Orthographic conundrums: the problem of *-opsis* and *-botrys*

John C. David

CABI Bioscience UK Centre, Bakeham Lane, Egham, Surrey, TW20 9TY, U.K. j.david@cabi.org

A survey of the use of two common suffixes of generic names and species epithets in botanical nomenclature is provided and discrepancies in treatment, either in the form of the stem or in the gender, are demonstrated. The reasons for these discrepancies and their consequences are outlined and possible means of harmonization are indicated.

KEYWORDS: Botanical Latin, Nomenclature, orthography.

INTRODUCTION

A problem for orthographists, or even nomenclaturalists in general, is the discrepancy between classical Latin of the 1st and 2nd Centuries AD and botanical Latin. The latter, derived from mediaeval ecclesiastic Latin via the academic Latin of the early modern period is a hybrid, absorbing many elements from other languages along the way. This is particularly true of Greek, word elements of which contribute a rich vocabulary to scientific nomenclature. Further, the creation of computer databases of scientific names quickly reveals the discrepancies in orthography, discrepancies that stem from inconsistencies in the rules on orthography themselves. In the past, people were possibly more *laissez-faire* about such differences but with the advent of large nomenclatural databases these inconsistencies are a significant source of confusion. When differences do occur it is often difficult to resolve them since the *ICBN* does not provide guidance for every case and precedents can be sought either in botanical Latin or in classical Latin that can conflict with each other. Two examples are discussed in detail below in support of two proposals (David, 2003) to amend the relevant articles of the *ICBN*.

1. THE SUFFIX *-OPSIS*

This suffix, derived from the Greek οψις, meaning an (outward) appearance, vision or apparition, is consequently used in botanical names to indicate a resemblance of one genus or species to another. In Greek the genitive, from which the stem is to be determined, is οψεως or οψιος, which is typical of third declension nouns with vowel stems. When converted into Latin, the genitive becomes *-opsis*, the same as the nominative. Indeed, this is how it is given by Zabinkova (1968) in Appendix II (List of final elements). Botanical practice is at variance, though. This is manifest in two ways: family names formed from generic names ending in *-opsis* and in specific epithets derived from host generic names ending in *-opsis*, which are commonly found among the fungi. In the former, almost without exception the stem is assumed to have an extra syllable *-id-* (anisosyllabic), similar to many third declension Greek nouns with consonantal stems, such as *-aspis*, *-camptis*, *-cystis* and *-glossis* which become *-apsidis*, *-camptidis*, *-cystidis*, and *-glossidis*, respectively. Stearn (1966) does not deal with the question directly but he cites *Galeopsis* as an example in his treatment of third declension nouns that have the desinence (i.e., the terminal element of a word that changes according to case, number or gender) *-is* and whose genitive singular is likewise *-is*. Greuter (1993: 8) discusses the difference between classical usage and botanical tradition and specifically cites *-opsis* as an example. He also lists the isosyllabic exceptions as compounds with *axis*, *crinis* and *pellis* and a number of generic names such as *Cannabis*, *Capparis*, *Haloragis* and *Vitis* which have in the past been given family names ending in *-idaceae* but now the *-id-* is omitted. This too gave rise to much debate at the time, particularly the vexed issue of *Capparidaceae* being altered to *Capparaceae* (Crosswhite & Iltis, 1966; Stafleu & Voss, 1972: 119–120).

The problem of the correct treatement of *-opsis* is not a new one: Silva (1980: 18) commented as follows, "Fifth, at least one Greek noun ending in -ις with the genitive singular -ιος or -εως has been treated traditionally in phycological nomenclature as having a genitive -ιδος. This noun is οψις (opsis: sight, appearance). Despite the lack of a classical precedent, of the 17 generic names of living algae ending in *-opsis* that have served as the basis of family names, 12 were given the stem *-opsid*, beginning in 1829. The five exceptions are *Ebriopsidae* and *Ellobiobsidae*, both published in zoological nomenclature in which the stem is *-ops* and the

suffix for the family name *-idae*; *Camptylonemopsaceae* and *Nostochopsaceae* (stem *-ops*); and *Ostreopsiaceae* (stem *-opsi*). Faced with the dilemma of affronting classicists or going contrary to long-standing phycological tradition, I have chosen the first alternative, using *-opsidaceae* throughout the catalogue". I have quoted his statement in full since it really encapsulates the problem and, potentially, the solution.

