelia spicata* Lam. is to be named *Lobelia spicata* Lam. var. *spicata* (see also Art. 24 Ex. 3).

*Note 1.* Art. 26.1 applies only to the names of those subordinate taxa that include the type of the adopted name of the species (but see Rec. 26A).

26.2 A name of an infraspecific taxon that includes the type (i.e. the holotype or all syntypes or the previously designated type) of the adopted, legitimate name of the species to which it is assigned is not validly published unless its final epithet repeats the specific epithet unaltered. For the purpose of this provision, explicit indication that the nomenclaturally typical element of the species is included is considered as equivalent to inclusion of the type, whether or not it has been previously designated (see also Art. 24.3).

*Ex.2.* The intended combination “*Vulpia myuros* subsp. *pseudomyuros* (Soy.-Will.) Maire & Weiller” was not validly published in Maire (Fl. Afrique N. 3: 177. 1955) because it included “*F. myuros* L., Sp. 1, p. 74 (1753) sensu stricto” in synonymy, *Festuca myuros* L. being the basionym of *Vulpia myuros* (L.) C. C. Gmel.

*Ex.3.* Linnaeus (Sp. Pl.: 3. 1753) recognized two named varieties under *Salicornia europaea*. Since *S. europaea* has no holotype and no syntypes are cited, both varietal names are validly published irrespective of the facts that the lectotype of *S. europaea*, designated by Jafri and Rateeb (in Jafri & El-Gadi, Fl. Libya 58: 57. 1979), can be attributed to *S. europaea* var. *herbacea* L. (1753) and that the latter name was subsequently lectotypified by Piirainen (in Ann. Bot. Fenn. 28: 82. 1991) by the same specimen as the species name.

*Ex.4.* Linnaeus (Sp. Pl.: 779-781. 1753) recognized 13 named varieties under *Medicago polymorpha*. Since *M. polymorpha* L. has neither a holotype nor syntypes, all varietal names are validly published, and indeed the lectotype subsequently designated (by Heyn in Bull. Res. Council Israel, Sect. D, Bot., 7: 163. 1959) is not part of the original material for any of the varietal names of 1753.

26.3 The first instance of valid publication of a name of an infraspecific taxon under a legitimate species name automatically establishes the corresponding autonym (see also Art. 11.6 and 32.3).

*Ex.5.* The publication of the name *Lycopodium inundatum* var. *bigelovii* Tuck. (in Amer. J. Sci. Arts 45: 47. 1843) automatically established the name of another variety, *L. inundatum* L. var. *inundatum*, the autonym, the type of which is that of the name *L. inundatum* L. (Art. 7.6).

*Ex.6.* Pangalo (in Trudy Prikl. Bot. 23: 258. 1930) when describing *Cucurbita mixta* Pangalo distinguished two varieties, *C. mixta* var. *cyanoperizona* Pangalo and var. *stenosperma* Pangalo, together encompassing the entire circumscription of the species. Although Pangalo did not mention the autonym (see 26B.1), *C. mixta* var. *mixta* was automatically established at the same time. Since neither a holotype nor any syntypes were indicated for *C. mixta*, both varietal names were validly published (see Art. 26.2). Merrick & Bates (in Bailey 23: 96, 101. 1989), in the absence of known type material, neotypified *C. mixta* by an element that can be attributed to *C. mixta* var. *stenosperma*. As long as their choice of neotype is followed, under Art. 11.6 the correct name for that variety recognized under *C. mixta* is *C. mixta* var. *mixta*, dating from 1930, not *C. mixta* var. *stenosperma*. When that variety is recognized under *C. argyrosperma* Huber (1867), as was done by Merrick & Bates, its correct name is not *C. argyrosperma* var. *stenosperma* (Pangalo) Merrick & D. M. Bates; a combination based on *C. mixta* is required.

#### Recommendation 26A

26A.1 A variety including the type of the correct name of a subspecies, but not including the type of the correct name of the species, should, where there is no obstacle under the rules, be given a name with the same final epithet and type as the subspecific name.



26A.2 A subspecies not including the type of the correct name of the species should, where there is no obstacle under the rules, be given a name with the same final epithet and type as a name of one of its subordinate varieties.

26A.3 A taxon of rank lower than variety that includes the type of the correct name of a subspecies or variety, but not the type of the correct name of the species, should, where there is no obstacle under the rules, be given a name with the same final epithet and type as the name of the subspecies or variety. On the other hand, a subspecies or variety that does not include the type of the correct name of the species should not be given a name with the same final epithet as a name of one of its subordinate taxa below the rank of variety.

26A.Ex.1 Fernald treated *Stachys palustris* subsp. *pilosa* (Nutt.) Epling (in Repert. Spec. Nov. Regni Veg. Beih. 8: 63. 1934) as composed of five varieties, for one of which (that including the type of *S. palustris* subsp. *pilosa*) he made the combination *S. palustris* var. *pilosa* (Nutt.) Fernald (in Rhodora 45: 474. 1943), there being no legitimate varietal name available.

26A.Ex.2 There being no legitimate name available at the rank of subspecies, Bonaparte made the combination *Pteridium aquilinum* subsp. *caudatum* (L.) Bonap. (Notes Ptérid. 1: 62. 1915), using the same final epithet that Sadebeck had used earlier in the combination *P. aquilinum* var. *caudatum* (L.) Sadeb. (in Jahrb. Hamburg. Wiss. Anst. Beih. 14(3): 5. 1897), both combinations being based on *Pteris caudata* L. Each name is legitimate, and both can be used, as by Tryon (in Rhodora 43: 52-54. 1941), who treated *P. aquilinum* var. *caudatum* as one of four varieties under subsp. *caudatum* (see also Art. 36.2).

#### Recommendation 26B

26B.1 When publishing a name of an infraspecific taxon that will also establish an autonym, the author should mention that autonym in the publication.

### Article 27

27.1 The final epithet in the name of an infraspecific taxon may not repeat unchanged the epithet of the correct name of the species to which the taxon is assigned unless the two names have the same type.

27.2 The final epithet in the name of an infraspecific taxon may not repeat unchanged the epithet of the species name if that species name is illegitimate.

Ex.1. When Honda (in Bot. Mag. (Tokyo) 41: 385. 1927) published *Agropyron japonicum* var. *hackelianum* Honda under the illegitimate *A. japonicum* Honda (1927), which is a later homonym of *A. japonicum* (Miq.) P. Candargy (1901), he did not validly publish an autonym "*A. japonicum* var. *japonicum*" (see also Art. 55 Ex. 3).

## SECTION 6. Names of organisms in cultivation

### Article 28

28.1 Organisms brought from the wild into cultivation retain the names that are applied to them when growing in nature.

*Note 1.* Hybrids, including those arising in cultivation, may receive names as provided in App. I (see also Art. 11.9, 32.4, and 50).

*Note 2.* Additional, independent designations for special categories of organisms used in agriculture, forestry, and horticulture (and arising either in nature or cultivation) are dealt with in the *International Code of Nomenclature for Cultivated Plants (ICNCP)*, which defines the cultivar as its basic category (see Pre. 11).

*Note 3.* Nothing precludes the use, for cultivated organisms, of names published in accordance with the requirements of this *Code*.

*Note 4.* Epithets in names published in conformity with this *Code* are retained as cultivar epithets, included in single quotation marks, under the rules of the *ICNCP* when it is considered appropriate to treat the taxon concerned under that *Code*.

*Ex.1.* *Mahonia japonica* DC. (1821) may be treated as a cultivar, which is then designated as *Mahonia* 'Japonica'; *Taxus baccata* var. *variegata* Weston (1770), when treated as a cultivar, is designated as *Taxus baccata* 'Variegata'.

*Note 5.* The *ICNCP* also provides for the establishment of epithets differing markedly from epithets provided for under this *Code*.

*Ex.2.*  $\times$ *Disophyllum* 'Frühlingsregen'; *Eriobotrya japonica* 'Golden Ziad' and *E. japonica* 'Maamora Golden Yellow'; *Phlox drummondii* 'Sternenzauber'; *Quercus frainetto* 'Hungarian Crown'.

*Ex.3.* *Juniperus*  $\times$ *pfitzeriana* 'Wilhelm Pfitzer' (P. A. Schmidt 1998) was established for a tetraploid cultivar presumed to result from the original cross between *J. chinensis* L. and *J. sabina* L.

## CHAPTER IV. Effective publication

### SECTION 1. Conditions of effective publication

#### Article 29

29.1 Publication is effected, under this *Code*, by distribution of printed matter (through sale, exchange, or gift) to the general public or at least to scientific institutions with generally accessible libraries. Publication is also effected by distribution on or after 1 January 2012 of electronic material in Portable Document Format (PDF; see also Art. 29.3 and Rec. 29A.1) in an online publication with an International Standard Serial Number (ISSN) or an International Standard Book Number (ISBN).

*Ex.1.* The paper containing the new combination *Anaeromyces polycephalus* (Y. C. Chen & al.) Fliegerová & al. (Kirk in Index Fungorum 1: 1. 2012), based on *Piromyces polycephalus* Y. C. Chen & al. (2002), was effectively published when it was issued online in Portable Document Format with an ISSN on 1 January 2012.

*Note 1.* The distribution before 1 January 2012 of electronic material does not constitute effective publication.

*Ex.2.* Floristic accounts of the *Asteraceae* in *Flora of China* 20-21, containing numerous nomenclatural novelties, were published online in Portable Document Format on 25 October 2011. Because they were distributed before 1 January 2012 and lacked either an ISBN or an ISSN they were not effectively published. Effective publication occurred when the printed version of the same volume became available on 11 November 2011.

*Ex.3.* The paper in which the diatom *Tursiocola podocnemicola* was first described was distributed online on 14 Dec 2011 as an “iFirst” PDF document (DOI: 10.1080/0269249X.2011.642498) available through the *Diatom Research* website (ISSN 0269-249X, print; ISSN 2159-8347, online). Although the paper appeared online in an ISSN-bearing electronic publication in Portable Document Format, it was distributed before 1 January 2012 and was not therefore effectively published. It did not become effectively published on 1 January 2012 merely by remaining available online. Effective publication occurred on 28 Feb 2012, when the printed version of the journal (*Diatom Res.* 27: 2. 2012) was distributed.

29.2 For the purpose of Art. 29.1, “online” is defined as accessible electronically via the World Wide Web.

29.3 Should Portable Document Format (PDF) be succeeded, a successor international standard format communicated by the General Committee (see Div. III) is acceptable.

#### Recommendation 29A

29A.1 Publication electronically in Portable Document Format (PDF) should comply with the PDF/A archival standard (ISO 19005).

29A.2 Authors of electronic material should give preference to publications that are archived and curated, satisfying the following criteria as far as is practical (see also Rec. 29A.1):

(a) The material should be placed in multiple trusted online digital repositories, e.g. an ISO-certified repository.

(b) Digital repositories should be in more than one area of the world and preferably on different continents.

(c) Deposition of printed copies in libraries in more than one area of the world and preferably on different continents is also advisable (but see Rec. 30A.2).

### Article 30

30.1 Publication is not effected by communication of nomenclatural novelties at a public meeting, by the placing of names in collections or gardens open to the public, by the issue of microfilm made from manuscripts or typescripts or other unpublished material, or by distribution of electronic material other than as described in Art. 29.

*Ex.1.* Cusson announced his establishment of the genus *Physospermum* in a memoir read at the Société des Sciences de Montpellier in 1770, and later in 1782 or 1783 at the Société de Médecine de Paris, but its effective publication dates from 1787 (in *Hist. Soc. Roy. Méd.* 5(1): 279).

30.2 An electronic publication is not effectively published if there is evidence within or associated with the publication that it is merely a preliminary version that was, or is to be, replaced by a version that the publisher considers final, in which case only that final version is effectively published.

*Ex.2.* The name *Rodaucea* was published in a paper first placed online on 12 January 2012 as a PDF document accessible through the website of the journal *Mycologia* (ISSN 0027-5514, print; ISSN 1557-2436, online). That document has a header stating “In Press”, and on the journal website it is qualified as “Preliminary version”, which is clear evidence that it is not considered by the publisher as final. As the final version of the document appeared simultaneously online and in print, a correct citation of the name is: *Rodaucea* W. Rossi & Santam. in *Mycologia* 104 (print & online): 785. 11 Jun 2012.

*Ex.3.* The name *Lycopinae* appeared in a paper first placed online on 26 April 2012 as an “Advance Access” PDF document accessible through the website of the *American Journal of Botany* (ISSN 0002-9122, print; ISSN 1537-2197, online). As the journal website stated (May 2012) that “AJB Advance Access articles ... have not yet been printed or posted online by issue” and that “minor corrections may be made before the issue is released” this is evidently not considered the final version by the publisher. *Lycopinae* B. T. Drew & Sytsma was validly published in *Amer. J. Bot.* 99: 945. 1 May 2012, when the paper containing it was effectively published.

*Ex.4.* The paper (in *S. African J. Bot.* 80: 63-66; ISSN 0254-6299) in which the name *Nanobubon hypogaeum* J. Magee appears was effectively published online as a PDF document on 30 March 2012 in its “final and fully citable” form, prior to publication of the printed version (May 2012). However, papers appearing online in the same journal under the heading “In Press Corrected Proof” are not effectively published, as the journal website clearly defines that status: “Corrected proofs: articles that contain the authors’ corrections. Final citation details, e.g. volume/issue number, publication year and page numbers, still need to be added and the text might change before final publication.”

*Note 1.* Citation, for electronic material, of an inappropriate ISSN or ISBN (e.g. one that does not exist or that refers to a serial publication or book in which that electronic material is not included, not even as a declared supplement to an included item) does not effect publication under Art. 29.1.

*Ex.5.* The paper by Meyer, Baquero, and Cameron in which “*Dracula trigonopetala*” was described as an intended new species was placed online as a PDF/A document on 1 March 2012. There is no mention of a journal or ISSN in the document itself, but as it was made accessible through the homepage of *OrchideenJournal* (ISSN 1864-9459), it might be argued that it qualifies as an “online publication with an International Standard Serial Number” (Art. 29.1). However, the paper is not presented in a format suited for publication in the *OrchideenJournal* and was evidently not intended for inclusion in that journal. A new version of the paper, translated into German, appeared in print (*OrchideenJ.* 19: 107–112) on 15 August 2012. Although this was effectively published, “*D. trigonopetala*” was not validly published there as no Latin or English description or diagnosis was provided.

30.3 The content of a particular electronic publication must not be altered after it is effectively published. Any such alterations are not themselves effectively published. Corrections or revisions must be issued separately to be effectively published.

*Note 2.* Content in external sources accessed via a hyperlink or URL (Uniform Resource Locator) embedded in text is not part of the publication; nor is associated information that does not form part of the text itself, such as page numbers (if preliminary or lacking) or watermarks. Content is that which stands alone as the version that the publisher considers final (see Art. 30.2).

*Ex.6.* A paper describing the new genus *Partitatheca* and its four constituent species, accepted for the *Botanical Journal of the Linnean Society* (ISSN 0024-4074, print; ISSN 1095-8339, online), was placed online on 1 February 2012 as an “Early View” PDF document with preliminary pagination (1-29). This was evidently the version considered final by the journal’s publisher because, in the document itself, it was declared the “Version of Record” (an expression defined by the standard, NISO-RP-8-2008). Later, in the otherwise identical electronic version issued upon publication of the printed version on 27 February 2012, the volume pagination (229-257) was added. A correct citation of the generic name is: *Partitatheca* D. Edwards & al. in *Bot. J. Linn. Soc.* 168 (online): [2 of 29], 230. 1 Feb 2012, or better just “... 168 (online): 230. 1 Feb 2012.”

*Ex.7.* The new combination *Rhododendron aureodorsale* was made in a paper in *Nordic Journal of Botany* (ISSN 1756-1051, online; ISSN 0107-055X, print), first effectively published online on 13 March 2012 in “Early View”, the “Online Version of Record published before inclusion in an issue”, with a permanent Digital Object Identifier (DOI) but with preliminary pagination (1-EV to 3-EV). Upon publication of the printed version on 20 April 2012, the pagination of the electronic version was changed to 184-186 and the date of the printed version was added. The combination can be cited as *Rhododendron aureodorsale* (W. P. Fang ex J. Q. Fu) Y. P. Ma & J. Nielsen in *Nordic J. Bot.* 30 (online): 184. 13 Mar 2012 (DOI: 10.1111/j.1756-1051.2011.01438.x).

*Ex.8.* Two new *Echinops* species, including *E. antalyensis*, were described in *Annales Botanici Fennici* (ISSN 1797-2442, online; ISSN 0003-3847, print) in a paper effectively published in its definitive form on 13 March 2012 as an online PDF document, still with preliminary pagination ([1]-4) and the watermark “preprint”. Upon publication of the printed version on 26 April 2012, the online document was repaginated ([95]-98) and the watermark removed. A correct citation of the name is: *E. antalyensis* C. Vural in *Ann. Bot. Fenn.* 49 (online): 95. 13 Mar 2012.

30.4 Publication by indelible autograph before 1 January 1953 is effective. Indelible autograph produced at a later date is not effectively published.

*Ex.9.* Lévillé, *Flore du Kouy Tchéou* (1914-1915), is a work lithographed from a handwritten text.

*Ex.10.* *Salvia oxyodon* Webb & Heldr. was effectively published in an indelible autograph catalogue (Webb & Heldreich, *Catalogus plantarum hispanicarum ... ab A. Blanco lectarum*, Paris, Jul 1850, folio).

30.5 For the purpose of Art. 30.4, indelible autograph is handwritten material reproduced by some mechanical or graphic process (such as lithography, offset, or metallic etching).

*Ex.11.* The *Journal of the International Conifer Preservation Society*, vol. 5[1]. 1997 (“1998”), consists of duplicated sheets of typewritten text with handwritten additions and corrections in several places. The handwritten portions, being indelible autograph published after 1 January 1953, are not effectively published. Intended new combinations (e.g. “*Abies koreana* var. *yuanbaoshanensis*”, p. 53) for which the basionym reference is handwritten are not validly published. The entirely handwritten account of a new taxon (p. 61: name, Latin description, statement of type) is treated as unpublished (see also Rec. 50G).

*Ex.12.* The generic designation “*Lindenia*” was handwritten in ink by Bentham in the margin of copies of a published but not yet distributed fascicle of the *Plantae hartwegianae* (1841: 84) to replace the struck-out name *Siphonia* Benth., which he had discovered was a later homonym of *Siphonia* Rich. ex Schreb. (1791). Although the fascicle was then distributed, the handwritten portion was not itself reproduced by mechanical or graphic process and is not therefore effectively published.

30.6 Publication on or after 1 January 1953 in trade catalogues or non-scientific newspapers, and on or after 1 January 1973 in seed-exchange lists, does not constitute effective publication.

30.7 The distribution on or after 1 January 1953 of printed matter accompanying specimens does not constitute effective publication.

*Note 3.* If the printed matter is also distributed independently of the specimens, it is effectively published.

*Ex.13.* The printed labels of Fuckel’s *Fungi rhenani exsiccati* (1863-1874) are effectively published even though not independently issued. The labels antedate Fuckel’s subsequent accounts (e.g. in *Jahrb. Nassauischen Vereins Naturk.* 23-24. 1870).

*Ex.14.* Vězda’s *Lichenes selecti exsiccati* (1960-1995) were issued with printed labels that were also distributed as printed fascicles; the latter are effectively published, and nomenclatural novelties appearing in Vězda’s labels are to be cited from the fascicles.

30.8 Publication on or after 1 January 1953 of an independent non-serial work stated to be a thesis submitted to a university or other institute of education for the purpose of obtaining a degree does not constitute effective publication unless the work includes an explicit statement (referring to the requirements of the *Code* for effective publication) or other internal evidence that it is regarded as an effective publication by its author or publisher.

*Note 4.* The presence of an International Standard Book Number (ISBN) or a statement of the name of the printer, publisher, or distributor in the original printed version is regarded as internal evidence that the work was intended to be effectively published.

*Ex.15.* “*Meclatis* in *Clematis*; yellow flowering *Clematis* species – Systematic studies in *Clematis* L. (*Ranunculaceae*), inclusive of cultonomic aspects” a “Proefschrift ter verkrijging van de graad van doctor ... van Wageningen Universiteit” by Brandenburg, was effectively published on 8 June 2000, because it bears the ISBN 90-5808-237-7.

*Ex.16.* The thesis “Comparative investigations on the life-histories and reproduction of some species in the siphonous green algal genera *Bryopsis* and *Derbesia*” by Rietema, submitted to Rijksuniversiteit te Groningen in 1975, is stated to have been printed (“Druk”) by Verenigde Reproductie Bedrijven, Groningen and was therefore effectively published.

*Ex.17.* The dissertation “Die Gattung *Mycena* s.l.” by Rexer, submitted to the Eberhard-Karls-Universität Tübingen, was effectively published in 1994 because it bears the statement “Druck: Zeeb-Druck, Tübingen 7 (Hagelloch)”, referring to a commercial printer. The generic name *Roridomyces* Rexer and the names of new species in *Mycena*, such as *M. taiwanensis* Rexer, are therefore validly published.

*Ex.18.* The thesis by Demoulin, “Le genre *Lycoperdon* en Europe et en Amérique du Nord”, defended in 1971, was not effectively published because it does not contain internal evidence that it is regarded as such. Even if photocopies of it can be found in some libraries, names of new species of *Lycoperdon*, e.g. “*L. americanum*”, “*L. cokeri*”, and “*L. estonicum*”, introduced there, were validly published in the effectively published paper “Espèces nouvelles ou méconnues du genre *Lycoperdon* (Gastéromycètes)” (Demoulin in *Lejeunia*, ser. 2, 62: 1-28. 1972).

*Ex.19.* The dissertation by Funk, “The Systematics of *Montanoa Cerv. (Asteraceae)*”, submitted to the Ohio State University in 1980, was not effectively published because it does not contain internal evidence that it is regarded as such. The same applies to facsimile copies of the dissertation printed from microfiche and distributed, on demand, from 1980 onward, by University Microfilms, Ann Arbor. The name *Montanoa imbricata* V. A. Funk, introduced in the dissertation, was validly published in the effectively published paper “The systematics of *Montanoa (Asteraceae, Heliantheae)*” (Funk in Mem. New York Bot. Gard. 36: 1-133. 1982).

*Ex.20.* The dissertation “Revision der südafrikanischen Astereengattungen *Mairia* und *Zyrphelis*” submitted in 1990 by Ursula Zinnecker-Wiegand to the Ludwig-Maximilians-Universität München (University of Munich) is not effectively published as it does not include an ISBN, the name of any printer or publisher or distributor, or any statement that it was intended to be effectively published under the Code, even though about 50 copies were distributed to other public libraries and all the other formalities for the publication of new taxa were met. The names intended to be published in the thesis were validly published in the effectively published paper by Ortiz & Zinnecker-Wiegand (in Taxon 60: 1194-1198. 2011).

## Recommendation 30A

*30A.1* Preliminary and final versions of the same electronic publication should be clearly indicated as such when they are first issued.

*30A.2* It is strongly recommended that authors avoid publishing nomenclatural novelties in ephemeral printed matter of any kind, in particular printed matter that is multiplied in restricted and uncertain numbers, in which the permanence of the text may be limited, for which effective publication in terms of number of copies is not obvious, or that is unlikely to reach the general public. Authors should also avoid publishing nomenclatural novelties in popular periodicals, in abstracting journals, or on correction slips.

*30A.Ex.1* Kartesz provided an unpaginated printed insert titled “Nomenclatural innovations” to accompany the electronic version (1.0) of the *Synthesis of the North American flora* produced on compact disk (CD-ROM; not effectively published under Art. 30.1). This insert, which is effectively published under Art. 29-31, is the place of valid publication of 41 new combinations, which also appear on the disk, in an item authored by Kartesz: “A synonymized checklist and atlas with biological attributes for the vascular flora of the United States, Canada, and Greenland” (e.g. *Dichantheium hirstii* (Swallen) Kartesz in Kartesz & Meacham, Synth. N. Amer. Fl., Nomencl. Innov.: [1]. Aug 1999). Kartesz’s procedure is not to be recommended, as the insert is unlikely to be permanently stored and catalogued in libraries and so reach the general public.

*30A.3* To aid availability through time and place, authors publishing nomenclatural novelties should give preference to periodicals that regularly publish taxonomic articles, or else they should send a copy of a publication (printed or electronic) to an indexing centre appropriate to the taxonomic group. When such publications exist only as printed matter, they should be deposited in at least ten, but preferably more, generally accessible libraries throughout the world.

*30A.4* Authors and editors are encouraged to mention nomenclatural novelties in the summary or abstract, or list them in an index in the publication.

## SECTION 2. Dates of effective publication

### Article 31

*31.1* The date of effective publication is the date on which the printed matter or electronic material became available as defined in Art. 29 and 30. In the absence of proof establishing some other date, the one appearing in the printed matter or electronic material must be accepted as correct.

*Ex.1.* Individual parts of Willdenow's *Species plantarum* were published as follows: 1(1), Jun 1797; 1(2), Jul 1798; 2(1), Mar 1799; 2(2), Dec 1799; 3(1), 1800; 3(2), Nov 1802; 3(3), Apr-Dec 1803; 4(1), 1805; 4(2), 1806; these dates are presently accepted as the dates of effective publication (see Stafleu & Cowan in *Regnum Veg.* 116: 303. 1988).

*Ex.2.* Fries first published *Lichenes arctoi* in 1860 as an independently paginated preprint, which antedates the identical content published in a journal (*Nova Acta Reg. Soc. Sci. Upsal.*, ser. 3, 3: 103-398. 1861).

*Ex.3.* *Diatom Research* 2(2) bears the date December 1987. However Williams & Round, the authors of a paper in that issue, stated in a subsequent paper (in *Diatom Res.* 3: 265. 1988) that the actual date of publication had been 18 February 1988. Under Art. 31.1 their statement is acceptable as proof establishing another date of publication for issue 2(2) of the journal.

*Ex.4.* The paper in which *Ceratocystis omanensis* Al-Subhi & al. is described was available online in final form on *Science Direct* on 7 November 2005, but was not effectively published (Art. 29 Note 1). It was distributed in print (in *Mycol. Res.* 110(2): 237-245) on 7 March 2006, which is the date of effective publication.

31.2 When a publication is issued in parallel as electronic material and printed matter, both must be treated as effectively published on the same date unless the dates of the versions are different as determined by Art. 31.1.

*Ex.5.* The paper in which *Solanum baretiae* was validly published was placed online in final form, as a PDF document, on 3 January 2012 in the journal *PhytoKeys* (ISSN 1314-2003). The printed version (ISSN 1314-2011) of the corresponding issue of *PhytoKeys*, with identical pagination and content, is undated but demonstrably later, as it includes a paper dated 6 January 2012. A correct citation of the name is: *S. baretiae* Tepe in *PhytoKeys* 8 (online): 39. 3 Jan 2012.

31.3 When separates from periodicals or other works placed on sale are issued in advance, the date on the separate is accepted as the date of effective publication unless there is evidence that it is erroneous.

*Ex.6.* The names of the *Selaginella* species published by Hieronymus (in *Hedwigia* 51: 241-272) were effectively published on 15 October 1911, since the volume in which the paper appeared, though dated 1912, states (p. ii) that the separate appeared on that date.

#### Recommendation 31A

31A.1 The date on which the publisher or publisher's agent delivers printed matter to one of the usual carriers for distribution to the public should be accepted as its date of effective publication.

#### Recommendation 31B

31B.1 Authors should indicate precisely the dates of publication of their works. In a work appearing in parts the last-published sheet of the volume should indicate the precise dates on which the different fascicles or parts of the volume were published as well as the number of pages and plates in each.

#### Recommendation 31C

31C.1 On reprints of papers published in a periodical, the name of the periodical, volume and part number, original pagination, and date (year, month, and day) should be indicated.



## CHAPTER V. Valid publication of names

### SECTION 1. General provisions

#### Article 32

32.1 In order to be validly published, a name of a taxon (autonyms excepted) must: (a) be effectively published (see Art. 29-31) on or after the starting-point date of the respective group (Art. 13.1); (b) be composed only of letters of the Latin alphabet, except as provided in Art. 23.3 and Art. 60.4, 60.6, 60.9, 60.10, and 60.11; and (c) have a form that complies with the provisions of Art. 16-27 (but see Art. 21.4 and 24.4) and Art. H.6 and H.7 (see also Art. 61).

*Note 1.* The use of typographic signs, numerals, or letters of a non-Latin alphabet in the arrangement of taxa (such as Greek letters  $\alpha$ ,  $\beta$ ,  $\gamma$ , etc. in the arrangement of varieties under a species) does not prevent valid publication, as rank-denoting terms and devices are not part of the name.

32.2 Names or epithets published with an improper Latin termination but otherwise in accordance with this *Code* are regarded as validly published; they are to be changed to accord with Art. 16-19, 21, 23, and 24, without change of the author citation or date (see also Art. 60.12).

*Ex.1.* The epithet in *Cassia* “\* *Chamaecristae*” L. (Sp. Pl.: 379. 1753) is a noun in the nominative plural, derived from “*Chamaecrista*”, a pre-Linnaean generic designation. Under Art. 21.2, however, this epithet must have the same form as a generic name, i.e. a noun in the nominative singular (Art. 20.1). The name is to be changed accordingly and is cited as *Cassia* [unranked] *Chamaecrista* L.

32.3 Autonyms (Art. 6.8) are accepted as validly published names, dating from the publication in which they were established (see Art. 22.3 and 26.3), whether or not they actually appear in that publication.

32.4 In order to be validly published, names of hybrids of specific or lower rank with Latin epithets must comply with the same rules as names of non-hybrid taxa of the same rank.

*Ex.2.* “*Nepeta* *×faassenii*” (Bergmans, Vaste Pl. Rotsheesters, ed. 2: 544. 1939, with a description in Dutch; Lawrence in Gentes Herb. 8: 64. 1949, with a diagnosis in English) is not validly published, not being accompanied by or associated with a Latin description or diagnosis. The name *Nepeta* *×faassenii* Bergmans ex Stearn (1950) is validly published, being accompanied by a Latin description.

*Ex.3.* “*Rheum* *×cultorum*” (Thorsrud & Reisaeter, Norske Plantenavn: 95. 1948), being there a nomen nudum, is not validly published.

*Ex.4.* “*Fumaria* *×salmonii*” (Druce, List Brit. Pl.: 4. 1908) is not validly published, as only the presumed parentage *F. densiflora*  $\times$  *F. officinalis* is stated.

*Note 2.* For names of hybrids of the rank of genus or subdivision of a genus, see Art. H.9.

*Note 3.* For valid publication of names of organisms originally assigned to a group not covered by this *Code*, see Art. 45.

#### Recommendation 32A

32A.1 When publishing nomenclatural novelties, authors should indicate this by a phrase including the word “novus” or its abbreviation, e.g. genus novum (gen. nov., new genus), species nova (sp. nov., new species), combinatio nova (comb. nov., new combination), nomen novum (nom. nov., replacement name), or status novus (stat. nov., name at new rank).

### Article 33

33.1 The date of a name is that of its valid publication. When the various conditions for valid publication are not simultaneously fulfilled, the date is that on which the last is fulfilled. However, the name must always be explicitly accepted in the place of its valid publication. A name published on or after 1 January 1973 for which the various conditions for valid publication are not simultaneously fulfilled is not validly published unless a full and direct reference (Art. 41.5) is given to the places where these requirements were previously fulfilled (but see Art. 41.7).

