

Chapter 11

Nomenclatural Stability and the Botanical Code: A Historical Review

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The question of nomenclatural stability has been discussed by all International Botanical Congresses. To provide a historical background to the debate, this contribution reviews the deliberations of these Congresses on this subject and documents the major changes made to the International Code of Botanical Nomenclature in the cause of nomenclatural stability.

CANDOLLEAN LAWS

In the *Lois de la Nomenclature Botanique* (De Candolle, 1867), the forerunner of our modern Code, the principle of priority was clearly enunciated. Although this principle was generally accepted by botanists in the latter part of the nineteenth century, there was debate on whether the specific epithet itself had priority or alternatively did priority apply only to the entire binomial. The so-called Kew Rule (see Stevens, Ch 18), practised by British botanists and by Asa Gray and his followers in North America, maintained that the correct name for a species in a particular genus was the first complete binomial published in that genus. Botanists who adhered to the Kew Rule complained of the unnecessary creation of synonyms and the loss of well-known names which resulted from a strict adherence to priority.

REVISIO GENERUM PLANTARUM

Kuntze (1891-98) demonstrated that a strict adherence to the Candollean Laws would result in a change of 1074 generic names and about 30 000 specific ones. Many botanists were horrified by the magnitude of the name changes suggested by Kuntze (De Candolle, 1892). The German Botanical Society responded by circulating its own proposals which included a list of 81 generic names which they proposed should be retained in spite of their lack of priority (Ascherson, 1892). Then in 1897 the Berlin group (Engler *et al.*, 1897) published its own set of rules based on the assumption that extreme reform was

impractical. This included what came to be known as the Berlin Rule which recommended the abandonment of generic names not in general use 50 years after their publication. This was seen as a practical way of preventing the acceptance of the name changes proposed by Kuntze.

ROCHESTER CODE 1892

Meanwhile in North America a school of thought was growing up which like Kuntze accepted priority as absolute. A meeting of the Botanical Club held in Rochester, New York in August 1892 passed the Rochester Resolutions, later known as the Rochester Code (Anon., 1892; Fairchild, 1892). Priority of publication was seen as the fundamental principle of botanical nomenclature. Although it was acknowledged that such a method would result in the creation of new names and the loss of some well-known names, it was felt that in the long-term this would prove to be the best way of achieving nomenclatural stability.

GENOA CONGRESS 1892

The International Botanical Congress at Genoa in 1892 had before it both the Rochester Resolutions and the Berlin proposals. The Congress accepted 1753 as the starting point for both generic and specific names. It did not, however, make a decision on the list of generic names which the Berlin group had proposed for conservation. Instead the Congress appointed an International Standing Committee to which nomenclature questions could be referred (Underwood, 1892).

PREMIER CONGRESS 1900

No action was taken by the Premier Congrès International de Botanique held in Paris in 1900 except to make provision for the appointment of an International Commission which was charged with the task of drawing up a new Code. The Commission was subsequently formed under the chairmanship of John Briquet. Interestingly, Hua made a proposal to this Congress that an international journal be established for the publication of all new botanical names (Perrot, 1900).

PHILADELPHIA CODE 1904

In 1904 the Nomenclature Commission of the Botanical Club of the American Association for the Advancement of Science (AAAS) approved at a meeting in Philadelphia a new Code which became known as the Philadelphia Code (Arthur *et al.*, 1904, 1907). As well as advocating a rigid application of the principle of priority, this Code introduced the concept of nomenclatural types. The members of the Commission (Arthur *et al.*, 1904) considered that the Candolleian Laws should be abandoned and replaced by the Philadelphia

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Code. They also announced that it was their intention to make such a proposal at the next International Botanical Congress to be held in Vienna in 1905.

VIENNA CONGRESS 1905

The work of the International Commission set up by the Premier Congrès was brought together in Briquet's *Texte synoptique* (1905). The Second International Botanical Congress in Vienna in 1905 decided to base its deliberations and its Code on the Candollean Laws and in so doing rejected the proposal put forward by the authors of the Philadelphia Code. The Congress rejected the Berlin Rule and the Kew Rule, but accepted the principle of *nomina generica conservanda* (Rendle, 1905). The Vienna Code (Briquet, 1906) listed 404 names to be retained despite their lack of priority. The Vienna Code also states that "Botanical nomenclature begins with the *Species plantarum* of Linnaeus ed. 1 (1753) for all groups of vascular plants".