Table 1 lists 60 family names in groups covered by the *ICBN* (Greuter & al., 2000) which either were published with the ending *-opsidaceae* or had their ending corrected to *-opsidaceae* where the original termination was in conformity with a genitive in *-opsis*.

If the classical form of the stem is to be followed these would have to be altered to *-opsaceae*. While few, if any, of the names listed are of major significance, such a wholesale change could give rise to similar debates as those, alluded to above, over the family names such as *Cannabaceae* and *Vitaceae*.

The other source of such names is epithets derived from host generic names. This is a particularly rich source in mycology for not only are there epithets which are the genitive of the host name but also all those with *-icola* as a suffix and variants combining the generic and species names of the host. For instance, two of the commonest host genera are *Castanopsis* and *Thermopsis*. On *Castanopis* there are fungi such as *Asterina castanopsis* B. Song & Ouyang, *Meliola castanopsis* Hansf. and *Phyllosticta castanopsis* Chen which are based on an *-ops* stem, but also *Meliola castanopsidicola* J. L. Crane & A. G. Jones, *Mycosphaerella castanopsidis* (Dearn.) Petrak and *Apendiculella castanopsidifoliae* (W. Yamam.) Hansf., which clearly have an *-opsid* stem. Likewise *Thermopsis* has *Phoma thermopsidicola* Henn., *Mycosphaerella thermopsidis* Kalymb. and *Uromyces thermopsidicola* Shimab. as well as *Microsphaera thermopsis* U. Braun, the only case of an *-ops* stem.

A survey was carried out of likely host-genus derived epithets in the *Species Fungorum* database and the results are provided in Table 2. The figures are not totally accurate since it was not readily possible to trace every combination so that several epithet counts may well refer to one basionym. What also has to be borne in mind is that not every occasion where the genus name is used as the specific epithet is due to the author adopting the classical genitive rather than the botanical Latin form. It is entirely possible to use the host genus name in the nominative as a noun in apposition.

Table 2 shows that over three-quarters of the epithets used in mycology assume the stem to be *-opsid* rather than *-ops* and these names would have to be changed if the classically correct stem is required. Admittedly, a significant number of these names is no longer in use or invalid in any case. However, a rigorous adherence to the classical usage would bring about a significant change to many names in current use. On the other hand, if we were to keep with botanical tradition then we would not need to change any species epithets for we could assume that all ending with *-opsis* are nouns in apposition.

2. THE SUFFIX *-BOTRYS*

This is a termination derived from the Greek word βοτρυζ, meaning a bunch or cluster of grapes. In botanical Latin it has been widely used to indicate a kind of fruit, clusters of spores or clusters of cells. In Greek the noun is masculine in gender while Lewis & Short (1955) give the latinized noun derived from the Greek as "*botrus*, *-i*" and assign it a feminine gender.

The gender assigned to generic names that are compounds of *-botrys* varies. A survey, in January, 2001, of the genera containing *-botrys* in the web version of *Index Nominum Genericorum* (http:www.nmnh.si.edu/cgi-bin/wdb/ing) produced 75 such names (Table 3), 36 of which could be assigned a feminine gender, 13 were masculine and 26 were indeterminable. Gender was determined based on the ending of the epithet of the name of the species indicating the type or, if this did not provide any guidance, the names of other species assigned to the genus were checked. Unfortunately there were some genera with one or only a few species whose epithets either were two-termination adjectives (i.e., one with the same termination in masculine and feminine), or did not give any indication of the gender of the genus: these were deemed indeterminable.

Article 62.1 states that a generic name retains the gender assigned by botanical tradition irrespective of classical usage or the author's original usage. The vast majority of the 75 genera whose names end in *-botrys* are mono- or oligospecific and so a botanical tradition cannot be said to have been established in these cases. Five genera are known to contain more than ten species. Of these the largest is *Artabotrys* containing 143 names, all of which are masculine (where determinable) except for three species: *A. rosea* Berl.; *A. nitida* Engl. and *A. lanuginosa* Berl. *Adelobotrys* includes 33 species, of which 19 names are feminine and none is masculine. The remaining three genera are fungal and all show a similar pattern to *Adelobotrys*: *Arthrobotrys* (53 feminine epithets out of 89, none masculine); *Gonatobotrys* (10 feminine epithets out of 20, none masculine) and *Stachybotrys* (35 feminine epithets out of 66, none masculine). The remainder of the epithets in these cases comprise those epithets derived from adjectives with only one or two terminations in the nominative, or genitives of nouns. In none of these genera has botanical tradition altered the original author's usage.

