

RICCIACEAE

LECTOTYPIFICATION OF *RICCIA CRYSTALLINA*

While working on a taxonomic revision of the liverwort family Ricciaceae for the *Flora of southern Africa* Cryptogam series, it was brought to my attention that no lectotype had been designated for *Riccia crystallina* L. The 1988 loan to PRE from Helsinki (Herb. S.O. Lindberg, H-SOL), of Lichen no. 12 (*Riccia crystallina*), a Dillenian specimen presumably examined by Linnaeus, was accompanied by a loan form bearing the following message from Dr Pekka Isoviita: 'The type of *Riccia crystallina*, as now used, should be Micheli's illustration (with typotype at FI?)'. Mme Jovet-Ast, in her authoritative work on the Mediterranean species of *Riccia* (Jovet-Ast 1986), had, however, cited as the type specimen of *R. crystallina*: 'trés petit specimen, Herbarium Dillenius, Isoviita (1970) (H-SOL)'. Puzzled by this discrepancy, I wrote to both Dr Isoviita and Mme Jovet-Ast, enquiring about the typification.

Previously, Jovet-Ast (1964, 1966) had thoroughly investigated the history and taxonomy of *R. crystallina* L. emend. Raddi and of *R. cavernosa* Hoffm. emend. Raddi. This was necessitated by the confusion, which had reigned up to that time concerning these two species, although Micheli (1729) had clearly distinguished between them (nos. 1 and 5 in his *Nova plantarum genera*):

1. *Riccia* minor, latifolia, pinguis, aspergine chrySTALLINA perfusa Tab. 57. fig. 3. *Hepatica palustris*, lobis cristatis Bot. Paris. num. 5 Tab. XIX. fig. 2. Brumali, atque Vernali tempore in urbanis horris ubique, et ita copiose crescit, ut ab hac hortulani, et floricultores abhorreant.

5. *Riccia* minima, pinguis, aspergine chrySTALLINA perfusa Tab. 57. fig. 7. In sylvia Coenobii Patrum Franciscanorum, vulgo la Doccia supra memorata.' (Micheli's No. 1 *Riccia* minor, latifolia... represents the current *R. crystallina*, his No. 5 *Riccia* minima pinguis... the current *R. cavernosa*). Linnaeus (1753) however, cited '*Riccia* minima et

minor pinguis aspergine crystallina perfusa. Mich. gen. 107. t. 57. f. 7.3, thus combining the two under *R. crystallina*.

As Linnaeus's (1753) *Species plantarum* is the starting point of the nomenclature of the Hepaticae, his treatment superseded that of Micheli, regardless of the fact that he, Linnaeus, was not very knowledgeable about the liverworts and had even grouped them together with the Algae. In fact, Linnaeus's concepts of the hepatics were mainly based on Dillenius's (1741) *Historia muscorum*, to which he also referred in the protologue of *Riccia crystallina*, as well as to Vaillant's (1723, 1727) *Botanicon parisiense* and to his own works, *Flora suecica* (Linnaeus 1745a) plus 'Öland & Gotland journey' (Linnaeus 1745b).

In his later emendation Raddi (1818) distinguished between *R. crystallina* and *R. cavernosa*, for which he respectively cited Micheli's drawings Tab. 57. fig. 3 and fig. 7, but Raddi's implicit treatment was not a typification, not even under the 'residue method': he did not mention the Dillenius element of *R. crystallina*, also cited by Linnaeus (1753), anywhere in his paper, (as Isoviita recently wrote to Jarvis — see below), nor did Raddi directly indicate that Micheli's Tab. 57 fig. 3 was the type (ICBN 1988 Art. 8.3). The confusion thus persisted, even into this century: in southern Africa, Duthie & Garside (1937, 1939) recognized *R. crystallina* as *R. plana* Tayl. and *R. cavernosa* as *R. rautanenii* Steph. Sim (1926) mentions *R. crystallina*, but cites no collections which could be checked. According to Duthie & Garside (1937), Sim's drawings of *R. crystallina* 'A, of part of thallus, × 7' is that of *R. cupulifera* A.V. Duthie and of 'D, four spores before separation, × 50' is that of *R. curtisii* (Aust.) James, thus illustrating that Sim's concept of the species was not clear. Arnell (1963) described both *R. chrySTALLINA* (sic) and *R. plana*, although he (Arnell 1953) had remarked that their relationship had previously been pointed out

