THE International Code of Nomenclature for Cultivated Plants is an attempt to prepare a precise, stable and internationally acceptable system for the naming of plants under cultivation. The Code was drawn up by a special commission of the International Union of Biological Sciences in 1958 and has received general acceptance. One provision of this special code is the recognition of cultivar names (fancy names), for "an assemblage of cultivated individuals which are distinguished by any characters (morphological, physiological, cytological, chemical or others) significant for the purposes of agriculture, forestry, or horticulture, and which, when reproduced (sexually or asexually), retain their distinguishing features." Such taxa have usually been considered as varieties or forms in the past. The Code now requires that after January 1, 1959, such fancy names must have a definite structure, be markedly different from the scientific name of a Latin forma, they should be distinguished in print by single quotation marks or the abbreviation "cv." and follow prescribed rules of botanical and horticultural priority regarding their use and publication. Thus firm rules are now established to be followed in the naming of new varieties of cultivated plants.

An Appendix to the Code recommends the compilation and publication by interested groups of lists of cultivar names in categories of cultivated plants which are of significance to horticulture, forestry or agriculture. Such lists, when compiled, will form the basis for future registration of distinctive cultivated plants under equally distinctive names. The lists should enable one to determine the validity of existing names which are to be regarded as cultivar names, establish the uniqueness or identity of plants with cultivar names and clearly indicate names which have been used previously within a genus and therefore may not be used again. Only a few such lists exist and none has been compiled in the United States since the adoption of the Code for the Nomenclature of Cultivated Plants by the Botanical and Horticultural Congresses.
The Arnold Arboretum staff, under the sponsorship of the American Association of Botanic Gardens and Arboretaums has been designated for a two year period as the National Registration Authority for all groups of woody ornamental plants not otherwise represented by special societies. Staff members are engaged in preparing lists of cultivar names for genera or species of interest to them. Furthermore, the staff is accepting for National Registration plant names submitted by nurserymen and others in groups for which no registration lists exist. For such groups a rapid though admittedly preliminary survey of existing names is made and a list compiled. At irregular intervals future issues of Arnoldia will include the lists of cultivar names prepared by staff members and others for various genera of ornamental woody plants. The purpose of this article is to point out for other compilers some of the problems encountered in the preparation of such lists and to the general reader the proper use and value of such lists.

Procedure for the compilation of registration lists

For groups not represented by societies the preparation of a list of ALL cultivar names can involve considerable bibliographic work and can be a serious challenge to the horticultural taxonomist. Only rarely have we found a monographer or specialist with even a partial list already prepared. For most groups it is necessary to start at the beginning for the Code calls for the application of the principle of priority, the retroactive application of the rules, and a starting place in Philip Miller's Gardener's Dictionary, ed. 6, 1752, if no later list has been accepted.

The basic reference we have found most useful is Alfred Rehder's Bibliography of Cultivated Plants. The Arnold Arboretum maintains the card file of references on which this work was based. This file which contains many cultivar references that Rehder did not include in his publication, has been kept current, as far as possible, particularly with woody ornamental plants. The staff of the Arnold Arboretum will assist any compiler of cultivar lists with the references available in this file. The Royal Horticultural Society's Dictionary of Gardening, and Bean's Trees and Shrubs of the British Isles have proved to be of great value in this work. Among other modern treatments the work of Boom of Wageningen (e.g., Ned. Dendr., Benaming, Geschiedenis, etc.) and Krüssman's Handbuch der Laubgeholze, being published in parts, contain lists of cultivars recognized and in many cases described for the first time. For names used in American horticulture the editions of Hortus are useful. Current offerings of American nurserymen can be found in the several editions of Plant Buyers Guide although it must be acknowledged that all these names are without description or bibliographic reference, and extensive correspondence is necessary to determine the origin of many names. We appreciate the interest and cooperation we have received from the nurserymen whom we have contacted.

