

A BASIS FOR AGREEMENT ON NOMENCLATURE AT THE ITHACA CONGRESS

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There is an insistent demand among botanists, especially among the non-taxonomists, that plant nomenclature be unified and stabilized—that the taxonomists “get together” on nomenclature. There is an impression that the present unsettled condition in nomenclature is a recent development due to conflicting codes, that if we could get back to the good old names all would be well. On the contrary there has never been a period since plants were given technical names when there were not complaints and criticisms concerning the “changing of well known names.” Beauvois more than one hundred years ago found it necessary to explain his failure to conserve “certain names already in use” and argues:

If botanists will adopt this principle [use of the oldest name, beginning with the works of Linnaeus] there will be in the future neither arbitrariness nor confusion in nomenclature Mibora will no longer be called Knappia in England and part of Germany; it will not be Sturmia for one, Chamagrostis for the other; it will be Mibora throughout the world and botanists will understand one another much better.

Does this not have a familiar ring? Codes of nomenclature have been adopted in an attempt to bring order out of confusion and not, as some seem to think, to introduce more confusion.

The non-taxonomist wishes to have one name for one plant, constant, invariable, and everlasting throughout the world. Those who were raised on the fifth edition of Gray's Manual, as was the writer, lamented the changes of well known names that came out in succeeding editions. We remember names as we learned them. To each, whether raised on “Gray,” “Wood,” or “Britton and Brown,” the well known name is the one familiar to *him*.

There is also an impression that the changes in names are due to the excessive activity of name-jugglers who are constantly searching for early names, bringing them to light, polishing them up, and setting them in place of the names we know, and placing their own names after the new combinations. There may be some slight basis for such an impression since occasionally triflers invade taxonomy as they may other branches of botany, but their influence, on the whole, has been small.

Changes of names are due to (1) differences in taxonomic opinion,

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(2) synonyms and homonyms, (3) incorrect identification. Let us examine these categories.

1. CHANGES OF NAMES DUE TO DIFFERENCES IN TAXONOMIC OPINION

"A name is an expression of a taxonomic idea." The limits of genera and species are matters of taxonomic opinion. This opinion is based upon knowledge of the morphology of the group in question but is influenced by the student's attitude toward the relationships of groups. Some are by nature "lumpers," others are "splitters," but all conscientious work takes into consideration the known facts. The arrangement or limitation of taxonomic groups is an attempt to express genetic relationships. It is clear that new facts may alter the opinion concerning relationships, and this changed concept may be reflected in the names by which the revised taxonomic ideas are expressed. Taxonomy is based chiefly on morphology. Morphology is not yet a completed study. The discovery of new facts is likely to continue for an indefinite period. So long as morphology is a living subject, so long may we expect changes in taxonomic concepts, thus necessitating changes in names. A large percentage of the changes of names comes in this category.

2. CHANGES OF NAMES DUE TO SYNONYMS AND HOMONYMS

Two or more names for a single taxonomic concept (synonyms) or the same name applied to two or more taxonomic concepts (homonyms) are the chief causes of confusion in nomenclature, and it is with this source of confusion that codes are chiefly concerned. Of these synonyms and homonyms some have been accepted in one part of the world and not in another, or by certain botanists and not by others. Some names, perchance the earliest, may have received no recognition by subsequent authors. Personal loyalties or national pride may have entered into the situation. Furthermore, when a species is transferred from one genus to another the species name may be already in use in the second genus, so that further change is required.

Botanists have found it necessary to establish rules (codes) to govern procedure when changes are made. No code can prevent changes in names. As has been shown above, changes are necessary and inevitable so long as taxonomy and morphology are living sciences. But a code should show how changes are to be made so that botanists may all make them in the same way.

In order to be of permanent value as a guide, a code must be founded on principles recognized and accepted by botanists in general. The details can be formulated only approximately because botanists can not foresee all possible cases nor the effect of the provisions in every case. There should be an opportunity for a revision of a code at intervals as dictated by experience. Botanists of the present can not bind those of the future. They may be able to agree on rules that compromise divergent views, but

unless these compromises appeal to future botanists as reasonable they will not be followed.

