

ophioglossoides is known in Cuba apparently only from the more tropical Provincia del Oriente. Mr. Garay, who determined the collection cited above, indicates that it is a "small form" of the species.

Xylobium palmifolium (Sw.) Benth. ex Fawcett. No. 700 (Hb. Ames 68234); No. 793 (Hb. Ames 68365).

This species, cited from Cuba by Fawcett & Rendle, is rare on the island. There has been no Cuban representation of it in the Ames Herbarium, and both Acuña and Brother León, in citing it, indicate that they have seen no specimens of it. It is known also from Jamaica, Haiti, the Dominican Republic and Trinidad.

NOTEWORTHY HEPATICAЕ FROM VIRGINIA

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The bryophytes, and mosses in particular, have been collected over various parts of the state during the past few years (Patterson 1950, 1951, & 1955). While many species have been reported, many others are expected to occur, particularly in unusually favorable habitats. Judging from past explorations, among the more critical areas in the state are the Dismal Swamp and adjacent territory of the southeastern coastal plain from which more range extensions may be expected; and White Top and Mt. Rogers, the highest points in Virginia, where bryophytes typical of the northern coniferous forest have been found as well as a group of species endemic in or disjunct to the southern Appalachians.

This paper reports the results of collections from each of these areas. The Dismal Swamp area was visited on April 2 and 3, 1955, and the mountain peaks on June 9 & 10, 1956. Collections were made in the Dismal Swamp in the mature forest on the east side of Lake Drummond between the origins of the Feeder and Portsmouth Ditches. The area designated as Nansemond (County) is a small area of swampy streams and fields to the immediate north and northeast of Cypress Chapel in the agricultural area reclaimed from the Dismal Swamp. The third place visited was the northern edge of the Seashore State Park along Route 60; this is at the northern tip of Cape Henry in

¹ University of Massachusetts, Amherst, and Hollins College, Virginia, respectively. The specimens validating this report are deposited at the authors' respective institutions.

Princess Anne County, east of the city of Norfolk. It includes both swampy forest and sandy, xeric habitats.

The peaks of White Top and Mt. Rogers are bisected by the Smyth-Grayson County line in the southwestern part of Virginia. Their altitudes are 5520 and 5720 feet respectively. The summit of White Top is dominated by nearly a pure stand of *Picea rubens* Sarg. and offers a variety of microhabitats, including exposed rock outcrops such as ledges and small cliffs, some of which remain permanently wet with seepage. Mt. Rogers is capped with almost a pure stand of *Abies fraseri* (Pursh.) Poir., an endemic of the southern Appalachians. Both stands seem to be virgin with windfall thinning the peak of Mt. Rogers. The latter peak is soil covered with occasional shaded, but dry boulder outcrops. White Top is easily reached by a road to the summit whereas Mt. Rogers has been visited much less frequently by botanists since it is approached by an unmarked and rather difficult logging road, and the peak must be ascended on foot.

This report also includes two new records for Virginia made by the authors, independently, at other localities. Since a number of reports below are of a peripheral character establishing these species at new limital points, and since the ecology of the species at such limital points is poorly known, we have given the common associates, and in the case of epiphytic species, the host trees. Since some of the species at the limits of their ranges are often found as impoverished, sterile, and hardly typical phases, we rather fully document the bases for our reports. Thus we hope to avoid the ambiguity that characterizes many local lists.

Lophozia incisa (Schrad.) Dum. Previously reported only from White Top, was found again here on rotten wood with *Anastrophyllum michauxii* and *Tritomaria exsecta*, (RMS 38088, 38100; PMP 2787). Mt. Rogers on rotten wood with *Harpanthus scutatus* and *Geocalyx graveolens* (RMS 38035, 38036a, 38043a; PMP 2759).

Lophozia silvicola Buch. Bedford County, Peaks of Otter near summit of Sharp Top under a shading rock (RMS 28597). These plants show the typical narrow-leaved phase, with yellow-green gemmae, and spherical, bi-concentric oil bodies. This species has not been reported previously in North America outside of Minnesota, Wisconsin, and Michigan. Schuster has also found it on Roan Mt., Mt. Mitchell, Mt. Leconte, and Grandfather's Mt. in North Carolina and Tennessee.

