Rhodora

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THE ANNUAL MEETING OF THE NEW ENGLAND BOTANICAL CLUB.

E. F. Williams, Recording Secretary.

The Annual Meeting of the New England Botanical Club was held on Friday, Dec. 6th, 1912, at 8 P. M. in the hall of the Twentieth Century Club, No. 3 Joy St., Boston, where our Club has held its meetings since Nov. 2nd, 1906. Professor Merritt L. Fernald, the President, occupied the Chair and there were 42 members present. This was the 155th meeting of the Club and as some of the proceedings at this meeting may be of interest to our non-resident or absent members an abstract of the minutes of the proceedings is given below.

After the reading of the report of the last meeting and the report of the Treasurer, Prof. Wiegand, the Phaenogamic Curator, made his report. It appears therefrom that the Club Herbarium has prospered greatly during the past year. To quote from the report,

"In July last, the Club Herbarium was moved into the sumptuous quarters in the Gray Herbarium made possible through the generosity of Mr. George Robert White. It now occupies the large eastern room in the second story of the White Laboratory, a structure wholly fire proof. The herbarium is housed in standard steel cases and the tables as well as wall cases are also of metal and hence fire proof.

The accessions during the year have been gratifying beyond expectation. Besides many small sets from about fifty persons several large contributions are worthy of special mention — the Herbaria of Sydney Harris, Charles H. Morss, the late Edward S. Hoar of Concord, the herbarium of Geo. Mackie, collected chiefly at Amherst, Mass., the recent collections of Miss Kate Furbish, the New England portion

of the herbarium of Arthur Stanley Pease rich in plants of Coös County N. H., and Andover, Massachusetts. Above all in size and importance, however, stands the gift to the Club of the herbarium of our corresponding secretary, Mr. Edward L. Rand. This collection, which has not yet been received, contains many thousands of specimens and is especially important as having formed the basis of Rand & Redfield's Flora of Mt. Desert Island. The total number of specimens actually received during the year was 11,765. The herbarium actually contains 51,109 sheets of mounted specimens distributed as follows.

From	Maine	22,238
"	N. H.	5,735
"	Vt.	2,396
"	Mass.	17,380
"	R. I.	882
"	Conn.	2,478

The reports of the Committees were then made, and the election of officers for the ensuing year resulted as follows: President, Merritt L. Fernald, Vice President, William P. Rich, Corresponding Secretary, Edward L. Rand, Recording Secretary and Treasurer, Emile F. Williams, Phaenogamic Curator, Karl M. Wiegand, Cryptogamic Curator, Lincoln W. Riddle, Members of the Council, Joseph A. Cushman, Walter Deane, and Benjamin L. Robinson. The following candidates, for membership recommended by the Council, were elected:—Resident members: Sumner C. Brooks, Cambridge, Myron E. Gutterson, Andover, George H. Richards, Boston, George S. Torrey, Boston, Prof. William M. Wheeler, Boston. Non-resident members: The Rev. Charles B. Ames, Belfast, Maine, Prof. Samuel F. Clarke, Williamstown, Massachusetts, Ralph Hoffman, Kansas City, Missouri, Bayard Long, Ashbourne, Pennsylvania, and Jay G. Underwood, Hartland, Vermont.

The talk of the evening, "The Shad Bushes of New England," was given by Prof. Wiegand, and this difficult subject was presented in such a comprehensive and lucid manner that it would appear as if his treatment would solve most of the difficulties which have beset every student of the genus. The difficulties are two-fold — first the very extensive and confused nomenclature, much of it hopeless on account of the insufficiency of the earlier descriptions and the impossibility of tracing the specimens upon which they were based and — second, the

great tendency to hybridization of the species in this genus, no less than from a quarter to a third of the sheets in every large collection being hybrids.

The paper on Amelanchier was published by Prof. Wiegand in the July, 1912, RHODORA. Many sheets of beautiful specimens of the genus were exhibited and also some excellent photographs of typical or noteworthy specimens.

NOTES ON CONNECTICUT MOSSES,— IV.

G. E. NICHOLS.

FOR the moss student whose lack of time precludes the pursuit of any extensive research along bryological lines there is open a fascinating field in the intensive study of the mosses within some limited area. During the past few years the writer's major interests have become of such a nature that the study of bryology has necessarily been forced to a subordinate position, and for this reason the little attention that it has been possible to give to this subject has been restricted almost entirely to Connecticut mosses. The advisability of further exploration within this state and of more intensive work was pointed out in the introductory chapter to the Bryophytes of Connecticut, and subsequent work has only served to make still more evident the apparently inexhaustible possibilities, from a bryological standpoint, of the region under consideration. Since 1908 three papers on Connecticut mosses have appeared [1] in each of which ten species new to the state have been recorded, while the present paper includes an even longer list of additions.

SPECIES OF SPHAGNUM NEW TO CONNECTICUT.

During the past year there has appeared Warnstorf's long heralded Sphagnologia Universalis.[2] In this exhaustive work many new species are described while other forms which heretofore have passed as varie-

[1] RHODORA: **12**:146–154. 1910; **13**: 40–46. 1911; **14**: 45–52. 1912.
[2] Engler, Pflanzenreich **51**. 1911.

ties are accorded the dignity of specific rank. On the authority of Warnstorf no less than eleven new species of *Sphagnum* may be added to the thirty [1] already accredited to Connecticut. These various additions are noted in the following paragraphs together, in some instances, with brief comment regarding the specimens on which the Connecticut record is based. In cases where no material can be found in the herbarium of Yale University to represent particular species cited by Warnstorf the record is quoted solely on his authority, as is indicated by the use of quotation marks.

SPHAGNUM FLAVICOMANS (Card.) Warnst. (*S. subnitens* Russ. & Warnst., var. *flavicomans* (Card.) Warnst.). For definite localities see under *S. subnitens* in Bryophytes of Connecticut.

SPHAGNUM SUBTILE (Russ.) Warnst. (*S. acutifolium* Ehrh., var. *subtile* Russ.). "Connecticut (Evans, Eaton)." In the opinion of Dr. Andrews this is not specifically distinct from *S. rubellum*.

SPHAGNUM AMBLYPHYLLUM Russ. (*S. recurvum* Beauv., var. *amblyphyllum* (Russ.) Warnst.). For definite stations see under *S. recurvum* in Bryophytes of Connecticut.

SPHAGNUM RUPPINENSE Warnst. "Connecticut, Bethany (Evans, No. 226)." This is the only extra-European station cited for the species. The number quoted, however, does not appear on any of the specimens in the Yale herbarium. Evans, No. 224, is labeled *S. cuspidatum*, var. *falcatum* Russ., forma *mollis* Warnst. and it seems barely possible that this is the specimen to which reference is intended. Both *S. ruppinense* and the next species are regarded by Dr. Andrews as varieties of *S. cuspidatum*.

SPHAGNUM VIRGINIANUM Warnst. "Connecticut, Bethany (Evans, No. 226)." It will be observed that the Connecticut citation for this species is identical with that given for *S. ruppinense*.

SPHAGNUM FRANCONIAE Warnst. "Connecticut (Eaton)." Var. *robustum* Warnst. "Connecticut, Branford (Eaton, No. 96)." According to Warnstorf this is a submersed form similar in habit to *S. rufescens* or *S. cuspidatum*, var. *submersum*. The specimen from Bethany, distributed by Eaton & Faxon [2] as No. 96 and bearing the latter name may possibly be the plant now referred as var. *robustum* to *S. Franconiae*.

[1] In the opinion of Dr. A. LeR. Andrews and of the writer the Connecticut specimens heretofore referred to *S. Garberi* Lesq. & James belong to *S. compactum* DC.

[2] Sphag. Bor. Amer. Exsic.

SPHAGNUM PSEUDOSQUARROSUM Warnst. "Connecticut, Oxford (Eaton)." Var. *heterophyllum* Warnst. Oxford (Eaton, 1893).[1] Var. *bicolor* Warnst. Oxford (Eaton, 1893).[2]

SPHAGNUM BAVARICUM Warnst. In pools, altitude 27 m., North Stonington (G. E. N., 1912). A submersed form heretofore included as a variety under *S. subsecundum*.

SPHAGNUM NICHOLSII Warnst. Submerged in shaded pools of a mountain swamp, altitude 570 m., Salisbury (G. E. N., 1912). Although in habit this moss resembles *S. cuspidatum*, it is obviously related to *S. inundatum*, from which it differs primarily in the fact that the hyalodermis of the stem consists of usually two (1–3) layers of cells instead of but one. From *S. contortum* and *S. platyphyllum*, the only other Connecticut species with which confusion is likely, *S. Nicholsii* may be distinguished by the shape of the chlorophyll cells in the branch leaves. In the two first mentioned species these are rectangular or barrel shaped in cross section whereas in the present species they are triangular or trapezoidal.

SPHAGNUM TURGIDULUM Warnst. East Haven (Eaton, 1893). Distributed by Eaton & Faxon[3] as *S. rufescens*, a species to which it bears a marked resemblance.

SPHAGNUM SUBBICOLOR Hampe. (*S. papillosum* Lindb., var. *intermedium* Warnst.). East Haven (Evans, 1891). The status of *S. subbicolor* has been discussed somewhat at length by Andrews[4] who considers it an artificial species designed to embrace intergrading forms of the two closely related species, *S. magellanicum* Brid. (*S. medium* Limpr.) and *S. palustre* L. (*S. cymbifolium* Ehrh.).

SPHAGNUM MACROPHYLLUM Bernh. Floating in ponds, altitude 120–150 m., Voluntown (G. E. N., 1912). There are a number of reasons why this moss is of unusual interest. In the first place the general appearance of the plant is strikingly different from that of any other Connecticut species — in fact, at first sight, it does not look like a *Sphagnum* at all; for the leaves, instead of being imbricated, spread at a wide angle from the branches, and the majority of the branch leaves are very large, attaining a length of 12 mm. or even more with a width of about 2 mm.; they have a glossy, metallic lustre when dry

[1] Eaton & Faxon, Sphag. Bor. Amer. Exsic. No. 130 (as *S. subsecundum*, var. *macrophyllum*).
[2] Eaton & Faxon, Sphag. Bor. Amer. Exsic. No. 143 (as *S. rufescens*).
[3] Sphag. Bor. Amer. Exsic. No. 142.
[4] Bryologist **15**: 71, 72. 1912.

and in the Connecticut specimens were dark olive-green in color when fresh. The only New England *Sphagnum* with which there is any danger whatever of confusing this beautiful form is *S. Torreyanum*. In the ponds referred to these two species grew side by side but were readily separable, the habit of *S. Torreyanum* being far less robust and the leaves much shorter, usually somewhat imbricated, and pale green in color. *S. Torreyanum* more often than not grew just below the surface with the lower portion of its stem imbedded in the substratum, while *S. macrophyllum* almost invariably floated free on the surface. The geographical distribution of *S. macrophyllum* is also rather interesting. It is endemic to North America and is primarily a southern coastal-plain species, its range coinciding approximately with that of the southern white cedar (*Chamaecyparis thyoides*). For New England, in addition to two stations in eastern Connecticut, it is reported from at least three localities in Rhode Island,[1] and in a recent letter Prof. Collins writes that he has in his herbarium a single specimen from eastern Maine (Marshfield, Washington County)!

SPECIES OF FONTINALIS NEW TO CONNECTICUT.

Five species of *Fontinalis* new to Connecticut have been recorded during the past year, thus bringing the total number now known to occur in the state up to nine. For the determination of the various species the writer is indebted to M. Jules Cardot, of Charleville, France, author of the "Monographie des Fontinalacées"[2] and generally recognized as an authority on the group.

Probably no genus, with the possible exception of *Sphagnum*, is more perplexing to the bryologist than *Fontinalis*. For, as Cardot remarks, the species are all more or less polymorphic and frequently exhibit marked structural variations as a result of differences in external conditions. Thus two plants of the same species growing in flowing and still water respectively may present totally different appearances; in a similar way, as is not infrequently the case with aquatic mosses, there may be marked contrasts between the aspects of the plant at different seasons of the year; and furthermore the same species-complex — using this term to designate a species in its broadest

[1] Bennett: Plants of Rhode Island 59. 1888; also herb. J. F. Collins.
[2] Mém. d. Soc. nat. d. Sciences nat. et math. d. Cherbourg **28**. 1892.

and most comprehensive sense — may vary considerably in different regions, the divergence frequently becoming so pronounced and apparently so constant as to make it convenient from a taxonomic standpoint to recognize more than a single species. From the foregoing remarks it can readily be seen that the difficulty in drawing specific lines in this genus is very great, and it is also obvious that not all of the various described species possess equal specific worth. While there is no question regarding the specific value of many of them, others represent merely variants due to regional or environmental factors.[1] The method of treatment adopted by Cardot takes cognizance of these conditions and his scheme of classification is outlined briefly in the next paragraph.

On a basis of the vegetative characters of the various species Cardot first subdivides the genus into six sections. Each of these sections comprises a natural group of closely related species which may be considered as in all probability having been derived from a recent common ancestor. He further classifies the respective species of each section into four ranks according to their relative importance or distinctness as species. Species of the first rank — there may be more than one such species in a given section — exhibit marked structural differences from one another. Species of the three lower ranks are separated from one another and from those of the first rank by fewer and less definite points of distinction — they are therefore subordinated to species of the first rank. Among themselves first rank species are as nearly as possible of equivalent value as regards the sum total of their distinctive characters, and the same observation might apply equally well to species of the second, third, and fourth ranks respectively. Transitions do not exist between species of the first rank, but species of the lower ranks are not always clearly delimited either among themselves or from the higher members of the same series. *Pari passu* there are sometimes encountered forms which it is impossible to name with any degree of certainty. Species of the third and fourth ranks generally occur as local or regional races, in most cases replacing or excluding in a given region the species from which they have probably been derived. Thus, for example, while the typical European form of *F. antipyretica* is very rare in this country it is paralleled, so to speak, by *F. antipyretica*, var. *gigantea*, *F. neomexicana*, etc.— forms which are not present in Europe.

[1] Species of the latter sort correspond variously to the elementary species of DeVries, the "kleine Arten" of K. Müller, and the subspecies of many authors.

Because of the inadequacy of readily accessible information as to the distribution of most species of *Fontinalis* it has been thought best in connection with the following remarks concerning the forms here recorded from Connecticut for the first time to include as complete an account of their ranges on this continent as the data at hand will permit.

FONTINALIS SULLIVANTII Lindb., not Lesq. & James. (*F. Lescurii*, var. *gracilescens* Sull.). On stones lining an old well — probably not submerged at any season of the year, altitude about 120 m., Monroe (G. E. N., 1911). Known from Maine,[1] New Hampshire,[2] Massachusetts,[3] and Rhode Island [4]; also from New Jersey,[5] Pennsylvania,[6] Delaware[7], Georgia,[8] and Minnesota [9]; endemic to North America.

Fontinalis Allenii Card. sp. nova. In a rocky brook, Mount Carmel, Hamden (J. A. Allen, 1880). M. Cardot supplies the following description: "This beautiful species belongs to the *F. Novae Angliae* group. In its robust habit and appressed, subimbricate leaves it resembles especially *F. Cardoti* Ren.,[10] but it differs from this in its even greater stoutness, its copper yellow color and glossy lustre, and its larger leaves which are rounded-obtuse at the apex, rarely acute, entire or scarcely sinuate near the tip. Branches slightly curved; plants rigid when dry. Fructification unknown." The specimens from which this species is described, together with those of *F. nitida* and *F. flaccida* mentioned below, were unearthed by the writer among a lot of undetermined *Fontinalis* material that was turned over to him by Messrs. O. D. and J. A. Allen, two collectors whose former activities have contributed much toward the present knowledge of the bryophytes in this state. The type specimen is preserved in the herbarium of Cardot; co-type specimens were recently distributed by Grout .[11]

[1] Rand & Redfield, Flora of Mount Desert 211. 1894.
[2] Lesquereux & James, Manual 271. 1884.
[3] Grout, N. Am. Musci Pleuro. Exsic. No. 73.
[4] Bennett, l. c. 63; also herb. Collins.
[5] Cardot, l. c. 78.
[6] Herb. Cardot.
[7] Lesquereux & James, l. c.
[8] Herb. E. B. Chamberlain.
[9] Holzinger: Minn. Bot. Stud. **1**: 290. 1897.
[10] *F. Cardoti* has been recorded from Vermont (RHODORA **4**: 180. 1902) and is probably widely distributed. A form closely approaching this species has been collected by the writer at North Branford.
[11] N. Amer. Musci Pleuro. Exsic. No. 395.

FONTINALIS NOVAE ANGLIAE Sull., var. **heterophylla** Card. var. nova. In a rocky brook, altitude 45 m., North Branford (G. E. N., 1911). "A form remarkable on account of the more or less pronounced dimorphism of its leaves. Stem leaves very large and flaccid, attaining a length of 6 mm. with a width of 2 mm.; for the most part narrowed into an elongated acumen, slightly truncate, denticulate at the apex. Branch leaves considerably smaller, ovate lanceolate, very broadly and shortly acuminate, obtuse." Type in herbarium of Cardot; co-type in herbarium of Yale University.

FONTINALIS NOVAE ANGLIAE Sull., var. **Lorenziae** Card. var. nova. Andover (C. A. Weatherby, 1907; communicated by Miss Annie Lorenz). "A form characterized by its slender branches, which are elongated, slightly spreading, and covered with small, imbricated leaves. Habit resembling that of *F. dalecarlica* Br. & Sch." Type in herbarium of Cardot; co-type in herbarium of Yale University.

FONTINALIS NOVAE ANGLIAE Sull., var. **latifolia** Card. var. nova. In a brook, Burlington (G. E. N., 1908). "Differs from the typical form in the structure of the leaves, which are more flaccid, wider, broadly ovate, and very concave." Type in herbarium of Cardot; co-type in herbarium of Yale University.

FONTINALIS NITIDA Lindb. & Arn. Attached to stones on muddy shores, upper reaches of tidal stream, New Haven (J. A. Allen, 1880). Apparently not heretofore recorded from the eastern United States, but known from Quebec [1]; Ontario[2]; British Columbia[3]; Alberta, Idaho, Wyoming, and Arizona [4]; Washington [5]; Asia.

FONTINALIS DURIAEI Schimp. Growing on rocks in brooks, Lakeville, altitude 225 m., and North Branford, altitude 45 m. (G. E. N., 1911). New to the eastern United States. Known from Saskatchewan, Wisconsin, Dakota, Colorado, Wyoming, and Arizona [6]; Minnesota [7]; Missouri and Arkansas [8]; California [9]; Europe, Africa.

FONTINALIS FLACCIDA Ren. & Card. On sticks and branches in still water, slightly above sea level, East Haven (J. A. Allen, 1880)

[1] Grout, N. Amer. Musci Pleuro. Exsic. No. 297.
[2] Macoun, Cat. Can. Plants 7: 269. 1902.
[3] Cardot, l. c. 104.
[4] Herb. Cardot.
[5] Herb. New York Botanical Garden.
Herb. Cardot.
[7] Herb. Chamberlain.
[8] Herb. New York Botanical Garden.
[9] Cardot, l. c. 113.

and North Stonington (G. E. N.). Reported from New Hampshire [1] and Massachusetts [2]; also from Maryland and Georgia [3]; Alabama and Louisiana [4]; Missouri [5]; Ohio [6]; British Columbia [7]; endemic to North America.

According to Cardot's classification, of the various species thus far recorded from Connecticut *F. antipyretica* and *F. Novae Angliae* are referred to the first rank; *F. Sullivantii* is a second rank species subordinate to the southern *F. disticha* Hook. & Wils.; *F. dalecarlica* is a third rank species related to the European *F. squamosa* L.; *F. Allenii* is a third rank species derived presumably from *F. Novae Angliae;* while *F. nitida, F. Duriaei, F. Lescurii,* and *F. flaccida* are accorded first, second, third, and fourth ranks respectively, being subordinated to *F. hypnoides* Hartm., a species which is widely distributed in Europe and which also occurs in the western part of this continent.

A revised key to the Connecticut species of *Fontinalis,* largely adapted from Cardot, is here given.

1. Stem leaves keeled ..... *F. antipyretica,* var. *gigantea*
   Leaves not keeled 2
2. Leaves more or less distinctly dimorphic 3
   Leaves uniform or nearly so 4
3. Plants slender, branches widely spreading, branch leaves almost entire ..... *F. Sullivantii*
   Plants robust, branches obliquely spreading, branch leaves distinctly denticulate above ..... *F. Novae Angliae,* var. *heterophylla*
4. Leaves flaccid, plane or nearly so in upper half 5
   Leaves more or less firm, concave 8
5. Leaves entire or sinuolate at apex ..... *F. nitida*
   Leaves denticulate at apex 6
6. Capsule ovoid or slightly elongated, trellis of inner peristome perfect; cells of leaf angles scarcely enlarged ..... *F. Duriaei*
   Capsule subcylindrical, trellis of inner peristome imperfect; cells of leaf angles much enlarged 7
7. Leaves ovate lanceolate or oblong lanceolate, shortly acuminate ..... *F. Lescurii*
   Leaves lanceolate, long acuminate ..... *F. flaccida*
8. Leaves very concave, less than 4 mm. long 9
   Leaves slightly concave, 3.5–7 mm. long 10

[1] Cardot, l. c. 119.
[2] Bryologist **13**: 48; also herb. Chamberlain.
[3] Herb. New York Botanical Garden.
[4] Renauld & Cardot, Musci Amer. Sept. 43. 1893.
[5] Bryologist **10**: 105. 1907.
[6] Herb. Cardot.
[7] Renauld & Cardot, l. c.

9. Leaves closely appressed-imbricate; apex usually rounded-acute, denticulate.....*F. Novae Angliae*, var. *Lorenziae*
   Leaves imbricate at base, spreading above; apex usually sharply acute, sinuolate.....*F. dalecarlica*
10. Plants rather slender, slightly glossy when dry, leaves erect-spreading. *F. Novae Angliae*
    Plants robust, very glossy when dry, leaves loosely appressed-imbricate *F. Allenii*

Other Mosses new to Connecticut.

Dicranum Bonjeani De Not. (*D. palustre* La Pyl.). Growing mixed with *D. Drummondii* in a spruce bog, altitude 120 m., New Fairfield (G. E. N., 1912). Determination verified by Mr. R. S. Williams. The Connecticut specimens seem to agree well with the typical form of the species. The leaves are bronze green in color, slightly secund, and decidedly undulate. They bear a marked resemblance to leaves of *D. undulatum*, but the serration both along the margin and at the back of the midrib is much less pronounced here than there. Fruit matures in late summer. *D. Bonjeani* has been accredited to Maine,[1] New Hampshire,[2] Vermont,[3] and Massachusetts.[4] It is found throughout arctic North America, Canada, and the northern United States, extending southward along the mountains to Georgia, Colorado, and California; Europe, Asia.

Barbula convoluta Hedw., var. commutata (Jur.) Husn. Sericite schist bluffs bordering the Connecticut River, altitude 30 m., Portland (G. E. N., 1909). Determined by Mr. Williams. When in fruit *B. convoluta* is readily recognized by its long, convolute, sheathing perichaetial leaves Sterile plants might be mistaken for *B. unguiculata*. It differs, however, in the character of the leaf margin which in that species is revolute nearly to the apex while here it is plane except near the base; also by the fact that in the present species the midrib, instead of being excurrent, vanishes in or below the apex. The variety is somewhat larger than the typical form of the species and has longer, firmer, slightly recurved leaves. Fruit matures in spring. *B. convoluta* is reported from Vermont [5] and Massachusetts [6]; it is widely scattered through temperate North America; Europe, Asia, Africa.

[1] Rand. & Redfield, l. c. 202.
[2] Herb. Yale University.
[3] Bryologist **7**: 6. 1904.
[4] Rhodora **2**: 96. 1904.
[5] Grout, Mosses of Vermont 14. 1898.
[6] Tuckerman & Frost, Plants within thirty miles of Amherst 47. 1875.

CAMPTOTHECIUM NITENS (Schreb). Schimp., var. **falcifolium** Ren. in litt. In a spruce bog, altitude 420 m., Norfolk (G. E. N., 1912). This variety differs from the typical form of the species in its strongly falcate-secund leaves; in habit it bears a striking resemblance to *Drepanocladus revolvens*. The credit for identifying the Connecticut plants with Renauld's undescribed variety should be given to Mr. Williams. Type collected by A. C. Waghorne at North Bay, Newfoundland (1893), and preserved in herbarium of New York Botanical Garden.

CALLIERGON STRAMINEUM (Dicks.) Kindb. In a spruce bog, altitude 420 m., Norfolk (G. E. N., 1912). Determinations verified by Mr. Williams. In the locality mentioned above two well marked forms of this moss are present. One of these occurs in the more open parts of the bog, growing especially at the bottom of deep ruts in an old wagon trail where the peat is more or less firmly packed down. When growing in such situations the plants are very slender and soft, with pale green, imbricated leaves, and there is no likelihood of their being mistaken for any other local bog species; they never develop very luxuriantly here, being more or less intermixed with *Camptothecium nitens*, *Scapania irrigua* and species of *Sphagnum*.

The second form grows partially submerged in shallow pools in somewhat shaded places and forms pure mats of considerable extent. This form is quite robust, with golden green leaves which may spread more or less widely and frequently reach a length of more than 2 mm. In the field this form might readily be confused with *C. cordifolium;* in that species, however, the midrib of the leaves is nearly percurrent while in *C. stramineum* the midrib extends little more than two thirds the length of the leaf. Fruit rare, maturing in summer. *C. stramineum* has been recorded from Maine,[1] New Hampshire,[2] Vermont,[3] Massachusetts[4], and Rhode Island [5]; it is widely distributed through Arctic America and Canada, and has been collected as far south as Virginia, Ohio, and Wyoming; Europe, Asia.

DREPANOCLADUS ADUNCUS (L.) Warnst. (*Hypnum uncinatum* Hedw.). Moist, shaded, sericite schist ledges, altitude 60 m. Middletown (G. E. N., 1912). In view of the fact that through a nomenclatorial mix-up this moss has previously been erroneously

[1] Rand & Redfield, l. c. 219.
[2] Lesquereux & James, l. c. 405.
[3] Grout, Mosses of Vermont. 30. 1898.
[4] Tuckerman & Frost, l. c. 51.
[5] Bennett, l. c. 65.

accredited to Connecticut it is a source of no little satisfaction at last to be able to reinstate it in the list. The characters which separate the species from other *Drepanocladi* are brought out in the writer's original key to the genus,[1] while the reasons for replacing the familiar binomial *H. uncinatum* by *D. aduncus* are sufficiently stated elsewhere.[2] Fruit usually borne in abundance, summer. *D. aduncus* has previously been recorded from Maine,[3] New Hampshire,[4] Vermont,[5] Massachusetts,[6] and Rhode Island.[7] It ranges throughout northern North America, reaching south as far as the mountains of West Virginia and California; a cosmopolitan.

The following additional localities for rare or infrequently collected mosses should also be noted[8]: *Sphagnum compactum*, North Haven; *Sphagnum obesum*, New Haven; *Dicranum spurium*, East Haven, Branford, and Killingworth; *Dicranum sabuletorum*, New Fairfield; *Dicranum Drummondii*, New Fairfield and Bethany; *Dicranum montanum*, Salisbury and Voluntown; *Dicranum viride*, Salisbury, Colebrook, and Voluntown; *Fissidens osmundoides*, Windsor (Miss Lorenz); *Octodiceras Julianum*, Salisbury and Branford; *Didymodon rubellus*, Windsor (Miss Lorenz); *Racomitrium sudeticum*, Killingworth; *Ephemerum cohaerens*, Branford; *Nanomitrium Austini*, New Haven; *Aphanorrhegma serratum*, Hartford (Miss Lorenz), Salisbury, and Bethany; *Bryum capillare*, Colebrook; *Myurella gracilis*, Middletown; *Pterigynandrum filiforme*, Salisbury and Colebrook; *Haplohymenium triste*, Colebrook; *Elodium Blandowii*, *Brachythecium populeum*, *Brachythecium velutinum*, *Sematophyllum tenuirostre*, and *Isopterygium elegans*, Colebrook; *Isopterygium turfaceum*, Norfolk and Colebrook; *Isopterygium Muellerianum*, Middletown; *Plagiothecium latebricola*, New Fairfield; *Amblystegiella confervoides*, Brookfield and Kent; *Amblystegium vacillans*, West Hartford (Miss Lorenz); *Chrysohypnum polygamum*, Salisbury; *Rhytidiadelphus squarrosus*, Colebrook; *Rhytidium rugosum*, Canaan; *Stereodon fertilis*, Voluntown; *Polytrichum strictum*, Colebrook.

Yale University.

[1] Bryophytes of Connecticut. 167.
[2] Rhodora **10**: 153–154. 1910.
[3] Rand & Redfield, l. c. 216.
[4] Herb. Yale University.
[5] Grout, Mosses of Vermont 30.
[6] Tuckerman & Frost, l. c. 51.
[7] Bennett, l. c. 65.
[8] Unless otherwise indicated the specimens were collected by the writer.

NUTTALL'S WHITE SASSAFRAS.

M. L. FERNALD.

THE common *Sassafras* of eastern North America, *S. variifolium* (Salisb.) Kuntze, based upon *Laurus Sassafras* L., has the young leaves densely pubescent, the mature ones considerably so beneath (in extreme specimens almost velvety to the touch) and the new twigs closely pubescent or at least puberulent. This is the common tree from southern Maine to Texas in the coastal region, and it is found inland more or less throughout the Atlantic States, in the Mississippi Basin and about the Great Lakes. In some parts of its range, however, notably from the upland woods of western New England to the Carolina mountains, much of the *Sassafras* has the leaves nearly or quite glabrous from the first and the bark of the new shoots glabrous and often glaucous.

This glabrous or glabrate *Sassafras* was well known to Thomas Nuttall who, in 1818, after setting off the deciduous-leaved laurels of the United States as a subgenus *Euosmus*, described the smooth *Sassafras* as *Laurus* (*Euosmus*) *albida* or White Sassafras, which he distinguished from the commoner tree with pubescent twigs and foliage, his *Laurus* (*Euosmus*) *Sassafras* or Red Sassafras. Nuttall's account of the two, under *Laurus*, was as follows:

"The deciduous leaved species of the United States appear to constitute a subgenus, which I propose as follows:

*EUOSMUS.† Flowers polygamous or dioicous.— *Calix* 6-parted. *Nectarium* none. *Stamina* 9, fertile; 6 exterior, naked, the 3 interior augmented by 6 infertile short stamina, attached by pairs; anthers of the sterile stamina glanduloid. *Berry* 1-seeded.

Trees or shrubs with alternate deciduous leaves, entire or lobed; flowers appearing before the leaves in small conglomerate umbells, or conglomerate bracteate racemes in *E. Sassafras* and *E. *albida* . . . . . .

§I. *Flowers umbellate, leaves entire.*

SPECIES. 3. *E. æstivalis* . . . . . 4. *Benzoin*, ...
5. *Diospyrus* . . . . . 6. *geniculata* . . . . . .

§II. *Buds producing both leaves and flowers; racemes conglomerate, corymbose; leaves lobed.*

7. *Sassafras.* Dioicous; arborescent; buds, younger branches and the under side of the leaves pubescent; leaves entire, or 2 or 3

† From ευοσμος, odorous."

lobed, under side prominently veined. (Red Sassafras.) — Anthers unequally 4-celled. The female flower produces the 6 infertile stamina only.

8. **albida*. Dioicous; arborescent; buds and younger branches smooth and glaucous; leaves entire, or 2 or 3 lobed, every where very smooth and thin, under side obsoletely veined, petiole longer. (White Sassafras.) HAB. In North and South Carolina abundant, from the Catawba mountains to the east bank of the Santee; growing with the common species, which is in North Carolina less abundant. I have not seen it in flower, therefore the comparison is incomplete, but all the inhabitants distinguish them perfectly by the names of white and red Sassafras, this species is also sometimes denominated Smooth Sassafras; the root is much more strongly camphorated than the ordinary sort and nearly white; it is also better calculated to answer as a substitute for *Ochra* (*Hibiscus esculentus*) than *E. Sassafras*, its buds and young branches being much more mucilaginous." [1]

Later, however, Nuttall concluded that the White Sassafras was a variety, rather than a species, saying in his North American Sylva:

"SASSAFRAS (*Laurus Sassafras*. Linn). The inhabitants of North and South Carolina distinguish two kinds of Sassafras, the Red and the White. The Red or true *L. Sassafras* I referred (in the Genera of North American plants, vol. 1. p. 259, 260.) to a sub-genus *Euosmus*, embracing also the following variety, which I then considered as a species, by the name of *L.* (*Euosmus*) *albida* . . . ." [2]

This mature judgment of Nuttall's appears sound for, although the two extremes are very pronounced, several specimens show transitions in the abundance and distribution of the pubescence; and the two varieties seem to be quite parallel with numerous other cases, such as the Red Ash, *Fraxinus pennsylvanica* Marsh. and Green Ash, *F. pennsylvanica*, var. *lanceolata* (Borkh.) Sargent or *Ilex monticola* Gray and its var. *mollis* (Gray) Britton. But, although the pubescent and the glabrous extremes of the *Fraxinus* and the *Ilex* have been long kept apart, sometimes as species, sometimes as varieties, the parallel case in *Sassafras* seems to have attracted little attention since the days of Nuttall and his immediate followers; for, though Sprengel went so far as to place the White Sassafras in a different genus from the Red (*Tetranthera albida* Spreng.[3] based on "*Evosmus albida* Nutt.") and Nees [4] maintained the two species, *Sassafras officinale* (*Laurus*

[1] Nutt. Gen. i. 258–260 (1818).
[2] Nutt. Sylva, i. 88 (1842).
[3] Spreng. Syst. ii. 267 (1825).
[4] Nees, Syst. Laur. 488–490 (1836).

Sassafras L.) and *S. albidum* (based upon "*Evosmus albida* Nutt." and Rafinesque [1] said that there are two species of *Sassafras*, "*S. rubra and albida* once blended in Laurus sassafras," recent treatments fail to take note of the differences.

Whether or not the two varieties have really different ranges it is not now possible to tell, but, judging from the material at hand, it would seem, as already indicated, that the pubescent extreme is more widely distributed over the country but in New England is the only form found in the sandy coastal region of Cape Cod, Nantucket and Rhode Island; while the smooth extreme is chiefly a tree of the more upland regions and extends from western New England to the Carolina mountains.

The glabrous or glabrate variety should be called:—

SASSAFRAS VARIIFOLIUM (Salisb.) Ktze., var. **albidum** (Nutt.), n. comb. *Laurus* (*Euosmus*) *albida* Nutt. Gen. i. 259 (1818). *Tetranthera albida* Spreng. Syst. ii. 267 (1825). *Evosmus albida* "Nutt" acc. to Spreng. l. c. as synonym (1825); Nees, Syst. Laur. 490 as synonym (1836); Steudel, Nom. ed. 2, 622 (1840). *S. albidum* Nees, l. c. (1836); Raf. Sylva Tell. 134 (1838). *Euosmus albida* "Nutt" acc. to Jackson, Ind. Kew. i. fasc 2, 914 (1893).

Whether the stronger flavor and white roots which Nuttall definitely ascribed to var. *albidum* are constant characters concomitant with the glabrous and glaucous twigs and glabrous foliage cannot now be determined, but a doubt is cast upon this point by the acute Kentuckian, John Uri Lloyd, who in his most interesting discussion of the history and uses of Sassafras says:

"The author's boyhood was spent in the country, in Kentucky, where sassafras abounds.....

Kentuckians claim that there are two varieties of sassafras, the red sassafras and the white, distinguished only by the bark. The white sassafras is not so aromatic and is bitter to the taste, and they use only the red bark." [2]

A somewhat complex and academic nomenclatorial question arises from Nuttall's careless use of the initial "*E*," in referring to some species of *Laurus* which he placed in the subgenus *Euosmus*. In the original publication, in the Genera, all the species were numbered consecutively under *Laurus* but some of those which Nuttall placed

[1] Raf. Sylva Tell. 134 (1838).
[2] J. U. Lloyd, Bull. Lloyd. Libr. no. xviii. 77, 78 (1911).

under his new subgenus *Euosmus* were referred to as *E. Sassafras*, *E. albida*, etc. The later treatment by Nuttall, in his Sylva, should be conclusive that, to his mind *Euosmus*, as he clearly stated when he originally published it and as the sequence of numbered species showed, was only a subgenus of *Laurus* and should not be treated as of generic value, although in using the initial "*E*" Nuttall departed from the general usage which refrains from giving subgenera the apparent rank of genera. But subsequent authors, Reichenbach (1828) and Bartling (1830) took up the name without discussion and listed it, Reichenbach as "*Evosmus* Nutt.," [1] Bartling as "*Euosmus* Nutt." [2] as a true generic name.

Whether the mere listing by Reichenbach of a name "*Evosmus* Nutt." in a table of generic names is sufficient to constitute *Evosmus* as a valid name for a genus is certainly a very doubtful question.

To the writer's mind there is no doubt that we should retain the clear and squarely published generic name *Sassafras* Nees & Ebermaier [3] as is now universally done and as is required by Article 5 of the International Rules which says: "in the absence of rule, or where the consequences of rules are doubtful, established custom becomes law"; but by those who do not allow the intent of the author to interfere with the taking up of an ill-begotten or thoughtlessly proposed name of real or fictitious priority, as for instance in the case of *Washingtonia* versus *Osmorhiza*, the name *Evosmus* should be carefully considered. In the case of *Washingtonia* versus *Osmorhiza*, Rafinesque, blissfully ignorant of the priority-rules to be promulgated after his death and thinking on paper, so to speak, said of Michaux's *Myrrhis:* "several names have been proposed for it, *Washingtonia, Osmorhiza, Gonatherus;* but these are not yet published; the second is perhaps the best." [4] Accordingly, all students of our flora, recognizing the validity of Rafinesque's proposition, called the Sweet Cicleys *Osmorhiza* until 1900, when Coulter & Rose, following the letter of the priority-rule to an illogical end, attempted to overthrow the name *Osmorhiza*, which they themselves admitted that Rafinesque clearly intended to use and later did use, and took up the name *Washingtonia* which Rafinesque had casually mentioned but promptly discarded. In so

[1] Reichenb. Consp. 87 (1828).
[2] Bartl. Ord. Nat. Pl. 112 (1830).
[3] Nees & Eberm. Handb. Bot. ii. 418 (1831).
[4] Raf. Am. Mo. Mag. ii. 176 (1818).

doing Coulter & Rose stated that, "It is under protest that we displace a name of such long use for what seems to be so trivial a reason, but the name *Washingtonia* will continue to be put forward in accordance with a technical interpretation of the law of priority".[1]

Of course, by those who believe in following the International Rules of Botanical Nomenclature, the name *Osmorhiza* is retained not only because it is clearly what Rafinesque meant to use but because of the sound requirement of Article 46 that, "If the names are of the same date, the author chooses, and his choice cannot be modified by subsequent authors."[2] But, as already said, to those who maintain that *Washingtonia* legitimately displaces *Osmorhiza* the equally ill-begotten name *Euosmus* (or *Evosmus*) should appeal. As used by Nuttall (1818) and of course by implication by Reichenbach (1828) and Bartling (1830) it covered species now generally referred to *Benzoin* Fabricius (1763), *Litsea* Lam. (1789) or *Malapoenna* Adans. (1763) and *Sassafras* Nees & Ebermaier (1831). With the species of *Benzoin* and *Litsea* (or *Malapoenna*) removed to those earlier-defined genera, the name *Euosmus* (or *Evosmus*) covered only members of the subsequently published genus *Sassafras*.

GRAY HERBARIUM.

EXTENDED RANGE OF VIOLA PEDATA L.— It may be interesting to note that this plant, which is given in the "Manual" as extending from southern New England to Maryland, occurs much farther westward. In DeWitt Co., Illinois, I have found it in two localities, both in close proximity to each other, along Salt Creek in the southwestern part of the county. One locality was a hillside with a southern exposure, rather densely covered with a crab-apple thicket. The other was an open hilltop about a quarter of a mile farther westward. This one contained many more specimens than the first. All the plants on the thicketed hillside belonged to the species, so far as a careful search revealed, but on the open hilltop there were a very few specimens of the variety *lineariloba*.

[1] Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 61 (1900).

[2] It is unfortunate that in Coulter & Nelson's Manual in which "the nomenclature, so far as practicable, is that adopted by the Vienna Congress," it was not found practicable to follow Article 46 and that, in spite of Professor Coulter's earlier-expressed protest against the name, *Washingtonia* was used instead of *Osmorhiza*.

In the dune region of Lake Co., Indiana, I have also found specimens of *V. pedata*, but in my experience it is very rare, while the variety is very abundant, and is doubtless the most common violet in that region.— EDWIN D. HULL, Chicago, Illinois.

A SECOND LOCAL RECORD FOR RYNCHOSPORA MACROSTACHYA TORR.— As the only recorded locality for this fine species within the Local Flora area is Great Pond, South Weymouth, Massachusetts, its discovery at another pond about four miles further north is of interest. I found about half a dozen dried up plants, still retaining achenes, about the north shore of Great Pond, in Braintree, on 6 Nov., 1912, and collected several.

Perhaps the most interesting feature in the New England distribution of this plant is its occurrence in the vicinity of Amherst, Massachusetts, at Leverett Pond (one of the type localities) and Belchertown, evidently as a migrant up the Connecticut River, although no intermediate stations are known as yet; a specimen collected at Leverett Pond by Edward Hitchcock is in the Gray Herbarium. It is rather common on Cape Cod, occurs in Rhode Island and at a few coastwise stations in Connecticut, as well as at Monroe and Woodbury near the Housatonic, and extends along the coast to Florida and Texas, and up the Mississippi Basin to Indiana and Kansas in the broad V characteristic of so many coastal-plain species.— SIDNEY F. BLAKE, Stoughton, Massachusetts.

DR. C. A. DARLING'S HANDBOOK OF THE WILD AND CULTIVATED PLANTS[1] presents in compact form four general, dichotomous keys, as follows: (1) to the wild plants and cultivated trees and shrubs which flower in March, April, and May; (2) to the wild plants and cultivated trees and shrubs which flower from June to November; (3) to the wild and cultivated trees and shrubs in autumn; and (4) to the cultivated herbs and potted shrubs. These keys are followed by a brief synopsis of all the species treated, arranged in their several families and also keyed out in a dichotomous manner. The author has availed himself of the most obvious distinctions; thus, in beginning his key to the usually formidable family *Compositae*, there is no struggling with achenes or pappus-bristles, style-branches or anther-tips,

[1] By Chester Arthur Darling, A. M., Ph. D., Instructor in Botany, Columbia University. 12mo., 264 pp. New York, 1912. Published by the author.

one is merely asked to observe whether the plant in question is cultivated in a hanging basket or not. Surely greater lucidity could scarcely be attained. The book is one which will give pleasure to many a vacation tourist and will lead to many a speedy and often correct identification, also, however, inevitably to many an error. In his preface the author says, "The object of this Handbook is to furnish a convenient and easy means of determining the wild and cultivated flowering plants found in the East. The rarer plants grown in greenhouses and in Botanical Gardens are not included." In the absence of any statement to the contrary the reader would naturally infer that all the wild plants of 'the East' — wherever that may be — have been included, which is far from being the case. If, for instance, a tourist attempts to use the book in Maine (which may fairly be interpreted as falling within the limits of the East), and tries to identify by it any one of a half dozen species of Eyebright, he will inevitably come to grief, for the genus is not mentioned. Various fairly prominent genera, such as *Arisaema*, *Eriophorum*, *Lemna*, *Corallorhiza*, *Claytonia*, *Castalia*, etc., are given but a single species, notwithstanding the fact that two or more of each are to be found in the eastern states. Where there has been, as in this work, a somewhat arbitrary selection as to which of many native plants to include and which to omit, it would seem that the author owed his public some intimation as to the method of choice, and at all events should warn the user against undue faith in the completeness of the work.— B. L. R.

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Rhodora

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REVISED LIST OF NEW ENGLAND HEPATICAE.

ALEXANDER W. EVANS.

ABOUT ten years ago the writer published a preliminary list of New England Hepaticae.[1] In this list 123 species were reported, 75 being accredited to Maine, 81 to New Hampshire, 67 to Vermont, 76 to Massachusetts, 65 to Rhode Island, and 94 to Connecticut; while 31 species were noted from all six of the New England states. Since the publication of this list the study of the New England Hepaticae has continued, many additional species have been brought to light, certain species already recognized as members of the flora have been more narrowly circumscribed, while certain other species have been reduced to synonymy. The writer has attempted to call attention to these various additions and changes in a series of "Notes on New England Hepaticae," published in this journal. The introductory number of this series, dating from November, 1902 (**4**: 207–213), had already appeared before the publication of the preliminary list. The second number was published in August and September, 1904 (**6**: 165–174, 185–191, *pl. 57*); the third in March, 1905 (**7**: 52–58); the fourth in February, 1906 (**8**: 34–45); the fifth in March and April, 1907 (**9**: 56–60, 65–73, *pl. 73*); the sixth in October, 1908 (**10**: 185–193); the seventh in October, 1909 (**11**: 185–195); the eighth in October, 1910 (**12**: 193–204); the ninth in January, 1912 (**14**: 1–18); and the tenth in November, 1912 (**14**: 209–225). Much of the information to be found in these Notes is now incorporated in the following revised list. As in the preliminary list the sign + indicates that an herbarium specimen has been seen, the sign − that a printed record has been found.