Table 1. Family names in groups covered by the *ICBN* derived from generic names that end in *-opsis**

'**ALGAE**'†	*Bryopsidaceae* Bory (1829). *Bryopsis*
	Chlorangiopsidaceae Korshikov (1953). *Chlorangiopsis*
	Cylindrocapsopsidaceae Desikachary (1958). *Cylindrocapsopsis*
	Palmellopsidaceae Korshikov (1953). *Palmellopsis*
	Nematochrysopsidaceae Gayral & Billard (1977). *Nematochrysopsis*
	Camptylonemopsidaceae Dutt, Datta & K. K. Gupta (1975) [as "*Camptylonemopsaceae*"]. Cyanobacterial
	Chlorogloeopsidaceae A. K. Mitra & D. C. Pandey (1967). Cyanobacterial
	Mastigocladospidaceae M. O. P. Iyengar & Desikachary (1946). Cyanobacterial
	Nostochopsidaceae Geitler (1925) [as "*Nostochopsaceae*"]. Cyanobacterial
	Glenodiniopsidaceae J. Schiller (1935). *Glenodiniopsis*
	Ostreopsidaceae Er. Lindem. (1928) [as "*Ostreopsiaceae*"]. *Ostreopsis*
	Ebriopsidaceae Deflandre (1950) [as "*Ebriopsidae*"]. *Ebriopsis*
	Ellobiopsidaceae Coutière (1911) [as "*Ellobiopsidae*"]. *Ellobiopsis*
	Cyclidiopsidaceae Hub.-Pest. (1955). *Cyclidiopsis*
	Chordariopsidaceae Kylin (1940). *Chordariopsis*
	Characidiopsidaceae H. Ettl (1956). *Characidiopsis*
	Characiopsidaceae Pascher (1937). *Characiopsis*
'**FUNGI**'	*Agyriopsidaceae* Cif. (1964). *Agyriopsis*
	Auriculariopsidaceae Jülich (1982). *Auriculariopsis*
	Boletopsidaceae Bondartsev ex Jülich (1982). *Boletopsis*
	Cyphellopsidaceae Jülich (1982). *Cyphellopsis*
	Echinosteliopsidaceae L. S. Olive (1970) [as "*Echinosteliopsidae*"]. *Echinosteliopsis*
	Endogonopsidaceae R. Heim (1969). *Endogonopsis*
	Fomitopsidaceae Jülich (1982). *Fomitopsis*
	Galeropsidaceae Singer (1962). *Galeropsis*
	Guttulinopsidaceae L. S. Olive (1970) [as "*Guttulinopsidae*"]. *Guttulinopsis*
	Hygrophoropsidaceae Kühner (1980). *Hygrophoropsis*
	Lenzitopsidaceae Jülich (1982). *Lenzitopsis*
	Micromycopsidaceae Subram. (1974). *Micromycopsis*
	Microtheliopsidaceae O. E. Erikss. (1981). *Microtheliopsis*
	Microthyriopsidaceae G. Arnaud (1918). *Microthyriopsis*
	Mycogalopsidaceae Gjurašin (1925). *Mycogalopsis*
	Olpidiopsidaceae Sparrow ex Cjep (1959). *Olpidiopsis*
	Parmeliopsidaceae M. Choisy (1950). *Parmeliopsis*
	Parodiopsidaceae Toro (1952). *Parodiopsis*
	Perisporiopsidaceae E. Müller & Arx (1962). *Perisporiopsis*
	Protosteliopsidaceae Locq. (1984) [as "*Protosteliopsiaceae*"]. *Protosteliopsis*
	Pyrenopsidaceae Th. Fr. (1860) [as "*Pyrenopsideï*"]. *Pyrenopsis*
	Scopulariopsidaceae Locq. (1984) [as "*Scopulariopsiaceae*"]. *Scopulariopsis*
	Sphaerophoropsidaceae Elenkin (1929). *Sphaerphoropsis*
	Sphaeropsidaceae Lév. (1845) [as "*Sphaeropsideï*"]. *Sphaeropsis*
	Stigmateopsidaceae Bat. ex Bat., Peres & H. Maia (1960). *Stigmateopsis*
	Thielaviopsidaceae Locq. (1984) [as "*Thielaviopsiaceae*"]. *Thielaviopsis*
	Torulopsidaceae Cif. (1925). *Torulopsis*
	Tremellodendropsidaceae Jülich (1982). *Tremellodendropsis*
	Triposporiopsidaceae S. Hughes (1976). *Triposporiopsis*
	Saccharomycopsidaceae Arx & van der Walt (1987). *Saccharomycopsis*
BRYOPHYTES	*Ephemeropsidaceae* W. Schultze-Motel (1970). *Ephemeropsis*
	Lepyrodontopsidaceae W. R. Buck (1981). *Lepyrodontopsis*
	Pleuroziopsidaceae Ireland (1968). *Pleuroziopsis*
	Balantiopsidaceae H. Buch (1955). *Balantiopsis*
	Chaetophyllopsidaceae R. M. Schust. (1961). *Chaetophyllopsis*
	Jubulopsidaceae (Hamlin) R. M. Schust. (1984). *Jubulopsis*
FERNS	*Hymenophyllopsidaceae* A. Christ. ex Pic. Serm. (1970). *Hymenophyllopsis*
	Lomariopsidaceae Alston (1956). *Lomariopsis*
	Pleurosoriopsidaceae Kurita & Ikebe ex Ching (1978). *Pleurosoriopsis*
GYMNOSPERMS	*Thujopsidaceae* Bessey. *Thujopsis*
ANGIOSPERMS	*Ampelopsidaceae* Kostel. (1835) [as "*Ampelopsideae*"]‡. *Ampelopsis*
	Berberidopsidaceae (Veldkamp) Takht. (1985). *Berberidopsis*
	Coreopsidaceae Link (1829) [as "*Coreopsideae*"]. *Coreopsis*