Solenostoma (*Plectocolea*) **obscurum** (Evans) Schuster. White Top on

side of cliff at summit (RMS 38073), male and female plants intermixed with *Scapania undulata*; (RMS 38098) with *Calypogeia fissa*; (RMS 38051) with *Marsupella emarginata*; (RMS 38055a) with *S. undulata*; and (PMP 2790) with *S. undulata*. The material of 38073, 38098 and 2790 is atypical in the rotundate or nearly rotundate leaves, suggesting *S. hyalinum* which was also collected. However the rhizoids have the intense violet coloration characteristic of *S. obscurum*. In 38098, a few weathered, but typical perianths are present which are very short and included. The smaller cells, 19–20 μ on the margin and 21–34 \times 23–30 μ medially definitely eliminate *S. hyalinum*. This species has not been reported south of northern New York and the New England states, but Schuster has collected it in both North Carolina and Tennessee.

Nardia lescurii (Aust.) Underw. This was collected from large mats in a shaded roadside ditch in Nansemond County (RMS 34502, 34505, 34507, 34509; PMP 2686). Previously reported from the mountains in Botetourt County, and from the outer Piedmont in Spottsylvania County; this is the first report of this primarily montane and Appalachian species from the outer coastal plain. It was associated with *Scapania nemorosa*, *Microlepidozia sylvatica*, *Cephalozia macrostachya*, *Telaranea nematodes*, *Calypogeia sullivantii*, *Odontoschisma prostratum*, *Sphagnum subsecundum* and *Ditrichum pallidum*. The plants were dioecious but bore mature sporophytes. The species is easily distinguished from *N. geoscyphus*, with which it is often confused in the southeast, by the uniformly emarginate leaves, the dioecious inflorescences, and the presence of 2–6 papillose-segmented oil bodies in each cell.

Anastrophyllum (*Sphenolobus*) **minutum** (Cr.) Schuster. White Top on shaded cliff near summit with *Herberta tenuis* and *Bazzania denudata* (RMS 38099); Mt. Rogers on the shaded vertical face of a large boulder at the lower edge of the *Abies fraseri* zone, (RMS 38021; PMP 2752). This is the first report of this species in Virginia. It occurred in very small quantity but has the typical bright scarlet gemmae masses in 38099. Nos. 38021 and 2752 are the green shade form with complicate but not cupped leaves with cuspidate lobes. Here the gemmae, apparently owing to development in deep shade, are a pale red.

Marsupella paroica Schuster. White Top on dry rocks and ledges near summit with *Blepharostoma* (RMS 38092, 38064, PMP 2794.) Mt. Rogers at very summit with *Tritomaria exsecta*, *Blepharostoma*, etc. (RMS 38025a). This is the first report of this recently described species in Virginia. For its description, see Schuster (1957). In the southeast, this species has been confused with *M. emarginata* but can be distinguished by the small size of *M. paroica*, by its paroecious inflorescence, asymmetrically bilobed leaves, and capsule wall anatomy.

Anomylia cuneifolia (Hook.) Schuster (*Myliia cuneifolia* (Hook.) S. F. Gray). Mt. Rogers on trunk of *Abies fraseri*, at summit, in minute quantity; occurring principally as isolated strands among *Frullania asagrayana*, *Plagiochila tridenticulata*, *Bazzania nudicaulis*, *Herberta tenuis* and *Paraleucobryum longifolium* (RMS 38002, 38003, 38011). This is the

northernmost report in the New World of this minute but distinctive species. Previous collections have been from the higher peaks of the mountains of western North Carolina and eastern Tennessee.

Plagiochila sullivanii Gottsche ex Evans. White Top near summit in a damp recess in a cliff with *Metzgeria hamata*, *Radula tenax* and *Bazzania denudata* (RMS 38083; PMP 2791). This collection agrees closely in all respects with the type material except that the caducous leaves are rare or absent. Aside from Sullivan's No. 219 it has been reported in Virginia only from the Shenandoah National Park.