[1] Preliminary Lists of New England Plants,— XI, Hepaticae. RHODORA **5**: 170–173. 1903.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
RICCIACEAE.						
Riccia arvensis Aust.					−	+
" Austini Steph.					−	+
" dictyospora M. A. Howe						+
" hirta Aust.						+
" Lescuriana Aust.						+
" sorocarpa Bisch.						+
Ricciella crystallina (L.) Warnst.						+
" fluitans (L.) A. Br.	+	+	+	+	+	+
" membranacea (Lindenb. & Gottsche) Evans						+
" Sullivantii (Aust.) Evans	+	+	+	+	+	+
Ricciocarpus natans (L.) Corda	+	+	+	+	+	+
MARCHANTIACEAE.						
Asterella tenella (L.) Beauv.	+	+	+	+	+	+
Conocephalum conicum (L.) Dumort.	+	+	+	+	+	+
Grimaldia fragrans (Balb.) Corda			+	−	+	+
Lunularia cruciata (L.) Dumort.			+	+	+	+
Marchantia polymorpha L.	+	+	+	+	+	+
Neesiella pilosa (Hornem.) Schiffn.			+			
Preissia quadrata (Scop.) Nees	+	+	+	+	+	+
Reboulia hemisphaerica (L.) Raddi	+	+	+	+	+	+
METZGERIACEAE.						
Blasia pusilla L.	+	+	+	+	+	+
Fossombronia foveolata Lindb.	+	+		+	+	+
" salina Lindb.					−	+
" Wondraczekii (Corda) Dumort.		+	+	+		+
Metzgeria conjugata Lindb.	+	+	+	+	−	+
" crassipilis (Lindb.) Evans			+	+		+
" furcata (L.) Dumort.	+	+	+			+
" pubescens (Schrank) Raddi		+	+			
Pallavicinia Flotowiana (Nees) Lindb.	+			+		
" Lyellii (Hook.) S. F. Gray	+	+	+	+	+	+
Pellia epiphylla (L.) Corda	+	+	+	+	+	+
" Fabroniana Raddi			+			+
" Neesiana (Gottsche) Limpr.	+	+				+
Riccardia latifrons Lindb.	+	+	+	+		+
" multifida (L.) S. F. Gray	+	+		+	−	+
" palmata (Hedw.) Carruth.	+	+		−	−	+
" pinguis (L.) S. F. Gray	+	+	+		+	+
" sinuata (Dicks.) Trevis.				+	+	+

Jungermanniaceae.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Anthelia Juratzkana (Limpr.) Trevis.		+				
Bazzania tricrenata (Wahl.) Trevis.	+	+	+	+		+
" trilobata (L.) S. F. Gray	+	+	+	+	+	+
Blepharostoma trichophyllum (L.) Dumort.	+	+	+	+		+
Calypogeia Neesiana (Massal. & Carest.) C. Müll.	+	+	+	+		+
" sphagnicola (Arn. & Perss.) Warnst. & Loeske			+			+
" suecica (Arn. & Perss.) C. Müll.	+	+				+
" Sullivantii Aust.				+	+	+
" tenuis (Aust.) Evans	+	+	+	+	+	+
" Trichomanis (L.) Corda	+	+	+	+	+	+
Cephalozia bicuspidata (L.) Dumort.	+	+	+	+		+
" connivens (Dicks.) Lindb.	+	+	+	+	+	+
" curvifolia (Dicks.) Dumort.	+	+	+	+	−	+
" fluitans (Nees) Spruce	+	+	+		+	+
" Francisci (Hook.) Dumort.	+					
" Macounii Aust.	+	+				
" media Lindb.	+	+	+	+	+	+
" pleniceps (Aust.) Lindb.	+	+	+			+
" serriflora Lindb.	+	+	+	+	−	+
Cephaloziella bifida (Schreb.) Schiffn.				+		+
" byssacea (Roth) Warnst.		+		+		+
" elachista (Jack) Schiffn.	+	+	+	+	+	+
" Hampeana (Nees) Schiffn.	+	+	+	+		+
" myriantha (Lindb.) Schiffn.	+	+	+	+	+	+
" papillosa (Douin) Schiffn.				+		+
" Sullivantii (Aust.) Evans		+		+		
Chiloscyphus fragilis (Roth) Schiffn.	+	+		+		+
" pallescens (Ehrh.) Dumort.	+	+		+	−	+
" polyanthus (L.) Corda	+	−	−	−	−	+
" rivularis (Schrad.) Loeske		+	+	+	+	+
Cololejeunea Biddlecomiae (Aust.) Evans	+	+	+	+	−	+
Diplophylleia albicans (L.) Trevis.	+					
" apiculata Evans	+			+	+	+
" taxifolia (Wahl.) Trevis.	+	+	+	+		+
Frullania Asagrayana Mont.	+	+	+	+	+	+
" Brittoniae Evans	+	+	+	+	+	+
" eboracensis Gottsche	+	+	+	+	+	+
" inflata Gottsche						+
" Oakesiana Aust.	+	+	+			
" plana Sulliv.					−	+
" riparia Hampe		+	+	−		+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Frullania saxicola Aust.	+					
" Selwyniana Pears.					−	+
" squarrosa (R. Bl. & N.) Dumort.	+			+		+
" Tamarisci (L.) Dumort.	+	+	+	+	+	+
Geocalyx graveolens (Schrad.) Nees	+	+				
Gymnomitrium concinnatum (Lightf.) Corda		+				
" corallioides Nees	+	+	+	+	−	+
Harpanthus scutatus (Web. f. & Mohr) Spruce	+	+	+	+	+	+
Jamesoniella autumnalis (DC.) Steph.	+	+	+	+	−	+
Jubula pennsylvanica (Steph.) Evans		+				+
Jungermannia cordifolia Hook.	+	+	+	+	−	+
" lanceolata L.	+	+	+	+	−	+
" pumila With.		+				
" sphaerocarpa Hook.	+	+	+	+	−	+
Lejeunea cavifolia (Ehrh.) Lindb.		+		+		+
Leucolejeunea clypeata (Schwein.) Evans					+	
" unciloba (Lindenb.) Evans	+	+	+	+	+	+
Lepidozia reptans (L.) Dumort.	+	+	+	+		+
" setacea (Web.) Mitt.	+	−		+	+	+
" sylvatica Evans	−		−	+	−	+
Lophocolea bidentata (L.) Dumort.	+	+	+	+	+	+
" heterophylla (Schrad.) Dumort.	+	+	+	+	+	+
" minor Nees	+	+	+			+
Lophozia alpestris (Schleich.) Evans	+	+	+			+
" attenuata (Mart.) Dumort.			+			+
" badensis (Gottsche) Schiffn.	+	+	+	+		+
" barbata (Schmid.) Dumort.	+	+	+	+	+	+
" bicrenata (Schmid.) Dumort.	+		+			
" confertifolia Schiffn.	+	+			+	+
" excisa (Dicks.) Dumort.		+	+			
" Floerkei (Web. f. & Mohr) Schiffn.	+					
" Hatcheri (Evans) Steph.	+					
" heterocolpa (Thed.) M. A. Howe	+	+	+	+	−	+
" incisa (Schrad.) Dumort.	+	+	+			+
" inflata (Huds.) M. A. Howe	+		+			
" Kaurini (Limpr.) Steph.		+				
" Kunzeana (Hüben.) Evans		+				
" longidens (Lindb.) Macoun	+	+				
" longiflora (Nees) Schiffn.	+	+				
" lycopodioides (Wallr.) Cogn.	+	+				
" marchica (Nees) Steph.	+	+	+			+
" Mildeana (Gottsche) Schiffn.	+	+	+	+		+
" obtusa (Lindb.) Evans	+					
" porphyroleuca (Nees) Schiffn.	+	+	+	+		+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Lophozia quinquedentata (Huds.) Cogn.	+	+	+			+
" ventricosa (Dicks.) Dumort.	+	+	+	+	−	+
Marsupella aquatica (Lindenb.) Schiffn.	+	+				
" emarginata (Ehrh.) Dumort.	+	+	+	+		+
" sparsifolia (Lindb.) Dumort.		+				
" sphacelata (Gieseke) Dumort.		+	+			
" Sullivantii (DeNot.) Evans	+	+		+		+
" ustulata (Hüben.) Spruce	+	+				
Mylia anomala (Hook.) S. F. Gray	+	+	+		−	+
" Taylori (Hook.) S. F. Gray	+	+	+			
Nardia crenulata (Smith) Lindb.	+	+	+	+	+	+
" crenuliformis (Aust.) Lindb.						+
" Geoscyphus (DeNot.) Lindb.		+		+		
" hyalina (Lyell) Carringt.	+	+	+	+		+
" obovata (Nees) Carringt.	+	+	+			
" scalaris (Schrad.) S. F. Gray	+					
Odontoschisma denudatum (Mart.) Dumort.	+	+	+	+	−	+
" elongatum (Lindb.) Evans	+	+				
" prostratum (Swartz) Trevis.				+	+	+
Pedinophyllum interruptum (Nees) Schiffn.						+
Plagiochila asplenioides (L.) Dumort.	+	+	+	+	+	+
" Sullivantii Gottsche		+				+
Porella pinnata L.	+	+	+	+	+	+
" platyphylla (L.) Lindb.	+	+	+	+	+	+
" rivularis (Nees) Trevis.			+			+
Ptilidium ciliare (L.) Nees	+	+	+	+	−	+
" pulcherrimum (Web.) Hampe	+	+	+	+	+	+
Radula complanata (L.) Dumort.	+	+	+	+	+	+
" obconica Sulliv.			+			+
" tenax Lindb.	+	+		+	−	+
Scapania apiculata Spruce	+	+				
" convexula C. Müll.	+					
" curta (Mart.) Dumort.	+	+	+	+		+
" dentata Dumort.		+	+			+
" glaucocephala (Tayl.) Aust.		+				
" gracilis (Lindb.) Kaalaas	+	+				
" irrigua (Nees) Dumort.	+	+	+			+
" nemorosa (L.) Dumort.	+	+	+	+	+	+
" paludosa C. Müll.		+	+	+		
" subalpina (Nees) Dumort.	+	+				
" umbrosa (Schrad.) Dumort.	+	+				
" undulata (L.) Dumort.	+	+	+	+	+	+
Sphenolobus exsectaeformis (Breidl.) Steph.	+	+	+			
" exsectus (Schmid.) Steph.	+	+	+	+		+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Sphenolobus Hellerianus (Nees) Steph.	+	+	+		−	+
" Michauxii (Web. f.) Steph.	+	+	+	+		+
" minutus (Crantz) Steph.	+	+	+			
Temnoma setiforme (Ehrh.) M. A. Howe	+	+	+			
Trichocolea tomentella (Ehrh.) Dumort.	+	+	+	+	+	+
ANTHOCEROTACEAE.						
Anthoceros carolinianus Michx.						+
" crispulus (Mont.) Douin						+
" levis L.	+	+	+	+	+	+
" Macounii M. A. Howe	+					+
" punctatus L.	+	+	+	+		+
Notothylas orbicularis (Schwein.) Sulliv.		+	+	+	−	+

NOTES ON THE PRECEDING LIST.

It will be noted that the list just given includes 177 species, a gain of 54, or nearly 44 per cent., over the preliminary list. From Maine 123 species are now listed, a gain of 64 per cent.; from New Hampshire 130 species, a gain of about 60 per cent.; from Vermont 109 species, a gain of about 63 per cent.; from Massachusetts 97 species, a gain of about 29 per cent.; from Rhode Island 77 species, a gain of about 18 per cent.; and from Connecticut 134 species, a gain of about 44 per cent. The number of species now known to be common to all six states is 53, equivalent to a gain of nearly 71 per cent.

If the revised list is compared with the preliminary list a large number of differences will be observed. Most of these are due to the additions; the others indicate reductions to synonymy or other changes in nomenclature of various sorts. For the sake of convenience these are summarized below, references being given to the writer's Notes, where more complete discussions may be found. The Roman numeral in each case refers to the number in the series, the Arabic numeral to the page.

Additions. *Riccia Austini* (IX, 4); *R. dictyospora* (IX, 6); *R. hirta* (IX, 8); *R. Lescuriana* (IX, 10); *R. sorocarpa* (VIII, 193); *Ricciella membranacea* (VIII, 196); *Neesiella pilosa* (X, 210); *Metzgeria crassipilis* (VII, 188); *M. furcata* (VII, 185); *M. pubescens* (VI, 185); *Pallavicinia Flotowiana* (II, 165); *Pellia Fabroniana* (VII, 189); *P. Neesiana* (VII, 190); *Calypogeia Neesiana* (VII, 193);

C. sphagnicola (V, 65); *C. suecica* (V, 66); *C. tenuis* (V, 69, *pl. 73, f. 9–14*); *Cephaloziella bifida* (X, 220); *C. elachista* (VII, 191); *C. Hampeana* (VII, 192); *C. papillosa* (X, 222); *C. Sullivantii* (VI, 189; also III, 55); *Chiloscyphus fragilis* (X, 217); *Ch. rivularis* (X, 219); *Frullania inflata* (VIII, 201); *F. saxicola* (VIII, 202); *F. Selwyniana* (VI, 191); *Jungermannia cordifolia* (II, 170); *Lepidozia sylvatica* (II, 186, *pl. 57*); *Lophozia badensis* (VIII, 197; also IV, 35); *L. confertifolia* (V, 59); *L. excisa* (IV, 34); *L. Hatcheri* (X, 210; also VI, 188); *L. heterocolpa* (X, 211); *L. Kaurini* (VIII, 198); *L. Kunzeana* (III, 52); *L. longidens* (V, 59); *L. longiflora* (VI, 189); *L. Mildeana* (VIII, 199); *L. obtusa* (X, 212); *L. porphyroleuca* (IV, 36); *Marsupella aquatica* (II, 167; also VI, 186) [1]; *M. sparsifolia* (III, 52); *M. Sullivantii* (V, 57; also II, 167); *Nardia crenuliformis* (VI, 186); *N. scalaris* (IX, 11); *Odontoschisma elongatum* (IX, 13); *Pedinophyllum interruptum* (VIII, 200); *Ptilidium pulcherrimum* (IV, 42); *Scapania apiculata* (V, 71); *S. dentata* (IV, 41); *S. glaucocephala* (VII, 194); *S. gracilis* (IV, 42); *Sphenolobus Hellerianus* (II, 172); *Anthoceros carolinianus* (X, 223); *A. crispulus* (IX, 16); *A. Macounii* (VI, 191).

Reductions to synonymy and other changes of names. *Riccia crystallina, R. fluitans,* and *R. Sullivantii* (of the preliminary list) are now placed in the genus *Ricciella* (V, 56, 57); *Archilejeunea clypeata* and *A. Sellowiana* are now *Leucolejeunea clypeata* and *L. unciloba,* respectively (VI, 190); *Bazzania triangularis* is now *B. tricrenata* (VI, 190); *Cephalozia catenulata* (of list) is now *C. serriflora* (II, 173); *C. divaricata* is now *Cephaloziella byssacea* (X, 221); *C. Jackii* is now *Cephaloziella myriantha* (VI, 190; also III, 55); *C. lunulaefolia* is now *C. media* [2]; *Chiloscyphus ascendens* is now included under *Ch. pallescens* (III, 53; X, 212); *Frullania virginica* is now included under *F. eboracensis* (IV, 44); *Jubula Hutchinsiae* (of list) is now *J. pennsylvanica* (III, 55); *Kantia Sullivantii* and *K. Trichomanis* are now *Calypogeia Sullivantii* and *C. Trichomanis,* respectively (V, 67, 70); *Lepidozia sphagnicola* is now included under *L. setacea.*

[1] In the second place quoted the writer proposed for this species the combination *M. robusta* (DeNot.) Evans, based on *Sarcoscyphus Ehrharti,* var. *robustus* DeNot., raised to specific rank, as *Nardia robusta,* by Trevisan in 1877, and therefore earlier than Schiffner's *M. aquatica* of 1896. Massalongo (Atti Reale Ist. Veneto **69**[2]: 146. 1909), however, has since shown that the var. *robustus* DeNot. represents the typical form of *M. emarginata.* It therefore becomes necessary to restore the name *M. aquatica* to the present species.

[2] The reasons for this change have not yet been discussed in the writer's Notes.

(II, 185); *Lophocolea Austini* is now included under *L. heterophylla* (IV, 37); *Lophozia gracilis* is now *L. attenuata* (VI, 187); *L. Lyoni* is now *L. quinquedentata* [1]; *Nardia haematosticta* is now *N. Geoscyphus* (V, 57).

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PHILOLOGICAL ASPECTS OF THE "PLANTS OF WINELAND THE GOOD."

A. LEROY ANDREWS.

A CONSIDERABLE time has elapsed since the appearance of Professor Fernald's preliminary study upon the Norse discovery of America,[2] but as the author's promised greater work upon the subject is not yet forthcoming the publication of the following considerations may not be without interest to those who have read his article.

It may be said at the outset that all attempts to find the Vínland of the Norsemen in New England have been unsuccessful. The evidence for Nova Scotia seemed relatively stronger, nor would the conclusions of Fernald's preliminary study, even if accepted in all their details, preclude the possibility of the Norsemen having come as far south as Nova Scotia, though the author seems unwilling to believe that they did.

Of the many works devoted in whole or in part to the Norse discovery of our continent the one possessing value beyond all others is that of the Norwegian historian, Gustav Storm, published in 1887,[3] who after a critical survey of all available material concluded that the Norsemen came as far south in America as Nova Scotia, but hardly further. Reeves, whose book [4] forms the basis of Fernald's study, was a young American scholar of promise who met with an untimely

[1] The reasons for this change have not yet been discussed in the writer's Notes.

[2] RHODORA, xii, 17ff. 1910.

[3] Aarbøger for nordisk Oldkyndighed og Historie, 2 Række, ii, 293ff.; the paper is also accessible in English in Mémoires de la Société Royale des Antiquaires du Nord viii, 307ff. 1888. For the bibliography of the Norse discovery of America see H. Hermannsson, Islandica, ii (Ithaca, N. Y.). 1909.

[4] The Finding of Wineland the Good. London. 1890.

death not long after the publication of his book. The book is of value as furnishing a phototypic reproduction of the saga-texts forming the most extensive sources of information as to the Norse voyages to America, enabling one then to form an independent judgment in critical questions of textual reading without a special trip to Copenhagen. Further than this very considerable service it represents no noteworthy contribution to the problem, though including many of Storm's results and offering generally a good means of orientation.[1]

The first serious assault upon Storm's results is that of Fernald, who confines himself for the present to the botanical field where his success may well lead one to suspect that Storm's position is less impregnable than had been supposed. Storm's botanical conclusions were that the wild grape may have been found by the Norsemen as far north as Nova Scotia, while he accepted Schübeler's hypothesis[2] that the "self-sown wheat" of the Norsemen was the wild rice (*Zizania*) of eastern America. Fernald after reviewing the facts, present and historical, about the northeastern distribution of the American species of wild grapes doubts that the Norsemen could have found them in Nova Scotia, and certainly no one familiar with Fernald's knowledge of the distribution of our northeastern plants and his familiarity with their literature would question the weight of his contentions. From the lack of similarity either in appearance or habitat he doubts that the Norsemen could have called our wild rice wheat, a doubt one cannot but subscribe to, and he notes further that wild rice does not occur in Nova Scotia anyhow. From this last fact there seems no escape. In so far Fernald has certainly made a real contribution. But he does not stop with this; much of positive conclusion he offers as a substitute for what he has demolished. The Norse *vínber* did not mean grapes at all, but only wild currants (*Ribes* spp.), or perhaps mountain-cranberries (*Vaccinium Vitis-Idaea*), their "self-sown wheat" was a species of grass (*Elymus arenarius*) more closely resembling wheat, while a wood referred to by the Norsemen as *mǫsurr* was the white birch. These conclusions called by the author "reasonably certain" are by no means invulnerable to criticism. Fernald's reference to the unquestionable Swedish *vinbär* = currant and to a similar terminology elsewhere among the northern European peoples as well

[1] Cf. the review of Gering, Zeitschrift für deutsche Philologie, xxiv, 84ff. 1892.

[2] Schübeler was not the first to whom this idea had suggested itself, as will be noted further on.

as to the wide-spread practice of preparing a beverage from the fruit of this plant is not without interest, but neither the name nor the practice, for either of which Fernald's earliest literary testimony is from the close of the 16th century, has any necessary application to the time or place of the literary monuments commemorating the Norse discovery of America. Fernald reasons as a botanist: if the most learned botanists of the end of the 16th and beginning of the 17th centuries confused the currant or the mountain-cranberry with the southern European grape, one could not expect that they were distinguished by anyone in northern Europe at an earlier period. That linguistic usage bears abundant testimony to the association (if not confusion) of the 3 kinds of plants with one another is an indubitable fact. But Fernald's attitude towards the facts of linguistic history seems unconsciously to coincide with that of a bygone school of philologists who regarded languages as undergoing a constant process of deterioration: i. e., he looks upon everything found in a relatively modern period as a survival from a more general condition of things in a linguistically richer past. As a matter of fact the development is more complex and the beginning must be considered as well as the end. The word *wine* and all its northern European kin are loan-words directly or indirectly from the Latin *vinum* (Vulgar Latin also *vinus*), the word with the things for which it stands becoming known to the Germanic peoples from about the beginning of the Christian era, to the most northerly ones of course relatively later.[1] That as a loan-word it first applied to the foreign grape and its products is incontestable. The earliest record we have of the combination wine-berry is in the Gothic of the Bible-translation accredited to Bishop Ulfilas (Wulfila) of the 4th century, the oldest manuscripts of which date from the 5th and 6th centuries. It occurs here as *weinabasi* (Mat. vii, 16; Lu. vi, 44) translating the Greek σταφυλή. In the related Old Germanic languages it was also found: in Old Saxon and Old High German *wînberi*, Old English *wînberie* (*berige*), Old Norse *vínber*, everywhere with the meaning grape, a meaning preserved in present German *Weinbeere* and generally in the Scandinavian languages. The transfer of the word to currant has become thoroughly established only in modern Swedish,

[1] Cf. Walde, Lateinisches etymologisches Wörterbuch, 2nd ed., 839. 1910; Falk & Torp, Norwegisch-dänisches etymologisches Wörterbuch, 1381. 1911; Kluge, Etymologisches Wörterbuch der deutschen Sprache, 7th ed., 487. 1910; Hoops, Waldbäume und Kulturpflanzen im germanischen Altertum, 558ff. 1905; with the literature there cited.

in that such use of it in Norwegian or English is more or less local, *vinbær* in Danish-Norwegian still meaning regularly grape. In modern Icelandic *vínber* means grape, as it did also in Old Icelandic in all cases of its use preserved to us. In view of these facts the use of the fermented juice of the currant in lieu of wine should not constitute an argument of great weight, but it may be said that we are tolerably well informed as to the details of life in Iceland in the saga-period (as we are for that matter of the Icelandic vocabulary) and that the fermented drinks of those troublous times were of an entirely different nature.[1] Wine was of course known, but is usually spoken of as an expensive article of import, a luxury of gods, kings and the very wealthy. For the substitute use of the fermented juices of native berries there is not much evidence, nor would one be inclined to suppose that such a beverage, if actually made, would have been dignified with the name of *vín*. Still it may be of passing interest to note that the saga of Bishop Páll [2] does speak of such wine made of crow-berries (*Empetrum nigrum*) but the making of it came as a new suggestion brought by Bishop Jón who had just arrived from Greenland, the latter having received the suggestion from the Norwegian king Sverrir. There is a corresponding entry in the Icelandic annals under date of 1203 [3] that berry-wine was made that year for the first time in Iceland. The fact is also referred to in Finnur Jónsson's Ecclesiastical History of Iceland,[4] the author being disinclined to believe that such wine was used for communion purposes (the circumstances connected with the report might well suggest that it was hit upon as a means of providing a substitute for communion-wine, which must have been expensive or often difficult to get at all in Iceland and even more so in Greenland) and stating that he knew a man of his own time who had made the same experiment with a degree of success, though the product was not of remarkable quality. The earliest reference to the vines from which *Vínland* took its name is of course Adam of Bremen's Latin *vitis*. If Fernald had simply argued that the Norsemen were not competent to know exactly what a grape was and might conceivably have taken something else for it,

[1] Cf. Weinhold, Altnordisches Leben, 151ff. 1856; Kålund in Paul, Grundriss der germanischen Philologie, iii², 448.

[2] Biskupa sögur, i, 135.

[3] Islenzkir Annálar, 84.

[4] Finni Johannaei Historia ecclesiastica Islandiae. Tom. i, 305, note b. Havniae, 1772. Cf. Olafsen & Povelsen, Reise igiennem Island, i, 171 f. 1772 (Reise durch Island. i, 92. 1774).

it could readily be granted. What the sagas say of the Vínland grapes leaves no doubt upon this point, in fact the relatively less credible one has felt obliged to introduce a southern European with the suggestive name of Tyrkir as a person competent to identify grapes. One might for example conceive of them as finding a wild plum or cherry (*Prunus* sp.) which would at least account for their loading up their boats with the wood of the grape. There is, so far as I can see, absolutely nothing gained by Fernald's attempt to find a new interpretation for the plant giving its name to the country. Such arguments as that a Scandinavian *vindrufva* (= grape) render it unlikely that the Norsemen would have called grapes *vínber* merely show upon what unfamiliar ground Professor Fernald is treading, as, if one choose to neglect the occurrence side by side of the corresponding *Weinbeere* and *Weintraube* in modern German, *vindrufva* is only a late Swedish word (it occurs also in Danish as *vindrue* = grape), the latter part of which (or for that matter the whole combination) is borrowed from the Low German, as the form of the word sufficiently shows.[1] One of Fernald's numerous footnotes (6 on page 21) leaves one similarly puzzled both as to meaning and application until one consults the reference to DeCandolle and finds it taken over intact, apparently without an exact understanding of its content. *Ribs* and *resp* are simply two of the distortions of the mediaeval Latin *ribes* found in recent Scandinavian (perhaps brought in with a cultivated strain of the plants) and not at all old Scandinavian words.[2] It is peculiar that the wild currants of northern Europe seem to have had no common Old Germanic or even common Scandinavian name.[3] For the interesting facts about the bringing of the plant-name *ribes* to Europe by the Arabs see Fischer-Benzon, Botanisches Centralblatt, lxiv, 371ff., 401ff. 1895. Fernald has himself been unable to find any evidence that the mountain-cranberry has ever been called *vínber* in any part of Scandinavia.

The conclusion that the "self-sown wheat" found was the Lyme-grass (*Elymus arenarius*) may readily seem more plausible than that it was the wild rice, but even then it is difficult to see why the Norsemen should have noted as remarkable the occurrence of a plant with which they were entirely familiar at home and why they should

[1] Cf. for example Falk & Torp, loc. cit., 158.
[2] Cf. Falk & Torp, loc. cit., 896.
[3] Cf. Hoops, Reallexikon der germanischen Altertumskunde, i, 204. 1912.

characterize it as self-sown (which surely implies a contrast with the sown wheat), if it was a plant they knew solely in the wild state. Nor has Fernald shown that the plant in question has ever been called *hveiti:* the terms "wild wheat," "wheat-grass," and "strand-wheat" which he brings as argument involve a comparison with wheat, not an identification with it, and none of them are Icelandic, the plant being known in Iceland as *melr* as Fernald notes. *Hveiti* meant in Old as it does in Modern Icelandic wheat. Fernald's note that this identification of the "self-sown wheat" with *Elymus arenarius* had already been published by Peter (Pehr) Kalm in 1764 is of decided interest, but does not prove its correctness. It may be of interest to note a prior publication of the same identification, viz. in a dissertation of G. A. Westman defended by its author in Åbo in 1757, during the rectorship of Kalm himself the dissertation being evidently largely inspired by the latter's American trip.[1] The author's refutation of the idea that the wheat of the Norsemen was *Zizania* is not dissimilar to Fernald's, Westman maintaining that this last plant resembled oats more than it did wheat and that it did not grow in fields, but actually in the water (pp. 16ff.). Kalm's idea also found expression in the article of Wormskiold to be referred to later.

As to the wood called *mǫsurr* Fernald may be entirely right in thinking it to be birch, or for that matter the white birch. The idea that it was maple, which Fernald combats, is however not one that has been generally held, but was evidently found in Reeves' book (Reeves, p. 170, does not commit himself however and states himself that the word had already been connected with Swedish masbjörk, etc), whence it may be followed back to Rafn[2] and is by him accredited to Wormskiold.[3] This identification also goes back ultimately to Kalm's American trip, the wood being discussed very sensibly by Westman in the dissertation just referred to (pp. 12ff.), who suggested that it might be the form of *Acer rubrum* seen by Kalm in Canada. If Fernald had based his researches upon Storm's work, he would have noted that the latter made no attempt to identify the tree, doubtless because he understood the word. The present Swedish *masur* and German *Maser* leave no doubt as to the meaning of the identical Old Norsę word *mǫsurr*. It means everywhere wood with a spotted or

[1] Westman, Itinera priscorum Scandianorum in Americam. Aboae. 1757.
[2] Antiquitates americanae, 441f. 1837.
[3] Det skandinaviske Litteraturselskabs Skrifter, xiii, 400ff, 1814.

mottled grain, the word being closely related to the German *Masern* (= measles) and the English *measles*."[1] It does not refer to any definite species or genus of trees. The "bird's eye maple" furnished the ground for the hypothesis that it was a species of maple the Norsemen referred to and credit is due Fernald for emphasizing a more probable identity with the white birch, but the fact must be borne in mind that the word permits no such certain identification as to contribute in any way to the determination of the point on the American coast reached by the Norsemen, but on the contrary the identity of the tree furnishing the *mqsurr* might depend upon the latitude in which it was found.

The fundamental problem, that of the value of the sources, Professor Fernald has naturally left untouched. The Old Icelandic sagas exist in all degrees of historical trustworthiness from that of very reliable contemporary or slightly later biography or history to the wildest fiction. In point of subject-matter, style and historical reliability they admit of classification into a number of groups. Most reliable generally are the *Konunga sqgur* or sagas of the (mostly Norwegian) kings, with which a few other historical works dealing with Iceland, etc. may be included. The authors of these are in many cases known. The *Íslendinga sqgur*, to which the most considerable sources for the Norse discovery of America belong, differ among other things in being all of unknown authorship. They were written mostly in the 13th century and show stylistically the characteristics of literary rather than primarily historical work.[2] They deal for the most part with Icelandic (in our case Greenlandic) personages of the 9th and 10th centuries: i. e. two to three centuries intervene between the events and the written record, or rather elaboration of them. The materials that the authors had to use were mostly oral traditions two or three hundred years old. That these literarily remarkable productions are not of the nature of historical documents must be clear enough from the nature of the case. In this particular instance a check upon their reliability is offered in the fact that two such records of the oral tradition of the Norse discovery of America are preserved: the so-called *Eiríks saga rauða* and the *Grænlendinga þáttr*. Under the circumstances only the features in which both agree could be

[1] The word is entirely correctly explained by Westman. Cf. also Grönlands historiske Mindesmærker, i, 279 f. 1838.

[2] Cf. e. g. Neckel in Mitteilungen der schlesischen Gesellschaft für Volkskunde, xi, 38ff. 1909.

reasonably trustworthy, but such features are surprisingly few, in that the two sources show the widest discrepancy. Storm's method in predicating a considerable degree of historical reliability for the *Eiríks saga rauða* at the expense of the other is hardly to be justified. That this saga may be relatively better is not tantamount to its being reliable and the other worthless. Reeves' book represents essentially Storm's point of view on this matter, as it has generally been adopted by subsequent authors.

Since the publication of Fernald's paper a real contribution to the problem of the value of the sources has appeared in Nansen's book.[1] Nansen with the able assistance of his colleagues, Torp, Moe and others finds that the grapes and the self-sown wheat associated with Scandinavian records of the Norse discovery of America are an offshoot of common mediaeval legends of the "Islands of the Blest," which quite regularly, e. g. in Isidor, etc., were characterized by just these features.[2]

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[1] Nord i Tåkeheimen. Kristiania. 1911. The book has been accessible to me only in the English translation: In Northern Mists. New York. 1911. The essential points with reference to the Norse discovery of America may also be found in the Geographical Journal, xxxviii, 557 ff. 1911, being a lecture delivered by Nansen before the Royal Geographical Society, Nov. 6, 1911.

[2] Of interest is also the discovery brought out by the first partial publication of Nansen's results that similar results had been attained independently and earlier by a Swedish scholar, Söderberg. (Cf. In Northern Mists, ii, 62ff.). Nansen's brief estimate of Fernald's publication (ii, 5f.) is in entire accord with the considerations I have given expression to above.

FURTHER NOTES ON THE PANICUMS OF ESSEX COUNTY, MASSACHUSETTS.

F. TRACY HUBBARD.

SPECIES NEWLY NOTED FROM THE COUNTY.

DURING about a week's collecting around Manchester this fall I discovered several species of Panicum not in my former list. [RHODORA **14**: 36 (1912)]. At least three of these seem to be unreported from Essex County. Additional collections were made of certain of the species mentioned in the former list and one species there noted must be excluded as further collections of similar material have led to a reversal of opinion.

PANICUM LINDHEIMERI Nash. Hitchcock & Chase, Contr. Nat. Herb. **15**: 203 cite this species from Maine; New Hampshire; Vermont; Massachusetts, Framingham, *Smith* no. 734; and Connecticut. There is no specimen of this species from Massachusetts in either the Gray Herbarium or the Herbarium of the New England Botanical Club, but in the latter is a specimen from Rhode Island, Warwick *M. L. Fernald,* June 25, 1910, so that the species has been sparingly found in all the New England states, most commonly in Maine. In the locality where I collected it, it was fairly abundant. My specimen is No. 482, sandy hillside, among rocks, back of Dana's Beach, Manchester, Oct. 1, 1912. This number was sent to Mrs. Chase of the Bureau of Plant Industry and was determined by her. The material is more pubescent than *P. Lindheimeri* ordinarily is and Mrs. Chase states that it is the form which was named *P. Funstoni* by Scribner and Merrill.

PANICUM MERIDIONALE Ashe. Hitchcock & Chase, l. c. 210 do not cite this species from Massachusetts, but in the Herbarium of the New England Botanical Club there are specimens from Sandwich, *F. S. Collins,* No. 1153; Brewster, *F. S. Collins,* Nos. 1288, 1205; Wellfleet, *F. S. Collins,* No. 1238. I have also seen specimens from Wellesley (Herb. Wellesley College); Dedham, Purgatory Swamp, *F. F. Forbes,* June 27, 1903 (Herb. Forbes) and Wilmington, *G. G. Kennedy* (Herb. Kennedy). My specimen is No. 475a, rich open woods, Beverly Farms, Sept. 29, 1912. This material was a single

plant collected with No. 475 and sent to Mrs. Chase for determination. No. 475 is *P. huachucae* Ashe var. *fasciculatum* (Torr.) Hubbard (Var. *sylvicola* Hitchc. & Chase).

PANICUM HETEROPHYLLUM Bosc var. THINIUM (Hitchc. & Chase) Hubbard (*P. columbianum* Scribn. var. *thinium* Hitchc. & Chase). Hitchcock and Chase, l. c. : 248 cite this species from Massachusetts, Nantucket, *Bicknell,* in 1889 and 1904. There is no specimen of this species in the Gray Herbarium, but in the Herbarium of the New England Botanical Club is a specimen from Winchester, *C. E. Perkins,* Sept. 1, 1882. My specimen is No. 483, sandy hillside back of Dana's Beach, Manchester, Oct. 1, 1912. This number was verified by Mrs. Chase.

While this variety has not been reported from Essex County I know that it has been previously collected from the same locality as my No. 483 by Miss Cora H. Clarke as I have seen specimens sent by her to Mrs. Chase. The variety seems to be rare and only sparingly collected from Massachusetts to Virginia always on or near the coast. At Dana's Beach it seemed to be fairly abundant.

ADDITIONAL NOTES ON PREVIOUSLY REPORTED SPECIES.

PANICUM TENNESSEENSE Ashe. This very variable species seems to be common in Essex County and several additional collections of it were made.

PANICUM LANGUIDUM Hitchc. & Chase. This fall I revisited the locality where I collected my No. 205 in 1911 and collected other material similar to it and also made several collections in Manchester which seemed to be the same species. These were sent to Mrs. Chase and after a careful study of them she decided that they were a form of *P. tennesseense* Ashe and redetermined No. 205 as the same, so that *P. languidum* must be removed from the list of Essex County Panicums.

Mrs. Chase writes me, in part, under the date of November 11, 1912, "I think it [No. 205] is an unusual specimen of P. tennesseense. The panicle of 205 is much longer than characteristic for P. tennesseense, and the blades less firm. These fall "vernal" culms are very deceiving but going over the whole group again, I should call this P. tennesseense."

PANICUM TSUGETORUM Nash. This species is abundant in Essex

County and numerous forms of it were collected from typical material to one collection which very closely approached *P. heterophyllum* Bosc (*P. columbianum* Scribn.).

PANICUM UMBROSUM Le Conte (*P. Ashei* Pearson). This species was collected once more and was fairly plentiful in the locality. No. 480, among boulders back of rocky coast, near Dana's Beach, Manchester, Oct. 1, 1912.

Additions to previous list of species collected in Essex County; noting specimens in the Gray Herbarium or the Herbarium of the New England Botanical Club or where there are published records of the species from Essex County.

P. Lindheimeri Nash.

P. meridionale Ashe.

P. heterophyllum Bosc var. *thinium* (Hitchc. & Chase) Hubbard.

P. latifolium L. N. E. Bot. Club; Robinson, Fl. Essex Co. 130 (1880)

CAMBRIDGE, MASSACHUSETTS.

THE VARIATIONS OF LUZULA CAMPESTRIS IN NORTH AMERICA.

M. L. FERNALD and K. M. WIEGAND.

THE cosmopolitan species, *Luzula campestris* (L.) DC., has been treated by Buchenau [1] as consisting of twenty geographical varieties and by him has been kept apart specifically from the American *L. comosa* Meyer. In the study of certain collections from northeastern America, however, the writers, who have found it necessary to organize the material of these two species in the Gray Herbarium and during the prosecution of this study have been kindly loaned the local collection of the Academy of Natural Sciences of Philadelphia, have found it impossible to maintain any real specific lines between these two plants. In this failure to find specific lines between *L. campestris* and *L. comosa* they have arrived at the conclusion which has already been reached by several other students, for example Otto Kuntze [2]

[1] Buchenau in Engler, Pflanzenf. iv. Fam. 36, 83–95 (1906).

[2] Kuntze, Revis. Gen. Pl. ii. 724 (1891).

and C. V. Piper.[1] The characters used by Buchenau and others to separate *L. comosa* from *L. campestris* are the elongate spikes, frondose bracts, more ciliate bractlets and prophylla, and larger and more denticulate perianth segments. But in many specimens from the Northwest which are otherwise good *L. comosa* the spikes are subglobose; and more or less cylindrical spikes are frequently seen in *L. campestris,* var. *multiflora,* while they are made the basis of *L. campestris,* var. *calabra* (Ten.) Buch. In many plants otherwise *L. comosa* the bracts are short and slender while in *L. campestris,* var. *frigida,* as described by Buchenau, we find "inflorescentia composita, saepe a bracteis 1 vel 2 frondosis rigidis superata"; and similar frondose bracts occur occasionally in *L. campestris,* vars. *alpina* and *multiflora.* The ciliation of the bractlets and prophylla proves to be highly variable in both *L. comosa* and *L. campestris* without any clear line of demarcation between. Extreme specimens of *L. comosa* do indeed have large flowers, but the examination of a large suite of specimens shows that in the two so-called species the measurements overlap so frequently that no real line can be drawn between them. Extreme *L. comosa* would seem to be simply a stage larger in size of flower just as *L. campestris,* var. *multiflora* is a stage larger than *L. campestris,* var. *pallescens.*

Although the color of the perianth or capsule has frequently been considered of taxonomic importance, it is highly variable and often seems to be directly modified by the intensity of the light, being brownish in the more exposed situations and extremely pale in the woods. In the more boreal and alpine habitats, however, the color is, as would be expected, very intense, usually dark-chestnut to blackish, and this tendency, accompanied by a shortening or suppression of the rays, distinguishes such plants as *L. campestris,* vars. *alpina* (*sudetica*), *frigida* and *congesta* which, having fairly well marked geographical ranges, are maintained as varieties.

The size of the seed and the length of the caruncle have sometimes been used in separating plants of the *campestris* series, but after an examination of the seeds of the plants said to have pronounced differences in these characters it has seemed to the writers that the differences are slight and apparently not constant. The varieties with the smallest flowers, *L. campestris,* var. *pallescens* for instance, naturally have their seeds smaller than do the large-flowered plants, but the

[1] Piper, Contrib. U. S. Nat. Herb. xi. 186 (1906).

differences are so slight as to be difficult to use except in actual comparison of large series of specimens.

In organizing the North American material the writers have found the following key to the varieties of *L. campestris*, based largely on Buchenau's treatment, of service. The measurements of the length of the perianth, which form the primary basis of division, have been made by the writers from the specimens they have examined, and, although the sizes of the flowers overlap, as would be expected in such a polymorphous species, the varieties recognized all seem to be definite geographic trends of the species.

A. Plant stoloniferous: inflorescence loose: flowers of medium size (3 mm. long): Eurasian.....1. *L. campestris* (typical).

A. Plants caespitose. B.

B. Perianth large (5–6.5 mm. long): heads globose to cylindric, 1–2 cm. long: inflorescence loose.....2. var. *macrantha*.

B. Perianth of medium size (2.5–4.5 mm. long). C.

C. Perianth 3–4.5 mm. long, equaling or exceeding the capsule: heads cylindrical, rarely globose, the longer 10–30 mm. long: inflorescence loose or somewhat congested.....3. var. *comosa*.

C. Perianth 3.5–4 mm. long, usually much exceeding the capsule; inflorescence with no obvious rays.....4. var. *congesta*.

C. Perianth (2.8–)3–4 mm. long, usually exceeding the capsule: heads hemispherical to short-cylindrical, 3–9 mm. long, mostly on unequal rays; some short rays strongly divergent.....5. var. *echinata*.

C. Perianth 2.4–3.3 mm. long, slightly or not at all exceeding the capsule: heads globose or short-cylindrical, 4–11 mm. long, on mostly ascending rays. D.

D. Perianth and capsule pale, ferruginous or moderately castaneous: inflorescence lax or rarely congested.

Base of plant rarely producing bulblets: perianth 2.5–3.3 mm. long.....6. var. *multiflora*

Base of plant commonly producing bulblets: perianth 2-2.5(–3) mm. long.....8. var. *bulbosa*.

D. Perianth and capsule intensely castaneous or almost black: inflorescence usually congested.....7. var. *frigida*.

B. Perianth small (1.8–2.3 mm. long).

Inflorescence lax to somewhat dense: perianth and capsule pale to moderately castaneous.

Base of plant copiously bulblet-bearing: perianth 2–2.3(–3) mm. long.....8. var. *bulbosa*.

Base of plant not bulblet-bearing: perianth 1.8–2.3 mm. long. 9. var. *pallescens*.

Inflorescence dense: perianth and capsule intensely castaneous or almost black.....10. var. *alpina*.

1. L. CAMPESTRIS (L.) DC. Fl. Franc. iii. 161 (1805). *Juncus campestris* L. Sp. Pl. 329, in part (1753). *L. campestris*, var. *vulgaris* Gaudin, Fl. Helv. ii. 572 (1828); Buchenau in Engler, Pflanzenr. iv. Fam. 36, 86 (1906), which see for fuller synonymy. *Juncodes campestre* O. Ktze. Revis. Gen. Pl. ii. 724 (1891). *Juncoides campestre* Coville, Contrib. U. S. Nat. Herb. iv. 208 (1902).— Eurasia. Said by Buchenau to occur in northwestern America.

2. Var. **macrantha** (Watson), n. comb. *L. comosa*, var. *macrantha* Watson, Bot. Cal. ii. 203 (1880). *Juncoides comosum*, var. *macrantherum* Parish, Erythea, iii. 59 (1895). *Juncoides comosum*, var. *macranthum* Howell, Fl. N. W. Am. i. 681 (1903).— CALIFORNIA: the specimens originally labelled *L. comosa*, var. *macrantha* by Watson were from Plumas County, May, 1877, *Mrs. R. M. Austin;* dry hills southeast of Mt. Diablo, May 23, 1860–62, *Brewer*, no. 1148; Big Trees, May, 1860–62, *Brewer*, no. 2335. A plant with extremely large flowers (6.5 mm. long) and a well-developed bulb borne on a short stolon comes from Placer County (*Mrs. M. E. P. Ames*). Parish reports the plant southward to San Bernardino County.

