

# ASTERISKS IN LINNAEUS'S SPECIES PLANTARUM

By C. X. FURTADO,  
Botanic Gardens, Singapore

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## 1. Introduction and Conclusions

In the *Journal of Botany*, lxxv, 1937, p. 78, Mr. T. A. SPRAGUE and Mr. A. W. EXELL have conjointly published a note drawing the attention of botanists to the significance of asterisks in LINNAEUS'S *Species Plantarum* ed. I (1753). They have shown that the use of asterisks was explained by LINNAEUS himself in the following paragraph in the preface of the second edition of his work :

“DESCRIPTIONS \* tantum in obscuris adhibere necessem fuit, easque sine ambagibus, ut obtinerem compendium tironibus gratum”.

This paragraph, but without the asterisk, is the verbatim reprint from the first edition of LINNAEUS'S *Species Plantarum*. Consequently Mr. SPRAGUE and Mr. EXELL assume that the asterisk was accidentally omitted after the word DESCRIPTIONES in the first edition of the work. They translate the paragraph as follows :

“Only in doubtful cases was it necessary to cite descriptions, and those, straightforward ones, so that I might keep the handbook suitable for beginners.”

While agreeing with the explanation of the omission of the asterisk from the first edition of the *Species Plantarum*, I find myself compelled to dispute this translation and, therefore, to reconsider the conclusion of these authors on the significance of the asterisk. The translation appears to me misleading, because it is too free and is removed from its context, and is therefore decidedly ambiguous. LINNAEUS cited descriptions for nearly every species, but no one imagines that he considered them all doubtful. Is “compendium” really a “handbook”? And what can be meant by the indefinite phrase “doubtful cases”? Are we to suppose that LINNAEUS was

doubtful of every species in the synonymy of which he employed an asterisk, or that he was merely doubtful of the unasterisked citations under it; or that he considered the citations with an asterisk to some extent doubtful though supplying a straightforward description, while those without an asterisk were not at all doubtful? It is clear that the translation of the phrase "in obscuris" and the interpretation of the asterisk may be matters of considerable taxonomic importance, for on them will depend the procedure for interpreting a Linnean species with an asterisked citation.

In view of this uncertainty I have undertaken an inquiry into the problem. My conclusions are these :

1. The paragraph should be read :

"Only in the case of obscure plants was it necessary to indicate with an asterisk such descriptions as were straightforward, so that I might keep the *compendium* suitable for beginners."

Note:—(a) "obscure" does not mean doubtful (*see* section 2, subsection V, p. 314). (b) "Compendium" means the list of synonyms or citations, *i.e.* the synopsis of the species under consideration (*see* section 2, subsection V, p. 315).

2. LINNÆUS did not mean to invest the asterisks with the force of indicators for discriminating between the synonyms (citations). The asterisks were meant as a guide for beginners, and all synonyms, whether with or without an asterisk, were equally important for the experienced botanist.

The evidence for my conclusions is set forth below.

## 2. Notations in the Species Plantarum

In order to view the problem of asterisks in their proper light, I have investigated the meaning of several other notations used by LINNÆUS for similar purposes. I shall therefore divide the problem under the following heads :—(i) Doubtful Taxonomic Groups; (ii) Imperfectly Investigated Taxonomic Groups; (iii) Synonyms of Doubtful Identity; (iv) Doubtfully Separable Taxonomic Groups; and (v) Species Containing Asterisked References.

Except when otherwise stated, all paragraphs and examples quoted below are from LINNÆUS'S *Species Plantarum* ed. 1 (1753), and the quotations without page references are from the preface of the same work.

### i. DOUBTFUL TAXONOMIC GROUPS

LINNÆUS, in his preface to the *Species Plantarum*, informed the reader that, having himself been many times deceived by the specific descriptions given by others, he had left out of his book all species of which he could not examine actual specimens or drawings, so that what was uncertain might not get mixed

with what was known for certain. The sentence in question runs thus :

“NON VISAS plantas heic omisi, toties elusus ab auctoribus, ne dubia certissimis miscerem”.