3. CHANGES OF NAMES DUE TO MISAPPLICATION OR INCORRECT IDENTIFICATION

Under categories 1 and 2 we have considered names as published by their authors. It is with such names that codes are concerned. But a serious source of confusion in the use of names is the misapplication of names by subsequent authors. It is easy to understand how such erroneous use took place; it is exceedingly difficult to clear up the confusion caused by it. Most early descriptions were very brief and inadequate, and there was little knowledge of plant geography. An author in writing a flora of a region may have misidentified some of his species, applying names to them that were originally applied to other species in another region. When such a work becomes the accepted manual or flora of a region these misapplied names have, to those who use the manual, all the "authority" of original publication.

For example, in the fifth edition of Gray's Manual a certain grass appears under the name *Panicum pauciflorum* Ell. Later it was thought that the grass there described was not the same as the closely related southern plant to which Elliott first gave the name. Hence in the sixth edition of the Manual *Panicum pauciflorum* was eliminated.

The discarding of *P. pauciflorum* was due to taxonomic opinion. Unfortunately, however, the name which was substituted was *P. scoparium* Lam., a species so different that no botanist had considered it even closely allied to *P. pauciflorum*. Here was a change based not on taxonomic opinion but on an erroneous identification. In the seventh edition of the Manual the error was corrected. *Panicum scoparium* Lam. was applied to the proper grass and the correct name, *P. scribnerianum* Nash, given to what had been called *P. scoparium* in the sixth edition. There was much regret and some irritation among users of the manual because of the change of this and other well known names, but a moment's consideration will show that if anyone is culpable it is the one who misapplied the name, not the one who, after studying the case anew, corrects it.

Changes in this category are necessary and inevitable until botanists cease to make mistakes. In extenuation of such errors it should be added that botanists have sometimes been forced to work with scant material or with insufficient library facilities, or have not been able to refer to the original specimens or types.

CODES OF NOMENCLATURE

The first serious attempt at international agreement was made at Paris in 1867 and resulted in the Paris Code. Experience showed that, as is not unusual when laws are proposed, the makers of the code had not

foreseen all cases nor the effect of some of the provisions. In 1905 at Vienna another attempt was made to formulate a code. This, the Vienna Code, was based upon the Paris Code but the provisions were greatly extended and modified.

About this time a group of American botanists formulated a set of rules known as the American Code. This was presented for consideration at Vienna but was not accepted. The American differed from the Vienna Code in two fundamental respects. It introduced the concept of types in determining the application of names, and it attempted to apply the principle of priority uniformly and rigidly.

Since 1905 American botanists have been divided in their support of these codes. A canvass of the Botanical Society of America a few years ago showed that approximately half of the taxonomists supported each code. There have been attempts to bring about an agreement on the basis of a compromise between the two codes or by a modification of the International Rules (Vienna Code), but some of the supporters of each have resisted this. The rigid supporters of the Vienna Code maintain that it is international and represents the majority opinion of the botanists of the world, while those of the American Code maintain that it is founded upon fundamental principles of inherent correctness and must ultimately prevail.

THE CODE OF THE FUTURE

In the writer's opinion the future code will be a modification of the International Rules which will include certain important features of the American Code. Such modification is even now under way. At the Brussels Congress (1910) the type concept of the American Code was recognized to the extent that a recommendation was added to the International Rules (Vienna Code) that types of species and genera be indicated in the future.

The Type-basis Code formulated by the Committee on Nomenclature of the Botanical Society of America (1919) modified the American Code by making it more flexible and introduced the idea of exceptions to the rules which should be validated by a judicial body.

Recently the British botanists proposed certain modifications of the International Rules at the Imperial Conference. The suggested changes would bring the rules in accord with the Type-basis Code on nearly all important points.