AMERICAN CODE OF BOTANICAL NOMENCLATURE 1907

Many American botanists were disappointed with the outcome of the Vienna Congress. They were especially concerned that the type method had not been accepted, and they resented the limitation to priority embodied in the Congress's acceptance of *nomina generica conservanda*. They also found the requirement that the description of new species be in Latin arbitrary and therefore offensive. Their dissatisfaction resulted in the publication of a modified version of the Philadelphia Code, which was called the American Code of Botanical Nomenclature (Arthur *et al.*, 1907).

BRUSSELS CONGRESS 1910

The type method, in a restricted sense, was accepted by the Third International Botanical Congress in Brussels in 1910. The Brussels Code (Briquet, 1912) included a Recommendation which suggests that "When publishing names of new groups, to indicate carefully the subdivision which is regarded as the type of the group; the typical genus in a family, the typical species in a genus, the typical variety or specimen of a species. This precaution will obviate difficulties of nomenclature if at some future time the group in question becomes broken up". The list of *nomina generica conservanda* was expanded to 516 names.

TYPE-BASIS CODE 1921

The Standing Committee on Botanical Nomenclature of the Botanical Society of America published the Type-Basis Code of Botanical Nomenclature (Hitchcock, 1921). This Code introduced more flexibility into the rules for establishing the type.

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THE IMPERIAL BOTANICAL CONFERENCE, LONDON, 1924

At the Imperial Botanical Conference in London in 1924 there was a sign of compromise between proponents of the American Code and the followers of the International Rules. The London Conference accepted in principle The Type-Basis Code, but suggested that the change in application of certain well-known generic names which would result from a rigid adherence to the type method could be prevented by "specially conserving such names, and attaching them to a standard-species which will preserve the generic name in its usual acceptation". The delegates also accepted the stricter homonym rule of the American Code; they rejected the necessity for a Latin diagnosis; accepted tautonyms; and the principle of *nomina conservanda* (Rendle, 1925).

ITHACA CONGRESS 1926

The Fourth International Botanical Congress, entitled the International Congress of Plant Sciences, was held at Cornell University, Ithaca in 1926. It had been decided that no legislation should be enacted. After a general discussion an international interim committee on nomenclature was appointed with Dr Briquet as Secretary to receive resolutions and suggestions and to report on these to the next International Botanical Congress (Briquet, 1929).

CAMBRIDGE CONGRESS 1930

At the Fifth International Botanical Congress at Cambridge in 1930, a compromise was reached between the followers of the International Rules and the advocates of the American Code. The Congress accepted the idea that the application of names should be determined by nomenclatural types; *nomina generica conservanda* were retained; the requirement for Latin diagnosis for valid publication of new names was deferred to 1932, and the stricter homonym rule of the American Code was accepted on the understanding that those generic names that were found to be affected by this change could be protected by conservation. The Congress rejected Burkill's (1929) proposal to resurrect the Berlin Rule as well as a proposal presented to it to extend the provision of *nomina conservanda* to specific names (Briquet, 1931). The Cambridge Rules (Briquet, 1935) did, however, provide for the rejection of *nomina ambigua* (Art. 62), *nomina dubia* (Art. 63) and *nomina confusa* (Art. 64). Provision was also made in the case of *nomina ambigua* and *nomina confusa* for lists to be incorporated into the Code.

AMSTERDAM CONGRESS 1935

The Sixth International Botanical Congress in Amsterdam in 1935 rejected the principle of *nomina specifica conservanda*. It did, however, appoint a Special Committee with a mandate "to draw up a list of names of economic plants in accordance with the International Rules". It was envisaged

that such a list would remain in use for ten years. Unfortunately, owing to the outbreak of World War II, this list was never completed (Sprague, 1936).