Plagiochila yokogurensis Steph. subsp. **fragilifolia** Schuster. Dismal Swamp on tree trunks with *Radula obconica*, *R. caloosiensis*, *Cololejeunea biddlecomiae* (RMS 34561, PMP 2650). Nansemond County on bases of trees along swampy streams (RMS 34514; PMP 2678, 2689). For a description of this plant see Schuster (1957a). A number of collections, some of which were reported under other specific names for Virginia belong here. Earlier collections in the Dismal Swamp (PMP 1564, 1736); Spottsylvania County in the outer Piedmont (*Iltis* 3806); in Henry County in the southwestern Piedmont apparently on igneous rock (PMP 1450); and in the southern Valley region of Virginia on limestone (Rockbridge County, *R. P. Carroll* 158, and Roanoke County, PMP R-395, 1457). Virginia and the District of Columbia is as far north as this plant is known to extend.

Cephaloziella byssacea Roth Warnst. var. **scabra** (Howe) Schuster. Seashore State Park in dry, sandy opening under *Quercus virginiana* Mill.; it was dispersed in cushions of *Dicranum condensatum* and *Leucobryum glaucum* (RMS 34557a; PMP 2669). This is the first report of the variety in Virginia. The plants were sterile but represent the extreme scabrous phase with very coarse cuticular papillae and cellular outgrowths on the postical face of the leaves. Typical *C. byssacea* was found nearby (RMS 34557) which was bearing perianths but showed no intergradation with the variety.

Cephalozia macrostachya Kaal. Nansemond with *Nardia lescurii* and other associates listed there (RMS 34506, 34507, 34501, 34509; PMP 2681). This has been reported for the state by Evans (material in United States National Museum), and has a sporadic range as yet unreported in the southeastern part of the United States. This plant is not wholly similar to the northern *C. macrostachya*, which grows exclusively in bogs. However it can not be placed in the more common and allied *C. catenulata* because of the very large cells of the stems and leaves. (Schuster 1949). The taxonomy of this complex needs further study.

Microlepidozia sylvatica (Evans) Joerg. Nansemond County on soil, roadside ditch, mixed with *Cephalozia macrostachya*, *Odontoschisma prostratum*, *Ditrichum pallidum* and small amounts of *Leucobryum glaucum* and *Atrichum undulatum* (RMS 34501, 34509 p.p.; PMP 2684). This species is rare and sporadically distributed in the coastal plain although found as far south as central Florida. The present collections are of particular interest in that some leaf cells and cortical stem cells show several small, homogeneous oil bodies per cell. This finding contradicts

the contention of Müller (1939) that *Microlepidozia* lacks oil bodies. Schuster and Blomquist (1954) have pointed out that the related *M. setacea* also has oil bodies present.

Telaranea nematodes (Gottsche ex Austin) Howe. Nansemond County, at the same site as the above and scattered in small quantity among *Nardia lescurii* and *Cephalozia macrostachya* (RMS 34506, 34516; PMP 2688). This has been collected in Virginia in four localities in the coastal plain. It seems to be infrequent as well as easily overlooked.

Calypogeia suecica (Arn. & Perss.) K. Müll. Mt. Rogers on decaying *Abies fraseri* logs with *Cephalozia catenulata* and *Nowellia curvifolia* (RMS 38040; PMP 2753). This small species is reported for the first time in Virginia: an earlier report of it is in error. The material is altogether typical. It is rather frequent at high elevations in western North Carolina and eastern Tennessee and has been found by Schuster as far south as the Estatoe River ravine in South Carolina.