At the coming congress at Ithaca (International Congress of Plant Sciences, August 16-23, 1926), the British botanists will present these proposals for discussion, and the Botanical Society of America has passed a resolution providing for the examination of these proposals at that time.

In view of the discussion which will take place at this congress, the writer wishes to bring to the attention of botanists the important differences between the two codes and the probable direction which mutual modification

may take. Continued discussion should be helpful toward a final agreement, especially if it can be carried on impersonally and without prejudice or controversy. All botanists desire that there should be an agreement on nomenclature, but the details of this agreement must be worked out by taxonomists.

At this point it may be well to refer to the recommendations of the Imperial Botanical Conference held at London in 1924.

IMPERIAL BOTANICAL CONFERENCE

The conference adopted a set of resolutions prepared by its committee on nomenclature (Dr. A. B. Rendle, chairman).² These resolutions are to be presented to the International Congress at Ithaca.³ It would be well for all those interested in nomenclature to read the report of this committee (p. 301). The discussion was led by Mr. T. A. Sprague and was participated in by many botanists. The report was finally adopted unanimously by the conference. The arguments in favor of the adoption of the type concept could not have been more convincing if they had been set forth by an advocate of the Type-basis Code. The report favors the term "standard" in place of "type" (standard species, standard specimen). In cases in which it is desirable to conserve genera against the action of the rules a standard species should be indicated, which, however, may not be identical with the type species.

The Conference finally adopted the resolution, "The principle of the type-method of applying names should be formally accepted."

Other resolutions adopted were the following which bear especially upon a compromise between the two codes:

That the rule requiring Latin diagnoses after 1908 should be replaced by a recommendation to supply Latin diagnoses in the future.

That all combinations which are later homonyms should be rejected.

That all generic names which are later homonyms should be rejected except such as may be specially conserved.

That duplicate binomials should not be rejected.

That the list of conserved names should be revised.

Nearly all these modifications would act in the direction of the Type-basis Code. The word *compromise* has been used above by the writer. However, the proposals of the British botanists to modify the International Rules and the suggestions of the writer to modify the Type-basis Code are not made primarily as a compromise, but rather to incorporate elements which experience has shown will make the codes more workable. As a result of such changes they would approach agreement.

² Imperial Botanical Conference. Report of Proceedings. Cambridge, 1925.

³ The International Congress of Plant Sciences (Fourth International Botanical Congress), Ithaca, N. Y., August 16-23, 1926. Organization Committee, B. M. Duggar (chairman), H. C. Cowles, H. H. Whetzel. Chairman, Committee on Taxonomy, K. M. Wiegand. See also Amer. Jour. Bot., Jan., 1926, page 4 of cover.

DIFFERENCES BETWEEN THE INTERNATIONAL RULES AND THE TYPE-BASIS CODE

In a preceding paper the writer pointed out the important differences between the two codes.⁴ They differ chiefly in 8 respects:

(1) The type concept, (2) starting-point for nomenclature, (3) exceptions to the priority rule, (4) publication of genera, (5) priority of position, (6) validity of homonyms, (7) duplicate binomials, (8) Latin diagnosis.

I. TYPE CONCEPT

This is not included in the International Rules but is not contrary to their spirit. At the Brussels Congress a recommendation was added to the rules to the effect that in the future authors should indicate the types of new genera and species. The type concept is one of the fundamental principles of the Type-basis Code. The advantages of the type concept are becoming generally recognized by the advocates of the International Rules, and it is probable that the rules will be modified to include this concept. It is also probable that the modification will include the idea of standard species for those cases in which the type species would lead in a direction contrary to usage. The Botanical Society of America at its last meeting recommended that the International Rules be modified to include a recommendation that the authors of revisions of taxonomic groups indicate what they accept as the type species of genera and the type specimens of species. We may assume that this difference between the codes will soon disappear.