3. Var. **comosa** (Meyer) n. comb. *L. comosa* Meyer, Synop. Luz. 21 (1823); Watson, Bot. Cal. ii. 202 (1880); Buchenau in Engler, Pflanzenr., iv. Fam. 36, 83 (1906). *Juncodes campestre*, var. *comosum* O. Ktze. Revis Gen. Pl. ii. 724 (1891). *Juncodes comosum* Sheldon, Minn. Bot. Stud. i. 64 (1894). *Juncoides comosum* Parish, Erythea, iii. 59 (1895). *Juncoides campestre*, in part, of Piper, Cont. U. S. Nat. Herb. xi. 186 (1906). *L. comosa*, var. *subsessilis* Watson, Bot. Cal. ii. 203 (1880). *Juncodes comosum*, var. *subsessilis* [*e*] Sheldon, Minn. Bot. Stud. i. 64 (1894). *Juncoides comosum*, var. *subsessile* Howell, Fl. N. W. Am. i. 681 (1903). *L. subsessilis* Buchenau, Öster bot. Zeitschr. xlviii. 290 (1898) and in Engler, l. c. 68 (1906). *L. comosa*, var. *laxa* Buchenau in Engler, l. c. 83 (1906) — Northeastern Asia (COPPER ISLAND) and ALASKA to southern CALIFORNIA. Also Newfoundland and eastern Quebec. NEWFOUNDLAND: Baccalieu Island, Notre Dame Bay, July 2, 1902, *Sornborger;* open river-flat, Glenwood, July 12 & 13, 1911, *Fernald and Wiegand*, no. 5163; sandy and gravelly banks, Whitbourne, August 8, 1911, *Fernald and Wiegand*, no. 5168. QUEBEC: sterile meadow, Douglastown, Gaspé Co., August 21 & 22, 1904, *Collins, Fernald & Pease.*— Without extended field knowledge of the variations here included it seems very unwise to separate from var. *comosa* vars. *subsessilis* and *laxa*, which, judging from the abundant transitional material in the herbarium seem to be mere states of one plant. The varietal name *comosa* is here retained in its aggregate sense.

4. Var. CONGESTA (Thuill.) Meyer. Synop. Luz. 18 (1823); Duby in DC. Bot. Gal. ed. 2, i. 479 (1828); Buchenau, Mon. Junc. 162 (1890) and in Engler, l. c. 91 (1906), which see for detailed synonymy. *Juncus campestris* ζ. L. Sp. Pl. 330 (1753). *Juncus congestus* Thuill. Fl. Par. ed. 2, 179 (1799). *L. comosa*, var. *congesta* Watson, Bot. Cal.

ii. 203 (1880). *Juncodes comosum*, var. *congestum* Sheldon, Minn. Bot. Stud. i. 64 (1894). *Juncoides comosum*, var. *congestum* Howell, Fl. N. W. Am. 681 (1903).— Europe and Eastern Asia. In North America from VANCOUVER ISLAND to CALIFORNIA.

5. Var. **echinata** (Small), n. comb. *Juncoides echinatum* Small, Torreya, i. 74 (1901). *Luzula campestris*, var. *bulbosa* Robinson & Fernald in Gray Man. ed. 7, 279 (1908) in part, not Wood.—NEW JERSEY and PENNSYLVANIA to GEORGIA and TEXAS.

6. Var. MULTIFLORA (Ehrh.) Čelak. Prodr. Fl. Böhem. 85 (1869); Buchenau in Engler, l. c. 94 (1906) which see for detailed synonymy; Robinson & Fernald in Gray Man. ed. 7, 279 (1908). *Juncus campestris* γ, L. Sp. Pl. 329 (1753). *Juncus multiflorus* Ehrh. Calam. Gram. et Tripet. exsicc. (about 1791); Retz. Fl. Scand. Prodr. ed. 2, 82 (1795). *Cyprella campestris*, var. *multiflora* MacMillan, Met. Minn. Val. 142 (1892). *Juncodes campestre*, var. *multiflorum* Sheldon, Minn. Bot. Stud. i. 65 (1894).— Eurasia and North America. In North America the most widely distributed plant, occurring from NEWFOUNDLAND to ALASKA, south to NEW JERSEY, PENNSYLVANIA, ILLINOIS, UTAH and CALIFORNIA; abundant northeastward, rare westward.

7. Var. FRIGIDA Buchenau, Öster. bot. Zeitschr. xlviii. 284 (1898), and in Engler, l. c. 93, fig. 55 (1906): Robinson & Fernald in Gray Man. ed. 7, 279 (1908).— Boreal, arctic and alpine Eurasia. In North America from GREENLAND and LABRADOR to NEWFOUNDLAND, southern NEW BRUNSWICK and eastern MAINE; islands of BERING SEA.

8. Var. BULBOSA Wood, Class Book (1861) 723; Robinson & Fernald in Gray Man. ed. 7, 279 (1908) in part. *Juncoides bulbosum* Small, Torreya, i. 75 (1901).— Dry open sandy woods and thickets or serpentine barrens, NEW JERSEY and southeastern PENNSYLVANIA to GEORGIA (*Small*), west KANSAS and TEXAS.— The production of bulblets, though more general in this variety than in the others, is by no means confined to it. They occur occasionally in vars. *macrantha*, *comosa*, *congesta*, and *multiflora* in America and in some of the European and Australian varieties as well as in various species of *Juncus* which ordinarily lack bulblets (see Buchenau, Flora, lxxiv. 77 (1891)). In its inflorescence var. *bulbosa* strongly simulates var. *pallescens* which, however, tends to have somewhat smaller flowers; but in the specimens which are transitional in the size of flowers the presence or absence of bulblets alone seems to distinguish the plants.

9. Var. PALLESCENS Wahlenb. Fl. Suec. i. 218 (1824); Buchenau in Engler, l. c. 88 (1906) which see for fuller synonymy. *Juncus campestris* β. L. Sp. Pl. 329 (1753). *Juncus pallescens* Wahlenb. Fl. Lapp. 87 (1812). *L. pallescens* Besser, Enum. Pl. Volh. Pod. 15 (1822). — Eurasia. In North America known only from NEWFOUNDLAND and the Gaspé Peninsula of QUEBEC, but, since it occurs on islands on the Asiatic side of Bering Sea, to be expected from the Alaskan islands. NEWFOUNDLAND: open fields near the Gander River, Glenwood, July 12 & 13, 1911, *Fernald & Wiegand*, nos. 5160, 5161. QUEBEC: sterile

meadow, New Richmond, July 28–August 1, 1904, *Collins, Fernald & Pease*, July 16 and 17, 1905, *Williams, Collins, & Fernald;* steep slide on the East Branch of Little Cascapedia River, July 29 and 30, 1904, *Collins, Fernald & Pease;* sterile meadow near Giroux Station, Maria, July 11, 1905, *Collins & Fernald*, no. 54.— Hooker (Fl. Bor.-Am. ii. 188) cites var. *pallescens* from "Lake Winnipeg, to the Saskatchewan, and prairies and Lake of the Woods, Rocky Mountains. *Drummond,*" but his description does not indicate whether he had the small-flowered plant or merely var. *multiflora*.

Var. ALPINA Gaud. Agrostol. Helv. ii. 247 (1811). *Juncus campestris* η. L. Sp. Pl. 330 (1753). *Juncus sudeticus* Willd. Sp. Pl. ii. 221 (1799). *Luzula sudetica* DC. Fl. Fr. vi. 306 (1815). *Luzula campestris*, var. *sudetica* Čelak, Prod. Fl. Böhm. 749 (1881); Buchenau in Engler, l. c. 89 (1906), which see for fuller synonymy. *Juncoides campestre sudeticum* Coville, Contrib. U. S. Nat. Herb. iv. 208 (1893). — Alpine and subarctic regions of Eurasia. Little known in North America: the only material seen by us comes from Fullerton, lat. 63°, 57′, northwest coast of HUDSON BAY, *J. M. Macoun,* no. 79,215. Coville and Funston's no. 1553 from near Mineral King, California, has been referred here, but the material in the Gray Herbarium, though too young for definite determination, has, even in its immature state, perianths longer than in var. *alpina* and the plant may be an extremely dwarfed state of var. *congesta*.

NOTES ON EUPHORBIA CYPARISSIAS L.— While returning after a day spent collecting in and about West Haven, Connecticut, June 23, 1912, in company with Mr. C. H. Bissell and Mr. R. W. Woodward, we crossed an open corner lot by a path used as a short cut to a near-by trolley line. This lot was quite thickly covered with *Euphorbia Cyparissias* L. Remarking that it looked strange I picked several plants and found they were heavily fruited and on further inspection the whole lot was found to be in full fruit. The reason of the peculiar appearance was the bright reddish color of the bracts which was characteristic of the plants all over the lot. A specimen in fruit in the herbarium of Dr. E. H. Eames of Bridgeport, Connecticut, from the well known station of Mr. Walter Deane's at Shelburne, New Hampshire, has been seen by the writer and has this same striking characteristic. In Mr. Deane's interesting articles in RHODORA no mention was made of the color of the bracts. Is this a distinctive trait of all fruiting plants of this species? The soil at the station was sandy and sterile. Owing to lack of time the station was not carefully looked over. The writer is looking forward to a visit to this place at an earlier date during the coming season.— ARTHUR E. BLEWITT, Waterbury, Connecticut.

Some Extensions of Local Ranges. — The Report on the Fora of the Boston District, Rhodora ix. 85, May (1907), makes no mention of the occurrence in this section of *Dicksonia punctilobula* (Michx.) Gray, forma *cristata* (Maxon) Clute. I am, therefore, glad to state that it was collected in Sherborn, Mass., August 3, 1912. It was found growing with an abundance of the type near the edge of rocky, deciduous woods. A frond was placed with the Boston Society of Natural History as No. 1138 of the Flora of Sherborn, Mass.

The same report characterizes *Onoclea Struthiopteris* (L.) Hoffm. as "rare; not reported from south of Boston." The fact that this species was collected in Sherborn December 15, 16, 1912, may be of interest. The station was rather large, there being certainly thirty or more crowns which were growing on a rocky hill at the side of a shady cart-road which gives access to the orchards, woodlots, and pastures which border it. Of course at the time of collection the sterile leaves were dry and brown; but several mature fertile fronds were gathered and sent to the Gray Herbarium and to the Boston Society where they are numbered 1199 of the Flora of Sherborn.

Another interesting collection, July 16, 1911, was that of *Sagittaria graminea* Michx. on the shore of Farm Pond. Material sent to the Boston Society was identified by Dr. J. A. Cushman. This species is mentioned in Rhodora xii. 4, January (1910), as being reported from "scattered stations in northern half of district." The finding it at Sherborn, therefore, seems to show an extension of range.— Martha Louise Loomis, Sherborn, Massachusetts.

Alnus crispa (Ait.) Pursh, var. **mollis** (Fernald), n. comb. *A. mollis* Fernald, Rhodora, vi. 162 (1904). Extended experiences in the field in New England, eastern Canada and Newfoundland during the past decade have convinced the writer that, although a well pronounced pubescent extreme of less boreal range than true *A. crispa*, *A. mollis* cannot be kept apart from the older species on any absolute characters and is better treated as a variety.— M. L. Fernald, Gray Herbarium.

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A NEW OENOTHERA.

Reginald Ruggles Gates.

(Plates 100 and 101.)

My cultures of Oenothera from seeds collected wild in various parts of the North American continent, have yielded a bewildering profusion of forms, races related to *O. biennis* L. and *O. muricata* L. being especially numerous. As is always the case when the number of forms under observation begins to be multiplied, the older lines of distinction between "species" break down, and it becomes finally an arbitrary matter, decided by convenience, where the line between two formerly distinct Linnaean species is to be drawn. Thus the multiplication of forms belonging to the two species mentioned above has necessitated drawing a more or less arbitrary line between them, as I have explained elsewhere,[1] and ranking all races on one side of this line with the *O. biennis* series, and all on the other side with the *O. muricata* series. Such a decision is of course based on a single character, because no two differential characters will hold for all the forms concerned.

I chose for this purpose the character of flower-size, and reckon all species of this group having petals 12–30 mm. in length, as belonging to *O. biennis*, and all having petals 9–15 mm. in length, with *O. muricata*. Flower-size is the most convenient character on which to base distinctions, and the same treatment should therefore be applied to *O. grandiflora* Sol.,[2] *O. Lamarckiana* Ser., and other species of the

[1] Gates, R. R. "Mutation in Oenothera." Amer. Nat. **45**: 577–606, 1911.

[2] I pointed out elsewhere (Amer. Nat. **45**: 588. 1911) that Solander should be credited with this species.

group. For example, species having small flowers with the *O. biennis* characters should be reckoned as belonging with the *biennis* series, even though they may have foliage more or less resembling *O. Lamarckiana*. This distinction is all the more important because the size of flower is usually correlated with other important flower differences, such as the habit of open- or close-pollination, while any of these flower characters may be found combined with any type of foliage.

This manner of treatment does not mean, of course, that Linnaean species should be differentiated on the basis of single characters, for obviously that is not what is meant by the species, the unit of systematists.

Notwithstanding the fact that single characters must be resorted to in classifying large series of races under one or another Linnaean species, yet this method is not always applicable, for races occur which represent such distinct combinations of characters that they are at once recognized as worthy of specific rank.

This is evidently the case with the species to be described in this paper. In its flower characters it belongs to the *biennis* series, yet in its foliage and its nearly glabrous character it clearly resembles *O. argillicola* Mack. But it possesses other features, such as the clearly subterminal sepal tips, which are reminiscent of another section of the genus.

The plants from which this species is described, were grown this year at the John Innes Horticultural Institution, Merton, Surrey, from one of several packets of seeds collected at Ithaca, New York, by Mr. H. B. Brown in 1909 and sent to me through the kindness of Professor W. W. Rowlee of Cornell University. Some of the other packets collected from this region gave races very distinct from this and resembling much more the ordinary *O. biennis* forms.

I at first intended giving this species the very appropriate designation *O. angustifolia*, but since that name is now a synonym, having been used by Miller, I have substituted *O. angustissima*. Type specimens from plants grown this year, are to be found in the British Museum (Natural History), London. The accompanying photographs, kindly taken by E. J. Allard, illustrate a rosette and two flowering shoots together with three leaves from the mature rosette. The description is as follows:

Oenothera angustissima, sp. nov.

Leaves of mature rosette:— Length about 29 cm., greatest width

24–26 mm. Blade long, narrow, lanceolate, narrowing gradually to petiole, margin repand-denticulate, sometimes very obscurely so, more distantly repand-dentate below; midribs pinkish, broadening below to a wide, long, unmargined petiole which is triangular in cross-section and greenish white on ventral surface. Veins on ventral surface of blade somewhat rugose, a very scattering, inconspicuous pubescence of fine, short hairs on both surfaces.

Mature plant:—Central stem nearly two metres high, with a ring of ascending crown branches (arising from the rosette) which frequently reach a greater height than the central shoot. Stems terete, fairly stout, reddish, nearly glabrous but bearing in places a few scattered short hairs and also very scattered long hairs which arise from red (anthocyanic) papillae. Late in the season (in this climate), very slender, short, terete secondary branches appear.

The lower cauline leaves have the same shape and other features as the radical leaves, but they are smaller, 25 cm. long, by 15.5 mm. wide, of nearly uniform width throughout the greater part of their length. The upper cauline leaves become gradually shorter with shorter petioles. Lowermost bracts 10 cm. long by 21 mm., in extreme width, scarcely petiolate, lance-pointed, narrowed abruptly at base; upper surface and veins on lower surface bearing a few short, scattering hairs; margin distantly and very obscurely glandular-denticulate. Upper bracts shorter, broader at base, and more or less curled or waved.

Flowering late in the season (nearly end of August when grown in the English climate as an annual). Inflorescence rather loose, tip of stem nutating as in *O. ammophila* Focke, and some forms of *O. muricata* L.

Flowers:— Petals 20 mm. long by 19 mm. broad, emarginate, deep yellow, not opening out flat, style short (stigma surrounded by the anthers), lobes of stigma usually opening only to an angle of about 45°. Length of hypanthium 24 mm., length of ovary 13 mm., thickness of ovary nearly 3 mm., thickness of hypanthium slightly over 2 mm.; length of bud cone 15 mm., diameter at base nearly 5 mm., length of sepal tips 5 mm. Sepal tips subterminal, hence separated at base, nearly parallel or somewhat spreading, reddish on inner face, especially at base, and in young buds. Buds nearly glabrous, cone slightly quadrangular, reddish stripes on margins of each sepal, median ridge green, hypanthium usually faintly pinkish, ovary reddish, with scattered red papillae bearing long hairs, hypanthium with scattered short hairs, sepals shiny, with very scattered long and short hairs.

Capsules:— Reaching 35 mm. in length, about 6.5 mm. in diameter, gradually tapering from near the base, green or with scattered patches of red, nearly glabrous, but with few, scattered long hairs, arising from mostly green papillae.

Diagnosis:—Herba biennis. Folia radicalia longa, angustissimē

lanceolata, longē petiolata, circa 29 cm., longa et 25 mm. lata, utrinque sparsē pubescentia. Folia caulina gradatim breviora, breviter petiolata. Caulis teres, subglaber, basi ramis pluribus verticillatis ascendentibus ipsum saepe excedentibus instructus. Spica sublaxa, superne nutans. Petala flava, circa 20 mm. longa, ascendentia. Antherae stigmata attingentes. Alabastrae subglabrae, obsoletē quadrangulares, apices sepalorum subterminales.

Royal College of Science, London.

Explanation of Plates.

Plate 100. *Oenothera angustissima*, sp. nov. Rosette, showing the beginning of the crown branches before the central stem appears.
Plate 101. The same. Two flowering shoots showing leaves, flowers and fruits; and three leaves from the mature rosette.

SYSTEMATIC STUDIES ON OENOTHERA,—II. THE DELIMITATION OF OENOTHERA BIENNIS L.

Harley Harris Bartlett.

(Plates 102 and 103.)

The problem of limiting the application of the name *Oenothera biennis* L. to one of the many forms which now pass under this name is largely bibliographical, to be solved by a careful analysis of the Linnaean account (Sp. Pl. ed. 1. p. 346. 1753.) which is quoted below:

biennis 1. OENOTHERA foliis ovato-lanceolatis planis. *Vir. cliff.* 33. *Hort. ups.* 94. *Gron. virg.* 254. *Roy. lugdb.* 251. *Gort. gelr.* 78.
Oenothera foliis ovato-lanceolatis denticulatis, floribus lateralibus in summo caulis. *Hort. cliff.* 144.
Lysimachia lutea corniculata. *Bauh. pin.* 245. 516. * *Moris. hist.* 2. *p.* 271, *f.* 3, *t.* 11, *f.* 7.
Habitat in Virginia *unde* 1614, *nunc vulgaris Europae.* ♂

Although no part of this account is original to the Species Plantarum, Linnaeus was himself the author of the first two of the three polynomials of which it consists. In 1737 Linnaeus published companion works, the Viridarium Cliffortianum and the Hortus Cliffortianus, in which these polynomials first appeared. We find in the

preface to the Viridarium the following explanation of the relationship between the two works:

> "Nomina quibus enumerantur plantae mutuata sunt ex Horto Cliffortiano fere omnia (paucis emendatioribus), singulis adjecto duplici numero, quorum priore paginam Horti Tui indicavi, posteriore vero generis speciem, ut si quae differentia minus indubitata occurreret, in majori opere eo facilius consulerentur synonyma."[1]

It is therefore clear that the following accounts, with the exception of the synonymy which is quoted in the Hortus, refer to the same plant.

> "Oenothera foliis ovato-lanceolatis planis.
> Oenothera foliis ovato-lanceolatis denticulatis, floribus lateralibus in summo caulis. 144. 1."
>
> *Virid. Cliff.* p. 33.
>
> "1. Oenothera foliis ovato-lanceolatis denticulatis, floribus lateralibus in summo caulis.
> Onagra latifolia. *Tournef. inst.* 302.
> Lysimachia lutea corniculata. *Bauh. pin.* 245. 516.
> Lysimachia lutea corniculata non papposa virginiana major. *Moris. hist.* 2. *p.* 271. *f.* 3, *t.* 11. *f.* 7.
> Lysimachia lutea corniculata latifolia lusitanica. *Barr. rar. t.* 1232.
> α Onagra latifolia, floribus amplis. *Tournef.*
> Onagra latifolia, flore dilutiore. *Tournef.*
> *Crescit in* Virginia, *aliisque Americae locis, ante centum et viginti annos in Europam translata, nunc spontanea facta, copiose crescit ubique in campis arenosis Hollandiae.*
> *Primo anno vix floret, altero floret et perit."*
>
> *Hort. Cliff. p.* 144.

The third polynomial quoted by Linnaeus in the Species Plantarum, *Lysimachia lutea corniculata* Bauhin, has not been satisfactorily identified by recent authors.[2] Nevertheless Bauhin's description is a lengthy one, and, for his time remarkably satisfactory, so that it is

[1] "The names by which the plants are enumerated are almost all taken from the Hortus Cliffortianus, a few having been somewhat improved and to each having been added a duplex number, by the first part of which I have indicated the page of your Hortus and by the last the species of the genus, so that if any somewhat doubtful distinction should present itself, the synonyms of the larger work might be the more readily consulted."

[2] Dr. R. R. Gates at one time attempted to identify *Lysimachia lutea corniculata* with what we now know as *Oenothera Lamarckiana*. See the following papers:

The earliest description of Oenothera Lamarckiana. Science, 2d. ser. xxxi (1910) pp. 425–426.

Early historico-botanical records of the Oenotheras. Proc. Iowa Acad. Sci. xvii (1910) pp. 85–124.

by no means improbable that his plant, which was the first Oenothera to be introduced into the botanical gardens of Europe, may yet be identified with some degree of plausibility. Whatever Bauhin's plant may have been, however, there is nothing in the description to indicate its identity with the Linnaean plant of the sand-dunes of Holland. It cannot, therefore, be chosen as the type to bear the name *Oe. biennis*, since a Linnaean species should certainly be typified by a plant with which Linnaeus was himself acquainted.

In the case of many hopelessly composite Linnaean species the name has been associated by later botanists with that one of several synonyms which Linnaeus referred to in the closing line of the diagnosis,—"Habitat in Virginia," or perhaps "Habitat in Canada." In such a case Linnaeus has been tacitly interpreted as having himself pointed out that a Gronovian diagnosis (sometimes associated with a Clayton specimen) or a Kalm specimen in his herbarium, should be crucial in interpreting his species, rather than earlier references to plants of which he had no personal knowledge. In the case of *Oenothera biennis*, however, the "Habitat in Virginia unde 1614, nunc vulgaris Europae" clearly refers to the similar statement in the Hortus Cliffortianus, "Crescit in Virginia, aliisque Americae locis, ante centum et viginti annos in Europam translata, nunc spontanea facta, copiose crescit ubique in campis arenosis Hollandiae," and affords no basis whatever for selecting as the type of *Oe. biennis* any other plant than that which grew in the dunes of Holland. As a matter of fact, *Oenothera foliis ovato-lanceolatis planis* L. was admitted to Gronovius' Flora Virginica (p. 154, not p. 254 as cited in Sp. Plant.) on the basis of Linnaeus' statement in the Hortus Cliffortianus that the plant of Holland had been introduced from Virginia, and not on the basis of notes or specimens from Clayton.

The plant which grew abundantly on the sand-dunes between Haarlem and Leyden in 1737, which Linnaeus was probably able to see in the course of a half hour's walk from the garden of Clifford, was no doubt the same species which is common there today. The fact that it has not been exactly duplicated in the material which has recently been assembled from American localities is not at all surprising, in view of the fact that our flora contains a number of closely related species and varieties, some of which seem to be very local in their distribution. I am informed by Professor de Vries that there are but two strains of Oenothera in the vicinity of Amsterdam which

conform to what is usually called, in a collective sense, *Oe. biennis.* They differ only in flower color, one having flowers of a lighter color than the other. The light-colored form has only become abundant in recent years, through its prompt occupation of a newly created habitat, the rights of way of the more recently constructed railroads. It has long occurred at many localities in Holland, however, and may be identified with reasonable certainty with the var. *a* of Linnaeus' *Oenothera foliis ovato-lanceolatis denticulatis, floribus lateralibus in summo caulis* (Hort. Cliff.). To be sure Linnaeus assigned this plant no name of his own, citing merely two polynomials of Tournefort's. One of them, however, *Onagra latifolia, flore dilutiore* Tourn. was merely a new name for Hermann's *Lysimachia corniculata non papposa, Virginiana, major, flore sulphureo* (Hort. acad. Lugd.-Bat. Catalogus, 1687) which was grown and described at Leyden half a century before Linnaeus' residence in Holland. We are therefore justified in treating the lighter-flowered plant of Holland as a variety of the other, which is to be regarded as the type of *Oenothera biennis.* The two plants, according to Professor de Vries, differ in the one character only.

It would hardly have been worth while to give in so much detail the reasons for selecting the common plant of Holland as typical *Oenothera biennis* but for the fact that certain botanists do not seem to realize that such a selection should be made according to principle. Dr. Britton, for instance, seems to have been able to select from among the American Oenotheras one which he arbitrarily pronounced to be *Oenothera biennis* "in the strictest sense." [1]

In a recent paper, Dr. Gates [2] has mentioned a specimen in the Linnaean Herbarium which he calls "the type specimen of Linnaeus's *Oenothera biennis* in the Species Plantarum." It would seem to be unnecessary to point out that Linnaeus had no "types" in the modern sense, and that the specimens in the Linnaean Herbarium cannot be

[1] "....a number of plants of *Onagra biennis* (in the strictest sense), growing in uncultivated land in the New York Botanical Garden in 1903, were selected to form the basis of a pedigree culture in 1904." Macdougal, Vail, Shull, and Small; Mutants and Hybrids of the Oenotheras, p. 9, 1905, "Parental individuals were selected and verified by Dr. N. L. Britton in 1903, and from the seeds furnished by them the plants were grown which furnished material for the descriptive diagnosis published in a previous paper (Macdougal, Vail, Shull and Small, 1905). This is not the species growing wild in Europe and cited by de Vries in his 'Mutationstheorie.'" Macdougal, Vail, and Shull: Mutations, Variations and Relationships of the Oenotheras, p. 56, 1907.

These quotations refer to the same culture.

[2] Gates, R. R.: Mutation in Oenothera. American Naturalist xlv (1911) pp. 577–606.

considered as "types" unless there is actual evidence that Linnaeus drew up his description wholly or in part from the preserved specimen.[1] In the case of *Oenothera biennis*, especially, where nothing in the account given in the Species Plantarum is original to that work, no herbarium specimen can be interpreted as a type unless it is definitely associable with the Hortus Cliffortianus. Mr. Gates himself states[2] that " . . . the actual specimens in the British Museum . . . which are supposed to have served as the types for the Hortus Cliffortianus are not fully authenticated. The handwriting is said not to be that of Linnaeus . . . " etc. Under the circumstances the best course seems to be to accept as true *Oenothera biennis* the common plant of Holland which Professor de Vries has referred to under this name in his Mutationstheorie. A diagnosis of this plant follows.

OENOTHERA BIENNIS L. Biennial. Mature rosettes large, sometimes 65 cm. in diameter (smaller if forced to flower the first year). Outer leaves with petioles 9–10 cm. long and oblanceolate or oblong lanceolate blades, 20–24 cm. long, 5.5–7.5 cm. broad, gradually narrowed to the sinuate-dentate base, distantly and minutely repand-denticulate toward the abruptly obtuse or acutish apex, with a sparse pubescence on both sides of short, sharp, arcuate hairs. Flowering plant about 7–10 dm. high, roughly pyramidal in outline, bearing cauline branches in all the lower axils, and flowers in all the upper axils of the main axis; branches with empty axils below and flowers above; stems and foliage green. Stem pubescence consisting of four types of hairs: I sharp-pointed, thick-walled granulose-roughened hairs from a tuberculate base (few); II similar but shorter hairs varying greatly in length, without a tuberculate base (the predominant type); III thin-walled hairs, round at the apex, of practically uniform diameter, or slightly clavate (few); and IV very small, ampulliform thin-walled hairs (mostly in the inflorescence). Lower stem leaves with blades about 16 cm. long, 4.5 cm. wide, lanceolate, acute, distantly denticulate, tapering at the repand-dentate base to a petiole about 4 cm. long. Uppermost stem leaves short-petioled, forming a gradual transition to the lower bracts, 10 cm. long, 3 cm. wide. Lower leaves of the branches (subtending neither branches nor flowers) ovate, acute, 5.5 cm. long, 3 cm. wide. Leaf-like lower bracts of both primary and secondary axes passing gradually to practically entire narrowly lanceolate bracts about 25 mm. long and 4 mm. wide, (i. e., 2½ times as long as the ovary at flowering time), clothed with hairs of type II above and types II and III below. Flowers of medium size. Ovary 10 mm. long. Hypanthium 35 mm. long, slender, expanding from a diameter

[1] In this connection see —
Hitchcock, A. S.: Types of American Grasses. Cont. U. S. Nat. Herb. xii (1908) p. 115.

[2] Am. Nat., xlv (1911) p. 587.

of 1.3 mm. near the base to 3 mm. at the orifice, sparsely pubescent with a few arcuate hairs of type II and more numerous perpendicular hairs of type III. Calyx segments deflexed in pairs, about 23 mm. long and 4 mm. wide above the base, bearing slender, strictly terminal, red-tipped free appendages 3 mm. long, moderately pubescent, hairs of type II sparse near base but very abundant on the free calyx-tips, hairs of type III predominant except on the free tips, where they are lacking, hairs of type IV abundant on the free tips but absent elsewhere. Petals yellow, becoming darker on fading with a reddish area at the base, obcordate, 20 mm. long, 27 mm. wide. Stigma lobes 6–7 mm. long, appressed, lying at the center of the unopened bud (therefore shorter than the corolla after expansion) surrounded by the slightly longer anthers. Capsules loosely aggregated but still overlapping in the lower part of the fruiting spike, rather more densely aggregated above, mostly between 23 and 27 mm. in length, shorter than the subpersistant foliaceous bracts except above, subquadrangular, apices of the valves neither spreading nor conspicuously emarginate, sparsely pubescent with arcuate hairs of type II and densely viscid-puberulent with very short hairs of type III. Seeds light brown, rather large, 1.7 to 2 mm. long.— Seed received in 1910 from Professor de Vries with data as follows: "*Oenothera biennis*. Pure seed, fertilized by myself in my garden from plants whose parents were collected in the sand-dunes of Holland.... The pure race,— the biennis often contains the var. *sulphurea*." Plants set out at Bethesda, Md., in the spring of 1911 did not flower during that season and were winter-killed. Sister plants, however, flowered in the garden of Prof. B. M. Davis at the Bussey Institution, and were self-pollinated by him. Their progeny, forced by being started in the greenhouse in the winter and set out early in the spring, flowered in 1912 both at Philadelphia and Bethesda. Herbarium specimens; *Bartlett* 2723, 3113 and 3160.

Oenothera biennis var. **sulphurea** de Vries *in litt.* Formae speciei typicae omnino similis floribus pallidioribus sulphureis exceptis. An *Lysimachia corniculata non papposa, Virginiana, major, flore sulphureo* Herm. (Hort. Lugd.-Bat. Cat. p. 396. 1687) et *Lysimachia lutea corniculata flore sulphureo* Herm. (Florae Lugd.-Bat. Flores, p. 95. 1690) et *Oenothera foliis ovatolanceolatis denticulatis, floribus lateralibus in summo caulis*, var. α, Linn. (Hort. Cliff. p. 144. 1737)? — Occurring with the typical form in the sand-dunes of Holland.

Bureau of Plant Industry, Washington, D. C.

Explanation of the Plates.

Plate 102. Lower figure: *Oenothera biennis*, mature rosette of a plant grown as an annual.

Upper figure: The same plant in flower, showing the long branches of the lower axils and the simple inflorescence of the main axis.

Plate 103. Branch and lower leaf of the same plant.

Photographs by B. M. Davis, of "11.16 a *biennis* H," in cultures grown from seeds of de Vries at the University of Pennsylvania, 1911.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,— XVI.

The records on which the reports on the *Gramineae* are based have been unusually full, except in the case of some of the more recently described species. Over 3500 of these records are already on file with the Committee. These represent the *Gramineae* of the Gray Herbarium, the Herbaria of the New England Botanical Club, Boston Society of Natural History, Peabody Academy of Science at Salem, Wellesley College and Yale University (Dr. C. W. Swan's collection), and the personal herbaria of J. R. Churchill, Walter Deane, F. F. Forbes, F. W. Grigg, F. Tracy Hubbard, C. H. Knowlton, John Murdoch, Jr., and R. A. Ware.

The collections from the Peabody Academy at Salem and from the Swan Herbarium at Yale were sent to the Gray Herbarium, where they were diligently verified. Prof. M. L. Fernald and Mr. F. Tracy Hubbard have been of special service in this work. The ranges given are based on actual specimens.

In studying *Panicum* constant use has been made of the Hitchcock & Chase monograph, Contrib. U. S. Nat. Herb. xv. 1910.

GRAMINEAE.

ZEA.

[Z. Mays L. Occasional on waste land and along railways. Probably does not reproduce itself wild.]

ANDROPOGON.

A. furcatus Muhl. Dry open ground, frequent throughout.

A. glomeratus (Walt.) BSP. Moist field, Duxbury (*C. H. Knowlton*, Sept. 10, 1911); Hingham, according to T. T. Bouvé, The Botany of Hingham, 1893, as *A. macrourus* Michx.

A. scoparius Michx. Dry sandy and rocky soil, very common throughout. Probably our most abundant grass.

A. virginicus Muhl. Dry ground, Blue Hill, Milton (*E. & C. E.*

Faxon, Oct. 7, 1878; *E. Faxon & J. R. Churchill*, Oct. 17, 1884; *W. H. Manning*, Aug. 15, 1894); Norwood (*E. F. Williams*, Sept. 15, 1895); Waltham (*S. E. French*, Sept. 10, 1888).

TRAGUS.

T. RACEMOSUS Scop. South Boston flats (*C. E. Perkins*, July 20, 1882, and Aug. 20, 1882). A fugitive plant, native in middle and southern Europe, the Canary Islands, Afghanistan and India.

SORGHASTRUM.

S. nutans (L.) Nash. Dry sandy soil, frequent throughout.

SORGHUM.

S. HALEPENSE (L.) Pers. South Boston (*C. E. Perkins*, Sept. 1 and 27, 1880); dump, Watertown (*R. Hoffmann*, Sept. 18, 1899).

S. VULGARE Pers. Dumps and made land; Lawrence, Brookline, Boston and South Boston, not collected recently. Probably seeded from corn-brooms.

DIGITARIA.

D. filiformis (L.) Koeler. Dry sterile soil; frequent except in Essex County, where it is reported only from Andover.

D. HUMIFUSA Pers. Dry soil; frequent from Hingham and Quincy northward, probably throughout.

D. SANGUINALIS (L.) Scop. Waste and cultivated ground, a very common weed throughout.

PASPALUM.

P. Muhlenbergii Nash. Fields and pastures, very common throughout.

P. psammophilum Nash. Dry sand, Halifax (*C. H. Knowlton & W. P. Rich*, July 15, 1906); Duxbury (*C. H. Knowlton*, Sept. 10, 1911). See RHODORA xiv. 174, 1912.

PANICUM.

P. Addisonii Nash, "Andover, *Blake* in 1882"; see Hitchcock & Chase, Contrib. U. S. Nat. Herb. xv. 244, 1910.

P. agrostoides Spreng. Low open ground, frequent.

P. Ashei Pearson. Rocky woods, Melrose (*W. P. Rich*, June 28, 1894, July 4, 1894, June 16, 1895).

P. barbulatum Michx. Dry sandy soil; Malden (*R. Frohock*, 1879); Mattapan, Dorchester (*J. R. Churchill*, June 21, 1890); Sherborn (*M. L. Loomis*, no. 1007, June 14, 1912); Hanson (*J. A. Cushman*, no. 2925, June 5, 1908).

P. boreale Nash. Moist soil, occasional in northern half of district, also at Sharon.

P. Boscii Poir. Rocky woods, Horn Pond Hill, Woburn (*A. S. Pease*, no. 11,364, July 8, 1908); Dorchester (*J. R. Churchill*, July 1, 1882); Natick (*C. H. Knowlton*, Sept. 4, 1898).

P. calliphyllum Ashe. Medford (*C. E. Perkins*, Aug. 3, 1881). The type collection near Ithaca, N. Y., and a collection at Painesville, O. are the only others known. See Hitchcock & Chase, Contrib. U. S. Nat. Herb. xv. 178, 1910.

P. capillare L. Gardens, shores and waste land, a very common weed throughout.

P. clandestinum L. Dry or moist soil, often in thickets or along streams, frequent.

P. Clutei Nash. (*P. mattamuskeetense* Ashe of Gray's Manual, 7th ed., 1908; see Hitchcock & Chase, Contrib. U. S. Nat. Herb. xv. 188, 1910). Framingham (*E. C. Smith*, June 21, 1892).

[*P. columbianum* Scribn. In RHODORA iii. 126, 1901, this species is cited from Nantasket Beach, Massachusetts, collected by Dr. Ezra Brainerd, June 11, 1896; but this specimen has been examined by Hitchcock & Chase who pronounce it to be *P. tsugetorum* Nash, the hairy form called by them "*P. lanuginosum siccanum*" in Contrib. U. S. Nat. Herb. xv. 245, 1910. This variety was published by them in RHODORA, viii. 207, 1906.]

P. commutatum Schultes. Dry bank in woods, Wellesley (*W. P. Rich*, June 14, 1899; see Hitchcock & Chase, Contrib. U. S. Nat. Herb. xv. 306, 1910).

P. dichotomiflorum Michx. Wet shores, cultivated and waste land, frequent.

P. dichotomum L. Woods, usually in dry soil, common throughout.

P. heterophyllum Bosc. (*P. columbianum* Scribn; see Hubbard, Rhodora xiv. 171–2, 1912). Dry sandy soil, sometimes in rich open woods; occasional from Holbrook, Canton, Milton, Westwood, Newton, Wellesley and Framingham northeastward.

P. heterophyllum Bosc, var. **thinium** (Hitchc. & Chase) Hubbard (*P. columbianum* Scribn., var. *thinium* Hitchc. & Chase; see Hubbard, Rhodora xiv. 172, 1912). Winchester (*C. E. Perkins*, Sept. 1, 1882); sandy hillside, Manchester (*F. T. Hubbard*, Oct. 1, 1912).

P. huachucae Ashe. Dry soil, eight stations in central part of district.

P. huachucae Ashe, var. **fasciculatum** (Torr.) Hubbard (var. *silvicola* Hitchc. & Chase; see Hubbard, Rhodora, xiv. 171, 1912). In moister soil than the typical form, often in woods; common from North Scituate, Canton and Norwood northward, probably throughout.

P. implicatum Scribn. Dry and moist soil, common.

P. languidum Hitchc. & Chase. North side of Prospect Hill on new road, Waltham (*E. F. Williams*, Oct. 6, 1895). Mr. F. Tracy Hubbard published in Rhodora xiv. 37, 1912, *P. languidum*, no. 205, from West Gloucester, specimens having been submitted to Mrs. Chase at Washington. Since then Mrs. Chase has decided that the plant is *P. tennesseense Ashe.*

P. latifolium L. Sandy and rocky soil, usually in open woods; frequent in northern and central portions, apparently rare southward.

P. Lindheimeri Nash. Dry soil, rare or local; Manchester, South Boston, West Roxbury, Canton Junction, Wellesley, Framingham.

P. linearifolium Scribn. Dry soil, mostly in woods; occasional, especially in central section.

P. lucidum Ashe. Rich woods, rare; Manchester, Melrose, Quincy, Framingham.

P. macrocarpon Torr. (*P. Scribnerianum* Nash; see Hubbard, Rhodora xiv. 184, 1912). Dry sand and gravel; common in most of the district, but not reported from the extreme south.

[*P. mattamuskeetense* Ashe. The plant reported under this name in Rhodora iii. 114, 1901, proves to be *P. commutatum* Schultes according to Mrs. Chase in litt.]

P. meridionale Ashe. Rich open woods; Beverly Farms, one

specimen (*F. T. Hubbard*, no. 475a, Sept. 29, 1912); near Silver Lake, Wilmington (*G. G. Kennedy*, June 11, 1899); Wellesley, no data, specimen in Herb. Wellesley College;[1] top of Blue Hill, Milton (*G. G. Kennedy*, July 10, 1899); woods by Purgatory Swamp, Norwood (*F. F. Forbes*, June 27, 1903).

P. microcarpon Muhl. Blue Hills (*W. H. Manning*, Aug. 11, 1894); "The Pines," Milton (*G. G. Kennedy*, Aug. 23, 1894); Milton, woods near Crossman's (*J. R. Churchill*, July 4, 1910); Milton (*H. H. Bartlett*, no. 844; see Hitchcock & Chase, Contrib. U. S. Nat. Herb. xv. 182, 1910); Blue Hills, West Quincy (*J. R. Churchill*, July 11, 1891); Wellesley (*W. P. Rich*, June 14, 1899).

P. MILIACEUM L. Waste land, occasional.

P. oligosanthes Schultes. Rocky soil, reasonably common, Waverly, Belmont (*F. T. Hubbard*, Oct. 13, 1912). An extension of range northward from New Jersey.

P. oricola Hitchc. & Chase. Sand dunes, Ipswich (*K. M. Wiegand*, June 25, 1908; *F. T. Hubbard*, Oct. 5, 1911; *M. L. Fernald*, Oct. 15, 1911); Scituate (*F. F. Forbes*, Aug. 15, 1909).

P. philadelphicum Bernh. Muddy and sandy pond shores, rare; Foster's and Long Ponds, Andover; Chadwick's Pond, W. Boxford; Johnson's Pond, Groveland; Winter Pond, Winchester.

P. sphaerocarpon Ell. Dry sandy and gravelly woods and fields, frequent.

P. spretum Schultes. Swamps and marshes, common.

P. strictum Pursh. (*P. depauperatum* Muhl.; see Hubbard, RHODORA xiv. 169, 1912). Dry sandy and gravelly soil, common throughout.

P. subvillosum Ashe. Dry soil, Gloucester, Ipswich, Wilmington, Malden, Woburn, Natick.

P. tenesseense Ashe. Woods and fields, usually in coarse soil; Gloucester, Manchester, Wenham, Winchester, Cambridge, Boston, Framingham, Milton, Scituate, Sharon, Stoughton.

P. TEXANUM Buckl. Cotton waste from mills, Malden (*F. S. Collins & C. W. Swan*, Sept. 14–15, 1888). A fugitive weed, native in Texas and northern Mexico.

P. tsugetorum Nash. Dry sandy fields and woods, frequent.

[1] The specimens reported in RHODORA xi. 82, 1909, from Wellesley prove to be *P. tsugetorum;* those reported from Ipswich, in the same notice, prove to be *P. tsugetorum* and *P. oricola.*

P. umbrosum Le Conte. (*P. Ashei* Pearson; see Hubbard, Rhodora xiv. 173, 1912). Dry rocky woods; Manchester, Lynn, Melrose, Malden, West Roxbury, Weston, Blue Hills, West Quincy, Walpole.

P. villosissimum Nash. Parker Street, Boston (*C. W. Swan*, June 19, 1885); Framingham (*E. C. Smith*, June 29, 1898).

P. virgatum L. Meadows and edges of marshes along the coast, reaching inland to Boxford, Concord and Bridgewater.

P. virgatum L., var. **cubense** Griseb. (var. *obtusum* Wood of Gray's Manual, 7th ed., 1908; see Hitchcock & Chase, Contrib. U. S. Nat. Herb. xv. 92, 1910). Occasional near the coast.

P. Werneri Scribn. Dry soil, Winchester, Wellesley, Dover, Natick, Sherborn, Westwood, Walpole, Holbrook, Norwell.

P. xanthophysum Gray. Gravel pit, Lowell Junction, Andover (*A. S. Pease*, Aug. 7, 1903); railway spur, Wellesley (*K. M. Wiegand*, July 24, 1912); Framingham, not uncommon (*E. C. Smith* in Rhodora i. 98, 1899).

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A NORTHERN VARIETY OF ERIGERON RAMOSUS.

M. L. Fernald and K. M. Wiegand.

For several years botanists collecting in the northern United States and Canada have been puzzled by a plant which seemed to be near *Erigeron ramosus*, as known farther south, but which in its sparser and more divergent pubescence often seemed referable to *E. annuus*. In studying the plants of western Newfoundland it was found that there the only *Erigeron* of this group had these transitional characters, and in the absence of *E. annuus* from the island obviously could not be considered a hybrid between that species and *E. ramosus*. A recent study of all available material shows that this tendency of *E. ramosus*, with the foliage greener than in the ordinary plant and with the stem

and leaf-surfaces sparsely hispidulous or nearly glabrous, is the characteristic form of *E. ramosus* in western Newfoundland, the Maritime Provinces and northern New England, where typical *E. ramosus* is apparently very local. This same form is found across northern New York, around the Great Lakes, and in the northwestern states, where it was long ago noted by Gray, who, on account of its pubescence placed it with *E. annuus* of eastern America, with the comment: "also in Oregon, &c., in a form quite intermediate between this [*E. annuus*] and the following [*E. strigosus* Muhl. i. e. *E. ramosus* (Walt.) B S P.]".[1] In its habit and in the entire margin of the upper leaves the plant so strongly resembles *E. ramosus* that, in spite of the more spreading character of the pubescence, it seems better treated as a northern variety of this widely distributed species. In its geographic range it is closely paralleled by a large number of plants occurring in the cooler moist regions of the Canadian zone. South of northern New England the plant is apparently rare in the East, but a few specimens indicate that, like many other Canadian plants, it extends southward through the hill country of western Connecticut.

