NOTES ON ANTARCTIC BRYOPHYTES:
V. *Brachythecium majusculum* M. E. Newton, **sp. nov.**

By M. E. NEWTON*

ABSTRACT. The description of *Brachythecium majusculum* M. E. Newton is based on material from the sub-Antarctic island of South Georgia and from Tierra del Fuego.

TAXONOMIC work on the genus *Brachythecium* from the sub-Antarctic island of South Georgia has revealed the presence of six species, five of which belong to previously recognized taxa, but the sixth has not been described hitherto. The holotype has been deposited in the herbarium of the British Antarctic Survey, at present housed in the Department of Botany, University of Birmingham, and duplicates have been distributed to the herbaria indicated in the text by the contractions recommended by Lanjouw and Stafleu (1964) and Greene (1973).

Brachythecium majusculum M. E. Newton, **sp. nov.**

Laxe caespitosa vel implicata, caules robusti ascendentes rhizoideis sparsis, ramifis unilateralibus vel subpinnatis. Folia imbricata plusminusve julacea, ovato-cordata, (1·80—) 2·00–3·15 (—3·90) longa × (0·90—) 1·20–1·95 (—2·60) mm. lata, in stato sicco vel humectato bilateraliter et profunde concava, late decurrentia; apice obtuso acumine canaliculato raro acuminato praedito; margine infra partem latitudinis maximae revoluto, supra partem latitudinis maximae plano, integro vel dentibus paucis ad basin acuminis; nervo singulari usque ad medium folii, interdum furcatus. Cellulae superae laminae vermiculares circa 6– vel 12-plo longiores quam latae, (40·0—) 65·0–115·0 (—145·0) longae × 6·5–12·5 μm. latae, parietibus aeque incrassatis vel leviter collenchymatosis, breviores atque latiores versus basin, plusminusve incrassatae et porosae, cellulae alares numerosae, quadratae vel breviter rectangulares, parietibus tenuibus, auriculis plusminusve manifestis. Autoica. Seta superne scabra. Capsula late oblonga, inclinata. Calyptra et operculum ignotum. Peristomium perfectum. Sporae sphaericae, sublaeves, virides. (Fig. 1.)

Holotype

Amongst wet *Deschampsia* sward, alt. *c.* 200 ft. (*c.* 61 m.), behind Jordan Cove, Bird Island, South Georgia, grid reference 030 154, Leg. S. W. Greene, 15.xii.1960, Greene 266 (AAS, isotypes BA, CHR, H, INACH, NY, S-PA, TNS).

Loosely caespitose or matted, stems robust, ascending, with sparse rhizoids, branching confined to one side of stem or sub-pinnate. Leaves imbricate, ± julaceous, ovate-cordate, (1·80—) 2·00–3·15 (—3·90) × (0·90—) 1·20–1·95 (—2·60) mm., bilaterally deeply concave wet or dry, broadly decurrent; leaf apex obtuse with channelled acumen, rarely acuminate; margin revolute below widest point plane above, entire throughout or with few teeth at base of acumen; nerve single to middle of leaf or shorter, sometimes forked. Upper laminar cells vermicular *c.* 6–12 times as long as broad, (40·0—) 65·0–115·0 (—145·0) × 6·5–12·5 μm., with walls evenly thickened or slightly collenchymatous, shorter and broader towards the base, ± incrassate and porose, alar cells numerous, quadrate or shortly rectangular, with thin or thick walls, auricles ± defined. Autoecious. Seta scabrous in upper part. Capsule broadly oblong, inclined. Calyptra and operculum unknown. Peristome perfect. Spores spherical, almost smooth, green. (Fig. 1.)

Notes

In addition to its occurrence on South Georgia, *Brachythecium majusculum* is known solely from a few Tierra del Fuegian specimens. The earliest collection was apparently made by J. D. Hooker at Cape Horn but the specimen in his herbarium (J. D. Hooker 120*, BM, *ex herb.*