*Ex.1.* “*Clypeola minor*” first appeared in the Linnaean thesis *Flora monspeliensis* (1756), in a list of names preceded by numerals but without an explanation of the meaning of these numerals and without any other descriptive matter; when the thesis was reprinted in vol. 4 of the *Amoenitates academicae* (1759), a statement was added explaining that the numbers referred to earlier descriptions published in Magnol’s *Botanicon monspeliense*. However, “*Clypeola minor*” was absent from the reprint, being no longer accepted by Linnaeus, and was not therefore validly published.

*Ex.2.* When proposing “*Graphis meridionalis*” as a new species, Nakanishi (in *J. Sci. Hiroshima Univ.*, Ser. B(2), 11: 75. 1966) provided a Latin description but failed to designate a holotype. *Graphis meridionalis* M. Nakan. was validly published when Nakanishi (in *J. Sci. Hiroshima Univ.*, Ser. B(2), 11: 265. 1967) designated the holotype of the name and provided a full and direct reference to his previous publication.

33.2 A correction of the original spelling of a name (see Art. 32.2 and 60) does not affect its date.

*Ex.3.* The correction of the erroneous spelling of *Gluta “benghas”* (Linnaeus, *Mant. Pl.*: 293. 1771) to *G. renghas* L. does not affect the date of the name even though the correction dates from 1883 (Engler in Candolle & Candolle, *Monogr. Phan.* 4: 225).

### Article 34

34.1 Names in specified ranks included in publications listed as suppressed works (*opera utique oppressa*; App. VI) are not validly published. Proposals for the addition of publications to App. VI must be submitted to the General Committee (see Div. III), which will refer them for examination to the committees for the various taxonomic groups (see Rec. 34A; see also Art. 14.12 and 56.2).

34.2 When a proposal for the suppression of a publication has been approved by the General Committee after study by the committees for the taxonomic groups concerned, suppression of that publication is authorized subject to the decision of a later International Botanical Congress (see also Art. 14.16 and 56.4).

#### Recommendation 34A

34A.1 When a proposal for the suppression of a publication under Art. 34.1 has been referred to the appropriate committees for study, authors should follow existing usage of names as far as possible pending the General Committee’s recommendation on the proposal (see also Rec. 14A and 56A).

### Article 35

35.1 A name of a taxon below the rank of genus is not validly published unless the name of the genus or species to which it is assigned is validly published at the same time or was validly published previously (but see Art. 13.4).

*Ex.1.* Binary designations for six species of “*Suaeda*”, including “*S. baccata*” and “*S. vera*”, were published with descriptions and diagnoses by Forsskål (*Fl. Aegypt.-Arab.*: 69-71. 1775), but he provided no description or diagnosis for the genus: these were not therefore validly published names.

Ex.2. Müller (in Flora 63: 286. 1880) published the new genus "*Phlyctidia*" with the species "*P. hampeana* n. sp.", "*P. boliviensis*" (*Phlyctis boliviensis* Nyl.), "*P. sorediiformis*" (*Phlyctis sorediiformis* Kremp.), "*P. brasiliensis*" (*Phlyctis brasiliensis* Nyl.), and "*P. andensis*" (*Phlyctis andensis* Nyl.). The intended new binomials were not, however, validly published in this place, because the intended generic name "*Phlyctidia*" was not validly published; Müller gave no generic description or diagnosis but only a description and a diagnosis for one additional species, "*P. hampeana*", and so failed to validly publish "*Phlyctidia*" under Art. 38.5 since the genus was not monotypic. Valid publication of the name *Phlyctidia* was by Müller (1895), who provided a short generic diagnosis and explicitly included only two species, the names of which, *P. ludoviciensis* Müll. Arg. and *P. boliviensis* (Nyl.) Müll. Arg., were also validly published in 1895.

Note 1. Art. 35.1 applies also when specific and other epithets are published under words not to be regarded as names of genera or species (see Art. 20.4 and 23.6).

Ex.3. The binary designation "*Anonymos aquatica*" (Walter, Fl. Carol.: 230. 1788) is not a validly published name. The first validly published name for the species concerned is *Planera aquatica* J. F. Gmel. (1791). This name is not cited as *P. aquatica* "(Walter) J. F. Gmel."

Ex.4. Despite the existence of the generic name *Scirpoides* Ség. (1754), the binary designation "*S. paradoxus*" (Rottboll, Descr. Pl. Rar.: 27. 1772) is not validly published since "*Scirpoides*" in Rottboll's context was a word not intended as a generic name. The first validly published name for this species is *Fuirena umbellata* Rottb. (1773).

35.2 A combination (autonyms excepted) is not validly published unless the author definitely associates the final epithet with the name of the genus or species, or with its abbreviation (see Art. 60.11).

Ex.5. Combinations validly published. In Linnaeus's *Species plantarum* the placing of the epithet in the margin opposite the name of the genus clearly associates the epithet with the name of the genus. The same result is attained in Miller's *Gardeners dictionary*, ed. 8, by the inclusion of the epithet in parentheses immediately after the name of the genus, in Steudel's *Nomenclator botanicus* by the arrangement of the epithets in a list headed by the name of the genus, and in general by any typographical device that associates an epithet with a particular name of a genus or species.

Ex.6. Combinations not validly published. Rafinesque's statement under *Blephilia* that "Le type de ce genre est la *Monarda ciliata* Linn." (in J. Phys. Chim. Hist. Nat. Arts 89: 98. 1819) does not constitute valid publication of the combination *B. ciliata*, since Rafinesque did not definitely associate the epithet *ciliata* with the generic name *Blephilia*. Similarly, the combination *Eulophus peucedanooides* is not to be attributed to Bentham & Hooker (Gen. Pl. 1: 885. 1867) on the basis of their listing of "*Cnidium peucedanooides*, H. B. et K." under *Eulophus*.

Ex.7. *Erioderma polycarpum* subsp. *verruculosum* Vain. (in Acta Soc. Fauna Fl. Fenn. 7(1): 202. 1890) is validly published since Vainio clearly linked the subspecific epithet to the specific epithet by an asterisk.

Ex.8. When Tuckerman (in Proc. Amer. Acad. Arts 12: 168. 1877) described "*Erioderma velligerum*, subsp. nov.", he stated that his new subspecies was very near to *E. chilense*, from which he provided distinguishing features. However, because he did not definitely associate the subspecific epithet with that species name, he did not validly publish "*E. chilense* subsp. *velligerum*".

## Article 36

36.1 A name is not validly published (a) when it is not accepted by the author in the original publication; (b) when it is merely proposed in anticipation of the future acceptance of the taxon concerned, or of a particular circumscription, position, or rank of the taxon (so-called provisional name); (c) when it is merely cited as a synonym; or (d) by the mere mention of the subordinate taxa included in the taxon concerned. Art. 36.1(a) does

not apply to names published with a question mark or other indication of taxonomic doubt, yet accepted by their author.

Ex.1. (a) "*Sebertia*", proposed by Pierre (ms.) for a unispecific genus, was not validly published by Baillon (in Bull. Mens. Soc. Linn. Paris 2: 945. 1891) because he did not accept the genus. Although he gave a description of it, he referred its only species "*Sebertia acuminata* Pierre (ms.)" to the genus *Sersalisia* R. Br., as "*Sersalisia ? acuminata*", which he thereby validly published under the provision of Art. 36.1, last sentence. The name *Sebertia* was validly published by Engler (1897).

Ex.2. (a) The designations listed in the left-hand column of the Linnaean thesis *Herbarium amboinense* defended by Stickman (1754) were not names accepted by Linnaeus upon publication and are not validly published.

Ex.3. (a) *Coralloides gorgonina* Bory was validly published in a paper by Flörke (in Mag. Neusten Entdeck. Gesamnten Naturk. Ges. Naturf. Freunde Berlin 3: 125. 1809) even though Flörke did not accept it as a new species. At Bory's request, Flörke included Bory's diagnosis (and name) making Bory the publishing author as defined in Art. 46.6. The acceptance or otherwise of the name by Flörke is not, therefore, relevant for valid publication.

Ex.4. (a) (b) The designation "*Conophyton*", suggested by Haworth (Rev. Pl. Succ.: 82. 1821) for *Mesembryanthemum* sect. *Minima* Haw. (Rev. Pl. Succ.: 81. 1821) in the words "If this section proves to be a genus, the name of *Conophyton* would be apt", was not a validly published generic name since Haworth did not adopt it or accept the genus. The name was validly published as *Conophytum* N. E. Br. (1922).

Ex.5. (b) "*Pteridospermaexylon*" and "*P. theresiae*" were published by Greguss (in Földt. Közl. 82: 171. 1952) for a genus and species of fossil wood. As Greguss explicitly stated "Vorläufig benenne ich es mit den Namen ..." [provisionally I designate it by the names ...], these are provisional names and as such are not validly published.

Ex.6. (b) The designation "*Stereocaulon subdenudatum*" proposed by Havaas (in Bergens Mus. Arbok. 12: 13, 20. 1954) is not validly published in spite of it being presented as a new species with a Latin diagnosis, since on both pages it was indicated to be "ad int." [ad interim, for the time being].

Ex.7. (c) "*Ornithogalum undulatum* hort. Bouch." was not validly published by Kunth (Enum. Pl. 4: 348. 1843) when he cited it as a synonym under *Myogalum boucheanum* Kunth; the combination under *Ornithogalum* L. was validly published later: *O. boucheanum* (Kunth) Asch. (1866).

Ex.8. (d) The family designation "*Rhaptopetalaceae*" was not validly published by Pierre (in Bull. Mens. Soc. Linn. Paris 2: 1296. Mai 1897), who merely mentioned the constituent genera, *Brazzeia* Baill., *Rhaptopetalum* Oliv., and "*Scytopetalum*", but gave no description or diagnosis; the family bears the name *Scytopetalaceae* Engl. (Oct 1897), which was accompanied by a description.

Ex.9. (d) The generic designation "*Ibidium*" was not validly published by Salisbury (in Trans. Hort. Soc. London 1: 291. 1812), who merely mentioned four included species but supplied no generic description or diagnosis.

Ex.10. *Besenna* A. Rich. and *B. anthelmintica* A. Rich. (1847) were simultaneously published by Richard, both with a question mark ("*Besenna ?*" and "*Besenna anthelmintica ?* Nob."). Richard's uncertainty was due to the absence of flowers or fruits for examination, but the names were nonetheless accepted by him, with *Besenna* listed as such (i.e. not italicized) in the index (p. [469]).

36.2 When, on or after 1 January 1953, two or more different names based on the same type are proposed simultaneously for the same taxon by the same author (so-called alternative names), none of them is validly

published. This rule does not apply in those cases where the same combination is simultaneously used at different ranks, either for infraspecific taxa within a species or for subdivisions of a genus within a genus (see Rec. 22A.1-2 and 26A.1-3), nor to names provided for in Art. 59.1.

*Ex.11.* The species of *Brosimum* Sw. described by Ducke (in Arch. Jard. Bot. Rio de Janeiro 3: 23-29. 1922) were published with alternative names under *Piratinera* Aubl. added in a footnote (pp. 23-24). The publication of both sets of names, being effected before 1 January 1953, is valid.

*Ex.12.* “*Euphorbia jaroslavii*” (Poljakov in Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 15: 155. 1953) was published with an alternative designation, “*Tithymalus jaroslavii*”. Neither was validly published. However, one name, *Euphorbia yaroslavii* (with a differently transcribed initial letter), was validly published by Poljakov (1961), who provided a full and direct reference to the earlier publication and rejected the assignment to *Tithymalus*.

*Ex.13.* Description of “*Malvastrum bicuspidatum* subsp. *tumidum* S. R. Hill var. *tumidum*, subsp. et var. nov.” (in Brittonia 32: 474. 1980) simultaneously validated both *M. bicuspidatum* subsp. *tumidum* S. R. Hill and *M. bicuspidatum* var. *tumidum* S. R. Hill.

*Ex.14.* Freytag (in Sida Bot. Misc. 23: 211. 2002) simultaneously published *Phaseolus leptostachyus* “var. *pinnatifolius* Freytag forma *purpureus* Freytag, var. et forma nov.”, using a single diagnosis and designating a single intended holotype. Since the intended combinations are not the same, neither is validly published.

*Ex.15.* Hitchcock (in Univ. Washington Publ. Biol. 17(1): 507-508. 1969) used the name *Bromus inermis* subsp. *pumpellianus* (Scribn.) Wagon and provided a full and direct reference to its basionym, *B. pumpellianus* Scribn. Within that subspecies, he recognized varieties, one of which he named *B. inermis* var. *pumpellianus* (without author citation but clearly based on the same basionym and type). In so doing, he met the requirements for valid publication of *B. inermis* var. *pumpellianus* (Scribn.) C. L. Hitchc.

### Article 37

**37.1** A name published on or after 1 January 1953 without a clear indication of the rank of the taxon concerned is not validly published.

**37.2** For suprageneric names published on or after 1 January 1887, the use of one of the terminations specified in Art. 16.3, 17.1, 18.1, 19.1, and 19.3 is accepted as an indication of the corresponding rank, unless this (a) would conflict with the explicitly designated rank of the taxon (which takes precedence), (b) would result in a rank sequence contrary to Art. 5 (in which case Art. 37.6 applies), or (c) would result in a rank sequence in which the same rank-denoting term occurs at more than one hierarchical position.

*Ex.1.* Jussieu (in Mém. Mus. Hist. Nat. 12: 497. 1827) proposed *Zanthoxyleae* without specifying the rank. Although he employed the present termination for tribe (-*ae*), that name, being published prior to 1887, is unranked. *Zanthoxyleae* Dumort. (Anal. Fam. Pl.: 45. 1829), however, is the name of a tribe, as Dumortier specified its rank.

*Ex.2.* Nakai (Chosakuronbun Mokuroku [Ord. Fam. Trib. Nov.]. 1943) validly published the names *Parnassiales*, *Lophiolaceae*, *Ranzanioideae*, and *Urospatheae*. He indicated the respective ranks of order, family, subfamily, and tribe, by virtue of their terminations even though he did not mention these ranks explicitly.

**37.3** A name published before 1 January 1953 without a clear indication of its rank is validly published provided that all other requirements for valid publication are fulfilled; it is, however, inoperative in questions of priority except for homonymy (see Art. 53.4). If it is the name of a new taxon, it may serve as a basionym or replaced synonym for subsequent new combinations, names at new ranks, or replacement names in definite ranks.

Ex.3. The unranked groups “*Soldanellae*”, “*Sepincoli*”, “*Occidentales*”, etc., were published under *Convolvulus* L. by House (in *Muhlenbergia* 4: 50. 1908). The names C. [unranked] *Soldanellae* House, etc., are validly published names but have no status in questions of priority except for purposes of homonymy under Art. 53.4.

Ex.4. In *Carex* L., the epithet *Scirpinae* was used in the name of an unranked subdivision of a genus by Tuckerman (Enum. Meth. Caric.: 8. 1843); this taxon was assigned sectional rank by Kükenthal (in Engler, Pflanzenr. IV. 20 (Heft 38): 81. 1909) and its name is then cited as *Carex* sect. *Scirpinae* (Tuck.) Kük. (C. [unranked] *Scirpinae* Tuck.).

Ex.5. Loesener published “*Geranium andicola* var. vel forma *longipedicellatum*” (Bull. Herb. Boissier, ser. 2, 3(2): 93. 1903) with an ambiguous indication of infraspecific rank. The name is correctly cited as “*G. andicola* [unranked] *longipedicellatum* Loes.” The epithet was used in a subsequent combination, *G. longipedicellatum* (Loes.) R. Knuth (1912).

37.4 If in one whole publication (Art. 37.5), prior to 1 January 1890, only one infraspecific rank is admitted, it is considered to be that of variety unless this would be contrary to the author’s statements in the same publication.

37.5 In questions of indication of rank, all publications appearing under the same title and by the same author, such as different parts of a flora issued at different times (but not different editions of the same work), must be considered as a whole, and any statement made therein designating the rank of taxa included in the work must be considered as if it had been published together with the first instalment.

Ex.6. In Link’s *Handbuch* (1829-1833) the rank-denoting term “O.” (ordo) was used in all three volumes. These names of orders cannot be considered as having been published as names of families (Art. 18.2) since the term family was used for *Agaricaceae* and *Tremellaceae* under the order *Fungi* in vol. 3 (pp. 272, 337; see Art. 18 Note 3). This applies to all three volumes of the *Handbuch* even though vol. 3 was published later (Jul - 29 Sep 1833) than vols. 1 and 2 (4-11 Jul 1829).

37.6 A name is not validly published if it is given to a taxon of which the rank is at the same time, contrary to Art. 5, denoted by a misplaced term. Such misplacements include forms divided into varieties, species containing genera, and genera containing families or tribes.

37.7 Only those names published with the rank-denoting terms that must be removed so as to achieve a proper sequence are to be regarded as not validly published. In cases where terms are switched, e.g. family-order, and a proper sequence can be achieved by removing either or both of the rank-denoting terms, names at neither rank are validly published unless one is a secondary rank (Art. 4.1) and one is a principal rank (Art. 3.1), e.g. family-genus-tribe, in which case only names published at the secondary rank are not validly published.

Ex.7. “*Sectio Orontiaceae*” (Brown, Prodr.: 337. 1810) is not a validly published name, since Brown misapplied the term “sectio” to a rank higher than genus.

Ex.8. “*Tribus Involuta*” and “*tribus Brevipedunculata*” (Huth in Bot. Jahrb. Syst. 20: 365, 368. 1895) are not validly published names, since Huth misapplied the term “tribus” to a rank lower than section, within the genus *Delphinium*.

Note 1. Sequential use of the same rank-denoting term in a taxonomic sequence does not represent misplaced rank-denoting terms.

Ex.9. Danser (in *Recueil Trav. Bot. Néerl.* 18: 125-210. 1921) published ten names of new subspecies in a treatment of *Polygonum* in which he recognized subspecies (indicated by Roman numerals) within subspecies (indicated by Arabic numerals). These do not represent misplaced rank-denoting terms, Art. 37.6 does not apply, and the names are validly published.

37.8 Situations where the same rank-denoting term is used at more than one non-successive position in the taxonomic sequence represent informal usage of rank-denoting terms. Names published with such rank-denoting terms are treated as unranked (see Art. 37.1 and 37.3).

*Ex.10.* Names published with the term “series” by Bentham & Hooker (Gen. Pl. 1-3. 1862-1883) are treated as unranked because this term was used at seven different hierarchical positions in the taxonomic sequence. Therefore, the sequence in *Rhynchospora* (3: 1058-1060. 1883) of genus-“series”-section does not contain a misplaced rank-denoting term.

37.9 An exception to Art. 37.6 is made for names of the subdivisions of genera termed tribes (tribus) in Fries’s *Systema mycologicum*, which are treated as validly published names of unranked subdivisions of genera.

*Ex.11.* *Agaricus* “tribus” *Pholiota* Fr. (Syst. Mycol. 1: 240. 1821), sanctioned in the same work, is the validly published basionym of the generic name *Pholiota* (Fr. : Fr.) P. Kumm. (1871) (see Art. 41 Ex. 6).

## SECTION 2. Names of new taxa

### Article 38

38.1 In order to be validly published, a name of a new taxon (see Art. 6.9) must (a) be accompanied by a description or diagnosis of the taxon or, if none is provided in the protologue, by a reference to a previously and effectively published description or diagnosis (except as provided in Art. 38.7, 38.8, and H.9; see also Art. 14.9 and 14.15); and (b) comply with the relevant provisions of Art. 32-45.

*Note 1.* An exception to Art. 38.1 is made for the generic names first published by Linnaeus in *Species plantarum*, ed. 1 (1753) and ed. 2 (1762-1763), which are treated as having been validly published in those works even though the validating descriptions were published later in *Genera plantarum*, ed. 5 (1754) and ed. 6 (1764), respectively (see Art. 13.4).

38.2 A diagnosis of a taxon is a statement of that which in the opinion of its author distinguishes the taxon from other taxa.

*Ex.1.* “*Egeria*” (Néraud in Gaudichaud, Voy. Uranie, Bot.: 25, 28. 1826) was published without a description or a diagnosis or a reference to a former one (and thus is a nomen nudum); it was not validly published.

*Ex.2.* “*Loranthus macrosolen* Steud.” originally appeared without a description or diagnosis on the printed labels issued about the year 1843 with Sect. II, No. 529, 1288, of Schimper’s herbarium specimens of Abyssinian plants; the name was not validly published until Richard (Tent. Fl. Abyss. 1: 340. 1847) supplied a description.

*Ex.3.* \* In Don, *Sweet’s Hortus britannicus*, ed. 3 (1839), for each listed species the flower colour, the duration of the plant, and a translation into English of the specific epithet are given in tabular form. In many genera the flower colour and duration may be identical for all species and clearly their mention is not intended as a validating description or diagnosis. Names of new taxa appearing in that work are not therefore validly published, except in some cases where reference is made to earlier descriptions or diagnoses.

*Ex.4.* “*Crepis praemorsa* subsp. *tatrensis*” (Dvořák & Dadáková in *Biológia* (Bratislava) 32: 755. 1977) appeared with “a subsp. *praemorsa* karyotypo achaeniorumque longitudine praecipue differt”. This statement specifies the features in which the two taxa differ but not how these features differ and so it does not satisfy the requirement of Art. 38.1(a) for a “description or diagnosis”.

Ex.5. The generic name *Epilichen* Clem. (Gen. Fungi: 69, 174. 1909) is validly published by means of the key character “parasitic on lichens” (contrasting with “saprophytic” for *Karschia*) and the Latin diagnosis “*Karschia lichenicola*”, referring to the ability of the included species formerly included in *Karschia* to grow on lichens. These statements, in the opinion of Clements, distinguished the genus from others, although provision of such a meagre diagnosis is not good practice.

38.3 The requirements of Art. 38.1(a) are not met by statements describing properties such as purely aesthetic features, economic, medicinal or culinary use, cultural significance, cultivation techniques, geographical origin, or geological age.

Ex.6. “*Musa basjoo*” (Siebold in Verh. Bat. Genootsch. Kunsten 12: 18. 1830) appeared with “Ex insulis Luikiu introducta, vix asperitati hiemis resistens. Ex foliis linteum, praesertim in insulis Luikiu ac quibusdam insulis provinciae Satzuma conficitur. Est haud dubie linteum, quod Philippinis incolis audit Nippis”. This statement gives information about the economic use (linen is made from the leaves), hardiness in cultivation (scarcely survives the winter), and geographical origin (introduced from the Ryukyu Islands), but since there is no descriptive information on the “leaves”, the only character mentioned, it does not satisfy the requirement of Art. 38.1(a) for a “description or diagnosis”. *Musa basjoo* Siebold & Zucc. ex linuma was later validly published in linuma, Sinteï Somoku Dzusetsu [Illustrated Flora of Japan], ed. 2, 3: ad t. 1. 1874, with floral details and a description in Japanese.

38.4 When it is doubtful whether a descriptive statement satisfies the requirement of Art. 38.1(a) for a “description or diagnosis”, a request for a decision may be submitted to the General Committee (see Div. III), which will refer it for examination to the Committee for the appropriate taxonomic group. A recommendation, whether or not to treat the name concerned as validly published, may then be put forward to an International Botanical Congress and, if ratified, will become a binding decision. These binding decisions are listed in App. VII.

Ex.7. *Ascomycota* Caval.-Sm. (in Biol. Rev. 73: 247. 1998, as “*Ascomycota* Berkeley 1857 stat. nov.”) was published as the name of a phylum, with the diagnosis “sporae intracellulares”. As Cavalier-Smith (l.c.) did not provide a full and direct reference to Berkeley’s publication (Intr. Crypt. Bot.: 270. 1857) of the name *Ascomycetes* [not *Ascomycota*], valid publication of *Ascomycota* is dependent on its meeting the requirements of Art. 38.1(a), and a request was made for a binding decision under Art. 38.4. The Nomenclature Committee for Fungi concluded (in Taxon 59: 292. 2010) that the requirements of Art. 38.1(a) were minimally fulfilled and recommended that *Ascomycota* be treated as validly published. This was endorsed by the General Committee (in Taxon 60: 1212. 2011) and ratified by the XVIII International Botanical Congress in Melbourne in 2011.

38.5 The names of a genus and a species may be validly published simultaneously by provision of a single description (descriptio generico-specifica) or diagnosis, even though this may have been intended as only generic or specific, if all of the following conditions are satisfied: (a) the genus is at that time monotypic (see Art. 38.6); (b) no other names (at any rank) have previously been validly published based on the same type; and (c) the names of the genus and species otherwise fulfil the requirements for valid publication. Reference to an earlier description or diagnosis is not acceptable in place of a descriptio generico-specifica.

38.6 For the purpose of Art. 38.5, a monotypic genus is one for which a single binomial is validly published even though the author may indicate that other species are attributable to the genus.

Ex.8. Nylander (1879) described the new species “*Anema nummulariellum*” in a new genus “*Anema*” without providing a generic description or diagnosis. Since at the same time he also transferred *Omphalaria nummularia* Durieu & Mont. to “*Anema*”, none of his names was validly published. They were later validly published by Forsell (1885).

Ex.9. The names *Kedarnatha* P. K. Mukh. & Constance (1986) and *K. sanctuarii* P. K. Mukh. & Constance, the latter designating the single, new species of the new genus, are both validly published although a Latin description was provided only under the generic name.



*Ex.10. Piptolepis phillyreoides* Benth. (1840) was a new species assigned to the monotypic new genus *Piptolepis*. Both names were validly published with a combined generic and specific description.

*Ex.11.* In publishing "*Phaelypea*" without a generic description or diagnosis, Browne (Civ. Nat. Hist. Jamaica: 269. 1756) included and described a single species, but he gave the species a phrase name not a validly published binomial. Art. 38.5 does not therefore apply and "*Phaelypea*" is not a validly published name.

38.7 For the purpose of Art. 38.5, prior to 1 January 1908, an illustration with analysis (see Art. 38.9 and 38.10) is acceptable in place of a written description or diagnosis.

*Ex.12.* The generic name *Philgamia* Baill. (1894) was validly published, as it appeared on a plate with analysis of the only included species, *P. hibbertioides* Baill.

38.8 The name of a new species or infraspecific taxon published before 1 January 1908 may be validly published even if only accompanied by an illustration with analysis (see Art. 38.9 and 38.10).

*Ex.13.* When Velloso (in Fl. Flumin. Icon. 11: ad t. 67. 1831) published "*Polypodium subulatum*", only an illustration of part of a frond, without analysis, was presented. This drawing does not fulfill the provisions of Art. 38.8, thus this name was not validly published there, but was validly published when Velloso's fern species descriptions appeared (in Arch. Mus. Nac. Rio de Janeiro 5: 447. 1881).

38.9 For the purpose of this *Code*, an analysis is a figure or group of figures, commonly separate from the main illustration of the organism (though usually on the same page or plate), showing details aiding identification, with or without a separate caption (see also Art. 38.10).

*Ex.14. Panax nossibiensis* Drake (1896) was validly published on a plate with analysis.

38.10 For organisms other than vascular plants, single figures showing details aiding identification are considered as illustrations with analysis (see also Art. 38.9).

*Ex.15. Eunotia gibbosa* Grunow (1881), a name of a diatom, was validly published by provision of a figure of a single valve.

38.11 For the purpose of valid publication of a name of a new taxon, reference to a previously and effectively published description or diagnosis is restricted as follows: (a) for a name of a family or subdivision of a family, the earlier description or diagnosis must be that of a family or subdivision of a family; (b) for a name of a genus or subdivision of a genus, the earlier description or diagnosis must be that of a genus or subdivision of a genus; and (c) for a name of a species or infraspecific taxon, the earlier description or diagnosis must be that of a species or infraspecific taxon (but see Art. 38.12).

*Ex.16. "Pseudoditrichaceae fam. nov."* (Steere & Iwatsuki in Canad. J. Bot. 52: 701. 1974) was not a validly published name of a family as there was no Latin description or diagnosis nor reference to either, but only mention of the single included genus and species (see Art. 36.1(d)), as "*Pseudoditrichum mirabile* gen. et sp. nov.", the names of which were both validly published under Art. 38.5 by a single Latin diagnosis.

*Ex.17.* Presl did not validly publish "*Cuscuteae*" (in Presl & Presl, Delic. Prag.: 87. 1822) as the name of a family (see "*Praemonenda*", pp. [3-4]) by direct reference to the previously and effectively published description of "*Cuscuteae*" (Berchtold & Presl, Přir. Rostlin: 247. 1820) because the latter is the name of an order (see Art. 18 \*Ex. 5).

*Ex.18. Scirpoides* Ség. (Pl. Veron. Suppl.: 73. 1754) was published without a generic description or diagnosis. It was validly published by indirect reference (through the title of the book and a general

statement in the preface) to the generic diagnosis and further direct references in Séguier (Pl. Veron. 1: 117. 1745).

*Ex.19.* As Art. 38.11 places no restriction on names at ranks higher than family, *Eucommiales* Němejc ex Cronquist (Integr. Syst. Class. Fl. Pl.: 182. 1981) was validly published by Cronquist, who provided a full and direct reference to the Latin description associated with the genus *Eucommia* Oliv. (1890).

**38.12** A name of a new species may be validly published by reference (direct or indirect; see Art. 38.13 and 38.14) to a description or diagnosis of a genus, if the following conditions are satisfied: (a) the name of the genus was previously and validly published simultaneously with its description or diagnosis and (b) neither the author of the name of the genus nor the author of the name of the species indicates that more than one species belongs to the genus in question.

*Ex.20.* *Trilepisium* Thouars (1806) was validated by a generic description but without mention of a name of a species. *Trilepisium madagascariense* DC. (1825) was subsequently proposed without a description or diagnosis of the species and with the generic name followed by a reference to Thouars. Neither author gave any indication that there was more than one species in the genus. Candolle's species name is therefore validly published.

**38.13** For the purpose of valid publication of a name of a new taxon, reference to a previously and effectively published description or diagnosis may be direct or indirect (Art. 38.14). For names published on or after 1 January 1953 it must, however, be full and direct as specified in Art. 41.5.

**38.14** An indirect reference is a clear (if cryptic) indication, by an author citation or in some other way, that a previously and effectively published description or diagnosis applies.

*Ex.21.* "*Kratzmannia*" (Opiz in Berchtold & Opiz, Oekon.-Techn. Fl. Böhm. 1: 398. 1836) was published with a diagnosis but was not definitely accepted by the author and therefore was not validly published under Art. 36.1(a). *Kratzmannia* Opiz (Seznam: 56. 1852), lacking description or diagnosis, is however definitely accepted, and its citation as "*Kratzmannia* O." constitutes an indirect reference to the diagnosis published in 1836.

#### Recommendation 38A

**38A.1** A name of a new taxon should not be validated solely by a reference to a description or diagnosis published before 1753.

#### Recommendation 38B

**38B.1** The description of any new taxon should mention the points in which the taxon differs from its allies.

#### Recommendation 38C

**38C.1** When naming a new taxon, authors should not adopt a name that has been previously but not validly published for a different taxon.

#### Recommendation 38D

**38D.1** In describing or diagnosing new taxa, authors should, when possible, supply figures with details of structure as an aid to identification.

**38D.2** In the explanation of figures, authors should indicate the specimen(s) on which they are based (see also Rec. 8A.2).

38D.3 Authors should indicate clearly and precisely the scale of the figures that they publish.

#### Recommendation 38E

38E.1 Descriptions or diagnoses of new taxa of parasitic organisms, especially fungi, should always be followed by indication of the hosts. The hosts should be designated by their scientific names and not solely by names in modern languages, the application of which is often doubtful.

### Article 39

39.1 In order to be validly published, a name of a new taxon (algae and fossils excepted) published between 1 January 1935 and 31 December 2011, inclusive, must be accompanied by a Latin description or diagnosis or by a reference (Art. 38.13) to a previously and effectively published Latin description or diagnosis (but see Art. H.9; for fossils see Art. 43.1; for algae see Art. 44.1).