† *Names derived from Silva (1980).*
* *Information derived from Hawksworth & David (1989) and Greuter (1993).*
‡ *The form* Ampelidaceae *A. Rich. (1846) is also encountered: Reveal, pers. comm.*

Table 2. Numbers of host-derived epithets based on the two possible stems of *-opsis*.

Genus name	stem *-opsid*	stem *-ops*
Castanopsis	13	21
Thermopsis	20	2
Galeopsis	16	0
Thujopsis	15	0
Oryzopsis	9	1
Codonopsis	9	0
Cyamopsis	6	2
Coreopsis	6	0
Echinopsis	1	5
Corylopsis	5	0
Lycopsis	3	0
Phalaenopsis	3	0
Chrysopsis	2	1
Meconopsis	2	1
Pericopsis	1	0
	111	33

Saint-Lager (1880) includes *-botrys* among his list of masculine suffixes. Silva (1980: 18) states that *-botrys* is masculine but, perhaps pertinently, all the other words he lists with the desinence *-ys* (namely chlamys, corys, drys and pitys), derived from Greek, are all feminine. Greuter & al. (1993) have assigned genders to 16% of the genera listed in NCU-3, amongst which are those that have a *-botrys* termination, which uniformly have been assigned a masculine gender, presumably in accordance with the original Greek and with Silva (1980). Those genera included in NCU-3 are emboldened in Table 3. In the introduction Greuter states that, "Gender indication is provided for all names covered by the provisions and examples of Art. 76 [Art. 62] of the *Code*, and for all those ending in either *-as*, *-es*, *-ma*, *-ne*, *-on*, *-x*, or *-ys*." There is no comment on the case of *-botrys* specifically and it is noted that gender indications are the result of personal judgement of two persons. Of those genera that end in *-botrys* included in NCU-3, 7 are masculine, 16 feminine and 14 indeterminable.

There does not seem to be a significant difference in practice between the main groups. Among the fungi 56% of the genera are feminine and 9% masculine; the plants, however, have 52% feminine and 22% masculine. Too few of the algal genera were determinable to provide a sensible result. However, overall there does seem to be a preference for a feminine gender. Checking the genera that were described earliest of all, when a knowledge of classical Latin was much more widespread, the majority are given a feminine gender: *Baeobotrys* (1775), *Adelobotrys* (1828), *Lasiobotrys* (1829), *Stachybotrys* (1837), *Gonatobotrys* (1839), *Arthrobotrys* (1839), *Eratobotrys* (1842), *Eubotrys* (1843) and *Phycobotrys* (1843). Those that are masculine are: *Artabotrys* (1820), *Xerobotrys* (1843) and *Cyanobotrys* (1845).

On the basis of species numbers, undoubtedly the largest genus is *Artabotrys*, a member of the *Annonaceae* known from the Old World tropics, with over 100 species which are almost uniformly given a masculine ending. After that there are only three further genera of significant size: *Adelobotrys* (*Melastomataceae*, 25 spp.), *Arthrobotrys* (conidial fungi, 28 spp.) and *Stachybotrys* (conidial fungi, c. 25 spp.). The latter is known for the production of mycotoxins that can affect livestock and the species are well-known and widespread. Hence, a change in gender would affect, on the one hand, one large genus or, on the other hand, three smaller genera. Changes in the remainder are unlikely to have any great impact.