A specimen in the Gray Herbarium from western New York, bearing the Torrey & Gray label, is marked *E. strigosus* β, and from its nearly glabrous stem and leaves is undoubtedly the plant described by Torrey & Gray as *E. strigosus* β with "stem and leaves nearly glabrous; the latter almost constantly entire, except the lowest."[2] Torrey & Gray, however, cited as a synonym *E. integrifolium* Bigelow,[3] which was described by Bigelow with the stem "smooth....with barely perceptible pubescence"; but, although a fragment of Bigelow's plant preserved in the Gray Herbarium shows his *E. integrifolium* to have a smoothish stem, the leaves are closely cinereous-strigose as in the ordinary form of the species.

Since no name seems to have been previously applied to the northern plant it may be called:—

Erigeron ramosus (Walt.) B S P., var. **septentrionalis**, n. var., caule foliisque tenuiter hispidulis vel fere glabris.—Resembling *E. ramosus* but with the stem and leaves sparingly hispidulous or nearly glabrous, instead of cinereous-strigose.—Newfoundland and eastern Quebec to northern and western New England, northern and western New York, and Michigan; and from Washington to California and

[1] Gray, Synop. Fl. i. pt. 2, 219 (1884).
[2] Torr. & Gray, Fl. ii. 176 (1841).
[3] Bigel. Fl. Bost. ed. 2, 302 (1824).

Idaho. Type specimen in the Gray Herbarium: gravelly thickets along Harry's River, Newfoundland, August 18, 1910, *Fernald & Wiegand*, no. 4137.

Specimens examined:—NEWFOUNDLAND: see above. MAGDALEN ISLANDS: rocky slope of East Cape, Coffin Island, August 17, 1912, *Fernald, Long & St. John*, no. 6170. QUEBEC: dry open soil, Douglastown, August 21 & 22, 1904, *Collins, Fernald & Pease;* dry pasture, Bic, July 18, 1905, *J. R. Churchill;* boggy meadow, Bic, July 20, 1907, *Fernald & Collins*, no. 1189; ledges, west shore of Lake Memphremagog, August 5, 1903 (unusual form with villous base of stem), *J. R. Churchill*. PRINCE EDWARD ISLAND: dry railroad bank, Mt. Stewart, July 30, 1912, *Fernald, Bartram, Long & St. John*, no. 6168; dry sandy open fields, Tignish, August 6, 1912, *Fernald, Long & St. John*, no. 6169. NOVA SCOTIA: Pictou, July 21, 1907, *C. B. Robinson*, no. 532. MAINE: moist clayey slope, upper St. John River at Little Black River Rapids, September 11, 1907, *J. A. Cushman*, no. 2079; dry larch swamp, Presque Isle, July 12, 1902, *Williams, Collins & Fernald;* fields, Orono, September 19, 1889, *Fernald;* gravelly bank, Dover, September 1, 1894, *Fernald;* dry thicket, Sangerville, June 29, 1895, *Fernald;* Gilead, 1897, *Kate Furbish;* Fayette, 1876, *K. Furbish;* South Poland, 1893, 1895, *K. Furbish;* Brunswick, 1890, *K. Furbish*. NEW HAMPSHIRE: Sinclair's Hill, Franconia, September 28, 1896, *Faxon;* open ground, Jaffrey, July 14, 1897, *B. L. Robinson*, no. 214. VERMONT: Willoughby, July 24, 1896, *G. G. Kennedy*. CONNECTICUT: Middlebury, June 28, 1896, *W. M. Shepardson;* dry fields, Greenwich, July 9, 1907, *Cushman & Sanford*, no. 1139. NEW YORK: Axton, July 9, 1899, *Rowlee, Wiegand & Hastings;* western N. Y., *A. Gray*. MICHIGAN: fields and slashings, Turin, Marquette County, August 8, 1901, *Bronson Barlow*. IDAHO: neglected orchards and ditch banks, New Plymouth, June 24, 1910, *J. F. Macbride*, no. 278. WASHINGTON: Cascade Mountains to Fort Colville, 1860, *Lyall;* Pullman, July 10, 1894, *Piper*, no. 1821; Cheney, *Mrs. Susan Tucker*, no. 99. OREGON: Union County, 1878, *Cusick;* wet meadows, John Day's River, July 5, 1897, *Cusick*, no. 1695. CALIFORNIA: Plumas County, 1875, *J. G. Lemmon*, no. 1005.

JUNCUS MONOSTICHUS IN OHIO.

ALMON N. ROOD.

ON Oct. 13th, 1912, while walking across a large pasture field I noticed a strange and, to me, new species of Juncus growing among the somewhat brown and half dried grasses and sedges. A hasty collection of several specimens was made and upon returning home a more careful examination convinced me that the plant was *Juncus monostichus* Bartlett. An examination of records showed that if it was indeed this species my find was east of any reported range so, in order to check any possible error, specimens were sent to Prof. Robinson of the Gray Herbarium and to Prof. Schaffner of the Ohio State University, both of whom confirmed my identification.

This plant has not, so far as I can learn, been reported from Ohio. It appears distinct from any Juncus with which I am acquainted and the plants would at once attract the attention of a botanist because of the peculiar arrangement of the flowers which are erect in a single row on the upper side of the branches of inflorescence. These branches at this time had curled inward at the tips, presenting an almost scorpioid appearance.

This latter characteristic would probably not be evident earlier in the season but a dry summer and several severe frosts had partially turned their color from green to brown and caused the tips of the branches to roll inward.

Though several plants were found in this one spot I did not search the surrounding region to see if it was at all prevalent elsewhere but think the find is rare for this locality. There was nothing to indicate that the plant had been introduced as the station was in a large, natural pasture which had never been plowed and not near any evident source of plant introduction.

Growing with it were an abundance of typical *Juncus tenuis* Willd. and occasional plants of a form of *Juncus marginatus* Rostk. Next season I shall try and make a more thorough examination of the locality with respect to this species.

PHALANX, TRUMBULL CO., OHIO.

MAGNOLIA TRIPETALA IN SPRINGFIELD, MASSACHUSETTS.

George E. Stone.

Some time ago my attention was called to one of our cultivated southern magnolias (*Magnolia tripetala* L.) growing apparently spontaneously in Springfield, Mass. Being interested in the occurrence of this species in a locality so remote from its native habitat and wishing to learn more of its occurrence there, one day last summer I made a trip to the location. Dr. W. H. Chapin, of Springfield, who discovered these trees, was the first to call my attention to them. He had observed them growing in two distinct localities in Springfield and has been familiar with these groups for some years.

One small tree about nine years old is now growing in Edgewood swamp, which is only a few rods from a much travelled highway and near the Boston & Albany railroad. The other station, which I did not visit, is on the edge of a pond about a mile from the swamp and about two miles east of the center of the city, towards Wilbraham. The group located on the pond shore has, I understand, been practically exterminated by the woodsman's axe, although a number of fairly good sized trees formerly grew there. The Edgewood swamp tree is seven or eight feet high and is growing in rather dense shade, surrounded by tall trees and such undergrowth as poison sumach, *Ilex*, *Osmunda cinnamomea* and other ferns. The tree was making good growth and appeared to be perfectly at home. From its habit of growth it would seem easy for this tree to become established in this location.

There are a number of these trees in cultivation in Springfield, and it is presumed that the ripened seeds were gathered by birds and dropped at these two stations. As an ornamental tree *Magnolia tripetala* thrives better in our range than some of our native species, notwithstanding its typical southern habitat.

The factors underlying plant distribution and adaptation are quite complex and difficult of solution; and in these days of soil surveys it would be of some importance to agriculture if we could know more about the subject. It is by no means easy to explain why a tree like *Magnolia tripetala*, which grows so well under our climatic conditions, is not indigenous to this region, or even why *M. glauca*, which is regarded as indigenous here, should be restricted to such a narrow range.

Amherst.

A Panicum unreported in New England.— While collecting this fall on Arlington Heights I noticed an unusual looking Panicum. Field observation led me to believe that though it resembled *P. macrocarpon* Torr. (*P. Scribnerianum* Nash) it was not that species, and more careful study of my specimens, at home, verified my belief. It proved to be *P. oligosanthes* Schultes, a species hitherto unrecorded from New England or north of New Jersey.

P. oligosanthes Schultes closely resembles *P. macrocarpon* Torr., but is distinguishable from it, in the vernal state, by its more pubescent culms, rather taller growth and longer more hirsute spikelets which have a relatively longer, more acute first glume. The harsh puberulence of the lower surface of the blades is also in contrast with the glabrous or appressed pubescent (not the common form) lower surface of the blades of *P. macrocarpon*. In the autumnal state *P. oligosanthes* is usually more heavily branched than *P. macrocarpon* and is often top heavy in consequence, as were the specimens which first called my attention to the difference. Moreover the branches which also occur sparingly from the lower as well as middle and upper nodes are always shorter than the vernal culm which noticeably exceeds them, — whereas in the late state of *P. macrocarpon* the elongated autumnal branches exceed the relatively short vernal culm and panicle. Another rather striking difference is that the autumnal blades of *P. oligosanthes* are noticeably reduced in size, especially the later ones, and are widely spreading,— while the autumnal blades of *P. macrocarpon* are only slightly reduced in size and are strongly ascending. The panicles are even more included than in *P. macrocarpon* and are commonly reduced to a few spikelets.

The most northern specimens of *P. oligosanthes* in the Gray Herbarium are from Norfolk, Va., but Hitchcock and Chase Contr. Nat. Herb. **15**: 285 (1910) report it from Atsion, New Jersey. My specimens are Nos. 497, rocky soil, Waverley, Mass., Oct. 13, 1912 and 498, same locality, Oct. 17, 1912. Specimens of the first number were sent to Washington, D. C., and verified by Mrs. Agnes Chase.

This species seems to be relatively plentiful in some of the rocky fields and along the roadside of the Waverley portion of Arlington Heights and was noted by me in small plots in several different places along about a mile of road. I did not see any plants of *P. macrocarpon*. — F. Tracy Hubbard, Cambridge, Massachusetts.

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OENOTHERA ANGUSTISSIMA, sp. nov.

OENOTHERA ANGUSTISSIMA, sp. nov.

OENOTHERA BIENNIS

OENOTHERA BIENNIS

Rhodora

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SOME PLANTS OF THE SOUTHBURY TRIASSIC AREA.

E. B. Harger.

The small area of Triassic sandstone with its accompanying trap ridges, which lies in the towns of Southbury and Woodbury, Connecticut, has long been of interest to geologists, and full descriptions of it from a geological point of view may be found in publications of the U. S. Geological Survey.

During the past few years the writer has had occasional opportunities for botanizing in parts of this area, and has found it unusually rich in species rare in the state and in New England.

The area underlaid by Triassic rocks is roughly oval in outline and is some six miles in length (north and south) by about three miles in width. It is generally below the level of the surrounding country and is divided into an eastern and a western valley by a group of trap ridges which run a little east of north through the central part. A small river, the Pomperaug, is formed at the northerly end of the valley by the junction of smaller tributaries and flows at first southwestwardly in the western valley but soon turning passes through a break in the central ridge and flows southerly through the eastern valley, then turning westerly sweeps in a broad curve around the end of the central highland and entering the western valley again flows northward as if bent on returning to its source. After about a mile, however, it turns in an acute angle to the southwest and enters the Housatonic river opposite its circuit of the ridge.

Three villages lie in the area,— Woodbury in the western valley at the north, Southbury in the central and southern part of the eastern valley, and South Britain in the southerly part of the western valley. The towns of Southbury and Woodbury divide the area between them,

with perhaps the greater part in Southbury, which includes South Britain.

My explorations have to a large extent been made from South Britain as a base but have included most of the territory to some degree. A locality of special interest is formed at South Britain by the river shores and alluvial meadows extending southerly from the acute angle of the river some half a mile until the river enters the granitic rocks. Here, close to the caving river bank, I collected, three or four years ago, a *Panicum* which at the time was taken for *P. villosissimum* Nash and some specimens were distributed under that name. Later, Mr. C. H. Bissell reported that his specimen from this collection had been determined by Prof. A. S. Hitchcock as *P. pseudo-pubescens* H. & C., but on sending my specimens to Prof. Hitchcock they were named *P. scoparioides* Ashe. I was somewhat puzzled but visited the locality again and found that both the latter species were growing there together, so that my first collection must have been of mixed material.

On the alluvial meadows here we find an abundance of *Tradescantia virginica* L. growing over a considerable area, perhaps a quarter of a mile in either direction from the Panicum station and on both sides of the river. The region was settled very early and this is possibly introduced but it appears to be native and, if so, this is probably the most northeasterly known native station. The river banks and thickets here furnish *Arabis glabra* (L.) Bernh. and an abundance of *Floetkea proserpinacoides* Willd. both of which seem to be rare in the state. In the summer of 1911 as I was passing by a thicket where *Floerkea* made a carpet in the spring, I saw a dodder which appeared to be strange. I was somewhat skeptical at first as our common *Cuscuta Gronovii* Willd. has a way of appearing in strange forms, but this proved to be *Cuscuta obtusiflora* HBK. new to New England and scarcely more than 300 feet from the only known New England station for *Panicum pseudo-pubescens:* while the single New England station for *Phlox pilosa* L. (see Rhodora **1**: 76) is about a mile distant. As far as yet known these meadows yield no more species unique in New England or even in Connecticut, but several rare or interesting forms occur, among them *Carex trichocarpa* Muhl. which has been known from Connecticut only a few years but here as elsewhere grows in masses in the swales, then *Viola scabriuscula* Schwein. and *Claytonia virginica* L. are abundant in their season, while *Antennaria canadensis* Greene and *Monarda fistulosa* L. occur sparingly.

Turning now to the trap ridges which overlook the village of South Britain from the east we find a little pool near the summit bordered by a growth of *Populus heterophylla* L. not known elsewhere within 25 miles; while on the drier rocky slopes *Cypripedium parviflorum* Salisb., *Aristolochia Serpentaria* L., *Parietaria pennsylvanica* Muhl. and *Ranunculus fascicularis* Muhl. grow sparingly. A small amount of *Pellaea atropurpurea* Link. grows here in crevices of sandstone and is also found in Woodbury on trap.

On the second ridge eastward Mr. A. E. Blewitt discovered the showy Cynthia, *Krigia amplexicaulis* Nutt., growing on a rather dry stony roadside remote from dwellings or cultivation.

At the southern end of one of these ridges overlooking the river is the type locality of *Arabis viridis* Harger (Rhodora **13**: 37). This also occurs sparingly near the station for *Populus heterophylla* L. and was collected by Dr. E. H. Eames in Orenaug Park, Woodbury on a trap ridge at the northerly end of the area.

Returning again to the lowland, as we go from South Britain toward Southbury we find the roadside bordered with *Dipsacus sylvestris* L. while a meadow near is yellow with *Galium verum* L. and nearly opposite is found *Physalis virginiana* Mill. Along the parallel road south of the river *Agrimonia parviflora* Ait. and *Linum sulcatum* Riddle, have been found, the latter occasional through the eastern valley into Woodbury. Just at the southern limit of the Triassic is located the station for *Phlox pilosa* L. already mentioned and with it or near by grow *Anemone cylindrica* Gray and *Convolvulus spithamaeus* L. while another dodder, *Cuscuta arvensis* Beyrich, was collected in a field near by.

Passing now into the eastern valley we find staminate *Salix alba* L. var. *vitellina* Koch. along a tributary of the Pomperaug and formerly there was a quantity of *Monarda didyma* L. in a fence-row along the road. A little farther north *Cuphea petiolata* Jacq., *Verbena angustifolia* Michx. and *Aster amethystinus* Nutt. grow in dry soil on one farm and near the northern limit of Southbury one of the "king devil" weeds, *Hieracium pratense* Tausch. (probably), is gaining a good foothold in a dry field. On a roadside near by the writer discovered *Senecio Balsamitae* Muhl. var. *praelongus* Greenm., the first record for this part of the state. This was later collected in Woodbury by Eames and Godfrey.

Passing now into the town of Woodbury we find a small sphagnum

bog at the southerly end of the village which contains a quantity of *Kalmia polifolia* Wang., the most southerly record for the state. Across a sandy ridge from this bog on the banks of the Pomperaug I found in 1884 *Hibiscus Moscheutus* L. The date of this record is of interest as the adjacent country has since been planted with native and exotic showy species and the present-day collector, if he found the rose-mallow there, would be apt to take it for a planted specimen, but in 1884 the place was entirely "unimproved."

Along a road leading westerly from the village of Woodbury and in the adjacent fields are a quantity of *Avena pubescens* Huds. and *Galium Mollugo* L., the former new to the state. Farther to the westward the upper reaches of a pond are covered with *Wollfia columbiana* Karst., here discovered by Eames & Godfrey, and near by along a brook grows *Carex tribuloides* Wahlenb. var. *reducta* Bailey. Other noteworthy species of Woodbury have been mentioned in connection with their occurrence farther south.

Oxford, Connecticut.

SOME NORTH AMERICAN RELATIVES OF POLYGONUM MARITIMUM.

M. L. Fernald.

In studying a glaucous large-fruited *Polygonum* which abounds on the sandy beaches of the Magdalen Islands and on some of the sands of western Newfoundland, Cape Breton and Prince Edward Island, it has been necessary to examine in some detail the plants which have passed in America as *Polygonum maritimum*. One of these, *P. Fowleri* Robinson, is sufficiently distinct in aspect as well as in habitat to need little discussion here, although it is worthy of note that this species of damp saline shores from the Straits of Belle Isle to the mouth of the Kennebec seems nowhere to encroach on the areas occupied by either of the other two plants to be discussed; for, while one of them is known only from the sands of western Newfoundland and the islands of the Gulf of St. Lawrence and the other follows the

sands of the Atlantic from northeastern Massachusetts to Georgia, *P. Fowleri* of somewhat heavier and damper soils has not, so far as the writer can determine, been detected in western Newfoundland, on the Magdalen Islands, nor on Prince Edward Island but occurs on the outer or eastern coast of Newfoundland and follows the mainland shores from Labrador and the lower St. Lawrence around the coast of New Brunswick and the coasts of Nova Scotia, to the islands between the lower Kennebec and Casco Bay — perhaps 120 miles by the coast from the northern limit of the third member of the group.

The plant which has long passed as *Polygonum maritimum* on the coast of the Atlantic United States, the whitish plant of sea-sands from Massachusetts southward, is a prostrate annual which by the earlier students of our flora was taken to be a purely American representative of the European *P. maritimum* L. To be sure, Linnaeus had included the American plant with his frutescent Mediterranean species, *P. maritimum*, saying: "*Habitat* Monspelii, *in* Italia, Virginia. ☿"[1] but by Pursh it was treated, with a very inaccurate statement of its characters, as an American variety, his *P. marinum, β. roseum*, said to be a "small prostrate evergreen [!] plant, with white or rose-coloured flowers."[2] Nuttall, however, better understood the situation when he treated the plant of our Atlantic sands as a new species, *P. glaucum*, and said: "Hab. On the sandy beach of the sea, around Egg-Harbour, New Jersey; possesses much the aspect of *P. aviculare*, but produces flowers which are conspicuous and elegant, and occurs in situations which pronounce it native; not naturalized as *aviculare*, the seed is also remarkably distinct. *A.* [*P.*] *maritimum* of Europe has never yet been found on the American sea-coast."[3] And Torrey also evinced a close knowledge of the plant when, taking up Nuttall's *P. glaucum* in 1824, he said: "It can hardly be *P. maritimum* of *Linnaeus*, a native of the shores of the Mediterranean, for that species is frutescent and evergreen, while our plant appears to be decidedly annual."[4]

Nevertheless, in spite of Linnaeus's statement that his Mediterranean *Polygonum maritimum* was frustescent and the emphasis laid upon this character by Torrey, Nuttall's annual *P. glaucum* was soon

[1] L. Sp. Pl. 361 (1753).
[2] Pursh, Fl. Am. Sept. i. 269 (1814).
[3] Nutt. Gen. i. 255 (1818).
[4] Torr. Fl. N. & M. U. S. i. 401 (1824).

re-merged with *P. maritimum* and has been so denominated by practically every subsequent student of the group, although the duration of the plant has caused considerable embarrassment. Thus Torrey himself, in 1843, placing *P. glaucum* again in *P. maritimum*, said: "Annual (in the Southern States apparently perennial, and even suffrutescent as in the plant of the Mediterranean shores)"; but in a succeeding paragraph he further qualified his statement by adding: "It is not improbable that the southern plant may be only an annual; for I have not seen the root, and ours is hard and woody at the base, particularly late in the season." [1] The first edition of Gray's Manual indicated it as annual, doubtfully perennial; the second, third and fourth editions called it annual but further confused its identity by reducing it to the very different *P. aviculare*, var. *littorale* Link and adding as synonyms the equally different *P. maritimum* Ray (*P. Raii* Bab.) and the even more distinct *P. Roberti* Loisel. In the fifth edition of the Manual *P. glaucum* somewhat cleared itself of these entangling alliances but still passed as *P. maritimum* and was said to have "a hard and somewhat woody and perennial root...at the north apparently only annual"; in the sixth edition, as *P. maritimum*, it is called "*Perennial*, at length woody at base (or sometimes annual)"; and in the seventh edition, as species no. 1, *P. maritimum*, it is indicated with no. 2, *P. Fowleri* (always annual so far as the writer has observed at numerous stations) as an exceptional species of the section *Aviculariа*, which is said to consist of "glabrous annuals, except nos. 1 and 2." Wood, also, passed through a similar psychological (not to say imitative) change in regard to the plant, in the second edition of his Class Book (1847) saying it was annual and treating it as *Polygonum aviculare*, β. *glaucum*, a treatment which also occurs in the so-called "Forty-first Edition" of 1856. In the edition of 1861, however, he swung with the general tide, treated the plant as *P. maritimum* and said that it was perennial. Small, also, in his Monograph of the North American Species of Polygonum [2] and in Britton & Brown's Illustrated Flora and the different editions of Britton's Manual has accepted the traditional statement and says of the plant, as *P. maritimum*: "Perennial or sometimes annual."

The conspicuous feature of these characterizations, it will be seen, is that, when treated as *Polygonum maritimum*, the description of

[1] Torr. Fl. N. Y. ii. 153 (1843).
[2] Small, Mem. Dept. Bot. Columbia Col. i. 100 (1895).

Nuttall's *P. glaucum* has been forced to fit the Linnean definition as a perennial, but usually with apologies for its annual character on our coast. When, however, the plant has stood upon its own merits it has as regularly been described as an annual. In his experience with the plant in the field the writer has never seen any reason to question Torrey's original statement that *P. glaucum* is "decidedly annual," nor do the herbarium specimens available give any evidence that this is not the fact.

When, however, we examine authentic material of *Polygonum maritimum*, the plant of the sands of the Mediterranean, but found locally northward on the Atlantic coast as far as the Channel Islands and possibly England,[1] we find that, although it may sometimes flower as an annual or biennial, it is, as described by Linnaeus, Torrey, and the Mediterranean botanists, ordinarily a suffruticose plant with stout branches 1.5–4 mm. thick at base, and usually closely invested with very conspicuous overlapping white hyaline stipules, which are 1–2 cm. long and have numerous (usually 12) nerves, the longest of which are 8–18 mm. long. The annual American *P. glaucum*, on the other hand, has the tough but scarcely ligneous branches only 1–2 mm. thick, the lower internodes commonly exceeding the stipules, which are only 7–10 mm. long, with the longest nerves only 5–8 mm. in length. In their extremes the measurements of these two plants slightly overlap, but when good fruit is examined it is found that the European *P. maritimum* has achenes 4.5–5 mm. long, with faces 2.5–3.5 mm. broad; while the American *P. glaucum* has the achenes distinctly smaller, 3–4 mm. long, with faces 1.6–2.2 mm. broad. In view of this aggregation of characters there seems, then, no good reason for longer confusing the endemic American *P. glaucum* Nutt. with its cousin of southern Europe, *P. maritimum* L.

The other glaucous large-fruited and petaloid-flowered *Polygonum* of the sands, the plant which abounds on the Magdalen Islands and is found on the neighboring sands of Prince Edward Island, Cape Breton and western Newfoundland, has also had an unfortunate experience in maintaining its own identity. This plant, like *P. glaucum*, is an annual, but it has greener usually less revolute leaves, shorter and therefore less conspicuous stipules, only 4–8 mm. long and with the longest nerves 3–5 mm. in length; and its achenes are

[1] "Very rare and perhaps extinct in England.... In the Channel Islands it is much more plentiful." — Syme, Engl. Bot. viii. 70 (1873).

as large as in the European *P. maritimum*, in well developed plants 4.5–5.3 mm. long, with faces 3–3.5 mm. broad. Its handsome white-rimmed flowers, too, are more obviously herbaceous below than in either *P. glaucum* or *P. maritimum*. This plant from the Gulf of St. Lawrence closely matches *P. Raii* Babington, a species of maritime sands from Scandinavia and Great Britain to northeastern France, and there seems no reason for not so calling it.

But unfortunately the name *Polygonum Raii* (often spelled *Rayi*) has recently been set aside by many European botanists and has been replaced by the name *P. Roberti* Loiseleur; and following this European lead American students have begun to use the name *P. Roberti* instead of *P. Raii*.[1] This understanding of the matter arose, apparently, from the fact that Meisner states in DeCandolle's Prodromus that material sent to him by Loiseleur was a mixture, but that the name properly belonged to *P. Raii*. Loiseleur's species was described from maritime sands of the Mediterranean, and since *P. Raii*, according to Rouy,[2] does not occur south of the shores of the English Channel (la Manche), it is hardly probable that *P. Roberti*, collected by Robert on the sands near Toulon, is identical with the northern plant. Furthermore, Rouy maintains[3] as *P. Roberti* a very distinct plant of the Mediterranean sands, with achenes only 2–3 mm. long. Under these circumstances it is apparently wiser to reinstate the name *P. Raii* for the northern plant to which it was originally applied.

As already pointed out by Dr. Robinson,[4] the plant which for some time passed in America as *Polygonum Raii*, the plant of damp brackish or saline shores from southern Labrador to southern Maine, is an endemic American species, *P. Fowleri*. This species, which occurs also upon our northwestern coast (but apparently not from "New Brunswick to Vancouver Island," as stated by Small[5]) and was described by Meisner from Sitka as *P. littorale*, *β. buxifolium*[6] (as shown by the original material in the DeCandolle herbarium), lacks the glaucous hue of *P. maritimum*, *P. glaucum*, and *P. Raii*, ordinarily having a warm green or purplish tone. It is also quickly distinguished from those three species of the sands by its blunt or round-tipped

[1] See Robinson, Rhodora, iv. 67 (1902); Eames, ibid. xi. 93 (1909); Fernald, ibid. xiii. 138 (1911).

[2] Rouy, Fl. Fr. xii. 110, 111 (1910).

[3] Rouy, l. c.

[4] Robinson, Rhodora, l. c.

[5] Small, Mem. Dept. Bot. Columbia Col. i. 98 (1895).

[6] Meisner in DC. Prodr. xiv. 98 (1856).

usually flat leaves, by the short faintly nerved stipules, by the smaller very herbaceous calyx with oblong (not oval or obovate) narrowly crimson- or pink-margined lobes, and by its olivaceous (not castaneous or blackish) achene. In fact, *P. Fowleri* in its characters and aspect as well as its habitat is quite unlike the three plants with which it has sometimes been confused and has its affinities much more with the boreal *P. islandicum* Meisner, the range of which it overlaps on the Straits of Belle Isle.

Gray Herbarium.

A TERATOLOGICAL SPECIMEN OF CYPRIPEDIUM ACAULE.

John B. May, M. D.

Abnormalities among flower forms are often of great interest to the student of botanical morphology, in that they sometimes furnish a clue or a connecting link to an earlier and now extinct form of the plant. I therefore make these notes of a specimen of *Cypripedium acaule*, found May 26, 1912, growing in the wild garden of Mr. Francis Southwick, at Waban, Mass. The two upper or lateral petals were enlarged, with irregular, wavy edges, part of each petal showing the parallel veining of the typical form, and part presenting the pink coloring, netted veining, and in-curved edges of the third petal or labellum. The relationship between the three petals was shown very plainly, while in the normal blossom the layman usually considers the lateral petals as sepals. The sepals and column were apparently normal.

After photographing and sketching the flower, I rubbed some of its own pollen on the stigma in an attempt at fertilization, with the rather remote possibility of seedlings appearing which would perpetuate the oddity.

Henry Baldwin, in his "Orchids of New England," describes a specimen of *Cypripedium spectabile* found in 1881 near Lake Michi-

gan. "The monstrosity was an almost regular flower growing on the same stem with one of the ordinary form. . . . It had no lip but three regularly formed pure white petals all of the same size and shape. . . . Here, in a genus affording some of the most strikingly irregular flowers in Nature was a flower all but regular." My specimen was not such an interesting or so extreme a case of reversion of form, but it fits in well with the theories of the development of the orchid.

As a sidelight on one of Nature's many methods of preventing the perpetuation of abnormalities, let me describe a specimen of *Arethusa bulbosa* found in Gloucester in late summer, in 1906. Two faded blossoms were growing from a single .root, the only two-flowered specimen I ever found. The scapes were parallel and the same length, and the two flowers faced each other in such a way that the parts were interlaced like the fingers of folded hands and the entrance of insects was effectually prevented. The flowers in fading had stuck together firmly, and the shrivelled ovaries showed plainly that fertilization had not taken place.

Waban, Massachusetts.

SOME NOTEWORTHY VARIETIES OF BIDENS.

M. L. Fernald.

In 1908, the writer recorded[1] the occurrence of the common European *Bidens tripartita* L. as an apparently native plant of swamps at Percé, Gaspé County, Quebec, and at that time called attention to the characters which differentiate it from the American species, *B. frondosa* and *B. connata*, to which it is related. It was, therefore, gratifying, while exploring in August last with Messrs. Bayard Long and Harold St. John on the Magdalen Islands in the Gulf of St. Lawrence, to find, as we had expected to do, *B. tripartita* abundant there, growing either in shallow water at the margins of brackish ponds or in boggy spots near the sea-strand, and later in August to

[1] Fernald, Rhodora, X. 200 (1908).

find it growing abundantly on the marshes near the Hillsborough River in Prince Edward Island.

Upon studying the specimens collected, however, the somewhat striking fact comes out that, though in all the material from the Magdalens and from Gaspé the awns and margins of the achenes are retrorsely barbed as in the European *Bidens tripartita*, the achenes of all the material (thirty or more sheets representing three different collections) from Prince Edward Island have the margins and awns uniformly upwardly barbellate, so that the achenes suggest those of the local *B. frondosa*, var. *anomala* Porter,[1] which is known to the writer only from marshes of the lower Schuylkill and Delaware rivers (in Pennsylvania, New Jersey and Delaware), from the mouth of the Androscoggin in Maine, and from the regions of Halifax, Nova Scotia and of St. Ann's, Cape Breton. This fact, in conjunction with the incident that the three collections of *B. tripartita* gathered without field-study in Prince Edward Island should all show a parallel peculiarity, indicates that this class of varieties is worthy more attention than some students have been inclined to give them.

On account of its upwardly barbed awns, the plant of the Philadelphia region, *Bidens frondosa*, var. *anomala*, was supposed by Asa Gray[2] to be a hybrid of *B. frondosa* and *B.* (or *Coreopsis*) *bidentoides*, a species known only from the region of Philadelphia. But as already pointed out by Wiegand "it does not show the necessary intermediate condition of other characters, and can scarcely be considered as such [a hybrid]."[3] And in a recent letter to the writer Mr. Bayard Long remarks: "All the localities, you see, are along the lower Schuylkill and Delaware waters. . . . There can be no doubt that *anomala* represents, at least in our area, a tide-water form. All the localities definitely point to this. . . . Typical *frondosa* seems very often to grow *with anomala*. . . . But despite this, I imagine you are quite right in believing *anomala* to be a real geographic variety. It certainly does *not* have anything to do with *B. bidentoides*, even in the Delaware system. Furthermore, the occurrence of var. *anomala* in the marshes of northeastern Cape Breton or of the Halifax region, 900 and 750 miles respectively from the locality of *B. bidentoides*, as well as on the lower Androscoggin, all regions which show in their

[1] Porter ex Fernald, Rhodora, v. 91 (1903).
[2] Gray, Syn. Fl. i. pt. 2, 296 (1878).
[3] Wiegand, Bull. Torr. Bot. Cl. xxvi. 407 (1899).

floras a large number of identities[1] with the flora of southern New Jersey and adjacent districts, indicates that it is a positive geographic variety.

It is remarkable that this variation of the awns in *Bidens*, known in America in at least six species (*B. discoidea*,[2] *B. Eatoni*,[3] *B. frondosa*, *B. connata*,[4] and *B. tripartita*, and in *B. aristosa* to be discussed below), should not have been noted in Europe. A somewhat detailed search through European treatments of *Bidens* has failed, at any rate, to reveal any mention of such a variation in Europe. It seems, therefore, that the Prince Edward Island variation of *B. tripartita* should be treated as an endemic variety of this species, which in its typical form is known in America only from the neighboring coasts of the Gaspé Peninsula and of the Magdalen Islands. The plant may be called

Bidens tripartita L., var. **heterodoxa**, n. var., formae typicae habitu statura etc. simile; foliis inferioribus mediisque 3–5-partitis, lobis lanceolatis argute serratis; foliis superioribus subsimplicibus vel simplicibus, eis ramorum simplicibus lanceolatis serratis; achaeniis biaristatis, margine aristisque sursum barbellatis.

Like the typical form in habit, stature, etc.: lower and median leaves 3–5-parted, with lanceolate coarsely serrate lobes; the upper leaves subsimple or simple; those of the branches simple, lanceolate, serrate: achenes 2-awned; their margins and awns upwardly barbellate.— Prince Edward Island: border of salt marsh, Bunbury, August 28, 1912, *Fernald, Long & St. John*, no. 8206 (type in Gray Herb.), also no. 8207 (form with many undivided leaves); fresh spring-fed marsh, Southport, August 28, 1912, no. 8205.

[1] On the lower Androscoggin and confluent lower Kennebec waters such excessively localized plants (most of them known from no other area in Maine) as *Lophotocarpus spongiosus*, *Eleocharis rostellata*, *Scirpus Smithii*, var. *setosus*, *Lilaeopsis lineata*, *Samolus floribundus*, and *Limosella aquatica*, var. *tenuifolia;* near Halifax such species as *Woodwardia virginica* (in Maine unknown east of the lower Penobscot), *Schizaea pusilla* (unknown in New England), *Typha angustifolia* (unknown in Maine from east of the lower Kennebec), *Salicornia mucronata* (unknown in Maine from east of York County) and *Ilex glabra* (unknown in New England from east of the Boston district); in Cape Breton such plants as *Schizaea pusilla*, *Lycopodium inundatum*, var. *Bigelovii* and *Iris prismatica* (unknown between York County, Maine and Cape Breton).

[2] "I have observed downwardly barbed awns in *Coreopsis discoidea*."— Britton, Bull. Torr. Bot. Cl. xx. 280 (1893).

[3] *B. Eatoni*, var. *fallax* Fernald, Rhodora, v. 92 (1903).

[4] " Specimens from Ithaca, N. Y., and Ohio (Selby) as well as one in the National Herbarium collected by Dr. Vasey near Washington have upwardly barbed awns but other characters the same as in the type. At Ithaca these upwardly barbed plants grow over a considerable area almost to the exclusion of the normal form; but many transitional specimens were found in which the awns bore barbs extending in either direction." — Wiegand, Bull. Torr. Bot. Cl. xxvi. 415 (1899). This is *B. connata*, var. *anomala* Farwell, Ann. Rep. Comm. Parks and Boul., Detroit. xi. 91 (1900).

In 1858, J. Q. A. Fritchey sent to Dr. Gray from the neighborhood of St. Louis a plant which in all outward characteristics was *Bidens* (at that time considered a *Coreopsis*) *aristosa* (Michx.) Britton, but differing from typical *Coreopsis aristosa,* which has the awns upwardly barbellate, in having retrorsely barbed awns. Dr. Gray was naturally interested in the anomalous plant and requested more information and material. This was sent by Mr. Fritchey on September 12, 1859, his letter saying: "Today I again examined the flower pronounced by you *Coreopsis aristosa* and which I had called a *Bidens* from the *awns being barbed downwards.* The awns of all achenia that I examined were barbed downwards, none were even spreading. The flowers which I examined grew in the same location that those grew in which I pressed last year and sent you. . . . In this neighborhood the plant is very abundant along the North Missouri Railroad between this [Bridgeton] and St. Louis, frequently for a mile in length and a rod in width. This plant grows so thick that at a short distance even it appears like solid gold." There are three sheets of the Fritchey material preserved in the Gray Herbarium and upon them Dr. Gray marked "*C. aristosa* in *Bidentem* transformata (*C. aristosa* turned to a *Bidens*)!!" and in a discussion of *Coreopsis,* published in 1862, he said: "*Coreopsis* and *Bidens* are separated by a single, artificial, and not wholly constant character. The group of species on which Nuttall grounded his genus *Diodonta* wholly accords with the *Platycarpæa* section of *Bidens,* except that the awns or teeth are antrorsely hispid or naked. Recently we have received, from Mr. Fritchey of Missouri, specimens of *C. aristosa,* Michx., or perhaps of a wild cross between that species and some *Bidens,* with *retrorsely* hispid awns."[1] And in the Synoptical Flora Dr. Gray treated the plant as a hybrid of *Coreopsis aristosa* "with *Bidens frondosa* or others."

Subsequently, however, a considerable amount of material has accumulated, which shows that this variety of *Bidens aristosa* with retrorsely barbed awns is widely distributed, collections coming in from several different sections of Illinois and Missouri. The immediate stimulus which has led the writer to study the plant was the receipt through Mr. John H. Lovell of material sent to him from Illinois for determination with the statement that it is found "in the swamps of Illinois and along the Mississippi River" and is highly esteemed by bee-keepers on account of its great yield of honey. A close study of the seven collections at hand fails to indicate that the

[1] Gray, Proc. Am. Acad. v. 125, 126 (1862).

plant has any admixture of *B. frondosa*, for except in the barbing of the awns it exactly simulates true *B. aristosa;* but so attractive is the suggestion of hybridity as an explanation of anomalous plants that one of the collections from the Mississippi Valley was labeled by its collector "*Coreopsis bidentoides* Nutt. × *Bidens frondosa* L.," a remarkable combination to find in Illinois and Missouri since *Coreopsis* (or *Bidens*) *bidentoides* is known only from the lower Delaware River! The status of the plant will be better indicated if we call it

Bidens aristosa (Michx.) Britton, var. **Fritcheyi**, n. var., formae typicae habitu foliis achaeniis etc. simile; aristis retrorse barbatis. — Like the typical form in habit, leaves, achenes, etc.: awns retrorsely barbed.— Wet prairies and swamps of Illinois and Missouri. Illinois: received through *J. H. Lovell;* Athens, September, 1868, *E. Hall;* Champaign, September 29, 1898, *H. A. Gleason.* Missouri: St. Louis County, September 21, 1858, September 22 and October 3, 1859 (type), *J. Q. A. Fritchey;* Webb City, September 25, 1908, *B. F. Bush*, no. 5175. Adventive in Maine: about wool waste, North Berwick, Sept. 25, 1897, *J. C. Parlin.*

Another variation of *Bidens aristosa* which is anomalous is the plant with awnless achenes, which is found at various stations in Ohio, Tennessee, Missouri and Louisiana, and is adventive in Massachusetts (Soldier's Field, Brighton, *A. S. Pease;* Sharon, *S. F. Poole*) and Connecticut (waste land, South Windham, *C. B. Graves*, no. 259[a]). This is

B. aristosa, var. mutica (Gray) Gattinger, Fl. Tenn. 172 (1901). *Coreopsis aristosa*, var. *mutica* Gray, Syn. Fl. i. pt. 2, 295 (1878).

The combination is here ascribed to Gattinger with hesitation, for according to a strict interpretation of the rules covering the transfer of names, Gattinger did not make the combination, for he ascribed it to Gray, who had called the plant a *Coreopsis*, and gave no bibliographical citation or synonymic reference. Unfortunately botanical literature is too full of such vaguely, hesitantly or unintentionally published names and it is a serious question whether they should be given more nomeclatorial weight than their authors actually intended.[1] By inference only can the combination be ascribed to Gattinger who merely said: "**B. aristosa** (Michx.) Britton. Var. mutica A. Gray"; but by the above complete citation the name is here given a more definite status.

Gray Herbarium.

[1] The writer is glad to note, since this paper went into type, a similar protest by Christensen against this unintelligent or unconscious publication of new combinations.— See Am. Fern Journ. iii, 1, 2 (1913).

PHLOX DIVARICATA IN VERMONT.— It may be interesting to the botanists of New England to know that on June 13, 1912, I found a station for the Blue Phlox, *Phlox divaricata* L., in Sheldon, Vermont. I was driving from Fairfield to Sheldon, intent upon business, when I noticed this blue flower some distance ahead. As I passed it rapidly I thought it *Geranium maculatum* L. but it occurred to me that I did not recall collecting the latter so far North. So I stopped the team and went back, finding to my delight that the plant was something new to me. On reaching Sheldon I secured a Manual and quickly determined it. The station was rather small — though there might be more in the neighborhood. It was in the damp shade of a maple sugar grove, the land somewhat rocky. I understand this is the first station for New England, although the plant has long been known in northern New York and adjacent Canada.— J. G. UNDERWOOD, Hartland, Vermont.

THE EIGHTEENTH ANNUAL WINTER MEETING OF THE VERMONT BOTANICAL CLUB was held at St. Johnsbury, January 31 and February 1, 1913, in conjunction with the Vermont Bird Club, with about the usual attendance. There were eleven botanical papers on the program. The principal ones were "Misapprehensions Regarding Some Northern Violets," by Dr. Ezra Brainerd, of Middlebury, who showed that some of the northern violets are called by wrong names at the present time; "The Franklin Bog," by Dr. George P. Burns, of the University of Vermont, a humorous warning against going too far in calling puzzling things hybrids; "The Botanical Manuals of the United States," by A. K. Peitersen of the University of Vermont, showing the territory covered by each, and "Notes on the Flora of Stratton, Berkshire, Franklin, Newport, Island Pond and Hartland," by Jay G. Underwood of Hartland, a resumé of his season's botanizing. The summer meeting of 1913 will be held in the West River valley, July 1 and 2, which may be extended by those so wishing, by a camping trip to Stratton Mountain.—MRS. NELLIE F. FLYNN, Secretary.

THE JOINT SUMMER MEETING OF THE VERMONT BOTANICAL AND BIRD CLUBS will be held in the West River Valley with headquarters at Townshend Inn, Townshend, Vt., July 1 and 2, 1913. Expeditions

have been planned by the members of the Committee, especially by Mr. L. A. Wheeler of Townshend who has made a special study of the Flora of this Valley, to the local points of interest. Hotel rates, trains and all details will be sent on application to members of this committee.

A supplementary meeting will follow. Members who decide to attend will go on July 3 to the town of Stratton in the wildest part of Southern Vermont. Headquarters will be in the abandoned mill village known as Grout's Mills. From this point explorations will be made of the forests, bogs, etc. of the surrounding country, especially of the wild meadows and bogs which are reported to lie South of Grout's on the Deerfield River, and will be flooded next year by the Somerset Dam. It should be thoroughly understood by all planning to attend this supplementary trip that it is strictly a camping trip. The villages are all abandoned. While there will be a roof over the heads of the party, everything else will need to be taken in. This includes, of course, bedding, food and clothing. All should be of the simplest kind. Everyone who plans to go should be prepared for a strictly camp trip, with all its inconveniences, its fun, and its joy of the woods. The committee expect that a forest ranger will be with the party and will assist in finding trails and in other ways. All the members of the Committee visited this county last summer and a partial list of plants found appears in the current bulletin of the Vermont Botanical Club. Persons interested are invited to correspond with members of the committee who will send detailed circulars.

The Vermont Botanical Club extends a most cordial invitation to all members of the New England Botanical Club to attend both its regular summer meeting and its supplementary meeting.

Jay G. Underwood, Hartland, Vt.
Leston A. Wheeler, Townshend, Vt.
Harold G. Rugg, Hanover, N. H.

Joint Committee on Summer Meeting of the Vermont Botanical and Bird Clubs.

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SYSTEMATIC STUDIES ON OENOTHERA,— III. NEW SPECIES FROM ITHACA, NEW YORK.

HARLEY HARRIS BARTLETT.