*Ex.1.* *Arabis* "Sekt. *Brassicoturritis* O. E. Schulz" and "Sekt. *Brassicarabis* O. E. Schulz" (in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 17b: 543-544. 1936), published with German but no Latin descriptions or diagnoses, are not validly published names.

*Ex.2.* "*Schiedea gregoriana*" (Degener, Fl. Hawaiiensis, fam. 119. 9 Apr 1936) was accompanied by an English but no Latin description and is not therefore a validly published name. *Schiedea kealiae* Caum & Hosaka (in Occas. Pap. Bernice Pauahi Bishop Mus. 11(23): 3. 10 Apr 1936), the type of which is part of the material used by Degener, is provided with a Latin description and is validly published.

*Ex.3.* *Alyssum flahaultianum* Emb., first published without a Latin description or diagnosis (in Bull. Soc. Hist. Nat. Maroc 15: 199. 1936), was validly published posthumously when a Latin translation of Emberger's original French description was provided (in Willdenowia 15: 62-63. 1985).

*Ex.4.* "*Malvidae*" was not validly published by Wu (in Acta Phytotax. Sin. 40: 308. 2002) by reference to "*Malvaceae*" (Adanson, Fam. Pl. 2: 390. 1763) because the latter was associated with a description in French, not a description or diagnosis in Latin as required by Art. 39.1. *Malvidae* was later validly published by Thorne & Reveal (in Bot. Rev. 73: 111. 2007).

39.2 In order to be validly published, a name of a new taxon published on or after 1 January 2012 must be accompanied by a Latin or English description or diagnosis or by a reference (Art. 38.13) to a previously and effectively published Latin or English description or diagnosis (for fossils see also Art. 43.1).

#### Recommendation 39A

39A.1 Authors publishing names of new taxa should give or cite a full description in Latin or English in addition to the diagnosis.

### Article 40

40.1 Publication on or after 1 January 1958 of the name of a new taxon of the rank of genus or below is valid only when the type of the name is indicated (see Art. 7-10; but see Art. H.9 Note 1 for the names of certain hybrids).

40.2 For the name of a new species or infraspecific taxon, indication of the type as required by Art. 40.1 can be achieved by reference to an entire gathering, or a part thereof, even if it consists of two or more specimens as defined in Art. 8 (see also Art. 40.7).

*Ex.1.* When Cheng described "*Gnetum cleistostachyum*" (in *Acta Phytotax. Sin.* 13(4): 89. 1975) the name was not validly published because two gatherings were designated as types: *K. H. Tsai 142* (as "♀ Typus") and *X. Jiang 127* (as "♂ Typus").

*Note 1.* When the type is indicated by reference to an entire gathering, or a part thereof, that consists of more than one specimen, those specimens are syntypes (see Art. 9.5).

*Ex.2.* The protologue of *Laurentia frontidentata* E. Wimm. (in Engler, *Pflanzenr.* IV. 276 (Heft 108): 855. 1968) includes the type statement "*E. Esterhuysen No. 17070!* Typus – Pret., Bol." The name is validly published because a single gathering is cited, despite the mention of duplicate specimens (syntypes) in two different herbaria.

**40.3** For the name of a new genus or subdivision of a genus, reference (direct or indirect) to a single species name, or citation of the holotype or lectotype of a single previously or simultaneously published species name, even if that element is not explicitly designated as type, is acceptable as indication of the type (see also Art. 22.6; but see Art. 40.6). Similarly, for the name of a new species or infraspecific taxon, mention of a single specimen or gathering (Art. 40.2) or illustration (when permitted by Art. 40.4 or 40.5), even if that element is not explicitly designated as type, is acceptable as indication of the type (but see Art. 40.6).

*Ex.3.* "*Baloghia pininsularis*" was published by Guillaumin (in *Mém. Mus. Natl. Hist. Nat., B, Bot.* 8: 260. 1962) with two cited gatherings: *Baumann 13813* and *Baumann 13823*. As the author failed to designate one of them as the type, he did not validly publish the name. Valid publication was effected when McPherson & Tirel (in *Fl. Nouv.-Caléd.* 14: 58. 1987) wrote "Lectotype (désigné ici): *Baumann-Bodenheim 13823* (P!; iso-, Z)" while providing a full and direct reference to Guillaumin's Latin description (Art. 33.1; see Art. 46 Ex. 20); McPherson & Tirel's use of "lectotype" is correctable to "holotype" under Art. 9.9.

*Note 2.* Mere citation of a locality does not constitute mention of a single specimen or gathering. Concrete reference to some detail relating to the actual type, such as the collector's name or collecting number or date, is required.

*Note 3.* Cultures of algae and fungi preserved in a metabolically inactive state are acceptable as types (Art. 8.4; see also Rec. 8B.1).

**40.4** For the purpose of Art. 40, the type of a name of a new species or infraspecific taxon (fossils excepted: see Art. 8.5) may be an illustration prior to 1 January 2007; on or after that date, the type must be a specimen (except as provided in Art. 40.5).

*Ex.4.* "*Dendrobium sibuyanense*" (see Art. 8 Ex. 6) was described with a living collection indicated as holotype and was not therefore validly published. It was not validly published later, when Lubag-Arquiza & Christenson (in *Orchid Digest* 70: 174. 2006) designated a published drawing as "lectotype", contrary to Art. 40.6, which does not permit use of the term "lectotype" in naming a new species starting from 1 January 1990. Nor was valid publication effected when Clements & Cootes (in *Orchideen J.* 2009: 27-28. 2009) published "*Euphlebium sibuyanense*" for this taxon, because after 1 January 2007 their indication of this drawing as holotype was precluded by Art. 40.4.

**40.5** For the purpose of Art. 40, the type of a name of a new species or infraspecific taxon of microscopic algae or microfungi (fossils excepted: see Art. 8.5) may be an effectively published illustration if there are technical difficulties of preservation or if it is impossible to preserve a specimen that would show the features attributed to the taxon by the author of the name.

**40.6** For the name of a new taxon of the rank of genus or below published on or after 1 January 1990, indication of the type must include one of the words "typus" or "holotypus", or its abbreviation, or its equivalent in a modern language (see also Rec. 40A.1 and 40A.2). But in the case of the name of a monotypic (as defined in Art.

38.6) new genus or subdivision of a genus with the simultaneously published name of a new species, indication of the type of the species name is sufficient.

*Ex.5.* “*Crataegus laurentiana* var. *dissimilifolia*” was not validly published by Kruschke (in Publ. Bot. Milwaukee Public Mus. 3: 35. 1965), because, contrary to Art. 40, two gatherings were cited as “type”. Phipps (in J. Bot. Res. Inst. Texas 3: 242. 2009) made a full and direct reference to Kruschke’s Latin diagnosis (Art. 7.7) but termed *Kruschke K-49-145* as “lectotype”. As he did not use either of the terms “typus” or “holotypus”, nor one of their abbreviations or equivalents in a modern language, Phipps did not validly publish the name.

40.7 For the name of a new species or infraspecific taxon published on or after 1 January 1990 of which the type is a specimen or unpublished illustration, the single herbarium or collection or institution in which the type is conserved must be specified (see also Rec. 40A.3 and 40A.4).

*Ex.6.* In the protologue of *Setaria excurrens* var. *leviflora* Keng ex S. L. Chen (in Bull. Nanjing Bot. Gard. 1988-1989: 3. 1990) the gathering *Guangxi Team 4088* was indicated as “模式” [“type”] and the herbarium where the type is conserved was specified as “中国科学院植物研究所标本室” [“Herbarium, Institute of Botany, The Chinese Academy of Sciences”], i.e. PE.

*Note 4.* Specification of the herbarium or collection or institution may be made in an abbreviated form, e.g. as given in *Index herbariorum, part I*, or in the *World directory of collections of cultures of microorganisms*.

*Ex.7.* When ‘t Hart described “*Sedum eriocarpum* subsp. *spathulifolium*” (in Ot Sist. Bot. Dergisi 2(2): 7. 1995) the name was not validly published because no herbarium or collection or institution in which the holotype specimen was conserved was specified. Valid publication was effected when ‘t Hart (in Strid & Tan, Fl. Hellen. 2: 325. 2002) wrote “Type ... ‘t Hart HRT-27104 ... (U)” while providing a full and direct reference to his previously published Latin diagnosis (Art. 33.1).

#### Recommendation 40A

40A.1 The indication of the nomenclatural type should immediately follow the description or diagnosis and should include the Latin word “typus” or “holotypus”.

40A.2 Details of the type specimen of the name of a new species or infraspecific taxon should be published in Roman script.

40A.3 Specification of the herbarium or collection or institution of deposition (see Art. 40 Note 4) should be followed by any available number permanently identifying the holotype specimen (see also Rec. 9D.1).

*40A.Ex.1* The type of *Sladenia integrifolia* Y. M. Shui & W. H. Chen (2002) was designated as “*Mo Ming-Zhong, Mao Rong-Hua & Yu Zhi-Yong 05* (holotype, KUN 0735701; isotypes, MO, PE)”, where 0735701 is the unique identifier of the holotype sheet in the herbarium of the Kunming Institute of Botany (KUN).

40A.4 Citation of the herbarium or collection or institution of deposition should use one of the standards mentioned in Art. 40 Note 4.

### SECTION 3. New combinations, names at new ranks, replacement names

#### Article 41

41.1 In order to be validly published, a new combination, name at new rank, or replacement name (see Art. 6.10 and 6.11), must be accompanied by a reference to the basionym or replaced synonym.

41.2 For the purpose of valid publication of a new combination, name at new rank, or replacement name, the following restrictions apply: (a) for a name of a family or subdivision of a family, the basionym or replaced synonym must be a name of a family or subdivision of a family; (b) for a name of a genus or subdivision of a genus, the basionym or replaced synonym must be a name of a genus or subdivision of a genus; and (c) for a name of a species or infraspecific taxon, the basionym or replaced synonym must be a name of a species or infraspecific taxon.

*Ex.1.* *Thuspeinanta* T. Durand (1888) is a replacement name for *Tapeinanthus* Boiss. ex Benth. (1848) non Herb. (1837); *Aspalathoides* (DC.) K. Koch (1853) is based on *Anthyllis* sect. *Aspalathoides* DC. (Prodr. 2: 169. 1825).

41.3 Before 1 January 1953 an indirect reference (see Art. 38.14) to a basionym or replaced synonym is sufficient for valid publication of a new combination, name at new rank, or replacement name. Thus, errors in the citation of the basionym or replaced synonym, or in author citation (Art. 46), do not affect valid publication of such names.

*Ex.2.* The name "*Persicaria runcinata* (Hamilt.)" was included in a list of names by Masamune (in Bot. Mag. (Tokyo) 51: 234. 1937) with no further information. The name *Polygonum runcinatum* was validly published by Don (Prodr. Fl. Nepal.: 73. 1825) and ascribed there to "Hamilton mss". The mention by Masamune of "Hamilt." is regarded as an indirect reference through Buchanan-Hamilton to the basionym published by Don, and thus the new combination *Persicaria runcinata* (Buch.-Ham. ex D. Don) Masam. was validly published.

*Ex.3.* Opiz validly published the name at new rank *Hemisphace* (Benth.) Opiz (1852) by writing "*Hemisphace* Benth.", which is regarded as an indirect reference to the basionym *Salvia* sect. *Hemisphace* Benth. (Labiata. Gen. Spec.: 193. 1833).

*Ex.4.* The new combination *Cymbopogon martini* (Roxb.) Will. Watson (1882) is validly published through the cryptic notation "309", which, as explained at the top of the same page, is the running-number of the species (*Andropogon martini* Roxb.) in Steudel (Syn. Pl. Glumac. 1: 388. 1854). Although the reference to the basionym *A. martini* is indirect, it is unambiguous (but see Art. 33 Ex. 1; see also Rec. 60C.2).

*Ex.5.* Miller (1768), in the preface to *The gardeners dictionary*, ed. 8, stated that he had "now applied Linnaeus's method entirely except in such particulars ...", of which he gave examples. In the main text, he often referred to Linnaean genera under his own generic headings, e.g. to *Cactus* L. [pro parte] under *Opuntia* Mill. Therefore an implicit reference to a Linnaean binomial may be assumed when this is appropriate, and Miller's binomials are accepted as new combinations (e.g. *O. ficus-indica* (L.) Mill., based on *C. ficus-indica* L.) or replacement names (e.g. *O. vulgaris* Mill., based on *C. opuntia* L.: both names have the reference to "*Opuntia vulgo herbariorum*" of Bauhin & Cherler in common).

41.4 If, for a name of a genus or taxon of lower rank published before 1 January 1953, no reference to a basionym is given but the conditions for its valid publication as the name of a new taxon or replacement name are fulfilled, that name is nevertheless treated as a new combination or name at new rank when this was the author's presumed intent and a potential basionym (Art. 6.10) applying to the same taxon exists.

*Ex.6.* In Kummer's *Führer in die Pilzkunde* (1871) the note (p. 12) explaining that the author intended to adopt at generic rank the subdivisions of *Agaricus* then in use, which at the time were those of Fries, and the general arrangement of the work, which faithfully follows that of Fries, have been considered to provide indirect reference to Fries's earlier names of "tribes" as basionyms. Even though this was Kummer's presumed intent, he did not actually mention Fries, and it is questionable whether he gave any reference, even indirect, to a basionym. However, even when Art. 41.3 is not considered to apply, as Kummer by providing diagnoses in a key fulfilled the conditions for valid publication of names of new taxa, Art. 41.4 rules that names such as *Hypholoma* (Fr. : Fr.) P. Kumm. and *H. fasciculare* (Huds. : Fr.) P.

Kumm. are to be accepted as new combinations or names at new rank based on the corresponding Friesian names (here: A. "tribus" *Hypholoma* Fr. : Fr. and A. *fascicularis* Huds. : Fr.)

Ex.7. *Scaevola taccada* was validly published by Roxburgh (1814) by reference to an illustration in Rheede (Hort. Malab. 4: t. 59. 1683) that appears to be its sole basis. As the name applies to the species previously described as *Lobelia taccada* Gaertn. (1788), it is treated as a new combination, *S. taccada* (Gaertn.) Roxb., not as the name of a new species, even though in Roxburgh's protologue there is no reference, either direct or indirect, to *L. taccada*.

Ex.8. When Moench (Methodus: 272. 1794) described *Chamaecrista*, he did not refer to *Cassia* [unranked] *Chamaecrista* L. (Sp. Pl.: 379. 1753) but used its epithet as the generic name and included its type, *Cassia chamaecrista* L. (cited in synonymy). Therefore, he published a name at new rank, *Chamaecrista* (L.) Moench, and not a name of a new genus.

Ex.9. *Brachiolejeunea* was published by Stephani & Spruce (in Hedwigia 28: 167. 1889) for a taxon that had previously been described as *Lejeunea* subg. *Brachiolejeunea* Spruce (in Trans. & Proc. Bot. Soc. Edinburgh 15: 75, 129. 1884) but without even an indirect reference to Spruce's earlier publication. Because Stephani & Spruce provided a description of *B. plagiochiloides* that under Art. 38.5 is acceptable as a descriptio generico-specifica of a monotypic genus, *Brachiolejeunea* fulfils the requirements for valid publication as the name of a new genus. Under Art. 41.4, it is therefore to be treated as a name at new rank, *Brachiolejeunea* (Spruce) Stephani & Spruce, based on Spruce's subgeneric name.

Ex.10. When Sampaio published "*Psoroma murale* Samp." (in Bol. Real Soc. Esp. Hist. Nat. 27: 142. 1927), he adopted the epithet of *Lichen muralis* Schreb. (1771), a name applied to the same taxon, without referring to that name either directly or indirectly. He cited *Lecanora saxicola* Ach. in synonymy. Under Art. 41.4, *Psoroma murale* is treated as a new combination based on *Lichen muralis*; otherwise it would be a validly published but illegitimate replacement name for *Lecanora saxicola*.

41.5 On or after 1 January 1953, a new combination, name at new rank, or replacement name is not validly published unless its basionym or replaced synonym is clearly indicated and a full and direct reference given to its author and place of valid publication, with page or plate reference and date (but see Art. 41.6 and 41.8). On or after 1 January 2007, a new combination, name at new rank, or replacement name is not validly published unless its basionym or replaced synonym is cited.

Ex.11. In transferring *Ectocarpus mucronatus* D. A. Saunders to *Giffordia*, Kjeldsen & Phinney (in Madrono 22: 90. 27 Apr 1973) cited the basionym and its author but without reference to its place of valid publication. They later (in Madrono 22: 154. 2 Jul 1973) validly published the new combination *G. mucronata* (D. A. Saunders) Kjeldsen & H. K. Phinney by giving a full and direct reference to the place of valid publication of the basionym.

Note 1. For the purpose of Art. 41.5, a page reference (for publications with a consecutive pagination) is a reference to the page or pages on which the basionym or replaced synonym was validly published or on which the protologue appears, but not to the pagination of the whole publication unless it is coextensive with that of the protologue (see also Art. 30 Note 2).

Ex.12. When proposing "*Cylindrocladium infestans*", Peerally (in Mycotaxon 40: 337. 1991) cited the basionym as "*Cylindrocladiella infestans* Boesew., Can. J. Bot. 60: 2288-2294. 1982". As this refers to the pagination of Boesewinkel's entire paper, not of the protologue of the intended basionym alone, the combination was not validly published by Peerally.

Ex.13. The new combination *Conophytum marginatum* subsp. *littlewoodii* (L. Bolus) S. A. Hammer (Dumpling & His Wife: New Views Gen. Conophytum: 181. 2002), being made prior to 1 January 2007, was validly published even though Hammer did not cite the basionym (*C. littlewoodii* L. Bolus) but only indicated it by giving a full and direct reference to its place of valid publication.

41.6 For names published on or after 1 January 1953, errors in the citation of the basionym or replaced synonym, including incorrect author citation (Art. 46), but not omissions (Art. 41.5), do not preclude valid publication of a new combination, name at new rank, or replacement name.

*Ex.14.* *Aronia arbutifolia* var. *nigra* (Willd.) F. Seym. (Fl. New England: 308. 1969) was published as a new combination “Based on *Mespilus arbutifolia* L. var. *nigra* Willd., in Sp. Pl. 2: 1013. 1800.” Willdenow treated these plants in the genus *Pyrus*, not *Mespilus*, and publication was in 1799, not 1800; these errors of citation do not prevent valid publication of the new combination.

*Ex.15.* The name at new rank *Agropyron desertorum* var. *pilosiusculum* (Melderis) H. L. Yang (in Kuo, Fl. Reipubl. Popularis Sin. 9(3): 113. 1987) was inadvertently but validly published by Yang, who wrote “*Agropyron desertorum* ... var. *pilosiusculum* Meld. in Norlindh, Fl. Mong. Steppe. 1: 121. 1949”, which constitutes a full and direct reference to the basionym, *A. desertorum* f. *pilosiusculum* Melderis, despite the error in citing the rank-denoting term.

41.7 Mere reference to the *Index kewensis*, the *Index of fungi*, or any work other than that in which the name was validly published does not constitute a full and direct reference to the place of publication of a name (but see Art. 41.8).

*Note 2.* For the purposes of Art. 41.7 an early version of an unpaginated or independently paginated electronic publication and a later version with definitive pagination are not considered to be different publications (Art. 30 Note 2).

*Ex.16.* Ciferri (in Mycopathol. Mycol. Appl. 7: 86-89. 1954), in proposing 142 intended new combinations in *Meliola*, omitted references to places of publication of basionyms, stating that they could be found in Petrak’s lists or in the *Index of fungi*; none of these combinations was validly published. Similarly, Grumann (Cat. Lich. Germ.: 18. 1963) introduced a new combination in the form *Lecanora campestris* f. “*pseudistera* (Nyl.) Grumm. c.n. – L. p. Nyl., Z 5: 521”, in which “Z 5” referred to Zahlbruckner (Cat. Lich. Univ. 5: 521. 1928), who gave the full citation of the basionym, *Lecanora pseudistera* Nyl.; Grumann’s combination was not validly published.

*Note 3.* A new name published for a taxon previously known under a misapplied name is always the name of a new taxon and must therefore meet all relevant requirements of Art. 32-45 for valid publication of such a name. This procedure is not the same as publishing a replacement name for a validly published but illegitimate name (Art. 58.1), the type of which is necessarily that of the replaced synonym (Art. 7.4).

*Ex.17.* *Sadleria hillebrandii* Rob. (1913) was introduced as a “nom. nov.” for “*Sadleria pallida* Hilleb. Fl. Haw. Is. 582. 1888. Not Hook. & Arn. Bot. Beech. 75. 1832.” Since the requirements for valid publication were satisfied (prior to 1935, simple reference to a previous description or diagnosis in any language was sufficient), the name is a validly published name of a new species, validated by Hillebrand’s description of the taxon to which he misapplied the name *S. pallida* Hook. & Arn., but not a replacement name as stated by Robinson.

*Ex.18.* “*Juncus bufonius* var. *occidentalis*” (Hermann in U.S. Forest Serv., Techn. Rep. RM-18: 14. 1975) was published as a “nom. et stat. nov.” for *J. sphaerocarpus* “auct. Am., non Nees”. Since there is no Latin description or diagnosis, indication of type, or reference to any previous publication providing these requirements, this is not a validly published name.

41.8 On or after 1 January 1953, in any of the following cases, a full and direct reference to a work other than that in which the basionym or replaced synonym was validly published is treated as an error to be corrected, not affecting the valid publication of a new combination, name at new rank, or replacement name:



(a) when the name cited as the basionym or replaced synonym was validly published earlier than in the cited publication, but in that cited publication, in which all conditions for valid publication are again fulfilled, there is no reference to the actual place of valid publication;

(b) when the failure to cite the place of valid publication of the basionym or replaced synonym is explained by the later nomenclatural starting-point for the group concerned, or by the backward shift of the starting date for some fungi;

(c) when an intended new combination or name at new rank would otherwise be validly published as a (legitimate or illegitimate) replacement name; or

(d) when an intended new combination, name at new rank, or replacement name would otherwise be the validly published name of a new taxon.

Ex.19. (a) The new combination *Trichipteris kalbreyeri* was proposed by Tryon (1970) with a full and direct reference to "*Alsophila Kalbreyeri* C. Chr. Ind. Fil. 44. 1905". This, however, is not the place of valid publication of the intended basionym, which had previously been published, with the same type, by Baker (1892; see Art. 6 Ex. 1). As Christensen provided no reference to Baker's earlier publication, Tryon's error of citation does not affect the valid publication of his new combination, which is to be cited as *T. kalbreyeri* (Baker) R. M. Tryon.

Ex.20. (a) The intended new combination "*Machaerina iridifolia*" was proposed by Koyama (in Bot. Mag. (Tokyo) 69: 64. 1956) with a full and direct reference to "*Cladium iridifolium* Baker, Flor. Maurit. 424 (1877)". However, *C. iridifolium* had been proposed by Baker as a new combination based on *Scirpus iridifolius* Bory (1804). As Baker provided an explicit reference to Bory, Art. 41.8(a) does not apply and the combination under *Machaerina* was not validly published by Koyama.

Ex.21. (b) The combination *Lasiobelonium corticale* was proposed by Raitviir (1980) with a full and direct reference to *Peziza corticalis* in Fries (Syst. Mycol. 2: 96. 1822). This, however, is not the place of valid publication of the basionym, which, under the *Code* operating in 1980, was in Mérat (Nouv. Fl. Env. Paris, ed. 2, 1: 22. 1821), and under the current *Code* is in Persoon (Observ. Mycol. 1: 28. 1796). Raitviir's error of citation, being partly explained by the backward shift of the starting date for most fungi and partly by the absence of a reference to Mérat in Fries's work, does not prevent valid publication of the new combination, which is to be cited as *L. corticale* (Pers. : Fr.) Raitv.

Ex.22. (c) The new combination *Mirabilis laevis* subsp. *glutinosa* was proposed by Murray (in Kalmia 13: 32. 1983) with a full and direct reference to "*Mirabilis glutinosa* A. Nels., Proc. Biol. Soc. Wash. 17: 92 (1904)" as the intended basionym. This, however, cannot be a basionym because it is an illegitimate later homonym of *M. glutinosa* Kuntze (1898); it is also the replaced synonym of *Hesperonia glutinosa* Standl. (1909). Under Art. 41.8(c) Murray validly published a new combination based on *H. glutinosa* because otherwise he would have published a replacement name for *M. glutinosa*. The name is therefore to be cited as *M. laevis* subsp. *glutinosa* (Standl.) A. E. Murray.

Ex.23. (c) The new combination *Tillandsia barclayana* var. *minor* was proposed by Butcher (in Bromeliaceae 43(6): 5. 2009) with a reference, but not a full and direct one, to *Vriesea barclayana* var. *minor* Gilmartin (in Phytologia 16: 164. 1968). Butcher also provided a full and direct reference to *T. lateritia* André (1888), which is the replaced synonym of *V. barclayana* var. *minor*. Under Art. 41.8(c), *T. barclayana* var. *minor* (Gilmartin) Butcher was validly published as a new combination based on *V. barclayana* var. *minor* because it would otherwise have been published as a replacement name for *T. lateritia*.

Ex.24. (d) The replacement name *Agropyron kengii* was proposed by Tzvelev (1968) with a full and direct reference to "*Roegneria hirsuta* Keng, Fl. ill. sin., Gram. (1959) 407". This, however, is not the place of valid publication of the intended replaced synonym, which was subsequently validly published by Keng

(1963). As Tzvelev also provided a Latin description and indicated a single gathering as the type, the replacement name was validly published as such because it would otherwise have been the validly published name of a new taxon.

#### Recommendation 41A

**41A.1** The full and direct reference to the place of publication of the basionym or replaced synonym should immediately follow a proposed new combination, name at new rank, or replacement name. It should not be provided by mere cross-reference to a bibliography at the end of the publication or to other parts of the same publication, e.g. by use of the abbreviations “loc. cit.” or “op. cit.”

### SECTION 4. Names in particular groups

#### Article 42

**42.1** For names of new taxa, new combinations, names at new ranks, or replacement names designating organisms treated as fungi (including fossil fungi and lichen-forming fungi) under this *Code* (Pre. 8) and published on or after 1 January 2013, the citation in the protologue of the identifier issued by a recognized repository for the name (Art. 42.3) is an additional requirement for valid publication.

*Ex.1.* The protologue of *Tetramelas thiopolizus* (Nyl.) Giralto & Clerc (2011) included the citation “MycoBank no.: MB561208”. Such citation of an identifier issued by a repository appointed by the Nomenclature Committee for Fungi (see Div. III) will be necessary for valid publication of new fungal names on or after 1 January 2013.

**42.2** For an identifier to be issued by a recognized repository as required by Art. 42.1, the minimum elements of information that must be accessioned by author(s) of scientific names are the name itself and those elements required for valid publication under Art. 38.1(a) and 39.2 (validating description or diagnosis) and Art. 40.1 and 40.7 (type) or 41.5 (reference to the basionym or replaced synonym). When accessioned and subsequently published information for a name with a given identifier differ, the published information is considered definitive.

*Note 1.* Issuance of an identifier by a recognized repository presumes subsequent fulfilment of the requirements for valid publication of the name (Art. 32-45) but does not in itself constitute or guarantee valid publication.

**42.3** The Nomenclature Committee for Fungi (see Div. III) has the power to (1) appoint one or more localized or decentralized, open and accessible electronic repositories to accession the information required by Art. 42.2 and issue the identifiers required by Art. 42.1; (2) cancel such appointment at its discretion; and (3) set aside the requirements of Art. 42.1 and 42.2, should the repository mechanism, or essential parts thereof, cease to function. Decisions made by this Committee under these powers are subject to ratification by a subsequent International Mycological Congress.

#### Recommendation 42A

**42A.1** Authors of names of organisms treated as fungi are encouraged to (a) deposit the required elements of information for any nomenclatural novelty in a recognized repository as soon as possible after a work is accepted for publication, so as to obtain accession identifiers; and (b) inform the recognized repository of the complete bibliographical details upon publication of the name, including volume and part number, page number, date of publication, and (for books) the publisher and place of publication.

**42A.2** In addition to meeting the requirements for effective publication of choices of name (Art. 11.5 and 53.6), orthography (Art. 61.3), or gender (Art. 62.3), those publishing such choices for names of organisms treated as

fungi are encouraged to record the choice in a recognized repository (Art. 42.3) and cite the accession identifier in the place of publication.

### Article 43

43.1 In order to be validly published, a name of a new fossil-taxon published on or after 1 January 1996 must be accompanied by a Latin or English description or diagnosis or by a reference (Art. 38.13) to a previously and effectively published Latin or English description or diagnosis.

*Note 1.* As Art.39.1 does not apply to names of fossil-taxa, a validating description or diagnosis (see Art. 38 in any language is acceptable for them prior to 1996.

43.2 A name of a new fossil-genus or lower ranked fossil-taxon published on or after 1 January 1912 is not validly published unless it is accompanied by an illustration or figure showing the essential characters or by a reference to a previously and effectively published such illustration or figure. For this purpose, in the case of a name of a fossil-genus or subdivision of a fossil-genus, citation of, or reference (direct or indirect) to, a name of a fossil-species validly published on or after 1 January 1912 will suffice.

*Ex.1.* “*Laconiella*” when published by Krasser (in Akad. Wiss. Wien Sitzungsber., Math.-Naturwiss. Kl. Abt. 1, 129: 16. 1920) included only one species, the intended name of which, “*Laconiella sardinica*”, was not validly published as no illustration or figure or reference to a previously and effectively published illustration or figure was provided. “*Laconiella*” is not, therefore, a validly published generic name.

*Ex.2.* *Batodendron* Chachlov (in Izv. Sibirsk. Otd. Geol. Komiteta 2(5): 9, fig. 23-25. 1921) was published with a description and illustrations. Even though the new fossil-genus did not include any named species, its name (an illegitimate later homonym of *Batodendron* Nutt. 1843) is validly published.

43.3 A name of a new fossil-species or infraspecific fossil-taxon published on or after 1 January 2001 is not validly published unless at least one of the validating illustrations is identified as representing the type specimen (see also Art. 9.15).

### Article 44

44.1 In order to be validly published, a name of a new taxon of non-fossil algae published between 1 January 1958 and 31 December 2011, inclusive, must be accompanied by a Latin description or diagnosis or by a reference (Art. 38.13) to a previously and effectively published Latin description or diagnosis.

*Note 1.* As Art.39.1 does not apply to names of algal taxa, a validating description or diagnosis (see Art. 38) in any language is acceptable for them prior to 1958.

*Ex.1.* Although *Neoptilota* Kylin (Gatt. Rhodophyc.: 392. 1956) was accompanied only by a description in German, it is a validly published name since it applies to an alga and was published before 1958.

44.2 A name of a new taxon of non-fossil algae of specific or lower rank published on or after 1 January 1958 is not validly published unless it is accompanied by an illustration or figure showing the distinctive morphological features, or by a reference to a previously and effectively published such illustration or figure.

#### Recommendation 44A

44A.1 The illustration or figure required by Art. 44.2 should be prepared from actual specimens, preferably including the holotype.

## Article 45

45.1 If a taxon originally assigned to a group not covered by this *Code* is treated as belonging to the algae or fungi, any of its names need satisfy only the requirements of the relevant other *Code* that the author was using for status equivalent to valid publication under this *Code* (but see Art. 54, regarding homonymy). The *Code* used by the author is determined through internal evidence, irrespective of any claim by the author as to the group of organisms to which the taxon is assigned. However, a name generated in zoological nomenclature in accordance with the Principle of Coordination is not validly published under this *Code* unless and until it actually appears in a publication as the accepted name of a taxon.