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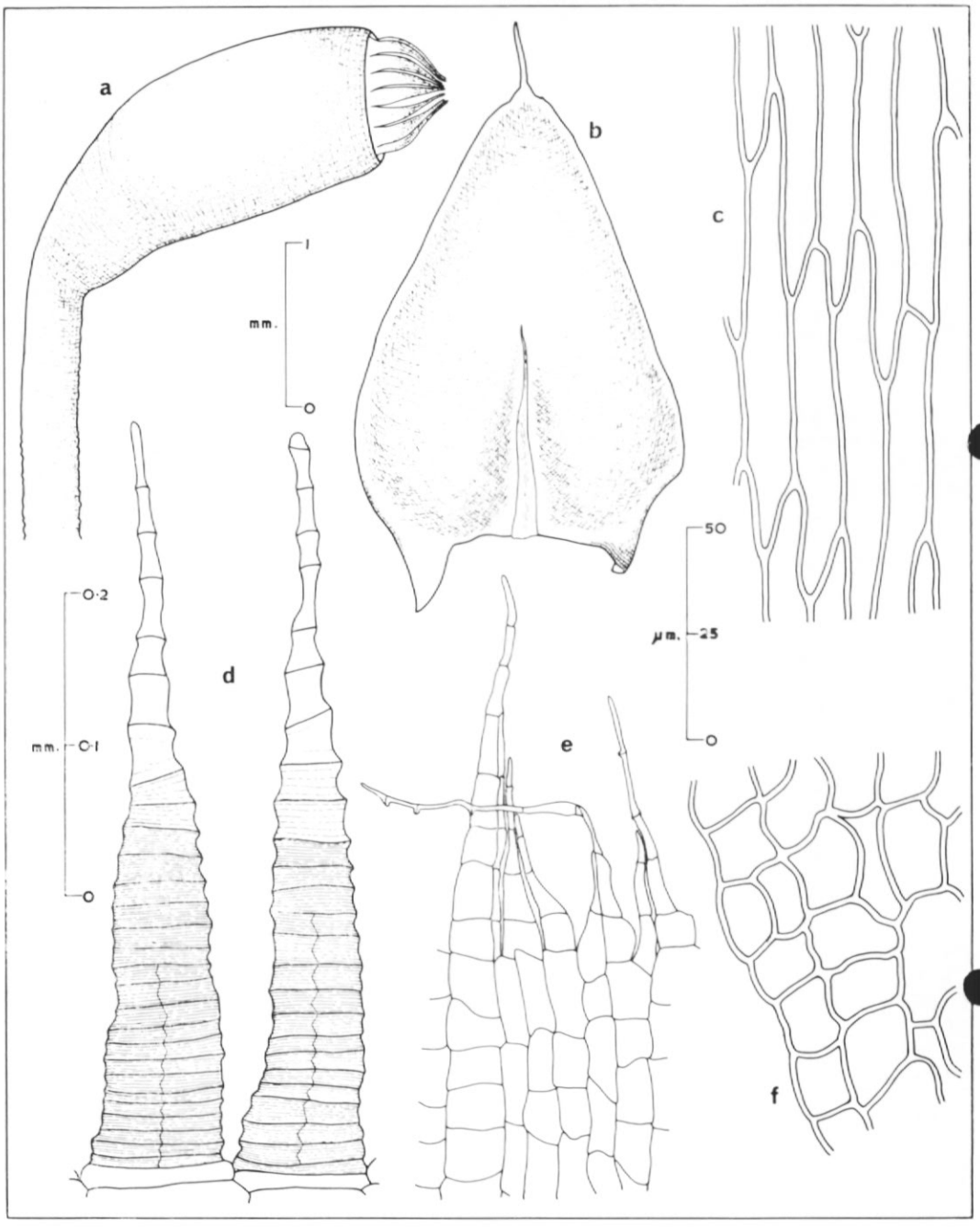

Fig. 1. *Brachythecium majusculum.*
a. Capsule; b. Stem leaf; c. Upper leaf cells; d. Outer surface of part of outer peristome; e. Outer surface of part of inner peristome; f. Cells in decurrent part of leaf.
Scales: upper for capsule and leaf, lower left-hand for peristome, lower right-hand for cells.
a, d and e from R. Smith 1709; b, c and f from the holotype.