Calypogeia neesiana (Massal. & Carest.) K. Müller. White Top, peaty soil over shaded ledges near summit (RMS 38062, 38066, 38071, 38075); Mt. Rogers, at the lower edge of the fir zone with *C. fissa* (RMS 38020). The plants of the latter collection are somewhat bluish gray when mature, and dull when dry. This is an extreme phase with the marginal cells of the leaves rarely differentiated. The White Top plants are in part abnormal. No. 38075, which is in fruit, shows the prominent nodular thickenings of the longitudinal walls of the epidermal cells of the capsule wall and the spores measure 12–13 μ . The marginal cells of the leaves are developed locally to a very limited extent. This is also true of No. 38066 which superficially approaches *C. muelleriana* from which this collection is distinct in the dull texture when dry. The plants of No. 38066 have a spring growth of very broad, large-celled, non-bordered leaves which are occasionally incised. The underleaves are somewhat more frequently incised. The material surely belongs here although in many respects it is abnormal. No. 38071 has these same characters but with the underleaves unusually emarginate and with the lateral leaves broad and dense. Here the "border" of the leaves is locally distinct only in the more normal summer or fall growth. No. 38062 shows similar variations in that the spring growth has broad, very polymorphous leaves which are often emarginate at the apex and without the trace of a border. The summer or fall growth, however, has narrower leaves which are often bordered by elongated cells, with underleaves subentire.

This critical series of specimens demonstrates again how exceedingly technical this genus is. This material shows superficial tendencies to grade into *C. muelleriana* (from which it differs in texture and capsule wall anatomy, for instance), but not toward *C. meylanii*, which is as yet unknown from the southern Appalachians.

There is an earlier report of *C. neesiana* from Giles County (Carroll No. 275). Another collection from Giles County, (PMP 2727), has the leaf shape, leaf tips and well developed leaf border on most of the leaves that is nearly typical of *C. neesiana*, however the underleaves are bidentate

suggesting *C. muelleriana*. The oil bodies are colorless, compound, chiefly fusiform in shape and rather large, they are mostly 8–11 μ long and 4–5 per cell, while some are smaller. They are present in all leaf cells but absent in the underleaves.

Calypogeia sullivantii Aust. Nansemond County, roadside ditch with *Nardia lescurii* etc., (RMS 34502). It is very unusual to find this plant in the outer coastal plain. It is very largely Appalachian in this area but extending toward the coast northward. The nearest collections in Virginia are on the outer Piedmont in Chesterfield and Henrico Counties.

Calypogeia fissa (L.) Raddi. White Top, on cliffs near summit, traces scattered in *Solenostoma obscurum* (RMS 38098); Mt. Rogers (RMS 38020a). This represents the nearctic race, as yet undescribed, with pointed leaves that are only occasionally bidentate; the oil bodies are colorless; the underleaves are transverse, often with obtuse lateral lobes. Some of the southeastern reports of *C. fissa* are in reality *C. portoricense*; thus the southeastern range of *C. fissa* is quite uncertain.

Radula caloosiensis Aust. Dismal Swamp (RMS, 34528 a & b, 34529a, 34531, 34559, 34560, 34532, 34539, 34553a, 34555, 34561a; PMP 2660, 2664, 2668). Nansemond (RMS 34503); Seashore State Park (PMP 2671). This plant occurred frequently and is associated with *Plagiochila yokogurensis* subsp. *fragilifolia*, *Cololejeunea biddlecomiae*, *Rectolejeunea maxonii*, *Radula obconica*, and such mosses as *Anomodon minor* and *Schwetschkeopsis denticulata*. It was growing on such trees as *Betula lenta*, *Acer saccharinum*, *A. rubrum*, and *Nyssa sylvatica* var. *biflora*. This is the first report in Virginia which locality is at its northernmost known limit. This species occurs as the brittle, bronze phase described by Castle (1925) as *R. langloisii*. The study of large quantities of material by Schuster has shown that this plant cannot be separated from *R. caloosiensis* so must be regarded as ccspecific.

Frullania inflata Gottsche. Nansemond (RMS 34521b). Found with capsules and androecia and associated with *Frullania brittoniae*, *F. squarrosa*, *Leucolejeunea uncioba* and *Cololejeunea biddlecomiae* and *C. minutissima*. This is a noteworthy citation as it seems to be rare in the state; it has been reported from only three collections in the Piedmont.

Frullania tamariscii (L.) Dum. Dismal Swamp (RMS 34546). It was growing on *Nyssa sylvatica* var. *biflora* with *Leucolejeunea clypeata*. The plants are typical with female bracts sharply serrated and pointed, the branch leaves with apiculate tips, with large styli, and with the underleaf margins reflexed distally. This is the second report from Virginia.