IN 1911 Prof. G. F. Atkinson cultivated experimentally several Oenotheras of the *Oe. biennis* alliance found wild by him in the vicinity of Ithaca, New York, in order to carry on a study of the hybridization phenomena exhibited by these plants. At the suggestion of Dr. Heinrich Hasselbring he sent herbarium material and seeds of three strains to the writer so that they might be compared with certain species which had already been cultivated and given provisional names in the writer's garden at Bethesda, Maryland. One of the Ithaca strains represented a species quite distinct from any which had been previously received, and was treated in this article, as first submitted for publication, as a new species, under a name proposed by Prof. Atkinson. What seems to be the same species, however, was named *Oenothera angustissima* by Gates [1] in an article which reached the editor a few days before this one. The name *Oe. angustissima* has therefore been substituted for Prof. Atkinson's but it has not seemed desirable to withdraw the diagnosis, which is directly comparable with the diagnoses of the other species from Ithaca. The other two strains belonged to species already represented in the writer's collection. The one described as *Oenothera nutans* had been cultivated not only in the Bethesda garden but also, by Prof. B. M. Davis, at Philadelphia, from seed collected at Havre de Grace, Maryland. The other, *Oenothera pycnocarpa*, was one of several types which Dr. Hasselbring had recognized as distinct, and had collected

[1] Gates, R. R. A new Oenothera. RHODORA, XV, pp. 45–48. 1913.

for the writer near Flint, Michigan. Because neither the strain from Havre de Grace nor that from Flint has been used in experimental work, it seems best to designate the strains from Ithaca as types of *Oenothera nutans* and *Oenothera pycnocarpa*. Only thus is it possible to insure the unquestionable applicability of the names which will be used shortly by Prof. Atkinson in reporting on his hybrids, since the Ithaca strains may, when grown side by side with those from Maryland and Michigan, show characteristics which one would fail to detect in herbarium specimens. Even in the vicinity of Ithaca there are forms of dubious identity with *Oenothera pycnocarpa* which indicate the propriety of taking every precaution in designating the type of this species. It may therefore be understood that the types of *Oe. nutans* and *Oe. pycnocarpa* described below are specimens collected at Ithaca and preserved in the Cornell University Herbarium. The descriptions have been drawn up from portions of the types in the writer's collection and from notes on the Cornell cultures and specimens kindly supplied by Prof. Atkinson.

Oenothera angustissima Gates. Biennis. Rosula autumnalis compacta depressa viridis, hieme rubescens; foliis planis acutis auguste oblanceolatis 10–19 cm. longis, 2–2.5 cm. latis, utrinque exigue et minutissime puberulis, nervis margineque rubris, lamina plerumque sine maculis rubris, exterioribus longe petiolatis, et, praecipue infra mediam, valde sinuato-dentatis. Planta matura 0.5–1 m. alta, parte inferiore vel simplex vel ramos cauli primario similis sed tertia parte humiliores ferens, superne usque ad inflorescentiam ramis axillaribus vel abbreviatis vel rosulatis praedita. Caulis ruber teres minutissime pilis curvatis acutis verrucosis, pluribus brevissimis, paucis aliquantum longioribus puberulus. Folia sinuato-denticulata utrinque subglabra autumno ignicantia, apice basique acuta, anguste lanceolata, inferiora ca. 13 cm. longa, 17 mm. lata, brevipetiolata, superiora 5 cm. longa, 8 mm. lata, sessilia. Inflorescentia juvenalis propter rubros calycum apices spectabilis, e spicis terminali aliisque lateralibus brevioribus composita. Bracteae persistentes foliorum modo superiorum obscure denticulatae, 3–4 cm. longae, 4–6 mm. latae, floribus 5–6 cm. longis superatae, apice acuminatae, basi valde rubrotinctae, obtusae vel rotundatae. Ovarium 10–12 mm. longum, sub lente pilis erectis apice rotundatis viscido-puberulum. Hypanthium 25–30 mm. longum etiam viscido-puberulum. Calycis segmenta nondum explicata gemmam quadrangulam 20 mm. longam 4 mm. crassam apicibus liberis rubris distantibus infraterminalibus 3–4 mm. longis coronatam formantia, ad basin versus solum exigue viscido-puberula, sed apicem rubrum versus pilis sparsis longioribus curvatis acutis praedita. Petala flava propter

texturam valde membranaceam cito marcescentia, obcordata, 15–18 mm. longa, 12–15 mm. lata, paululo plicata. Stamina stigmata attingentia, 12–14 mm. longa. Fructus ca. 20 mm. longus, infra mediam ca. 4 mm. crassus, sursum angustatus, quadrangulus, minute viscido-puberulus, costis plerumque rubris.— *Atkinson* No. 9, Ithaca, New York.

Oenothera nutans Atkinson & Bartlett sp. nov. Biennis. Rosula autumnalis compacta, depressa, rubro-maculata; foliis valde undulatis, acutis, lanceolatis, 20–30 cm. longis, 5–6 cm. latis, utrinque sparsim pubescentibus, exterioribus ad basin petiolatam versus solum modice sinuato-dentatis, apicem versus distanter denticulatis, fere integerrimis. Planta matura 1–1.5 m. alta, deorsum ramosa, ramis numerosis, collo tumido enatis, cauli primario similibus sed 20–30 cm. brevioribus, sursum usque ad inflorescentiam ramulis brevissimis abortivis axillaribus praedita. Caulis ruber et viridis conspicue sulcatus, deorsum modice pilosus, sursum minute puberulus et pilosus, longioribus pilis basi rubro-tuberculatis. Folia lanceolata distanter denticulata, utrinque pubescentia, praecipue subtus in nervis; inferiora petiolata apice basique acuta 15–24 cm. longa, 3.5–5 cm. lata, mediocria 12 cm. longa, 3.5 cm. lata, superiora, infra inflorescentiam sita, acuminata, ca. 5.5 cm. longa, 1 cm. lata. Inflorescentia caulem primarium terminans e spicis pluribus composita, lateralibus longis patentibus, aliae, ramos inferiores terminantes saepe simplices, axe deorsum rubro, sursum viridi. Bracteae cito caducae, lanceolatae ca. 2 cm. longae 5 mm. latae, textura coloreque calycis segmentis valde similes. Flores mediocres ca. 70 mm. longi cito marcescentes, tum deinde nutantes. Ovarium, ca. 9 mm. longum et hypanthium gracile ca. 38 mm. longum pilis paucissimis longis curvatis acutis instructa, et exigue pilis rectis apice rotundatis viscido-pubescentia. Calycis segmenta nondum explicata gemmam quadrangulam ca. 22 mm. longam, 4 mm. crassam, inferne fere glabram superne sparsim pubescentem formantia, apicibus liberis viridibus inter se appressis terminalibus 4 mm. longis, pilis numerosis patentibus acutis vestitis. Petala obovata retusa vix emarginata, sub-erosa, ca. 22 mm. longa, 19–20 mm. lata. Stamina petalis aequilonga stigmata attingentia. Fructus ca. 23 mm. longus, infra mediam 5 mm. crassus apicem versus angustatus, viridis, absque pilis rubro-tuberculatis, sparsim pilosus et exigue viscido-pubescens, aetate nitidus fere glabratus, valvulorum apicibus truncatis. Semina diametro ca. 1 mm. castanea.— Type, *Atkinson* No. 2, Ithaca, New York.

Oenothera pycnocarpa Atkinson & Bartlett sp. nov. Biennis. Rosula autumnalis compacta, depressa, viridis; foliis oblanceolatis, utrinque pubescentibus, exterioribus 20–35 cm. longis 4–5 cm. latis, longe petiolatis, infra mediam profunde pinnatifidis, planis vel plus minusve undulatis, albo-nervatis. Planta matura 1.5–2 m. alta deorsum ramosa, ramis strictis numerosis collo tumido enatis, caule primario dimidio brevioribus, sursum usque ad inflorescentiam ramulos

brevissimos vel rosulatos ferens. Caulis viridis vel aetate paulum rubro-tinctus, superiore parte fere teres, inferiore parte interdum subangulosus, pilis brevibus arcuatis crispis aliisque multo longioribus patentibus basi rubro- vel viridi-tuberculatis vestitus. Folia utrinque pubescentia, acuminata, petiolata, denticulata, inferiora spatulata 15–24 cm. longa, 3–4 cm. lata, saepe ad basin versus pinnatifida, mediocria anguste lanceolata, 12–18 cm. longa, 22–33 mm. lata, superiora 6–8 cm. longa 10–20 mm. lata. Inflorescentiae plerumque simplices, vel primaria spicis paucis lateralibus strictis quam terminali multo brevioribus instructa. Bracteae virides foliaceae persistentes sessiles ca. 5 cm. longae, 6–7 mm. latae, denticulatae, apicem hypanthii plerumque attingentes, pubescentes. Flores mediocri ca. 72 mm. longi, textura firmiusculi, non cito marcescentes. Ovarium ca. 14 mm. longum dense cum pilis ascendentibus longis acutis aliisque rectis brevibus apice rotundatis viscidis tectum. Hypanthium ca. 38 mm. longum viscido-pubescens etiam pilis longioribus curvatis exornatum. Calycis segmenta nondum explicata gemmam quadrangulam 23–25 mm. longam, 5 mm. crassam, ambabus pilorum speciebus dense vestitam formantia, apicibus liberis viridibus inter se appressis terminalibus 3–5 mm. longis. Petala cuneato-obcordata profunde emarginata firmiuscula plana flava. Fructus 2.5–3.3 cm. longus a bractea persistenti superatus basi 5 mm. crassus apicem versus angustatus, pubescens, valvulorum apicibus truncatis. Semina 1.5 mm. longa.— Type, *Atkinson* No. 1, Ithaca, New York.

The following summary will serve to indicate the characters which distinguish these three species from one another. It will of course prove entirely misleading if any attempt is made to apply it in the identification of Oenotheras from other localities, without checking up other characters included in the foregoing diagnoses. Nevertheless it is presented in the hope that it may be useful to local botanists who would take an interest in the problem of differentiating their local elementary species of Oenothera if they knew the nature of some of the characters which have been found constant in heredity and which should therefore be looked for in the field.

Free tips of the calyx segments infraterminal; therefore widely separated in bud ..... *Oe. angustissima.*
Free tips of the calyx segments terminal; therefore in contact in bud.
Bracts caducous when the flower wilts..... *Oe. nutans.*
Bracts persistent until the capsules ripen..... *Oe. pycnocarpa.*

Oenothera angustissima. Rosette leaves flat, green, not spotted, red-nerved, becoming red in the winter, outer ones sinuate-dentate. Stem red, terete with no red-tuberculate hairs. Leaves almost glabrous, fiery red in autumn. Bracts persistent, red at the base.

Free tips of the calyx segments bright red. Petals of very delicate texture, somewhat plicate, quickly wilting.

Oenothera nutans. Rosette leaves crinkled, red-spotted, with red-dish mid-vein, not becoming uniformly red in the winter, outer ones slightly sinuate-dentate. Stem red and green, channeled, with red-tuberculate hairs. Leaves moderately pubescent on both sides. Bracts yellowish-green or nearly colorless, short, quickly deciduous. Free tips of the calyx segments green. Flower of delicate texture, quickly wilting and then nodding; petals somewhat plicate.

Oenothera pycnocarpa. Rosette leaves flat or only somewhat crinkled, green, white-nerved, outer ones deeply pinnatifid. Stem green, nearly terete, with red-tuberculate hairs. Leaves rather densely pubescent on both sides. Bracts leaf-like, persistent. Free tips of the calyx segments green. Flowers of firm texture, not wilting quickly, and not noticeably nodding when wilted. Petals not plicate.

Oenothera angustissima, is not closely related to the two other species. It has its nearest allies in two undescribed species which are known in Maryland and Virginia and which doubtless have a wider distribution.

Oenothera nutans and *Oenothera pycnocarpa* would be placed by most botanists in *Oenothera biennis.* Both of them differ from that species, as it is interpreted in the last article of this series, in the mode of branching. *Oe. biennis* has either an inflorescence-bearing branch or a flower in every axil. The leaves grade uniformly into the bracts so that the lower flowers are much exceeded in length by the leaf-like bracts which subtend them. *Oe. nutans* and *Oe. pycnocarpa* agree in that the long basal inflorescence-bearing branches are separated from the inflorescence of the primary stem by an interval in which the leaf-axils are occupied by abbreviated, frequently rosette-like, vegetative branches. Prof. Atkinson has in preparation a paper on hybrids of these two species which will include illustrations of the type plants.

Bureau of Plant Industry, Washington, D. C.

FORMS OF OPHIOGLOSSUM VULGATUM IN EASTERN NORTH AMERICA.

Sidney F. Blake.

Several years ago during a month's collecting in southern New Hampshire I discovered a rather large colony of *Ophioglossum vulgatum*, from which when the spikes became ripe over four hundred specimens were collected. The plants, which grew in two adjacent bits of sphagnous meadowland, usually in the open but occasionally on the edges of thickets, show great variation in size, shape, and position of leaf, size of spike, and number of fronds, sufficient to constitute half a dozen "species" if brought back by collectors from as many regions. Usually there is but one frond on a rootstock, but not rarely two are present, either both fertile or one sterile, and equal or unequal in size. The presence of two fronds on a rootstock, which has been emphasized as a more or less distinctive mark of *Ophioglossum arenarium* (= *O. vulgatum* var. *minus* Moore), is shown by specimens in the Gray Herbarium to be of not infrequent occurrence practically throughout the American range of *O. vulgatum*, and is not correlated with any other characters either of size or leaf form. It apparently occurs rather more frequently in *O. Engelmanni* Prantl, but can hardly be considered of any importance in distinguishing species or varieties in this immediate group.

The ordinary leaf form in this series seems to be oblong, obtuse or rounded at tip, broadest about the middle and only slightly narrowed at the ends, with the base somewhat decurrent on the stem. An average specimen measures 5 by 1.5 cm., with extremes of 7 by 2 to 3.8 by 1 cm. The sterile segment is situated almost always at or above the middle of the hypergean axis, but occasionally at a considerable distance below it, a feature upon which stress has also been laid in descriptions of *O. arenarium*, but which frequently occurs in some individuals of a colony of otherwise normal *O. vulgatum*. This common oblong leaf grades on the one hand into a form with shorter and broader ovate leaf, more conspicuously contracted at the base, and on the other connects with a larger form having oblong or ovate-oblong sterile segment as much as 96 mm. in length. Some broader-leaved intermediates lead to plants with oval leaf more than half as

broad as long, in an extreme case 45 by 27 mm. All these forms, although dissimiliar enough in their extremes, intergrade so gradually and completely that their recognition even as formae does not seem practicable, but the following plant, though it also inosculates with the other forms, is so distinct and generally recognizable as to deserve a name.

OPHIOGLOSSUM VULGATUM L. f. **pseudopodum**, n. forma, folio oblongo obtuso basin versus petioliforme angustato. Sterile segment oblong, obtuse, 69–122 mm. long, 9–26 mm. wide, situated at or below middle of axis, tapering into a conspicuous petiole-like base one-fourth to two-thirds the length of rest of leaf. Specimens examined: MAINE: Bridgton, Cumberland Co., Aug. 1905, *M. H. Grant;* VERMONT: Ferrisburg, 19 June 1881, *Faxon*; NEW HAMPSHIRE: sphagnous meadow, Sharon, Hillsboro Co., 2 Aug. 1909, *Blake* (TYPE SHEET no. 682 in my herb.); other specimens collected at various dates; CONNECTICUT: Manchester, 1899, *A. W. Driggs;* MICHIGAN: low dump ground, Aug. 1888, *Farwell* 584; ARIZONA: Huachuca Mts., Sept. 1882, *Lemmon.*

The following plant, lately described by Clute as a variety of *O. vulgatum*, should be reduced to formal rank as a mere ecological development, which the plant above described certainly is not. Through the kindness of Mr. W. A. Poyser, its discoverer, I possess a fertile specimen, which has a sterile segment with lamina 5 cm. long and 1.5 cm. wide on an attenuate base 12.5 cm. long.

O. VULGATUM f. **lanceolatum** (Clute), n. comb. *O. vulgatum* var. *lanceolatum* Clute, Fern Bull. xix. 72 (1911). Sterile segment with a very long linear base, as above described, due to growth among clumps of sedge. Specimen examined: PENNSYLVANIA: between hummocks in Pratts Swamp, Lima, Delaware Co., 3 July 1908, *W. A. Poyser.*

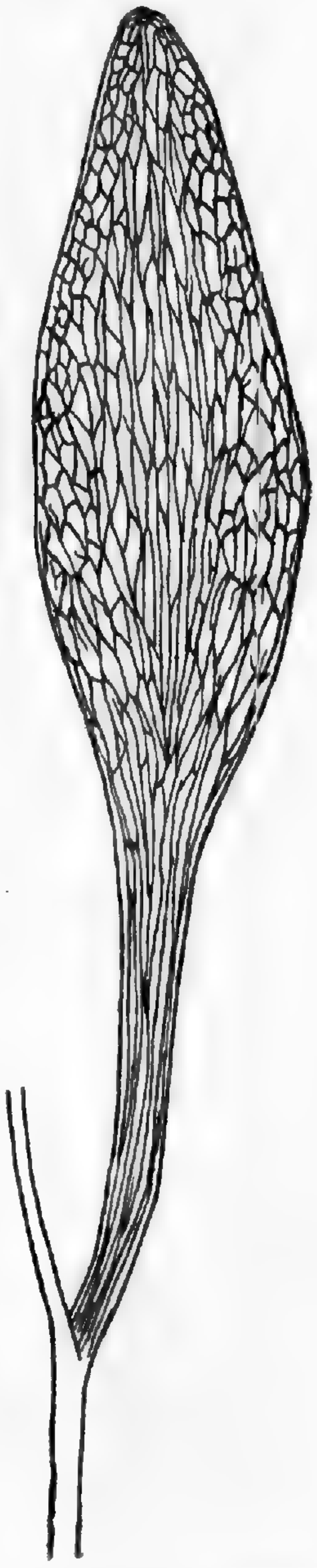

Fig. 1. O. vulgatum f. pseudopodum. Leaf from type.

The plant described from New Jersey some years ago as *Ophioglossum arenarium* E. G. Britton seems, as already noted by Clute, to be merely a starved form of *O. vulgatum,* with narrowly lanceolate leaf situated below the middle of

the axis, and as a forma should be known as O. VULGATUM f. ARENARIUM (E. G. Britton) Clute, Our Ferns in their Haunts, 316 (1901). *O. arenarium* E. G. Britton, Bull. Torr. Club, xxiv. 555, pl. (1897.) *O. vulgatum* var. *minus* Moore, Ferns Gt. Brit. and Ireland, t. 51B3 (1857). *O. vulgatum* var. *microstichum* Moore, Octavo Nat. Pr. Brit. Ferns, ii. 336 (1859). *O. microstichum* Acharius (1809), fide Moore l. c. *O. Grayi* Beck, Bot. N. and Mid. St. 458 (1833). It is represented from North America in the Gray Herbarium only from New York and New Jersey.

STOUGHTON, MASSACHUSETTS.

received June 27 1913

NOTES ON THE ALGAE OF GEORGIAN BAY.

A. B. KLUGH, M. A.

DURING the latter part of August and the first three weeks of September, 1912, I was engaged in an investigation of the Algae of Georgian Bay, Ontario. The work was done in connection with the Biological Station, Go-Home Bay, Muskoka.

From August 17 to 19 was spent at the Station. On August 20th I started on a trip round Georgian Bay in company with Mr. A. D. Robertson in a motor-boat. We carried a tent and camp outfit, and spent from one to four days at the following points:— Waubaushene; Shawanaga, Parry Sound District; French River, Nipissing District; Killarney, Algoma District; Big Burnt Island; Wekwemikongsing Manitoulin; Rattlesnake Harbour, Fitzwilliam Island; Tobermory; MacGregor's Harbour, Bruce Peninsula; and Collingwood. From these points short runs were made each day for collecting.

It will be noticed that the number of species of Chlorophyceae reported is small; this being due to the lateness of the season as most of the Chlorophyceae are vernal plants, and even if they have not completely disappeared by midsummer they are only in a vegetative condition and not recognizable with certainty. The genera *Spirogyra*, *Zygnema*, and *Oedogonium* were present in many collections but none were in fruit.

Cyanophyceae.

Chroococcus turgidus, Naegeli. Among stems of plants in a dried up marsh on the shore of Georgian Bay at Collingwood, Sept. 19.

Gloeocapsa fusco-lutea, Kuetzing. On rocks in Georgian Bay near Rattlesnake Harbour, Fitzwilliam Island, Sept. 8. Sheaths mostly brownish but some reddish, in color. This is the first Canadian record.

Gloeocapsa rupestris, Kuetzing. In a pool in flat limestone rock on the shore at Tobermory, Sept. 9.

Gloeocapsa ambigua, Naegeli. On rocks near Rattlesnake Harbour, Sept. 8. In pool in limestone rock at Tobermory, Sept. 9. This species has not been previously recorded from Canada.

Aphanothece saxicola, Naegeli. On rocks in Georgian Bay near Rattlesnake Harbour, Sept. 8.

Microcystis marginata, Kuetzing. Shawanaga River, Parry Sound, Aug. 26.

Coelosphaerium kuetzingianum, Naegeli. In plankton, Müller's Bay, Go-Home Bay, Aug. 17.

Merismopedium glaucum, Naegeli. In the French River, Aug. 31.

Oscillatoria tenuis, Agardh. In a small stream into the Shawanaga River, Aug. 27. On dead twigs in a little lake off the Shawanaga River, Aug. 27.

Lyngbya aestuarii, Liebmann. In the North River at Waubaushene, Aug. 24.

Lyngbya aerugineo-caerulea, Gomont. Along the banks of the North River at Waubaushene, Aug. 24. This is the first Canadian record for this species.

Nostoc verrucosum, Vaucher. Shore of the Severn River, Muskoka, Aug. 23.

Nostoc commune, Vaucher. Among stems of plants in a dried up marsh on the shore of Georgian Bay at Collingwood, Sept. 19. Recorded previously in Canada only from Davis Strait.

Nostoc pruniforme, Agardh. Shore of the Severn River, Aug. 23. Not previously recorded from Canada.

Anabaena circinalis, Rabenhorst. Plankton, Go-Home Bay, Aug. 17. This is the first Canadian record for this species.

Anabaena catenula, Bornet & Flahault. On dead twigs in a little lake off the Shawanaga River, Aug. 27.

Anabaena sphaerica, Bornet & Flahault. On leaves of *Nymphaea advena* in lake off Shawanaga River, Aug. 27. This species has not been previously recorded from Canada, or from the Eastern or Middle States.

Cylindrospermum minutum, Wood. Marsh, Killarney, Sept. 4. This is the first Canadian record for this species.

Cylindrospermum muscicola, Kuetzing. On leaves of *Nymphaea advena* in a lake off the Shawanaga River, Aug. 27. Not previously recorded from Canada.

Scytonema myochrous, Agardh. On gneiss rocks at water's edge on Station Island, Go-Home Bay, Aug. 17. In pool in flat limestone rock on the shore at Tobermory, Sept. 9.

Tolypothrix tenuis, Kuetzing. On dead twigs in lake off the Shawanaga River, Aug. 27. Floating at the shore of Georgian Bay, Waubaushene, Aug. 24.

Tolypothrix penicillata, Thuret. Forming a coating of little dark brown tufts on gneiss rocks at the water's edge on Station Island, Go-Home Bay, Aug. 19. Occurring as little brownish-black tufts on limestone rocks just beneath the water near Rattlesnake Harbour, Fitzwilliam Island, Sept. 8. Not before recorded from Canada.

Tolypothrix distorta, Kuetzing. Forming a close brownish hairy coating on gneiss rocks at the water's edge on an island near Collin's Inlet, Algoma District, Sept. 3. This is the first Canadian record.

Calothrix adscendens, Bornet & Flahault. On dead shells of *Unio complanatus* in Georgian Bay at Waubaushene, Aug. 21. Not previously recorded from Canada.

Calothrix parietina, Thuret. On limestone rocks in Georgian Bay near Rattlesnake Harbour, Sept. 8.

Rivularia laurentiana, sp. nov. Coloniis ad 5 mm. diam., globosis, subviridibus, pleurumque solitariis, solidis, firmis sed non calce incrustatis. Filamentis ad 750 μ longis, 5–8 μ diam., densis. Trichomatibus 4–7 μ diam., sensim in setas achroas attenuatis. Vaginis spissis et aequis, 1 μ. crassis. Cellulis 2–10 μ longis. Heterocystis 10–12 μ diam., globosis aut ovatis minore extremitate deorsum versa. Gonidiis semper absentibus.

Colonies up to 5 mm. in diameter, spherical, light green, usually solitary, solid, firm but not incrusted with calcium carbonate. Filaments up to 750 μ in length, 5–8 μ in diameter, crowded. Trichomes 4–7 μ in diameter, tapering to a colorless hair. Sheaths close and even, 1 μ thick. Cells 2–10 μ in length. Heterocysts 10–12 μ in diameter, spherical or ovoid with the small end downwards. Gonidia never present.

Common on aquatic plants. On *Vallisneria spiralis, Potamogeton heterophyllus* and *Elodea canadensis* at Waubaushene. On submerged leaves of *Eleocharis acicularis* in the Severn River, Muskoka. On *Potamogeton perfoliatus* at Shawanaga, Parry Sound. On *Myriophyllum spicatum* in the French River, Nipissing District. I have found this *Rivularia* before in lakes and streams in the Laurentian region and as it seems characteristic of this region I have named it as above.

Chlorophyceae.

Pandorina morum, Bory. Pool, Shawanaga River, Aug. 27.

Rhaphidium falcatum, Cooke. Pool, Shawanaga River, Aug. 27.

Rhaphidium falcatum aciculare, Hansgirg. Pool, Shawanaga River, Aug. 27.

Nephrocytium agardhianum, Naegeli. Floating at shore, Waubaushene, Aug. 24.

Tetraedron regulare, Kuetzing. Plankton, Waubaushene, Aug. 24.

Scenedesmus bijuga, Wittrock. Plankton, Waubaushene, Aug. 24. French River, Aug. 31.

Scenedesmus obliquus, Kuetzing. Pool, Shawanaga River, Aug. 27.

Scenedesmus quadricauda, Brébisson. Among other Algae on leaf of *Nymphaea advena* in lake off the Shawanaga River, Aug. 27. Waubaushene, Aug. 21. French River, Aug. 31. Fishing Island Cove, Manitoulin, Sept. 7.

Coelastrum microporum, Naegeli. Plankton, near Collin's Inlet, Sept. 3.

Pediastrum boryanum, Meneghini. Plankton, Müllers Bay, Go-Home Bay, Aug. 17. Plankton, Waubaushene, Aug. 24. Fishing Island Cove, Manitoulin, Sept. 7.

Pediastrum tetras, Ralfs. Pool, Shawanaga River, Aug. 27. Marsh, Killarney, Sept. 4.

Ulothrix zonata, Kuetzing, On limestone rocks near Rattlesnake Harbour, Sept. 8. On limestone rocks, Bear's Rump Island, near Tobermory, Sept. 9.

Chaetosphaeridium globosum, Klebahn. On other Algae on leaf of *Nymphaea advena* in lake off Shawanaga River, Aug. 27.

Chaetophora elegans, Agardh. On dead shells of *Unio complanatus* at Waubaushene, Aug. 21.

Chaetophora incrassata, Hazen. Shore of Severn River, Aug. 21.

Gloiococcus mucosus, A. Braun. Shawanaga River, Aug. 27. Fishing Island Cove, Manitoulin, Sept. 7. Stream into Georgian Bay, Collingwood, Sept. 19.

Coleochaete orbicularis, Pringsheim. On leaves of *Potamogeton lucens* in the French River, Aug. 31.

Coleochaete irregularis, Pringsheim. On leaves of *Nymphaea advena* in lake off Shawanaga River, Aug. 27. This is the first record for this species for Canada.

Cladophora fracta, Kuetzing. Fishing Island Cove, Manitoulin, Sept. 7.

QUEEN'S UNIVERSITY, Kingston, Ontario.

A NORTHEASTERN VARIETY OF CAREX DEWEYANA.

M. L. FERNALD.

Carex Deweyana Schwein. is one of the most characteristic sedges in open woods and thickets from the Straits of Belle Isle to British Columbia and south in the Canadian zone, so-called, into the northern States. The species is ordinarily an easy one to distinguish at sight on account of the long interval which separates the remote long-bracted lowest spike from the approximate upper ones. This internode of the rhachis between the lowest spike and the lowermost of the upper ones varies in length from 1 to 3 cm.; and the remote terminal cluster of 2 to 6 spikes usually nods in such a way as to suggest the inflorescence of an overgrown *C. trisperma*.

In the Gaspé Peninsula of Quebec, however, *Carex Deweyana* departs in its inflorescence from the typical plant above described and, as found along the Grand Cascapedia, Grand and Ste. Anne des Monts Rivers, has the spikes all approximate or overlapping, the lowermost subtended by a short or nearly obsolete bract. In luxuriant plants the spikes are often 12 mm. long, so that with its overlapping long spikes and often shortened bract the plant very closely simulates the closer-headed form of the western *C. Bolanderi* Olney, a species with which the writer was at first inclined to place it. Subsequent study, however, shows that in its nerveless perigynia and

smooth scales (somewhat inconstant characters relied upon to separate *C. Deweyana* from *C. Bolanderi*) the Gaspé plant belongs with *C. Deweyana*. In the large mass of specimens of this species examined occasional tendencies toward the Gaspé extreme are found but in all these cases the tendency to crowded spikes is confined to one or two culms on an otherwise typical plant of *C. Deweyana*. As a pronounced variation the Gaspé plant seems to be confined to that limited geographic area. It may be designated:—

CAREX DEWEYANA Schwein., var. **collectanea**, n. var., spicis contiguis.— QUEBEC: alluvial woods, Grand Cascapedia River, July 12–15, 1905, *Williams, Collins & Fernald*, TYPE in Gray Herb.; woods, banks of Grand River, June 30–July 3, 1905, *Fernald*; woods at 600 m. altitude, Macoun's Ravine, north slope of Mt. Albert, August 8–15, 1905, *Collins & Fernald*.

GRAY HERBARIUM.

AN ADDITIONAL NOTE ON NANTUCKET LICHENS.

R. HEBER HOWE, JR.

MR. Eugene P. Bicknell has kindly sent me another small collection of lichens collected on Nantucket Island, Massachusetts (see RHODORA **14**: 88–90. 1912) adding the following species:

Group: *Radiatae* Hue.

Family: *Usneaceae.*

Ramalina farinacea (L.) Ach., on "red cedars" at Coatue, July 13, 1912.

Teloschistes flavicans (Sw.) Norm., on "red cedars" at Coatue, July 13, 1912.

Group: *Stratosi-Radiatae* Hue.

Family: *Cladoniaceae.*

Cladonia cristatella Tuck., "on ground," Gibbs' Swamp, July 6, 1912.

" *squamosa* (Scop.) Hoffm., Tom Never's Swamp, July 2, 1912.

Cladonia uncialis (L.) Web., "on ground," Tom Never's Swamp, July 2, 1912.

Cladonia verticillata Hoffm. var. *cervicornis* (Ach.) Flk., "on ground," Gibbs' Swamp, July 6, 1912.

Group: *Stratosae* Hue.

Family: *Parmeliaceae.*

Parmelia saxatilis (L.) Ach. var. *sulcata* (Tayl.) Nyl., on "red cedars," at Coatue, July 13, 1912, and "on boulder," Altar Rock Hill, July 6, 1912.

Family: *Lecanoraceae.*

Lecanora subfusca (L.) Ach. (intermediate toward var. *distans* Ach.), on "red cedars," at Coatue, July 13, 1912. Kindly determined by Dr. H. E. Hasse.

The Cladonias were kindly determined by Prof. Bruce Fink.

Thoreau Museum, Concord, Massachusetts.

Extended Ranges of some Connecticut Plants.— In a former note (Rhodora, **13**: 68) I reported *Carex umbellata* Schkuhr var. *brevirostris* Boott from Franklin, a town of eastern Connecticut, twenty miles north from Long Island Sound. I have since examined the central part of the town with considerable care, in order to learn to what extent this variety, having perigynia with short broad beaks, here replaces the more slender beaked species. Franklin is traversed by several ranges of hills, whose broad flat tops, rising to an average altitude of 150 meters, are free from glacial deposits and covered with soil derived from underlying soft micaceous rocks. The slopes of the hills have a similar soil, but in the valleys the surface is mostly gravel. My examination was restricted to the central range of hills and the broad central valley. On the hills, *brevirostris* can be found in every field. It is abundant where conditions favor, and often fairly carpets the ground. In starved soil the plant is small and inconspicuous, but in more fertile spots it grows larger and the leaves are often 30 cm. long. A favorite location is where flat rocks are overlaid by a few inches of dark soil, rich in humus, and it is in such situations, that the most luxuriant tufts are to be found. The plant is less common in the low lands, but it is present on most of the gravel knolls and

ridges and sometimes forms extensive colonies. As a rule it is smaller here and does not fruit so freely, but I have seen beds on the gravel that were loaded with fruit. Both on the hills and in the valley search was made for specimens with slender beaked perigynia. While there is naturally considerable variation in individual plants, I do not feel sure that any of the material collected can properly be classed as a good example of the species, and I conclude that *Carex umbellata* Schkuhr is at least rare in the region examined, although the variety *brevirostris* Boott is so common.

In this connection certain field characters seem worthy of mention. Even when quite ripe and ready to fall, the perigynia have a broadly truncate base, and rarely give any indication of the strongly stipitate base so characteristic of herbarium specimens, and which develops also in the Franklin specimens after drying in the press. Except for a narrow green midrib the scales are essentially white, and this color makes the fruiting spikes contrast prettily with the green of the leaves. There is also a marked tendency toward white in the perigynia, and at some stations the entire body up to the beak is white.

Carex umbellata Schkuhr var. *brevirostris* Boott occurs on the trap ridges about New Haven, and is here associated with the species. Mr. A. E. Blewitt has reported it from the trap ridges of Cheshire, fifteen miles north of New Haven, and it occurs in the towns west of New Haven, the indications being that it is more generally distributed through Southern Connecticut than has been supposed to be the case.

A couple of winters ago I noticed in my herbarium some specimens of *Thalictrum* from Franklin, which had an odd look. Plants collected the next spring and sent to the Gray Herbarium proved to be *Thalictrum dasycarpum* Fisch. & Lall. This is a considerable extension of range, Gray's Manual giving New Jersey as the northern limit of the species in the East.

Festuca rubra (L.) var. *subvillosa* Mert. & Koch is an occasional grass on dry hillsides in Franklin. In 1912, in consequence of "labor troubles" a considerable portion of the lawn remained uncut till midsummer, when I learned to my surprise that the above variety is practically the only grass on this section of the lawn. It is an ideal lawn grass. It forms a soft dense carpet of green, which has not faded perceptibly during the prolonged drouths of recent summers.

Bidens laevis (L.) BSP., hitherto unreported from eastern Connecticut, occurs in Franklin. Its golden yellow flowers are conspicuous,

in late September, in the low wet meadows of the central valley. Specimens of this plant from Franklin have been verified at the Gray Herbarium.— R. W. WOODWARD, New Haven, Connecticut.

A NEW COLOR GUIDE.[1]— A new color guide by Dr. Robert Ridgway, the well known ornithologist, is practically an entirely revised and much enlarged edition of his earlier nomenclature of colors (1886) with 17 plates and 186 colors as against 53 plates and 1115 colors in the present work. The color work was done by A. Hoen & Co., of Baltimore and is much more uniform in different copies than in the earlier edition, which was hand stenciled from several mixings of the same color; while in the present work each color for the whole edition of 5000 copies was prepared from one lot of color and uniformly coated at one time. While the present work does not contain quite as many colors as are included in the more bulky French work by Rene Oberthur, the gradation between colors is more uniform, and the colors are on dull instead of glossy-surfaced paper as in that work, which gives a slightly different, but more natural color effect, and no metallic color effects are included. The proportion of darker broken colors is greater, which will appeal especially to the ornithologist and mammalogist, although the work is designed to be equally useful to botanists, florists, artists, dyers, merchants, and chemists who require a standard color scheme. The colors have evidently been standardized to a degree of accuracy not hitherto attained in any color chart. The colors are one-half by one inch, arranged on a heavy gray paper in three vertical columns of 7 colors each. The plates are divided into 6 series. In plates I–XII the middle row of horizontal colors represents the 36 colors and hues most readily distinguished in the spectrum, although it is said to be possible to distinguish 1000. Above these colors each succeeding horizontal row of colors is the spectrum color mixed with 9.5; 22.5; and 45 per cent of white. Below they are mixed with 45; 70.5 and 87.5 per cent of black. Plates XIII–XXVI represent the colors in plates I–XII dulled by 32 per cent of neutral gray; plates XXXII–XXXVIII are dulled by 58 per cent of neutral gray; plates XXXIX–XLIV are dulled by 77 per cent of neutral gray; plates XLV–L are dulled by 90 per cent of neutral gray; and plates LI–LIII are dulled by 95.5 per cent of neutral gray. If the color to be matched is darker than in the first series of plates turn to the same position in the succeeding 5 series of plates until one is found that is dark enough to match. This is readily done by referring to the numbers at the head of the vertical columns and to the letters at the left of the horizontal rows. In numbering and lettering the rows of

[1] Color Standards and Color Nomenclature. By Robert Ridgway, [3447 Oakwood Terrace, N. W.], Washington. Published by the author 1913. Pp. 1–44; pls. I–LIII. $8.00.

colors every other number and letter has been omitted so that colors that do not exactly match any in the present work, but are intermediate can be designated by a symbol. For example, in plate I the vertical columns are 1, 3, and 5; the tints b, d, and f; and the shades i, k, and m. All the colors are named as well as symbolized, but if a given color comes between Hermosa Pink (1 f) and Eosine Pink (1 d) it could be designated 1 e. In this manner about 2385 additional colors or a total of 3500 can be designated. Undoubtedly exception will be taken to some of the names, but in this the personal equation plays such a large part that decisions must be rather arbitrarily rendered. The primary colors have been standardized by Dr. P. G. Nutting of the U. S. Bureau of Standards.

It was originally expected that six months would suffice for the preparation of the colors, but unforeseen difficulties in reproduction have extended this period to about three years.

A list of color synonyms as shown by the immense list of trade samples that must have accumulated would have formed an exceedingly interesting and valuable addition to the work.

A table of percentages of color, together with an explanation of the amount of white, black, or neutral gray used as above, will give an approximately ready clue to the reproduction of any color in the guide, the only uncertain factor being the possible lack of standardized primary colors to begin with.

Definitions of the principal color terms, such as color, shade, tint, hue, tone, etc., which are used almost interchangeably by many people, will repay careful study by those not familiar with their exact use.

A slight error on page 12, due to a misunderstanding, should be corrected. Mr. F. A. Walpole had no connection with the color project of the American Mycological Society, the preparation of which was delegated to the late Dr. L. M. Underwood, Dr. W. A. Murrill, and the writer. Mr. Walpole died before the committee was appointed, and the project was abandoned after two years' work by the committee in favor of Doctor Ridgway's work, which had not previously come to their notice.— P. L. Ricker, Washington, D. C.

A Flora of the Connecticut Valley in Massachusetts.— The region centering about Amherst, Massachusetts, has furnished a number of the scholarly "local floras" of New England, beginning with Edward Hitchcock's *Catalogue* in 1817 and including the lists of Tuckerman & Frost and of Cobb. The last of these was published in 1887 and it is natural that many alterations in the knowledge of the flora of the region should have been noted in the intervening period. For this reason the revised *List,* by Professor George E. Stone,[1] with

[1] A List of Plants growing without Cultivation in Franklin, Hampshire, and Hampden Counties, Massachusetts. By George E. Stone, Professor of Botany at the Massachusetts Agricultural College. Amherst, Mass. 1913. pp. vii + 72.

its boundaries extended to include all of Franklin, Hampshire and Hampden Counties, will interest many students of our flora. The present list "contains in all 1190 native and 303 naturalized and adventive species, a total of 1493"; but of this number several, upon critical inspection, must obviously be omitted: such plants as *Lycopodium sabinaefolium* and *L. complanatum*, boreal plants which extend southward only into northern New England and which were not stricken from the list when their Massachusetts representatives, *L. tristachyum* and *L. complanatum*, var. *flabelliforme*, were inserted; *Glyceria fluitans* whose place in Massachusetts is taken by *G. septentrionalis* and *G. borealis; Carex adusta*, known in New England only from Hancock County, Maine, but here entered upon the basis of Tuckerman's specimens which, as represented in various herbaria, are typical *C. foenea; Epipactis decipiens*, known in New England only in northernmost Maine but often confused (without apparent reason) with our Massachusetts *E. tesselata;* and *Vitis cordifolia*, a plant unknown as far northeast as New England but formerly (and apparently still by some people) confused with our common and distinct *V. vulpina*.

The opportunity for further additions to the list for the Connecticut Valley counties and the value of the field work now being actively prosecuted by the New England Botanical Club are clearly indicated by the fact that collections brought back to the Club Herbarium, chiefly by those who took part in the Greenfield field-day in 1912, contain forty species which are not mentioned in Professor Stone's *List: Equisetum pratense, Scirpus Peckii, Carex Crawfordii, C. cephaloidea, C. communis, Juncus brachycephalus, Spiranthes Romanzoffiana, Oxalis filipes, Teucrium Botrys, Antennaria occidentalis, A. Brainerdii, A. petaloidea, Xanthium canadense, Bidens vulgata*, etc.; while many local species, listed by Stone from a single station each, were collected at what now appear to be unrecorded stations: *Cryptogramma Stelleri* at Montague and Gill; *Poa alsodes* at Greenfield and Amherst; *Alnus mollis* at Montague and Shelburne; *Dentaria maxima* at Northfield, Gill and Coleraine; *Waldsteinia fragarioides* at Greenfield; *Prunus cuneata* at Montague; etc. From these facts it is clear that our knowledge of the flora of the Connecticut Valley counties is far from complete; and to those who are situated to explore that diversified region, Professor Stone's new *List* will be welcome as a convenient basis for further detailed notes.— M. L. F.

Scirpus Peckii in Connecticut.— While spending my vacation at my brother's home in Barkhamsted and during my time not spent "farming it" I was studying and collecting the flora in that vicinity as I have done on many previous occasions. In an old and wettish meadow, at an elevation of 1025 feet, where an abundance of *Scirpus*

atrocinctus grew, I noticed a few small clumps of a *Scirpus* which, while resembling it, was taller and more erect, with upright spikes and long slender spikelets. The *S. atrocinctus* that grew all about was ripe and falling to pieces, while this sedge was just passing out of blossom. The following day, July 13, 1912, I was collecting in a similar wet meadow about a half mile west of there in the town of Winchester at an elevation of 900 feet, where I came across a small stand of this same *Scirpus*. The nearly related *S. atrocinctus* was also abundant in this meadow with its var. *brachypodus* and with many variations between the typical form and the variety. I identified this *Scirpus* as *S. Peckii* and Mr. C. A. Weatherby, who kindly compared it with specimens at the Gray Herbarium, confirmed my identification. The species is new to Connecticut. This rare sedge has been found in Berkshire Co., Massachusetts, since the publication of the New Gray's Manual, thus greatly increasing its southern range.— ARTHUR E. BLEWITT, Waterbury, Connecticut.

A SUMMER COURSE ON THE FLOWERING PLANTS is being planned in connection with the Summer School of Harvard University. It will be given from July 1 to August 12 in the new George Robert White Laboratories of Systematic Botany, connected with the Gray Herbarium, at the Botanic Garden. The course is to be conducted by Prof. Fernald and will be devoted to the classification and distribution of the Flowering Plants, with special reference to the Flora of New England and the Maritime Provinces. It will consist of lectures, laboratory work, and excursions. Five times a week; lectures at 9, laboratory exercises 10–1. Excursions one afternoon and one whole day each week. The fee for the course is $30. For further information apply to PROF. M. L. FERNALD, Gray Herbarium, Cambridge, Mass.

TWO RECORDS OF PANICUM CALLIPHYLLUM ASHE.— Mr. F. T. Hubbard has lately identified as this rare species my no. 4465, collected at Lakeville, Massachusetts, 25 August 1912, on a sand bank sloping down from dry woods. The only previous collection of the plant known from New England is that made by C. E. Perkins at Medford, Mass., 3 August 1881, recorded by Hitchcock and Chase in

their monograph. It has been found also in New York (the type locality) and Ohio, and has recently been collected at Galt, Ontario, by Mr. W. Herriot, to whom I am indebted for information regarding his find, with permission to record it. Mr. Herriot writes me that he discovered a large clump, growing in company with *Panicum latifolium*, *P. linearifolium*, and *P. xanthophysum*, in land now covered with dry open woods but formerly thickly forested, chiefly with white pine, on 20 July, 1910, since which date he has not met with the species elsewhere.—SIDNEY F. BLAKE, Stoughton, Massachusetts.