2. STARTING-POINT FOR NOMENCLATURE

Both codes take 1753 as the starting-point for the flowering plants. The International Rules accept different dates for starting-points for different groups of Cryptogams (Brussels Congress). The botanists concerned with the lower groups must ultimately come to an agreement on this, but with the modifications proposed by the British they may find that 1753 will be satisfactory for all groups.

3. EXCEPTIONS TO PRIORITY RULE

This is the most important difference between the codes, and probably both codes must be modified to reach an agreement. Many followers of the Type-basis Code admit that some genus names in general use should be conserved. If the supporters of the International Rules are willing to follow the suggestion of the British botanists that the list of conserved names be revised, it seems probable that an agreement can be reached on this point. The list appended to the International Rules evidently was never revised to accord with the rules as finally adopted by the congress. It contains many names that are not exceptions to the rules and thus unnecessarily extend the list. *Buchloe* and *Leersia* are conserved against

⁴ Jour. Bot. Brit. For. 60: 316. 1922.

Bulbilis and Homalocenchrus, but the latter two would be invalidated by the rules themselves.

In the writer's opinion there should be a list of *nomina conservanda*, but the present list should be revised. An agreement on a list of conserved names can be more readily reached if it is accepted that the rules shall prevail except when their strict application would result in changing well known and long-accepted names in two categories: first, genera containing a large number of species; and second, genera containing well known economic species.

The revision should be done by a competent international committee of taxonomists, who shall decide the many difficulties that will arise, including the interpretation of usage as applied to long-established names.

4. PUBLICATION OF GENERA

The original American Code admitted effective publication of a genus if it could be definitely connected with at least one species, because thus the type could be determined. The International Rules require that there should be a generic description or a reference to a previously published genus name to constitute effective publication.

The Type-basis Code requires for effective publication that the genus name shall be accompanied by a binomial species name (Art. 2) or by a definite reference to such. This provision eliminates those names which had been accepted by the American Code on the basis of being "associable by citation with a previously published binomial species" (Canon 10), for example, Homalocenchrus Mieg.

An examination of the grass genera has been made to bring them in accord with this provision of the Type-basis Code. The following American genera are included in the list of *nomina conservanda* of the International Rules. In the right-hand column are placed the American Code names. The italicized names in the left-hand column are accepted under the Type-basis Code because the corresponding American Code names are not effectively published:

International Rules	American Code
1. Rottboellia L. f. 1779	Manisuris L. 1771
2. Tragus Hall. 1768	Nazia Adans. 1763
3. Zoysia Willd. 1801	Osterdamia Neck. 1790
4. <i>Leersia</i> Swartz. 1788	Homalocenchrus Mieg. 1760
5. Hierochloa R. Br. 1810	Torresia Ruiz & Pav. 1798
6. <i>Cynodon</i> L. C. Rich. 1805	Capriola Adans. 1763
7. Ctenium Panz. 1813	Campulosus Desv. 1810
8. <i>Buchloe</i> Engelm. 1859	Bulbilis Raf. 1819
9. Diarrhena Beauv. 1812	Diarina Raf. 1808
10. <i>Zeugites</i> Schreb. 1791	Senites Adans. 1763
11. <i>Lamarkia</i> Moench. 1794	Achyrodes Boehm. 1760
12. <i>Glyceria</i> R. Br. 1810	Panicularia Fabr. 1763

It will be noted that six names out of the twelve are removed from the right-hand column, that is, the differences in usage of genus names based

on the list of *nomina conservanda* are reduced by 50 percent by the provisions of the Type-basis Code. If this proportion is found to prevail throughout the flowering plants, there will be a radical reduction in the number of names to be considered in a final adjustment. Even then the list must be open for additions as the consensus of opinion shall approve. If the advocates of the Type-basis Code are willing to concede the requirement of a generic description to establish effective publication, a still further reduction of differences is brought about. By agreeing so far as possible to exclude names which have been casually mentioned or published, but scarcely effectively so, the number of names remaining for actual consideration on the basis of priority *versus* usage (conserved names) would be relatively small.

