



Yet a Further Example of the Operation of the Autonym Rules. The Case of *Haworthia margaritifera* (Asphodelaceae)

Author(s): P. V. Heath

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THE APPLICATION OF \times APOROPHYLLUM HUNT (CACTACEAE)

P. V. Heath¹

In 1980 Rowley replaced the name \times *Aporophyllum* Johnson with \times *Aporephyllum* Rowley. The following year, in his Prop. 180, he explained why: " \times *Aporophyllum* Johnson when first published was defined as *Aporocactus* \times members of the Orchid Cacti. The latter constitute the epicacti (epiphyllums of horticulture)—a complex descended from 4 or 5 separate genera. This name is hence illegitimate in that it conflicts with Art. H.7.6. For the simple bigener *Aporocactus* \times *Epiphyllum* a different name applies (\times *Aporephyllum* Rowl.)". But \times *Aporophyllum* Johnson is a red herring—it was published in one of Johnson's catalogues in 1955 (according to Rowley, 1982) and therefore was not effectively published under Art. 29.4 and has no botanical standing at all. Several later authors have used the name \times *Aporophyllum*. The next subsequent author after Johnson would appear to have been Hunt in 1966, who defined it as *Aporocactus* \times *Epiphyllum* and attributed it to "Hort." Consequently, \times *Aporephyllum* Rowley is a later synonym of \times *Aporophyllum* hort. ex Hunt, and Article H.6 Example 4 is erroneous and must be deleted or corrected.

The nothogenus contains only one nothospecies, and that is \times *Aporophyllum freiburgensis* (Mundt ex Weingart) Heath, which, according to Weingart (1920), is derived from *Cereus flagelliformis* ♀ \times *Phyllocactus crenatus* ♂ [i.e., *Aporocactus flagelliformis* \times *Epiphyllum crenatum*]. The majority of plants grown as *Epiphyllum* seem in fact to be \times *Heliochia*, that is, they are hybrids between *Heliocereus* and *Nopalxochia*, with no *Epiphyllum* in them at all. As a result it seems probable that most plants grown as \times *Aporophyllum* are actually referable to the triple hybrid *Aporocactus* \times *Heliocereus* \times *Nopalxochia*, for which the name \times *Aporoheliochia* Heath has been published (Heath, 1983–1984). Unfortunately, very few of the \times *Aporoheliochia* cultivars have recorded parentages. However, the cross \times *Heliochia hybrida* ♀ \times *Aporocactus flagelliformis* ♂ has been made by the present author, and seed was distributed via the Epiphytic Plant Study Group. Hence plants of documented origin are now in cultivation.

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¹ 9 Hazeldene Meads, Brighton BN1 5LR, U.K.

YET A FURTHER EXAMPLE OF THE OPERATION OF THE AUTONYM RULES— THE CASE OF *HAWORTHIA MARGARITIFERA* (ASPHODELACEAE)

P. V. Heath¹

That the autonym rules can sometimes have a desirable effect has been demonstrated by Taylor (1985), but unfortunately this is not always the outcome. Doubtless Article 26.1, concerning infra-specific autonoms, was not intended to cause instability and confusion at specific rank, but this has been the result in the case of *Haworthia margaritifera*. Hence this cautionary tale, which is intended for all those who wish to propose radical changes to the Code, the potentially destabilizing ramifications of which cannot readily be assessed. In particular far-reaching proposals like those concerning legit-

¹ 9 Hazeldene Meads, Brighton BN1 5LR, U.K.

Table 1. Nomenclatural history of some varieties of *Haworthia margaritifera*.

1753	Aloe pumila L. <i>A. p. α. margaritifera</i> L.	<i>A. pumila</i> β	<i>A. pumila</i> ε
1768	A. p. var. pumila <i>A. margaritifera</i> Mill.		A. herbacea Mill.
1789	<i>A. margaritifera</i> var. <i>major</i> Aiton	A. margaritifera var. minor Aiton	A. arachnoides var. pumila Aiton
1804			A. pumila (Aiton) Haw.
1809	<i>Haworthia major</i> Duval	H. minor (Aiton) Duval	H. pumila (Aiton) Duval
1819	H. margaritifera Haw.		
1938			H. herbacea (Mill.) Stearn
1947		H. margaritifera var. minor (Aiton) Uitew.	
1978	<i>H. pumila</i> (L.) Scott		

imacy (Parkinson, 1984), priority (Hawksworth, 1988), validity (Brummitt reported by Chapman, 1986), and lectotypification (McNeill, 1986) should give cause for concern.

To understand how Article 26.1 affects *Haworthia margaritifera*, the nomenclatural history of the species must be examined in detail. In 1753 Linnaeus divided his *Aloe pumila* into five varieties, two named and three unnamed. Fortunately, it is only necessary to consider the subsequent history of three of these five varieties. Table 1 gives all the later nomenclatural synonyms of the first, second and fifth varieties. Names in the same column are based on the same type, and names on the same line were published simultaneously. The names in the first two columns are now generally held to be conspecific. All other taxonomic synonyms have been excluded from the table, as they do not have any direct bearing on the matter. Names in **bold** are legitimate, names in *italics* are illegitimate or invalid.

