SOME NOMENCLATORIAL PROBLEMS

by

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This paper is divided into two parts:
(1) The Value of Nomenclatorial Discussions; and
(2) Valid Descriptions.

I. THE VALUE OF NOMENCLATORIAL DISCUSSIONS.

Much of the difficulty experienced by the modern systematic botanist is nomenclatorial. Though he may have a clear conception of a plant as a taxonomic unit, he is often at a loss to find out what it is as a legitimate nomenclatural entity. If a haphazard use of names is permitted, it will result in different botanists using the same name in a different sense, so that the names themselves, unaccompanied by a description, will give no definite denotation; that is, a name may become applicable to several independent taxonomic units. And if it is attempted to skip over these difficulties by creating a new name every time the legitimacy of a name of a plant is questioned, a usage may be established in virtue of which, on the one hand, very good names may be rejected on insufficient grounds, while, on the other, one and the same taxonomic group of plants will be known by different names to different botanists in different countries. Actually, some such state of affairs as this was common at one time in taxonomic botany, so that it came to be felt that personalities had a great deal to do with popularizing some names, however erroneous, as well as with rejecting quite good ones. In other words, there was a tendency to subordinate the naming of plants, or the validity and legitimacy of plant-names, to personal or national or provincial likes and dislikes, with the result that the scientific names were often less stable and precise in their application than the vernacular names.

In order to obviate these drawbacks and to make the nomenclature

of plants more precise and international, the new nomenclatorial Rules adopted as their basis the type- and the priority-concepts as the most important guiding principles in such matters. These Rules do not recognize personalities, but they oblige taxonomists to examine the claims of each plant-name for legitimacy on the merits of the names themselves, and not of the authors of the names, or of the authors of the works in which the names have been published. Thus at one stroke these two principles have, in nomenclatorial procedure, attempted to do away with all incentives for botanists to split themselves into different camps on a national basis or according to the sides taken by the heads of the particular institutions to which they belong.

When a choice has to be made between any two rival plant-names or epithets that are valid, each of equal rank and merit, the priority principle obliges botanists to make this choice, not on the merits or influence of the authors, nor on the aesthetic, descriptive or historical value of the names or epithets, but strictly on the dates of the validation of the names or epithets, so that the earlier name or epithet becomes the legitimate name, or epithet, and the later become illegitimate. When the rival names or epithets are more than two, then the earliest is the legitimate name or epithet for the taxonomic unit or group, all other names becoming illegitimate. If the legitimate epithet is not in the required position, then it must be instated in the desired position; and, when this is done, the oldest name containing the epithet becomes the basinym, and the new combination in the desired position becomes its isonym. It is only when the oldest epithet is not instatable in the new position (because of the resulting homonym or tautonym) or, at the time of publication, happened to be a later homonym, that the Rules prescribe the use of another epithet as the legitimate one for the taxonomic unit, though the Rules are somewhat obscure on the procedure to be adopted in such cases and they require to be further elucidated (see my Commentary in Gard. Bull. S. S. IX, pt. 3, 1937).

The type-basis concept obliges botanists to interpret a name with reference to its types. If types represent different taxonomic groups and no holotype is indicated in the original description, then one of the syntypes has to be chosen as the lectotype of the name. If no types are extant, then the nomenclatorial group must be typified. If, in the latter case, the description admits more than one interpretation of equal merit and not obviously discordant with the description, then it seems reasonable that botanists should be obliged to follow the earliest of the interpretations, until a better interpretation, accompanied by botanical

proofs, is forthcoming to oblige us to discard the hitherto accepted interpretation. Similarly, if a name has been disregarded as uninterpretable or dubious, it should remain as a *nomen dubium* until someone can produce proofs showing why it must be accepted for a definite taxonomic group. It is customary, I am told, in judicial procedure for the earliest decisions to define the interpretation of a doubtful law; or, if a law has been held as inexplicable or dubious, it is not permissible to invoke it without adequate reasons demonstrating the particular interpretation as the correct one. The overwhelming reason why a similar procedure should be adopted by botanical nomenclatorialists is that it would stabilize the application of doubtful or ambiguous names, and prevent the acceptance of haphazard proposals for the rejection of well typified names, that have long been in use, in favour of doubtful or ambiguous ones that have been long disregarded.