According to the suggestions of the Code, registration lists should include the
names of all the cultivars currently in cultivation, giving for each name the particular required in the registration of a new cultivar, e.g., the names of the owner of the parental stock, the originator and the individual who described the plant; the year of registration of the parentage of the plant; any particulars regarding the testing of the cultivar or any awards it may have received as well as a description of the plant. Further, the registration authority is requested to include all the cultivars, which, although no longer cultivated are of historical importance as ancestors of existing cultivars, and finally, all known synonymy of the group. No existing registration list of cultivar names contains this information in full.

Our goal in preparing lists is based on a taxonomic interest and will to the best of our ability:

1. List all of the cultivar names which can be properly assigned to the genus.
2. Indicate the earliest bibliographic reference where a description can be found.
3. Signify the validity of the reference according to the Code of Nomenclature.
4. Indicate synonymy where possible.
5. Note which cultivars are currently in cultivation in botanical gardens or available through commercial sources.
6. Indicate briefly the distinguishing characteristics used in describing the cultivar.
7. Record the date and place of origin of the cultivar when possible.

It is suggested that for easiest reference two separate lists be prepared, one to be an alphabetical list of all the names properly considered as cultivars whether so described originally or not, and a second list to place the cultivars in the proper species or other category where possible, recording at the same time the bibliographic reference and other data mentioned above. The first list of cultivar names will allow a quick decision by the originator of a new plant who wishes to register it, whether or not the name has been used before. The second list will be of greatest use for diagnostic and other taxonomic purposes.

What names should go into a list

The definition of a cultivar under the code is broad. Basically it is any plant under cultivation which can be distinguished morphologically, physiologically, chemically, or cytologically and be propagated to retain its distinctive features. Color, hardiness, taste, or chromosome numbers may be used as the basis of distinctiveness yet we know that color forms may depend on soil or other environ-
mental factors; hardiness may be a matter of microclimates; chromosome counts are subject to error and while some can be checked many cannot, and chemical difference as expressed in odor or taste may vary with the environment. Nevertheless a name submitted for registration and based on one of these tenuous characteristics must be accepted and considered. The case of older cultivar names is no different. The horticultural judgment of a worker in the 18th century must also be accepted since the rules are retroactive. The Registration Authority is not responsible for the decision of whether the cultivar is new or different, only whether or not the name submitted is legitimate under the Code. "The customer is always right" and a name submitted in proper form must be accepted.

A horticultural taxonomist working as a registration authority can and should express his judgment. The Code currently suggests that "testing" of cultivars be employed and the particulars reported. Unless the Registration Authority expresses an opinion in print the way is clear for repeated description of the same cultivar with only a change of name. The equation of older cultivars with plants bearing more modern names is difficult, but it is often possible and should be attempted.

The bibliographic reference

Cultivar names in registration lists are not required to carry the names of the original author or the author of any transfer for cultivar names in existence before January 1, 1959. There are advantages and disadvantages to this practice. It is already evident that taxa now recognized as cultivars were previously described as botanical varieties or forms. If the transfer of these names to a cultivar status was to be regarded as a distinction and bear the authors name the way would be open for the change of literally thousands of names of cultivated plants. The disadvantage is equally clear. Without the authors name the place of publication of the basionym and its description or typification remains obscure. We intend to offer where possible the oldest reference available containing the epithet now used as a cultivar name which also describes the plant. If the place of publication of the transfer of this basionym to cultivar status is known this will be retained in the files of the Registration Authority but will not be published. If the Code is changed in the future these references will be at hand.

For cultivar names registered after January 1, 1959, the Code makes no specific suggestions regarding the form of publication of registration lists but calls for information on the describer and data on the characteristics of the plant. At a recent meeting of an international committee on plant registration and nomenclature it was decided that registration is publication for purposes of priority. The question of how such names are to be cited in technical horticultural literature remains unanswered.