*Ex.1. Amphiprora* Ehrenb. (1843), available<sup>1</sup> under the *International Code of Zoological Nomenclature* as the name of a genus of animals, was first treated as belonging to the algae by Kützing (1844). Under the *International Code of Nomenclature for algae, fungi, and plants*, *Amphiprora* is validly published and dates from 1843, not 1844.

*Ex.2. Petalodinium* Cachon & Cachon-Enj. (in *Protistologia* 5: 16. 1969) is available under the *International Code of Zoological Nomenclature* as the name of a genus of dinoflagellates. When the taxon is treated as belonging to the algae, its name is validly published and retains its original authorship and date even though the original publication lacked a Latin description or diagnosis (Art. 44.1).

*Ex.3. Prochlorothrix hollandica* Burger-Wiersma & al. (in *Int. J. Syst. Bacteriol.* 39: 256. 1989) was published according to the *International Code of Nomenclature of Bacteria*. When the taxon is treated as an alga, its name is validly published and retains its original authorship and date even though it was based on a living culture (Art. 8.4) and the original publication lacked a Latin description or diagnosis (Art. 44.1).

*Ex.4. Labyrinthodictyon* Valkanov (in *Progr. Protozool.* 3: 373. 1969, '*Labyrinthodictyon*') is available under the *International Code of Zoological Nomenclature* as the name of a genus of rhizopods. When the taxon is treated as belonging to the fungi, its name is validly published and retains its original authorship and date even though the original publication lacked a Latin description or diagnosis (Art. 39.1).

*Ex.5. Protodiniferaceae* Kof. & Swezy (in *Mem. Univ. Calif.* 5: 111. 1921, '*Protodiniferidae*'), available under the *International Code of Zoological Nomenclature*, is validly published as a name of a family of algae and retains its original authorship and date but with the original termination changed in accordance with Art. 18.4 and 32.2.

*Ex.6. Pneumocystis* P. Delanoë & Delanoë (in *Compt. Rend. Hebd. Séances Acad. Sci.* 155: 660. 1912) was published for a "protozoan" genus with a description expressing doubt as to its generic status, "Si celui-ci doit constituer un genre nouveau, nous proposons de lui donner le nom de *Pneumocystis Carinii*". Under Art. 36.1(b) *Pneumocystis* would not be validly published, but Art. 11.5.1 of the *International Code of Zoological Nomenclature* allows for such qualified publication at that time. Therefore *Pneumocystis*, being an available name under the *ICZN*, is validly published under Art. 45.1.

*Ex.7. Pneumocystis jirovecii* Frenkel (in *Natl. Cancer Inst. Monogr.* 43: 16. 1976, '*jiroveci*'), treated as a protozoan, was published with only an English description and without designation of a type, but these conditions are no obstacle to availability under Art. 72.3 and Rec. 13B of the *International Code of Zoological Nomenclature*. Therefore, when considered the name of a fungus, *P. jirovecii*, with modified termination (Art. 60.12), is validly published under Art. 45.1. Subsequent publication of a Latin diagnosis by Frenkel (*J. Eukaryot. Microbiol.* 46: 91S. 1999), who treated the species as a fungus, was necessary under the edition of the *International Code of Botanical Nomenclature* in operation at that time, but is no longer so; *P. jirovecii* dates from 1976, not 1999.

*Note 1.* Names of *Microsporidia* are not covered by this *Code* (see Pre. 8 and Art. 13.1(d)) even when *Microsporidia* are considered as fungi.

*Note 2.* If a taxon originally assigned to a group not covered by this *Code* is treated as belonging to the plants (i.e. not the algae or fungi), the authorship and date of any of its names are determined by the first publication that satisfies the relevant requirements of Art. 32-45 for valid publication.

<sup>1</sup> The word “available” in the *International Code of Zoological Nomenclature* is equivalent to “validly published” in this Code.

## CHAPTER VI. Citation

### SECTION 1. Author citations

#### Article 46

46.1 In publications, particularly those dealing with taxonomy and nomenclature, it may be desirable, even when no bibliographic reference to the protologue is made, to cite the author(s) of the name concerned (see also Art. 22.1 and 26.1). In so doing, the following rules apply.

*Ex.1. Rosaceae* Juss., *Rosa* L., *Rosa gallica* L., *Rosa gallica* var. *eristyla* R. Keller, *Rosa gallica* L. var. *gallica*.

46.2 A name of a new taxon is attributed to the author(s) to whom the name was ascribed when the validating description or diagnosis was simultaneously ascribed to or unequivocally associated with the same author(s), even when authorship of the publication is different. A new combination, name at new rank, or replacement name is attributed to the author(s) to whom it was ascribed when, in the publication in which it appears, it is explicitly stated that the same author(s) contributed in some way to that publication. Art. 46.5 notwithstanding, authorship of a nomenclatural novelty is always accepted as ascribed, even when it differs from authorship of the publication, when at least one author is common to both.

*Ex.2.* The name *Viburnum ternatum* was published in Sargent (*Trees & Shrubs* 2: 37. 1907). It was ascribed to "Rehd.", and the account of the species has "Alfred Rehder" at the end. The name is therefore cited as *V. ternatum* Rehder.

*Ex.3.* In a paper by Hilliard & Burt (1986) names of new species of *Schoenoxiphium*, including *S. altum*, were ascribed to Kukkonen, preceded by a statement "The following diagnostic descriptions of new species have been supplied by Dr. I. Kukkonen in order to make the names available for use". The name is therefore cited as *S. altum* Kukkonen.

*Ex.4.* In Torrey & Gray (1838) the names *Calyptridium* and *C. monandrum* were ascribed to "Nutt. mss.", and the descriptions were enclosed in double quotes indicating that Nuttall wrote them, as acknowledged in the preface. The names are therefore cited as *Calyptridium* Nutt. and *C. monandrum* Nutt.

*Ex.5.* When publishing *Eucryphiaceae* (1848) the otherwise unnamed author "W.", in a review of Gay's *Flora chilena* (1845-1854), wrote "wird die Gattung *Eucryphia* als Typus einer neuen Familie, der *Eucryphiaceae*", thus ascribing both the name and its validating description to Gay (*Fl. Chil.* 1: 348. 1846), who had used the designation "Eucrifiáceas" (see Art. 18.4). The name is therefore cited as *Eucryphiaceae* Gay.

*Ex.6.* When Candolle wrote "*Elaeocarpeae*. Juss., *Ann. Mus.* 11, p. 233" he ascribed the name to Jussieu and, to validate it, used Jussieu's diagnosis of an unnamed family (in *Ann. Mus. Natl. Hist. Nat.* 11: 233. 1808). The name is therefore cited as *Elaeocarpaceae* Juss., not *Elaeocarpaceae* "Juss. ex DC."

*Ex.7.* Green (1985) ascribed the new combination *Neotysonia phyllostegia* to Wilson and elsewhere in the same publication acknowledged his assistance. The name is therefore cited as *N. phyllostegia* (F. Muell.) Paul G. Wilson.

*Ex.8.* The authorship of *Sophora tomentosa* subsp. *occidentalis* (L.) Brummitt (in *Kirkia* 5: 265. 1966) is accepted as originally ascribed, although the new combination was published in a paper authored jointly by Brummitt & Gillett.

*Note 1.* When authorship of a name differs from authorship of the publication in which it was validly published, both are sometimes cited, connected by the word “in”. In such a case, “in” and what follows are part of a bibliographic citation and are better omitted unless the place of publication is being cited.

*Ex.9.* The name and original description of *Verrucaria aethiobola* Wahlenb. (in Acharius, Methodus, Suppl.: 17. 1803) was in a single paragraph ascribed to “Wahlenb. Msc.” The name is therefore cited as *V. aethiobola* Wahlenb., not “Wahlenb. ex Ach.” nor “Wahlenb. in Ach.” (unless a full bibliographic citation is given).

*Ex.10.* The new combination *Crepis lyrata* was published in Candolle’s *Prodromus systematis naturalis regni vegetabilis* (7: 170. 1838), as “*C. lyrata* (Froel. in litt. 1837)”, and in a footnote on p. 160 Candolle acknowledged Froelich as having authored the account of the relevant section of *Crepis* (“Sectiones generis iv, v et vi, a cl. Froelich elaboratae sunt”). The name is therefore cited as *C. lyrata* (L.) Froel. or *C. lyrata* (L.) Froel. in Candolle (followed by a bibliographic citation of the place of publication), but not *C. lyrata* “(L.) Froel. ex DC.”

*Ex.11.* The name *Physma arnoldianum* was published in a paper authored by Arnold (in *Flora* 41: 94. 1858). Arnold introduced the name as “*Ph. Arnoldianum* Hepp. lit. 12. Decbr. 1857”, and the description is immediately followed by the phrase “Hepp. in lit.” The name is therefore cited as *P. arnoldianum* Hepp, not *P. arnoldianum* “Hepp ex Arnold”. As Arnold is the author of the paper, not of the whole work (the journal *Flora*), his name is not required even in a full bibliographic citation.

46.3 For the purposes of Art. 46, ascription is the direct association of the name of a person or persons with a new name or description or diagnosis of a taxon. An author citation appearing in a list of synonyms does not constitute ascription of the accepted name, nor does reference to a basionym or a replaced synonym (regardless of bibliographic accuracy) or reference to a homonym, or a formal error.

*Ex.12.* The name *Atropa sideroxyloides* was published in Roemer & Schultes (*Syst. Veg.* 4: 686. 1819), with the name and diagnosis in a single paragraph followed by “Reliq. Willd. MS.” As this represents direct association of Willdenow with both the name and the diagnosis, the name is cited as *A. sideroxyloides* Willd., not *A. sideroxyloides* “Roem. & Schult.” nor *A. sideroxyloides* “Willd. ex Roem. & Schult.”

*Ex.13.* *Sicyos triqueter* Moc. & Sessé ex Ser. (1830) was ascribed to Mociño and Sessé by Seringe’s writing “*S. triqueter* (Moc. & Sessé, fl. mex. mss.)”. However, *Malpighia emarginata* DC. (1824) was not ascribed to these authors by Candolle’s writing “*M. emarginata* (fl. mex. ic. ined.)”.

*Ex.14.* *Lichen debilis* Sm. (1812) was not ascribed to Turner and Borrer by Smith’s citing “*Calicium debile* Turn. and Borr. Mss.” as a synonym.

*Ex.15.* When Opiz (1852) wrote “*Hemisphace* Benth.” he did not ascribe the generic name to Bentham but provided an indirect reference to the basionym, *Salvia* sect. *Hemisphace* Benth. (see Art. 41 Ex. 3).

*Ex.16.* When Brotherus (1907) published “*Dichelodontium nitidum* Hook. fil. et Wils.” he provided an indirect reference to the basionym, *Leucodon nitidus* Hook. f. & Wilson, and did not ascribe the new combination to Hooker and Wilson. He did, however, ascribe to them the simultaneously published name of his new genus, *Dichelodontium*.

*Ex.17.* When Sheh & Watson (in Wu & al., *Fl. China* 14: 72. 2005) wrote “*Bupleurum hamiltonii* var. *paucefulcrans* C. Y. Wu ex R. H. Shan & Yin Li, *Acta Phytotax. Sin.* 12: 291. 1974” they did not ascribe the new combination to any of those authors but provided a full and direct reference to the basionym, *B. tenue* var. *paucefulcrans* C. Y. Wu ex R. H. Shan & Yin Li.

*Ex.18.* When Sirodot (1872) wrote “*Lemanea* Bory” he in fact published a later homonym (see Art. 48 Ex. 1). His reference to Bory’s earlier homonym is not therefore ascription of the later homonym, *Lemanea* Sirodot, to Bory.

*Ex.19.* Following their description of *Hosackia* [unranked] *Drepanolobus*, Torrey & Gray (Fl. N. Amer. 1: 324. 1838) attributed the name as “*Drepanolobus*, Nutt.” This reference to Nuttall’s unpublished generic designation is not ascription of *Hosackia* [unranked] *Drepanolobus* to Nuttall, but is considered a formal error because Torrey and Gray (on p. 322) stated that they disagreed with Nuttall’s view that *Drepanolobus* formed a distinct genus. The name is cited as *Hosackia* [unranked] *Drepanolobus* Torr. & A. Gray.

*Note 2.* When the name of a new taxon is validly published by reference to a previously and effectively published description or diagnosis (Art. 38.1(a)), the name of the author of that description or diagnosis, even if not explicitly mentioned, is unequivocally associated with it.

*Ex.20.* The appropriate author citation for *Baloghia pininsularis* (see Art. 40 Ex. 3) is Guillaumin, and not McPherson & Tirel, because in the protologue the name was ascribed to Guillaumin and a full and direct reference was given to Guillaumin’s earlier Latin description. Even though McPherson & Tirel did not explicitly ascribe the validating description to its author, Guillaumin, he is “unequivocally associated” with it.

*Ex.21.* “*Pancheria humboldtiana*” was published by Guillaumin (in Mém. Mus. Natl. Hist. Nat., Ser. B, Bot. 15: 47. 1964), but no type was indicated the name was not validly published. Valid publication was effected by Hopkins & Bradford (in *Adansonia* 31: 119. 2009), who designated “*Baumann-Bodenheim 15515* (P! P00143076)” as the holotype, ascribed the name to Guillaumin, and by citing “*Pancheria humboldtiana* Guillaumin, *Mémoires du Muséum national d’Histoire naturelle*, sér. B, botanique 15: 47 (1964), nom. inval.”, provided a full and direct reference to a validating description that is unequivocally associated with Guillaumin. Art. 46.10 notwithstanding, the name is therefore attributed to Guillaumin, not “Guillaumin ex H. C. Hopkins & J. Bradford” as given by Hopkins & Bradford.

*Note 3.* A name or its validating description or diagnosis is treated as though ascribed to the author(s) of the publication (as defined in Art. 46.6) when there is no ascription to or unequivocal association with a different author or different authors.

*Ex.22.* The name *Asperococcus pusillus* was published in Hooker (Brit. Fl., ed. 4, 2(1): 277. 1833), with the name and diagnosis ascribed simultaneously, at the end of the paragraph, to “Carm. MSS.” followed by a description ascribed similarly to Carmichael. Direct association of Carmichael with both the name and the diagnosis is evident, and the name must be cited as *A. pusillus* Carmich. However, the paragraph containing the name *A. castaneus* and its diagnosis, published by Hooker on the same page of the same work, ends with “*Scytosiphon castaneus*, Carm. MSS.” Because Carmichael is directly associated with “*S. castaneus*” and not *A. castaneus*, the latter name is correctly cited as *A. castaneus* Hook., the author of the publication, even though the description is ascribed to Carmichael.

*Ex.23.* Brown is accepted as the author of the treatments of genera and species appearing under his name in Aiton’s *Hortus kewensis*, ed. 2 (1810-1813), even when names of new taxa or the descriptions validating them are not explicitly ascribed to him. In a postscript to that work (5: 532. 1813), Aiton wrote: “Much new matter has been added by [Robert Brown] ... the greater part of his able improvements are distinguished by the signature *Brown mss.*” The latter phrase is therefore a statement of authorship not merely an ascription. For example, the combination *Oncidium triquetrum*, based by indirect reference on *Epidendrum triquetrum* Sw. (1788), is cited as *O. triquetrum* (Sw.) R. Br. (1813), and is not attributed to “R. Br. ex W. T. Aiton” nor to Aiton alone, because in the generic heading Brown is credited with authorship of the treatment of *Oncidium*.



46.4 When the epithet of a validly published name is taken up from and attributed to the author of a different binary designation that has not been validly published, only the author of the validly published name may be cited.

*Ex.24.* When publishing *Andropogon drummondii*, Steudel (1854) attributed the name to “Nees. (mpt. sub: Sorghum.)”. This reference to the unpublished binary designation “*Sorghum drummondii* Nees” is not ascription of *A. drummondii* to Nees, and the name is cited as *A. drummondii* Steud., not *A. drummondii* “Nees ex Steud.”

46.5 A name of a new taxon is attributed to the author(s) of the publication in which it appears when the name was ascribed to a different author or different authors but the validating description or diagnosis was neither ascribed to nor unequivocally associated with that author or those authors. A new combination, name at new rank, or replacement name is attributed to the author(s) of the publication in which it appears, although it was ascribed to a different author or different authors, when no separate statement was made that one or more of those authors contributed in some way to that publication. However, in both cases authorship as ascribed, followed by “ex”, may be inserted before the name(s) of the publishing author(s).

*Ex.25.* *Lilium tianschanicum* was described by Grubov (1977) as a new species, with its name ascribed to Ivanova; since there is no indication that Ivanova provided the validating description, the name is cited as either *L. tianschanicum* N. A. Ivanova ex Grubov or *L. tianschanicum* Grubov.

*Ex.26.* In a paper by Boufford, Tsi & Wang (1990) the name *Rubus fanjingshanensis* was ascribed to Lu with no indication that Lu provided the description; the name is attributed to either L. T. Lu ex Boufford & al. or Boufford & al.

*Ex.27.* Seemann (1865) published *Gossypium tomentosum* “Nutt. mss.”, followed by a validating description not ascribed to Nuttall; the name is cited as either *G. tomentosum* Nutt. ex Seem. or *G. tomentosum* Seem.

*Ex.28.* Rudolphi published *Pinaceae* (1830) as “*Pineae*. Spreng.”, followed by a validating diagnosis not ascribed to Sprengel; the name is cited as either *Pinaceae* Spreng. ex F. Rudolphi or *Pinaceae* F. Rudolphi.

*Ex.29.* Green (1985) ascribed the new combination *Tersonia cyathiflora* to “(Fenzl) A. S. George”; since Green nowhere mentioned that George had contributed in any way, the combining author is cited as either A. S. George ex J. W. Green or J. W. Green.

46.6 For the purposes of Art. 46, the authorship of a publication is the authorship of that part of a publication in which a name appears regardless of the authorship or editorship of the publication as a whole.

*Ex.30.* *Pittosporum buxifolium* was described as a new species, with its name ascribed to Feng, in Wu & Li, *Flora yunnanica*, vol. 3 (1983). The account of *Pittosporaceae* in that flora was authored by Yin, while the whole volume was edited by Wu & Li. The author of the publication (including the validating diagnosis) was Yin. The name is therefore cited as either *P. buxifolium* K. M. Feng ex W. Q. Yin or *P. buxifolium* W. Q. Yin, but not *P. buxifolium* “K. M. Feng ex C. Y. Wu & H. W. Li” nor *P. buxifolium* “C. Y. Wu & H. W. Li”.

*Ex.31.* *Vicia amurensis* f. *sanneensis*, ascribed to Jiang & Fu, was published in Ma & al. (ed.), *Flora intramongolica*, ed. 2, vol. 3 (1989). The author of the account of *Vicia* in that flora is Jiang, one of the persons to whom the name was ascribed (see Art. 46.2, last sentence). The name is therefore cited as *V. amurensis* f. *sanneensis* Y. C. Jiang & S. M. Fu, not *V. amurensis* f. *sanneensis* “Y. C. Jiang & S. M. Fu ex Ma & al.”

*Ex.32. Centaurea funkii* var. *xeranthemoides* “Lge. ined.” was described in *Prodromus florum hispanicae*, which was authored as a whole by Willkomm & Lange, although the different family treatments are by individual authors, and Fam. 63 *Compositae* has a footnote “Auctore Willkomm”. As the validating description was not ascribed to Lange, the name is cited as *C. funkii* var. *xeranthemoides* Lange ex Willk. Its full bibliographic citation is *C. funkii* var. *xeranthemoides* Lange ex Willk. in Willkomm & Lange, Prodr. Fl. Hispan. 2: 154. 1865.

*Ex.33.* The name *Solanum dasypus* was published in a work of Candolle (Prodr. 13(1): 161. 1852), in which the account of *Solanaceae* was authored by Dunal. Dunal introduced the name as “*S. dasypus* (Drege, n. 1933, in h. DC)” thereby ascribing it to Drege. The name is therefore cited as either *S. dasypus* Drege ex Dunal or *S. dasypus* Dunal.

*Ex.34.* Schultes & Schultes (Mant. 3: 526. 1827), in a note, published a new classification of the traditional genera *Avena* and *Trisetum*, which they had received from “Besser in litt.” The publishing author of that text, in which the new genera *Acrospelion* Bess., *Helictotrichon* Bess., and *Heterochaeta* Bess. were described, is Besser. The new names are validly published, authored by Besser alone, irrespective of whether or not the volume authors, Schultes & Schultes, accepted them. (See also Art. 36 Ex. 3).

46.7 When a name has been ascribed by its author to a pre-starting-point author, the latter may be included in the author citation, followed by “ex”. For groups with a starting-point later than 1753, when a taxon of a pre-starting-point author was changed in rank or taxonomic position upon valid publication of its name, that pre-starting-point author may be cited in parentheses, followed by “ex”.

*Ex.35.* Linnaeus (1754) ascribed the name *Lupinus* to the pre-starting-point author Tournefort; the name is cited as either *Lupinus* Tourn. ex L. (1753) or *Lupinus* L. (see Art. 13.4).

*Ex.36.* “*Lyngbya glutinosa*” (Agardh, Syst. Alg.: 73. 1824) was taken up as *Hydrocoleum glutinosum* by Gomont in the publication that marks the starting-point of the “*Nostocaceae homocysteeae*” (in Ann. Sci. Nat., Bot., ser. 7, 15: 339. 1892). The name may be cited as either *H. glutinosum* (C. Agardh) ex Gomont or *H. glutinosum* Gomont.

46.8 In determining the correct author citation, only internal evidence in the publication as a whole (as defined in Art. 37.5) where the name was validly published is to be accepted, including ascription of the name, statements in the introduction, title, or acknowledgements, and typographical or stylistic distinctions in the text.

*Ex.37.* Although the descriptions in Aiton’s *Hortus kewensis* (1789) are generally considered to have been written by Solander or Dryander, the names of new taxa published there are attributed to Aiton, the stated author of the work, except where a name and description were both ascribed in that work to somebody else.

*Ex.38.* The name *Andreaea angustata* was published in a work of Limpricht (1885) with the ascription “nov. sp. Lindb. in litt. ad Breidler 1884”, but there is no internal evidence that Lindberg had supplied the validating description. Authorship is therefore cited as either Limpr. or Lindb. ex Limpr., but not “Lindb.”

46.9 External evidence may be used to determine authorship of nomenclatural novelties included in a publication or article for which there is no internal evidence of authorship.

*Ex.39.* No authorship appears anywhere in the work known as “Cat. Pl. Upper Louisiana. 1813”, a catalogue of plants available from the Fraser Brothers Nursery. Based on external evidence (cf. Stafleu & Cowan in Regnum Veg. 105: 785. 1981), authorship of the document, and of included nomenclatural novelties such as *Oenothera macrocarpa*, is attributed to Thomas Nuttall.

*Ex.40.* The book that appeared under the title *Vollständiges systematisches Verzeichniß aller Gewächse Teutschlandes ...* (Leipzig 1782) bears no explicit authorship but is attributed to “einem Mitgliede der Gesellschaft Naturforschender Freunde”. External evidence may be used to determine that G. A. Honckeny is the author of the work and of the nomenclatural novelties that appear in it (e.g. *Poa vallesiana* Honck., *Phleum hirsutum* Honck.; see also Art. 23 Ex. 14), as was done by Pritzel (Thes. Lit. Bot.: 123. 1847).

46.10 Authors publishing nomenclatural novelties and wishing other persons’ names followed by “ex” to precede theirs in authorship citation may adopt the “ex” citation in the protologue.

*Ex.41.* In validly publishing the name *Nothotsuga*, Page (1989) cited it as “*Nothotsuga* H.-H. Hu ex C. N. Page”, noting that in 1951 Hu had published it as a nomen nudum; the name is attributed to either Hu ex C. N. Page or C. N. Page.

*Ex.42.* Atwood (1981) ascribed the name of a new species, *Maxillaria mombachoensis*, to “Heller ex Atwood”, with a note stating that it was originally named by Heller, then deceased; the name is attributed to either A. H. Heller ex J. T. Atwood or J. T. Atwood.

#### Recommendation 46A

46A.1 For the purpose of author citation, prefixes indicating ennoblement (see Rec. 60C.5(d-e)) should be suppressed unless they are an inseparable part of the name.

46A.Ex.1 Lam. for J. B. P. A. Monet Chevalier de Lamarck, but De Wild. for E. De Wildeman.

46A.2 When a name in an author citation is abbreviated, the abbreviation should be long enough to be distinctive, and should normally end with a consonant that, in the full name, precedes a vowel. The first letters should be given without any omission, but one of the last characteristic consonants of the name may be added when this is customary.

46A.Ex.2 L. for Linnaeus; Fr. for Fries; Juss. for Jussieu; Rich. for Richard; Bertol. for Bertoloni, to be distinct from Bertero; Michx. for Michaux, to be distinct from Micheli.

46A.3 Given names or accessory designations serving to distinguish two authors of the same name should be abridged in the same way.

46A.Ex.3 R. Br. for Robert Brown; A. Juss. for Adrien de Jussieu; Burm. f. for Burman filius; J. F. Gmel. for Johann Friedrich Gmelin, J. G. Gmel. for Johann Georg Gmelin, C. C. Gmel. for Carl Christian Gmelin, S. G. Gmel. for Samuel Gottlieb Gmelin; Müll. Arg. for Jean Müller argoviensis (of Aargau).

46A.4 When it is a well-established custom to abridge a name in another manner, it is advisable to conform to custom.

46A.Ex.4 DC. for Augustin-Pyramus de Candolle; St.-Hil. for Saint-Hilaire; Rchb. for H. G. L. Reichenbach.

46A.Note1 Brummitt & Powell’s *Authors of plant names* (1992) provides unambiguous standard forms for a large number of authors of names of organisms in conformity with this Recommendation. These abbreviations, updated as necessary from the *International Plant Names Index* ([www.ipni.org](http://www.ipni.org)) and *Index Fungorum* ([www.indexfungorum.org](http://www.indexfungorum.org)), have been used for author citations throughout this *Code*.

#### Recommendation 46B

46B.1 In citing the author of the scientific name of a taxon, the romanization of the author’s name given in the original publication should normally be accepted. Where an author failed to give a romanization, or where an

author has at different times used different romanizations, then the romanization known to be preferred by the author or that most frequently adopted by the author should be accepted. In the absence of such information the author's name should be romanized in accordance with an internationally available standard.

**46B.2** Authors of scientific names whose personal names are not written in Roman letters should romanize their names, preferably (but not necessarily) in accordance with an internationally recognized standard and, as a matter of typographical convenience, without diacritical signs. Once authors have selected the romanization of their personal names, they should use it consistently. Whenever possible, authors should not permit editors or publishers to change the romanization of their personal names.

#### Recommendation 46C

**46C.1** After a name published jointly by two authors, both authors should be cited, linked by the word "et" or by an ampersand (&).

*46C.Ex.1* *Didymopanax gleasonii* Britton et P. Wilson or *D. gleasonii* Britton & P. Wilson.

**46C.2** After a name published jointly by more than two authors, the citation should be restricted to the first author followed by "et al." or "& al.", except in the original publication.

*46C.Ex.2* *Lapeirousia erythrantha* var. *welwitschii* (Baker) Geerinck, Lisowski, Malaisse & Symoens (in Bull. Soc. Roy. Bot. Belgique 105: 336. 1972) should be cited as *L. erythrantha* var. *welwitschii* (Baker) Geerinck & al.

#### Recommendation 46D

**46D.1** Authors should cite themselves by name after each nomenclatural novelty they publish rather than refer to themselves by expressions such as "nobis" (nob.) or "mihi" (m.).

### Article 48

**48.1** When an author adopts an existing name but definitely excludes its type, a later homonym that must be attributed solely to that author is considered to have been published. Similarly, when an author who adopts a name refers to an apparent basionym or replaced synonym but explicitly excludes its type, the name of a new taxon is considered to have been published that must be attributed solely to that author. Exclusion can be effected by simultaneous explicit inclusion of the type in a different taxon by the same author.

*Ex.1.* Sirodot (1872) placed the type of *Lemanea* Bory (1808) in *Sacheria* Sirodot (1872); hence *Lemanea*, as treated by Sirodot (1872), is to be cited as *Lemanea* Sirodot non Bory, and not as *Lemanea* Bory emend. Sirodot.

*Ex.2.* The name *Amorphophallus campanulatus* Decne. (1834) was apparently based on the illegitimate *Arum campanulatum* Roxb. (1819). However, the type of the latter was explicitly excluded by Decaisne, and his name is therefore a legitimate name of a new species, to be attributed solely to him.

*Ex.3.* The type of *Myginda* sect. *Gyminda* Griseb. (Cat. Pl. Cub.: 55. 1866) is *M. integrifolia* Poir. even though Grisebach misapplied the latter name. When Sargent raised the section to the rank of genus, he named the species described by Grisebach *Gyminda grisebachii* and explicitly excluded *M. integrifolia* from the genus. *Gyminda* Sarg. (1891) is therefore the name of a new genus, typified by *G. grisebachii* Sarg., not a name at new rank based on *M. sect. Gyminda*.

*Note 1.* Misapplication of a new combination, name at new rank, or replacement name to a different taxon, but without explicit exclusion of the type of the basionym or replaced synonym, is dealt with under Art. 7.3-4.

*Note 2.* Retention of a name in a sense that excludes its original type, or its type designated under Art. 7-10, can be effected only by conservation (see Art. 14.9).

48.2 For the purpose of Art. 48.1, exclusion of a type means exclusion of (a) the holotype under Art. 9.1 or the original type under Art. 10 or all syntypes under Art. 9.5 or all elements eligible as types under Art. 10.2; or (b) the type previously designated under Art. 9.11-9.13 or 10.2; or (c) the type previously conserved under Art. 14.9 (see also Art. 52.2(e), applicable by analogy).

48.3 When a sanctioning author accepted an earlier name but did not include, even implicitly, any element associated with its protologue, or when the protologue did not include the subsequently designated type of the sanctioned name, the sanctioning author is considered to have created a later homonym, treated as if conserved (Art. 15.1).

## Article 49

49.1 When a genus or a taxon of lower rank is altered in rank but retains its name or the final epithet in its name, the author of that earlier name, if it is legitimate (i.e. if it is the basionym; Art. 6.10), is cited in parentheses, followed by the name of the author who effected the alteration (the author of the name). The same provision holds when a taxon of lower rank than genus is transferred to another genus or species, with or without alteration of rank.

*Ex.1.* *Medicago polymorpha* var. *orbicularis* L. (1753) when raised to the rank of species becomes *M. orbicularis* (L.) Bartal. (1776).

*Ex.2.* *Anthyllis* sect. *Aspalathoides* DC. (Prodr. 2: 169. 1825) raised to generic rank, retaining the epithet *Aspalathoides* as its name, is cited as *Aspalathoides* (DC.) K. Koch (1853).

*Ex.3.* *Cineraria* sect. *Eriopappus* Dumort. (Fl. Belg.: 65. 1827) when transferred to *Tephrosia* (Rchb.) Rchb. is cited as *T.* sect. *Eriopappus* (Dumort.) Holub (in *Folia Geobot. Phytotax.* 8: 173. 1973).

*Ex.4.* *Cistus aegyptiacus* L. (1753) when transferred to *Helianthemum* Mill. is cited as *H. aegyptiacum* (L.) Mill. (1768).

*Ex.5.* *Fumaria bulbosa* var. *solida* L. (1753) was raised to specific rank as *F. solida* (L.) Mill. (1771). The name of this species when transferred to *Corydalis* DC. is cited as *C. solida* (L.) Clairv. (1811), not *C. solida* "(Mill.) Clairv."