CYPERUS GRAYII IN RHODE ISLAND.—While walking along the beach at Westerly, on September 9, 1912, I saw *Cyperus Grayii* in several places and made collections at one of them. This station is of interest, since the report of the species in Rhode Island given in the preliminary list of New England *Cyperaceae* (RHODORA, **10**:135) rests upon a printed record and not upon herbarium specimens actually seen. Specimens from Westerly will be deposited in the Gray Herbarium.—R. W. WOODWARD, New Haven, Connecticut.

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NOTES ON THE FLORA OF MARYLAND AND VIRGINIA,—I.

Ivar Tidestrom.

In a booklet[1] on the Coniferae of Maryland and Virginia, the writer presented a review of the species growing in Maryland and Virginia. A fairly complete synonymy was there given so as to enable any one who might be interested in the history of our Coniferae to trace their record in literature to the earliest sources. In the last five years a good deal has been added by several workers to our knowledge of the distribution of the species. This information is summarized in these notes.

In regard to the genus Pinus which occupies fully as important a place as Quercus in our flora there is much to be added and — corrected. The several distinct floral regions of our area have each some particular pine, which along with certain oaks is characteristic of the landscape, as for instance, *Pinus virginiana* in the western part of the coastal plain of Maryland, or *Pinus Taeda* on the Eastern Shore. It is often true that whatever pine inhabits a region constitutes the most characteristic element in the scenery.

Pinus virginiana Mill. The range of this species is given in the most recent book covering our region[2] "from Long Island to South Carolina, Alabama and Southern Indiana. I have observed the species throughout Maryland with the exception of Garrett County in the western extremity of the state. My observations in western Maryland extend only to a point two or three miles west of Cumberland where I found the species common on slopes. In Virginia my

[1] Elysium Marianum **1**: pt. 2, 1908.
[2] Gray's Manual ed. 7, p. 64.

westernmost record is Clifton Forge [Tm. no. 36] where I observed it at the base of the mountain and to some extent on the slopes, while *Pinus pungens* crowned the ridges. Some miles westward at Covington, I noticed no *Pinus virginiana*, but found *Pinus Strobus* [Tm. 3153] scattered, *Pinus rigida* [Tm. 3154], and *Pinus pungens* [Tm. 3158] frequent. On the Eastern Shore, *Pinus virginiana* is frequent and sometimes abundant. I have observed it associated with *Pinus Taeda* near Cape Charles and in many localities northward. The densest stands, however, are not found on the Eastern Shore but in the western portion of the coastal plain and in the Piedmont region. It was first recorded by Plukenet in 1696 under the name *Pinus virginiana binis brevioribus & crassioribus setis* etc., and also by Clayton.[1] In the stamping ground of that enthusiastic pioneer — at Gloucester Court House and adjacent region — I have found the scrub pine frequent, even forming forests here and there.

PINUS ECHINATA Mill. appears to be a rare tree in our region. I have collected specimens of it from a tree (introduced?) in the park of the U. S. Soldier's Home, Washington, D. C., and in St. Mary's County, Md., between Leonardtown and Millstone [Tm. 5113]. In the latter region it was mixed with the prevalent *Pinus virginiana*. There is a single tree in a field one mile west of Warrenton, Virginia, from which I collected specimens this spring [Tm. 6239].

PINUS PUNGENS Lamb. This interesting little pine was first discovered by Michaux on Massanutten Mountain in Virginia. I had never seen the tree growing wild until August 2, 1907, when I botanized at Clifton Forge. At this place I found it scattered among several species of oaks, particularly *Quercus alba* and *Quercus prinus monticola*. Since that time I have found the tree in several localities — at Pen-Mar on Mount Quirark [Tm. 5889] at an elevation of 630 m.; on Sugar Loaf Mountain, Maryland, at an elevation of 360 m. At the latter place there is a number of trees on the very rocky and steep slopes besides those crowning the summit. The tree is also present at Thoroughfare Gap, Virginia. There are a few trees in Rock Creek Park, Washington, D. C., and also some along the rocky bluffs of the Potomac River, about 15 miles above Washington. The tree is preeminently an inhabitant of the high ridges and plateaux — hence its name Table Mountain Pine.

[1] Gronovius [and Linnaeus] Flora Virginica, p. 190, 1743.

PINUS TAEDA L. This stately tree is an inhabitant of the coastal plain. It forms forests in the southeastern quarter of our region, particularly about Norfolk and Cape Charles, Va., and on the opposite mainland. As one descends the Potomac River towards its mouth this weird pine attracts attention on account of its loftiness. Where it forms forests, with the ocean for a background, the tall, straight trunks, devoid of branches to within a few feet of the top, give the impression of countless pillars supporting an uninterrupted roof of branches.

My own observations as to the distribution of the species are as follows: At Franklin, Va., it is one of the characteristic trees on higher ground beyond the river area, which is inhabited by *Taxodium distichum*, *Quercus nigra*, *Quercus lyrata*, and species of Alnus, Betula, and Nyssa. It also forms more or less broken forests eastward towards the ocean. At Petersburg, Va., it is also the characteristic pine on the higher ground, while the area immediately adjoining the Appomattox River is inhabited by Liquidambar, *Quercus nigra*, and other species usually associated with these. Proceeding northward to Fredericksburg we find the tree losing itself, so to speak, among the oaks, hickories, and scrub-pines.

Going northeastward from this point towards the Potomac River and crossing into Maryland, we meet with the tree in Charles County mixed with the scrub pine and shrubs. In June, 1911, I traversed Charles County from a point near the mouth of Nanjemoy Creek northward into Prince George's County to Washington, observing the tree occasionally. After passing Pisgah, Charles County, however, I did not observe a single tree of *Pinus Taeda*. It may occur north of that point but if so it must be rare and out of its range. The solitary trees which occur here and there in northern Charles County, as for example, at Marshall Hall, are lost sight of before one reaches the Prince George's County line. In August, 1911, I explored the region lying between Leonardtown and Millstone, at the mouth of the Patuxent River. In this region I found the scrub pine to be the characteristic conifer, although *Pinus Taeda* was quite frequent. At the mouth of the Patuxent River *Pinus Taeda* is common. North of this point about 30 miles — at Chesapeake Beach, in Calvert County, I have observed scattered individuals, but I have not seen the tree inland from this point — at least not west of the Patuxent River. My own observations, therefore, lead me to believe that

Pinus Taeda does not exist except as a planted tree in Prince George's County, although accredited to this County by Professor Chrysler.[1] It is possible that *Pinus rigida* may have been taken for *Pinus Taeda* in this instance. The former is common in Prince George's County, while the latter has never been observed wild there, as far as I know, by any of the local botanists of Washington who are perhaps more familiar with the situation than botanists from a distance.[2] *Pinus Taeda* can always be distinguished from *Pinus rigida* as the cones in the former are fully twice as long as those of the latter, not to mention any of the leaf-characters. On the Eastern Shore of Chesapeake Bay I have noticed *Pinus Taeda* at Claiborne, Easton, Wye Mills, Queen Anne, Denton, Md., and at Lewes, Delaware, and throughout Accomac and Northampton Counties, Va. In those places it forms forests or is scattered among deciduous trees and *Pinus virginiana*.

PINUS RIGIDA Mill. This pine is a northern tree[3]: It disappears from the coastal plain in Virginia. In the mountains I have observed it in a number of places; at Cumberland, Md., it is common; at Covington, Va., it is mixed with *Pinus pungens* and sparingly with *Pinus Strobus*. It is frequently found mixed with *Pinus virginiana* in the Piedmont region and on the coastal plain. It sometimes forms forests or smaller colonies as at Lewes, Delaware, where I have seen it and *Pinus Taeda* in almost equal numbers. I have no knowledge of its occurrence south of this place except further inland at higher altitudes towards the fall line.

PINUS STROBUS L. This picturesque pine is frequent throughout the western counties of Maryland and Virginia. I have observed it at Pen-Mar [Tm. 5875], at Covington, Va. [Tm. 3157], and elsewhere. Mr. H. H. Bartlett has found it at Rockville, Md., and Mr. H. S. Barber near the Potomac River in Virginia some ten miles upstream from Washington, D. C.

PINUS SEROTINA Michx. This tree has been observed by Mr. R. M. Harper[4] between Portsmouth and Suffolk, Va. It is an inhabitant of sandy swamps in the coastal plain and ranges from Virginia to

[1] Plant Life of Maryland, p. 155.

[2] Much argument ecological falls of its own weight when the entities considered are not known to the observers.

[3] It was known in Europe under the name "the Three-leaved Virginian Pine Tree" as early as 1768 or earlier.

[4] Torreya **3**: 122, 1903.

Florida.[1] Mr. Harper reports it also from the sand hills of North Carolina. I have seen no specimens from Virginia.

PINUS PALUSTRIS Mill. is another very rare tree in our region. It has been reported from the Dismal Swamp, but I have not seen any specimens of it from that place. Mr. Harper (l. c.) reports it common on the coastal plain of North Carolina, "especially on the sandhills."

PICEA. Too little botanizing has been done in our mountains to give us any adequate notion of the distribution of our spruces. The same is true of our firs and the tamarack. The latter was not known from Maryland at the time I prepared the booklet on the Conifers.

TSUGA CANADENSIS L. The hemlock is frequent throughout the mountains of Maryland and Virginia. I have observed it in many places: in West Virginia it is quite common. Solitary trees are to be found along the Potomac River within 15 miles of Washington. So fas as I know we have only one published record of this tree from the coastal plain: it is mentioned in the Plant Life of Maryland by Mr. Shreve,[2] who records it from Watts Creek, Caroline County, some three miles south of Denton. While on a botanical trip to the Eastern Shore, September 23, 1912, Mr. Stevens of Queen Anne, Md., took me to a colony of what the inhabitants called the "yew-pine," some three or four miles south of that village, along the Tuckahoe River. I was astonished to find a large number of *Tsuga canadensis* lining both banks of the river. There was a considerable mixture of species, for many of the swamp species, as Nyssa, Liquidambar, and Quercus, were represented. The largest hemlocks were 3 dm. in diameter. There were also a large number of saplings, and Mr. Stevens estimated the number of hemlocks at 3000. The presence of a great number of robust saplings leads us to the belief that these trees are native and not by some agency or other introduced.

Owing to lack of facilities for crossing we examined only the right bank of the river, so we have little knowledge of the conditions on the other bank, which, however, appeared still more favorable to the hemlock. The vernacular name is of some significance and leads us to believe that it could not have been applied to our tree except by a people who were familiar with the yew. So we must draw the conclusion that the first colonists gave it the name yew pine. Being familiar with the European tree and finding our tree with "yew-leaves" dif-

[1] Small, Fl. S. E. U. S. 28, 1903.
[2] Plant Life of Maryland, p. 122.

ferent from it they applied the name "yew-pine" to it. It should be noted also that the people of the Eastern Shore are not possessed with that restive spirit which characterizes those of other sections and that traditions have remained intact in a higher degree here than elsewhere. Besides the scant means of communication of earlier days, the natural barrier — Chesapeake Bay, and the great distance to other localities for the species — would naturally prevent the people from learning the common name which the tree bears throughout New England and the Middle States.

TAXODIUM DISTICHUM L. The weird Bald Cypress is frequent in swamps in Eastern Maryland and southward. I have observed it along Pocomoke River where it is the prevalent tree and also along Blackwater River at Franklin, Va. Bartram has eulogized it in his Travels (p. 88) and a few lines of his may not be amiss: "its majestic stature is surprising; and on approaching it, we are struck with a kind of awe, at beholding the stateliness of the trunk, lifting its cumbrous top toward the skies; and casting a wide shade upon the ground, as a dark intervening cloud, which, for a time excludes the rays of the sun." I have seen them in all their magnificence in Florida.

WASHINGTON, D. C.

IS VIOLA ARENARIA DC. INDIGENOUS TO NORTH AMERICA?

EZRA BRAINERD.

(Plate 104.)

EUROPEAN students of *Viola* have recently reduced *V. arenaria* DC. (1805) to varietal rank, as differing from the older *V. rupestris* Schmidt (1791) only in being "densely short-hairy or downy."[1] This requires a corresponding change in the name of the American species, that has been generally passing as *V. arenaria* since the publication of the Illustrated Flora in 1897. But before doing this, it seems a fitting time to review critically the claim that the plants of

[1] Reichlich kurzhaarig oder pflaumig,— W. Becker, Flora Bayerns.

the two hemispheres are of the same species. Through the kindness of Dr. Millspaugh, of the Field Museum, Chicago, I have had the loan for several months of 45 excellent specimens of the European *V. arenaria*, and of 577 additional specimens of allied European species of the *canina* group. The opportunity thus afforded for a careful comparison has convinced me beyond a doubt that our so-called *V. arenaria* is specifically different from the Old World *V. arenaria* DC. Without going into a detailed discussion of the points of difference, I would present them concisely in the following table: — (See plate 104.)

V. RUPESTRIS var. ARENARIA (DC.) Beck.	AMERICAN ALLY
LEAVES: roundish, not much longer than wide, rarely over 2 cm. long;	broadly ovate, bluntly pointed, usually 2–5 cm. long.
STIPULES: ovate to oblong, with acute close-set deltoid teeth;	linear to lanceolate, with scattered setulose teeth mostly near the base.
FLOWERS: much overtopping the leaves;	slightly overtopping the leaves.
BRACTS of peduncles usually on a level with the flower;	usually much below the flowers.
PETALS: broadly obovate, 4–6 mm. wide;	narrowly obovate, commonly 3–4 mm. wide.
SPUR: 3–4 mm. long, straight, blunt;	5–7 mm. long, often curved upward or hooked.
CAPSULE: pubescent;	glabrous.

It should be noted that occasional specimens from the Old World labeled "*V. arenaria*" are not typical, but rather hybrids of this with allied species of the same group. Six such hybrids are listed in W. Becker's VIOLAE EUROPAEAE; some of them closely simulate the American plant.

The task, then, is before us to determine what name, if not *V. arenaria* nor *V. rupestris*, rightfully belongs to our native species. We note, first, that though the plant is not infrequent along the whole northern border of the eastern United States and adjacent Canada, its occurrence in this tract was not recognized until within the last twenty-five years. Dr. Gray, indeed, had once before him a specimen collected by Dr. Engelmann in loose sands on the shore of Lake Superior; but he considered it "a summer form" of *V. canina* var.

Muhlenbergii, that "imitates the European *V. arenaria*." In the Gray Manual the plant is first recognized in 1890, by Dr. Watson, under the name *V. canina* var. *puberula*, "sandy or stony shores and islands of Lakes Huron and Superior." Six years later, in the Synoptical Flora, the range of this variety is extended across the continent, from Maine to Washington and Oregon.

This wide stretch of range is not uncommon among our northern plants, and a thorough study of the abundant material in five of our largest herbaria,[1] affords emphatic confirmation of Dr. Robinson's statement in the Synoptical Flora. The specimens vary considerably in size, in the amount of pubescence, and in the presence of flowers with hooked spurs; but not more so in the western plants than in the eastern.

Now, the plant of the Pacific coast is evidently what Sir J. E. Smith published in 1817 as *Viola adunca*.[2] But Dr. Gray conceived Smith's species to be "nearly glabrous," and subsequent authors have simply echoed his statement[3]; but the author of the species says the leaves are "downy," and emphasizes this character as chiefly distinguishing his species from *V. canina*. I quote Smith's description in full, that the reader may see for himself how well it applies to the eastern plant under discussion: —

"63. VIOLA ADUNCA. Hooked Violet.— Stems simple, ascending. Leaves ovate, somewhat heart-shaped, obtuse, crenate, downy, dotted. Stipulas loosely fringed. Flower-stalks longer than the leaves. Nectary hooked.— Brought by Mr. Menzies from the west coast of North America. This species has the size and habit of *V. canina;* and their *stipulas*, *flower-stalks*, and *bracteas* are similar. The *calyx-leaves* too are extended, in like manner, at the base. The whole of the herbage is minutely speckled, as in our last species,[4] as well as in *canina*. But the plant is more or less downy, and clearly distinguished by the strongly recurved form of the *spur*, which if straight would be as long as the *lip*. The two lateral petals are downy at the base. Perhaps this species is more akin to *canina* than to any other, and ought to stand near it; at least if the *rubella*[5] and *maculata* have no elongation [auricles] at the base of their *calyx*."

[1] I am under especial obligation to Prof. Trelease, recent Director of the Missouri Botanical Garden, for the loan of 126 sheets of this species.

[2] Rees' Encyclopedia vol 38; no. 63 under article on *Viola*.

[3] "Herbage glabrous or nearly so," Piper in Flora of Washington; "glabrous or nearly so," Nelson in New Manual of Rocky Mt. Botany; in key, unqualifiedly "Leaves glabrous."

[4] No. 62. *V. maculata* Cavan., from the Falkland Islands.

[5] No. 61. *V. rubella* Cavan., native of Chili, South America.

'Downy,' though here used three times, is infrequent as a botanical term; but it is good Saxon English for a soft pubescence more pronounced than puberulence; conversely, Webster defines 'puberulent' as "very minutely downy." In the *canina* group there is but one species "from the west coast of North America," that is either downy or puberulent; and if so, we can hardly do otherwise than regard it as the *V. adunca* of Smith, and the *V. canina* var. *puberula* of the Synoptical Flora.

At the same time it should be said that forms of *V. adunca* occur on both sides of the continent that are "glabrous or nearly so." This fact, however, does not embarrass the situation; for there is not a single pubescent species of *Viola* in the western United States that does not furnish forms nearly or quite glabrous. We may question the need of giving a special name to every glabrous form of a pubescent violet, or to every white-flowered form of a purple violet; but in the case of *V. adunca* it will save confusion thus to recognize the occasional loss of this prominent character of the type,— marking a distinction just the reverse of that now made between *V. rupestris* Schmidt and its var. *arenaria* (DC.) Beck.[1] I would therefore propose:—

VIOLA ADUNCA var. **glabra**, var. nov. Planta foliis, stipulis, caulibusque glabris; aliter typo similis, ad quem transit,— Leaves, stipules, and stems glabrous; otherwise as in the type, into which it passes.— Eastern specimens seen are: QUEBEC:— gravelly beach, Carlton, Bonaventure Co., *Collins & Fernald* 111, July 19, 1905. PRINCE EDWARD ISLAND:— *L. W. Watson*, 1904 (live plants, still in cultivation at Middlebury, Vt.). NEW BRUNSWICK:— sand plain, Miscou Island, *W. F. Ganong*, August 15, 1905; Grand Menan Island, *J. Vroom*, May 9, 1880. ONTARIO:— Drommond's Island, Niagara, *Macoun*, May 13, 1901. MICHIGAN:— Isle Royale, *W. S. Cooper*, Aug. 20, 1909. N. DAKOTA:— Peninsula of Lake Ibsen, Benson Co., *Dr. J. Lunell*, May 10, 1907.

Some further comments may be permitted, in order to clear up other misapprehensions regarding *V. adunca* and its allies.

The hooked spur that suggested the specific name, though doubtless seen in all the specimens before the author of the species, is far from being a constant character, and occurs occasionally in such allied

[1] The following observation of Wilhelm Becker applies equally well to the allied American species, if we omit the word "only":— "*V. rupestris* varies only as respects pubescence, which is ± evident or quite lacking. The completely glabrous form occurs, sometimes, exceptionally; but sometimes it is the exclusive form of a whole region. * * The two are connected by transitional forms." Translated from VIOLAE EUROPAEAE, p. 48.

species as *V. rostrata* and *V. conspersa*. Sir William J. Hooker observes [1] that "the greater number [of spurs in *V. adunca*] are straight, thick and very obtuse," though they are generally uncinate "in the state of bud." The spurs of these species are unusually long, and apparently are doubled up in aestivation, and when the flower expands often do not quite straighten out. The spur not infrequently displays other aberrant forms,— tapering to a more or less acute point, or bearing one or more small protuberances on the upper side. Several pseudo-species have been founded on these trivial malformations: *V. oxyceras, V. odontophora, V. unguiculata, V. drepanophora, V. mamillata, V. uncinulata.* Dr. Watson, with more reason, would distinguish all the forms with straight blunt spurs as var. *longipes* (Nutt. pro sp.). But both kinds of spur, straight and hooked, are at times to be seen on the same plant! Nuttall's *V. longipes* is by others taken to designate the glabrous forms; but his description reads "glabrous or slightly pubescent"; and one of the two plants collected and labeled by himself as his type (or at least marked with an asterisk, his way of writing 'n. sp.') shows marked puberulence. Should not the name be allowed to pass into the 'limbo of synonymy'?

The dotted, or minutely speckled, herbage ascribed by Sir J. E. Smith to *V. adunca* is not a proper character, but rather a condition not found in the living plant, but in specimens poorly dried, or later exposed to heat and moisture. It is the effect of fermentation induced by enzymes.[2] It may be observed on old specimens of many species of *Viola* that are but remotely related to each other. Its presence, however, has suggested several specific names, such as *V. punctata* Schwein., *V. conspersa* Reichenb., *V. maculata* Cavan. Hooker, confirming Smith's account of dotted leaves in *V. adunca*, says that all his own specimens, and these from very remote localities, are "so thickly covered with distinct brown dots as to give a dusky hue to the foliage, and to bring the species near to some of the South American kinds, which present that appearance in a remarkable degree." Dr. Gray, among the characters separating *V. striata* and *V. canina* from his *V. Howellii*, says the leaves of the former are "apt to be brown-dotted in age," those of the latter are "dotless." [3] But

[1] Flora Bor.-Am. i. 79. 1830.

[2] I am indebted to Prof. Burns of the University of Vermont for a microscopic investigation of this phenomenon.

[3] Synop. Fl. N. Am. I. pt. 1. 204 & 205.

Dr. Gray had before him only fresh and well-dried specimens from Howell and Suksdorf. As a matter of fact, good specimens of *V. Howellii*, markedly punctate with minute dots, are to be seen in the herbaria both at St. Louis and at New York; [1] in the latter herbarium is also an older specimen,[2] marked in pencil by Dr. Gray as "large *V. canina*."

The acaulescent appearance that *V. adunca* sometimes assumes at vernal flowering has been a cause of further confusion. The American caulescent species that bear violet-colored flowers all belong to the group 'ROSULANTES,' marked by bearing in spring at the crown of the rootstock a cluster of leaves. From the axils of these the stems later appear, and often petaliferous flowers on long scape-like peduncles, especially if the growth of the stems is retarded. These undeveloped forms are easily mistaken for stemless species. Even Dr. Gray, thus misled, has in the Synoptical Flora placed *V. Langsdorfii* (a stemmed violet of the Northern Pacific coast, allied to *V. adunca* and the Eurasian *V. mirabilis*) in the section of species "strictly acaulescent." Dr. Greene has published as a species (*V. filipes*) a seemingly acaulescent form of *V. adunca*. (Pitt. iv. 289.) On the other hand, Howell and others have distributed *V. nephrophylla*, a truly stemless species as *V. Howellii*, supposing it the form with undeveloped stems.—In Garcke's German Flora, at the end of his treatment of the stemless violets, there is a sign-board, warning every one not to locate there forms of *V. mirabilis* that are stemless at first flowering.[3] We may need to have a like caution inserted in our American manuals.

MIDDLEBURY, VERMONT.

EXPLANATION OF PLATE 104.

1. *Viola adunca* J. E. Smith, (*E. Brainerd*, Bristol, Vt., May 26, 1912), × $\frac{8}{9}$. A. stipule × 2; B. immature capsule × 3.
2. *Viola rupestris* Schmidt var. *arenaria* (DC.) Beck.; after Schlechtendal revised by Hallier, fig. 1273. × $\frac{8}{9}$. C. stipule × 2; D. capsule × 2; both after Reichenbach, Pl. crit. lxxii.

[1] Pt. Reyes, Marin Co., Cal., July, 1903, *A. D. E. Elmer;* labeled "*V. cuneata*."
[2] Swamps at Noyo, Mendocino Co., Cal. Bolander, coll. 1867.
[3] Man hüte sich, die zuerst blühenden, stengellosen Pflanzen von *V. mirabilis* hieher zu rechnen."

NOTES ON NEW OR RARE VIOLETS OF NORTHEASTERN AMERICA.

EZRA BRAINERD.

I have had the privilege of examining the violets collected by Prof. Fernald the past season in Prince Edward Island and the Magdalen Islands, and also those collected the two previous years in Newfoundland. They conform for the most part to the forms found in eastern Quebec and in the mountainous regions of northern New England. In Newfoundland, *V. labradorica* seems to take the place of *V. conspersa*. The only white violets are *V. renifolia* var. *Brainerdii*, *V. pallens* (often with the petioles of summer leaves quite hirtellous), *V. incognita*, and its var. *Forbesii*. Not unexpectedly, *V. septentrionalis* and *V. nephrophylla* were found in Newfoundland. We miss, however, all forms of *V. canadensis* and *V. pubescens*, and the acaulescent *V. rotundifolia*, *V. sororia* and *V. affinis*, — five species rarely, if ever, found to the north or east of Maine.

V. CUCULLATA is widely distributed in these islands, and quite variable. The most common form, as in the Green Mts., is one in which the leaves under a lens appear more or less hirtellous, and the margin of the sepals "often interruptedly serrulate-ciliolate." This is the *V. prionosepala* of Dr. Greene. (Pitt. v. 99.) We do not believe it specifically distinct, but it may well pass as *V. cucullata* Ait., forma **prionosepala** (Greene).

Another departure from the quite glabrous form of the Middle Atlantic States is more serious. The long auricles of the persistent sepals have been considered a reliable character in *V. cucullata*. But in Newfoundland and the Magdalen Islands plants occur with short appressed auricles, though in other characters — foliage, flowers and seeds — conforming to normal *V. cucullata*. This we would mark off as:

VIOLA CUCULLATA Ait., var. **microtitis**, var. nov., auriculis sepalorum 1–2 mm. longis, multo brevioribus quam in forma communi.— Auricles of the sepals 1–2 mm. long, much shorter than in the ordinary form.—NEWFOUNDLAND:—damp thickets and open woods, Grand Falls, July 4, 1911; wet mossy spruce and larch woods, Grand Falls, July 5, 1911; low mossy and boggy spruce woods along Gander River, Glenwood, July 12 & 13, 1911; bog, Black Island, July 20,

1911; *Fernald & Wiegand*, nos. 5856, 5857, 5861, 5864. QUEBEC.—wet woods and thickets, Grindstone Island, Magdalen Islands, *Fernald & others*, no. 7773, July 17, 1912.

In the northwestern portion of the region covered by the Gray Manual we have to record the appearance of V. NOVAE-ANGLIAE,[1] heretofore known only from northern and central Maine.[2] It was collected by the late Dr. Fletcher at Maple Lake, near Parry Sound, Ont. Living plants, furnished by Dr. Fletcher in 1904, were for several years grown at Middlebury, Vt. In June, 1909, Dr. H. V. Ogden of Milwaukee sent live plants, collected "on a small sand island" Mercer, Wis.: and a year later, other plants, from Saxesville, Wis., 250 miles further south. From seeds of both, vigorous plants with large handsome flowers were obtained. Prof. Fernald has shown me also a specimen from Duncan Bay, Isle Royale, Mich., *W. S. Cooper*, Aug. 18, 1910. The species, thus, seems to occur with more or less frequency in the region of the Great Lakes.

V. RUGULOSA Greene, found in Minnesota, Iowa, and eastern Nebraska, should be added to the Gray Manual list. *V. Rydbergii* Greene, published a page later, is from the eastern slope of the Rocky Mts., but is hardly distinguishable from the Minnesota plant. Both have root-leaves much broader and larger than those of *V. canadensis*, and the upper stem-leaves are densely short-pubescent beneath, especially along the veins. But the most pronounced character is the presence, well underground, of long vigorous branching root-stocks, by means of which the plant spreads rapidly in the garden or in the wild. But this character is rarely seen in herbarium specimens and was apparently unknown to Dr. Greene when he described the species. I observed it first in plants under cultivation from Boulder, Colo. To ascertain whether this was also the habit of the Minnesota plant I applied to Prof. Clements, who kindly sent me living specimens with abundant stolons, not only from the University grounds but from its native haunts at Ft. Snelling.

V. EGGLESTONII,[3] a fine species with rich purple flowers, is also entitled to recognition in the Gray Manual. The type specimens

[1] RHODORA vi. 226, pl. 59; and vii. 1–3.

[2] Since the above was written, I have received specimens, both in flower and in fruit, of *V. novae-angliae* from the Province of New Brunswick:— Wet sandy shores, Lake Utopia, St. George, Charlotte Co., N. B.; *J. Vroom*, July & August, 1883. This is the earliest known collection of this species.

[3] Bull. Torrey Bot. Club xxxvii. 526, plates 34 & 35. 1910.

were collected by Mr. Eggleston at West Nashville, Tenn., May 26, 1909. But there is a specimen in the National Museum, collected near Nashville July, 1897, by Mr. Williamson, but named by Mr. C. L. Pollard *V. viarum* Pollard. A still older specimen is in the herbarium of the Missouri Botanical Garden, collected by Dr. A. Gattinger at La Vergne, Tenn. (15 miles southeast of Nashville), May 13, 1881. But it was of more interest to find at St. Louis a specimen from Bowling Green, Kentucky, collected by Miss Sadie F. Price April 11, 1899, labeled "*V. falcata* Greene."

V. SEPTEMLOBA LeConte, a most distinct and beautiful species of the coastal plains from N. Carolina to Mississippi, seems to occur, at least sporadically, in Virginia and even in Delaware. It was admitted into the revised edition of the Illustrated Flora on the evidence of a specimen from Virginia Beach collected by Mrs. N. L. Britton. Later a good specimen of LeConte's plant was seen in the herbarium of the Field Museum, Chicago, the ticket reading: "*Viola cucullata* var. *palmata* L. Newcastle Co'y, Del., W. M. Canby, coll." Unfortunately the date and the name of the town where found are lacking. But collectors in these localities should be on the watch for this species.

I take this opportunity to emend the names of three hybrids, two described from Lexington, Mass., and one from the Middle Atlantic States; the change is required by the recognition of *V. triloba* Schwein. as a species distinct from *V. palmata* L. But *both* species are found to cross with *V. fimbriatula*, with *V. cucullata*, and with *V. sagittata*, as follows: —

1. **Viola fimbriatula** × **triloba**, nom. nov.— *V. fimbriatula* × *palmata* Robinson, RHODORA viii. 53, pl. 70. March, 1906.

2. **Viola fimbriatula** × **palmata**, hyb. nov.— Not *V. fimbriatula* × *palmata* Robinson, from which in aspect it is markedly distinct.— Leaves ovate in outline, subcordate, obtuse, 3–5-lobed or -cleft on either side chiefly below the middle, finely pubescent especially on the petioles and along the veins of the lower surface; flowers, capsules and peduncles intermediate between those of the parents; plants quite infertile; offspring diversiform,— some with leaves like those of the hybrid parent, others with leaves uncut as in *V. fimbriatula*, and still others with deeply lobed leaves as in *V. palmata*, in all cases the width of leaf being intermediate.— East Lyme, Ct., *Miss A. M. Ryon*, Oct., 1905; rocky woodlands, Yonkers, N. Y., *Brainerd*, Sept. 9, 1905; Spring Valley, N. Y., *Miss E. M. Kittredge*, May 26, 1911; Sylvan Beach, Oneida Co., N. Y., *H. D. House* 1244 (in part), July 11,

1905; Palmer's Glenn, N. Y., *J. Bishop*, 1909; Mt. Tryon (alt. 760 m.) Tenn., *E. Brainerd*, April 21, 1910.

3. **Viola cucullata** × **triloba**, nom. nov., *V. cucullata* × *palmata* [var. *dilatata* authors not Ell.], RHODORA viii. 56 (March 1906).

4. **Viola cucullata** × **palmata**, hyb. nov., not *V. cucullata* × *palmata* of RHODORA viii. 56.—Leaves nearly glabrous, broadly cordate-ovate, lobes as numerous as in *V. palmata*, but shorter; cleistogamous flowers intermediate in form to those of the parent species, on elongate ascending peduncles; auricles long, slightly setulose, sepals otherwise glabrous; capsule bearing few seeds.— East Lyme, Ct., *Miss A. M. Ryon*, Oct. 4, 1906.

5. **Viola sagittata** × **triloba**, nom. nov., *V. palmata* [var. *dilatata* authors not Ell.] × *sagittata*, RHODORA viii. 54, except specimen last cited.

6. **Viola palmata** × **sagittata** hyb. nov., not *V. palmata* [var. *dilatata* authors not Ell.] × *sagittata*, RHODORA viii. 54.— Leaves ciliate and more or less pubescent, subcordate, with 6-8 acute slender lobes chiefly towards the base; capsules infertile.— Garrison's, N. Y., *Ed. S. Denton*, May, 1886 (characterized by Dr. Gray as "*V. palmata* towards *sagittata*"); Staten I., N. Y., *Philip Dowell* 4518 b, July 18, 1906; West Orange, N. J., *Philip Dowell* 4795, June 22, 1907.

MIDDLEBURY, VERMONT.

ARENARIA CAROLINIANA IN RHODE ISLAND.— Several plants of *Arenaria caroliniana* Walt. were found by the writer in the salt-marsh back of the sand-dunes at Weekapaug, Rhode Island, Sept. 1, 1912. They were growing on a slightly elevated, but dry, spot in the meadow and were confined to the one locality. Some of them were still in blossom on the 22nd of the month.

Through the kindness of Prof. Fernald, I am enabled to give the previously printed records (under the synonymous name *Arenaria squarrosa*) of this plant for New England, as follows:

"Arenaria squarrosa Michx. Torrey & Gray, i, 179.
In Block Island, Dr. Robbins, Sept., 1829."
Oakes in Hovey's Magazine, xiii, 218 (1847).

"Arenaria squarrosa Mchx., Robbins, 1829.
S. T. O." (Stephen T. Olney) in note on the rare plants of Block Island, in Bulletin Torrey Botanical Club, v, 38 (1874).

The above records seem to have been overlooked by all the manual-makers.

Specimens from Weekapaug have been placed in the Herbarium of the New England Botanical Club.— JOHN H. SAGE, Portland, Connecticut.

HIERACIUM FLORENTINUM AT WELLESLEY HILLS, MASSACHUSETTS. — On October 22, 1912, I found an unfamiliar plant growing rather abundantly in dry sandy soil by the side of Cliff Road, Wellesley Hills. Prof. K. M. Wiegand identified this as *Hieracium florentinum* All. The American range of this plant is given in Gray's Manual as "eastern Quebec to northern New York." There is, however, a sheet of it in the Gray Herbarium collected by Mrs. Ella L. Horr on June 11, 1911, at Worcester, Massachusetts, "in a pasture, well established," and a sheet in the Herbarium of the New England Botanical Club, collected by Mr. F. F. Forbes, June 16, 1912, in Brookline, Massachusetts, where found in abundance in "dry sandy ground off Pond Ave." With these three Massachusetts stations the range is extended far to the south and east of that given in the Manual.— RUTH S. RODMAN, Wellesley College.

THE NINETEENTH ANNUAL MEETING OF THE JOSSELYN BOTANICAL SOCIETY will be held at Thomaston, Maine, August 12–16, with headquarters at the Knox Hotel. Further notice, with program, will be sent to members, and to any persons interested, on request, at least two weeks previous to the meeting.— DANA W. FELLOWS, Secretary, Portland, Maine.

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F. Schuyler Mathews del.

1. Viola adunca J. E. Sm.
2. Viola rupestris Schmidt var. arenaria (DC.) Beck.

Rhodora

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SOUTHERLY RANGE EXTENSIONS IN ANTENNARIA.

Bayard Long.

The appearance in print of the New Gray in 1908 with its prepossessing treatment of *Antennaria* — descriptions with actual distinctions; dichotomous keys with ample contrasting characters; excellent drawings by Mr. Schuyler Mathews which illustrate and do not obscure — was largely responsible for the increased interest which some of us at Philadelphia began to take in this genus which we had previously considered as sacred to the specialist.

Our determination to collect as extensively as possible in this group during the following spring was made known to Professor Fernald and his interest solicited. He very generously agreed to examine and name all our prospective material. So with such encouragement for obtaining a knowledge of a genus so thoroughly neglected by us, we felt we were making a most auspicious onset upon *Antennaria*. We were not so over-sanguine as to hope for new species in the Middle Atlantic States but we knew that there were additions to be made to the knowledge of at least the local distribution of our species, if not to their general geographic range.

At that time there had been, apparently, no published records or notes on the Antennarias to be found in the Philadelphia region since Professor Porter's *Flora of Pennsylvania* in 1903 and Keller and Brown's *Flora of Philadelphia and Vicinity* in 1905. From these two sources it appeared that there were but three species, *Antennaria plantaginifolia*, *A. neglecta*, and *A. neodioica* commonly recognized to be generally distributed, and two others, *A. Parlinii*, noted from a single locality in the one book, and *A. fallax* recorded in the other volume,

also from but one station. Naturally our interest during local trips largely centered about these last two supposedly rare species, and it was not long before a little active collecting showed them to be frequent about Philadelphia or even locally common.

Professor Fernald had encouraged us with the opinion that *A. canadensis*, *A. occidentalis*, and *A. petaloidea* ought to be extended south into our upland counties, so a trip in the middle of May, 1909, with Mr. S. S. Van Pelt into the glaciated area of Northampton County, Pennsylvania, lying just south of the Blue, or Kittatinny, Mountains, held at least promise of some possibilities in *Antennaria*. In the Herbarium of the Academy of Natural Sciences we had seen a specimen of *A. canadensis* from the Catskills and so during this trip we had this species continually in mind. The hope of finding it was not realized here but a tall form with large heads and strikingly handsome white petaloid bracts (suggesting, in general, *A. fallax* with round-tipped leaves) collected at the foot of the Big Offset north of Bangor, and again between Johnsonville and Mount Bethel, proved to be *A. occidentalis* — a northern species heretofore known, in the eastern part of its range, only as far south as western Massachusetts and New York.

The work of Mr. Harold W. Pretz in Lehigh County, Pennsylvania, has given us additional information on the local distribution of *Antennaria* and has also added another northern species to our local flora. Through two seasons he has collected extensively and has generously allowed me the use of his material. To Mr. Pretz belongs the credit of making known in our region *Antennaria petaloidea* — a species not previously recorded south of New York State. His station is at Corning, in the red-shale district of the extreme southern part of Lehigh County, at the head of the Perkiomen Valley which supports so many interesting and often local species.[1] Two other collections of his give additional evidence of *A. occidentalis* at localities still farther south than the Bangor stations. The one, of handsome staminate plants with characteristic basal leaves, Professor Fernald

[1] Here occur two of our most southeasterly stations in Pennsylvania for *Luzula saltuensis*, as well as stations for *L. campestris* var. *multiflora* which finds the extreme limit of its range on the southeast near Philadelphia. Among species of characteristic occurrence may be mentioned *Juniperus communis*, *Oryzopsis racemosa*, *Polygonatum biflorum*, *Corylus rostrata*, *Acer spicatum*, *Lonicera dioica* — all types which come into the Philadelphia area from the north or northwest and which become rare and localized south or southeast of the Perkiomen Valley.

agrees probably represents this species. The colony was found in the vicinity of the Blue Mountains below Lehigh Gap Station. The other collection seems to me to be satisfactory *A. occidentalis* but Professor Fernald is inclined to feel that it approaches *A. fallax.* These plants are also from Corning, where Mr. Pretz tells me Antennarias abound in the greatest profusion. The country is here quite hilly with often abrupt rises of several hundred feet, the general elevation ranging from four hundred to over a thousand feet.

Our most successful Antennaria hunt, the one most full of surprises, was during a trip over Decoration Day in 1909 with Mr. E. B. Bartram into the mountains of the western part of Virginia near the Natural Bridge. The very first morning's explorations brought to light, almost within sight of the famous bridge, two of the most interesting additions to the flora of this region. While I was expending my enthusiasm on two beautifully distinct forms of *Polygala Senega* Mr. Bartram was the fortunate discoverer of the first colony of *Antennaria canadensis.* The plants were growing in large tangled mats on a moist, shaded, woodland bank. The leaves of the first colony examined seemed to be much longer, narrower and more pointed than in the common plant of the north but other plants were quite characteristic. Although so far south and occurring at only fifteen hundred feet elevation, the inflorescences were still mostly quite fresh and in good collecting condition. Only a few colonies of this species were found unfortunately, but this deficiency was amply made up by the abundance of *Antennaria Parlinii* everywhere in the rich, moist, rocky woods along Cedar Creek below the Bridge. Considerable variation on leaf-form was found in the many colonies collected. A form with oblong, rather obtuse leaves seemed to prevail. Both typical *Parlinii* and Prof. Greene's *arnoglossa* (with broad, white, petaloid bracts) occurred, but the former was noticeably the commoner. Unlike *A. canadensis,* plants with fresh inflorescences were very rare; the heads were commonly quite dried and withered.

These two species showed rather considerable range extensions. *A. Parlinii* does not appear to be credited further south than the District of Columbia region, about one hundred fifty miles to the north of the Natural Bridge, while the nearest station known to me for *A. canadensis* is that of Mr. C. S. Williamson at Platte Clove in the Catskills, approximately four hundred miles distant.[1] The most

[1] Bartonia, iii, 30 (1911).

southwesterly stations noted in Connecticut in the recent Catalogue [1] of the plants of that state are at about the same distance.

In lately re-examining our Antennarias in the general collection of the Academy two sheets of plants of particular interest were found. These were both collected by C. W. Short, a name inseparably associated in botany with that of Kentucky. His labels, like those of many of the botanists of somewhat earlier days, ofttimes bear rather meager information. This is unfortunately true in the present case, but Mr. Stewardson Brown assures me that when there is no intimate locality noted the specimen came from the Lexington region of Kentucky, this being his regular and consistent method of labelling. The one sheet bears two plants, in good condition, with this label in his own hand: —

" Gnaphalium plantagineum
On thin clayey lanes. Ky- fl: May
C. W. Short"

The other sheet bears three plants with a rather similar label. The interesting point is that only one of the plants is what is now known as *Antennaria plantaginifolia*, while the remainder are specimens of the large-leaved series in which both the basal leaves and those of the stolons are bright green and glabrous above from the first — quite definitely referable to *A. Parlinii*.[2]

Although the basis of this record may not be satisfactorily conclusive for Lexington, no doubt need be cast upon it for Kentucky. From the occurrence of *A. Parlinii* as far west as Iowa, taken into consideration with its abundance in the lower altitudes of the Blue Ridge at Natural Bridge, on the Potomac at Washington, and at low elevations in Pennsylvania, New Jersey, and Delaware, we would rather expect to find it occurring in country of no great elevation on the western side of the southern Alleghanies — country very like the Lexington region.

The extensions of range recorded in these notes seem to be very logical and natural; they are all southerly extensions along lines of

[1] Flowering Plants and Ferns of Connecticut. Ct. Geol. and Nat. Hist. Surv. Bull., xlv. 389 (1910).

[2] The second sheet mentioned shows staminate plants, the only specimens of this sex of *A. Parlinii* that have come under my notice, except some from above Washington along the Potomac, and a single large and luxuriant colony found by Mr. C. S. Williamson and myself at Harrington, Delaware. The extreme rarity of staminate plants would seem to be an actual, demonstrated fact and not one at all to be accounted for by an insufficiency of intensive field-work.

distribution well recognized. *Antennaria canadensis*, *A. occidentalis*, and *A. petaloidea* are species characteristic of the region north of Pennsylvania. Here they extend through New England and eastern Canada westward half way or more across the continent. A southerly advance of Canadian types such as these would be found along the general line of the Alleghanies, where they find climatic and temperature conditions similar to those of their northern home. These three plants will probably be found to belong to a group whose distribution may be typified by such species as *Glyceria Torreya*, *Tiarella cordiolia*, *Pyrus americana*, *Acer pennsylvanicum*, *A. spicatum*.

Although *Antennaria canadensis* has not yet, to the best of my knowledge, been collected between the Catskills and Natural Bridge, I feel that with future work in the Alleghanies its occurrence in Pennsylvania will be established. An interesting analogy would be shown should its distribution prove to be similar to that of *Thuja occidentalis*, which, despite the natural assumption that it extends from its northern home all along the Alleghanies to its southern limit in North Carolina, appears to be quite unknown in a native state in the wide mountain area of Pennsylvania.[1]

In our present knowledge of *A. petaloidea* and *A. occidentalis* extending down along the mountains only as far as Pennsylvania, their distribution is closely paralleled by such species as *Alnus incana*, *Lonicera canadensis*, *Lobelia Kalmii*.

Antennaria Parlinii is found to have a more southerly distribution than the other three species, occurs at lower altitudes, and extends well down into the northern coastal plain. It belongs to quite a different category — not a Canadian but an Alleghanian type. More properly it might be called an Alleghanian type encroaching on the Carolinian Zone. The impossibility of sharply separating the several floras in eastern America is a well-known fact.[2] There would seem to be sufficiently good evidence, however, for classing *A. Parlinii* as above. Its distribution in Maine — absent from the northern boreal portion but extending through the southern part (Alleghanian Zone) and in a broad arm well up the Penobscot Valley — is particularly interesting and indicative of the life-zone to which it belongs. Its occurrence through southerly New England in general, up along the

[1] See Porter, Flora of Pennsylvania, 3 (1903); Taylor, Torreya, ix. 206 (1909), xii. 103 (1912).

