

NOMENCLATURE

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Type species or typical species?

Gea Zijlstra

Laboratory of Palaeobotany and Palynology, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands; g.zijlstra@uu.nl

ORCID: <http://orcid.org/0000-0001-9894-9967>DOI <http://dx.doi.org/10.12705/643.11>**Abstract** The idea that Schimper in his *Synopsis muscorum* mentioned nomenclatural types, is rejected.**Keywords** musci; typification; W.P. Schimper Synopsis

■ INTRODUCTION

John McNeill brought to my attention that in a recent publication (Bednarek-Ochyra, 1995: 281), the idea is accepted that Schimper (1860) in his *Synopsis* mentioned the types of a large number of generic names of mosses. Bednarek-Ochyra made the statement with a reference to Margadant, who according to a personal communication of P. Isoviita, had been the first who noticed this.

In my opinion, the statement “Accedunt tabulae VIII typos genericos exhibentes” on the title page of Schimper’s book has another meaning: here it is stated that on the plates typical species are illustrated.

Before I give my arguments why I reject the idea of typification in Schimper’s book, a bit more on the two concepts under discussion. They can be found in Art 7.2 of the *ICN* (McNeill & al., 2012), which reads: “A nomenclatural type (typus) is that element to which the name of a taxon is permanently attached, whether as the correct name or as a synonym. The nomenclatural type is not necessarily the most typical or representative element of a taxon.”

I know of one author who almost a century ago, occasionally stated that a certain species was a typical species: N.L. Britton. When more than a decade ago, I was replacing a number of American Code typifications by better later typifications of Hitchcock or Green (Hitchcock & Green, 1929), I noticed one case in which by mistake such a typical species had been entered in *ING* (Farr & al., 1979) as the type, and I corrected this record:

[C] *Pancreatium* Linnaeus, Sp. Pl. 290. 1 Mai 1753.LT.: *P. zeylanicum* Linnaeus (vide Hitchcock, Prop. Brit.

Bot. 145. Aug 1929)

N. L. Britton (Fl. Bermuda 77. 1918), by using the phrase “the following typical” instead of “type species” as in other cases, did not provide a real lectotypification on *P. maritimum*.

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In this case, I replaced the Britton 1918 LT by the Hitchcock 1929 LT, and then I added that Note (Farr & Zijlstra, 1996–).

In other cases, it appeared that such a typical species had already been neglected by the *ING* collaborator, and in the following case, I only added a note:

[C] *Sesamum* Linnaeus, Sp. Pl. 634. 1 Mai 1753.LT.: *S. indicum* Linnaeus (vide M. L. Green, Prop. Brit.

Bot. 169. Aug 1929)

Britton et Millspaugh (Bahama Fl. 399. 1920), by using the phrase “the following typical” instead of “type species” as in other cases, did not provide a real lectotypification on *S. orientale*.

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If my interpretation is accepted that Schimper mentioned typical species, not nomenclatural types, then the traditional concept of a number of genera can continue to exist. This is not only important for dozens of genera that are illustrated on the plates in Schimper’s *Synopsis* (a few of which already have been conserved on a different type), but also for a number of later genera, e.g., *Anisothecium* Mitt. 1869, see, e.g., Art. 6, Ex. 3 of the *ICN*.

Margadant. — Of course it would be possible that during more than a century, no bryologist has noticed that Schimper designated nomenclatural types; even though with respect to Margadant, this would be most peculiar. He is one of the co-authors of the *Index muscorum* (Van der Wijk & al., 1959, 1962, 1964, 1967, 1969). When the Utrecht Herbarium was closed, and I had to shift my main attention to names of fossil plants, I gave my copy of the *Index muscorum* to somebody else. For the present study, I could use the volumes from our university library, originating from the Department of Biohistory of the University of Utrecht where Margadant has been a staff member from 1970 until his retirement in 1981; after the shutting-down of Biohistory, these books were added to the university book collection. The copies that I could borrow, have been Margadant’s

private copies. I checked all generic names with a supposed Schimper 1860 type in it; in no case, such a “Schimper 1860” lectotype was mentioned in it. In several places one finds a handwritten correction in these copies, e.g., in a date, the addition of a month. In no case, however, a later LT replaced by a handwritten Schimper 1860 LT.

I decided to search in later literature, and at last I came upon an article by Margadant & Geissler (1995) with 17 proposals to conserve a generic name of Musci. The main reason for their set of proposals was that the “residue method” was not any more allowed (for explanation of this method, with an example, see below under Schimper). In addition, in their introduction they stated that type designations in Schimper’s 1860 *Synopsis* have been discovered—designations that were unknown when the *Index Muscorum* (1959–1969) was prepared. It is said there that Margadant & Isoviiita are preparing “a special paper on Schimper’s lectotypifications, to be published in the journal *Lindbergia*”. In other words, it has been a very late discovery of Margadant. It appears that the announced Margadant & Isoviiita paper has not any more been published. Margadant died in 1997, in the age of 81.