*Ex.6.* On the other hand, *Pulsatilla montana* var. *serbica* W. Zimm. (in Feddes Repert. Spec. Nov. Regni Veg. 61: 95. 1958), originally placed under *P. montana* subsp. *australis* (Heuff.) Zămelis, retains its author citation when placed under *P. montana* subsp. *dacica* Rummelsp. (see Art. 24.1) and is not cited as var. *serbica* "(W. Zimm.) Rummelsp." (in Feddes Repert. 71: 29. 1965).

*Ex.7.* *Salix* subsect. *Myrtilloides* C. K. Schneid. (Ill. Handb. Laubholz. 1: 63. 1904), originally placed under *S.* sect. *Argenteae* W. D. J. Koch, retains its author citation when placed under *S.* sect. *Glaucæ* Pax and is not cited as *S.* subsect. *Myrtilloides* "(C. K. Schneid.) Dorn" (in *Canad. J. Bot.* 54: 2777. 1976).

*Ex.8.* The name *Lithocarpus polystachyus* published by Rehder (1919) was based on *Quercus polystachya* A. DC. (1864), ascribed by Candolle to "Wall. list n. 2789" (a nomen nudum); Rehder's combination is cited as either *L. polystachyus* (Wall. ex A. DC.) Rehder or *L. polystachyus* (A. DC.) Rehder (see Art. 46.5).

49.2 Parenthetical authors are not cited for suprageneric names.

*Ex.9.* Even though *Illiciaceae* A. C. Sm. (1947) was validly published by reference to *Illicieae* DC. (1824) it is not cited as *Illiciaceae* "(DC.) A. C. Sm."

*Note 1.* Art. 46.7 provides for the use of parenthetical author citations preceding the word “ex” after some names in groups with a starting-point later than 1753.

## Article 50

*50.1* When a taxon at the rank of species or below is transferred from the non-hybrid category to the hybrid category of the same rank (Art. H.10 Note 1), or vice versa, the author citation remains unchanged but may be followed by an indication in parentheses of the original category.

*Ex.1.* *Stachys ambigua* Sm. (1809) was published as the name of a species. If regarded as applying to a hybrid, it may be cited as *S. xambigua* Sm. (pro sp.).

*Ex.2.* *Salix xglaurops* Andersson (1868) was published as the name of a hybrid. Later, Rydberg (in Bull. New York Bot. Gard. 1: 270. 1899) considered the taxon to be a species. If this view is accepted, the name may be cited as *S. glaurops* Andersson (pro hybr.).

## SECTION 2. General recommendations on citation

### Recommendation 50A

*50A.1* In the citation of a name that is not validly published because it was merely cited as a synonym (Art. 36.1(c)), the words “as synonym” or “pro syn.” should be added.

### Recommendation 50B

*50B.1* In the citation of a nomen nudum, its status should be indicated by adding the words “nomen nudum” or “nom. nud.”

*50B.Ex.1* “*Carex bebbii*” (Olney, Carices Bor.-Amer. 2: 12. 1871), published without a description or diagnosis, should be cited as *Carex bebbii* Olney, nomen nudum (or nom. nud.).

### Recommendation 50C

*50C.1* The citation of a later homonym should be followed by the name of the author of the earlier homonym preceded by the word “non”, preferably with the date of publication added. In some instances it will be advisable to cite also any other homonyms, preceded by the word “nec”.

*50C.Ex.1* *Ulmus racemosa* Thomas in Amer. J. Sci. Arts 19: 170. 1831, non Borkh. 1800.

*50C.Ex.2* *Lindera* Thunb., Nov. Gen. Pl.: 64. 1783, non Adans. 1763.

*50C.Ex.3* *Bartlingia* Brongn. in Ann. Sci. Nat. (Paris) 10: 373. 1827, non Rchb. 1824 nec F. Muell. 1882.

### Recommendation 50D

*50D.1* Misidentifications should not be included in synonymies but added after them. A misapplied name should be indicated by the words “auct. non” followed by the name(s) of the original author(s) and the bibliographic reference of the misidentification.

*50D.Ex.1* *Ficus stortophylla* Warb. in Ann. Mus. Congo Belge, Bot., ser. 4, 1: 32. 1904. *F. irumuensis* De Wild., Pl. Bequaert. 1: 341. 1922. “*F. exasperata*” auct. non Vahl: De Wildeman & Durand in Ann. Mus. Congo Belge, Bot., ser. 2, 1: 54. 1899; De Wildeman, Miss. Em. Laurent: 26. 1905; Durand & Durand, Syll. Fl. Congol.: 505. 1909.

### Recommendation 50E

50E.1 After a conserved name (nomen conservandum; see Art. 14 and App. II-IV) the abbreviation “nom. cons.” or, in the case of a conserved spelling, “orth. cons.” (orthographia conservanda) should be added in a formal citation.

50E.Ex.1 *Protea* L., Mant. Pl.: 187. 1771, nom. cons., non L. 1753.

50E.Ex.2 *Combretum* Loefl. 1758, nom. cons. [= *Grislea* L. 1753].

50E.Ex.3 *Glechoma* L. 1753, orth. cons., ‘*Glecoma*’.

50E.2 After a name rejected under Art. 56 (nomen utique rejiciendum, suppressed name; see App. V) the abbreviation “nom. rej.” should be added in a formal citation.

50E.Ex.4 *Betula alba* L. 1753, nom. rej.

50E.Note1 Rec. 50E.2 also applies to any combination based on a nomen utique rejiciendum (suppressed name; see Art. 56.1).

50E.Ex.5 *Dryobalanops sumatrensis* (J. F. Gmel.) Kosterm. in Blumea 33: 346. 1988, nom. rej.

50E.3 If a name has been adopted by Fries or Persoon, and thereby sanctioned (see Art. 13.1(d) and 15), “: Fr.” or “: Pers.” should be added in a formal citation. The same convention should be used for the basionym of the sanctioned name, if it has one, and for all combinations based on either the sanctioned name or its basionym.

50E.Ex.6 *Boletus piperatus* Bull. (Herb. France: t. 451, fig. 2. 1790) was accepted in Fries (Syst. Mycol. 1: 388. 1821) and was thereby sanctioned. It should thus be cited as *B. piperatus* Bull. : Fr.; *Chalciporus piperatus* (Bull. : Fr.) Bataille is a subsequent combination based on it.

50E.Ex.7 *Agaricus sarcocephalus* Fr. (1815) : Fr. was sanctioned as *Agaricus compactus* [unranked] *sarcocephalus* (Fr. : Fr.) Fr. (1821); *Psathyrella sarcocephala* (Fr. : Fr.) Singer is a subsequent combination based on it.

### Recommendation 50F

50F.1 If a name is cited with alterations from the form as originally published, it is desirable that in full citations the exact original form should be added, preferably between single or double quotation marks.

50F.Ex.1 *Pyrus calleryana* Decne. (*P. mairei* H. Lév. in Repert. Spec. Nov. Regni Veg. 12: 189. 1913, ‘*Pirus*’).

50F.Ex.2 *Zanthoxylum cribrosum* Spreng., Syst. Veg. 1: 946. 1825, “*Xanthoxylon*” (*Z. caribaeum* var. *floridanum* (Nutt.) A. Gray in Proc. Amer. Acad. Arts 23: 225. 1888, “*Xanthoxylum*”).

50F.Ex.3 *Spathiphyllum solomonense* Nicolson in Amer. J. Bot. 54: 496. 1967, ‘*solomonensis*’.

### Recommendation 50G

50G.1 Authors should avoid mentioning in their publications previously unpublished names that they do not accept, especially if the persons responsible for these unpublished names have not formally authorized their publication (see Rec. 23A.3(i)).

## CHAPTER VII. Rejection of names

### Article 51

51.1 A legitimate name must not be rejected merely because it, or its epithet, is inappropriate or disagreeable, or because another is preferable or better known (but see Art. 56.1), or because it has lost its original meaning.

*Ex.1.* The following changes are contrary to the rule: *Mentha* to *Minthe*, *Staphylea* to *Staphylis*, *Tamus* to *Tamnus*, *Thamnos*, or *Thamnus*, *Tillaea* to *Tillia*, *Vincetoxicum* to *Alexitoxicon*; and *Orobanche artemisiae* to *O. artemisiepiphyta*, *O. columbariae* to *O. columbarihaerens*, *O. rapum-genistae* to *O. rapum* or *O. sarothamnophyta*.

*Ex.2.* *Ardisia quinquegona* Blume (1825) is not to be rejected in favour of *A. pentagona* A. DC. (1834) merely because the specific epithet *quinquegona* is a hybrid word (Latin and Greek) (contrary to Rec. 23A.3(c)).

*Ex.3.* The name *Scilla peruviana* L. (1753) is not to be rejected merely because the species does not grow in Peru.

*Ex.4.* The name *Petrosimonia oppositifolia* (Pall.) Litv. (1911), based on *Polycnemum oppositifolium* Pall. (1771), is not to be rejected merely because the species has leaves only partly opposite, and partly alternate, although there is another closely related species, *Petrosimonia brachiata* (Pall.) Bunge, having all its leaves opposite.

*Ex.5.* *Richardia* L. (1753) is not to be rejected in favour of *Richardsonia*, as was done by Kunth (1818), merely because the name was originally dedicated to Richardson.

### Article 52

52.1 A name, unless conserved (Art. 14) or sanctioned (Art. 15), is illegitimate and is to be rejected if it was nomenclaturally superfluous when published, i.e. if the taxon to which it was applied, as circumscribed by its author, definitely included the type (as qualified in Art. 52.2) of a name that ought to have been adopted, or of which the epithet ought to have been adopted, under the rules (but see Art. 52.3 and Art. 59.1).

52.2 For the purpose of Art. 52.1, definite inclusion of the type of a name is effected by citation (*a*) of the holotype under Art. 9.1 or the original type under Art. 10 or all syntypes under Art. 9.5 or all elements eligible as types under Art. 10.2; or (*b*) of the previously designated type under Art. 9.11-13 or 10.2; or (*c*) of the previously conserved type under Art. 14.9; or (*d*) of the illustrations of these. It is also effected (*e*) by citation of the name itself or any name homotypic at that time, unless the type is at the same time excluded either explicitly or by implication.

*Ex.1.* The generic name *Cainito* Adans. (1763) is illegitimate because it was a superfluous name for *Chrysophyllum* L. (1753), which Adanson cited as a synonym.

*Ex.2.* *Chrysophyllum sericeum* Salisb. (1796) is illegitimate, being a superfluous name for *C. cainito* L. (1753), which Salisbury cited as a synonym.

*Ex.3.* On the other hand, *Salix myrsinifolia* Salisb. (1796) is legitimate, being explicitly based on “*S. myrsinites*” of Hoffmann (Hist. Salic. Ill.: 71. 1787), a misapplication of *S. myrsinites* L. (1753), a name that Salisbury excluded by implication by not citing Linnaeus as he did under each of the other 14 species of *Salix*.



Ex.4. *Picea excelsa* Link (1841) is illegitimate because it is based on *Pinus excelsa* Lam. (1779), a superfluous name for *Pinus abies* L. (1753). Under *Picea* the correct name is *Picea abies* (L.) H. Karst. (1881).

Ex.5. On the other hand, *Cucubalus latifolius* Mill. and *C. angustifolius* Mill. are not illegitimate names, although Miller's species are now united with the species previously named *C. behen* L. (1753): *C. latifolius* and *C. angustifolius* as circumscribed by Miller (1768) did not include the type of *C. behen* L., a name that he adopted for another species.

Ex.6. Explicit exclusion of type. When publishing the name *Galium tricornutum*, Dandy (in *Watsonia* 4: 47. 1957) cited *G. tricornis* Stokes (1787) pro parte as a synonym while explicitly excluding its type.

Ex.7. Exclusion of type by implication. *Tmesipteris elongata* P. A. Dang. (in *Botaniste* 2: 213. 1891) was published as a new species but *Psilotum truncatum* R. Br. was cited as a synonym. However, on the following page, *T. truncata* (R. Br.) Desv. is recognized as a different species and two pages later both are distinguished in a key, thus showing that the meaning of the cited synonym was either "*P. truncatum* R. Br. pro parte" or "*P. truncatum* auct. non R. Br."

Ex.8. Under *Persicaria maculosa* Gray (1821), the name *Polygonum persicaria* L. (1753) was cited as the replaced synonym, and hence the type of *Polygonum persicaria* was definitely included. However, *Persicaria mitis* Delarbre (1806), as the earlier legitimate replacement name for *Polygonum persicaria*, is necessarily homotypic; hence, *Persicaria maculosa* when published was an illegitimate superfluous name for *Persicaria mitis*. Its continued use has been made possible by conservation.

Ex.9. Under *Bauhinia semla* Wunderlin (1976), the name *B. retusa* Roxb. (1832) non Poir. (1811), was cited as the replaced synonym while *B. emarginata* Roxb. ex G. Don (1832) non Mill. (1768), was also cited in synonymy, and hence the types of the two synonyms were definitely included. However, *B. roxburghiana* Voigt (1845), which was published as a replacement name for *B. emarginata*, is necessarily homotypic with it and should have been adopted by Wunderlin. Therefore, *B. semla* is an illegitimate superfluous name but is typified by the type of its replaced synonym, *B. retusa* (see Art. 7 Ex. 5).

Ex.10. Both *Apios americana* Medik. (1787) and *A. tuberosa* Moench (1794) are replacement names for the legitimate *Glycine apios* L. (1753), the epithet of which in combination with *Apios* would form a tautonym and would not therefore be validly published (Art. 23.4). *Apios tuberosa* was nomenclaturally superfluous when published, and is therefore illegitimate, because Moench cited in synonymy *G. apios*, which was then, as now, homotypic with *A. americana*, the name that has priority and that Moench should have adopted.

Ex.11. *Erythroxyllum suave* O. E. Schulz (1907) is illegitimate because Schulz cited "*Erythroxyllum brevipes* DC. var. *spinescens* (A. Rich.) Griseb." (1866) in synonymy, thereby including the type of *E. spinescens* A. Rich. (1841), the name that Schulz should have adopted.

Ex.12. In publishing the name *Matricaria suaveolens* (1755), Linnaeus adopted the phrase name and included all the synonyms of *M. recutita* L. (1753) and so Applequist (in *Taxon* 51: 757. 2002) claimed that "all original elements of *M. recutita* are found in the protologue of *M. suaveolens*, making it illegitimate under Art. 52". However, in 1755 *M. recutita* had no holotype, no syntypes, no designated lectotype or conserved type, nor was the name itself (i.e. *M. recutita*) cited by Linnaeus; therefore, none of the criteria of Art. 52.2 is fulfilled and *M. suaveolens* is a legitimate name.

Note 1. The inclusion, with an expression of doubt, of an element in a new taxon, e.g. the citation of a name with a question mark, does not make the name of the new taxon nomenclaturally superfluous.

*Ex.13.* The protologue of *Blandfordia grandiflora* R. Br. (1810) includes, in synonymy, “*Aletris punicea*. Labill. nov. holl. 1. p. 85. t. 111 ?”, indicating that the new species might be the same as *A. punicea* Labill. (1805). *Blandfordia grandiflora* is nevertheless a legitimate name.

*Note 2.* The inclusion, in a new taxon, of an element that was subsequently designated as the type of a name that, so typified, ought to have been adopted, or of which the epithet ought to have been adopted, does not in itself make the name of the new taxon illegitimate.

*Ex.14.* *Leccinum* Gray (1821) does not include all potential types (in fact, none) of *Boletus* L. (1753) and thus is not illegitimate even though it included, as *L. edule* (Bull. : Fr.) Gray, the subsequently conserved type of *Boletus*, *B. edulis* Bull. : Fr.

**52.3** A name that was nomenclaturally superfluous when published is not illegitimate on account of its superfluity if it has a basionym (which is necessarily legitimate; see Art. 6.10), or if it is based on the stem of a legitimate generic name. When published it is incorrect, but it may become correct later.

*Ex.15.* *Chloris radiata* (L.) Sw. (1788) was nomenclaturally superfluous when published, since Swartz cited the legitimate *Andropogon fasciculatus* L. (1753) as a synonym. However, it is not illegitimate since it has a basionym, *Agrostis radiata* L. (1759). *Chloris radiata* is the correct name in the genus *Chloris* for *Agrostis radiata* when *Andropogon fasciculatus* is treated as a different species, as was done by Hackel (in Candolle & Candolle, Monogr. Phan. 6: 177. 1889).

*Ex.16.* *Juglans major* (Torr.) A. Heller (1904), based on *J. rupestris* var. *major* Torr. (in Rep. Exped. Zuni and Colorado Rivers: 171. 1853), was nomenclaturally superfluous when published because Heller cited the legitimate *J. californica* S. Watson (1875) as a synonym. Nevertheless, *J. major* is legitimate because it has a basionym, and it may be correct when considered taxonomically distinct from *J. californica*.

*Ex.17.* The generic name *Hordelymus* (Jess.) Harz (1885) was nomenclaturally superfluous when published because its type, *Elymus europaeus* L., is also the type of *Cuviera* Koeler (1802). However, it is not illegitimate since it has a basionym, *Hordeum* [unranked] *Hordelymus* Jess. (Deutschl. Gräser: 202. 1863). *Cuviera* Koeler has since been rejected in favour of its later homonym *Cuviera* DC., and *Hordelymus* can now be used as the correct name for a segregate genus containing *E. europaeus* L.

*Ex.18.* *Carpinaceae* Vest (Anleit. Stud. Bot.: 265, 280. 1818) was nomenclaturally superfluous when published because of the inclusion of *Salix* L., the type of *Salicaceae* Mirb. (1815). However, it is not illegitimate because it is based on the stem of a legitimate generic name, *Carpinus* L.

*Note 3.* In no case does a statement of parentage accompanying the publication of a name for a hybrid make the name illegitimate (see Art. H.4-5).

*Ex.19.* The name *Polypodium xshivasiae* Rothm. (1962) was proposed for hybrids between *P. australe* Fée and *P. vulgare* subsp. *prionodes* (Asch.) Rothm., while at the same time the author accepted *P. xfont-queri* Rothm. (1936) for hybrids between *P. australe* and *P. vulgare* L. subsp. *vulgare*. Under Art. H.4.1, *P. xshivasiae* is a synonym of *P. xfont-queri*; nevertheless, it is not an illegitimate name.

### Article 53

**53.1** A name of a family, genus, or species, unless conserved (Art. 14) or sanctioned (Art. 15), is illegitimate if it is a later homonym, that is, if it is spelled exactly like a name based on a different type that was previously and validly published for a taxon of the same rank (see also Art. 53.2 and 53.4).

*Ex.1.* *Tapeinanthus* Boiss. ex Benth. (1848), given to a genus of *Labiatae*, is a later homonym of *Tapeinanthus* Herb. (1837), a name previously and validly published for a genus of *Amaryllidaceae*.

*Tapeinanthus* Boiss. ex Benth. is therefore illegitimate and unavailable for use; it was renamed *Thuspeinanta* T. Durand (1888).

Ex.2. *Torreyia* Arn. (1838) is a nomen conservandum and is therefore available for use in spite of the existence of the earlier homonym *Torreyia* Raf. (1818).

Ex.3. *Astragalus rhizanthus* Boiss. (1843) is a later homonym of the validly published name *A. rhizanthus* Royle (1835) and is therefore illegitimate; it was renamed *A. cariensis* Boiss. (1849).

Ex.4. *Molina racemosa* Ruiz & Pav. (1798) (*Compositae*) is an illegitimate later homonym of *Molina racemosa* Cav. (1790) (*Malpighiaceae*).

Ex.5. *Moreae* Britton & Rose (in N. Amer. Fl. 23: 201, 217. 1930), based on *Mora* Benth. (1839), although a later homonym of *Moreae* Dumort. (Anal. Fam. Pl.: 17. 1829), based on *Morus* L. (1754), is not illegitimate as the provisions on homonymy do not apply to subdivisions of families.

Note 1. A validly published earlier homonym, even if illegitimate or otherwise generally treated as a synonym, causes rejection of any later homonym that is not conserved or sanctioned (but see Art. 53.2).

Ex.6. *Zingiber truncatum* S. Q. Tong (1987) is illegitimate, being a later homonym of the validly published *Z. truncatum* Stokes (1812), even though the latter name is itself illegitimate under Art. 52.1; *Z. truncatum* S. Q. Tong was renamed *Z. neotruncatum* T. L. Wu & al. (2000).

Ex.7. *Amblyanthera* Müll. Arg. (1860) is a later homonym of the validly published *Amblyanthera* Blume (1849) and is therefore illegitimate, although *Amblyanthera* Blume is now considered to be a synonym of *Osbeckia* L. (1753).

53.2 A sanctioned name is illegitimate if it is a later homonym of another sanctioned name (see also Art. 15 Note 1).

53.3 When two or more names of genera or species based on different types are so similar that they are likely to be confused (because they are applied to related taxa or for any other reason) they are to be treated as homonyms (see also Art. 61.5). If established practice has been to treat two similar names as homonyms, this practice is to be continued if it is in the interest of nomenclatural stability.

Ex.8. \* Names treated as homonyms: *Asterostemma* Decne. (1838) and *Astrostemma* Benth. (1880); *Pleuropetalum* Hook. f. (1846) and *Pleuripetalum* T. Durand (1888); *Eschweilera* DC. (1828) and *Eschweilera* Boerl. (1887); *Skytanthus* Meyen (1834) and *Scytanthus* Hook. (1844).

Ex.9. \* *Bradlea* Adans. (1763), *Bradleja* Banks ex Gaertn. (1790), and *Braddleya* Vell. (1827), all commemorating Richard Bradley, are treated as homonyms because only one can be used without serious risk of confusion.

Ex.10. \* *Acanthoica* Lohmann (1902) and *Acanthoeca* W. N. Ellis (1930), both designating flagellates, are sufficiently alike to be considered homonyms (Taxon 22: 313. 1973).

Ex.11. \* Epithets so similar that they are likely to be confused if combined under the same name of a genus or species: *ceylanicus* and *zeylanicus*; *chinensis* and *sinensis*; *heteropodus* and *heteropus*; *macrocarpon* and *macrocarpum*; *macrostachys* and *macrostachyus*; *napaulensis*, *nepalensis*, and *nipalensis*; *poikilantha* and *poikilanthus*; *polyanthemos* and *polyanthemus*; *pteroides* and *pteroides*; *thibetanus* and *tibetanus*; *thibetensis* and *tibetensis*; *thibeticus* and *tibeticus*; *trachycaulon* and *trachycaulum*; *trinervis* and *trinervius*.

Ex.12. \* Names not likely to be confused: *Desmostachys* Miers (1852) and *Desmostachya* (Stapf) Stapf (1898); *Euphorbia peplis* L. (1753) and *E. peplus* L. (1753); *Gerrardina* Oliv. (1870) and *Gerardiina* Engl. (1897); *Iris* L. (1753) and *Iria* (Pers.) Hedw. (1806); *Lysimachia hemsleyana* Oliv. (1891) and *L. hemsleyi* Franch. (1895) (see, however, Rec. 23A.2); *Monochaetum* (DC.) Naudin (1845) and *Monochaete* Döll (1875); *Peltophorus* Desv. (1810; Gramineae) and *Peltophorum* (Vogel) Benth. (1840; Leguminosae); *Peponia* Grev. (1863) and *Peponium* Engl. (1897); *Rubia* L. (1753) and *Rubus* L. (1753); *Senecio napaeifolius* (DC.) Sch. Bip. (1845, 'napeaeifolius'; see Art. 60 Ex. 21) and *S. napifolius* MacOwan (1890; the epithets being derived, respectively, from *Napaea* and *Brassica napus*); *Symphystemon* Miers (1841) and *Symphostemon* Hiern (1900); *Urvillea* Kunth (1821) and *Durvillaea* Bory (1826).

Ex.13. Names conserved against earlier names treated as homonyms (see App. III): *Cephalotus* Labill. (vs *Cephalotos* Adans.); *Columellia* Ruiz & Pav. (vs *Columella* Lour.), both commemorating Columella, the Roman writer on agriculture; *Lyngbya* Gomont (vs *Lyngbyea* Sommerf.); *Simarouba* Aubl. (vs *Simaruba* Boehm.).

Ex.14. *Gilmania* Coville (1936) was published as a replacement name for *Phyllogonum* Coville (1893) because the author considered the latter to be a later homonym of *Phyllogonium* Bridel (1827). Treating them as homonyms has become accepted, e.g. in *Index Nominum Genericorum*, and the name *Gilmania* has been accepted as legitimate ever since. Therefore the names *Phyllogonum* and *Phyllogonium* are to continue to be treated as homonyms.

53.4 The names of two subdivisions of the same genus, or of two infraspecific taxa within the same species, even if they are of different rank, are homonyms if they are not based on the same type and have the same final epithet, or are treated as homonyms if they have a confusingly similar final epithet. The later name is illegitimate.

Ex.15. *Andropogon sorghum* subsp. *halepensis* (L.) Hack. and *A. sorghum* var. *halepensis* (L.) Hack. (in Candolle & Candolle, Monogr. Phan. 6: 502. 1889) are legitimate since both have the same type (see also Rec. 26A.1).

Ex.16. *Anagallis arvensis* subsp. *caerulea* Hartm. (Sv. Norsk Exc.-Fl.: 32. 1846), based on the later homonym *A. caerulea* Schreb. (1771), is illegitimate because it is itself a later homonym of *A. arvensis* var. *caerulea* (L.) Gouan (Fl. Monsp.: 30. 1765), based on *A. caerulea* L. (1759).

Ex.17. *Scenedesmus armatus* var. *brevicaudatus* (Hortob.) Pankow (in Arch. Protistenk. 132: 153. 1986), based on *S. carinatus* var. *brevicaudatus* Hortob. (in Acta Bot. Acad. Sci. Hung. 26: 318. 1981), is a later homonym of *S. armatus* f. *brevicaudatus* L. S. Péterfi (in Stud. Cercet. Biol. (Bucharest), Ser. Biol. Veg. 15: 25. 1963) even though the two names apply to taxa of different infraspecific rank. *Scenedesmus armatus* var. *brevicaudatus* (L. S. Péterfi) E. H. Hegew. (in Arch. Hydrobiol. Suppl. 60: 393. 1982), however, is not a later homonym since it is based on the same type as *S. armatus* f. *brevicaudatus* L. S. Péterfi.

Note 2. The same final epithet may be used in the names of subdivisions of different genera and in the names of infraspecific taxa within different species.

Ex.18. *Verbascum* sect. *Aulacosperma* Murb. (Monogr. Verbascum: 34, 593. 1933) is permissible, although there is an earlier *Celsia* sect. *Aulacospermae* Murb. (Monogr. Celsia: 34, 56. 1926). This, however, is not an example to be followed, since it is contrary to Rec. 21B.3.

53.5 When it is doubtful whether names or their epithets are sufficiently alike to be confused, a request for a decision may be submitted to the General Committee (see Div. III), which will refer it for examination to the committee(s) for the appropriate taxonomic group(s). A recommendation, whether or not to treat the names concerned as homonyms, may then be put forward to an International Botanical Congress and, if ratified, will become a binding decision. These binding decisions are listed in App. VIII.

53.6 When two or more homonyms have equal priority, the first of them that is adopted in an effectively published text (Art. 29-31) by an author who simultaneously rejects the other(s) is treated as having priority. Likewise, if an author in an effectively published text replaces with other names all but one of these homonyms, the homonym for the taxon that is not renamed is treated as having priority (see also Rec. 42A.2).

*Ex.19.* Linnaeus simultaneously published “10.” *Mimosa cinerea* (Sp. Pl.: 517. 1753) and “25.” *M. cinerea* (Sp. Pl.: 520. 1753). In 1759, he renamed species 10 as *M. cineraria* L. and retained the name *M. cinerea* for species 25, so that the latter is treated as having priority over its homonym.

*Ex.20.* Rouy & Foucaud (Fl. France 2: 30. 1895) published the name *Erysimum hieraciifolium* var. *longisiliquum*, with two different types, for two different taxa under different subspecies. Only one of these names can be maintained.

*Note 3.* A homonym renamed or rejected under Art. 53.6 remains legitimate and has priority over a later synonym of the same rank should it be transferred to another genus or species.

*Ex.21.* *Mimosa cineraria* L. (1759), based on *M. cinerea* L. (Sp. Pl.: 517 [non 520]. 1753; see Art. 53 Ex. 19), was transferred to *Prosopis* by Druce (1914) as *P. cineraria* (L.) Druce. However, the correct name in *Prosopis* would have been a combination based on *M. cinerea* had not that name been successfully proposed for rejection (see App. V).

#### Article 54

54.1 Consideration of homonymy does not extend to the names of taxa not treated as algae, fungi, or plants, except as stated below:

(a) Later homonyms of the names of taxa once treated as algae, fungi, or plants are illegitimate, even when the taxa have been reassigned to a different group of organisms to which this *Code* does not apply.

(b) A name originally published for a taxon other than an alga, fungus, or plant, even if validly published under this *Code* (Art. 32-45), is illegitimate if it becomes a homonym of an algal, fungal, or plant name when the taxon to which it applies is first treated as an alga, fungus, or plant (see also Art. 45.1).

*Note 1.* The *International Code of Nomenclature of Bacteria* provides that a bacterial name is illegitimate if it is a later homonym of a name of a taxon of bacteria, fungi, algae, protozoa, or viruses.

#### Recommendation 54A

54A.1 Authors naming new taxa under this *Code* should, as far as is practicable, avoid using such names as already exist for zoological and bacteriological taxa.

#### Article 55

55.1 A name of a species or subdivision of a genus may be legitimate even if its epithet was originally placed under an illegitimate generic name (see also Art. 22.5).

*Ex.1.* *Agathophyllum neesianum* Blume (1851) is legitimate even though *Agathophyllum* Juss. (1789) is illegitimate, being a superfluous replacement name for *Ravensara* Sonn. (1782). Because Meisner (1864) cited *A. neesianum* as a synonym of his new *Mespilodaphne mauritiana*, *M. mauritiana* Meisn. is illegitimate under Art. 52.

*Ex.2.* *Calycotrix* sect. *Brachychaetae* Nied. (in Engler & Prantl, Nat. Pflanzenfam. 3(7): 100. 1892) is legitimate even though it was published under *Calycotrix* Meisn. (1838), a superfluous replacement name for *Calytrix* Labill. (1806).

55.2 An infraspecific name may be legitimate even if its final epithet was originally placed under an illegitimate species name (see also Art. 27.2).

*Ex.3. Agropyron japonicum* var. *hackelianum* Honda (in Bot. Mag. (Tokyo) 41: 385. 1927) is legitimate even though it was published under the illegitimate *A. japonicum* Honda (1927), a later homonym of *A. japonicum* (Miq.) P. Candargy (1901) (see also Art. 27 Ex. 1).

55.3 The names of species and of subdivisions of genera assigned to genera the names of which are conserved or sanctioned later homonyms, and that had earlier been assigned to the genera under the rejected homonyms, are legitimate under the conserved or sanctioned names without change of authorship or date if there is no other obstacle under the rules.

*Ex.4. Alpinia languas* J. F. Gmel. (1791) and *A. galanga* (L.) Willd. (1797) are so accepted although *Alpinia* L. (1753), the name of the genus to which they were assigned by their authors, is rejected and the genus in which they are now placed is named *Alpinia* Roxb. (1810), nom. cons.

## Article 56

56.1 Any name that would cause a disadvantageous nomenclatural change (Art. 14.1) may be proposed for rejection. A name thus rejected, or its basionym if it has one, is placed on a list of nomina utique rejicienda (suppressed names, App. V). Along with each listed name, all names for which it is the basionym are similarly rejected, and none is to be used (see Rec. 50E.2).