[2] See Fernald, Expedition to Newfoundland. RHODORA, xiii. 137, 139 (1911).

Connecticut and Hudson Valleys, as well as its absence in the higher mountains of Vermont and New Hampshire, points to the same conclusion. South of New England and New York it spreads, like a great many other species, into the northern extensions of the Carolinian. In all probability it will be shown to belong to a distribution-group which is typified by *Lycopodium complanatum* var. *flabelliforme*, *Populus grandidentata*, *Quercus coccinea*, *Q. bicolor*, *Pyrola americana*.

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,— XVII.

GRAMINEAE.

ECHINOCHLOA.

E. COLONA (L.) Link. Cotton waste from mill, Malden (*F. S. Collins*, Aug. 19, 1888, specimen in herb. Yale University).

E. CRUSGALLI (L.) Beauv. Wet shores and waste places, common throughout.

E. FRUMENTACEA (Roxb.) Link. Occasionally persistent from cultivation, and sometimes sporadic in waste land.

E. Walteri (Pursh) Nash. Swamps and salt marshes near the coast; Swampscott, Medford, Boston, Dorchester, Scituate.

SETARIA.

S. GLAUCA (L.) Beauv. Fields and waste places, common throughout.

S. ITALICA (L.) Beauv. Introduced in waste places from cultivation, frequent. A variable species, the variations of which are now being studied.

S. VERTICILLATA (L.) Beauv. Waste land; Newburyport, Salem, Charlestown, Cambridge, Boston, Dorchester.

S. VIRIDIS (L.) Beauv. Fields and waste places, common throughout.

CENCHRUS.

C. CAROLINIANUS Walt. In sandy soil and waste places, apparently introduced; at ten scattered stations.

ZIZANIA.

Z. aquatica L. Wet borders of Concord and Charles Rivers and their tributaries, in Lowell, Wayland, Framingham, Newton, Wellesley, Needham, Medfield. An uncommon species in our region.

Z. palustris L. Rivers and ditches; frequent throughout.

LEERSIA.

L. oryzoides (L.) Sw. Wet places, common throughout.

L. oryzoides (L.) Sw., forma **glabra** A. A. Eaton. "Tidal shores of the Merrimac river near 'the laurels' in the western part of Newburyport" (*A. A. Eaton*, Sept., 1902; *A. A. Eaton & M. L. Fernald*, Oct. 2, 1902, specimens in herb. N. E. Botanical Club). See RHODORA v. 118, 1903.

L. virginica Willd. Moist woods, occasional from Walpole northward.

PHALARIS.

P. arundinacea L. Swamps, marshes and pond margins, locally abundant. No reports from southeastern portion of district.

P. arundinacea L., var. PICTA L. Persistent and occasionally spreading from old gardens; apparently native in Stoughton (*S. F. Blake*, June 15, 1912).

P. CANARIENSIS L. Waste places and dumps around cities and towns, occasional.

ANTHOXANTHUM.

A. ODORATUM L. Fields, pastures and roadsides; very common throughout.

A. PUELII Lecoq & Lamotte. South Boston (*C. E. Perkins*, June 25, 1879); Jamaica Plain [W. Roxbury] (*E. & C. E. Faxon*, July 8, 1883); Milton (*G. G. Kennedy*, June 27, 1897).

HIEROCHLOË.

H. odorata (L.) Wahlenb. Meadows and marshes, both brackish and fresh; common along the coast, inland on the Concord and Shawsheen Rivers; meadow, frequent, Wellesley (*K. M. Wiegand*, May, 1912).

ORYZOPSIS.

O. asperifolia Michx. Dry open woods, frequent.

O. pungens (Torr.) Hitchc. Dry sandy fields, and open woods, frequent throughout.

O. racemosa (Sm.) Ricker. Dry rocky woods, rare; Georgetown, Essex, Malden, Woburn. "Melrose (Wm. Boott; specimen in herb. of)." according to Dame & Collins, Fl. Middlesex Co. 126, 1888, as *Oryzopsis melanocarpa* Muhl.

STIPA.

S. avenacea L. Dry open woods, rare; Wakefield, Woburn, Malden, Medford, Milton.

ARISTIDA.

A. dichotoma Michx. Dry sandy soil, common throughout.

A. gracilis Ell. Sandy soil, frequent from Hingham and Sharon northward.

A. purpurascens Poir. Dry sandy soil, scattered stations, throughout.

A. tuberculosa Nutt. Plum Island (*J. Robinson*, Aug. 31, 1876); Ocean Spray, Winthrop (*H. A. Young*, Sept. 28, 1878); Winthrop (*C. E. Perkins*, Sept. 6, 1882); Winter Pond, Winchester (*C. E. Perkins*, Sept. 6, 1882). The last reference is probably an error, since this species is ordinarily confined to coastal sands, and Perkins collected it on September 6, 1882, at Winthrop, as cited above. This is the same date that appears with the specimen said to come from Winter Pond. The field-label accompanying the Winthrop material is in Perkins's own hand, but the material labelled "Winter Pond" is marked in another hand, presumably through a confusion of labels.

MUHLENBERGIA.

M. capillaris (Lam.) Trin. Hingham, rare (*T. T. Bouvé*, no date; *J. R. Churchill*, Oct. 5, 1887). We know of only two other records of this species from New England, namely, Hamden and New Haven, Connecticut. See Flowering Plants and Ferns of Connecticut, Conn. Bot. Society, 62, 1910.

M. foliosa Trin. Moist soil; Andover, Lawrence, Dracut, Groton, Marlboro, Wellesley, Natick.

M. mexicana (L.) Trin. Woods and thickets; frequent.

M. racemosa (Michx.) BSP. Meadows and low ground; occasional from Blue Hills and Walpole northward.

M. Schreberi J. F. Gmel. Roadsides and fields, introduced around towns and cities, perhaps native in some places. Scattered stations from Braintree and Wellesley northward.

M. sobolifera (Muhl.) Trin. Rocky woods and ledges; occasional from the Blue Hills and Needham northward.

M. sylvatica Torr. Damp woods and roadsides; occasional from the Blue Hills northward.

M. tenuiflora (Willd.) BSP. Damp rocky woods; ten stations, from Blue Hills northward.

BRACHYELYTRUM.

B. erectum (Schreb.) Beauv. Moist woods, occasional.

HELEOCHLOA.

H. SCHOENOIDES (L.) Host. Made land, South Boston flats, very abundant.

PHLEUM.

P. PRATENSE L. Fields and roadsides, very common throughout.

ALOPECURUS.

A. AGRESTIS L. Adventive in waste places; Lowell, Charlestown, Boston, South Boston.

A. geniculatus L. Moist soil, occasional from Norwood northward.

A. geniculatus L., var. **aristulatus** Torr. Wet places, from Hingham, Dorchester and Natick northward; also on shore of Massapoag Lake, Sharon (*S. F. Blake*, June 26, 1911).

A. PRATENSIS L. Fields and meadows, generally introduced and abundant.

SPOROBOLUS.

S. asper (Michx.) Kunth. Dry sand and gravel; Ipswich, Danvers, Medford, Somerville, Boston, Dorchester, Duxbury; Hingham, according to T. T. Bouvé, Botany of Hingham, in History of the town of Hingham i. pt. 1, 134, 1893.

S. cryptandrus (Torr.) Gray. Sandy and gravelly soil at numerous stations along the coast; also at Lowell, Dracut, and Winter Pond, Winchester.

S. uniflorus (Muhl.) Scribn. & Merr. Meadows and bogs, common throughout.

S. vaginiflorus (Torr.) Wood. Dry sterile soil; common throughout.

AGROSTIS.

A. alba L. Dry and moist soil; not reported from southeast, but common elsewhere.

A. alba L., var. **aristata** Gray. Meadows and moist places; Ipswich, Woburn, Melrose, Medford, Carlisle, Newton, Dorchester.

A. alba L., var. **maritima** (Lam.) G. F. W. Mey. Moist soil; Gloucester, Revere, Saugus, Stoneham, Charlestown, Boston, Hingham.

A. alba L., var. VULGARIS (With.) Thurb. Fields and meadows, common throughout.

A. antecedens Bicknell. (Bull. Torr. Bot. Club xxxv. 473–475, 1908). West Boston dump (*C. W. Swan*, June 27, 1881, specimen in herb. Yale University). Common on Nantucket and Long Island.

A. CANINA L. Meadows and damp places; occasional in central and northern portion of district.

A. hyemalis (Walt.) BSP. Moist and dry soil, common throughout.

A. perennans (Walt.) Tuckerm. Woods, common throughout.

GASTRIDIUM.

G. AUSTRALE Beauv. In wool waste, Lowell and Billerica (*C. W. Swan*, July 24, 1883); S. Boston (*C. E. Perkins*, July 20, 1882). A native of Europe, but probably adventive here from California, where it is naturalized (Dame & Collins, Fl. Middlesex Co. 127, 1888).

POLYPOGON.

P. MONSPELIENSIS (L.) Desf. Waste places, rare; North Chelmsford, Lowell, Dracut, Billerica, Charlestown, Boston, South Boston.

CALAMAGROSTIS.

C. canadensis (Michx.) Beauv. Swamps and wet places, common throughout. A peculiar form of this species collected in Boxford, August 6, 1899, by E. F. Williams was sent to Mrs. Chase and has been returned by her with the following note, dated April 23, 1913; "The loose panicle of long slender branches, and the long callus hairs indicate *C. canadensis* with which the specimen agrees perfectly except in having spikelets scarcely 2.5 mm. long. I do not find any specimens with spikelets quite so small as this, but there are a number with spikelets less than 3 mm. These are from Saskatchewan, Montana, Wisconsin, and District of Columbia, showing no geographical limitation."

C. cinnoides (Muhl.) Barton. Low thickets and borders of woods, never abundant; occasional in other parts of district, but not reported from west or southwest.

C. Pickeringii Gray. Meadow north of Haggett's Pond, Andover (*J. Robinson*, June 26, 1878; June 27, 1879; June 26, 1880); swamps, Andover (*J. H. Sears*, September, 1880); meadows along Fish Brook, Andover (*A. S. Pease*, July 27, 1903; July 7, 1904); sandy bank, Wilmington (*E. F. Williams*, June 11, 1899).

AMMOPHILA.

A. arenaria (L.) Link. Sand-dunes and beaches along the coast, common.

APERA.

A. SPICA-VENTI (L.) Beauv. Made land, S. Boston (*C. E. Perkins*, July 1, 1878 and July 5, 1881; *E. & C. E. Faxon*, Oct. 5, 1878 and July 3, 1879); "in a field at West Newbury (*W. P. Conant*)" according to Robinson, Fl. Essex Co. 123, 1880 (as *Agrostis Spica-venti* L.).

CINNA.

C. arundinacea L. River borders, swamps and wet woods; common elsewhere, but not reported from the extreme south.

[*C. latifolia* (Trev.) Griseb. "Lawrence, Danvers (J. H. Sears); West Newbury (W. P. Conant) etc." according to Robinson, Fl. Essex Co. 124, 1880, as *C. arundinacea*, L., var. *pendula*, Gray. There are no specimens in the Peabody Academy of Science.]

HOLCUS.

H. LANATUS L. Fields and meadows, very common throughout.

SPHENOPHOLIS.

S. nitida (Spreng.) Scribn. Woods, rare; Melrose, Malden, Wellesley, Canton, Randolph.

S. obtusata (Michx.) Scribn. Dry shaded ledges north of Crooked Pond, Boxford (*A. S. Pease*, June 27, 1912); West Boston flats (*C. W. Swan*, June 27, 1881 and June 25, 1882); Blue Hill, Milton (*E. & C. E. Faxon*, no date); "Concord (E. S. Hoar; specimen in herb. of); Watertown (Bigelow's Fl. Bost., under Aira truncata, Muhl.)" according to Dame & Collins, Fl. Middlesex Co. 129, 1888, as *Eatonia obtusata* Gray.

S. pallens (Spreng.) Scribn. Meadows and ditches, rare; nine stations from Blue Hills northward (1877–1896).

S. pallens (Spreng.) Scribn., var. **major** (Torr.) Scribn. Danvers (*J. H. Sears*, June 4, 1879, specimen in herb. Peabody Academy of Science).

S. palustris (Michx.) Scribn. Swamps and meadows; Andover (*A. S. Pease*, June 8, 1903); "well meadow head," Concord (*H. D.*

Thoreau, June 19, 1859); "Heywood meadow near R. R. spring in brush," Concord (*H. D. Thoreau*, June 29, 1859); Needham (*T. O. Fuller*, June 9–10, 1887); Purgatory Swamp, Norwood (*C. E. Faxon*, June 17, 1879; *C. W. Swan*, June 17, 1882; *E. F. Williams*, June 22, 1896 and June 4, 1899).

TRISETUM.

T. spicatum (L.) Richter. Andover (*J. Blake*, June 26, 1882); rocky bank of Merrimac and sandy wood-road near Pomp's Pond, Andover (*A. S. Pease*, Sept. 19, 1903; June 4 and 20, 1904); Bateman's Pond, Concord (*C. W. Swan & C. W. Jenks*, July 6, 1888).

DESCHAMPSIA.

D. caespitosa (L.) Beauv. Shore of Haggett's Pond, Andover (*C. H. Knowlton*, June 20, 1903); shore of Merrimac River, Dracut and Lowell (*C. W. Swan*, July 20, 1882); introduced on land of J. R. Churchill, Dorchester (*J. R. Churchill*, 1884 to date); Chelmsford (*C. W. Swan*) according to Dame & Collins, Fl. Middlesex Co., 128, 1888.

D. flexuosa (L.) Trin. Dry ground; not reported from western and southwestern towns, but frequent elsewhere.

AVENA.

A. HIRSUTA Roth. South Boston dump (*C. W. Swan*, June 6, 1886). "Habitat passim in Europae cultis," according to Roth, Catalecta Botanica iii. 19, 1806. Specimen in herb. Yale University.

A. HYBRIDA Koch. Brickyard, Newburyport (*E. F. Williams*, July 31, 1898). An Old World species. Specimen in herb. N. E. Botanical Club.

A. SATIVA L. Fields, roadsides and waste places, frequent throughout.

ARRHENATHERUM.

A. ELATIUS (L.) Beauv. Fields and roadsides, occasional.

DANTHONIA.

D. compressa Aust. Dry ground, mostly in open woods; frequent, especially southward.

D. spicata (L.) Beauv. Dry places, common throughout.

SPARTINA.

S. glabra Muhl., var. **alterniflora** (Loisel.) Merr. Salt marshes, frequent along the coast.

S. glabra Muhl., var. **pilosa** Merr. Salt marshes, abundant along the coast.

S. Michauxiana Hitchc. Wet shores and marshes, both salt and fresh; frequent, especially on the coast.

S. patens (Ait.) Muhl. Salt marshes, abundant along the coast.

S. patens (Ait.) Muhl., var. **caespitosa** (A. A. Eaton) Hitchc. Causeway, Salisbury (*A. A. Eaton*, Sept. 2, 1898); Plum Island (*A. A. Eaton*, Aug. 29, 1896); Newbury (*A. A. Eaton*, August, 1897).

S. patens (Ait.) Muhl., var. **juncea** (Michx.) Hitchc. Edges of salt marshes, occasional; Ipswich, Revere, Cambridge, Boston, Dorchester.

CYNODON.

C. DACTYLON (L.) Pers. South Boston flats (*C. E. Perkins*, Aug. 25, Sept. 2 and Oct. 3, 1879; Sept. 5, 1881).

CHLORIS.

C. ELEGANS HBK. South Boston flats (*C. E. Perkins*, Aug. 2, 1882). Native of Texas and northern Mexico.

BOUTELOUA.

B. GRACILIS (HBK) Lag. Made land, South Boston flats (*C. E. Faxon*, Oct. 5, 1878). Native of northwestern Canada, western United States and Mexico.

[*B. oligostachya* (Nutt.) Torr. "Near the old carpet factory,

Tapleyville, 1880" (*J. H. Sears & J. Robinson*) according to Robinson, Fl. Essex Co. 125, 1880. No specimen seen.]

B. RADICOSA (Fourn.) Griffiths. South Boston flats (*C. E. Perkins*, 1882). Native of southwestern United States and Mexico.

B. TEXANA Watson. South Boston flats (*C. E. Perkins*, Aug. 2, 1882). Native of Texas and Mexico.

DACTYLOCTENIUM.

D. AEGYPTIUM (L.) Richter. Cotton waste from mills, Malden (*F. S. Collins*, Aug. 19, 1888; *F. S. Collins & C. W. Swan*, Sept. 14, 1888).

ELEUSINE.

E. INDICA Gaertn. Waste places, rare; Salem, Lowell, Reading, Malden, Boston, South Boston.

LEPTOCHLOA.

L. FASCICULARIS (Lam.) Gray. Adventive, Boston (*C. W. Swan*, Sept. 17 and 19, 1887, specimens in herb. Yale University and in herb. Walter Deane.

L. FILIFORMIS (Lam.) Beauv. Cotton waste from mills, Lowell (*C. W. Swan*, Aug. 16 and Sept. 6, 1883); Malden (*F. S. Collins*, Sept. 25, 1887; *F. S. Collins & C. W. Swan*, Sept. 14, 1888).

L. IMBRICATA Thurb. Woollen mill waste, N. Billerica (*C. W. Swan*, Sept. 18, 1885, specimens in herb. Yale University and N. E. Botanical Club). Native of Arizona.

PHRAGMITES.

P. communis Trin. Wet places near the coast, becoming more frequent southward; inland at Andover and S. Lincoln.

TRICUSPIS.

T. flava (L.) Hubbard. (*Tridens flavus* (L.) Hitchc. Gray's Manual, 7th ed. See Hubbard, RHODORA xiv. 185–6, 1912). Campus lawns, Wellesley (*K. M. Wiegand*, Sept. 16, 1910); abundant in old fields, Southboro (*A. J. Eames*, August, 1909).

TRIPLASIS.

T. purpurea (Walt.) Chapin. Sandy places; Salisbury, Ipswich, Winthrop, Winchester, Dorchester, Hingham. "Nahant beach" according to Robinson, Fl. Essex Co. 125, 1880.

ERAGROSTIS.

E. capillaris (L.) Nees. Dry sand and gravel; Essex, Andover, Lowell, Malden, Needham, Canton; "observed by myself in sunny situations in the environs of Salem, chiefly about cultivated ground," according to C. Pickering, Chronological History of Plants, 810, 1879.

E. MEGASTACHYA (Koeler) Link. Waste ground and roadsides; abundant around Boston, occasional elsewhere.

E. MINOR Host. Waste places rare; Westford, Lowell, Cambridge, Boston, Roxbury, Dedham, Hingham.

E. pectinacea (Michx.) Steud. Dry fields, common throughout.

E. pectinacea (Michx.) Steud., var. **spectabilis** Gray. Near Kimball's Pond, Amesbury (*A. A. Eaton*, 1895); Andover (*A. S. Pease*, Sept. 22, 1901); Tewksbury (*A. S. Pease*, Sept. 17, 1903); Hingham, according to T. T. Bouvé, Botany of Hingham, in History of the town of Hingham i. pt. 1, 135, 1893.

E. pilosa (L.) Beauv. Gravel and sand; common and abundant.

Notes and corrections on the preceding list. On page 56, lines 5 and 6 should be deleted. The reference to *Panicum Ashei* is an unintentional repetition, under a now discarded name, of what is duly entered, on page 59, under *P. umbrosum*.

On page 56, line 18, for *known* read *recorded*.

C. H. KNOWLTON
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} *Committee on Local Flora.*

TWO NEW CARICES FROM NEWFOUNDLAND.

M. L. Fernald and K. M. Wiegand.

Carex gracillima Schwein., var. **macerrima**, n. var., 3–5 dm. alta; foliis 3–5 mm. latis; spiculis lateralibus pendulis 12–20-floris tenuissimis 1.5–2 mm. crassis 1.5–3 cm. longis; squamis ♀ albidis 2 mm. longis; perigyniis nunquam inflatis trigonis utroque acutis vel subacutis brunneis 2–2.8 mm. longis 1–1.2 mm. latis; achaeniis late ellipsoideis utroque rotundatis 1.6–1.8 mm. longis, 1 mm. latis.

Plant low, 3–5 dm. high: leaves 3–5 mm. broad: lateral spikes pendulous, 12–20-flowered, very slender, 1.5–2 mm. thick, 1.5–3 cm. long: pistillate scales whitish, 2 mm. long: perigynia not at all inflated, trigonous, acute or acutish at both ends, brown, 2–2.8 mm. long, 1–1.2 mm. wide: achenes broadly ellipsoid, rounded at both ends, 1.6–1.8 mm. long, 1 mm. wide.— Newfoundland: moist open grassland near sea-level, York Harbor, Bay of Islands, July 27, 1908, *E. H. Eames & C. C. Godfrey*, no. 5937 (type in Gray Herb.); meadow on Governor's Island, Bay of Islands, July 28, 1908, *Eames & Godfrey*, no. 5938.— Distributed as *C. gracillima*, var. *humilis* Bailey and reported by Eames as "occasional about the Bay of Islands, where it appears to be a well-marked variety."[1] In a letter Dr. Eames says further: "I was interested in this thing at the time, so had it in mind thereafter. And, although I collected but two numbers, my 'notes' state that it was 'Frequent in meadows near sea-level' about York Harbor. I saw it at intervals near the shore for about two miles, and on two islands off-shore."

C. gracillima, var. *humilis*, as defined by Bailey, is merely dwarfed *C. gracillima:* "In open places and on harder soils, the species becomes dwarfed, and may then be known as Var. humilis. Smaller, the leaves narrower; spikes often very small, two- to twelve-flowered, erect or ascending; perigynium mostly smaller."[2] The plant from the Bay of Islands is clearly different in its pendulous many-flowered spikes and in its uniformly dark brown firm and acute perigynia. In these characters the plant suggests the narrow-leaved *C. capillaris*, var. *elongata* Olney and it may, when better known, prove to be a fertile hybrid of *C. gracillima* with that plant.

[1] Rhodora, xi. 90 (1909).
[2] Bailey, Mem. Torr. Bot. Cl. i. 71 (1889).

CAREX LENTICULARIS Michx., var. **eucycla**, n. var., a forma typica recedit perigyniis late ovalibus vel suborbicularibus utroque rotundatis, 1.8 mm. longis; squamis ♀ breviter oblongis vel suborbicularibus 1.5–2 mm. longis.

Differing from typical *C. lenticularis* in having the perigynia broad-oval or suborbicular and rounded to base and apex, 1.8 mm. long; scales of the pistillate spikes short-oblong or suborbicular, 1.5–2 mm. long.— NEWFOUNDLAND: gravelly margin of Birchy Pond Stream, East Branch of the Humber, *Fernald & Wiegand*, nos. 2826, 2833 (TYPE in Gray Herb.).— In typical *C. lenticularis* the ovate to narrowly elliptical perigynia are acutish at base and apex and 2.2–3 mm. long, and the scales are distinctly longer than in the rounder-fruited variety from central Newfoundland. Var. *eucycla* in its short roundish perigynia suggests var. *paullifructus* Kükenthal, described from the state of Washington; but that is said to have the pistillate scales with broad white-hyaline margins, while var. *eucycla* has the fuscous scales with extremely narrow or almost imperceptible pale margins.

SOME MAINE PLANTS.

RALPH C. BEAN.

THE following plants, collected for the most part during the summer of 1912, have been of special interest to me and the localities for some of them are, I think, worth recording.

EUPHRASIA AMERICANA Wettst. I have been interested in watching this plant, which has occupied the same locality — a country roadside a half mile south of Clinton Village — for ten years. The area covered does not appear to vary, nor have I been able to find other stations in the region. My herbarium specimens were collected August 19, 1904, August 4, 1909, and August 11, 1911.

PODOSTEMON CERATOPHYLLUM Michx. I found this plant first in the summer of 1909 in a brook in Winslow. Its strange appearance entirely baffled me at the time. I believe it was then the second station in Maine. I collected it again in the same brook, which is an outlet for Pattee Pond in Winslow, on July 11, 1912. It was growing closely adhering to the stones in the shallow water.

POTENTILLA FRUTICOSA L. was collected in a pasture at Pittsfield, on July 23, 1912, and in a pasture in Center Minot on August 14, 1912. Before this time I had not seen the plant in any of the towns near Clinton.

PRUNUS VIRGINIANA L., var. LEUCOCARPA Wats. This was growing beside a country road in West Minot. I collected on August 14, 1912. The amber-colored fruit was entirely new to me. It has been known in this locality for thirty years at least.

PYCNANTHEMUM VIRGINIANUM (L.) Durand & Jackson. At a distance this had the appearance of a white aster. I collected it on August 27, 1912, in a field near woods one mile south of Clinton Village. This was an entirely new plant for this locality.

UTRICULARIA. During the meeting of the Josselyn Botanical Society at Gardiner in 1912, while on a trip to Nahumkeag pond in Pittston, I found three *Utriculariae*. *U. vulgaris*, L. was growing in the shallow water at the west side of the pond. *U. purpurea* Walt. was found in a similar situation, though but a single plant. *U. gibba* L. was growing on small islands near the same shore. These plants were about 3 cm. high. All three species were collected August 9, 1912.

WAKEFIELD, MASSACHUSETTS.

CALAMAGROSTIS PICKERINGII Gray, var. **debilis** (Kearney) n. comb. *C. breviseta debilis* Kearney, U. S. Dept. Agric. Div. Agrost. Bull. xi. 25 (1898). In Newfoundland we became very familiar with two pronounced tendencies of *C. Pickeringii*, one of rather coarse habit with spikelets large (4–5 mm. long), a comparatively common plant; the other, the commonest grass of bogs and tundra, with often more slender habit and with spikelets small (2.8–3.6 mm. long). Examination of the material in the Gray Herbarium, and especially of the specimens cited by Kearney, shows that the plant with larger spikelets is true *C. Pickeringii* (of which the type is in the Gray Herbarium), while the plant with smaller spikelets closely matches the duplicate type of *C. breviseta debilis*. The characters emphasized by Kearney, however: "Of softer texture; culms sometimes only 2 dm. high, very slender, less rigid, the uppermost internodes much elongated, usually twice as long as both sheath and blade; leaf-blades thinner and rather lax; panicle small (mostly 4 to 10 cm. long, about 1 cm. wide), con-

tracted, almost spiciform, somewhat flexuous; empty glumes narrower and somewhat thinner"; do not properly distinguish the plants, for these characters are found abundantly interchanged in specimens with both large and small spikelets. We would, therefore, rest the var. *debilis* simply on its smaller spikelets rather than upon the inconstant vegetative characters originally used.

Of the 39 collections of *C. Pickeringii*, var. *debilis* examined by us, the following are from outside Newfoundland and it may be of interest to New England botanists to have a record of the stations. NEW HAMPSHIRE: dry bank by B. & M. R. R., 1 mile south of the village, Lancaster, *A. S. Pease*, no. 12, 272; head of Oakes Gulf, Mt. Washington, *Faxon;* Mt. Monroe, *Faxon;* Ethans Pond, Mt. Willey, *Pringle* (distributed as *C. Pickeringii*, var.), *Faxon;* Echo Lake, Franconia, *William Boott*, 1861 (labeled by Dr. Gray "var."), *J. W. Chickering* (labeled by Dr. Gray "=Boott's pl."), *Faxon;* Profile Lake, Franconia, *Faxon;* in sand by cascade, Albany Intervale, *W. G. Farlow;* meadows, frequent, West Thornton, *A. S. Pease*, no. 2513; Pelham, *F. W. Batchelder.* MASSACHUSETTS: north of Haggetts' Pond, Andover, *J. Robinson;* Fish Brook meadows, Andover, *A. S. Pease*, nos. 2368, 4260.— M. L. FERNALD and K. M. WIEGAND.

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SOME NOTEWORTHY PLANTS FROM THE ISLANDS AND COAST OF MAINE.

ARTHUR H. NORTON.

DURING the last dozen years the writer has had frequent occasion to visit many of the outermost islands of Maine between Eastport and Saco Bay, and various harbors and other inlets of the coast. Many of these places, unimportant and probably not destined to receive attention from botanists for years to come, have furnished one or more rare or otherwise interesting plants. A number of the most interesting plants, seeming sufficiently isolated or having their distribution sufficiently covered, are here mentioned. It should be stated that the journeys to these islands have had non botanical objects in view, and many of the landings have been made when long distances were still to be covered, or when heavy seas or fog were threatening and time was at a premium. Under these conditions only the more conspicuous plants have fallen under observation. Some of these afford ample material for interesting generalizations, which however, must be omitted for the present. The notes are based primarily upon the writer's observations but additional records from the Gray Herbarium and the herbarium of the New England Botanical Club have been furnished by Professor Fernald.

PINUS BANKSIANA Lam. Attention has been called to the abundance of this pine at Schoodic Peninsula.[1] It remains to be said that it extends to the southeastern limits of the town of Gouldsborough,

[1] 1889 Rand, Bull. Torr. Bot. Cl. **16**: 294, 295, and Redfield l. c. 295, 296.

which includes Schoodic, but not to the small islands of the outer part of Gouldsborough and Dyers Bays. It occurs upon Mt. Desert [1] and Great Wass Island;[2] also on Steele Harbor Island (*C. A. Cheever* in herb. New England Botanical Club).

PICEA CANADENSIS (Mill.) B.S.P. Abundant on many of the islands east of the St. Georges group. At Eastern Ear, Isle au Haut, on the south side exposed to the force of sea breezes and gales, trees ten or more feet high are so dense that a person of two hundred pounds weight may walk from the ground to the summit on the ends of the densely matted and tangled branches. West of St. Georges it becomes less abundant, and at Casco Bay is decidedly rare, though a few trees occur at Trundys Reef, Cape Elizabeth.

JUNIPERUS HORIZONTALIS Moench. Crumple Island, near Jonesport; Matinicus Seal Island, in abundance; Big Two Bush and White Head, Knox County; Pumpkin Knob near Damascove Island; Western Brown Cow and Marsh Islands, Casco Bay. Known in some sections as Slink Weed. Distribution local. In the herbarium of the New England Botanical Club are specimens from Monhegan Island (*Miss Furbish*).

TYPHA ANGUSTIFOLIA L. The easternmost recorded stations on the Maine coast are Great Chebeague, Casco Bay, and Winnegance.[3]

SPARGANIUM ANGUSTIFOLIUM Michx. Rare at Matinicus Island.

IRIS SETOSA CANADENSIS Foster. This plant, the interesting history of which is shown in the pages of RHODORA,[4] abounds on most of the islands (excepting Machias Seal Island) east of Petit Menan Point. West of this point it becomes very local, and generally rare. It abounds, however, on Cranberry Point in the town of Gouldsboro, but is recorded as rare at Great Cranberry Island;[5] and in 1911 I found a few plants on Little Duck Island, its southwestern known limit at this time.

IRIS PRISMATICA Pursh. On the 31st of July, 1903, I had occasion to visit Flint Island, Naraguagus Bay. While I was occupied with the object of my visit, Mrs. Norton discovered a number of sterile plants of a very slender *Iris* markedly different in appearance from the

[1] 1899 Rand, RHODORA **1**: 135.
[2] 1909 Cushman, RHODORA **11**: 13.
[3] 1910 Fernald & Wiegand, RHODORA **12**: 120.
[4] 1902 Kennedy, RHODORA **4**: 23–26; J. F. Collins, ibid. 179–180; 1903 Foster, ibid. **5**: 157–159.
[5] 1908 Shaw, RHODORA, **10**: 145.

abundant *I. setosa canadensis.* After careful search she found one plant in fresh flower, rendering the identification with *I. prismatica* certain. This has been presented to the herbarium of the Portland Society of Natural History.

QUERCUS ILICIFOLIA Wang. An additional coast station is near Hall Quarry, on Mt. Robinson, Mt. Desert Island.

ARENARIA PEPLOIDES ROBUSTA Fernald. Marshalls Island, Masons Ledge and Three Ledges, Jericho Bay; Ship Island of the Mt. Desert Group; Matinicus Seal Island. West of the latter place, it has not been reported until Old Orchard (*Goodale,* 1864) is reached. It occurs at Biddeford Pool (*Kennedy* in herb. N. E. Bot. Cl.) and was found at Kittery by the Josselyn Botanical Society in 1905. At Ship Island in 1904 it attained superior development forming numerous large glistening mats and fruited plentifully. Eastward it is known from Jonesport (*N. T. Kidder* in herb. Gray) and from Roque's Bluffs.[1] Harvey and Briggs recorded it from Passamaquoddy Bay;[2] their station may or may not have been in Maine. Strictly local.

ARENARIA GROENLANDICA (Retz.) Spreng. Collected at Oceanville, Deer Isl., July 3, 1903.

CERASTIUM ARVENSE L. Common and often abundant on the outer fringe of Islands from the Duck Islands to Cape Elizabeth, forming large mats to the exclusion of other vegetation.

RANUNCULUS LAXICAULIS (T. & G.) Darby. July 23 to 26, 1904, a colony of small size was found at South Deer Isle, at a muddy pool, resorted to by cattle as a drinking place.

RANUNCULUS PENNSYLVANICUS L. f. Though not here regarded as a coastal plant, it practically reaches sea level at the junction of the Presumpscot River with tide water, and is not rare along the valley of the Presumpscot, considerably west and slightly south of Brunswick, its southwesternmost recorded station in the state.[3] Collected at Cutler.

SISYMBRIUM INCISUM Engelm. Common by roadsides at Bar Harbor, July 13, 1911.

ARABIS DRUMMONDI Gray. Crow Nubble at the eastern end of Bradburys Island, Penobscot Bay, July 17, 1903. Having poor facilities for preserving specimens, but one was taken. The plants

[1] 1902 Moulton, RHODORA, **4**: 189.
[2] 1893 Bull. Me. State Coll. Lab. Nat. Hist. **1**: No. 2, pt. 2, 6.
[3] 1911, Fernald, RHODORA **13**: 181.

which were numerous, were very coarse in appearance, and the specimen taken was a small one. Even the coarse appearance of this is noticeably different from that of taller specimens of *A. drummondi* from western Maine, and the ripe pods reach fully 3 mm. in breadth. It seems best referred to *Arabis drummondi connexa* (Greene) Fernald.

Arabis hirsuta (L.) Scop. "Oyster Banks," east side of Damariscotta River, Sept. 15, 1912.

Sedum roseum (L.) Scop. Reported as new to the flora of Maine in 1863 by Prof. A. E. Verrill in 1865,[1] and is admitted in fifth edition of Gray's Manual.[2] It was next recorded from Cutler by Harvey and Briggs,[3] followed the next year by Rand and Redfield, as rare at Dog Mountain, and Egg Rock, Mt. Desert.[4] In 1902 Miss Dora Moulton published its occurrence at Point of Main, Englishmans Bay,[5] and later, Mr. Joseph Cushman published the fact of its general distribution in this and adjacent bays.[6] To his list of stations should be added Pulpit and Freemans Rocks. To the westward of Great Wass Island it is common on Crumple Island and several of the small adjacent rocks. This seems to mark its limit of general distribution westward as it is not noticeable on the rocky islands off the eastern part of Gouldsborough and has not been noticed in Jericho and Penobscot Bays.[7] At Matinicus Seal Island and Rock it is abundant, but I have not myself found it west of these islands. It is not included in Miss Mabel P. Cook's list of Monhegan plants,[8] but there are specimens in the herbarium of the New England Botanical Club collected on Monhegan in 1901 by C. F. Jenney and in 1910 and 1911 by Miss Kate Furbish.

Ribes lacustre (Pers.) Poir. Little Sheep Island, a short distance southwest of Eagle Island Light, Penobscot Bay.[9]

Potentilla pennsylvanica L. Common in crevices of ledges of mica schist and granite on many of the outer islands. Cape Eliza-

[1] 1865 Proc. Bost. Soc. N. H. **9**: 327, also 373. Cf. Porter, 1868 Am. Nat. **2**: 39–40.
[2] 1870 Gray, Man. ed. 5, 100.
[3] 1893 Bull. Me. State Coll. Lab. Nat. Hist. **1**: No. 2, pt. 2, 7.
[4] 1894 Flora Mt. Desert, 100.
[5] 1902 Rhodora **4**: 189.
[6] 1909 Rhodora **11**: 13.
[7] I have not landed on Schoodic Point or Island nor the main island of Isle au Haut; these bold headlands seem to furnish ideal conditions for the plant, and it is to be expected there. However, I have not found it at the eastern Ear of Isle au Haut apparently suitable for its needs.
[8] 1903 Rhodora, **3**: 187–190.
[9] 1910 See Fernald, Rhodora, **12**: 34.

beth, Cushings and Green Islands, Casco Bay, Seguin, Pumpkin Knob near Damascove, Haddock Island in Bristol, have furnished herbarium specimens at hand at this writing; and it is in the herbarium of the New England Botanical Club from Kennebunkport, Cushing's Island, Monhegan Island, Great Gott Island, and Great Head on Mt. Desert Island, but there are no specimens from farther east; while the Gray Herbarium shows specimens from the Isles of Shoals, but no stations between Mt. Desert Island and the Gaspé Peninsula of Quebec.

POTENTILLA FRUTICOSA L. Crumple Island, near Jonesport, has a small colony.

RUBUS CHAMAEMORUS L. Since this plant has received frequent notices in print, including the pages of RHODORA, the following stations only are to be noted. Fishermans Island, near Great Wass Island Life Saving Station, Aug. 4, 1904. It has already been noticed from near Prospect Harbor, in Gouldsborough [1]. In Gouldsborough it is not confined to this vicinity but occurs also about Corea. The fruit is gathered here. In 1904 I was told by two young boys at Corea, that they had sold six quarts of the berries at fifteen cents per quart, and more had been preserved for home use.

GERANIUM CAROLINIANUM L. Reported as a Maine plant in the early catalogues, but such of the early herbarium specimens as I have seen labelled *G. carolinianum* all have proved to be *G. bicknellii* Britton. In the seventh edition of Gray's Manual the range is restricted to Eastern Massachusetts southward and westward. The occurrence of *G. carolinianum* at the junction of the Presumpscot River with tide water in Falmouth, where it was collected by Edward B. Chamberlain and the writer in 1907 may be noteworthy.

EUPHORBIA POLYGONIFOLIA L. A noteworthy eastern station is found at Matinicus Island. It is frequent from Long Island, in Casco Bay westward, and has been recorded from Phippsburgh and Georgetown.[2]

EMPETRUM NIGRUM L. Common from Mt. Desert eastward. Westward it becomes local, and seems to disappear on the coast at the southwesterly entrance to Penobscot Bay. Abundant at Matinicus Seal Island, and occurs at Matinicus. Abundant at White Head, Knox County, and has spread to the adjacent Browns Islands. This station has been known to me for upwards of thirty years; here the

[1] Fl. Mt. Desert, 91.
[2] 1911 Fernald, RHODORA **13**: 181.

fruit, known as Hog Cranberry, is often gathered for household purposes. In 1904 a small quantity was found on Rackliff's Island, about a mile distant. Since the berries are freely eaten by "soft billed birds," and the seeds pass through the alimentary canals of this (arbitrarily limited) group of birds unbroken, this station which I have reason to believe to be of rather recent origin is no doubt to be attributed to this agency. Specimens at hand from these stations belong to the type of the species.

COREMA CONRADII Torr. Gouldsborough, *Redfield*;[1] Mt. Desert, *Rand & Redfield;*[2] Isle au Haut, *Young;*[3] Mt. Batty, Camden, *Chickering;*[4] St. George, near sea level (new station); Bristol, *Chamberlain*;[5] Southport, *Fernald;*[6] Bath, *Gambel*,[7] Phippsburgh, *Lee*;[8] Gun Point, Harpswell, *Furbish*;[9] Great Island, Harpswell and Orrs Island, *C. B. Fuller*, 1876. These last stations have long been known, but perhaps have not been published. Coastal stations east of Gouldsborough and west of Harpswell would be of especial interest.

KALMIA LATIFOLIA L. Though for many years known to botanists to occur at Great Island, Casco Bay, the fact seems not to have been published until 1911.[10] What seems to be a forgotten station at Cherryfield, was published by Dr. Aaron Young, Jr., in 1843.[11] In the paper cited Dr. Young gave a very full account of a visit to the bed of *Rhododendron maximum* L. at Standish, and thereby had brought to his attention the plant at Cherryfield, supposed by his correspondent to be that species. Specimens were sent him, and proved to be *Kalmia latifolia*, of which he gave an extended account. It is extremely gratifying to find a Cherryfield specimen from Dr. Young, well preserved in the Parker Cleaveland herbarium, at Bowdoin College.

PRIMULA FARINOSA MACROPODA Fernald. Collected at Dog Rock, near Crumple Island, Jonesport, Aug. 4, 1904, by the writer. The plant has long been known from this region, at least since 1878 when

[1] 1889 Bull. Torr. Bot. Cl. **16**: 296.
[2] 1894 Flora Mt. Desert, 148.
[3] Maine Farmer, 1848, June 7.
[4] 1859 In Herbaria, also cf. Bull. Torr. Bot. Cl. **16**: 296, 1889.
[5] 1911 Fernald, RHODORA, **13**: 181.
[6] Fernald, l. c.
[7] 1846 Gray, Mem. Am. Acad. A. & S. **3**: ?
[8] 1906 In Herbaria.
[9] 1911 Fernald, RHODORA **13**: 181.
[10] 1911 Fernald: RHODORA **13**: 182.
[11] 1843 Young, *Flora of Bangor*, in Bangor Daily Whig and Courier. Spring or early summer.

it was brought to Dr. Wm. Wood of Portland by Hon. Wm. Senter (also of Portland), who obtained it "while gunning at Crumple Island." The exact station for Mr. Senter's plants is unknown. A detailed notice of several stations about Englishmans Bay has been furnished by Mr. Joseph Cushman.[1]

MERTENSIA MARITIMA (L.) S. F. Gray. Local, with distribution in Maine corresponding somewhat with that of *Arenaria peploides robusta*: Bailey's mistake, Lubec (*Fernald* in herb. N. E. Bot. Cl.); Roque's Bluffs and Point of Main;[2] Jonesport (*F. H. Peabody* in herb. Gray); Mt. Desert and Cranberry Islands;[3] Ship Island of the Mt. Desert group; Fog Island, Jericho Bay; Vinal Haven (*S. Watson* in herb. Gray); Matinicus Rock (superb mats); Metinic Green Island; Owl's Head (*A. H. Moore* in herb. N. E. Bot. Cl.); Burnt Island, one of the St. Georges group; Southport (*Mrs. Sharpless* in herb. N. E. Bot. Cl.); Trotts' Island, Kennebunkport (*W. H. Manning* in herb. N. E. Bot. Cl.); Wells Beach (*Miss Furbish* in herb. Gray); recorded from York.[4]

TEUCRIUM CANADENSE LITTORALE (Bickn.) Fernald. Sandy Beach, Matinicus Island. Not common on the islands east of Casco Bay. Occurs at Mt. Desert.[5]

PORTLAND SOCIETY OF NATURAL HISTORY.

[1] 1907 RHODORA 9: 217–218.
[2] 1902 Moulton, RHODORA 4: 189.
[3] 1894 Flora Mt. Desert, 130.
[4] 1864 Goodale, Proc. Portl. Soc. N. H. 1: 59.
[5] Flora Mt. Desert, 135.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,— XVIII.

GRAMINEAE.

[*Melica striata* (Michx.) Hitchc. "'Manchester' (S. P. Fowler), banks of the Merrimac, West Newbury," according to Robinson, Fl. Essex Co. 128, 1880, as *Avena striata* Michx. Mr. Robinson writes that the Manchester record was a quotation from notes by S. P. Fowler. This cannot be verified. The specimen cited from West Newbury is *Bromus ciliatus* L. "Concord (E. S. Hoar; specimen in herb. of)." according to Dame & Collins, Fl. Middlesex Co. 128, 1888, as *Avena striata* Michx. This specimen, now in the herbarium of the New England Botanical Club, proves also to be *Bromus ciliatus*.]

DISTICHLIS.

D. spicata (L.) Greene. Salt marshes. Common along the coast, but not reported south of Boston.

BRIZA.

B. MAXIMA L. Boston (*C. E. Perkins*, July 3, 1878, specimen in herb. Yale University). Native of Mediterranean region and southern Africa.

B. MEDIA L. Meadows and fields, scattered throughout.

DACTYLIS.

D. GLOMERATA L. Fields, roadsides and waste places, common throughout.

CYNOSURUS.

C. CRISTATUS L. Lawns, fields and roadsides; Salem, Cambridge, Dorchester and Jamaica Plain.

POA.

[*P. alsodes* Gray. Specimens recorded from Medford, Malden, Cambridge and Newton by Dame & Collins, Fl. Middlesex Co. 130,

1888, cannot be traced, and hence the reference cannot be verified. They doubtless all belong to other species.]

P. ANNUA L. Waste places, abundant throughout.

P. COMPRESSA L. Waste places, fields and woods, in dry and moist soil. Common throughout.

P. NEMORALIS L. Wenham (*J. Robinson*, July 4, 1875); Percival St., Dorchester, introduced (*J. R. Churchill*, June 26, 1898). The Wenham plant was also probably an introduction.