Wijnands (1985) has demonstrated that *Haworthia pumila* (Linnaeus) Scott and *Haworthia pumila* (Aiton) Duval have different types, as the latter is based on *Aloe arachnoides* var. *pumila* Aiton, from which the type of *Aloe pumila* Linnaeus was implicitly excluded, because Aiton listed *Aloe pumila* α as a synonym of *Aloe margaritifera* var. *major*. Hence *Haworthia pumila* (L.) Scott is unavailable because it is a later homonym of *Haworthia pumila* (Aiton) Duval, and therefore illegitimate under Article 64.1. *Haworthia pumila* (Aiton) Duval is also incorrect because Duval should have retained the epithet of *Aloe herbacea* Miller. Unfortunately the fact that *Haworthia pumila* (Aiton) Duval is itself incorrect does not make the later *Haworthia pumila* (Linnaeus) Scott legitimate, as this is prevented by Article 64.1 Note 1.

Bayer (1986) states that Wijnands has ascertained that "*H. margaritifera* (L.) Haw. is the correct name for the species concerned", but this is certainly not the case, because, as Nicolson (1985) and Taylor (1986) have pointed out, the citation "*Haworthia margaritifera* (L.) Haw." is incorrect.

The name *Aloe pumila* var. *margaritifera* Linnaeus is invalid, because it has the same type as *Aloe pumila* Linnaeus, and should therefore have been called *Aloe pumila* var. *pumila*; Articles 26.1 and 33.1(b) apply. Thus *Aloe pumila* var. *margaritifera* cannot be a basionym for *Aloe margaritifera* Miller or *Haworthia margaritifera* Haworth.

Aloe margaritifera Miller is illegitimate because Miller should have retained the name *Aloe pumila* Linnaeus. Hence *Aloe margaritifera* cannot be a basionym for *Haworthia margaritifera* Haworth, and does not establish the priority of the epithet *margaritifera* at specific rank.

Haworthia margaritifera Haworth is legitimate but is not correct, because the epithet *margaritifera* only has priority from its first legitimate use, which was by Haworth in 1819. Unfortunately there are epithets available from at least three older specific names. They are:

1809 *Haworthia minor* (Aiton) Duval

1817 *Aloe papillosa* Salm-Dyck [*Haworthia papillosa* (Salm-Dyck) Haworth]

1817 *Aloe semimargaritifera* Salm-Dyck [*Haworthia semimargaritifera* (Salm-Dyck) Haworth]

Bayer (1982) includes all three of these within his circumscription of *Haworthia pumila* (Linnaeus) Scott. He should therefore now take up *Haworthia minor* (Aiton) Duval as the correct name. Thus, as a result of Article 26.1 the epithet of an erstwhile atypical variety becomes the correct epithet of the species!

The combination *Haworthia major* Duval, although published simultaneously with *Haworthia minor*, need not be taken into consideration, because it is illegitimate. Duval should have retained the epithet of *Aloe pumila* Linnaeus for the species which he called *Haworthia major*. The fact that he simultaneously published the name *Haworthia pumila* (Aiton) Duval for another plant does not make his *Haworthia major* legitimate, as Article 55.1 applies.

As Nicolson (1985) observed, Article 26.1 "will have an effect on other cases where it is shown that the name of an infraspecific taxon is homotypic with the species to which it is attributed".

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CORRECT AUTHORSHIP CITATION FOR CERATOPHYLLALES

Donald H. Les¹

In a recent paper dealing with the origin and affinities of the Ceratophyllaceae (Les, 1988), I treated the Ceratophyllales as a new order of angiosperms. Since publication of my work, Dr. Arthur Cronquist was notified by a Soviet correspondent that the ordinal name Ceratophyllales was published previously by Nakai (1943), and had been adopted in the most recent edition of Takhtajan's *Systema magnoliophytorum* (1987). Dr. Cronquist promptly relayed this information to me, and here I attempt to clarify the authorship of the name.

Neither Nakai's nor Takhtajan's works were known to me at the time my paper appeared (despite the earlier date of the latter), and their omission in my work was unintentional. In particular, Nakai's (1943) work is generally unknown to western botanists as a source of nomenclatural novelties. The volume commemorates the 60th birthday of the author, and includes a prolific roster of orders, families, tribes, genera, sections, species, varieties, and forms representing names proposed as new during Nakai's previous lectures. Nakai was known for his attempts to revise "the whole system of vascular plants" and he developed novel classifications of the group (Hara, 1953). This resulted in a number of validly published names that are unfamiliar to many taxonomists but must be considered in nomenclatural matters such as priority. The names are not limited to angiosperms, but also include bryophytes, lycopods, psilophytes, pteridophytes, gymnosperms, and even fossil plants.

Many of Nakai's names represent orders, families, subfamilies, etc. (e.g., Nuphaceae) that are considered unnecessary by contemporary authors. Other names (such as Betulales and Nymphaeales) were published previously elsewhere. With respect to the Ceratophyllales, however, Nakai's work does indeed represent an earlier publication of the name validated by a Latin key that serves as a diagnosis.

When consulting this work, it is often necessary to disregard dates presented by the names as

¹ Department of Biological Sciences, The University of Wisconsin–Milwaukee, Milwaukee, WI 53201, U.S.A.