There are additional problems involving the questions of valid publication and authorship. The Code indicates in Articles 24–27 the requirements for publication. To be validly published the cultivar name is to be in a publication multi-
plied by any mechanical or graphical process and distributed to the public. Since January 1, 1959, the publication must be dated, at least to the year. It can be in any language. Only handwritten material, even though mechanically reproduced and newspapers are excluded. Therefore in the preparation of the registration lists of cultivar names ALL nursery catalogues prior to January 1, 1959 must be considered and since that date the majority of catalogues which are dated to the year. This presents a tremendous task to the compiler who must attempt to procure or survey catalogues from all countries in order to have an International Registration List based on the principle of priority recognized by the Code. Rehder and other horticultural taxonomists have accepted nursery lists, even price lists as the source of cultivar names. These references must be re-examined by the compiler of registration lists. Names which are commonly known with the following abbreviation "hort." have often been validly described by Rehder and Bailey in familiar horticultural encyclopedias but equally validly described under the present rules at an earlier date in nursery catalogues. The amount of bibliographic research required to do a careful job in the preparation of either a National or International Registration list under the present rules must not be under-estimated.

An additional difficulty comes in the encounter and acceptance of names described by anonymous authors in uncredited publications. "Späth" is commonly cited as the authority for names used in catalogues through several generations of Späth ownership of a nursery. Whether or not a particular Späth actually published the description of a new cultivar is as difficult to determine as the author of a current catalogue of an existing nursery. A cultivar name validly described and published only a few years ago in the catalogue of an imaginary and authorless Johnny Jump Up Garden Center must be considered and listed. It appears that anonymous authorship should be accepted if a useable reference to the place of publication of a cultivar name can be cited.

Legitimate and illegitimate names

A cultivar name is legitimate if it conforms with the provisions of the Code. The cultivar name theoretically can be rejected if it is illegitimate by not conforming to the Code. Three examples of categories to be termed illegitimate names have been found in the preliminary registration work which we have done. A name can be considered illegitimate under the Code if it does not carry a description upon publication. For names created since January 1, 1959 the rejection of invalid names appears simple unless one considers the possibility of the same name being validly published elsewhere. It is not unusual to find names widely used in books on horticulture, handlists of botanical gardens and even in scientific publications which have not been legitimately published. We suggest that all of these names be included in the registration lists but designated as nomina nuda, thereby calling attention to the name. It is hoped the users of
registration lists will call attention to places of valid publication for such names as they are encountered.

A second category of illegitimate names are those transfers of true botanical varieties or forms to cultivar status. In several groups which have been studied recently modern authors have listed as cultivars native wild plants which are not known in cultivation. We do not believe that every plant in cultivation deserves a cultivar name nor do we subscribe to the hypothesis of a typical cultivar with segregated cultivars appropriately named.

The third category of illegitimate cultivar names encountered are those which are validly published since January 1, 1959 but do not conform to the rules. The rules of horticultural nomenclature are new and errors will be made. It appears desirable to be lenient until the rules are well known by suggesting changes to current authors and listing the illegitimate name as such in a registration list designating as well the legitimate substitute.

**Duplication of cultivar names**

The Code suggests in Article 19 that "within a genus or hybrid genus the same cultivar name must not be used more than once without permission from the official registration authority, if such exists, and only when one or more of the following conditions obtain: a. the cultivars belong to subdivisions of a genus which are so markedly different as to provide wholly different groups; b. the first cultivar is no longer known to be in cultivation." Therefore with no registration authority for most genera of woody ornamental plants a cultivar name cannot be used a second time in a genus. From January 1, 1959 onwards this presents no real difficulty for newly described cultivars. However, the wisdom of allowing the repetition of a name when a plant is thought to be out of cultivation is questionable for two reasons: botanical gardens tend to maintain varieties long after they have passed from commercial favor, and the difficulty of citation when names must bear "sensu" citations of equal status. Prior to 1959 many duplications of cultivar names exist in such descriptive names as *variegata, fastigiata, pendula, rubra*, etc. The current rules do not permit the modern usage of names in latin form. They do provide for the change of a name when an earlier name is an exact duplicate (Recommendation 33A). We have no intention of implementing this option and will continue to recognize duplicate names within one genus fully expecting that future horticultural congresses will accept committee recommendations to apply the no-duplication rule at the specific level. The Registration lists which we publish will contain many duplicate names and often several repetitions of a name within the genus but not within the species.