The new Rules of Botanical Nomenclature contain the following provisions:

> "No one may change a name (or a combination of names) without serious "motives, based either on more profound knowledge of facts or on the necessity "of giving up a nomenclature that is contrary to the Rules". (Art. 17).
>
> "Recommendation III: Changes in nomenclature should be made only after "adequate taxonomic study".

But since no definite laws have been enacted to enforce the principle embodied in Art. 17 and to prevent the resurrection of long disregarded names without adequate proofs, there has developed lately a large crop of very annoying nomenclatorial changes, which it is the main object of the above principle to discourage and prevent. The enforcement of the procedure suggested above would, it is hoped, check to a large extent these vexatious activities, which are largely responsible not only for making the Rules of Botanical Nomenclature unpopular in many quarters, but also for raising the clamour for *Nomina Specifica Conservanda.*

Having discussed elsewhere the details of the procedure which I recommend, I limit myself here to drawing the attention of botanists to the principles underlying the procedure for the solution of the vexatious problems concerning dubious and long forgotten names, and *mixta composita.*

The adoption of the type-basis and the priority principles as the two most important fundamentals in the new nomenclatorial legislation has obliged taxonomists and other users of scientific plant-names to make adjustments in the current nomenclature of plants, so that both the interpretation and the legitimacy of names may conform with the

two principles. In making these adjustments, it becomes necessary sometimes to reject many current interpretations or uses of names that contradict these two principles. In other cases errors may be detected in the current nomenclature of some taxonomic groups, but time is needed before the legitimate or the correct name for the plant is found out, as this is very often a question of a detailed inquiry into the status of types, descriptions and synonyms, and also because the original descriptions and types may not be easily accessible to the persons best qualified to pass an opinion on the matter. It is noticed, for instance, that the current use of names like *Artocarpus integrifolia* and *A. champeden* are not tenable, at least as they are used in Malaya, and this despite the fact that the species involved are widely distributed in cultivation throughout India, Ceylon, Burma, the Malay Peninsula, Siam, Indochina and in many parts of the Malay Archipelago, and that they have been described in literature from very ancient times, some hundreds of years before modern systematic botany was established. Yet no one would be justified, without having any data warranting definite decisions on the matter, to change the accepted designations of the plants, any more than in the courts of law, a property, owned mistakenly by a wrong owner, can be made to change hands before the claim of its rightful owner is established to the satisfaction of the court. In such matters the botanical public has a right to demand reasons in black and white for any nomenclatorial sentence a botanist may pass on the claims of one name against another. The mere statement that someone is convinced that such and such a name must be interpreted in such and such a manner is an arbitrary sentence unsupported by any proofs, and only allowable to dictators; but the basic intention of the existing Rules of Botanical Nomenclature is to suppress the activities of the dictators.

In cases like that of the two *Artocarpi* mentioned above, the only way to establish the correct names of the plants is to undertake a careful inquiry into the original types, descriptions, and the synonyms. Often this research-work may have to be accompanied by a careful study of the living plants in the field, so that any ambiguities or obscurities in the original descriptions and types may be cleared up and the application of the various old names may be correctly defined or fixed. But in order that such an inquiry may be fruitful in clearing up the confusion, and also that any rejection of types, descriptions, or names, firstly, as i n v a l i d and then, as i l l e g i t i m a t e, may be binding on other botanists, and that the inquirer himself may not be confused over the issue in such cases, the inquirer must allow himself to be guided

by the nomenclatorial laws. It is only when he is sufficiently familiar with the Rules of Botanical Nomenclature and able to make clear distinctions between these two kinds of names, types and descriptions, that he can hope to wade successfully through the bewildering maze of nomenclatorial problems, and to arrive at conclusions that should be acceptable to other botanists — a fact which many botanists are apt to overlook. This means that the nomenclatorial Rules themselves must be unequivocal and explicit in their directions before one can hope to come to any finality in such cases. It is therefore necessary that botanists should devote more time to the problems of legislation, so that our laws may be perfected and the ambiguities cleared up. To achieve this goal it is useful, in my opinion, to discuss, in botanical periodicals, the difficulties experienced in applying the Rules of Botanical Nomenclature, so that the pros and cons of all the cases may be considered in all their aspects by as many botanists as possible before surprise proposals for approval or disapproval are sprung upon the International Botanical Congress. It is on the whole very disadvantageous to get proposals on nomenclature hastily passed, for hasty legislation may have very serious repercussions on the stability of plan-names. It is fatuous to get *ad hoc* nomenclatorial decisions: for finality in the Rules can only be achieved by establishing general principles which will enable one to judge whether or not any of the decisions are constitutional.