It is obvious that LINNÆUS meant by the word *plantas* not only specimens but also drawings for it is a well-known fact that LINNÆUS based several species merely on drawings. Nor is this contradicted by the fact that his previous experience in the matter of published descriptions, unsupported by drawings or specimens, led him to adopt CAESALPIN'S dictum :

“Ignoto Genere proprio nulla descriptio, quis accurata tradita, certam demonstrat, sed plerumque fallit.”

which motto LINNÆUS placed on the reverse of the title-page of his book. Nor is it contradicted by the further fact that, despite all his efforts to keep out species of which he could not examine drawings or specimens, there are evidences to show that he has not been able to ignore entirely the descriptions of his contemporaries and friends. Thus, for instance, he published an unnamed *Trientalis* (*i.e.* without a trivial name); but here he was careful to mark the reference with an obelisk (dagger) and make the following observation :

“Plantam hanc non vidi, ex auctoritate Clariss. D. Royeni adposui.” (p. 344).

It is evident therefore that by the phrase “in obscuris” LINNÆUS did not mean dubious species (*plantæ dubiæ*), *i.e.* those that were not known to him from specimens or reliable drawings.

## ii. IMPERFECTLY INVESTIGATED TAXONOMIC GROUPS

It is understandable that, in such a comprehensive work, LINNÆUS had not sufficient opportunities or material to investigate fully every one of the species which he described. He therefore indicated insufficiently investigated species with an obelisk so that others might examine them in more detail. The use of obelisks is explained in the following sentence :

“si vero aliquando contigerit non sufficienter inspexisse plantam, vel specimen imperfectum obtinuisse, signo+hoc notavi, ut ali eandem accuratius examinent.”

The dagger is employed perhaps more with the purpose of directing botanists to a further inquiry into species than with the purpose of indicating his own imperfect inquiry. Thus the reference cited under the unnamed *Trientalis* *sp.* is, as noticed above, daggered, though LINNÆUS himself had not had any opportunity of seeing the plant. An unnamed *Phyllis* *sp.* (p. 232) is daggered and contains the following remarks : “Flores hujus mihi ignoti sunt”, while the following species, although not

daggered, have attached to them remarks which show that LINNAEUS had imperfect specimens for examination :

(a) *Cassia javanica* p. 239 : "Flores mihi non protulit".

(b) *Laurus Winterana* p. 371 : "Flores ipse non vidi".

(c) *Eranthemum capense* p. 9 : This is not daggered neither in the first edition nor in the second edition of *Species Plantarum*, but the second edition contains the following note : "Habitus *Chironiæ*, unicum specimen minus perfectum vidi, ideoque accuratius examinanda."

The cases are very few where the species containing asterisked references also contain remarks to show the species were imperfectly investigated, and so far I have come across only one species where both an obelisk and an asterisk occur (*i.e.* *Ammi glaucifolium* p. 243).

I conclude from this that the phrase "in obscuris" does not refer to such cases as were imperfectly investigated by LINNAEUS.

### iii. SYNONYMS OF DOUBTFUL IDENTITY

That LINNAEUS did not generally allow himself to be guided by descriptions alone, unaccompanied by specimens or drawings, has been explained above. It is therefore to be presumed that he did not cite any synonyms of which he had not examined drawings or specimens. Further it is to be presumed that LINNAEUS did not give each and every synonym, even when its type specimen or drawing was available for inspection. On the title-page of *Species Plantarum*, LINNAEUS speaks of *Synonymis Selectis* and, in the following paragraph of the preface, he informs readers, of the reasons that led him to give more synonyms to non-European plants than to the European plants :

"SYNONYMA paucissima in EUROPÆIS plantis adhibui, contentus *C. Bauhino* & *Iconographo* præstantiore; in EXOTICIS vero plura, quum difficiliora minusque trita sint."

But despite this selection of synonyms, LINNAEUS had cases where he was not sure of the correctness of his determination of them; and such synonyms he has shown with a question mark. Such queried references have, in my opinion, to be excluded in typifying a Linnean species.

Examples of queried references will be found under *Apluda mutica* p. 82, *Aristida adscensionis* p. 82, and *Queria canadense* p. 90.

There are, however, cases like *Alpinia racemosa* (1753) p. 2 and (1763) p. 2, which contain references that are queried not in the first edition of the work, but only in the second. But these references stand on a different footing and should be included in typifying a Linnean species.