For a number of decades, the concept of a “typical species” has rarely been used. Maybe this explains why nowadays some people, when seeing such a statement on the title page of Schimper’s *Synopsis*, start to think that it must have been his intention to mention type species?

Schimper. — One could wonder if Schimper already had the type concept as we have it nowadays—yes, he had! I know of several cases in Bruch & al. (1836–1855).

An example of a lectotype: For *Pterigynandrum* Hedw. 1801, we find this reference in *ING* and in App. III to the *Code* (Wiersema & al., 2015), in the list of conserved and rejected generic names: “(vide Schimper in Bruch & al., Bryol. Europ. [5: 121]. 1851)”. In his treatment of *Pterigynandrum* (that he restricted to one of Hedwig’s original species), Schimper twice made the comment that (with all other species now transferred to other genera) there is no other way out then to make “our moss” (*P. filiforme*) the type of a separate genus.

An example of a type from the beginning: *Homalothecium* was published with two species: *H. sericeum* (Hedw.) Schimp. and *H. philippeanum* (Spruce) Schimp.; in [5: 92], Schimper stated that the Linnaean species *Hypnum sericeum* (for mosses, a pre-startingpoint name, GZ) “constitutes the type of our genus *Homalothecium*”.

I know of one case only in which *ING* ever had a type paragraph with a reference to Schimper’s *Synopsis*: *Oncophorus* (Brid.) Brid. 1826. Here we find in *ING*’s 1979 book edition (Farr & al., 1979: 1206): “(vide W. P. Schimper, Syn. 63. Mar.-Apr. 1860)”. This is not a reference to the legend of the plates, but to the main text. On p. 63 (where he had reduced *Oncophorus* to the epithet of a subgenus), Schimper clearly had restricted this taxon to only one of its original species: *Dicranum virens* Hedw. Here he did not use the term type, it was a “typification” by the “residue method”, no longer allowed since the Berlin Congress, when the rule was accepted that for designation of a type, the term “type” (typus) or an equivalent must be used (nowadays this rule is in Art. 7.10 of the *ICN*).

For *ING* collaborator (12) = Bonner, the residue method was a good method, as it was for the authors of the *Index muscorum*, for Stafleu and for me, until the Berlin 1987 decision. In 1999, I corrected the record by giving it a wide *Index muscorum* 1964 reference: “LT.: *O. virens* (J. Hedwig) S. E. Bridel (*Dicranum virens* J. Hedwig) (vide R. van der Wijk, W. D. Margadant et P. A. Florschütz, Regnum Veg. 33: 474. Jun 1964)” (and in 2004 an additional correction was made, by replacing the “sect.” in the Note by “1”, thus unranked).

The fact that the term “type” did not occur in the main text of the *Synopsis*, but only on the title page, referring to the species on the plates, immediately made me wonder if it really could be considered as nomenclatural types, or that it could mean typical species, illustrated to show the generic characters. So I started some investigations.

■ ANALYSIS

Autonym subgenera. — In a number of cases, Schimper had his genus divided into several subgenera. In the legend of some of his plates, however, he had a species that did not belong to the autonym subgenus!

This occurred with *Weissia* (“*Weisia*”) that was divided into five subgenera: *W.* subg. *Gyroweis*, subg. *Microweis*, subg. *Rhabdoweis*, subg. *Euweis* and subg. *Oreoweis* (the only case in which he had an *Eu*- prefix, nowadays not allowed under Art. 21.3). For tab. I, *W. viridula* is listed, a species that in the main text was treated in *W.* subg. *Microweis*!

Two species figured. — There are a few cases in which two species are mentioned in the legend of the plates, e.g., for *Pleuroidium*. For tab. I this is given: “*Pleuroidium subulatum* et *Pl. alternifol.* magn. nat., *Pl. subulat.* ampl.” Schimper knew quite well that one species name only can provide the type; if you figure two species to show the typical characters, then of course it is no problem to use two species.

Grimmia is very peculiar. It had four subgenera: *G.* subg. *Schistidium*, subg. *Gasterogrimmia*, subg. *Grimmia* and subg. *Guembelia*. The legend of tab. II has this information: “*Grimmia leucophaea* mag. nat. capsula calyptr. et perist. dent., capsula cucullato-calyptata *Gr. orbicularis* amplif.” The first of these two species is completely figured, it belongs to *G.* subg. *Guembelia*; the second species, of which only a slightly enlarged capsule is shown, belongs to *G.* subg. *Grimmia*. If you are not yet convinced, please tell me—which of these two species is mentioned here as the “type”?