It is on this conviction concerning the advantages to be derived from the discussions on nomenclatorial laws in botanical periodicals that I contribute this present article to the Jubilee Volume of "Blumea", brought out in honour of one of the greatest systematic botanists in general and orchidologists in particular on the Malayan and Malaysian flora, namely, Dr JOANNES JACOBUS SMITH, and devote it entirely to the discussion of some nomenclatorial problems. I may also mention here that my first experience in seeing name-changes made without any definite guiding principle or law was in connection with certain names, or interpretations of names, adopted for the Malaysian Euphorbiaceae by Dr J. J. SMITH and accepted by me in naming the plants cultivated in the Botanical Gardens, Singapore, only to discover later that they were in part rejected without good reason by botanists elsewhere. It also showed me how botanists were sometimes misled by the use of expressions denoting new binomials or homonyms also to indicate the different misinterpretations of one and the same name, so that changes in names or new combinations were made on the mistaken belief that an expression standing for a misinterpretation was really an expression

denoting a new binomial. This experience led me also to feel the need for a procedure which is known to the zoologists as the Aesthetic Rule, I think, in virtue of which a systematist who finds one of his contemporaries making proposals contrary to any one of the Articles in the Rules, but to the names of organisms in which he himself is not directly engaged, would be obliged, on aesthetic grounds, to communicate with the latter and give him an opportunity either for justifying himself for the apparent erratic procedure, or for correcting it. It is only when the latter refuses to conform himself with the Rules that the first systematist would be justified in making name-changes based on the data given by the second. If the former does not wish to correspond directly with the latter, he can do so through the Executive Committee of Nomenclature. Such a procedure would ensure a wider diffusion of the laws of nomenclature and also enable one to get to know another man's view on the same problem, or the reasons why he regards the existing laws as unsuitable, or inapplicable to the case.

II. A VALID DESCRIPTION.

A name, in order that it may be admitted as valid, must conform to certain fundamental principles. These fundamental principles concern (1) the words constituting the name itself; (2) the words constituting the description, either accompanying it or referred to; and (3) the means taken by the author or the publisher of the work (wherein the name is published) to make the name known to the botanical public.

The principle (2) really covers three fundamentals:

(*a*) the language that has to be used in publishing a description,

(*b*) the references that are admissible under the Rules, and

(*c*) the minimum number of characters that have to be included in order that a description may be eligible for validation.

Now the Rules treat, though not always consistently, with (1) and (3) and to a certain extent with (2)-(*a*) and (*b*), but (2)-(*c*) is not even touched on in the Rules, so that in certain cases systematists are at a loss to decide whether or not a description is admissible under the Rules.

A very recent example of disagreement about the validity of descriptions concerns five species published by BAILLON under the genera *Labordia* and *Geniostoma* in Soc. Linn. Paris Bull. I (1880) pp. 238—240. In all cases the types are extant. Dr C. SKOTTSBERG treated all the five species of BAILLON as "little more than nomina nuda. They "may be taken up and used when the species, if really new, are described,

"but they are not valid against later names accompanied by a description". (Acta Horti Gothoburg. X 1936, p. 156 adnot.). Dr HAROLD ST. JOHN, however, differs from Dr SKOTTSBERG on this matter and maintains that only one of the five BAILLON's species, namely, *Labordia Echitis,* is invalid, the remaining four being valid having full claims to be included into any priority considerations. I have not seen BAILLON's paper, but, according to Dr ST. JOHN, even this species which he considers as invalid and describes under a new name, was placed by BAILLON "in the well-defined section Rabdolia", its only fault being apparently the briefness of the accompanying description, though this last refers to leaves, stipules and flowers. (Bern. P. Bishop Mus. Occas. Papers, Hawaii, XII, no. 8, 1936, p. 1—11). Yet botanists do not hesitate to admit as valid very much more meagre descriptions, even when pertaining to juvenile or sterile material published by LINNAEUS, BURMAN, SPRENGEL, BLUME, HASSKARL, HOOKER, ENGLER, MIQUEL, etc., and often impossible for identification except to persons examining the type specimens.