5. PRIORITY OF POSITION

In order definitely to establish validity of publication when two or more competing names were published on the same date, the American Code provided that the name having precedence of position should have priority. This is often referred to as priority of position. The International Rules leave this to the choice of the next author and his decision is to be followed.

The advocates of the Type-basis Code will probably concede this point, because it seems unreasonable to displace a well known name merely on the ground of precedence of position.

6. VALIDITY OF HOMONYMS

The International Rules are vague on this point. They provide that "No one is authorized to reject, change, or modify a name (or combination of names) because . . . of the existence of an earlier homonym which is universally regarded as non-valid . . ." (Art. 50). This rule is difficult to apply. The British botanists say (Proc. Imper. Conf. 303): "As it is frequently a matter of opinion whether the first use of a name is a synonym or not, the conditional acceptance of homonyms leads to instability and uncertainty." Hence they propose, in their recommendations for the modification of the International Rules, that (*a*) all combinations which are later homonyms should be rejected, and (*b*) that generic names which are later homonyms should be rejected unless they are specially conserved. This seems entirely reasonable and probably will ultimately be accepted by botanists. The Type-basis Code rejects all later homonyms but provides for exceptions in special cases (Art. 7).

7. DUPLICATE BINOMIALS

The International Rules reject duplicate binomials (such as *Phragmites phragmites*). The Type-basis Code accepts these. There is a tendency among the followers of the latter code to reject them, and the British

botanists are proposing to accept them. This difference in the codes is a minor point and should be readily adjusted.

8. LATIN DIAGNOSIS

The International Rules provide (Art. 36) that "On and after January 1, 1908, the publication of names of new groups will be valid only when accompanied by a Latin diagnosis." There is no such provision in the Type-basis Code. The report of the British botanists, previously referred to, states that Article 36 does not comply with the general condition that "Rules should be reasonable, otherwise they will not be accepted; they can not be enforced," and was not in accordance with one of the leading principles on which the rules were based [Art. 3. The rules of nomenclature should neither be arbitrary nor imposed by authority, etc.]. The report considers the rule to be arbitrary and imposed by authority, and not founded on considerations forcible enough to secure general acceptance. The report proposes to revoke the rule and replace it by a recommendation to the same effect. The conference report states that 10,000 new species of flowering plants have been described without Latin diagnoses between 1908 and 1924.

Botanists generally recognize that Latin diagnoses are desirable, but many are not ready to invalidate names not accompanied by Latin diagnoses if otherwise properly published. A recommendation will probably be as effective as a rule and will not appear arbitrary.

SUMMARY

The program of the Section on Taxonomy of the Ithaca Congress (International Congress of Plant Sciences, August 16-23, 1926) will provide time for a discussion of nomenclature. The British botanists will present certain proposals for discussions. The Botanical Society of America has voted to examine these proposals, and to present certain modifications of the International Rules. The preceding synopsis of the present status of nomenclature is presented with the hope that it may direct the attention of the members of the Botanical Society to the items that are likely to be discussed.

Botanists look with regret or even irritation on changes in plant names, especially in those that are well known and long-established. Changes due to differences of taxonomic opinion must continue so long as morphology and taxonomy are living sciences. Changes due to synonyms and homonyms may be regulated by codes. Changes due to the misapplication of names ought to be made. Changes in the last two categories will become fewer as taxonomic study progresses.

A brief outline is given of the Paris Code, the Vienna Code, the American Code, and the Type-basis Code.

An outline of the British proposals is given.

The important differences between the International Rules and the Type-basis Code are outlined.

It is shown that in the American grass genera in the present list of *nomina conservanda* there is a reduction by 50 percent in the differences by applying the provisions of the Type-basis Code.

The list of *nomina conservanda* contains many names that are valid under the rules themselves and hence were not in need of conservation. The list should be revised for this and other reasons.

Agreement on a code can not prevent changes of names but it will provide an orderly method for making such changes as are necessary.

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