Hooker, Cape Spenser, Cape Horn) was identified as *B. subpilosum* (Hook. f. et Wils.) Jaeg. Dusén (1903) was the first to recognize the species but, because the *nomen nudum B. majusculum* Dus. was never validated, his concept of the taxon remains doubtful, although an attempt has been made to form some idea of his thinking by examining the five specimens thus named in his herbarium, as well as one from that of V. F. Brotherus. It is evident that the material is heterogeneous by comparison with the present definition of the species. Two specimens bearing the same number are *B. subpilosum* (Hook. f. et Wils.) Jaeg. (P. Dusén 360, S-PA, *ex herb.* H. Möller, Fuegia austr. Ushuaia, in terra, 5.v.1896; P. Dusén 360, S-PA, *ex herb.* H. Möller, Tierra del Fuego, Ushuaia, 5.v.1896), whereas two others (P. Dusén 2, S-PA, Patagonia, Punta Arenas, 22.xi.1895; P. Dusén 201, S-PA, Fuegia austr., Rio Azopardo, 1.iii.1896) belong to another taxon that is unknown to the author. Two further specimens can, however, be identified with the present species (Dusén 269, S-PA, *ex herb.* H. Möller, Fuegia austr., Rio Azopardo, 28.ii.1896; Dusén 269, H, *ex herb.* V. F. Brotherus, Fuegia austr., Rio Azopardo in terra, 6.iii.1896), the former having been determined as *B. majusculum* C. Muell, by Müller (*in scheda*) and the latter as *B. majusculum* Dus. by Dusén (*in scheda*), both P. Dusén and C. Müller having been of the opinion that an undescribed taxon was represented. Both specimens of Dusén 269 lie close to the limits of morphological variation, as known at present, and therefore the holotype was chosen from the South Georgian material, since it is more representative of the species as a whole and was sufficiently large to provide a number of isotypes.

Amongst the South Georgian bryophyte flora, *B. majusculum* shows greatest similarity to *B. glaciale* B.S.G., a generally less robust plant distinguished by its ovate, gradually acuminate, less concave leaves with serrulate to serrate margins. In view of the reflexed margin in the lower part of the leaf and the presence of numerous quadrate alar cells that are strongly decurrent, the two species are considered to belong to the section *Reflexa* Broth. Another South Georgian species, *B. subpilosum*, also shows affinities with *B. majusculum* but differs in its triangular leaves that are only slightly decurrent. The identification (Dixon, *in scheda*) of an early South Georgian specimen of *B. majusculum* (T. Tröim 71, BM, Hestesletten, South Georgia, 26.iii.1933) as *B. skottsbergii* Card., however, is difficult to explain. Both are robust species which tend to be julaceous but leaf shape and structure are quite distinct, *B. skottsbergii* being considered to be a member of the section *Salebrosa* Broth. by the present author in view of the lax cells with bulging walls in the alar region.

Despite its affinities with *B. glaciale* and *B. subpilosum*, it must be admitted that the operculum of the present species is unknown and in placing it in *Brachythecium* the assumption is being made that it is conical since the genus is usually characterized by its conical operculum (Dixon, 1924; Grout, 1928; Nyholm, 1965). However, if the operculum were rostrate, *B. majusculum* would show affinities with the genus *Cirriphyllum* Grout.

Grout (1898), in erecting the genus *Cirriphyllum* to accommodate a number of species of *Eurhynchium* B.S.G., pointed out the strong resemblance of some of its members to the genus *Brachythecium*. The long rostrate operculum of *Cirriphyllum* was considered to be the most important diagnostic character but Robinson (1962), who did not accept that this was a character of sufficient importance to outweigh those shared with *Brachythecium* in North America, transferred three species to that genus, a view which is not, however, generally accepted (Crum and others, 1973). One, *B. piliferum* (Hedw.) Kindb., is of particular interest, since it bears a marked similarity to *B. majusculum*. Robinson did not provide a detailed description but he mentioned the presence of inflated cells, comparing the species with *B. rivulare* B.S.G. It is clear from the comprehensive set of illustrations provided by Robinson (1962, figs. 100–113) that only a few alar cells are apparently inflated and because the overlap is ± confined to one side of the cells the appearance is that of a large, slightly convex area of cells. It is therefore suggested that the cells are in fact similar to those of *B. majusculum*. Only the revolute lower leaf margin of *B. majusculum* distinguishes it from *B. piliferum* as illustrated by Robinson, leaf shape, leaf areolation, the transverse section of the nerve and the rough seta being indistinguishable.

Although Robinson (1962) regarded *Cirriphyllum piliferum* (Hedw.) Grout as *Brachythecium piliferum*, the illustrations and description of the former provided by Grout (1928) portray a plant which lies outside the range of variation at present known in *B. majusculum*. Leaf shape

differs because it is proportionately longer and the margin is strongly dentate almost throughout. Examination of a small sample of North American *C. piliferum* in the British Museum (Nat. Hist.) has shown that the alar cells are truly inflated as in European material (BIRM, BM). It is therefore suggested either that North American *C. piliferum* or *B. piliferum* is extremely variable or that the taxon recognized as *B. piliferum* by Robinson is not synonymous with *C. piliferum*. If the former is true and if *B. majusculum* is found to have a rostrate operculum, then the species would need to be transferred to *Cirriphyllum*. If the latter applies, the possibility of the synonymy of *B. piliferum sensu* Robinson and *B. majusculum* would need to be investigated.

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