56.2 The list of nomina utique rejicienda (suppressed names) will remain permanently open for additions and changes. Any proposal for rejection of a name must be accompanied by a detailed statement of the cases both for and against its rejection, including considerations of typification. Such proposals must be submitted to the General Committee (see Div. III), which will refer them for examination to the committees for the various taxonomic groups (see also Art. 14.12 and 34.1).

56.3 In the interest of nomenclatural stability, for organisms treated as fungi (including lichenicolous fungi, but excluding lichen-forming fungi and those fungi traditionally associated with them taxonomically, e.g. *Mycocaliciaceae*), lists of names to be rejected may be submitted to the General Committee, which will refer them to the Nomenclature Committee for Fungi (see Div. III) for examination by subcommittees established by that Committee in consultation with the General Committee and appropriate international bodies. Names on these lists, which become Appendices of the *Code* once reviewed and approved by the Nomenclature Committee for Fungi and the General Committee, are to be treated as rejected under Art. 56.1 and may become eligible for use only by conservation under Art. 14 (see also Art. 14.13).

56.4 When a proposal for the rejection of a name under Art. 56 has been approved by the General Committee after study by the Committee for the taxonomic group concerned, rejection of that name is authorized subject to the decision of a later International Botanical Congress (see also Art. 14.16 and 34.2).

### Recommendation 56A

56A.1 When a proposal for the rejection of a name under Art. 56 has been referred to the appropriate Committee for study, authors should follow existing usage of names as far as possible pending the General Committee's recommendation on the proposal (see also Rec. 14A and 34A).

## Article 57

57.1 A name that has been widely and persistently used for a taxon or taxa not including its type is not to be used in a sense that conflicts with current usage unless and until a proposal to deal with it under Art. 14.1 or 56.1 has been submitted and rejected.

*Ex.1.* The name *Bovista pusilla* (Batsch : Pers.) Pers., based on *Lycoperdon pusillum* Batsch : Pers., is typified by a plate (t. 41, fig. 228 in Batsch, Elench. Fung. Cont. Secunda. 1789) that represents the species currently known as *B. limosa* Rostr. (1894) s. l., but has been widely and persistently used for either or both of two different species, the correct names of which are *B. dermoxantha* Vitt. and *B. furfuracea* (J. F. Gmel.) Pers. Unless and until a proposal to reject the name *B. pusilla* or to conserve *B. limosa* against it has been submitted and rejected, the name *B. pusilla* is not to be used.

57.2 In pleomorphic fungi (including lichenicolous fungi, but excluding lichen-forming fungi and those fungi traditionally associated with them taxonomically, e.g. *Mycocaliciaceae*), in cases where, prior to 1 January 2013, both teleomorph-typified and anamorph-typified names were widely used for a taxon, an anamorph-typified name that has priority is not to displace the teleomorph name(s) unless and until a proposal to reject the former under Art. 56.1 or 56.3 or to deal with the latter under Art. 14.1 or 14.13 has been submitted and rejected.

*Ex.2.* The anamorph-typified *Polychaeton* (Pers.) Lév. (1846) was not taken up by Chomnunti & al. (in Fungal Div. 51: 116. 2011) in preference to the later, widely used teleomorph-typified *Capnodium* Mont. (1849). The authors suggested that *Capnodium* be considered for inclusion in the planned lists of accepted names to be approved by the General Committee under Art. 14.13. Unless and until such a proposal (or a proposal to conserve *Capnodium* under Art. 14.1 or to reject *Polychaeton* under Art. 56.1 or 56.3) has been submitted and rejected, the name *Polychaeton* is not to be used in preference to *Capnodium*.

*Ex.3.* Pending action under Art. 14.1 or 14.13, the anamorph-typified *Pyricularia* Sacc. (1880), even though earlier, is not to displace the teleomorph-typified *Magnaporthe* R. A. Krause & R. K. Webster (1972), as both names are widely used.

## Article 58

58.1 If there is no obstacle under the rules, the final epithet in an illegitimate name may be re-used in a different name, at either the same or a different rank; or an illegitimate generic name may be re-used as the epithet in the name of a subdivision of a genus. The resulting name is then treated either as a replacement name with the same type as the illegitimate name (Art. 7.4; see also Art. 7.5 and Art. 41 Note 3) or as the name of a new taxon with a different type. Its priority does not date back to the publication of the illegitimate name (see Art. 11.3-4).

*Ex.1.* The name *Talinum polyandrum* Hook. (1855) is illegitimate under Art. 53.1, being a later homonym of *T. polyandrum* Ruiz & Pav. (1798). When Bentham, in 1863, transferred *T. polyandrum* Hook. to *Calandrinia*, he called it *C. polyandra*. This name has priority from 1863, and is cited as *C. polyandra* Benth., not *C. polyandra* "(Hook.) Benth."

*Ex.2.* *Hibiscus ricinifolius* E. Mey. ex Harv. (1860) is illegitimate under Art. 52.1 because *H. ricinoides* Garcke (1849) was cited in synonymy. When the epithet *ricinifolius* was combined at varietal rank under *H. vitifolius* by Hochreutiner (in *Annuaire Conserv. Jard. Bot. Geneve* 4: 170. 1900) his name was legitimate and is treated as a replacement name, automatically typified (Art. 7.5) by the type of *H. ricinoides*. The name is cited as *H. vitifolius* var. *ricinifolius* Hochr., not *H. vitifolius* var. *ricinifolius* "(E. Mey. ex Harv.) Hochr."

*Ex.3.* *Collema tremelloides* var. *cyanescens* Ach. (Syn. Meth. Lich.: 326. 1814) is illegitimate under Art. 52.1 because Acharius cited in synonymy *C. tremelloides* var. *caesium* Ach. (Lichenogr. Universalis: 656. 1810), a legitimate name at the same rank. Schaerer was the first to raise the variety to specific rank, but *Parmelia cyanescens* Schaerer (1842) is illegitimate under Art. 53.1, being a later homonym of *P. cyanescens* (Pers.) Ach. (1803). Rabenhorst (1845) transferred the species to *Collema*, where the epithet *cyanescens* was available. *Collema cyanescens* Rabenh. is a legitimate name dating from 1845. The subsequent combination in *Leptogium* is cited as *L. cyanescens* (Rabenh.) Körber.

*Ex.4. Geiseleria* Klotzsch (1841) is illegitimate under Art. 52.1, being a superfluous replacement name for *Decarinium* Raf. (1825). In 1856, Gray published *Croton* subg. *Geiseleria*, which has priority from that date and is cited as *C. subg. Geiseleria* A. Gray, not *C. subg. Geiseleria* "(Klotzsch) A. Gray". As it was proposed as a replacement name, its type is *C. glandulosus* L., the type of *Decarinium* Raf. and automatic type (Art. 7.5) of *Geiseleria* Klotzsch.

*Note 1.* When the epithet of a name illegitimate under Art. 52.1 is re-used at the same rank, the resulting name is illegitimate unless either the type of the name causing illegitimacy is explicitly excluded or its epithet is unavailable for use.

*Ex.5. Menispermum villosum* Lam. (1797) is illegitimate under Art. 52.1 because *M. hirsutum* L. (1753) was cited in synonymy. The name *Cocculus villosus* DC. (1817), based on *M. villosum*, is also illegitimate since the type of *M. hirsutum* was not excluded and the epithet *hirsutus* was available for use in *Cocculus*.

*Ex.6. Cenomyce ecmocyna* Ach. (1810) is an illegitimate renaming of *Lichen gracilis* L. (1753). *Scyphophora ecmocyna* Gray (1821), based on *C. ecmocyna*, is also illegitimate since the type of *L. gracilis* was not excluded and the epithet *gracilis* was available for use. When proposing the combination *Cladonia ecmocyna*, Leighton (1866) explicitly excluded *L. gracilis* and thereby published the legitimate name of a new species, *Cladonia ecmocyna* Leight.

*Ex.7. Ferreola ellipticifolia* Stokes (1812) is illegitimate under Art. 52.1 because *Maba elliptica* J. R. Forst. & G. Forst. (1776) was cited in synonymy. Bakhuizen van den Brink published *Diospyros ellipticifolia* Bakh. (1933) as a replacement name for *F. ellipticifolia* and did not exclude the type of *M. elliptica*. *Diospyros ellipticifolia* is nevertheless a legitimate name, because in 1933 the epithet *elliptica* was not available for use in *Diospyros* due to the existence of *D. elliptica* Knowlt. (1902), of which *D. elliptica* (J. R. Forst. & G. Forst.) P. S. Green (1969) is an illegitimate later homonym (Art. 53.1).



## CHAPTER VIII. Names of anamorphic fungi or fungi with a pleomorphic life cycle

### Article 59

59.1 A name published prior to 1 January 2013 for a taxon of non-lichen-forming *Ascomycota* and *Basidiomycota*, with the intent or implied intent of applying to or being typified by one particular morph (e.g. anamorph or teleomorph), may be legitimate even if it otherwise would be illegitimate under Art. 52 on account of the protologue including a type (as defined in Art. 52.2) referable to a different morph. If the name is otherwise legitimate, it competes for priority (Art. 11.3 and 11.4; see also Art. 57.2).

*Ex.1. Penicillium brefeldianum* B. O. Dodge (1933) was described and based on a type with both the anamorph and teleomorph (and therefore necessarily typified by the teleomorph element alone under previous editions of this *Code*). The combination *Eupenicillium brefeldianum* (B. O. Dodge) Stolk & D. B. Scott (1967) for the teleomorph is legitimate. *Penicillium dodgei* Pitt (1980), typified by the anamorph in a dried culture “derived from Dodge’s type”, did not include the teleomorphic type of *P. brefeldianum* and therefore it too is legitimate. However, when considered a species of *Penicillium*, the correct name for all its states is *P. brefeldianum*.

*Note 1.* Except as provided in Art. 59.1, names of fungi with mitotic asexual morphs (anamorphs) as well as a meiotic sexual morph (teleomorph) must conform to the same provisions of this *Code* as all other fungi.

*Note 2.* Previous editions of this *Code* provided for separate names for mitotic asexual morphs (anamorphs) of certain pleomorphic fungi and required that the name applicable to the whole fungus be typified by a meiotic sexual morph (teleomorph). Under the current *Code*, however, all legitimate fungal names are treated equally for the purposes of establishing priority, regardless of the life history stage of the type (but see Art. 57.2; see also Art. 14.13).

*Ex.2. Mycosphaerella aleuritidis* (Miyake) S. H. Ou (1940), when published as a new combination, was accompanied by a Latin diagnosis of the newly discovered teleomorph corresponding to the anamorph on which the basionym *Cercospora aleuritidis* Miyake (1912) was typified. Under previous editions of this *Code*, *M. aleuritidis* was considered to be the name of a new species with a teleomorph type, dating from 1940, and with authorship attributed solely to Ou. Under the current *Code*, the name is cited as originally published, *M. aleuritidis* (Miyake) S. H. Ou, and is typified by the type of the basionym.

*Ex.3.* In the protologue of the teleomorph-typified *Venturia acerina* Plakidas ex M. E. Barr (1968) the anamorph-typified *Cladosporium humile* Davis (1919) was included as a synonym. The name *V. acerina* is not illegitimate as it was published prior to 1 January 2013, but *C. humile* is the earliest legitimate name at the rank of species.

*Note 3.* Names proposed simultaneously for separate morphs (e.g. anamorph and teleomorph) of a taxon of non-lichen-forming *Ascomycota* and *Basidiomycota* are necessarily heterotypic and are not therefore alternative names as defined by Art. 36.2.

*Ex.4. Hypocrea dorotheae* Samuels & Dodd and *Trichoderma dorotheae* Samuels & Dodd were simultaneously validly published (in *Stud. Mycol.* 56: 112. 2006) for what the authors considered a single species with *PDD 83839* as the holotype. As these names were published before 1 January 2013 (see Art. 59.1 and Note 2), and as the authors explicitly indicated that the name *T. dorotheae* was typified by the anamorphic element of *PDD 83839*, both names are validly published and legitimate. They are not alternative names as defined in Art. 36.2.

## CHAPTER IX. Orthography and gender of names

### SECTION 1. Orthography

#### Article 60

60.1 The original spelling of a name or epithet is to be retained, except for the correction of typographical or orthographical errors and the standardizations imposed by Art. 60.4 (letters and ligatures foreign to classical Latin), 60.5 (*u/v* or *i/j* used interchangeably), 60.6 (diacritical signs and ligatures), 60.7 (intentional latinizations), 60.8 (compounding forms), 60.9 (hyphens), 60.10 (apostrophes and full stops), 60.11 (abbreviations), 60.12 (terminations; see also Art. 32.2), and 60.13 (epithets of fungal names) (see also Art. 14.11 and 15.1).

*Ex.1.* Retention of original spelling: The generic names *Mesembryanthemum* L. (1753) and *Amaranthus* L. (1753) were deliberately so spelled by Linnaeus and the spelling is not to be altered to “*Mesembrianthemum*” and “*Amarantus*”, respectively, although these latter forms are philologically preferable (see Bull. Misc. Inform. Kew 1928: 113, 287. 1928). – *Phoradendron* Nutt. (1848) is not to be altered to “*Phoradendrum*”. – *Triaspis mozambica* A. Juss. (1843) is not to be altered to “*T. mossambica*”, as in Engler (Pflanzenw. Ost-Afrikas C: 232. 1895). – *Alyxia ceylanica* Wight (1848) is not to be altered to “*A. zeylanica*”, as in Trimen (Handb. Fl. Ceylon 3: 127. 1895). – *Fagus sylvatica* L. (1753) is not to be altered to “*F. silvatica*”. Although the classical spelling is *silvatica*, the mediaeval spelling *sylvatica* is not an orthographical error (see also Rec. 60E). – *Scirpus cespitosus* L. (1753) is not to be altered to “*S. caespitosus*”.

*Ex.2.* \* Typographical errors: *Globba “brachycarpa”* Baker (1890) and *Hetaeria “alba”* Ridl. (1896) are typographical errors for *Globba trachycarpa* Baker and *Hetaeria alta* Ridl., respectively (see J. Bot. 59: 349. 1921).

*Ex.3.* “*Torilis” taihasenzanensis* Masam. (in J. Soc. Trop. Agric. 6: 570. 1934) was a typographical error for *Trollius taihasenzanensis*, as noted on the errata slip inserted between pages 4 and 5 of the same volume.

*Ex.4.* The misspelled *Indigofera “longipednnculata”* Y. Y. Fang & C. Z. Zheng (1983) is presumably a typographical error and is to be corrected to *I. longipedunculata*.

*Ex.5.* \* Orthographical error: *Gluta “benghas”* L. (1771), being an orthographical error for *G. renghas*, is cited as *G. renghas* L. (see Engler in Candolle & Candolle, Monogr. Phan. 4: 225. 1883); the vernacular name used as a specific epithet by Linnaeus is “*renghas*”, not “*benghas*”.

*Note 1.* Art. 14.11 provides for the conservation of a particular spelling of a name of a family, genus, or species (see Art. 14.8).

*Ex.6.* *Bougainvillea* Comm. ex Juss. (*‘Buginvillea’*), orth. cons. (see App. IIIA).

*Ex.7.* *Wisteria* Nutt. 1818, nom. cons. is not to be altered to *Wistaria*, although the genus was named in honour of Caspar Wistar, since *Wisteria* is the spelling used in App. IIIA (see Art. 14.8).

60.2 The words “original spelling” mean the spelling employed when a name of a new taxon or a replacement name was validly published. They do not refer to the use of an initial capital or lower-case letter, this being a matter of typography (see Art. 20.1 and 21.2, Rec. 60F).

60.3 The liberty of correcting a name is to be used with reserve, especially if the change affects the first syllable and, above all, the first letter of the name.

Ex.8. \* The spelling of the generic name *Lespedeza* Michx. (1803) is not to be altered, although it commemorates Vicente Manuel de Céspedes (see *Rhodora* 36: 130-132, 390-392. 1934). – *Cereus jamacaru* DC. (1828) may not be altered to *C. “mandacaru”*, even if *jamacaru* is believed to be a corruption of the vernacular name “mandacaru”.

60.4 The letters *w* and *y*, foreign to classical Latin, and *k*, rare in that language, are permissible in scientific names (see Art. 32.1(b)). Other letters and ligatures foreign to classical Latin that may appear in scientific names, such as the German *ß* (double *s*), are to be transcribed.

60.5 When a name has been published in a work where the letters *u*, *v* or *i*, *j* are used interchangeably or in any other way incompatible with modern practices (e.g. one letter of a pair not being used in capitals, or not at all), those letters are to be transcribed in conformity with modern nomenclatural usage.

Ex.9. *Curculigo* Gaertn. (1788), not “*Cvrcvligo*”; *Taraxacum* Zinn (1757), not “*Taraxacvm*”; *Uffenbachia* Fabr. (1763), not “*Vffenbachia*”.

Ex.10. “*Geastrvm hygrometricvm*” and “*Vredo pvstvlata*” of Persoon (1801) are spelled, respectively, *Geastrum hygrometricum* Pers. and *Uredo pustulata* Pers.

Ex.11. *Brachypodium “iaponicum”* of Miquel (1866) is spelled *Brachypodium japonicum* Miq.

60.6 Diacritical signs are not used in scientific names. When names (either new or old) are drawn from words in which such signs appear, the signs are to be suppressed with the necessary transcription of the letters so modified; for example *ä*, *ö*, *ü* become, respectively, *ae*, *oe*, *ue*; *é*, *è*, *ê* become *e*; *ñ* becomes *n*; *ø* becomes *oe*; *å* becomes *ao*. The diaeresis, indicating that a vowel is to be pronounced separately from the preceding vowel (as in *Cephaëlis*, *Isoëtes*), is a phonetic device that is not considered to alter the spelling; as such, its use is optional. The ligatures *–æ–* and *–œ–*, indicating that the letters are pronounced together, are to be replaced by the separate letters *–ae–* and *–oe–*.

Ex.12. Umlaut to be transcribed: “*Lühea*”, dedicated to Carl Emil von der Lühe, is spelled *Luehea* Willd. (1801).

60.7 When changes in spelling by authors who adopt personal, geographical, or vernacular names in nomenclature are intentional latinizations, they are to be preserved, except in epithets when they concern (a) only a termination to which Art. 60.12 applies, or (b) personal names in which the changes involve (1) omission of the final vowel or final consonant or (2) conversion of the final vowel to a different vowel, for which that letter is to be restored.

Ex.13. *Clutia* L. (1753), *Gleditsia* L. (1753), and *Valantia* L. (1753), commemorating Cluyt, Gleditsch, and Vaillant, respectively, are not to be altered to “*Cluytia*”, “*Gleditschia*”, and “*Vaillantia*”; Linnaeus deliberately latinized these personal names as *Clutius*, *Gleditsius*, and *Valantius*.

Ex.14. *Abies alcoquiana* Veitch ex Lindl. (1861), commemorating “Rutherford Alcock Esq.”, implies an intentional latinization of his family name to *Alcoquius*. In transferring the epithet to *Picea*, Carriere (1867) deliberately changed the spelling to “*alcockiana*”. The resulting combination is nevertheless correctly cited as *P. alcoquiana* (Veitch ex Lindl.) Carriere (see Art. 61.4).

Ex.15. *Abutilon glaziovii* K. Schum. (1891), *Desmodium bigelovii* A. Gray (1843), and *Rhododendron bureavii* Franch. (1887), commemorating A. F. M. Glaziou, J. Bigelow, and L. E. Bureau, respectively, are not to be changed to *A. “glazioui”*, *D. “bigelowii”*, or *R. “bureaui”*. In these three cases, the implicit latinizations *Glaziovius*, *Bigelovius*, and *Bureauius* result from conversion of the final vowel or consonant to a consonant and do not affect merely the termination of the names.

*Ex.16. Arnica chamissonis* Less. (1831) and *Tragus berteronianus* Schult. (1824), commemorating L. K. A. von Chamisso and C. L. G. Bertero, are not to be changed to A. "*chamissoi*" or T. "*berteroanus*". The derivation of these epithets from the third declension genitive (Rec. 60C Ex. 1(b)), a practice normally discouraged (see Rec. 60C.2), involves the addition of letters to the personal name and does not affect merely the termination.

*Ex.17. Acacia "brandegeana", Blandfordia "backhousii", Cephalotaxus "fortuni", Chenopodium "loureirei", Convolvulus "loureiri", Glochidion "melvilliorum", Hypericum "buckleii", Solanum "rantonnei", and Zygophyllum "billardierii"* were published to commemorate T. S. Brandegee, J. Backhouse, R. Fortune, J. de Loureiro, R. Melville and E. F. Melville, S. B. Buckley, V. Rantonnet, and J. J. H. de Labillardiere (de la Billardiere). The implicit latinizations are Brandegeus, Backhousius, Fortunus, Loureireus or Loureirus, Melvillius, Buckleius, Rantonneus, and Billardierius, but these are not acceptable under Art. 60.7. The names are correctly cited as A. *brandegeana* I. M. Johnst. (1925), *B. backhousei* Gunn & Lindl. (1845), *Cephalotaxus fortunei* Hook. (1850), *Chenopodium loureiroi* Steud. (1840), *Convolvulus loureiroi* G. Don (1836), *G. melvilleorum* Airy Shaw (1971), *H. buckleyi* M. A. Curtis (1843), *S. rantonnetii* Carriere (1859), and *Z. billardierei* DC. (1824).

*Ex.18. Mycena seynii* Quél. (in Bull. Soc. Bot. France 23: 351. 1877), commemorating Jules de Seynes, is not to be altered to *M. "seynesii"*. The implicit latinization of that name to Seynius results from omission of more than the final letter.

*Note 2.* The provisions of Art. 60.7, 60.12, and Rec. 60C deal with the latinization of names through their modification. Latinization is not the same as translation of a name (e.g. Tabernaemontanus, Latin for Bergzabern; Nobilis, Latin for Noble). Epithets derived from such Latin translations fall under Rec. 60C.2 and are not subject to standardization under Art. 60.7 or 60.12.

*Ex.19.* In *Wollembia nobilis* W. G. Jones & al. (1995), *nobilis*, an adjective with genitive *nobilis*, is the translation into Latin of the family name of the discoverer David Noble. *Cladonia abbatiana* S. Steenroose (1991) honours the French lichenologist H. des Abbayes, where Abbayes can be translated to Abbatiae (abbeyes). Neither epithet may be altered.

**60.8** Adjectival epithets that combine elements derived from two or more Greek or Latin words but are not formed in accordance with Rec. 60G.1(a) are to be corrected to conform with it, unless Rec. 60G.1(b) or (c) applies. In particular, the use, in pseudocompounding, of the genitive singular of Latin first-declension nouns (Rec. 60G.1(c)) instead of a regular compound (Rec. 60G.1(a)) is treated as an error to be corrected unless it serves to make an etymological distinction.

*Ex.20.* The epithet of *Pereskia "opuntiaeflora"* DC. (1828) is to be spelled *opuntiaiflora*, and that of *Myrosma "cannaefolia"* L. f. (1782), *cannifolia*.

*Ex.21.* The epithet of *Cacalia "napeaeifolia"* DC. (1838) and *Senecio "napeaeifolius"* (DC.) Sch. Bip. (1845) is to be spelled *napaeifolia (us)*; it refers to the resemblance of the leaves to those found in *Napaea* L. (not "*Napea*"), and the connecting vowel *-i-* should have been used instead of the genitive singular inflection *-ae-*.

*Ex.22.* In *Andromeda polifolia* L. (1753), the epithet is taken from a pre-Linnaean generic designation ("*Polifolia*" of Buxbaum) and is a noun used in apposition, not an adjective; it is not to be altered to "*poliifolia*" (*Polium*-leaved).

*Ex.23. Tetragonia tetragonoides* (Pall.) Kuntze (1891) was based on *Demidovia tetragonoides* Pall. (1781), the specific epithet of which was derived from the generic name *Tetragonia* and the suffix *oides*. Since this is a compound epithet derived from a noun and a suffix, not two Greek or Latin words, it is not to be altered to "*tetragonioides*".

60.9 The use of a hyphen in a compound epithet is treated as an error to be corrected by deletion of the hyphen. A hyphen is permitted only when the epithet is formed of words that usually stand independently, or when the letters before and after the hyphen are the same (see also Art. 23.1 and 23.3).

Ex.24. Hyphen to be omitted: *Acer pseudoplatanus* L. (1753), not “*pseudo-platanus*”; *Croton ciliatoglandulifer* Ortega (1797), not “*ciliato-glandulifer*”; *Eugenia costaricensis* O. Berg (1856), not “*costa-ricensis*”; *Ficus neoebudarum* Summerh. (1932), not “*neo-ebudarum*”; *Lycoperdon atropurpureum* Vittad. (1842), not “*atro-purpureum*”; *Scirpus* sect. *Pseudoeriophorum* Jurtzev (in Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 70(1): 132. 1965), not “*Pseudo-eriophorum*”.

Ex.25. Hyphen to be maintained: *Athyrium austro-occidentale* Ching (1986), *Piper pseudo-oblongum* McKown (1928), *Ribes non-scriptum* (Berger) Standl. (1930), *Vitis novae-angliae* Fernald (1917).

Ex.26. Hyphen to be inserted: in *Arctostaphylos “uva ursi”* (L.) Spreng. (1825), *Aster “novae angliae”* L. (1753), and *Coix “lacryma jobi”* L. (1753) the epithet is to be spelled *uva-ursi*, *novae-angliae*, and *lacryma-jobi*, respectively; in *Marattia “rolandi principis”* Rosenst. (1911), *rolandii-principis* (see Art. 60.12); in *Vaccinium* sect. “*Vitis idaea*” W. D. J. Koch (1837), *Vitis-idaea*; in *Veronica “anagallis s”* L. (1753), *anagallis-aquatica* (see Art. 23.3).

Note 3. Art. 60.9 refers only to epithets (in combinations), not to names of genera or taxa in higher ranks; a generic name published with a hyphen can be changed only by conservation (Art. 14.11; see also Art. 20.3).

Ex.27. *Pseudo-salvinia* Piton (1940) may not be changed to “*Pseudosalvinia*”; whereas by conservation “*Pseudo-elephantopus*” was changed to *Pseudelephantopus* Rohr (1792).

60.10 The use of an apostrophe in an epithet is treated as an error to be corrected by deletion of the apostrophe. The use of a full stop (period) in an epithet that is derived from a personal or geographical name that contains this full stop is treated as an error to be corrected by deletion of the full stop.

Ex.28. In *Cymbidium “i’ansonii”* Rolfe (1900), *Lycium “o’donellii”* F. A. Barkley (1953), and *Solanum tuberosum* var. “*murukewillu*” Ochoa (in *Phytologia* 65: 112. 1988), the final epithet is to be spelled *iansonii*, *odonellii*, and *murukewillu*, respectively.

Ex.29. In *Nesoluma “St.-Johnianum”* Lam & Meeuse (1938), derived from St. John, the family name of one of the collectors, the epithet is to be spelled *st-johnianum*.

60.11 Abbreviated names and epithets are to be expanded in conformity with nomenclatural tradition (see also Art. 23 \*Ex. 19).

Ex.30. In *Allium “a.-bolosii”* P. Palau (1953), dedicated to Antonio de Bolos y Vayreda, the epithet is spelled *antonii-bolosii*.

60.12 The use of a termination (for example *-i*, *-ii*, *-ae*, *-iae*, *-anus*, or *-ianus*) contrary to Rec. 60C.1 is treated as an error to be corrected (see also Art. 32.2). However, terminations of epithets formed in accordance with Rec. 60C.2 are not to be corrected.

Ex.31. In *Rhododendron “potanini”* Batalin (1892), commemorating G. N. Potanin, the epithet is to be spelled *potaninii* under Rec. 60C.1. However, in *Phoenix theophrasti* Greuter (1967), commemorating Theophrastus, it is not spelled “*theophrastii*” since Rec. 60C.2 applies.

Ex.32. *Rosa “pissarti”* Carriere (in *Rev. Hort.* 1880: 314. 1880) is a typographical error for *R. “pissardi”* (see *Rev. Hort.* 1881: 190. 1881), which is to be spelled *R. pissardii* (see Rec. 60C.1(b)).

*Ex.33.* In *Uladendron codesuri* Marc.-Berti (1971) the epithet derives from an acronym (CODESUR, Comisión para el Desarrollo del Sur de Venezuela), not a personal name, and is not to be changed to “*codesurii*” (as by Brenan in Index Kew., Suppl. 16: 296. 1981).

*Ex.34.* In *Asparagus tamaboki* Yatabe (1893) and *Agropyron kamoji* Ohwi (1942) the epithets correspond, respectively, to a Japanese vernacular designation, “tamaboki”, or to part of such a designation, “kamojigusa”, and are not therefore spelled “*tamabokii*” and “*kamojii*”.

*Note 4.* If the gender and/or number of a substantival epithet derived from a personal name is inappropriate for the sex and/or number of the person(s) whom the name commemorates, the termination is to be corrected in conformity with Rec. 60C.1.

*Ex.35.* *Rosa* ×“*toddii*” Wolley-Dod (in J. Bot. 69, Suppl.: 106. 1931) was named for “Miss E. S. Todd”; the epithet is to be spelled *toddiae*.

*Ex.36.* *Astragalus* “*matthewsii*” Podlech & Kirchoff (in Mitt. Bot. Staatssamml. München 11: 432. 1974) commemorates Victoria A. Matthews; the epithet is to be spelled *matthewsiae*. *A. matthewsiae* is not a later homonym of *A. matthewsii* S. Watson (1883) (see Agerer-Kirchoff & Podlech in Mitt. Bot. Staatssamml. München 12: 375. 1976).

*Ex.37.* *Codium* “*geppii*” (Schmidt in Biblioth. Bot. 91: 50. 1923), which commemorates A. Gepp and E. S. Gepp, is to be corrected to *C. geppiorum* O. C. Schmidt.

*Ex.38.* *Acacia* “*Bancrofti*” Maiden (in Proc. Roy. Soc. Queensland 30: 26. 1918) “commemorates the Bancrofts, father and son, the former the late Dr. Joseph Bancroft, and the latter Dr. Thomas Lane Bancroft”; the epithet is to be spelled *bancroftiorum*.

*Ex.39.* *Chamaecrista leonardiae* Britton (1930, ‘*leonardae*’), *Scolosanthus leonardii* Alain (1968), and *Frankenia leonardiorum* Alain (1968, ‘*leonardorum*’) were all based on type material collected by Emery C. Leonard and Genevieve M. Leonard. As there is no explicit contradicting statement, these names are to be accepted as dedicated to either or both, as indicated by the termination of the epithet.

**60.13** Epithets of fungal names derived from the generic name of an associated organism are to be spelled in accordance with the accepted spelling of the name of that organism; other spellings are regarded as orthographical variants to be corrected (see Art. 61).

*Ex.40.* *Phyllachora* “*anonicola*” Chardón (in Mycologia 32: 190. 1940) is to be altered to *P. anonicola* Chardón, since “*Anona*” L. is a spelling correctable to *Annona*. – *Meliola* “*albizziae*” Hansf. & Deighton (in Mycol. Pap. 23: 26. 1948) is to be altered to *M. albiziae*, since the spelling “*Albizzia*” Durazz. is a spelling correctable to *Albizia*.

#### Recommendation 60A

**60A.1** When a name of a new taxon or a replacement name, or its epithet, is to be derived from Greek, the transcription to Latin should conform to classical usage.

**60A.Ex.1** The Greek spiritus asper (an inverted apostrophe) in words transcribed to Latin should be replaced by the letter h, as in *Hyacinthus* (from ὑάκινθος) and *Rhododendron* (from ῥοδόδενδρον).