Frullania plana Sull. Mt. Rogers (RMS 38031a). Growing on the trunk of a large *Aesculus octandra* 5–7 feet above the base with *Porella platyphylloidea*, *Radula complanata*, *Cololejeunea biddlecomiae*, *Metzgeria fruticulosa*. Reported from four collections in three counties in the western part of the state on boulders, this collection represents the decidedly rare, reddish-brown, corticolous phase of the species.

Frullania saxicola Aust. Roanoke County, on shaded limestone ledge above Tinker Creek near Hollins (PMP 2795). While this taxon is ex-

ceedingly close to *F. inflata* it is easily separated by the numerous clavate papillae that close the perianth mouth. For a discussion of these differences, see Schuster (1953).

Frullania oakesiana Aust. White Top (RMS 38063, 38068, 38070, 38088a, 38090, 38091; PMP 2780 & 2783). Mt. Rogers (RMS 38011, 38014, 38024). The White Top collections were from *Sorbus americana*, *Acer spicatum*, *Betula lutea*, and were associated with *Frullania asagrayana*, *Metzgeria crassipilis*, *F. eboracensis*, *Ulota crispa* and *Sematophyllum adnatum*. The collections on Mt. Rogers grew on *Sorbus americana*, *Betula lutea* and *Abies fraseri* with *Frullania asagrayana*, *F. eboracensis*, *Ulota crispa*, etc. This is a well marked species and occurred in normal condition. It has not been reported south of western New York. This is the first report for Virginia although Schuster has collected it in North Carolina and Tennessee on Roan Mt., Mt. Mitchell, Clingman's Dome and Andrews Bald. In the southern Appalachians it seems to be limited to the spruce-fir zone.

Frullania obcordata Lehm. & Lindb. Dismal Swamp (RMS, several collections; PMP 2659 and 2672 p.p.). Seashore State Park (RMS 34551a, 34553; PMP 2674). The Dismal Swamp collections occurred on *Ilex opaca* in isolated, nearly pure colonies. In Seashore State Park on *I. opaca*, *Acer rubrum* and *Quercus* with *Frullania kunzei*, *Leucolejeunea uncioba*, *Leptocolea cardiocarpa* and *Cololejeunea minutissima*. This species is new to Virginia and this area represents the northernmost known extension in range.

Lejeunea (Microlejeunea) bullata Tayl. Dismal Swamp (RMS 34545). It was growing on *Ilex opaca* with *Metzgeria furcata* var. *ulvula* and *Frullania brittoniae*. This is the northernmost valid station for this species and the first report for Virginia. The mature plants have one oil body per cell and median leaf cells are 12–13.5 μ wide. The ocelli of the antical leaf base vary from 1–4, usually 2–3 per leaf. The larger number of ocelli are very rarely found, otherwise the plants are quite typical.

Cololejeunea minutissima (Smith) Schiffn. subsp. **minutissima**. Dismal Swamp (RMS 34550, 34552c, 34553, 34556, 34563; PMP 2653, 2654); Seashore State Park (RMS 34553 p.p.; PMP 2676); Nansemond (RMS 34521). It was found growing on *Ilex opaca*, *Nyssa sylvatica* var. *biflora*, *Asimina triloba*, and *Acer rubrum* with the usual associates including *Leptocolea cardiocarpa*, *Cololejeunea biddlecomiae*, *Lejeunea flava*, *Metzgeria furcata ulvula*, *Frullania kunzei*, etc. For the synonymy of the groupings under this species see Schuster (1955). Here also is listed the Virginia collections along with the occurrence of *Frullania obcordata* and *Leptocolea cardiocarpa*. The above is the first report for Virginia and represents its northernmost valid locality. All of these plants are quite typical except that RMS 34530c has the discoid gemmae as illustrated in the paper cited above. These gemmae are 25–32 celled and arise from the antical face of the lobe, on the marginal cells, and on the abaxial face of the lobule.

Leptocolea cardiocarpa (Mont.) Evans. Dismal Swamp (RMS 34529, 34542, 34556, 34563; PMP 2644, 2657, 2663, 2665); Seashore State Park

(RMS 34551; PMP 2675). Growing on the same types of trees and with the same hepatics as noted above except for the additional occurrence on *Berchemia scandens* where it was growing as isolated small patches. This is another northward extension in range and first report for Virginia.