STOCKHOLM CONGRESS 1950

The possibility of adopting either *nomina specifica conservanda* or *nomina specifica rejicienda*, as a means of stabilizing the nomenclature of species of economic importance, was discussed by the Seventh International Botanical Congress at Stockholm in 1950. Despite a plea from J.S.L. Gilmour "that the time had come to adopt some method of avoiding changes in well-known names that had been widely used over a long period", and his urging "that the principle of stability was at least as important as the principle of priority; [and that] the latter was, indeed, only a means towards the accomplishment of the former", proposals for *nomina specifica conservanda* and *nomina specifica rejicienda* were both rejected by a large majority. Similarly, a suggestion made by N. Hylander that specific names published before 1890 and not accepted by other than their authors should be rejected was not supported (Lanjouw, 1953). The Stockholm Code (Lanjouw *et al.*, 1952) did, however, extend the provision of *nomina conservanda* to include the names of families, orders and intermediate taxa.

The Stockholm Congress also deleted Art. 63 dealing with *nomina dubia* from the Code and the provision for lists from Arts 62 and 64, which dealt with *nomina ambigua* and *nomina confusa* respectively (Lanjouw, 1953).

PARIS CONGRESS 1954

The Eighth International Botanical Congress in Paris in 1954 again debated the problem of stabilization of names of species of economic importance. The discussions focused on a proposal of Dandy *et al.* (1952) which suggested that nomenclatural stability of economic species might be obtained through the rejection of names rather than through conservation. They proposed that rejected names be placed on a list of *nomina specifica rejicienda*, and that such names be treated as illegitimate. They emphasized that "the principle of *nomina specifica rejicienda* must not be applied retroactively", and that before a name could be included "in the list of *nomina specifica rejicienda* it must be recommended for such inclusion by the Special Committee for the group concerned". Dandy explained to the Congress (Stafleu, 1955) that rejection of names would be easier than conservation since in the opinion of the proposers it would not be necessary to typify rejected names. The proposal initially received support but ultimately failed mainly because there were doubts that it would be possible to restrict such an Article to names of plants of economic importance. Some delegates were also worried that the international organizations would not be able to deal with the number of proposals that would be generated (Stafleu, 1954a).

Rickett (1953) proposed that a name without a type be rejected. He suggested that in order to prevent disadvantageous changes in nomenclature, names then in current use which were without a type be provided with a lectotype or neotype; but warned against "designating lectotypes or neotypes for untypified names which if accepted would displace names in current use.". This proposal was not discussed by the Congress but automatically rejected as it had not been accepted by the preliminary vote (Stafleu, 1954a).

The proposal put forward by the Geneva Conference (Stafleu, 1954b) that "A scientific name not used in a botanical paper published since 1900 may not be used to replace a currently accepted name.", was rejected partly because of the difficulty of defining "taken up", "currently accepted" and "botanical paper". Also some felt that as the proposal for *nomina specifica rejicienda* had been rejected it would be illogical to accept this proposal (Stafleu, 1955).

The Nomenclature Section of the Paris Congress appointed a Special Committee on Stabilization under the chairmanship of Gilmour. Also, in order to demonstrate the importance it attached to this matter the Section passed a resolution that "something should be done to solve the present problems of nomenclatural instability" (Stafleu, 1954a, 1955).

MONTREAL CONGRESS 1959

The Ninth International Botanical Congress held in Montreal in 1959 received Gilmour's (1959) report of the Special Committee on Stabilization. Gilmour indicated that it had discussed a number of ways in which stability might be achieved:

(1) *Nomina specifica conservanda*. It was suggested that Art. 14 be extended to include the names of species. Species names considered for conservation would be restricted to those "which have been used for a long period, are still widely current, and the changing of which would cause serious inconvenience among a large number of users; for example the names of important economic plants".

(2) *Nomina specifica rejicienda*. A proposal of Dandy & Ross (1959), similar to the one presented to the Paris Congress by Dandy *et al.* (1952), was discussed.

The Committee concluded that name changes not made for purely taxonomic reasons usually resulted from: (a) the unearthing of an earlier legitimate name for a species well-known by a later legitimate name; (b) the discovery that a well-known name is illegitimate; (c) the existence of an earlier homonym, thus making the well-known name an illegitimate later homonym; or (d) the realization that the type of a particular name is not referable to the species for which the name is presently applied. Supporters of *nomina specifica rejicienda* objected to a method which would permit the conservation of misapplications and other inaccuracies, and they maintained that rejection

would be simpler as it would not involve the difficulties and complications associated with typification as would conservation. Supporters of *nomina specifica conservanda* pointed out that while rejection would only save names in category (a), conservation would be capable of saving names in all four.

(3) Provision of lists attached to Arts 65 and 66. That is lists of *nomina ambigua* and *nomina confusa*.