It is evident that the phrase "in obscuris" and asterisks do not refer to the synonyms of whose identity LINNAEUS had still doubts.

iv. DOUBTFULLY SEPARABLE  
TAXONOMIC GROUPS

From time to time it happens that an author cannot decide whether certain taxonomic groups should be separated as species, quite distinct from others, or should be subordinated to other groups. LINNAEUS himself made a point of indicating under each species or variety any such uncertainty. And that LINNAEUS did not use the asterisks to indicate such uncertainty is obvious because, firstly, most of the species accompanied by asterisked references have no remarks about uncertainties; and secondly, most of the species having such remarks bear no asterisked references. But the conclusive evidence that "in obscuris" and asterisks do not refer to this kind of uncertainty is the fact that LINNAEUS established several monotypic genera accompanied by asterisked references to the type species but without remarks throwing doubts upon the status of the type species. And what makes this evidence so strong against the view that "in obscuris" relates to such uncertainty on the part of LINNAEUS, is that the work of LINNAEUS is not such as to lay him open to the charge of inconsistency in having established a new genus without being sure of the only species included under it.

(a) *Examples of Species containing remarks but no asterisks:*

1. *Prunus sibirica* p. 474: "An hæc satis distincta a precedenti?"
2. *Cistus pilosus* p. 528: "Hæc tres.  $\alpha$ .  $\beta$ .  $\gamma$ . vel varietates vel valde affines certiora determinant autoptæ".
3. *Asarum canadense* p. 442: "An varietas præcedentis; sic suadent Folia bina; dissuadent alia".
4. *Hyacinthus monstrosus* p. 318: "An sequentis sola varietas?"
5. *Leontice Leontopetaloides* p. 313: The diagnosis is obelisked, and the remarks are as follows: "Hæbitus hujus generis, at flos videtur satis diversus, an sufficienter pro distincto generi determinant autoptæ."
6. *Sanicula canadensis* p. 235: "Structura ita præcedentis, ut vix differentia, sed planta decupulo sæpe omnibus partibus major."
7. *Gentiana campestris* p. 231: "Præcedenti nimis affinis & fere varietas aut hybrida."

(b) *Examples of Species in monotypic genera containing asterisked references:*

*Maranta arundinacea* p. 2; *Eranthemum capense* p. 9; *Amethystea carulea* p. 21; *Muntingia calabura* p. 509; *Nama zeylanica* p. 226; *Heliocarpus americana* p. 448; and *Gethyblis atra* p. 442.

Each of the last two species contains one reference, which is to the type specimen itself. There is no diagnosis independent of this reference, yet one finds this only reference is marked with an asterisk.

v. SPECIES CONTAINING ASTERISKED  
REFERENCES

I submit that the foregoing discussion has made it amply evident that the phrase "in obscuris" does not refer to any cases when LINNAEUS had doubts either about a species, or about a description, or about a synonym.

Looking therefore to the accepted meanings of the word *obscurus* I find that they can be divided into two classes: The first is original and objective "obscure, not manifest to the eye, difficult for observation" *i.e.* the object itself present some difficulties, which come in the way of one's seeing it clearly or of discriminating between its various parts; the second class is figurative and subjective and refers to the difficulties experienced in getting to know about the object or forming a definite opinion about the status of the object. Difficulties (or obscurities) of the first class affect the apprehension of the characters of the thing observed, even when the observer has full opportunity to examine it; those of the second class arise from insufficiency or inaccessibility of material or from inability to comprehend the characters already apprehended. Difficulties of the second class were dealt with by LINNAEUS in the four different procedures discussed above. I surmise therefore that LINNAEUS used the word *obscurus* to express not his own doubts, but the obscurities, intricacies, or difficulties which the species themselves presented to an observer. LINNAEUS has used the word *obscurus*, or its derivative, in such a sense in the following note under *Cistus apenninus* p. 529: "*Cistorum historia maxime omnium obscura ob varietatum copiam, illustrabitur si determinent in singulis—*"

Now in order to determine what sort of objects or cases are implicit in the phrase "in obscuris", it is necessary to consider the entire paragraph with reference to the one immediately preceding it. The two paragraphs are:

"SYNONYMA paucissima in EUROPÆIS plantis adhibui, contentus *C. Bauhino & Iconographo* præstantiore; in EXOTICIS vero plura, quum difficiliora minusque trita sint.

"DESCRIPTIONES \* tantum in obscuris adhibui necessum fuit, easque sine ambagibus, ut obtinerem compendium tironibus gratum."

From this context it appears that the word *plantis* is understood after "in obscuris", so that we get actually three consecutive sentences where the words *planta* and *adhibere*, or their derivatives, occur or are understood, *viz.*:

1. Synonyma paucissima in Europæis plantis adhibui,———
2. In Exoticis [plantis] plura [synonyma adhibui]———
3. Descriptiones tantum in obscuris [plantis] adhibere necessum fuit———.