**Some hybrids in cultivation**

Botanical gardens and arboreta maintain collections of species which by their proximity to one another and their genetic relationship may cross spontaneously
or be crossed by a horticulturist. In the genus *Cornus* for example there are five hybrids described by Rehder which originated in botanical gardens and for which the parent species are suggested. Rehder considered these hybrids as species and so described them. The plants are not outstanding in quality and no breeder has seen fit to duplicate the cross. However, the plants have been propagated vegetatively and distributed to other arboreta. These plants fit the description of a cultivar in its broadest sense, i.e., they originated in cultivation and in fact are known only in cultivation. It does not seem appropriate to include such examples in a list of cultivar names at the present time.

The Code provides a means of handling such taxa as "groups" or "grex" if the cross is repeated with different results or if selections are made from variations resulting from mutations or sexual propagation of the original plants. It is obvious that many "species" in other genera must be handled in this manner with the cultivar name following the group name as suggested in Article 13.

**Patented plants and their names**

American registration authorities are faced with another problem regarding cultivar names published in the medium of the plant patent act. Currently a plant patent may be issued to either a named or unnamed plant or even to one designated by a number. We have records of many patented plants which the originator chose not to distribute. One case has come to our attention where a nursery distributed a plant under one fancy (cultivar) name which was validly described and published in their catalogue but they subsequently patented the plant under a different cultivar name. Plants are available today from commercial sources under both cultivar names. According to the Code and its regulations regarding priority of names the patented name should be rejected. Business practices being what they are the use of the patented name will continue, illegitimate or not. Registration lists should contain all designations included in the registry of plant patents.

**The typification of cultivars**

When accepting a name for registration it has been our practice to request an herbarium specimen to be considered as the type specimen of the cultivar, and plant material for propagation or testing within our area. If the herbarium specimen cannot be supplied one of the propagants is designated as the plant from which a type specimen is to be collected. We state that future propagants of these plants will not be distributed without the consent of the person registering the plant. We recognize there are many inadequacies to type specimens of cultivars when the cultivar is based on characteristics not adequately preserved such as color, odor, hardiness or chromosome number. Nevertheless the herbarium specimen is better than no specimen at all for future taxonomic work which may involve the assignment of a plant to the proper genus or species. We have been fortunate to receive excellent cooperation in our requests for herbarium specimens.
and we suggest all registration authorities make such requests. The Arnold Arboretum is willing to accept such specimens for permanent deposit in its herbarium of cultivated plant specimens and will furnish such material on loan to other qualified scholars.

Summary

The compilation of a list of cultivar names for any genus of ornamental plants represents initially a bibliographic problem of great magnitude. There are obstacles in following literally the Code for the Nomenclature of Cultivated Plants which suggest that some changes should be made in the Code by future Horticultural and Botanical Congresses. The Registration lists to be of greatest value should be as complete as possible, not only in the cultivar names included but in the data supplied for each entry. There is a place in this work for the expression of taxonomic judgment and the efforts of horticultural taxonomists in the preparation of such lists is solicited. It is important to note, however, that the registrar will depend on the cooperation of the nurserymen and those persons who introduce and name plants in cultivation. The product produced, a registration list of cultivar names, will be a major contribution to the clarification of our knowledge of a group of cultivated plants and will be of benefit to the plant breeder, the commercial grower and the amateur as well as the professional horticulturist.

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