Riccardia palmata Hedw. White Top (RMS 38053, 38103; PMP 2774). It was growing near the summit on a decaying moist log with *R. latifrons*, *Cephalozia catenulata*, and *Nowellia curvifolia*. The plants are typical, possess capsules and slender androecial plants. Trustworthy reports of this species in the southeast are very few. The majority of the specimens are referable to *R. latifrons* or even *R. multifida* vars.

Metzgeria hamata Lindb. White Top (RMS 38050; PMP 2773). On treebase by brook just below the spruce forest at summit. Alt. ca. 5000 ft. Growing with *Lejeunea lamacenna* var. *geminata*, *Radula tenax*, and *Plagiothecium denticulatum* in beech woods. This tropical species is extremely rare north of the montane parts of Tennessee and North Carolina. The only other report for Virginia is at the Breaks of the Cumberland at the junction of the Virginia, West Virginia, and Kentucky borders.

Metzgeria fruticulosa (Dicks.) Evans. Mt. Rogers (RMS 38028, 38031; PMP 2764, 2768). Near the summit on the barks of *Aesculus octandra*, *Betula lutea*, *Fagus grandifolia* and *Acer saccharum*, growing with *Frullania plana*, *Porella platyphylloidea*, *Radula complanata*, *Cololejeunea biddlecomiae*, *Metzgeria crassipilis*, *Leucodon julaceus* and *Pylaisia* spp. This species has been reported once before in the state in Giles County. It is extremely rare north of the montane portions of Tennessee and North Carolina, where it has been overlooked previously. It occurs at much higher elevations than the ubiquitous *M. furcata* and has quite a different ecology. The arbitrary position of Frye & Clark (1937) in placing this as a variety of *M. furcata* indicates a lack of understanding of the nature of this species.

Metzgeria myriopoda Lindb. Dismal Swamp (RMS 34529, 34530, 34531, 34541, 34545, 34562, 34537; PMP 2652). Growing on *Nyssa sylvatica* var. *biflora* with *Anomodon attenuatus*, *Radula caloosiensis*, *R. obconica*, *Rectolejeunea maxonii*; Nansemond County, as noted for *R. caloosiensis* in similar ecology (RMS 34511, 34514a). This plant is new to Virginia and is an extension of its range to the north, Frye & Clark's (1937) reports for the District of Columbia and Quebec are in error. The plants are often rather impoverished and approach *M. furcata* from which they differ in the convex branches with the marginal hairs 2-3 per cell. The frequent geminate marginal hairs suggest *M. conjugata* from which the oval, short gemmae and uniform sterility serve to distinguish these plants. Occasional plants (RMS 34537) exhibit a few ultimate branches, bearing short, oval gemmae and have the facies of a form of *M. fruticulosa*.

Sphaerocarpus terrestris Bisch. (*S. texanus* Aust.). Nansemond, moist, sandy soil near the end of an unplowed field (RMS 36675 PMP 2690). Colonies small to large and in abundance, with immature sporophytes. This plant has been collected as far north as Middlesex County near Saluda south of the Rappahannock River terminus in minute quantity.

This collection confirms the presence of this species near the edge of its reported range northwards in eastern United States.

It may be noted in passing that previous reports of *Ptilidium ciliare* (L.) Nees for the state, duplicates of which were obtained on loan from the New York Botanical Garden (for which appreciation is here expressed), and examined by the second author, all proved to be *P. pulcherrimum* (Web.) Hampe, a species of scant occurrence in the state. Thus the reported bryophytes for Virginia now stand at 512 with the hepatics at 147.

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MONOTROPSIS LEHMANIAE NOT A REAL SPECIES

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BURNHAM (1906) described *Monotropis Lehmaniae* as a new species, separated from *M. odorata* Ell. by having the corolla "but half the length of the sepals, and the lobes . . . more deeply divided." Moreover, the flowers of the new plant were scentless and "never appear until about the 20th of September." Burnham's initial impression was that only in the time of flowering did the specimens sent to him by Miss E. A. Lehman from the