(4) Avoidance of strict typification if this would be contrary to current use (Mansfeld & Schulze, in Gilmour, 1959).

(5) Non-recognition of *nomina specifica nuda* (de Wit, 1956).

(6) Rejection of names not typified by holotypes. Baehni (in Gilmour, 1959) proposed that "Beginning on 1 January, 1961, a specific name accepted as correct can only be replaced by an older legitimate name if the latter is typified by a holotype in the form of an authentic herbarium specimen".

(7) Proscription of certain works.

(8) Deletion of Arts 65 and 66 (Fosberg, 1958).

(9) Rejection of names not in *Index Kewensis*. D.D. Keck drew attention to a suggestion attributable to H.A. Gleason that "all specific names published prior to 1875 that had not been picked up by the *Index Kewensis* up to the first supplement following the Congress adopting the article should be outlawed".

(10) Compilation of lists of names. M. Lange suggested: (a) "compiling lists of names of all species considered to be of real significance"; and (b) "regarding this whole list as conserved against all future changes, whether the names on them were known to be in danger or not".

Gilmour, when addressing the Congress, indicated that although none of the above had received majority support, the general feeling of the Committee had been that something should be done, and that that something should be either conservation or rejection (Bureau of Nomenclature, 1960).

The Montreal Congress was reluctant to make any decisions without an assessment of the magnitude of the problem. The Congress did however accept the following motions. (1) "The Section on Nomenclature believes that meticulous monographic and revisional studies of groups of plants, utilizing the principle of priority and its modifications as outlined in the 1956 edition of the Code, offer the best means of achieving future stabilization of specific names". (2) "Whereas the Nomenclature Session of the IX International Botanical Congress is aware of the inconvenience to a large number of users of plant names caused by changes in the nomenclature of a number of species which are important economic plants, plants often used as textbook examples and plants that have been the subject of important scientific work; and whereas this Section is therefore willing to co-operate with all those interested in bringing about the stabilization of these plant names; and whereas, in order that the Section may ascertain the number and identity of the species involved, all organizations and all persons are invited to send to the General Committee

lists of plant names for which stabilization seems important, whether or not these names are now threatened; each name appearing on these lists being accompanied by a statement of the general importance of the species; and whereas the Committee will set up an organization to study these lists and will report to the next International Botanical Congress, the IX International Botanical Congress expresses the hope that all those concerned will give scientific and financial support for this important and difficult task" (Anon., 1959; Bureau of Nomenclature, 1960).

In order to put the second of these resolutions into effect the Secretary of the General Committee on Botanical Nomenclature wrote to the Secretary of the International Commission for the Nomenclature of Cultivated Plants requesting that the Commission provide the General Committee with lists of names for which stabilization seemed to be important (Anon., 1959).

Little (1957) presented two proposals to the Congress aimed at preventing overlooked names published in obscure works from replacing well-known names. First: "In Spermatophyta a generic or specific name more than fifty years old is rejected as not effectively published when it neither has been accepted by a second author nor has been cited in an index of scientific names within fifty years after publication or by 1 Jan. 1960, if published before 1910". Second: "To be effectively published, a name of a genus or species of Spermatophyta published before 1900 must have been cited in *Index Kewensis* including Supplementa I to XI". Both proposals were rejected (Bureau of Nomenclature, 1960).

Rickett & Camp (1955) submitted a proposal that "No name, even if prior, may displace a hitherto accepted name unless it is associated with a holotype cited in the original place of publication". Although the Rapporteur (Lanjouw, 1959) recommended acceptance of this proposal, as "Even if the principle of *nomina specifica conservanda*, or its counterpart is accepted, it would still be useful to have this Article because it would keep down the number of proposals for conservation or rejection", it was rejected (Bureau of Nomenclature, 1960).