AMENDMENTS TO THE *ICBN*

If botanical tradition is to be followed in the case of *-opsis*, it seems most appropriate to add a Note to Art. 18.1, where the rules for forming family names are given, with a cross-reference from Art. 60.12 which gives guidance on the correct spelling of fungal epithets derived from the generic name of the associated organism. In the case of the gender of *-botrys*, since it seems that the least disruption of names and the majority of published opinion favours it being masculine, the proposal is made to add it to the list of masculine suffixes in Art. 62.2 (a).

POSTSCRIPT

I would like to end this paper with another quote, this time from the Portuguese mycologist Manuel de Souza da Camara (1930: 21):

"La communication est terminée, et comme nos illustres confrères ont vu, son sujet est minime, peut être sans grand intérêt, sans une vraie importance scientifique; veuillez pardonner l'audace de vous avoir fait perdre du temps et de vous avoir dérangé excessivement en rapportant un sujet si ennuyeux.

J'ai dit."

Need one say more?

ACKNOWLEDGEMENTS

I am pleased to recognize the many contributions of others in putting this paper together, most notably Professor Emory Simmons who pointed out the problem of the gender of *-botrys*, Dr. Uwe Braun (HAL) who raised the difficulties concerning *-opsis*, Professor James L. Reveal for providing information and advice on vascular plant family names (and saving me from at

Table 3. Gender of the generic names in *Index Nominum Genericorum* with a *-botrys* termination

Achaetobotrys Bat. & Cif.	m/f	*Epibotrys* Theiss. & Syd.	?
Acrobotrys K. Schum. & K. Krause	?	*Eratobotrys* Fenzl ex Endl.	f
Actinobotrys H. Hoffm. (1856)	?	*Eubotrys* Nutt.	f
Actinobotrys West & G. S. West (1905)	m	*Gambeyobotrys* Aubrév.	f
Adelobotrys DC	f	*Gliobotrys* Höhn.	m/f
Adinobotrys Dunn	m	***Gloeobotrys*** Pascher	m
Aleurobotrys Boidin	m	***Gonatobotrys*** Corda	f
Amphobotrys Hennebert	?	*Heterobotrys* Sacc.	f
Aneimiaebotrys Fée	f	*Hyalobotrys* Pidopl.	m/f
Artabotrys R. Br.	m	*Hyalostachybotrys* Sriniv.[3]	?
Arthrobotrys Corda (1839)	f	***Kusanobotrys*** Henn.	?
Arthrobotrys (C. Presl) Lindl. (1846)	–	***Lasiobotrys*** Kunze ex Fr.	f
Baeobotrys J. R. Forst. & G. Forst.	f	***Lepidobotrys*** Engl.	?
Basidiobotrys Höhn.	f	*Leptobotrys* Baill.	?
Blastobotrys Klopotek	f	*Leucobotrys* Tiegh.	f
Botrys D. I. Schirschova (1985)	f	*Lomariobotrys* Fée	f
Botrys Nieuwl. (1914)	f	*Melanobotrys* Rodway	m
Brachybotrys Maxim. ex Oliver	m/f	*Mesobotrys* Sacc.	f
Capnobotrys S. Hughes	f	***Neuontobotrys*** O. E. Schulz	m
Catabotrys Theiss. & Syd.	f	***Ophiobotrys*** Gilg	?
Chaetobotrys Clem.	?	*Parartabotrys* Miq.	m
Chamaebotrys Huisman[1]	?	***Phaeobotrys*** H. Ettl	f
Chlamydobotrys Korschikov	m/f	***Phycobotrys*** Kütz.	m
Chlorobotrys Bohlin	m/f	*Phyllobotrys* (Spach) Fourr.	f
Chrysobotrys Pascher (1925)	f	***Pseudartabotrys*** Pellegr.	?
Chrysobotrys W. Conrad (1926)	?	***Pseudobotrys*** Moeser	m
Cincinnobotrys Gilg	f	*Psilobotrys* Sacc.	f
Coccobotrys Boud. & Pat. (1900)	m	***Pyrenobotrys*** Theiss. & Syd.	f
Coccobotrys R. Chodat (1913)[2]	m	***Pyrobotrys*** Arnoldi	f
Codonobotrys Pascher	?	***Reticulobotrys*** E. Y. Dawson	?
Coleobotrys Tiegh.	f	***Sphaerobotrys*** Butcher	m/f
Coniobotrys Pouzar	f	***Stachybotrys*** Corda	f
Corallobotrys Hook. f.	f	***Sterigmatobotrys*** Oudem.	f
Cremobotrys Beer	f	***Streptobotrys*** Hennebert[4]	?
Cyanobotrys Zucc.	f	***Trichobotrys*** Penz. & Sacc.	f
Dermatobotrys Bolus	?	***Verrucobotrys*** Hennebert	?
Dichobotrys Hennebert	f	*Xerobotrys* Nuttall	m
Didymobotrys Clem. & Shear	f		