Because of this I undertook an inquiry into this matter, which led me to conclude that further research is needed in order to come to definite decisions concerning systematic descriptions of phanerogams (paleobotanical phanerogams being excluded from this consideration because paleobotany recognizes procedures inadmissible in ordinary taxonomic botany). I do not suggest that my inquiry has been more than superficial, but the results obtained seem to me to be so important that I publish them here in the hope that a consideration of them by systematists generally may stimulate further research in the matter and hasten a finality in the Rules. The conclusions may be summarized as follows:

A. Though there is no uniformity, usage seems to admit, as valid, specific descriptions giving particulars regarding:

(1) the shape and the margin of the leaves, or the shape, size and the surface of the leaves;

(2) the size and the shape of the fruits, or their seeds, together with the disposition, or characters, of some of the internal parts;

(3) the characters of the stem, when the latter is green, and is also the most conspicuous and distinguishing feature of the plants, and when the leaves are ephemeral, inconspicuous, or totally absent (e.g. *Cacti, Cereus* spp., *Coniferae* spp., some *Euphorbia* spp.);

(4) the shape and the disposition of the various parts of the flowers, or of composite inflorescence, when the flowers are the most distinctive parts of plants, or when the leaves are either inconspicuous, ephemeral, or totally absent (e.g. *Rafflesia* spp. *Cuscuta* spp., *Ficus* spp., *Artocarpus* spp., *Orchidaceae* etc.); and

(5) the disposition (with or without particulars about the size or shape) of the fruits, leaves, or flowers, but this is admissible only in works where the generic

descriptions are given, or where each species is described, or is arranged in a regular order to bring into prominence the salient characters that distinguish each group of species within a genus or a section of a genus.

B. Characters pertaining to taste, smell, the structure of bark and timber, and histology of cytology, or indefinite characters regarding size, (e.g. short, long, large, small, tall, etc.), are insufficient in specific descriptions, though they may be sufficient in the descriptions of varieties or of taxonomic groups lower than varieties. Except in descriptions of (*a*) taxonomic groups of lower rank than species, or (*b*) when the species proposed are compared with another known description, and the characters are mentioned as features that distinguish one species from another, the following particulars are inadmissible in validating a species.

(1) general shape or appearance of the plant in the field or referring to its habit (e.g. tree, shrub, climber, or herb, annual, perennial, prostrate, etc.) or descriptions of underground parts (tubers, corms, rhizomes, etc.);

(2) characters of flowers or stems, other than those enumerated above in A (1—5);

(3) colour, smell, or taste.

Note: These characters, however, should be taken into consideration in typifying a species.

An exception may have to be made to the species and genera described in LINNAEUS's Species Plantarum ed. 1 (1753). This book being the starting point of modern plant-nomenclature enjoys special immunities in matters concerning the validity of descriptions of species and genera in the book, and so the Linnean descriptions, whether or not they satisfy the laws subsequently made, cannot be rejected as invalid. If it were a question of tautonyms, homonyms or of names inadmissible under the binomial system of nomenclature, it would be quite different matter, for Linnean names, unlike the Linnean descriptions, can be rejected as invalid or illegitimate under the Rules. If necessary the immunity privilege regarding the descriptions could be extended also to other works published during the first decade or two following the publication of the first edition of the Species Plantarum (1753), but an extension of this privilege to any work issued after the year 1800 seems inadvisable, especially when hundreds of well-known names listed in Catalogues like that of WALLICH's have been rejected as invalid.

The foregoing consideration concerning the validity of descriptions shows the necessity of laying down laws for the guidance of those who,

in future, wish to publish any new species. It could be, for instance, laid down that all future descriptions cannot be eligible for validation under the Rules unless in the descriptions are included particulars concerning the shape, size and the surface of the leaves or leaflets (if such organs are normal and conspicuous), the fruits or flowers, and the features that distinguish the newly described group from its nearest ally. If any of these conditions were omitted, the description should be rendered invalid. The time has passed when the systematists were justified in basing genera or species on merely fragmentary or sterile material. Though it has to be admitted that specialists can recognize genera, and even species, on mere fragmentary material, we must aim at better descriptions of plants so that it may be easier to detect any mistakes made in the original descriptions and to typify a species, should at any future date doubts arise about the exact identity of the species.

Examples of Incomplete Descriptions, with suggestions as to their validity or invalidity.