#### Recommendation 60B

**60B.1** When a new generic name, or epithet in a new name of a subdivision of a genus, is taken from the name of a person, it should be formed as follows (see Rec. 20A.1(i)):

(a) When the name of the person ends with a vowel, the letter *a* is added (thus *Ottoa* after *Otto*; *Sloanea* after *Sloane*), except when the name ends with *a*, when *ea* is added (e.g. *Collaea* after *Colla*), or with *ea* (as *Correa*), when no letter is added.

(b) When the name of the person ends with a consonant, the letters *ia* are added, but when the name ends with *er*, either of the terminations *ia* and *a* is appropriate (e.g. *Sesleria* after *Sesler* and *Kerneria* after *Kerner*).

(c) In latinized personal names ending with *us* this termination is dropped before applying the procedure described under (a) and (b) (e.g. *Dillenia* after *Dillenius*).

*60B.Note1* The syllables not modified by these endings are unaffected unless they contain letters, ligatures, or diacritical signs that must be transcribed under Art. 60.4 and 60.6.

*60B.Note2* More than one generic name, or epithet of a subdivision of a genus, may be based on the same personal name, e.g. by adding a prefix or suffix to that personal name or by using an anagram or abbreviation of it.

*60B.Ex.1* *Durvillaea* Bory (1826) and *Urvillea* Kunth (1821); *Lapeirousia* Pourr. (1788) and *Peyrousea* DC. (1838); *Engleria* O. Hoffm. (1888), *Englerastrum* Briq. (1894), and *Englerella* Pierre (1891); *Bouchea* Cham. (1832) and *Ubochea* Baill. (1891); *Gerardia* L. (1753) and *Graderia* Benth. (1846); *Martia* Spreng. (1818) and *Martusia* Schult. & Schult. f. (1822).

## Recommendation 60C

*60C.1* When personal names are given Latin terminations in order to form specific and infraspecific epithets, formation of those epithets is as follows (but see Rec. 60C.2):

(a) If the personal name ends with a vowel or *-er*, substantival epithets are formed by adding the genitive inflection appropriate to the sex and number of the person(s) honoured (e.g. *scopoli -i* for *Scopoli* (m), *fedtschenko -i* for *Fedtschenko* (m), *fedtschenko -ae* for *Fedtschenko* (f), *glaziou -i* for *Glaziou* (m), *lace -ae* for *Lace* (f), *gray -i* for *Gray* (m), *hooker -orum* for the *Hookers* (m)), except when the name ends with *a*, in which case adding *-e* (singular) or *-rum* (plural) is appropriate (e.g.  *triana -e* for *Triana* (m), *pojarkova -e* for *Pojarkova* (f), *orlovskaja -e* for *Orlovskaja* (f)).

(b) If the personal name ends with a consonant (but not in *-er*), substantival epithets are formed by adding *-i-* (stem augmentation) plus the genitive inflection appropriate to the sex and number of the person(s) honoured (e.g. *lecard -ii* for *Lecard* (m), *wilson -iae* for *Wilson* (f), *verlot -iorum* for the *Verlot* brothers, *braun -iarum* for the *Braun* sisters, *mason -iorum* for *Mason*, father and daughter).

(c) If the personal name ends with a vowel, adjectival epithets are formed by adding *-an-* plus the nominative singular inflection appropriate to the gender of the generic name (e.g. *Cyperus heyne -anus* for *Heyne*, *Vanda lindley -ana* for *Lindley*, *Aspidium berteroi -anum* for *Bertero*), except when the personal name ends with *-a* in which case *-n-* plus the appropriate inflection is added (e.g. *balansa -nus* (m), *balansa -na* (f), and *balansa -num* (n) for *Balansa*).

(d) If the personal name ends with a consonant, adjectival epithets are formed by adding *-i-* (stem augmentation) plus *-an-* (stem of adjectival suffix) plus the nominative singular inflection appropriate to the gender of the generic name (e.g. *Rosa webb -iana* for *Webb*, *Desmodium griffith -ianum* for *Griffith*, *Verbena hassler -iana* for *Hassler*).

*60C.Note1* The hyphens in the above examples are used only to set off the total appropriate termination.

60C.2 Personal names already in Greek or Latin, or possessing a well-established latinized form, should be given their appropriate Latin genitive to form new substantival epithets (e.g. *alexandri* from Alexander or Alexandre, *augusti* from Augustus or August or Auguste, *martini* from Martinus or Martin, *linnaei* from Linnaeus, *martii* from Martius, *wislizeni* from Wislizenus, *edithae* from Editha or Edith, *elisabethae* from Elisabetha or Elisabeth, *murielae* from Muriela or Muriel, *conceptionis* from Conceptio or Concepción, *beatricis* from Beatrix or Béatrice, *hectoris* from Hector; but not “*cami*” from Edmond Gustave Camus or Aimée Camus). Treating modern family names, i.e. ones that do not have a well-established latinized form, as if they were in third declension should be avoided (e.g. *munronis* from Munro, *richardsonis* from Richardson).

60C.3 New epithets based on personal names that have a well-established latinized form should maintain the traditional use of that latinized form.

*Ex.1.* In addition to the epithets in Rec. 60C.2, the following epithets commemorate personal names already in Latin or possessing a well-established latinized form: (a) second declension: *afzelii* based on Afzelius; *allemanii* based on Allemanius (Freire Allemao); *bauhini* based on Bauhinus (Bauhin); *clusii* based on Clusius; *rumphii* based on Rumphius (Rumpf); *solandri* based on Solandrus (Solander); (b) third declension: *bellonis* based on Bello; *brunonis* based on Bruno (Robert Brown); *chamissonis* based on Chamisso; (c) adjectives (see Art. 23.5): *afzelianus*, *clusianus*, *linnaeanus*, *martianus*, *rumphianus*, *brunonianus*, and *chamissonianus*.

60C.4 In forming new epithets based on personal names the customary spelling of the personal name should not be modified unless it contains letters, ligatures, or diacritical signs that must be transcribed under Art. 60.4 and 60.6.

60C.5 In forming new epithets based on personal names prefixes and particles should be treated as follows:

(a) The Scottish patronymic prefix “Mac”, “Mc”, or “M’”, meaning “son of”, should be spelled “mac” and united with the rest of the name (e.g. *macfadyenii* after Macfadyen, *macgillivrayi* after MacGillivray, *macnabii* after McNab, *mackeenii* after M’Ken).

(b) The Irish patronymic prefix “O” should be united with the rest of the name (Art. 60.10) or omitted (e.g. *obrienii*, *brienianus* after O’Brien, *okellyi* after O’Kelly).

(c) A prefix consisting of an article (e.g. le, la, l’, les, el, il, lo), or containing an article (e.g. du, de la, des, del, della), should be united to the name (e.g. *leclercii* after Le Clerc, *dubuyssonii* after DuBuysson, *lafarinae* after La Farina, *logatoi* after Lo Gato).

(d) A prefix to a family name indicating ennoblement or canonization should be omitted (e.g. *candollei* after de Candolle, *jussieui* after de Jussieu, *hilairei* after Saint-Hilaire, *remyi* after St Rémy); in geographical epithets, however, “St” should be rendered as *sanctus* (m) or *sancta* (f) (e.g. *sancti-johannis*, of St John, *sanctae-helena*, of St Helena).

(e) A German or Dutch prefix should be omitted (e.g. *iheringii* after von Ihering, *martii* after von Martius, *steenii* after van Steenis, *strassenii* after zu Strassen, *vechtii* after van der Vecht), but when it is normally treated as part of the family name it should be included in the epithet (e.g. *vonhausenii* after Vonhausen, *vanderhoekii* after Vanderhoek, *vanbruntiae* after Van Brunt).

#### Recommendation 60D

60D.1 An epithet derived from a geographical name is preferably an adjective and usually takes the termination *ensis*, (*a*)*nus*, *inus*, or *icus*.

60D.Ex.1 *Rubus quebecensis* L. H. Bailey (from Quebec), *Ostrya virginiana* (Mill.) K. Koch (from Virginia), *Eryngium amorginum* Rech. f. (from Amorgos), *Fraxinus pennsylvanica* Marshall (from Pennsylvania).



## Recommendation 60E

60E.1 The epithet in a name of a new taxon or replacement name should be written in conformity with the customary spelling of the word or words from which it is derived and in accordance with the accepted usage of Latin and latinization (see also Art. 23.5).

60E.Ex.1 *sinensis* (not *chinensis*).

## Recommendation 60F

60F.1 All specific and infraspecific epithets should be written with an initial lower-case letter.

## Recommendation 60G

60G.1 A name or epithet that combines elements derived from two or more Greek or Latin words should be formed, as far as practicable, in accordance with classical usage. This may be stated as follows (see also Rec. 60G Note 1):

(a) In a regular compound, a noun or adjective in non-final position appears as a compounding form generally obtained by

(1) removing the case ending of the genitive singular (Latin *-ae*, *-i*, *-us*, *-is*; transcribed Greek *-ou*, *-os*, *-es*, *-as*, *-ous* and its equivalent *-eos*) and

(2) before a consonant, adding a connecting vowel (*-i-* for Latin elements, *-o-* for Greek elements).

60G.Ex.1 The epithet meaning “having leaves like those of *Quercus*” is *quercifolia* (*Querc-*, connecting vowel *-i-*, and ending *-folia*).

60G.Ex.2 The epithet “*aquilegifolia*”, derived from the name *Aquilegia* must, under Art. 60.8, be changed to *aquilegiifolia* (*Aquilegi-*, connecting vowel *-i-*, and ending *-folia*).

(b) Exceptions to the procedure outlined in (a) are common, and one should review earlier usages of a particular compounding form. In forming apparently irregular compounds, classical usage is commonly followed.

60G.Ex.3 The compounding forms *hydro-* and *hydr-* (*Hydro-phyllum*) stem from water (*hydor*, *hydatos*); *calli-* (*Calli-stemon*) derives from the adjective beautiful (*kalos*); and *meli-* (*Meli-osma*, *Meli-lotus*) stems from honey (*mel*, *melitos*).

(c) In a pseudocompound, a noun or adjective in a non-final position appears as a word with a case ending, not as a modified stem. Examples are: *nidus-avis* (nest of bird), *Myos-otis* (mouse ear), *albo-marginatus* (white-margined), etc. In epithets where tingeing is expressed, the modifying initial colour often is in the ablative because the preposition *e*, *ex*, is implicit, e.g. *atropurpureus* (blackish purple) from “*ex atro purpureus*” (purple tinged with black). Other pseudocompounds have been deliberately introduced to reveal etymological differences when different word elements result in the same regular compound (see also Art. 60.8).

60G.Ex.4 The Latin words for tube (*tubus*, *tubi*) and for trumpet (*tuba*, *tubae*), in regular compounds, result in identical epithets (e.g. *tubiformis*), whereas the pseudocompound *tubaeformis* can only mean trumpet-formed, as in *Cantharellus tubaeformis* Fr. : Fr.

*60G.Ex.5* Regular compounds derived from papaya (*Carica, Caricae*) and sedge (*Carex, Caricis*) are identical, whereas the pseudocompound *caricaefolius* can only mean papaya-leaved.

*60G.Note1* Unless it serves to make an etymological distinction, the use, in a pseudocompound adjectival epithet, of the genitive singular of Latin first-declension nouns is treated as an error to be corrected (Art. 60.8).

*60G.Ex.6* The epithet “*aquilegiaefolia*” must, under Art. 60.8, be changed to *aquilegiifolia* (*Aquilegi-*, connecting vowel *i-*, and ending *folia*).

*60G.Note2* The hyphens in the above examples are given solely for explanatory reasons. For the use of hyphens in generic names and in epithets see Art. 20.3, 23.1, and 60.9.

## Recommendation 60H

*60H.1* The etymology of new generic names or of epithets in the names of new taxa should be explicitly stated, especially when the meaning is not obvious.

## Article 61

*61.1* Only one orthographical variant of any one name is treated as validly published: the form that appears in the original publication (but see Art. 6.10), except as provided in Art. 60 (typographical or orthographical errors and standardizations), Art. 14.11 (conserved spellings), and Art. 32.2 (improper Latin terminations).

*61.2* For the purpose of this *Code*, orthographical variants are the various spelling, compounding, and inflectional forms of a name or its final epithet (including typographical errors), only one nomenclatural type being involved.

*Ex.1.* *Nelumbo* Adans. (1763) and “*Nelumbium*” (Jussieu 1789) are spelling forms of a generic name based on *Nymphaea nelumbo* L., and are treated as orthographical variants. Similarly *Musineon* Raf. (1820) and “*Musenium*” (Nuttall 1840, an intended orthographical correction), both with *Seseli divaricatum* Pursh as type, are orthographical variants.

*Ex.2.* The epithet of *Selaginella apus* Spring (1840) is a noun in apposition, so that *apus* cannot be treated as an orthographical variant of the adjective *apodus*, used in *Lycopodium apodum* L. (1753). Spring cited *L. apodum* as a synonym of *S. apus*, but instead he should have adopted the former epithet and published “*S. apoda*”; consequently *S. apus* was nomenclaturally superfluous when published and is illegitimate under Art. 52.1.

*61.3* If orthographical variants of a name of a new taxon or replacement name appear in the original publication, the one that conforms to the rules and best suits the recommendations of Art. 60 is to be retained. If the variants conform and suit equally well, the first author who, in an effectively published text (Art. 29-31), explicitly adopts one of the variants and rejects the other(s) must be followed (see also Rec. 42A.2).

*61.4* The orthographical variants of a name are to be corrected to the validly published form of that name. Whenever such a variant appears in a publication, it is to be treated as if it appeared in its corrected form.

*Note 1.* In full citations it is desirable that the original form of a corrected orthographical variant of a name be added (Rec. 50F).

*61.5* Confusingly similar names based on the same type are treated as orthographical variants. (For confusingly similar names based on different types, see Art. 53.3-5.)

Ex.3. “*Geaster*” (Fries, 1829) and *Geastrum* Pers. (1794) : Pers. (1801) are similar names with the same type (see Taxon 33: 498. 1984); they are treated as orthographical variants despite the fact that they are derived from two different nouns, *aster* (*asteris*) and *astrum* (*astri*).

## SECTION 2. Gender

### Article 62

62.1 A generic name retains the gender assigned by nomenclatural tradition, irrespective of classical usage or the author’s original usage. A generic name without a nomenclatural tradition retains the gender assigned by its author (but see Art. 62.4).

*Note 1.* Tradition for generic names usually maintains the classical gender of the corresponding Greek or Latin word, if such exists, but may differ.

Ex.1. \* In accordance with tradition, *Adonis* L., *Atriplex* L., *Diospyros* L., *Eucalyptus* L’Hér., *Hemerocallis* L., *Orchis* L., *Stachys* L., and *Strychnos* L. must be treated as feminine while *Lotus* L. and *Melilotus* Mill. must be treated as masculine. Although their ending suggests masculine gender, *Cedrus* Trew and *Fagus* L., like most other classical tree names, were traditionally treated as feminine and thus retain that gender; similarly, *Rhamnus* L. is feminine, despite the fact that Linnaeus assigned it masculine gender. *Erigeron* L. (m), *Phyteuma* L. (n), and *Sicyos* L. (m) are other names for which tradition has reestablished the classical gender despite another choice by Linnaeus.

62.2 Compound generic names take the gender of the last word in the nominative case in the compound. If the termination is altered, however, the gender is altered accordingly.

Ex.2. Irrespective of the fact that the name *Parasitaxus* de Laub. (1972) was treated as masculine when published, its gender is feminine: it is a compound of which the last part coincides with the generic name *Taxus* L., which is feminine by tradition (Art. 62.1).

Ex.3. Compound generic names in which the termination of the last word is altered: *Dipterocarpus* C. F. Gaertn., *Stenocarpus* R. Br., and all other compounds ending in the Greek masculine *-carpos* (or *-carpus*), e.g. *Hymenocarpus* Savi, are masculine; those in *-carpa* or *-carpaea*, however, are feminine, e.g. *Callicarpa* L. and *Polycarpaea* Lam.; and those in *-carpon*, *-carpum*, or *-carpium* are neuter, e.g. *Polycarpon* L., *Ormocarpum* P. Beauv., and *Pisocarpium* Link.

(a) Compounds ending in *-botrys*, *-codon*, *-myces*, *-odon*, *-panax*, *-pogon*, *-stemon*, and other masculine words, are masculine.

Ex.4. Irrespective of the fact that the generic names *Andropogon* L. and *Oplopanax* (Torr. & A. Gray) Miq. were originally treated as neuter by their authors, they are masculine.

(b) Compounds ending in *-achne*, *-chlamys*, *-daphne*, *-glochis*, *-mecon*, *-osma* (the modern transcription of the feminine Greek word *οσμή*, *osmē*), and other feminine words, are feminine. An exception is made in the case of names ending in *-gaster*, which strictly speaking ought to be feminine but are treated as masculine in accordance with tradition.

Ex.5. Irrespective of the fact that *Tetraglochis* Poepp., *Triglochis* L., *Dendromecon* Benth., and *Hesperomecon* Greene were originally treated as neuter, they are feminine.

(c) Compounds ending in *-ceras*, *-dendron*, *-nema*, *-stigma*, *-stoma*, and other neuter words, are neuter. An exception is made for names ending in *-anthos* (or *-anthus*), *-chilos* (*-chilus* or *-cheilos*), and *-phykos* (*-phycos* or *-phycus*), which ought to be neuter, since that is the gender of the Greek words

άνθος, *anthos*, χείλος, *cheilos*, and φύκος, *phykos*, but are treated as masculine in accordance with tradition.

*Ex.6.* Irrespective of the fact that *Aceras* R. Br. and *Xanthoceras* Bunge were treated as feminine when first published, they are neuter.

62.3 Arbitrarily formed generic names or vernacular names or adjectives used as generic names, of which the gender is not apparent, take the gender assigned to them by their authors. If the original author failed to indicate the gender, the next subsequent author may choose a gender, and that choice, if effectively published (Art. 29-31), is to be accepted (see also Rec. 42A.2).

*Ex.7.* *Taonabo* Aubl. (1775) is feminine because Aublet's two species were *T. dentata* and *T. punctata*.

*Ex.8.* *Agati* Adans. (1763) was published without indication of gender; feminine gender was assigned to it by Desvaux (in *J. Bot. Agric.* 1: 120. 1813), who was the first subsequent author to adopt the name in an effectively published text, and his choice is to be accepted.

*Ex.9.* The original gender of *Manihot* Mill. (1754), as apparent from some of the species polynomials, was feminine, and *Manihot* is therefore to be treated as feminine.

62.4 Generic names ending in *-anthes*, *-oides*, or *-odes* are treated as feminine and those ending in *-ites* as masculine, irrespective of the gender assigned to them by the original author.

*Note 2.* Art. 14.11 provides for the conservation of a particular gender of a generic name.

#### Recommendation 62A

62A.1 When a genus is divided into two or more genera, the gender of the new generic name or names should be that of the generic name that is retained (see also Rec. 20A.1(i) and 60B).

62A.Ex.1 When *Boletus* L. : Fr. was divided, the segregated genera were usually given masculine names: *Xerocomus* Qué. (1887), *Boletellus* Murrill (1909), etc.

### DIVISION III. Provisions for the Governance of the *Code*

*Div.III.1* The *Code* may be modified only by action of a plenary session of an International Botanical Congress on a resolution moved by the Nomenclature Section of that Congress<sup>1</sup>.

*Div.III.2* Permanent nomenclature committees are established under the auspices of the International Association for Plant Taxonomy. Members of these committees are elected by an International Botanical Congress. The committees have power to co-opt and to establish subcommittees; such officers as may be desired are elected.

(1) General Committee composed of the secretaries of the other committees, the rapporteur-général, the president and the secretary of the International Association for Plant Taxonomy, and at least 5 members to be appointed by the Nomenclature Section. The rapporteur-général is charged with the presentation of nomenclature proposals to the International Botanical Congress.

(2) Nomenclature Committee for Vascular Plants.

(3) Nomenclature Committee for Bryophytes.

(4) Nomenclature Committee for Fungi.

(5) Nomenclature Committee for Algae.

(6) Nomenclature Committee on Fossils.

(7) Editorial Committee charged with the preparation and publication of the *Code* in conformity with the decisions adopted by the International Botanical Congress. It is chaired by the rapporteur-général of the previous Congress, who is charged with the general duties in connection with the editing of the *Code*.

*Div.III.3* The Bureau of Nomenclature of the International Botanical Congress. Its officers are: (1) the president of the Nomenclature Section, elected by the organizing committee of the International Botanical Congress in question; (2) the recorder, appointed by the same organizing committee; (3) the rapporteur-général, elected by the previous Congress; (4) the vice-rapporteur, elected by the organizing committee on the proposal of the rapporteur-général.

*Div.III.4* The voting on nomenclature proposals is of two kinds: (a) a preliminary guiding mail vote and (b) a final and binding vote at the Nomenclature Section of the International Botanical Congress.

Qualifications for voting:

(a) Preliminary mail vote:

(1) The members of the International Association for Plant Taxonomy.

(2) The authors of proposals.

(3) The members of the permanent nomenclature committees.

*Note 1.* No accumulation or transfer of personal votes is permissible.

(b) Final vote at the sessions of the Nomenclature Section:

(1) All officially enrolled members of the Section. No accumulation or transfer of personal votes is permissible.

(2) Official delegates or vice-delegates of the institutes appearing on a list drawn up by the Bureau of Nomenclature of the International Botanical Congress and submitted to the General Committee for final approval; such institutes are entitled to 1-7 votes, as specified on the list. No single institution, even in the wide sense of the term, is entitled to more than 7 votes. Transfer of institutional votes to specified vice-delegates is permissible, but no single person will be allowed more than 15 votes, personal vote included. Institutional votes may be deposited at the Bureau of Nomenclature to be counted in a specified way for specified proposals.<sup>2</sup>

<sup>1</sup> In the event that there should not be another International Botanical Congress, authority for the *International code of nomenclature for algae, fungi, and plants* shall be transferred to the International Union of Biological Sciences or to an organization at that time corresponding to it. The General Committee is empowered to define the machinery to achieve this.

<sup>2</sup> Prior to each International Botanical Congress any institution desiring to vote in the coming Nomenclature Section (and not listed as having been allocated a vote in the previous Nomenclature Section) should notify the Bureau of Nomenclature of the IBC of its wish to be allocated one or more votes and provide relevant information regarding its level of taxonomic activity.

## APPENDIX I. Names of hybrids

### Article H.1

*H.1.1* Hybridity is indicated by use of the multiplication sign × or by addition of the prefix “notho-”<sup>1</sup> to the term denoting the rank of the taxon.

<sup>1</sup> From the Greek νόθος, *nothos*, meaning hybrid.

### Article H.2

*H.2.1* A hybrid between named taxa may be indicated by placing the multiplication sign between the names of the taxa; the whole expression is then called a hybrid formula.

*Ex.1.* *Agrostis* L. × *Polypogon* Desf.; *Agrostis stolonifera* L. × *Polypogon monspeliensis* (L.) Desf.; *Melampsora medusae* Thüm. × *M. occidentalis* H. S. Jacks.; *Mentha aquatica* L. × *M. arvensis* L. × *M. spicata* L.; *Polypodium vulgare* subsp. *prionodes* (Asch.) Rothm. × *P. vulgare* L. subsp. *vulgare*; *Salix aurita* L. × *S. caprea* L.; *Tilletia caries* (DC.) Tul. & C. Tul. × *T. foetida* (Wallr.) Liro.

#### Recommendation H.2A

*H.2A.1* It is usually preferable to place the names or epithets in a formula in alphabetical order. The direction of a cross may be indicated by including the sexual symbols (♀: female; ♂: male) in the formula, or by placing the female parent first. If a non-alphabetical sequence is used, its basis should be clearly indicated.

### Article H.3

*H.3.1* Hybrids between representatives of two or more taxa may receive a name. For nomenclatural purposes, the hybrid nature of a taxon is indicated by placing the multiplication sign × before the name of an intergeneric hybrid or before the epithet in the name of an interspecific hybrid, or by prefixing the term “notho-” (optionally abbreviated “n-”) to the term denoting the rank of the taxon (see Art. 3.2 and 4.4). All such taxa are designated nothotaxa.

*Ex.1.* ×*Agropogon* P. Fourn. (1934); ×*Agropogon littoralis* (Sm.) C. E. Hubb. (1946); *Melampsora ×columbiana* G. Newc. (2000); *Mentha ×smithiana* R. A. Graham (1949); *Polypodium vulgare* nothosubsp. [or nsubsp.] *mantoniae* (Rothm.) Schidlay (in Futák, Fl. Slov. 2: 225. 1966); *Salix ×capreola* Andersson (1867). (The putative or known parentage is found in Art. H.2 Ex. 1.)

*H.3.2* A nothotaxon cannot be designated unless at least one parental taxon is known or can be postulated.

*H.3.3* For purposes of homonymy and synonymy the multiplication sign and the prefix “notho-” are disregarded.

*Ex.2.* ×*Hordelymus* Bachtcev & Darevsk. (1950) (*Elymus* L. × *Hordeum* L.) is a later homonym of *Hordelymus* (Jess.) Harz (1885).

*Note 1.* Taxa that are believed to be of hybrid origin need not be designated as nothotaxa.

*Ex.3.* The true-breeding tetraploid raised from the artificial cross *Digitalis grandiflora* L. × *D. purpurea* L. may, if desired, be referred to as *D. mertonensis* B. H. Buxton & C. D. Darl. (1931); *Triticum aestivum* L. (1753), which provides the type of *Triticum* L., is treated as a species although it is not found in nature and its genome has been shown to be composed of those of several wild species; the taxon known as *Phlox divaricata* subsp. *laphamii* (A. W. Wood) Wherry (in Morris Arbor. Monogr. 3: 41. 1955) was

believed by Levin (in *Evolution* 21: 92-108. 1967) to be a stabilized product of hybridization between *P. divaricata* L. subsp. *divaricata* and *P. pilosa* subsp. *ozarkana* Wherry; *Rosa canina* L. (1753), a polyploid believed to be of ancient hybrid origin, is treated as a species.

#### Recommendation H.3A

*H.3A.1* In named hybrids, the multiplication sign  $\times$  belongs with the name or epithet but is not actually part of it, and its placement should reflect that relation. The exact amount of space, if any, between the multiplication sign and the initial letter of the name or epithet should depend on what best serves readability.

*H.3.Note1* The multiplication sign  $\times$  in a hybrid formula is always placed between, and separate from, the names of the parents.

*H.3A.2* If the multiplication sign is not available it should be approximated by the lower-case letter “x” (not italicized).

#### Article H.4

*H.4.1* When all the parent taxa can be postulated or are known, a nothotaxon is circumscribed so as to include all individuals recognizably derived from the crossing of representatives of the stated parent taxa (i.e. not only the  $F_1$  but subsequent filial generations and also back-crosses and combinations of these). There can thus be only one correct name corresponding to a particular hybrid formula; this is the earliest legitimate name (Art. 6.5) in the appropriate rank (Art. H.5), and other names corresponding to the same hybrid formula are synonyms of it (but see Art. 52 Note 3).

*Ex.1.* The names *Oenothera  $\times$ drawertii* Renner ex Rostański (1966) and *O.  $\times$ wienii* Renner ex Rostański (1977) are both considered to apply to the hybrid *O. biennis* L.  $\times$  *O. villosa* Thunb.; the types of the two nothospecific names are known to differ by a whole gene complex; nevertheless, the earlier name is the correct name and the later name is treated as a synonym of it.

*Note 1.* Variation within nothospecies and nothotaxa of lower rank may be treated according to Art. H.12 or, if appropriate, according to the *International Code of Nomenclature for Cultivated Plants*.

#### Article H.5

*H.5.1* The appropriate rank of a nothotaxon is that of the postulated or known parent taxa.

*H.5.2* If the postulated or known parent taxa are of unequal rank the appropriate rank of the nothotaxon is the lowest of these ranks.

*Note 1.* When a nothotaxon is designated by a name in a rank inappropriate to its hybrid formula, the name is incorrect in relation to that hybrid formula but may nevertheless be correct, or may become correct later (see also Art. 52 Note 3).

*Ex.1.* The combination *Elymus  $\times$ laxus* (Fr.) Melderis & D. C. McClint. (1983), based on *Triticum laxum* Fr. (1842), was published for hybrids with the formula *E. farctus* subsp. *boreoatlanticus* (Simonet & Guin.) Melderis  $\times$  *E. repens* (L.) Gould, so that the combination is in a rank inappropriate to the hybrid formula. It is, however, the correct name applicable to all hybrids between *E. farctus* (Viv.) Melderis and *E. repens*.

*Ex.2.* Radcliffe-Smith incorrectly published the nothospecific name *Euphorbia  $\times$ cornubiensis* Radcl.-Sm. (1985) for *E. amygdaloides* L.  $\times$  *E. characias* subsp. *wulfenii* (W. D. J. Koch) Radcl.-Sm., although the correct nothospecific designation for all hybrids between *E. amygdaloides* and *E. characias* L. is *E.  $\times$ martini* Rouy (1900); later, he published the appropriate combination *E.  $\times$ martini* nothosubsp.



*cornubiensis* (Radcl.-Sm.) Radcl.-Sm. (in Taxon 35: 349. 1986). However, the name *E. ×cornubiensis* is potentially correct for hybrids with the formula *E. amygdaloides* × *E. wulfenii* W. D. J. Koch.

## Recommendation H.5A

*H.5A.1* When publishing a name of a new nothotaxon at the rank of species or below, authors should provide any available information on the taxonomic identity, at lower ranks, of the known or postulated parents of the type of the name.

## Article H.6

*H.6.1* A nothogeneric name (i.e. the name at generic rank for a hybrid between representatives of two or more genera) is a condensed formula or is equivalent to a condensed formula (but see Art. 11.9).

*H.6.2* The nothogeneric name of a bigeneric hybrid is a condensed formula in which the names adopted for the parental genera are combined into a single word, using the first part or the whole of one, the last part or the whole of the other (but not the whole of both) and, optionally, a connecting vowel.

*Ex.1.* ×*Agropogon* P. Fourn. (1934) (*Agrostis* L. × *Polypogon* Desf.); ×*Gymnanacamptis* Asch. & Graebn. (1907) (*Anacamptis* Rich. × *Gymnadenia* R. Br.); ×*Cupressocyparis* Dallim. (1938) (*Chamaecyparis* Spach × *Cupressus* L.); ×*Seleniphyllosum* G. D. Rowley (1962) (*Epiphyllum* Haw. × *Selenicereus* (A. Berger) Britton & Rose).

*Ex.2.* ×*Amarcrinum* Coutts (1925) is correct for *Amaryllis* L. × *Crinum* L., not “×*Crindonna*”. The latter formula was proposed by Ragionieri (1921) for the same nothogenus, but was formed from the generic name adopted for one parent (*Crinum*) and a synonym (*Belladonna* Sweet) of the generic name adopted for the other (*Amaryllis*). Being contrary to Art. H.6, it is not validly published under Art. 32.1(c).

*Ex.3.* The name ×*Leucadenia* Schltr. (1919) is correct for *Leucorchis* E. Mey. × *Gymnadenia* R. Br., but if the generic name *Pseudorchis* Ség. is adopted instead of *Leucorchis*, ×*Pseudadenia* P. F. Hunt (1971) is correct.

*Ex.4.* Boivin (1967) published ×*Maltea* for what he considered to be the intergeneric hybrid *Phippisia* (Trin.) R. Br. × *Puccinellia* Parl. As this is not a condensed formula, the name cannot be used for that intergeneric hybrid, for which the correct name is ×*Pucciphippisia* Tzvelev (1971). Boivin did, however, provide a Latin description and designate a type; consequently, *Maltea* B. Boivin is a validly published generic name and is correct if its type is treated as belonging to a separate genus, not to a nothogenus.

*H.6.3* The nothogeneric name of an intergeneric hybrid derived from four or more genera is formed from the name of a person to which is added the termination *ara*; no such name may exceed eight syllables. Such a name is regarded as a condensed formula.