EDINBURGH CONGRESS 1964

As a result of its request for lists of names of plants of economic importance, the General Committee received nine lists from the International Commission for the Nomenclature of Cultivated Plants, and a number of additional names were received from other sources (General Committee on Botanical Nomenclature, 1964; Stafleu, 1966). The work of assessing the names presented to the General Committee was undertaken by Dr W. Punt and a preliminary report entitled *Preliminary report on the stabilization of plants of economic importance* (General Committee on Botanical Nomenclature, 1964) was available to the Tenth International Botanical Congress at Edinburgh in 1964. Four lists were included in the report: (A) 11 names found

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to be incorrect and for which no legitimate alternative was then known to be available; (B) 295 names considered to be incorrect as submitted and for which the correct name was then available (some of the correct names had been known for sometime, others were documented for the first time in this report); (C) 237 names for which minor corrections such as author citation or orthography were required to the names as submitted; and (D) 723 names which were considered correct as submitted. Of the c. 2000 names submitted, it was estimated that fifty required a change of name.

The principle of stabilization was discussed at length during the Edinburgh Congress. Although it was acknowledged that all were in favour of stabilizing the nomenclature of plants of economic importance, the method of achieving this could not be agreed. Some were in favour of a list of stabilized (conserved) names, others considered stabilization could better be achieved by applying the Code and that a system of conserving specific names would be far too rigid. Dr A. Cronquist stated that he was opposed to a list of conserved names, but expressed his support for a suggestion which he attributed to Dr H.A. Gleason, that "any generic or specific name of a phanerogam that was published prior to 1885, but not included in the original edition of *Index Kewensis* or any of its supplements up to the next one, be considered as not validly published". That, stated Cronquist, "would avoid the possibility that someone will dig up a name in the *Saturday Evening Post* that would upset an existing name" (Stafleu, 1966).

A compromise was eventually reached through the following motion which was accepted by a large majority. "The Section on Nomenclature believes that careful monographic and revisional studies of groups of plants, utilizing the principle of priority and its modifications as outlined in the International Code of Botanical Nomenclature offer the best means of achieving future stabilization of specific names. The Section further recognizes its responsibility to cooperate with users of plant names in arriving at correct nomenclature. It proposes, therefore, that a standing committee be established to assist organizations in determining the correct names, in accordance with the Code, for plants with which they are concerned. This committee will be composed of taxonomists experienced in nomenclatural procedure and it is expected that the committee will consult specialists whenever appropriate. The Committee is invited to set up a list of names of plants of economic importance and to submit this list to a coming session of the Nomenclature Section of the International Botanical Congress". As a result a Standing Committee on Stabilization was established with B. C. Schubert as Secretary (Stafleu, 1966). This Committee published two reports (Stafleu & Voss, 1972; Anon., 1975).

The Section also discussed a proposal made from the floor by J.E. Dandy designed to amend Art. 69 so that it could be used not only to reject names which were already a source of error but also those which might become so in

the future. Although Dandy's proposal, which was amended a number of times, was rejected, the Section did authorize the setting up a Special Committee to study the problem of *nomina ambigua* (Stafleu, 1966).

SEATTLE CONGRESS 1969

The Report of the Special Committee on *nomina ambigua* was presented to the Eleventh International Botanical Congress, Seattle, 1969 by Dandy (Stafleu & Voss, 1972). It suggested that Art. 69 be amended to read "A name must be rejected if it is used in different senses, or has been consistently used in a sense different from that of the original author, and so has become a long-persistent source of error". The report further suggested that a sentence be added stating that "This Article applies only to names published not later than 50 years after the starting-point for nomenclature of the group concerned". It also supported the idea that a list of rejected names be included in the Code. After much discussion it was decided that the matter should be referred to a new Committee which should also study Arts 70 and 71, and that this Committee should report to the Leningrad Congress (Stafleu & Voss, 1972).

A proposal by Bullock (1968) that Art. 69 be deleted and replaced either by the "New Article 14 *bis*" put forward by Dandy & Ross (1959) to the Montreal Congress, or alternatively the wording for Art. 69 of Dandy as amended by the Edinburgh Congress, was not accepted (Stafleu & Voss, 1972).

Cronquist & Gleason (1968) made a formal proposal that "Any specific or generic name of a seed plant which appeared before 1885 and which was not included in the original edition of *Index Kewensis* or any of its supplements, up to and including the 15th supplement, is considered not to have been effectively published". The authors indicated that they had chosen the 15th supplement (then due for publication in 1976) as the cut off-point as this would enable botanists to communicate to the editors of *Index Kewensis* any names then in current use which had not been included in *Index Kewensis*. The proposal was not accepted (Stafleu & Voss, 1972).