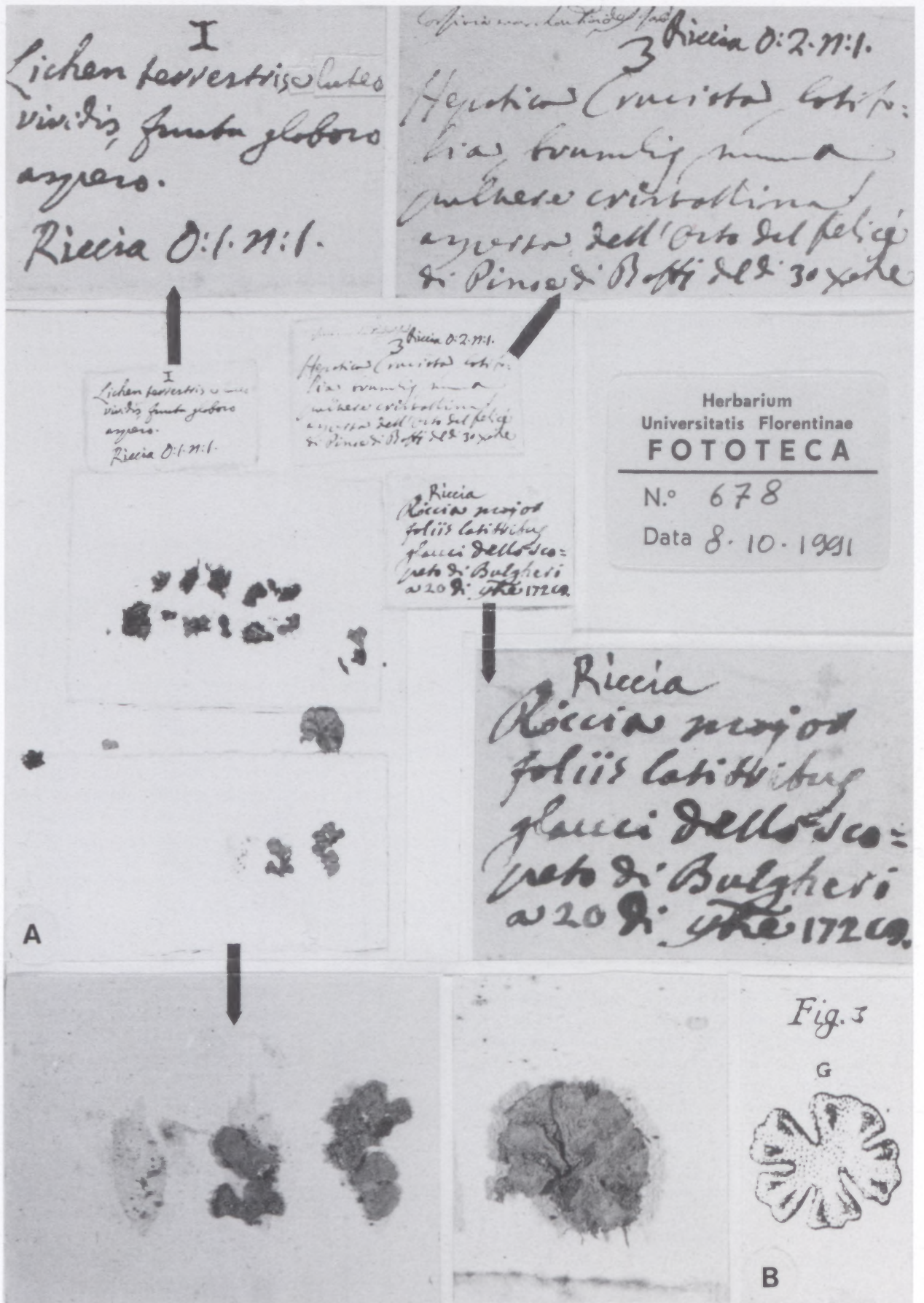


FIGURE 4.—A, photograph of herbarium sheet (with enlargements of all the relevant specimen photographs and labels) of Micheli's *Riccia* species 0:1.n:1 = Ordo : 1.no.:1 and 0:2.n:1 = Ordo : 2.no.:1 from which were illustrated Tab. 57. fig. 1 (I on photo of label) and fig. 3, (3 on photo of label) respectively; B, xerox copy of Micheli's Tab. 57. fig. 3G.

by Garside. Arnell's (1963) drawings of the spores of *R. crystallina* are those of *R. cavernosa*, and *R. cavernosa* was described by him (Arnell 1963) as *R. rautanenii*. Jovet-Ast (1964, 1966) placed *R. plana* in synonymy under *R. crystallina* and *R. rautanenii* under *R. cavernosa*.