*Ex.5.* ×*Beallara* Moir (1970) (*Brassia* R. Br. × *Cochlioda* Lindl. × *Miltonia* Lindl. × *Odontoglossum* Kunth).

*H.6.4* The nothogeneric name of a trigeneric hybrid is either (a) a condensed formula in which the three names adopted for the parental genera are combined into a single word not exceeding eight syllables, using the whole or first part of one, followed by the whole or any part of another, followed by the whole or last part of the third (but not the whole of all three) and, optionally, one or two connecting vowels, or (b) a name formed like that of a nothogenus derived from four or more genera, i.e. from a personal name to which is added the termination *ara*.

*Ex.6.* ×*Sophrolaeliocattleya* Hurst (1898) (*Cattleya* Lindl. × *Laelia* Lindl. × *Sophranitis* Lindl.); ×*Vascostylis* Takakura (1964) (*Ascocentrum* Schltr. ex J. J. Sm. × *Rhynchostylis* Blume × *Vanda* W. Jones ex R. Br.); ×*Rodrettiopsis* Moir (1976) (*Comparettia* Poepp. & Endl. × *Ionopsis* Kunth × *Rodriguezia* Ruiz & Pav.);

×*Devereuxara* Kirsch (1970) (*Ascocentrum* Schltr. ex J. J. Sm. × *Phalaenopsis* Blume × *Vanda* W. Jones ex R. Br.).

## Recommendation H.6A

*H.6A.1* When a nothogeneric name is formed from the name of a person by adding the termination *ara*, that person should preferably be a collector, grower, or student of the group.

### Article H.7

*H.7.1* The name of a nothotaxon that is a hybrid between subdivisions of a genus is a combination of an epithet, which is a condensed formula formed in the same way as a nothogeneric name (Art. H.6.2-4), with the name of the genus.

*Ex.1.* *Ptilostemon* nothosect. *Platon* Greuter (in Boissiera 22: 159. 1973), comprising hybrids between *P.* sect. *Platyrrhaphium* Greuter and *P.* sect. *Ptilostemon*; *P.* nothosect. *Plinia* Greuter (in Boissiera 22: 158. 1973), comprising hybrids between *P.* sect. *Cassinia* Greuter and *P.* sect. *Platyrrhaphium*.

### Article H.8

*H.8.1* When the name or the epithet in the name of a nothotaxon is a condensed formula (Art. H.6 and H.7), the parental names used in its formation must be those that are correct for the particular circumscription, position, and rank accepted for the parental taxa.

*Ex.1.* If the genus *Triticum* L. is interpreted on taxonomic grounds as including *Triticum* (s. str.) and *Agropyron* Gaertn., and the genus *Hordeum* L. as including *Hordeum* (s. str.) and *Elymus* L., then hybrids between *Agropyron* and *Elymus* as well as between *Triticum* (s. str.) and *Hordeum* (s. str.) are placed in the same nothogenus, ×*Tritordeum* Asch. & Graebn. (1902). If, however, *Agropyron* is treated as a genus separate from *Triticum*, hybrids between *Agropyron* and *Hordeum* (s. str. or s. 1.) are placed in the nothogenus ×*Agrohordeum* E. G. Camus ex A. Camus (1927). Similarly, if *Elymus* is treated as a genus separate from *Hordeum*, hybrids between *Elymus* and *Triticum* (s. str. or s. 1.) are placed in the nothogenus ×*Elymotriticum* P. Fourn. (1935). If both *Agropyron* and *Elymus* are given generic rank, hybrids between them are placed in the nothogenus ×*Agroelymus* E. G. Camus ex A. Camus (1927); ×*Tritordeum* is then restricted to hybrids between *Hordeum* (s. str.) and *Triticum* (s. str.), and hybrids between *Elymus* and *Hordeum* are placed in ×*Elyhordeum* Mansf. ex Tsitsin & Petrova (1955), replacing ×*Hordelymus* Bachtcev & Darevsk. (1950) non *Hordelymus* (Jess.) Harz (1885).

*Ex.2.* When *Orchis fuchsii* Druce was renamed *Dactylorhiza fuchsii* (Druce) Soó the name for its hybrid with *Coeloglossum viride* (L.) Hartm., ×*Orchicoeloglossum mixtum* Asch. & Graebn. (1907), had to be changed to ×*Dactyloglossum mixtum* (Asch. & Graebn.) Rauschert (1969).

*H.8.2* Names ending in *ara* for nothogenera, which are equivalent to condensed formulae (Art. H.6.3 and H.6.4(b)), are applicable only to hybrids that are accepted taxonomically as derived from the parents named.

*Ex.3.* If *Euanthe* Schltr. is recognized as a distinct genus, hybrids simultaneously involving its only species, *E. sanderiana* (Rchb.) Schltr., and the three genera *Arachnis* Blume, *Renanthera* Lour., and *Vanda* W. Jones ex R. Br. must be placed in ×*Cogniauxara* Garay & H. R. Sweet (1966); if, on the other hand, *E. sanderiana* is included in *Vanda*, the same hybrids are placed in ×*Holttumara* Holttum (1958) (*Arachnis* × *Renanthera* × *Vanda*).

### Article H.9

*H.9.1* In order to be validly published, the name of a nothogenus or of a nothotaxon with the rank of subdivision of a genus (Art. H.6 and H.7) must be effectively published (see Art. 29-31) with a statement of the names of the

parent genera or subdivisions of genera, but no description or diagnosis is necessary, whether in Latin, English, or any other language.

*Ex.1.* Validly published names: *×Philageria* Mast. (1872), published with a statement of parentage, *Lapageria* Ruiz & Pav. *× Philesia* Comm. ex Juss.; *Eryngium* nothosect. *Alpestris* Burdet & Miede (pro sect.) (in *Candollea* 23: 116. 1968), published with a statement of its parentage, E. sect. *Alpina* H. Wolff *×* E. sect. *Campestris* H. Wolff; *×Agrohordeum* E. G. Camus ex A. Camus (1927), published with a statement of parentage, *Agropyron* Gaertn. *× Hordeum* L., and its later synonym *×Hordeopyron* Simonet (1935, "*Hordeopyrum*"; see Art. 32.2), published with an identical statement of parentage.

*Note 1.* Since the names of nothogenera and nothotaxa with the rank of a subdivision of a genus are condensed formulae or treated as such, they do not have types.

*Ex.2.* The name *×Ericalluna* Krüssm. (1960) was published for plants that were thought to be the product of the cross *Calluna vulgaris* (L.) Hull *× Erica cinerea* L. If it is considered that these plants are not hybrids but variants of *E. cinerea*, the name *×Ericalluna* Krüssm. remains available for use if and when known or postulated plants of *Calluna* Salisb. *× Erica* L. should appear.

*Ex.3.* *×Arabidobrassica* Gleba & Fr. Hoffm. (in *Naturwissenschaften* 66: 548. 1979), a nothogeneric name that was validly published with a statement of parentage for the result of somatic hybridization by protoplast fusion of *Arabidopsis thaliana* (L.) Heynh. with *Brassica campestris* L., is also available for intergeneric hybrids resulting from normal crosses between *Arabidopsis* Heynh. and *Brassica* L., should any be produced.

*Note 2.* Names published merely in anticipation of the existence of a hybrid are not validly published under Art. 36.1(b).

## Article H.10

*H.10.1* Names of nothotaxa at the rank of species or below must conform with the provisions (a) in the body of the *Code* applicable to names in the same ranks (see Art. 32.4) and (b) in Art. H.3. Infringements of Art. H.3.1 are treated as errors to be corrected (see also Art. 11.9).

*Ex.1.* The nothospecific name *Melampsora ×columbiana* G. Newc. (in *Mycol. Res.* 104: 271. 2000) was validly published, with a Latin description and designation of a holotype, for the hybrid between *M. medusae* Thüm. and *M. occidentalis* H. S. Jacks.

*Note 1.* Taxa previously published as species or infraspecific taxa that are later considered to be nothotaxa may be indicated as such, without change of rank, in conformity with Art. 3 and 4 and by the application of Art. 50 (which also operates in the reverse direction).

*H.10.2* The following are considered to be formulae and not true epithets: designations consisting of the epithets of the names of the parents combined in unaltered form by a hyphen, or with only the termination of one epithet changed, or consisting of the specific epithet of the name of one parent combined with the generic name of the other (with or without change of termination).

*Ex.2.* The designation *Potentilla "atrosanguinea-pedata"* published by Maund (in *Bot. Gard.* 5: No. 385, t. 97. 1833) is considered to be a formula meaning *P. atrosanguinea* Lodd. ex D. Don *× P. pedata* Nestl.

*Ex.3.* *Verbascum "nigro-lychnitis"* (Schiede, *Pl. Hybr.:* 40. 1825) is considered to be a formula, *V. lychnitis* L. *× V. nigrum* L.; the correct binary name for this hybrid is *V. ×schiedeanum* W. D. J. Koch (1844).

*Ex.4.* In *Acaena × anserovina* Orchard (1969) (*A. anserinifolia* (J. R. Forst. & G. Forst.) J. Armstr. *× A. ovina* A. Cunn.) the epithet (contrary to Rec. H.10A) combines the first part of the first and the whole of the

second epithet in the names of the parental species; as more than the termination of the first epithet is omitted, *anserovina* is a true epithet.

*Ex.5.* In *Micromeria* × *benthamineolens* Svent. (1969) (*M. benthamii* Webb & Berthel. × *M. pineolens* Svent.) the epithet (contrary to Rec. H.10A) combines the first part of the first and the second part of the second epithet in the names of the parental species; as neither epithet is unaltered, *benthamineolens* is a true epithet.

*Note 2.* Since the name of a nothotaxon at the rank of species or below has a type, statements of parentage play a secondary part in determining the application of the name.

*Ex.6.* *Quercus* × *deamii* Trel. (in Mem. Natl. Acad. Sci. 20: 14. 1924) when described was considered as the cross *Q. alba* L. × *Q. muehlenbergii* Engelm. However, progeny grown from acorns of the tree from which the type originated led Bartlett to conclude that the parents were in fact *Q. macrocarpa* Michx. and *Q. muehlenbergii*. If this conclusion is accepted, the name *Q. ×deamii* applies to *Q. macrocarpa* × *Q. muehlenbergii*, and not to *Q. alba* × *Q. muehlenbergii*.

#### Recommendation H.10A

*H.10A.1* In forming epithets for names of nothotaxa at the rank of species and below, authors should avoid combining parts of the epithets of the names of the parents.

#### Recommendation H.10B

*H.10B.1* When contemplating the publication of names for hybrids between named infraspecific taxa, authors should carefully consider whether these names are really needed, bearing in mind that formulae, though more cumbersome, are more informative

### Article H.11

*H.11.1* The name of a nothospecies of which the postulated or known parent species belong to different genera is a combination of a nothogeneric name with a nothospecific epithet.

*Ex.1.* × *Heucherella tiarelloides* (Lemoine & É. Lemoine) H. R. Wehrh. is considered to have originated from the cross between a garden hybrid of *Heuchera* L. and *Tiarella cordifolia* L. (see Stearn in Bot. Mag. 165: ad t. 31. 1948). Its basionym, *Heuchera ×tiarelloides* Lemoine & É. Lemoine (1912), is therefore incorrect.

*H.11.2* The final epithet in the name of an infraspecific nothotaxon of which the postulated or known parental taxa are assigned to different species may be placed subordinate to the name of a nothospecies (but see Rec. H.10B).

*Ex.2.* *Mentha* × *piperita* L. nothosubsp. *piperita* (*M. aquatica* L. × *M. spicata* L. subsp. *spicata*); *M. ×piperita* nothosubsp. *pyramidalis* (Ten.) Harley (in Kew Bull. 37: 604. 1983) (*M. aquatica* L. × *M. spicata* subsp. *tomentosa* (Briq.) Harley).

### Article H.12

*H.12.1* Subordinate taxa within nothospecies may be recognized without an obligation to specify parent taxa at the subordinate rank. In this case non-hybrid infraspecific categories of the appropriate rank are used.

*Ex.1.* *Mentha* × *piperita* f. *hirsuta* Sole; *Populus* × *canadensis* var. *serotina* (R. Hartig) Rehder and *P. ×canadensis* var. *marilandica* (Poir.) Rehder (see also Art. H.4 Note 1).

*Note 1.* When there is no statement of parentage, Art. H.4 and H.5, governing the circumscription and appropriate rank of hybrid taxa, do not apply.

*Note 2.* Art. H.11.2 and H.12.1 cannot both be applied simultaneously at the same infraspecific rank.

*H.12.2* Names published at the rank of nothomorph<sup>1</sup> are treated as having been published as names of varieties (see Art. 50).

<sup>1</sup> Editions of the *Code* prior to that produced as a result of the Sydney Congress of 1981 permitted only one rank under provisions equivalent to Art. H.12. That rank was equivalent to variety and the category was termed “nothomorph”.

## GLOSSARY

### *DEFINITIONS OF TERMS USED IN THIS CODE*

The particular usage of a few other words, not defined in the *Code*, is also indicated; these are italicized in the list below and are accompanied by editorial explanation of their use.

*admixture*. [Not defined] – something mixed in, especially a minor ingredient, used for components of a gathering that represent a taxon or taxa other than that intended by the collector, and that do not preclude the gathering, or part thereof, being a type specimen, the admixture being disregarded (Art. 8.2).

**alternative family name (nomen alternativum)**. One of eight family names, each regularly formed from a generic name in accordance with Art. 18.1, allowed as an alternative (Art. 18.6) to one of the family names of long usage treated as validly published under Art. 18.5.

**alternative names**. Two or more different names based on the same type proposed simultaneously for the same taxon by the same author (Art. 36.2).

**analysis**. A figure or group of figures, commonly separate from the main illustration of the organism (though usually on the same page or plate), showing details aiding identification, with or without a separate caption (Art. 38.9).

**anamorph**. A mitotic asexual morph in pleomorphic fungi (Art. 59 Notes 1 and 2).

**ascription**. The direct association of the name of a person or persons with a new name or description or diagnosis of a taxon (Art. 46.3).

**author citation**. A statement of the name(s) of the author(s) responsible for the establishment or introduction of a name; when used, it is appended to that name (Art. 46-50).

**automatic typification**. (1) Typification of a nomenclaturally superfluous and illegitimate name by the type of the name which ought to have been adopted under the rules (Art. 7.5). (2) Typification of the name of a taxon above the rank of genus by the type of the generic name on which it is based (Art. 10.6 and 10.7).

**autonym**. An automatically established name in which a generic name or specific epithet is repeated as the final epithet in the name of a subdivision of a genus or of an infraspecific taxon that includes the type of the adopted, legitimate name of the genus or species, respectively; the final epithet of an autonym is not followed by an author citation (Art. 22.1 and 26.1). [Autonyms do not exist above the rank of genus.]

*available*. [Not defined] – applied to an epithet in a name (Art. 11.5 and 15.5), the type of which falls within the circumscription of the taxon under consideration and where the use of the epithet would not be contrary to the rules (see also **available name**).

**available name**. A name published under the *International Code of Zoological Nomenclature* with a status equivalent to that of a validly published name under the *International Code of Nomenclature for algae, fungi, and plants* (Art. 45.1 footnote).

**avowed substitute**. See **replacement name**.

**basionym**. The legitimate, previously published name on which a new combination or name at new rank is based. The basionym provides the final epithet, name, or stem of the new combination or name at new rank (Art. 6.10) (see also **name at new rank, new combination**).

**binary combination (binomial)**. A generic name combined with a specific epithet to form a species name (Art. 23.1).

*binary designation*. [Not defined] – an apparent binary combination that has not been validly published (Art. 46.4; see also Art. 6.3).

**binding decision**. A recommendation made by the General Committee and ratified by an International Botanical Congress on (1) whether or not a name is validly published (Art. 38.4) or (2) whether or not names are to be treated as homonyms (Art. 53.5). Binding decisions are listed in (1) App. VII or (2) VIII.

**binomial**. See *binary combination*.

**combinatio nova (comb. nov.)**. See *new combination*.

**combination**. A name of a taxon below the rank of genus, consisting of the name of a genus combined with one or two epithets (Art. 6.7).

**compound**. A name or epithet that combines elements derived from two or more Greek or Latin words, a regular compound being one in which a noun or adjective in a non-final position appears as a modified stem (Rec. 60G.1(a)) (see also *pseudocompound*).

**confusingly similar names**. Orthographically similar names at the rank of genus or below that are likely to be confused and are to be treated as homonyms if heterotypic (Art. 53.3, 53.4) or as orthographical variants if homotypic (Art. 61.5). Binding decisions may be made on whether or not the former are to be treated as homonyms (Art. 53.5 and App. VIII).

**conserved name (nomen conservandum)**. (1) A name of a family, genus, or species, or in certain cases a name of a subdivision of a genus or of an infraspecific taxon, ruled as legitimate and with precedence over other specified names even though it may have been illegitimate when published or lack priority (Art. 14.1-14.7, 14.10, App. II, III, and IV). (2) A name for which the type, orthography, or gender has been fixed by the conservation process (Art. 14.9, 14.11, App. III, and IV).

**correct name**. The name that must be adopted in accordance with the rules for a taxon with a particular circumscription, position, and rank (Art. 6.6, 11.1, 11.3, and 11.4).

**cultivar**. The basic independent category used for organisms in agriculture, forestry, and horticulture and defined and regulated in the *International Code of Nomenclature for Cultivated Plants* (Art. 28 Notes 2, 4, and 5).

**date of name**. The date of valid publication of a name (Art. 33.1).

**descriptio generico-specifica**. A single description simultaneously validating the names of a genus and its single species (Art. 38.5).

*description*. [Not defined] – a published statement of a feature or features of a taxon; a description (or a diagnosis) is required for valid publication of a name (Art. 38.1(a) and 38.3).

**descriptive name**. A name of a taxon above the rank of family not formed from a generic name (Art. 16.1(b)).

*designation*. [Not defined] – the term used for what appears to be a name but that (1) has not been validly published and hence is not a name in the sense of the *Code* (Art. 6.3 and 46.4) or (2) is not to be regarded as a name (Art. 20.4, 23.4, and 23.6).

**diagnosis**. A statement of that which in the opinion of its author distinguishes a taxon from other taxa (Art. 38.2); a diagnosis (or a description) is required for valid publication of a name (Art. 38.1(a)).

**duplicate**. Part of a single gathering of a single species or infraspecific taxon made by the same collector(s) at one time (Art. 8.3 footnote).

**effective publication.** Publication in accordance with Art. 29-31 (Art. 6.1).

*element* (as applied to typification). [Not defined] – applied to a specimen or illustration eligible as a type; also applied to a species name considered as the full equivalent of its type for the purposes of designation or citation of the type of a name of a genus or subdivision of a genus (Art. 10.1).

*epithet.* [Not defined] – used for the words in a combination other than the generic name and any rank-denoting term; hyphenated words are equivalent to a single word (Art. 6.7, 11.4, 21.1, 23.1, and 24.1; see also Art. H.10.2).

**epitype.** A specimen or illustration selected to serve as an interpretative type when the holotype, lectotype, or previously designated neotype, or all original material associated with a validly published name, cannot be identified for the purpose of the precise application of the name to a taxon (Art. 9.8).

**ex-type (ex typo), ex-holotype (ex holotypo), ex-isotype (ex isotypo), etc.** A living isolate obtained from the type of a name when this is a culture permanently preserved in a metabolically inactive state (Rec. 8B.2).

**final epithet.** The last epithet in sequence in any particular combination, whether in the rank of a subdivision of a genus, or of a species, or of an infraspecific taxon (Art. 11.4 footnote).

**forma specialis.** See *special form*.

**fossil-taxon.** A taxon (diatom taxa excepted) the name of which is based on a fossil type (Art. 1.2 and 13.3).

*gathering.* [Not defined] – used for a collection of one or more specimens made by the same collector(s) at the one place and time (Art. 8.2 and 8.3 footnote).

**heterotypic synonym (taxonomic synonym).** A name based on a type different from that of another name referring to the same taxon (Art. 14.4); termed a “subjective synonym” in the *International Code of Zoological Nomenclature* and the *International Code of Nomenclature of Bacteria (Bacteriological Code)* (Art. 14.4 footnote).

**holotype.** The one specimen or illustration used by the author, or designated by the author as the nomenclatural type (Art. 9.1).

**homonym.** A name spelled exactly like another name published for a taxon of the same rank based on a different type (Art. 53.1). Note: names of subdivisions of the same genus or of infraspecific taxa within the same species that are based on different types and have the same final epithet are homonyms even if they differ in rank, the rank-denoting term not being part of the name (Art. 53.4).

**homotypic synonym (nomenclatural synonym).** A name based on the same type as that of another name (Art. 14.4); termed an “objective synonym” in the *International Code of Zoological Nomenclature* and the *International Code of Nomenclature of Bacteria (Bacteriological Code)* (Art. 14.4 footnote).

**hybrid formula.** An expression consisting of the names of the parent taxa of a hybrid with a multiplication sign placed between them (Art. H.2.1).

**illegitimate name.** A validly published name that is not in accordance with specified rules (Art. 6.4), principally those on superfluity (Art. 52) and homonymy (Art. 53 and 54).

**illustration.** A work of art or a photograph depicting a feature or features of an organism, e.g. a picture of a herbarium specimen or a scanning electron micrograph (Art. 8.1 footnote).

**improper Latin termination.** A termination of a name or epithet not in accordance with the termination mandated by the *Code* (Art. 16.3, 18.4, 19.7, and 32.2).



**indelible autograph.** Handwritten material reproduced by some mechanical or graphic process (such as lithography, offset, or metallic etching) (Art. 30.5).

**indirect reference.** A clear (if cryptic) indication, by an author citation or in some other way, that a previously and effectively published description or diagnosis applies (Art. 38.14) or that a basionym or replaced synonym exists (Art. 41.3).

**informal usage.** Usage of the same rank-denoting term at more than one non-successive position in the taxonomic sequence. Note: names involved in such usage are validly published but unranked (Art. 37.8).

*infraspecific.* [Not defined] – below the rank of species.

**isoeptype.** A duplicate specimen of the eptype (Rec. 9C).

**isolectotype.** A duplicate specimen of the lectotype (Rec. 9C).

**isoneotype.** A duplicate specimen of the neotype (Rec. 9C).

**isonym.** The same name based on the same type, published independently at different times perhaps by different authors. Note: only the earliest isonym has nomenclatural status (Art. 6 Note 2; but see Art. 14.15).

**isosyntype.** A duplicate of a syntype (Art. 9.12).

**isotype.** A duplicate specimen of the holotype (Art. 9.4).

**lectotype.** A specimen or illustration designated from the original material as the nomenclatural type if no holotype was indicated at the time of publication, or if the holotype is missing, or if a type is found to belong to more than one taxon (Art. 9.2).

**legitimate name.** A validly published name that is in accordance with the rules, i.e. one that is not illegitimate (Art. 6.5) (see also *illegitimate name*).

**misplaced term.** A rank-denoting term used contrary to the relative order specified in the *Code* (Art. 18.2, 19.2, 37.6, and 37 Note 1).

**monotypic genus.** A genus for which a single binomial is validly published (Art. 38.6) (see also *unispecific*).

**name.** A name that has been validly published, whether it is legitimate or illegitimate (Art. 6.3) (see also *designation*).

**name at new rank (status novus).** A new name based on a legitimate, previously published name at a different rank, which is its basionym and which provides the final epithet, name, or stem of the name at new rank (Art. 6.10 and 7.4) (see also *basionym, new combination*).

**name of a new taxon.** A name validly published in its own right, i.e. one not based on a previously validly published name; it is not a new combination, a name at new rank (status novus), or a replacement name (avowed substitute, nomen novum) (Art. 6.9).

**neotype.** A specimen or illustration selected to serve as nomenclatural type if no original material is extant or as long as it is missing (Art. 9.7).

**new combination (combinatio nova).** A new name of rank lower than genus based on a legitimate, previously published name, which is its basionym and which provides the final epithet of the new combination (Art. 6.10 and 7.4) (see also *basionym, name at new rank*).

*new name*. [Not defined] – A name as it appears in the place of its valid publication (see also **nomenclatural novelty**).

**nomen alternativum (nom. alt.)**. See **alternative family name**.

**nomen conservandum (nom. cons.)**. See **conserved name**.

**nomen novum (nom. nov.)**. See **replacement name**.

**nomen nudum (nom. nud.)**. A designation of a new taxon published without a description or diagnosis or reference to a description or diagnosis (Art. 38 Ex. 1, Rec. 50B).

**nomen rejiciendum (nom. rej.)**. A name rejected in favour of a name conserved under Art. 14 or a name ruled as rejected under Art. 56.1 (App. IIA, III, IV, and V) (see also **rejected name**).

**nomen utique rejiciendum (suppressed name)**. A name ruled as rejected under Art. 56.1. Note: it and all names for which it is a basionym are not to be used (see App. V).

**nomenclatural novelty**. Any or all of the categories: name of a new taxon, new combination, name at new rank, and replacement name (Art. 6 Note 3; see also Art. 6 Note 4) (see also **new name**).

**nomenclatural synonym**. See **homotypic synonym**.

**nomenclatural type**. The element to which the name of a taxon is permanently attached (Art. 7.2).

**non-fossil taxon**. A taxon the name of which is based on a non-fossil type (Art. 13.3).

**nothogenus**. A hybrid genus (Art. 3.2).

**nothomorph**. A term formerly denoting the only infraspecific rank, equivalent to variety, permitted within nothospecies. Names published as nothomorphs are now treated as names of varieties (Art. H.12.2 and footnote).

**nothospecies**. A hybrid species (Art. 3.2).

**nothotaxon**. A hybrid taxon (Art. 3.2 and H.3.1).

**objective synonym**. See **homotypic synonym**.

**opera utique oppressa**. See **suppressed works**.

**organism**. As used in this *Code*, the term is applied only to organisms traditionally studied by botanists, mycologists, and phycologists (Pre. 2 footnote, Pre. 8).

**original material**. The set of specimens and illustrations from which a lectotype may be chosen (see Art. 9.3 and Notes 2-4 for details; but see Art. 9.10).

**original spelling**. The spelling employed when a name of a new taxon or a replacement name was validly published (Art. 60.2).

**orthographical variants**. Various spelling, compounding, and inflectional forms of a name or its final epithet, only one nomenclatural type being involved (Art. 61.2).

**page reference**. Citation of the page or pages on which the basionym or replaced synonym was validly published or on which the protologue appears (Art. 41 Note 1).

**paratype.** Any specimen cited in the protologue that is neither the holotype nor an isotype, nor one of the syntypes if in the protologue two or more specimens were simultaneously designated as types (Art. 9.6).

**position.** [Not defined] – used to denote the placement of a taxon relative to other taxa in a classification, regardless of rank (Prin. IV, Art. 6.6 and 11.1).

**priority.** A right to precedence established by the date of valid publication of a legitimate name (Art. 11) or of an earlier homonym (Art. 53 Note 1), or by the date of designation of a type (Art. 7.9 and 7.10).

**protologue.** Everything associated with a name at its valid publication, e.g. description, diagnosis, illustrations, references, synonymy, geographical data, citation of specimens, discussion, and comments (Rec. 8A.4 footnote).

**provisional name.** A designation proposed in anticipation of the future acceptance of the taxon concerned, or of a particular circumscription, position, or rank of the taxon (Art. 36.1).

**pseudocompound.** A name or epithet that combines elements derived from two or more Greek or Latin words and in which a noun or adjective in a non-final position appears as a word with a case ending, not as a modified stem (Rec. 60G.1(c)) (see also **compound**).

**rank.** [Not defined] – used for the relative position of a taxon in the taxonomic hierarchy (Art. 2.1).

**rejected name.** A name ruled as not to be used, either by formal action under Art. 14 or 56.1 overriding other provisions of the *Code* (see ***nomen rejiciendum***, ***nomen utique rejiciendum***) or because it was nomenclaturally superfluous when published (Art. 52) or a later homonym (Art. 53 and 54).

**replaced synonym.** The legitimate or illegitimate, previously published name on which a replacement name (avowed substitute, *nomen novum*) is based. The replaced synonym, when legitimate, does not provide the final epithet, name, or stem of the replacement name (Art. 6.11).

**replacement name (avowed substitute, *nomen novum*).** A new name based on a legitimate or illegitimate, previously published name, which is its replaced synonym and which, when legitimate, does not provide the final epithet, name, or stem of the replacement name (Art. 6.11 and 7.3).

**sanctioned name.** The name of a fungus treated as if conserved against earlier homonyms and competing synonyms, through acceptance in a sanctioning work (Art. 15).

**special form (*forma specialis*).** A taxon of parasites, especially fungi, characterized from a physiological standpoint but scarcely or not at all from a morphological standpoint, the nomenclature of which is not governed by this *Code* (Art. 4 Note 4).

**specimen.** A gathering, or part of a gathering, of a single species or infraspecific taxon made at one time, disregarding admixtures, mounted either as a single preparation or as more than one preparation with the parts clearly labelled as being part of the same specimen (Art. 8.2 and 8.3).

**status.** (1) Nomenclatural standing with regard to effective publication, valid publication, legitimacy, and correctness (Art. 6 and 12.1). (2) Rank of a taxon within the taxonomic hierarchy (see ***name at new rank***).

**status novus (stat. nov.).** See ***name at new rank***.

**subdivision of a family.** Any taxon of a rank between family and genus (Art. 4 Note 2).

**subdivision of a genus.** Any taxon of a rank between genus and species (Art. 4 Note 2).

**subjective synonym.** See ***heterotypic synonym***.

**superfluous name.** A name that, when published, was applied to a taxon that, as circumscribed by its author, definitely included the type of a name that ought to have been adopted, or of which the epithet ought to have been adopted, under the rules (Art. 52.1).

**suppressed name.** See *nomen utique rejiciendum*.

**suppressed works (opera utique oppressa).** Works, ruled as suppressed, in which names in specified ranks are not validly published (Art. 34.1 and App. VI).

**synonym.** [Not defined] – one of two or more names that apply to the same taxon (see *heterotypic synonym*, *homotypic synonym*).

**syntype.** Any specimen cited in the protologue when there is no holotype, or any of two or more specimens simultaneously designated in the protologue as types (Art. 9.5).

**tautonym.** A binary designation in which the specific epithet exactly repeats the generic name (Art. 23.4).

**taxon (taxa).** A taxonomic group at any rank (Art. 1.1).

**taxonomic synonym.** See *heterotypic synonym*.

**teleomorph.** A meiotic sexual morph in pleomorphic fungi (Art. 59 Notes 1 and 2).

**type.** See *nomenclatural type*.

**type designation.** [Not defined] – an explicit statement that establishes the type of a name; either (1) a holotype (Art. 9.1) or syntype(s) (Art. 9.5) designated in the protologue or (2) a lectotype, neotype, or epitype subsequently designated under the provisions of Art. 9-10 and in accordance with Art. 7.7-10.

**unispecific.** [Not defined] – with a single species.

**validate.** [Not defined] – to make validly published; used in the context of a description or diagnosis, or illustration, effecting valid publication of a name (e.g. Art. 38 Ex. 20, 43.3, and 46 Ex. 6).

**validly published.** Effectively published and in accordance with Art. 32-45 or H.9 (Art. 6.2) (see *designation*, *name*).

**voted example.** An Example, denoted by an asterisk in the *Code*, accepted by an International Botanical Congress in order to govern nomenclatural practice when the corresponding Article is open to divergent interpretation or does not adequately cover the matter. A voted Example is therefore comparable to a rule, as contrasted with other Examples provided by the Editorial Committee solely for illustrative purposes (Art. 7 \*Ex. 13 footnote).