Comparison of ed. 1 and ed. 2. — I have also compared ed. 1 (1860) with ed. 2 (1876) of the *Synopsis*. In several cases, there is a difference! At the end of tab. V, ed. 1 has *Pylaisia intricata*, with the addition “(americ.)” whereas ed. 2 has *Pylaisia polyantha*. There is another illustration in ed. 2, indeed. In the main text of this book with European mosses, only one species is treated: the European *P. polyantha*, this is the same in ed. 2. Of course Schimper knew that one cannot change the type. Therefore I wondered if in 1860 an illustration of this European species was already available and it was. In its original publication by Schimper in Bruch & al. (l.c. [5: 455]),

only *this* species was illustrated. Did Schimper later on arrive at the conclusion that *P. polyantha* was more typical, thus better this species should be illustrated?

In another case: at the end of tab. V, in ed. 1, we find *Bryum bimum*, whereas in ed. 2 we find *Bryum turbinatum*. In the main text, in both editions, both species are treated, both in subg. *Bryum*. *Bryum* is an 1801 genus, *B. bimum* and *B. turbinatum* date from 1804—thus none of them can provide the type. Nevertheless their mentioning gives an indication of what might have been the intention of Schimper. The text in the legend of the plates is partly different, just as the illustrations are not fully identical. I suppose that Schimper had concluded that the *B. turbinatum* capsule shows better the *Bryum* characters.

A third case is *Anomodon* on tab. VI. In ed. 1, it concerns *A. viticulosus*, the fourth of the four species that he treats in the main text, and one of the two original species. This species name is generally accepted as providing a good lectotype. So far no problem. In ed. 2, *A. apiculatus* is on tab. VI, the fifth of the five species that now are treated, not an original species. In this case, however, the illustrations are fully identical! Of course ed. 2 is of no importance if one would consider the names in the legends as nomenclatural types. Again, however, the fact that later on he had arrived at the conclusion that another species was figured, shows that it did not concern a nomenclatural type, but a typical species.

In the main text, nothing on the changes in these three cases. Thus it does not concern a change of type, only a change in what Schimper wished to illustrate as a typical/representative species.

A later species figured.—In a number of cases, Schimper did not illustrate the original species (type from the beginning), respectively not one of the original species—he had a *later* species! This occurred more often than in the case that is mentioned already above (*Bryum*: *B. bimum* as well as *B. turbinatum*).

Such later species that were mentioned in the legends of the plates:

Archidium alternifolium (tab. VIII), *Atrichum angustatum* (tab. IV), *Bryum bimum* (tab. V), *Didymodon rubellus* (tab. II), *Encalypta rhabdocarpa* (tab. II), *Eurhynchium murale* (tab. VII), *Grimmia leucophaea* and *G. orbicularis* (tab. II), *Gymnostomum rupestre* (tab. I), *Isoetecium curvatum* (tab. VIII), *Orthodontium gracile* (tab. III), *Physcomitrium pyri-forme* (tab. V), *Pleuridium subulatum* (tab. I, one of the two species), *Trematodon ambiguus* (tab. I), *Ulota bruchii* (tab. II) and *Zygodon forsteri* (tab. II). In three of these cases, there cannot even be a lectotype—there is a type from the beginning: *Archidium*, *Trematodon* and *Zygodon*.

I realized that in some cases, there could be the pitfall of too quickly concluding that it concerns a later species: Schimper of course did not yet have our 1 Jan 1801 startingpoint for mosses. An example: he ascribed *Grimmia* to “Ehrhart, Beitr. I” (this is p. 176 in 1787); in this place the genus is well described, no species name is mentioned. Nowadays we have *Grimmia* as a genus of Hedwig (1801). So I wondered if *G. leucophaea* and/or *G. orbicularis* might be pre-Hedwigian names that only were validated after 1801—no.

■ CONCLUSION

There are several reasons not to accept the idea that Schimper’s *Synopsis* had nomenclatural types:

- In a few cases, he figured a species that in the main text was not placed in the autonym subgenus.
- In a few cases, he figured two species.
- In a few cases, there are different species illustrated in ed. 1 (1860) and ed. 2 (1876), whereas Schimper knew quite well that one cannot change the type. In one case, there is the same illustration, but yet another name—this seems to be a correction of a misidentification.
- In 15 cases, he figured a later species, not one of the original species; in three of these cases, there even is a type from the beginning, thus again: Schimper knew quite well that one cannot change the type.
- All this leaves us only one possibility: Schimper was only concerned with the species that he used to show the characters of those genera of mosses, not nomenclatural types. Then indeed it is not unusual that he did not use the term type anywhere in the main text of this book, but only in the legends of the plates.

As for Margadant: maybe he was still impressed by the fact that since the Berlin 1987 decision, for typification the term type is required? Apparently he has not wondered if Schimper’s intention could have been “typical species”.

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