As observed by Garside in 1957 and quoted by Jovet-Ast (1964), there is no type specimen of *R. crystallina* in the Herbarium of the Linnean Society in London, nor had Jovet-Ast designated a lectotype. Nevertheless, ever since her publications (Jovet-Ast 1964, 1966), it had been accepted practice to follow her example by citing the Micheli element as *R. crystallina* L., rather than the Dillenian element, which actually represents *R. cavernosa* Hoffm. (Koponen *et al.* 1977). My examination by SEM of the spores of the latter specimen certainly confirms this observation, although the spores are not very well preserved. Isoviita's (1970) suggestion that the Dillenian specimen should be selected as lectotype, also failed to 'preserve current usage' (ICBN 1988, Recommendation 7B.5) (see filed at PRE, copy of Dr Isoviita's letter, dated 19 February 1990, and addressed to Dr Jarvis at The Natural History Museum, London; Dr Isoviita kindly forwarded this letter to me).

In explaining the reason for her citation of the small Dillenian specimen as the type of *R. crystallina*, Jovet-Ast (pers. comm.) wrote that she had thought that Isoviita would have been aware of her earlier work (Jovet-Ast 1964, 1966) and I presume, perhaps she may also have assumed that he was in possession of additional information, even though his concept of *R. crystallina sensu stricto* was shown by Koponen *et al.* (1977) to have been erroneous.

In her correspondence with me (letter dated 28 January 1990), Mme Jovet-Ast very graciously outlined several options open to one in selecting a lectotype for *R. crystallina*. Among these, she suggested that one could choose Micheli's figure of *R. minor* (Tab. 57. fig. 3) (although no spores were illustrated), or else, one could select a neotype from among the specimens collected and named by Raddi as *R. crystallina*. It proved to be unnecessary to resort to the latter option as Dr Chiara Nepi, curator at FI, kindly sent micrograph negatives of three of Micheli's *Riccia* specimens (two of which are shown on Figure 4) assuring me that they were of 'the only (*Riccia*) specimens that may have some references with the descriptions in *Nova plantarum genera*'. I ascertained that the labels numbered 1 *Riccia* 0:1.n:1 and 3 *Riccia* 0:2.n:1 correspond to Micheli's descriptions on pp. 106 and 107 (Micheli 1729) of *Riccia* Ordo 1.numero 1 and of Ordo 2.numero 1 respectively. Each of the labels also bears some words that can be linked with the descriptions, namely on 1 (specimen unfortunately in fragments) is written 'fructu globoso' and in the description it reads 'fructu subrotundo' and on 3 is written 'crystallina aspersa', with the description reading 'aspergine chrySTALLINA perfusa Tab. 57. fig. 3'. Below the latter label is an unnumbered one of '*Riccia major*' (the ink is somewhat smeared) that clearly pertains to *Riccia* 0:1.n:1, since it is described in the text on p. 106 as *Riccia major*. The third specimen, which is not shown on Figure 4, is labelled '2 *Riccia* 0: (figure illegible as scored through).n: 2' and 'fructu pyramidato' as in Micheli's description on page 107.

Unfortunately, the rosette, which clearly must have served as the model for Micheli's drawing of Tab. 57. fig. 3, has become detached from its original position (notice smudge on Figure 4A) and has come to lie between the two specimens, but there is no doubt about its identity nor of the remaining two pieces on the herbarium sheet. Micheli's drawing Tab. 57. fig. 3 (Micheli 1729) (reproduced in Figure 4B from a xerox copy of the original) is therefore selected as the lectotype of *R. crystallina*, with the typotype, *Riccia* 0:2.n:1, held at FI.

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I wish to thank Mme Jovet-Ast most sincerely for her kindness and generosity in sharing her experience of the above problem with me; also Dr Isoviita for the loan of the Dillenian specimen held at H-SOL and for forwarding to me a copy of his letter to Dr Jarvis. I had several discussions about this matter with my colleagues at NBI, Pretoria, and wish to thank Dr H.F. Glen, Dr D.J.B. Killick, Dr O.A. Leistner and Mr J. van Rooy for their advice; also Mr Ashley Nicholas, South African Liaison Officer at Kew at the time, for all his help in obtaining literature. I particularly wish to thank the curator of FI, Dr Chiara Nepi, for a copy of the relevant pages of Micheli's work and for the micrograph negatives; also the curator of PI for the loan of Raddi's specimens.

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