A proposal of Crosswhite (1968) that "If a valid name published without indication of type has been in repeated use for at least 100 years but must be lectotypified by an element different from the usage, then the priority right of the name is suspended and the next available name must be used. This article applies only to cases discovered after 1956, in order that previously argued cases will not be changed", was also rejected (Stafleu & Voss, 1972).

LENINGRAD CONGRESS 1975

The Twelfth International Botanical Congress was held in Leningrad in 1975. Brummitt & Meikle (1974), in an attempt to find a way to protect names of species of economic and horticultural importance, put forward alternative proposals to amend Art. 14 to save species names either through conservation

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or rejection. The proposal to extend conservation to species names was rejected and the proposal on *nomina rejicienda* was withdrawn. Their proposal that "A special committee should be set up to report on the desirability and practicability or otherwise of both conservation and rejection of specific names, and to present recommendations or proposal to the XIII International Botanical Congress", was, however, accepted (Voss, 1979).

Faegri (1974), in the report of the Special Committee for Articles 69, 70, and 71 recommended that Art. 69 be reworded to read "A name must be rejected if it has been widely and persistently used for a taxon not including its type. Names thus rejected shall be placed [on] a list of *nomina rejicienda*". To which he suggested should be added a note to read. "Wide usage is documented by the use of the name in the wrong sense in.... non-taxonomic texts which are effectively published according to Arts. 29-31 before 1 January 19-." Faegri pointed out that this would enable the Article to be used not only to reject names which had become a persistent source of error but also to reject those which would become so if their correct typification were to require a change of application. Faegri concluded by saying "I should like to mention that by applying the Article in this way we adhere strictly to the type method, but we do sacrifice priority to safeguard clarity - like it is done in many other cases.". The Rapporteurs (Stafleu & Voss, 1975) pointed out that this proposal, like the present Art. 69, only provides for the *rejection* of names which have been used in a sense that has excluded their types. A well-known name which is discovered to be in use for a taxon which does not include its type could be *retained* in its well known sense only by a procedure for conservation". Faegri's rewording of Art. 69 was accepted but the "Note" was rejected (Stafleu *et al.*, 1978; Voss, 1979).

SYDNEY CONGRESS 1981

The Thirteenth International Botanical Congress at Sydney in 1981 discussed Greuter & McNeill's (1981) proposal to amend Art. 14 in order to provide for the conservation of species names. This proposal was sympathetically received but there was concern that unless the number of species names available for conservation were restricted the procedure could get out of hand. Greuter agreed but considered that two categories of species names should be admitted; "those of plants of major economic importance and those to replace the names presently [Leningrad Code] rejected under Art. 69. Following further discussion, the proposal was amended by the addition of a sentence stating that: "Conservation of species names is restricted to species of major economic importance" and was passed (Greuter & Voss, 1982).

The Congress (Greuter & Voss, 1982) also accepted the proposal made by the Second International Mycological Congress (van Warmelo, 1979) and defended by Demoulin *et al.* (1981) that the starting point for fungi be changed

to Linnaeus's *Species plantarum* (1753). In order to protect those names adopted by Persoon (*Synopsis Methodica Fungorum*, 1801), and Fries (*Systema Mycologicum*, 1821-32) the Sydney Code (Voss *et al.*, 1983) approved the term "sanctioned". Sanctioned names "are treated as if conserved against earlier homonyms and competing synonyms". They can be typified on any element associated with that name by the sanctioning author (Voss *et al.*, 1983).

BERLIN CONGRESS 1987

The Fourteenth International Botanical Congress held in Berlin in 1987 accepted Greuter *et al.*'s (1986) proposal to amend Arts 14 and 69 so that names which under Art. 69 of the Sydney Code were eligible for rejection might instead be conserved with a new type so that their traditional usage could be maintained (Greuter *et al.*, 1988, 1989).

The Congress (Greuter *et al.*, 1989) also passed a motion that "A Special Committee on Registration be set up to report to the XV International Botanical Congress". A further proposal accepted by the Congress stated "That the Special Committee on Registration be given a mandate to determine the desirability and feasibility, and, if appropriate to actively investigate, negotiate and test the structures, procedures and mechanisms, including finance, required for the implementation of a system for the registration of new plant names".

It is the mandate of the above Committee, together with that of the Special Committee on Names in Current Use, set up by the General Committee on Botanical Nomenclature in March 1989, which form the focus of this symposium.

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