1. Several species based on sterile or juvenile material are valid; e.g. *Artocarpus anisophylla* MIQ., *Scindapsus pictus* HASSK.,*Scindapsus argyraeus* ENGL., *Pinanga maculata* LEM.
2. GAERTNER's names published in "De Fructibus et Seminibus Plantarum" are valid, though they are based entirely on the description of fruits or seeds.
3. *Ficus pisifera* WALL. ex VOIGT, Hort. Suburb. Calcutt. (1845) 285.
   "A tree. Penang. Fruit-receptacles axillary, solitary, sessile, smooth, the size of a pea, ripening in hot season". (Valid description though overlooked by most authors).
4. *Daphne viridiflora* WALL. (Cat.) ex VOIGT op. cit. p. 304.
   "A shrub. China. Flowers small, pale green, and fruit the whole year". (Invalid).
5. *Grantia* GRIFF. gen. nov. in VOIGT op. cit. p. 692.
   "Flos monandrus, terminalis. Spatha nulla. Anthera unilocularia. *Planta minima, claviformis inter Phanerogameas simplicissima*" (Valid, but without the italicized portion it would appear to be invalid; the italicized portion by itself would validate the genus).
6. *Grantia microscopica* GRIFF. in VOIGT op. cit. p. 692.
   "An annual. Calcutta [and] Serampore. Flowers most minute, terminal naked, [produced in] the rainy and the cold seasons". (Valid, because the generic description is given in the same book where the species has been published).
7. *Hedychium gratum* WALL. ex VOIGT op. cit. p. 570.
   "Khassya. Very near *H. flavescens*, but smaller" (invalid).
8. *Lablab vulgaris* var. *sepiarum* VOIGT op. cit. p. 233.
   "In hedges, near Samulcota. Differs from [var.] *a* in being very downy. Fl. red. Seeds dark grey, mottled". (Valid, even if it were of a species).
9. *Quercus sirokasi* SIEB., Synops. Fl. Jap. (1830) 26.
   "Japan. Lignum durissimum pro pectinibus". (Invalid).

10. *Litsea persella* RIDL. ex ANDERSON, Index of plants, Bot. Gard. Singapore (1912) 70.
"A tree, small. Borneo". (Invalid).
11. *Coleus macrophyllus* var. *concolor* HASSK., Cat. Hort. Bogor. II (1844) 129.
"Foliis concoloribus vix acutis" (Valid as a description of a variety, invalid if it were of a species).
12. *Scindapsus pictus* HASSK. op. cit. p. 58.
"Foliis ovato-lanceolatis obliquis acutis, basi cordatis, supra glaucis maculis pictis, petiolis primo vaginantibus dein complicatis" (Valid).
13. *Aglaonema? pygmaea* HASSK. op. cit. p. 57.
"Rhizocarpae. Humile, foliis oblongo-lanceolatis protuberanti-venosis spatha minuta" (Valid).
14. *Rhus javanicum* L., Spec. Pl. I (1762) 380.
"Foliis pinnatis ovatis acuminatis serratis, subtus tomentosis. *Habitat* in China OSBECK". (Valid).
15. *Hartogia capensis* L. op. cit. p. 288.
"*Habitat ad* Cap. b. spei. *Fruticantes.*
"Statura Diosmae aut Bruniae. Folia opposita, subulata, triquetra. Flores albi in Corymbum". (Valid).
16. *Cistus capensis* L. Spec. Pl. II (1763) 736.
"Arborescens extipulatus, foliis ovato-lanceolatis petiolatis trinerviis denticulatis utrinque nudis.
"*Habitat ad* Cap. b. Spei. Fructicantes.
"*Differt a sequentibus foliorum denticulis*" (Valid. The last italicized sentence by itself would not validate the species, as the teeth are not described).
17. *Polygonum erectum* L. Sp. Pl. II (1763) 520.
"Floribus octandris trigynis axillaribus, foliis ovalibus, caule erecto herbaceo. *Habitat in* Philadelphia — annuas". (Valid).
18. *Cistus canadensis* L., Spec. Pl. I (1753) 526.
Herbaceus exstipulatus, foliis omnibus alternis lanceolatis, caule adscendente. *Habitat in* Canada. *Kalm. Perennes.* Facies *C. Helianthemi* sed folia alterna". (Valid, even if the species was not of Linnaeus, and even when the description consisted only of the last sentence).