This preceding paragraph also explains the word "compendium" as referring to the "synonyma". It can hardly be translated as "handbook" because four paragraphs earlier LINNAEUS referred to his work as "Libello" with a capital letter ("compendium" is written with a small letter). Further the original meaning of the word "compendium" is "a hanging together" and its immediately derived meaning is "a putting together" with the idea of effecting a saving, and therefore "a shortening". Now LINNAEUS put together the synonyms

under each species and effected a saving in space by not quoting all the descriptions given by other authors. Hence I maintain that word "compendium" is employed by LINNAEUS to mean rather the "compendium synonymorum" (putting together the previously described species in a synoptic form) than a shortening of descriptions or of his book (as Mr. SPRAGUE and Mr. EXELL imply), of which LINNAEUS did not speak. But whether "compendium" is translated as I suggest here or whether it is translated as "handbook", the interpretation of the significance of asterisks and of the signification of the phrase "in obscuris" remains unaffected.

In view of the foregoing reasons I suggest that the entire paragraph containing the phrase "in obscuris" might be best translated as follows:

"Only in the case of obscure plants was it necessary to indicate with an asterisk such descriptions as were straightforward, so that I might keep the *compendium* suitable for beginners".

This means that LINNAEUS asterisked references only in the case of species that presented difficulties for observers or investigators, the object of asterisks being to lighten the task of beginners by directing them primarily to straightforward descriptions. Other references LINNAEUS left unasterisked not because there was any doubt as to their identity or status, but either because the plants were not obscure or not difficult to study, or because the descriptions in cited references were thought to be not straightforward.

From this it follows that asterisks were not intended by LINNAEUS to indicate any distinction between diagnoses or synonyms and descriptions, as Mr. SPRAGUE's and Mr. EXELL's note seems to suggest; nor do the asterisks indicate that LINNAEUS considered the descriptions given in *Species Plantarum* merely diagnoses, or inadequate descriptions. LINNAEUS himself gave long descriptions even when he had asterisked some references, as can be seen from the following examples:

*Cerbera manghas* p. 208; *Leontice thalictroides* p. 312; *Vaccinium frondosum* p. 351; *Origanum syriacum* p. 590; *Gerardia purpurea* p. 610; *Malva tomentosa* p. 687; *Trifolium tomentosum* p. 771; *Hyoseris virginica* p. 809; *Carduus helenioides* p. 825; and *Cacalia suaveolens* p. 835.

The majority of references asterisked are from LINNAEUS's previous works, but other references also have been asterisked, even to RHEEDE's *Hortus Malabaricus* (e.g. *Curcuma rotunda* p. 2), though descriptions from this last work are usually regarded as "obscure" by modern botanists. Further if two or more references are found to contain straightforward descriptions of one and the same synonym LINNAEUS asterisked both the references (e.g. *Eranthemum capense* p. 9, *Euphorbia Cyparissias* p. 461). There are also instances where references that are not asterisked in the first edition of *Species Plantarum*, are marked with asterisks in the second edition (e.g. *Justicia adhatoda* and

*J. ecbolium*, ed. 1 p. 15 and ed. 2 p. 20). The probable reason for this is that the marks were inadvertently omitted in the first edition of the work, or that LINNAEUS did not realize at the time either how "obscure" was each of the species, or how straightforward were the descriptions.

This view of the asterisks in LINNAEUS'S *Species Plantarum* makes the interpretation of asterisked references clear, not only in cases where they are the only references given under a genus or species (references which may be considered as the sole basis of the genus or species) and in cases where a lengthy description is given as well, but also in the case of *Ammi glaucifolium* p. 243, which has a reference marked with both an obelisk and an asterisk. Similarly this view enables us to understand why under *Valeriana tripteris* p. 32, not only the reference to Bauh. Prodr. p. 86 (specially noted by Mr. SPRAGUE and Mr. EXELL), but even other references given under the same species, are not asterisked; or why the only reference given in *Grislea secunda* p. 348 or in *Allophyllus zeylanicus* p. 348 is asterisked, while that in *Gethylis afra* p. 442 or in *Heliocarpus americana* p. 448 is not, though in each case the reference is to a Linnean work, and the species is the type of a monotypic genus and is not accompanied with a diagnosis or a description.