Genera in bold are those included in Greuter & al. (1993).

m/f indicates that the species epithet is a two-termination adjective, where the masculine and feminine endings are the same (these have been counted as "indeterminable" in the figures given in the text).

[1]*Two species,* C. boergesenii *and* C. lomentariae*, neither give an indication of gender.*

[2]*The type,* C. verrucariae*, gives no indication of gender but a subsequent species added to the genus,* C. mucosus *P. A. Broady & M. Ingerfield suggests a masculine gender.*

[3]*Two species included,* H. bisbyi *and* H. sacchari*, neither give an indication of gender.*

[4]*Three species included,* S. arisaematis, S. caulophylli, *and* S. streptothrix*, none of which gives an indication of gender.*

least one unpardonable error), and Dr. Dan Nicolson for his advice and comments on an early draft of this paper. I am deeply indebted to the databases freely available on the Internet: *Species Fungorum*, *Index Nominum Genericorum*, *International Plant Names Index*, *Index Nominum Algarum*, without which it would have been almost impossible to collect the data used in this paper. Also invaluable has been access to the libraries of Royal Botanic Gardens Kew, and the Linnean Society of London.

LITERATURE CITED

Crosswhite, F. S. & Iltis, H. H. 1966. Studies in the *Capparidaceae* X. Orthography and conservation: *Capparidaceae* vs. *Capparaceae*. *Taxon* 15: 205–214.

David, J. C. 2003. (057–058) Proposals on *-opsis* and *-botrys*. *Taxon* 52: 636.

Greuter, W. (ed.). 1993. NCU-1. Family Names in Current Use for Vascular Plants, Bryophytes and Fungi. *Regnum Veg.* 126: 1–95.

Greuter, W., Brummitt, R. K., Farr, E., Kilian, N., Kirk, P.

M. & Silva, P. C. (eds.). 1993. NCU-3. Names in Current Use for Extant Plant Genera. *Regnum Veg.* 129: xxvii, 1–1464.

Greuter, W., McNeill, J., Barrie, F. R., Burdet, H. M., Demoulin, V., Filgueiras, T. S., Nicolson, D. H., Silva, P. C., Skog, J. E., Trehane, P., Turland, N. J. & Hawksworth, D. L. 2000. *International Code of Botanical Nomenclature (Saint Louis Code) adopted by the Sixteenth International Botanical Congress, St. Louis, Missouri, July–August 2000.* Koeltz Scientific Books, Königstein [*Regnum Veg*. 138: 1–474.]

Lewis, C. T. & Short, C. 1879 (1955 imp.). *A Latin Dictionary*. Oxford Univ. Press, Oxford.

Hawksworth, D. L. & David, J. C. 1989. Family Names. *Index of Fungi Supplement.* CABI publishing, Wallingford.

Saint-Lager, J. B. 1880. Réforme de la nomenclature botanique. *Ann. Soc. Bot. Lyon* 7: 1–154.

Silva, P. C. 1980. Names of classes and families of living algae. *Regnum Veg*. 103: 1–156.

Souza da Câmara, M. de. 1930. Proposta de divisão do genero *Stemphylium* Wallr. fungo da ordem das Hyphales (Mart.) em. Sacc. & Trav. Communição feita à Academia das Sciencias de Lisbôa na sessão da 1ª classe, de 20 de Fevereiro de 1930, 21 pp.

Stafleu, F. A. & Voss, E. G. (eds.). 1972. Report on botanical nomenclature – Seattle 1969. *Regnum Veg*. 81: 1–135.

Stearn, W. T. 1966. *Botanical Latin.* Thomas Nelson and Sons, London.

Zabinkova, N. 1968. Generic names ending in *-is* and the determination of their stems. *Taxon* 17: 19–33.