P. pratensis L. Fields and meadows, common throughout.

P. triflora Gilib. Dry and wet ground, common throughout.

P. TRIVIALIS L. Damp ground and waste places. Fairly well distributed but not common, from Dedham and Hingham northward.

GLYCERIA.

G. acutiflora Torr. Wet boggy places and in shallow water. Fairly common throughout.

G. borealis (Nash) Batchelder. Wet places and in shallow water; Boxford, Stoneham, Malden, Needham and Natick.

G. canadensis (Michx.) Trin. Low ground, common throughout.

G. grandis Wats. Wet places. Fairly common in northern half of district, probably found throughout.

G. laxa Scribn. West Gloucester (*F. T. Hubbard*, Sept. 27, 1911, specimen in herb. F. T. Hubbard); Reading (*W. H. Manning*, July 8, 1882, specimen in herb. N. E. Botanical Club).

G. melicaria (Michx.) Hubbard. (*G. Torreyana* (Spreng.) Hitchc.; see Hubbard, RHODORA xiv. 186, 1912.) Essex Co. (*W. Oakes*, no date); bank of brook near Merrimac River, East Haverill (*J. H. Sears*, Sept. 11, 1901); Brookline (*S. Harris*, June 27, 1894). Also observed but not collected in Weston and Dedham, July, 1908, by K. M. Wiegand.

G. nervata (Willd.) Trin. Swamps and low ground, common throughout.

G. obtusa (Muhl.) Trin. Borders of ponds and wet ground. Well distributed throughout, and fairly common.

G. pallida (Torr.) Trin. Shallow water. Seventeen stations from Sudbury eastward.

G. pallida (Torr.) Trin., var. **Fernaldii** Hitchc. Edge of pond, Woburn (*C. H. Knowlton*, June 20, 1908); ditch, Concord (*W. Deane*,

July 21, 1886); shallow water in meadow, East Sudbury (*W. P. Rich*, July 7, 1901); shrubby swamp, Dover (*K. M. Wiegand*, July 9, 1908); "Charles River near Wellesley and Needham," Wiegand, Rhodora xi. 83, 1909.

G. septentrionalis Hitchc. Swamps and shallow water. Not reported north of Lynn, common elsewhere.

PUCCINELLIA.

P. distans (L.) Parl. Salt marshes and brackish soil along the coast. Rather rare; Plum Island, Revere, Charlestown, Boston, South Boston and Brighton.

P. maritima (Huds.) Parl. Salt marshes and brackish sand. Common along the coast from Hingham northward; not reported farther south, but doubtless common.

FESTUCA.

F. elatior L. Fields, roadsides and waste land. Common from Walpole northward, and probably throughout.

F. myuros L. Wool waste, North Billerica (*C. W. Swan*, July 24, 1883); waste land, South Boston (*C. E. Faxon*, Oct. 5, 1878; C. E. Perkins, July 1 and 25, 1881; July 20, 1882); "N. Chelmsford, wool waste (Rev. W. P. Alcott)" according to Dame & Collins, Fl. Middlesex Co. 131, 1888.

F. nutans Spreng. Rich woods. Frequent from Randolph and Framingham northward.

F. octoflora Walt. Dry sterile soil. Fairly common throughout.

F. ovina L. Dry sandy soil; Andover, Cambridge, Boston, Needham and Jamaica Plain.

F. ovina L., var. capillata (Lam.) Hack. Occasional from Boxford, Chelmsford, Danvers, Dorchester, Wellesley and Hanson.

F. ovina L., var. hispidula Hack. Dry roadside, Mount Auburn Cemetery, Watertown (*A. S. Pease*, May 19, 1905); sandy field, Wellesley (*K. M. Wiegand*, May 29, 1908); campus, Wellesley (*K. M. Wiegand*, May 27, 1912).

F. rubra L. Dry sandy soil. Frequent throughout. "*F. varia*, Haenk., var. *flavescens*. (F. flavescens, Bellard). Chelmsford, July 3, 1883 (Dr. C. W. Swan)." in Dame & Collins, Fl. Middlesex Co. 131,

1888, in "an odd variation of *F. rubra* L." according to F. T. Hubbard.

F. rubra L., var. **megastachys** Gaudin. Vacant lot, Boston (*C. H. Knowlton*, June 25, 1908, specimen in herb. C. H. Knowlton).

F. rubra L., var. **multiflora** (Hoffm.) Asch. & Graebn. East Gloucester (*C. W. Swan*, July, 1881, specimen in herb. Yale University).

F. rubra L., var. **prolifera** Piper. Moist gravel, Lexington (*C. H. Knowlton*, Sept. 12 and 20, 1903, specimen in herb. N. E. Botanical Club).

SCLEROPOA.

S. RIGIDA (Kunth) Griseb. Boston (*C. E. Perkins*, July 1, 1878, specimens in herb. Yale University and N. E. Botanical Club). Native of southern Europe and northern Africa.

BROMUS.

B. altissimus Pursh. Ayer (*W. H. Manning*, Aug. 13, 1882, specimen in herb. N. E. Botanical Club); Trull Brook woods, Tewksbury (*C. W. Swan*, Sept. 1, 1882, specimen in herb. Yale University).

B. ARVENSIS L. South Boston (*C. E. Perkins*, June 25 and 30, 1879, specimens in herb. Yale University and N. E. Botanical Club).

B. BRIZAEFORMIS Fisch. & Mey. Charlestown (*C. E. Perkins*, July 23, 1881); South Boston (*C. E. Perkins*, May 28 and June 9, 1879); "collected for three years past on a dump near Leonard's Pond" according to E. C. Smith, RHODORA i. 98, 1899.

B. ciliatus L. Moist woods, fields and roadsides. Occasional northward, but not reported south of Jamaica Plain.

B. COMMUTATUS Schrad. Waste ground; Beverley, Chelmsford, Reading, Cambridge, Boston, South Boston and Dorchester.

B. HORDEACEUS L. Roadsides and waste places; Billerica, Salem, Cambridge, Boston, South Boston, Dorchester, Wellesley and Dedham.

B. HORDEACEUS L., var. LEPTOSTACHYS (Pers.) Beck. East Gloucester (*C. W. Swan*, ——, 1881, specimen in herb. Yale University); Field's Corner, Dorchester (*C. W. Swan*, June 24, 1882, specimen in herb. Yale University).

B. INERMIS Leyss. Field under partial cultivation, Nehoiden St., Needham (*K. M. Wiegand*, July 23, 1908, specimen in herb. N. E. Botanical Club). Native of Eurasia.

B. JAPONICUS Thunb. St. Mary's St., Boston (*C. W. Swan*, July 4, 1892, specimen in herb. Yale University).

B. KALMII Gray. Malden (*C. E. Perkins*, Aug. 23, 1882, specimen in herb. N. E. Botanical Club).

B. purgans L. Rocky woods; Boxford and the neighborhood of Boston, including Woburn, Melrose, Medford, Malden, Revere and Brookline.

B. RACEMOSUS L. Waste land. Sparingly reported from Dedham northward.

B. RUBENS L. Wool waste, North Billerica (*C. W. Swan*, July 24, 1883, specimens in herb. Yale University and N. E. Botanical Club).

B. SECALINUS L. Waste places, common, but not reported south of Blue Hills. "Forms exist with the lowermost sheathes pubescent, and the lemmas at maturity touching or over-lapping and scabrous on the back, but with short awns." F. T. Hubbard.

B. STERILIS L. Waste places; Billerica, Boston and South Boston. "Winchester (C. E. Perkins)" and "Medford (Miss A. M. Symmes)," according to Dame & Collins, Fl. Middlesex Co. 132, 1888.

B. TECTORUM L. Waste places, common throughout.

B. UNIOLOIDES HBK. South Boston flats (*C. E. Perkins*, Sept. 5, 1881, specimen in herb. Yale University). Adventive from Tropical America.

B. VILLOSUS Forsk. South Boston flats (*C. E. Perkins*, June, 1882, specimen in herb. Yale University). Native of Europe.

B. VILLOSUS Forsk., var. GUSSONII (Parl.) Asch. & Graebn. Medford (*C. E. Perkins*, June, 1882 and June, 1883); Boston (*C. E. Perkins*, June 9, 1879); South Boston flats (*C. E. Perkins*, June, 1882). Native of southern Europe, and introduced into western United States.

LOLIUM.

L. MULTIFLORUM Lam. Fields and waste places; Revere, Somerville, Boston, Dorchester, Jamaica Plain and Scituate.

L. PERENNE L. Fields, lawns and roadsides. Frequent from Scituate and Hingham northward.

L. TEMULENTUM L. Fields and waste places; Rowley, Ipswich, Lowell, Charlestown, Boston and South Boston.

L. TEMULENTUM L., var. LEPTOCHAETON A. Br. "Boston or vic[inity]" (*C. E. Perkins*, ——, 1882, specimen in herb. N. E. Botanical Club). See Fernald, RHODORA xii. 185, 1910.

AGROPYRON.

A. caninum (L.) Beauv. Rocky woods, Stoneham (*W. P. Rich*, July 4, 1894); ledges on Mt. Tabor, Lincoln (*J. R. Churchill*, June 18, 1883; *J. R. Churchill & Walter Deane*, Sept. 15, 1888); Concord (*C. W. Swan & C. W. Jenks*, July 6, 1888); Maj. Heywood path, near 2d Division Brook, Concord (*H. D. Thoreau*, July 1, 1859); Conantum, Concord (*E. S. Hoar*, July 6, ——); Damp woods, Wellesley (*K. M. Wiegand*, July, 1912).

A. caninum (L.) Beauv., var. **tenerum** (Vasey) Pease & Moore. (*A. tenerum* Vasey; see Pease & Moore, Rhodora xii. 71, 1910.) Dry railroad bank, Norfolk (*R. A. Ware*, July 4, 1908, specimen in herb. R. A. Ware).

A. caninum (L.) Beauv., var. **tenerum** (Vasey) Pease & Moore, forma **ciliatum** (Scribn. & Sm.) Pease & Moore. (See Pease & Moore, Rhodora xii. 72, 1910.) Border of marsh, Petengill's Swamp, Newbury (*A. A. Eaton*, Aug. 12, 1897, specimen in Gray Herb.).

A. pungens (Pers.) R. & S. Edge of salt marsh, Scituate (*C. H. Knowlton*, July 28, 1907, specimen in herb. C. H. Knowlton).

A. repens (L.) Beauv. Waste and cultivated ground, very common throughout.

A. repens (L.) Beauv., var. pilosum Scribn. (See Scribner, Bull. U. S. Division of Agrostology, No. 4, 1897, page 36.) Dry ground, Andover (*A. S. Pease*, June 30, 1901); low ground, Andover Hill, Andover (*A. S. Pease*, July 2, 1905); "Chelsea Beach" [Revere Beach, Revere] (*W. Boott*, July 15, 1868). Native of western North America.

SECALE.

S. cereale L. Rye. Waste ground. Several scattered stations throughout. Native of Eurasia.

TRITICUM.

T. aestivum L. Wheat. Roadsides, wharves, railroad tracks, old fields and waste places. Scattered stations throughout. Adventive from Eurasia.

HORDEUM.

H. DISTICHUM L. West Boston dump (*C. W. Swan*, Sept. 19, 1883, specimen in herb. Yale University. F. Lamson-Scribner has written on the label, "Two-rowed variety.") From Tartary.

H. jubatum L. Border of marshes and dry gravelly waste places. Scattered over the eastern and southern portions of the district.

H. MARITIMUM With. South Boston (*C. E. Perkins*, May 28 and June 29, 1879, specimen in herb. N. E. Botanical Club); "Billerica, in wool waste (Dr. C. W. Swan). Adv. from Eu." according to Dame & Collins, Fl. Middlesex Co. 134, 1888.

H. MURINUM L. Dumps and wool waste, Dracut, Lowell, North Chelmsford, Billerica, Charlestown and South Boston. Specimens in Gray Herb. and in herb. Yale University and N. E. Botanical Club. Native of Europe.

H. NODOSUM L. Filling, South Boston (*H. A. Young*, June 21, 1879, specimen in herb. N. E. Botanical Club).

H. VULGARE L. Barley. Waste ground. Sparingly from Essex, Beverley, Salem, Revere and Cambridge. Originally from western Asia.

ELYMUS.

E. australis Scribn. & Ball. Dry woods, West Quincy (*J. R. Churchill*, July 11, 1891); dry woods, Blue Hill, Canton (*J. R. Churchill*, Aug. 10, 1887, and Aug. 1, 1897).

E. brachystachys Scribn. & Ball. Andover (*A. S. Pease*, Sept. 24, 1901); Sunset Rock, Lee's Cliff, Concord (*E. S. Hoar*, Sept. 6, ——); rocky woods, Great Blue Hill, Canton (*A. S. Pease*, Nov. 8, 1901); Cohasset (*C. E. Faxon*, no date).

E. canadensis L. Sandy soil and rocky woods; Amesbury, West Newbury, Georgetown, Dracut, Lowell, Boston, Watertown and Dedham. "Merrimack river banks, from Lawrence to Newburyport" according to Robinson, Fl. Essex Co. 128, 1880.

E. striatus Willd. Dry woods and banks; Plum Island, Georgetown, Ipswich, Gloucester, Andover, Dracut, Lowell, Woburn, Melrose, Revere and Milton.

E. virginicus L. Banks of streams, borders of woods and edges of salt marsh. Frequent in the northern two-thirds of the district.

E. virginicus L., var. **hirsutiglumis** (Scribn.) Hitchc. Lower Mystic Lake, Arlington (*H. A. Young*, Aug. 1, 1880); near Charles River, East Watertown (*A. S. Pease*, Oct. 9, 1901); meadow, border of Neponset River, Milton (*W. P. Rich*, Sept. 27, 1896); dry rocks, Blue Hill, Canton (*C. H. Knowlton*, Sept. 19, 1908).

E. virginicus L., var. **submuticus** Hook. Revere (*C. E. Perkins*, Aug. 13, 1880 and Aug. 11, 1881, specimens in herb. N. E. Botanical Club). See Fernald, RHODORA xii. 186, 1910.

ASPERELLA.

A. Hystrix (L.) Humb. (*Hystrix patula* Moench; see Hubbard, RHODORA xiv. 187, 1912.) Moist and rocky woods; fifteen stations between Boxford, Quincy and Framingham.

C. H. KNOWLTON
S. F. BLAKE
WALTER DEANE
} *Committee on Local Flora.*

JUNCUS DICHOTOMUS IN RHODE ISLAND.— The species occurs at Westerly, where I collected it among the sand hills near the beach, on September 9, 1912. Professor M. L. Fernald, who has kindly verified my specimens, writes that the species has not been reported previously from the State. Specimens from Westerly have been deposited in the Gray Herbarium.— R. W. WOODWARD, New Haven, Connecticut.

AN ALBINO KALMIA ANGUSTIFOLIA.— In August, 1911, Professor Wiegand and the writer found on the hills south of St. John's, Newfoundland, a considerable colony of *Kalmia angustifolia* with white corollas; and recently Miss Martha Louise Loomis has sent to the Gray Herbarium fresh specimens of the same albino form from Sherborn, Massachusetts. As this form is conspicuous in the field and one which it may be desirable to refer to by name it may be called KALMIA ANGUSTIFOLIA L., forma **candida**, n. f., corolla alba.— NEWFOUNDLAND: damp mossy or turfy hollows on hill south of St. John's, Aug. 2, 1911, *Fernald & Wiegand*, no. 6019. MASSACHUSETTS:

one plant in a wet pasture with the common rose-flowered form, Sherborn, June 18, 1913, comm. by *Miss M. L. Loomis*.— M. L. FERNALD.

AN IMPORTANT PUBLICATION ON THE BIOLOGY OF WOOD'S HOLE.— Vol. XXXI of the Bulletin of the Bureau of Fisheries, U. S. Department of Commerce and Labor, has just been issued, 860 large octavo pages, with 274 charts and maps; all devoted to the fauna and flora of the Wood's Hole region. Naturally, the greater part is taken by the zoological side, but the botanical part, by Dr. Bradley M. Davis, is the most important paper on the marine algae of this coast that has appeared for some time. In part 2 is the "census" of the marine flora of the Wood's Hole region, giving all the species of which there is authentic record, 240 in all, with full particulars of station, etc.; this list may be considered fairly complete, and of much value to students of the region. Part 1, the "survey", will attract more general interest, as it gives the results of dredging at 458 stations in Buzzard's Bay and Vineyard Sound, in the years 1903, 1904, 1905, and a few in 1907; while the distribution of 38 of the principal species of algae is shown on charts. A uniform outline chart is used, the chart for each species being marked with stars, each showing the place of a dredging where the species was found. This graphic representation of the distribution of a species, certainly new in its application to algae, and probably to plants in general, is so much superior to anything that could be shown by descriptions or tables, that it is likely to be adopted generally when the data are sufficient to justify it. There is also a somewhat similar representation of the seasonal changes, for a period of 15 months, of the algae growing at various levels on a small group of rocks, "Spindle Rocks"; we can recall no record of any similar series of observations. The tendency of recent local reports in Europe is towards observations of all the conditions of the species recorded, and away from the mere list; Dr. Davis' work will rank with the best of the kind. By botanists who favor uniformity of nomenclature, a government publication like this, with the nomenclature conforming to the Vienna rules, will be hailed with much satisfaction.— FRANK S. COLLINS, North Eastham, Massachusetts.

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SIX WEEKS' BOTANIZING IN VERMONT,— I.

NOTES ON THE PLANTS OF THE BURLINGTON REGION.

SIDNEY F. BLAKE.

DURING the summer of 1911, acting on the suggestion of Prof. M. L. Fernald, I spent the period from 18 July to 30 August botanizing in the Champlain Valley of Vermont, devoting particular attention to tracing out the altitudinal ranges of a considerable number of plants whose distribution is in a general way coincident with the coastal plain or its extensions. Four weeks were spent in the Burlington Region, with Essex Junction as a center, after which I spent two weeks in northern Vermont, with headquarters at Swanton, the second town below the Canadian line on the shore of Lake Champlain.

Essex Junction, with an elevation of 358 feet above sea level, is in the midst of a number of sand and gravel plains of glacial origin, sometimes of very pure and shifting sand, on which are found several species very local or quite absent in other sections of the state, such as *Carex Muhlenbergii*, *Cyperus Houghtonii*, *Asclepias amplexicaulis*, and *Prunus cuneata*, with such commoner things of similar habitat as *Salix humilis*, *Lespedeza capitata*, *Lupinus perennis*, *Polygala polygama*, and *Viola adunca*. The highest sand plain met with, called locally the "High Plains," was at 500 feet, and here grew such plants as *Lechea intermedia*, *Aster linariifolius*, *Betula populifolia*, and *Myrica asplenifolia*, characteristic species of sterile soils nearly throughout New England. On the sandy beach of Lake Champlain (96 feet above sea level), at Malletts Bay and elsewhere, grew *Spartina Michauxiana*, *Scirpus americanus*, *S. fluviatilis*, *S. heterochaetus*, *Salix longifolia*, *Polanisia graveolens*, *Potentilla Anserina* and its handsome variety

sericea, *Hudsonia tomentosa* var. *intermedia*, *Artemisia caudata*, and many other plants more or less characteristic of the Lake shore, while among the species nearly or quite confined to the Winooski River were *Tussilago Farfara*, *Xanthium canadense*, *Equisetum variegatum* var. *Jesupi*, *Hypericum Ascyron*, and *Senecio Balsamitae*.

I wish to thank Dr. B. L. Robinson, Pres. Ezra Brainerd, Mr. F. T. Hubbard, and Prof. K. M. Wiegand for the identification of various species; Mrs. Nellie F. Flynn of Burlington, who guided me to several localities of interest in the Burlington Region, and has since furnished information about the occurrence of several species; and particularly Prof. M. L. Fernald, at whose suggestion the trip was made, who has verified practically all the identifications in the following list, and otherwise aided by advice on critical points.

In the following list, including all the species collected in the Burlington Region which seem worthy of record, those not in Mrs. Flynn's excellent Flora [1] are marked with an asterisk. Altitudes (taken by aneroid) are given in feet.

ASPIDIUM BOOTTII Tuckerm. Along brook in woods, Essex Junction.

A. CRISTATUM (L.) Sw. var. CLINTONIANUM D. C. Eaton. Damp soil in woods, Essex Junction; woods, alt. 565, Williston.

A. GOLDIANUM Hook. Woods, alt. 585, Williston, 31 July.

ASPLENIUM ACROSTICHOIDES Sw. Woods, alt. 460, Williston.

*PELLAEA ATROPURPUREA (L.) Link var. BUSHII Mackenzie. On rocks, alt. 220, Burlington, 27 July (*Blake* 2276). There are specimens in Gray Herbarium from Burlington (herb. D. C. Eaton) and from High Bridge, Aug. 1877, *C. E. Faxon*.

PHEGOPTERIS HEXANGONOPTERA (MX.) Fée. Woods, alt. 585, Williston.

FORMS OF OSMUNDA CINNAMOMEA L.

The forms of the Cinnamon Fern that are fairly recognizable are about seven in number, of which five occur in Vermont. They may be separated by the following key.

A. Fertile and sterile fronds quite distinct.
  B. Pinnules entire.
    C. Pinnules not glandular-pubescent.

[1] Nellie F. Flynn, Flora of Burlington and Vicinity (Contr. Bot. Vt. ix), 1911. The Burlington Region, to which the present notes are confined, includes Burlington, South Burlington, Colchester, Essex, Williston, and Shelburne.

1. O. CINNAMOMEA L. Sp. ii. 1066 (1753). Pinnules rounded or acutish, somewhat crowded to subremote.— Newfoundland to Florida, west to Illinois and Louisiana.— Including *O. cinnamomea* f. *angusta* Clute, Fern Bull. xvii. 12 (1909), which as represented in herb. Boston Society of Natural History by an authentic frond collected in a cedar swamp, Leicester, Vt., 17 July 1909, by D. L. Dutton, appears to be a not uncommon state in which the pinnules are sømewhat revolute and a little remote, and has the appearance of a teratological development rather than a nameworthy variation.

CC. Pinnules and upper part of rachis glandular-pubescent.

2. O. CINNAMOMEA var. GLANDULOSA Waters, Fern Bull. x. 21 (1902). *O. cinnamomea* f. *glandulosa* Waters, l. c.— In swampy woods, Rhode Island, New Jersey, Maryland.

BB. Some of the pinnules crenulate, serrate, or lobed.

D. Pinnules not bearing ascidia.

E. Pinnules serrate, the teeth sharp; middle pinnules of the pinnae usually most deeply cut.

3. O. CINNAMOMEA f. INCISA (Huntington) Gilbert, N. A. Pterid. 13, 28 (1901); Clute, Fern Bull. xv. 16, with fig. (1907). *O. cinnamomea incisa* Huntington, Fern Bull. vii. 12 (1899).— Seen from New Hampshire, New York, Massachusetts, Minnesota, and VERMONT: damp woods, Swanton, 25 Aug. 1911, *Blake* 3159; Mt. Mansfield, Underhill, alt. 3670, 11 Aug. 1911, *Blake* 2733; common in rather exposed places, Jay Peak, 17 July 1908, *Winslow;* in sphagnum bog, alt. 1000, near Rutland, 1 July, 1908, *Kirk* (see RHODORA xi. 28 (1909)). — Including *O. cinnamomea* var. *auriculata* Hopkins, Am. Fern Journ. i. 100, fig. (1911), a development with enlarged basal pinnules as in the next, but with "pinnules of entire frond more or less dentate-serrate" (no specimens seen).

EE. Pinnules lobed, with rounded divisions; lobing most conspicuous toward base of frond, pinnae, and pinnules, the lowest pinnules often elongated.

*4. O. CINNAMOMEA f. BIPINNATIFIDA Clute, Fern Bull. xv. 17 (1907). *O. cinnamomea bipinnatifida* Clute, Fern. Bull. xiv. 45 (1906). — Seen from all the New England states except Rhode Island, and from Florida (*Nash* 274); the following from VERMONT: pasture, alt. 620, Williston, 31 July 1911, *Blake* 2404.— Includes f. *trifolia* Clute, Fern Bull. xvii. 12 (1909).

EEE. Pinnules thin, deltoid to deltoid-oblong, with crenulate margin, the lower ones often faintly lobed.

*5. O. CINNAMOMEA f. **latipinnula** n. forma, pinnis alternis plerumque lato-oblongis, pinnulis paucis (ca. 10-jugis) alternis oblongo-deltoideis crenulatis, 1.5–2 cm. longis, 1 cm. latis.— Specimens examined: VERMONT: edge of woods, Swanton, 20 Aug. 1911, *Blake* 2981; MASSACHUSETTS: Great Swamp, Walpole, 7 Sept. 1906, *Churchill;* dry woods, Canton, 7 Oct. 1908, *Blake* (TYPE no. 239 in my herbarium).

DD. Midrib of pinnae naked for some distance below tip; many of the pinnules bearing ascidia on naked veinlets arising from the under surface; some of the pinnules lobed.

6. O. CINNAMOMEA f. CORNUCOPIAFOLIA Clute, Fern Bull. xvi. 108, 109, with plate (1908).— A curious form, not seen; described by Clute from a frond collected by A. S. Bossart in 1907 at Burton, Geauga Co., Ohio.

AA. Fertile frond partly foliaceous.

7. O. CINNAMOMEA f. FRONDOSA (T. & G.) Britton, Cat. Pl. N. J. 312 (1890). *O. cinnamomea* var. *frondosa* T. & G. in Torr. Cat. Pl. N. Y., in Ann. Rep. Geol. Surv. iv. 196 (1840).— Fertile frond with fruiting pinnae at base, apex, or middle, very variable; the sterile pinnae of fertile frond often lobed, and sometimes bearing a few sporangia at tips of veinlets.— Seen from all the New England states except Rhode Island, and from Pennsylvania.

BOTRYCHIUM TERNATUM (Thunb.) Sw. var. INTERMEDIUM D. C. Eaton. Læaf mold, base of Brownell Mt., Williston.

OPHIOGLOSSUM VULGATUM L. Pasture, Essex Junction.

*EQUISETUM HYEMALE L. var. AFFINE (Engelm.) A. A. Eaton f. POLYSTACHYUM Prager. Sandy soil, Burlington, 22 July (*Blake* 2087). A form bearing sessile spikes from the upper nodes. For description see Eaton, Fern Bull. xi. 112 (1903).

E. PALUSTRE L. Damp spot beside road, alt. 120, Colchester, 22 July (*Blake* 2102); sandy shore of Malletts Bay, Colchester, 9 August (2627).

*E. VARIEGATUM Schleich. var. JESUPI A. A. Eaton. Mrs. Flynn lists only the type, from Burlington and Colchester; but all my plants are of this variety, which is probably the common one in the Burlington Region. Shore of L. Champlain, Burlington (Mrs. Flynn's station); shore of Winooski River, where rather abundant, Essex Junction, 25 July (*Blake* 2186 in part); shore of Shelburne Bay, South Burlington, 13 August.

*E. VARIEGATUM var. JESUPI f. **geminatum**, n. forma, caulibus fertilibus 1–2 spicas sessiles vel brevipedunculatas nodis summis gerentibus. Fertile stems with one or two supernumerary spikes, sessile or on one-jointed peduncles from the topmost nodes. Specimens examined: VERMONT: shore of Winooski River, alt. 270, Essex Junction, 25 July, *Blake* 2186 part; and at 200 ft., 29 July, *Blake* 2345 part (TYPE SHEET no. 3461 in my herbarium).

*E. VARIEGATUM var. JESUPI f. **multirameum**, n. forma, caulibus fertilibus 1–7 multinodiatos ramos steriles vel spiciferos superioribus

nodis gerentibus. Fertile stems bearing from the upper nodes 1 to 7 long many-jointed often spiciferous branches. Specimens examined: MAINE: seepy gravelly shore, Fort Kent, 8 July 1904, *Fernald;* VERMONT: shore of Winooski River, Essex Junction, *Blake* 2186 part, and 2345 part (TYPE SHEET no. 3460 in my herb.); MICHIGAN: Keweenaw Peninsula, 1863, *Robbins*.

LYCOPODIUM ANNOTINUM L. Woods, alt. 485, Essex; woods, alt. 685, Williston, 7 August.

*L. CLAVATUM L. var. MEGASTACHYON Fernald & Bissell. Edge of wooded bank, Essex, 3 August. A single plant found, this bearing but a single fruiting branch.

L. OBSCURUM L. Quoted by Mrs. Flynn only from Burlington, but doubtless not uncommon. In woods, Burlington; damp woods, Williston, 31 July, and woods, Williston, alt. 685, 7 August; edge of wooded bank, Essex. A form intermediate between the type and the variety was collected in woods at Essex Junction on 26 July.

L. TRISTACHYUM Pursh. Dry woods, Burlington, 22 July and 2 August.

PICEA RUBRA (Du Roi) Dietr. Pasture, alt. 545, Williston.

TYPHA ANGUSTIFOLIA L. Swampy spot (near Central Vermont Railroad), Burlington (a different station from Mrs. Flynn's Burlington one).

SPARGANIUM AMERICANUM Nutt. Close to pond, Essex, alt. 270; boggy meadow, Essex Junction; edge of pond, alt. 300, Essex (*Blake* 2388). The last includes both the type and the variety **androcladum,* the two former representing the variety only; but the so-called var. *androcladum* is scarcely worthy of any recognition in nomenclature, simple and branched forms being almost always found growing together, so that the distinction based on presence or absence of branches is of no real value.

S. DIVERSIFOLIUM Graebn. Recorded only from Colchester by Mrs. Flynn. It seems to be not rare. Shore of Winooski River, alt. 270, Essex Junction (with the variety); bog, alt. 100, Colchester; mud flats of Hinesburg Pond, Williston, alt. 684 (*Blake* 2570). Number 2571, collected with the last, approaches *S. americanum*. With these grew also the variety (2569).

*S. DIVERSIFOLIUM var. ACAULE (Beeby) Fernald & Eames. Shore of Winooski River, Essex Junction (2206 part); mud flats of Hinesburg Pond, Williston, 7 August.

*S. LUCIDUM Fernald & Eames. Shore of Winooski River, near its

mouth, alt. 97, Burlington, 2 August (*Blake* 2428). A most unexpected occurrence of a plant of coastal plain range, hitherto known sparingly from Massachusetts to Illinois and Missouri.

*POTAMOGETON BUPLEUROIDES Fernald. Shore of Winooski River, alt. 270, Essex Junction, 25 July (*Blake* 2212). Also a plant of coastal plain range, though less pronouncedly so, and likewise new to the state.

*P. EPIHYDRUS Raf. var. CAYUGENSIS (Wiegand) Bennett. Shallow water in Winooski River, alt. 96, Burlington, 2 August (*Blake* 2425). New to the state.

P. HETEROPHYLLUS Schreb. Along the Winooski, Essex Junction, 21 and 25 July; shallow water, in Hinesburg Pond, Williston; Malletts Bay.

P. PUSILLUS L. Shore of Winooski, alt. 270, Essex Junction; shore of L. Champlain, Burlington.

P. RICHARDSONII (Benn.) Rydb. Mouth of Winooski, Burlington.

P. ROBBINSII Oakes. Malletts Bay, Colchester, 9 August.

SCHEUCHZERIA PALUSTRIS L. In sphagnum bog, Porters Swamp, Colchester. In herb. Boston Society of Natural History are a number of specimens collected in Colchester by William Oakes.

*SAGITTARIA ARIFOLIA Nutt. This species, not in Mrs. Flynn's list, proved to be rather common. It was first found on 22 July by Mrs. Flynn and myself, while collecting along the shore of Lake Champlain in Burlington, and later I met with it as follows: shore of Winooski, Essex Junction (a single small plant); flats of L. Champlain, Colchester, 2 August, first near the mouth of the Winooski, then between Mills Point and Porter Point along the muddy shore of the Lake; sandy shore of Malletts Bay; shore of Potash Creek, close to mouth, South Burlington.

FORMS OF SAGITTARIA HETEROPHYLLA Pursh.

The formal varieties of this species mentioned in Gray's Manual, being mere leaf forms without stable characters or particular range, are properly treated as formae. Doubtless all of them occur in Vermont.

1. SAGITTARIA HETEROPHYLLA Pursh, Fl. Am. Sept. ii. 396 (1814). Leaves on the same plant varying from linear-lanceolate and entire

to lanceolate or oval-oblong with two narrow acute hastate or sagittate basal lobes, the presence of the latter distinguishing it from all other forms except *elliptica*.—Seen only from Ontario, Massachusetts, New York, Delaware, Illinois, Missouri, and VERMONT: Burlington, July–August 1911, *Blake* 1860, 2430; mud flats of Hinesburg Pond, alt. 684, Hinesburg, *Blake* 2595; Little Otter Creek, Ferrisburg, 10 Aug. 1880, *C. E. Faxon*.

2. S. HETEROPHYLLA f. **elliptica** (Engelm.) n. comb. *S. heterophylla* var. *elliptica* Engelm. in Gray, Man. ed. 2. 439 (1856).—Leaves broadly elliptical, some of them with very acute arcuate-sagittate basal lobes, 8–10.5 cm. long, 5–9 cm. wide.—Specimens examined: MASSACHUSETTS: Lowell, 9 Aug. 1882, *Manning;* MISSOURI: St. Louis, Sept. 1846, *Engelmann*.

*3. S. HETEROPHYLLA f. **rigida** (Pursh) n. comb. *S. rigida* Pursh l. c. 397 (1814). *S. heterophylla* var. *rigida* Engelm. l. c. (1856). (?) *S. heterophylla* var. *angustifolia* Engelm. l. c. (?) *S. rigidia* var. *Engelmanni* Farwell, Ann. Rep. Comm. Parks Detroit, xi. 44 (1900).—Leaves entire, lance-linear to oval, acute to acuminate at both ends, or rounded at base in the broadest-leaved specimens.—The commonest form, represented in the material examined from Quebec and Maine to Delaware, west to Minnesota, with the following from VERMONT: L. Champlain, Alburg, 1878, *Pringle;* shore of Shelburne Pond, Shelburne, *Blake* 2377; Malletts Bay, Colchester, *Blake* 2649; Ferrisburg, 1879, *Brainerd*.

*4. S. HETEROPHYLLA f. **fluitans** (Engelm.) n. comb. *S. heterophylla* var. *fluitans* Engelm. l. c. (1856).—Leaves all linear, or phyllodial and bladeless.—Specimens examined: VERMONT: Graveyard Point, North Hero, 2 Aug. 1899, *Brainerd;* L. Champlain, Aug. 1880, *C. E. Faxon;* shore of Maquam Bay, Swanton, 28 Aug. 1911, *Blake* 3191; Winooski R., Burlington, 2 Aug. 1911, *Blake* 2427; MASSACHUSETTS: Sheffield and Stockbridge, Aug. 1902, *Hoffmann*.

*S. LATIFOLIA Willd. f. GRACILIS (Pursh) Rob. Along the Winooski, Essex Junction; shore of L. Champlain, Burlington.

CENCHRUS CAROLINIANUS Walt. Dry soil along railroad near Essex Junction station; in sand beside road, Essex.

DANTHONIA COMPRESSA Aust. Wooded hillside, Essex Junction. This and the next determined by Mr. F. T. Hubbard.

*ELYMUS AUSTRALIS Scribn. & Ball. Edge of woods along Winooski River, alt. 235, Essex Junction, 21 July (*Blake* 2043). Previously collected in the state at Jamaica by L. A. Wheeler (see RHODORA, March 1912).

*ERAGROSTIS PECTINACEA (MX.) Steud. Sand bank, along railroad alt. 340, Essex Junction, 25 July (*Blake* 2176). An interesting oc-

currence, the plant being of coastal plain affinities, and previously known in Vermont only from the lower Connecticut Valley.

*Muhlenbergia foliosa (R. & S.) Trin. Damp spot in railroad embankment, alt. 345, Essex Junction, 20 July (*Blake* 1889). Determined by Mr. Hubbard, as were the following Panicums. Previously recorded from Townshend, *L. A. Wheeler*, by Kirk in Rhodora, March 1912. The following specimens in the Gray Herbarium, determined by Mr. Weatherby, all originally ticketed *M. mexicana*, show that the species is at least well distributed in the state: damp places, Sudbury, 14 Sept. 1896, *F. W. Hubby;* base of Willoughby Cliff, 4 Aug. 1881, and Fourth of July and North Slides, Willoughby Mt., 19 Aug. 1896, *Faxon;* North Pownal, 19 Aug. 1903, *Blanchard*. *M. foliosa* subsp. *ambigua* (Torr.) Scribn. is also represented in the Gray Herbarium by a sheet from Lake Champlain, 14 Sept. 1881, *Faxon*.

Panicum dichotomum L. Wooded hillside, Essex Junction.

P. tennesseense Ashe. Winooski Gorge, Colchester.

*Carex flava L. var. rectirostra Gaudin. Mud flats of Hinesburg Pond, alt. 684, Williston, 7 August.

*C. lanuginosa Mx. Shore of Winooski R., alt. 270, Essex Junction, 25 July.

*C. oligosperma Mx. Porters Swamp, Colchester, 2 August.

*C. Pseudo-cyperus L. Damp soil, Shelburne Pond, Shelburne, 30 July (*Blake* 2371).

*C. rosea Schkuhr var. radiata Dewey. Woods, alt. 765, Williston, 5 August (*Blake* 2540).

*Cyperus diandrus Torr. Sandy shore of Malletts Bay, Colchester, 9 August (*Blake* 2623). Apparently only the third record for the state.

C. Houghtonii Torr. The previous records for the state are as follows: Fairlee Lake, *Jesup* [1]; Colchester, Oct. 1901, *Mrs. Flynn* [2]; Castleton, 1911, *Brainerd* [3]. My experience seemed to show that the plant is not very uncommon in the Burlington Region, always growing in dry sand,[4] although this is not in all cases shifting as at Mrs. Flynn's Colchester locality. I made the following collections of the species; in Essex: sand along railroad, alt. 350, 26 July (2248, 2249); 2248 was

[1] Fl. Vt. 22 (1900).
[2] Rhodora v. 191 (1903).
[3] Rhodora xiv. 40 (1912).
[4] Except on one occasion, when it was found growing in the gravel between R. R. ties.

collected from a small clump about three-quarters of a mile north of the Essex Junction station, 2249 from another larger colony about three-quarters of a mile further north, which also extended up the side of a nearby hill to 440 ft. altitude, above which height the hill was wooded; sandy wood road, alt. 500, 3 August, on the "High Plains"; pure sand, alt. 410, 3 August. In Essex Junction: pure sand, alt. 360, 26 July (thirty plants or more, a little north of the station, growing with *C. filiculmis* var. *macilentus*); gravel between railroad ties, 3 August; sand plain, alt. 360, 14 August. In Colchester: sand plain, back of Fort Ethan Allen, alt. 350, 23 July; in sand, alt. 340, 9 August (this was Mrs. Flynn's original station).

The fruiting season, given as "Aug., Sept." in Mrs. Flynn's list, should be extended to include July as well, as many of my plants collected on 23 July are in good fruit.

*C. STRIGOSUS L. var. COMPOSITUS Britton. Along brook, alt. 310, Essex Junction, 20 July (*Blake* 1969); shore of Winooski River, alt. 97, Burlington, 2 August (2429). New to the state.

ELEOCHARIS INTERMEDIA (Muhl.) Schultes. Sandy shore of Malletts Bay, Colchester, 9 August.

*E. PALUSTRIS (L.) R. & S. var. CALVA (Torr.) Gray. Shore of Lake Champlain, Burlington, 22 July (*Blake* 2076).

E. PALUSTRIS (L.) R. & S. var. MAJOR Sonder (var. *vigens* Bailey). Shore of Malletts Bay, 22 July and 9 August; flats of Lake Champlain, Colchester.

SCIRPUS ATROCINCTUS Fernald f. **brachypodus** (Fernald) n. comb. *S. atrocinctus* var. *brachypodus* Fernald, Proc. Am. Acad. xxxiv. 503 (1899).— Pasture, alt. 370, Williston, 30 July (a small colony with none of the type form near).— Occurring practically throughout the range of the type, often growing with it, and intimately connected by numerous intermediate specimens.

*S. ATROVIRENS Muhl. f. **sychnocephalus** (Cowles) n. comb. *S. sylvaticus* (var. *atrovirens*) var. *sychnocephala* S. N. Cowles, Am. Nat. iii. 101 (1869). *S. atrovirens* var. *pycnocephalus* Fernald, RHODORA viii. 163 (1906).— Shore of Winooski River, alt. 270, Essex Junction, 25 July (*Blake* 2203): three plants collected, two good *sychnocephalus*, the other intermediate. Rocky shore of Winooski near High Bridge, Essex Junction, 28 July; meadow along Winooski River, alt. 98, Burlington, 27 July. New to the state.— Cowles' var. *sychnocephala*, from North East, Pennsylvania, is evidently the same as var. *pycnocephalus* Fernald, of much later date.

*S. CYPERINUS (L.) Kunth var. PELIUS Fernald. Along brook, Essex Junction (*Blake* 1966); Porters Swamp, Colchester (2443); meadow, alt. 684, Williston (2581); Malletts Bay (2635).

*S. CYPERINUS (L.) Kunth var. PELIUS Fernald f. **condensatus** (Fernald) n. comb. *S. cyperinus* var. *condensatus* Fern. RHODORA ii. 16 (1900). *S. Eriophorum* var. *condensatus* Fern. Proc. Am. Acad. xxxiv. 501 (1899).— Meadow at south end of Shelburne Pond, 30 July (*Blake* 2379, 2380); meadow, Shelburne (2383); pasture, alt. 370 (2390), and pasture, alt. 620 (2403), Williston, 31 July; grassy soil, alt. 780 (2559), and pasture, alt. 725 (2560), Williston, 7 August.

*S. OCCIDENTALIS (Wats.) Chase. Shore of Malletts Bay, Colchester, 22 July (*Blake* 2099), and 9 August (2633, 2634); shore of Shelburne Pond, alt. 330, Shelburne (2373); meadow at south end of Shelburne Pond (2378); damp soil, near shore of Lake Champlain, Colchester, 2 August.

S. SMITHII Gray. Shore of L. Champlain, Burlington.

*S. TORREYI Olney. Shore of L. Champlain, Burlington, 27 July (*Blake* 2297). Also collected perhaps two hundred yards above this spot, along shore of Winooski River, in Burlington, on 2 August. About the fifth record for the state.

ERIOCAULON SEPTANGULARE With. Shore of Malletts Bay, Colchester (Mrs. Flynn's locality); sandy shore of Hinesburg Pond, alt. 684, Williston.

JUNCUS ARTICULATUS L. Shore of Winooski R., alt. 270, Essex Junction; rocky shore of Winooski near High Bridge, Essex Junction, alt. 215; shore of L. Champlain, Burlington.

(*J. brachycephalus* (Engelm.) Buchenau. The record of this species in Bull. 7 Vt. Bot. Club, p. 16, based on my report of the plant to Mrs. Flynn, should be expunged, the specimens being immature *J. brevicaudatus* (Engelm.) Fernald.)

*J. EFFUSUS L. var. PYLAEI (Laharpe) Fernald & Wiegand. Damp spot in railroad embankment, alt. 345, Essex Junction, 20 July (*Blake* 1887).

*J. EFFUSUS L. var. SOLUTUS Fernald & Wiegand. Near pond, alt. 270, Essex (*Blake* 2128); along Winooski River, Burlington (2434), New to the state.

*J. FILIFORMIS L. Shore of Malletts Bay, L. Champlain, Colchester, 9 August (*Blake* 2638). I find also a fragment including the inflorescence entangled in a mounted specimen of *Scirpus pedicellatus* which I collected at the same locality on 22 July.

J. PELOCARPUS Mey. Shore of Malletts Bay; flats of Lake, Colchester, near mouth of Winooski; shore of Lake, Burlington.

CALOPOGON PULCHELLUS (Sw.) R. Br. Porters Swamp, alt. 100. Colchester.

HABENARIA BRACTEATA (Willd.) R. Br. Woods, alt. 765, Williston.

H. CLAVELLATA (Mx.) Spreng. Damp spot in railroad embankment, alt. 345, Essex Junction (a single plant).

POPULUS BALSAMIFERA L. Sandy hillside, alt. 430, Essex, 26 July — an odd habitat for this species of swamps and river borders.

*SALIX ALBA L. Dampish soil, Burlington, 19 July (*Blake* 1832), in woods near the railroad yards. New to the state.

S. DISCOLOR Muhl. var. ERIOCEPHALA (Mx.) Anders. Shore of Shelburne Bay, Queen City Park, South Burlington.

*S. LUCIDA Muhl. var. ANGUSTIFOLIA Anders. Shore of L. Champlain, Burlington, 22 July (*Blake* 2069). New to the state.

S. NIGRA Marsh. Material referable to var. *falcata* (Pursh) Torr., as at present understood, was collected at Burlington and Williston; but from many observations in Vermont and Massachusetts I have become convinced that this so-called variety represents merely the normal condition of young branchlets in this species. The leaves on older wood and at base of first year shoots are oblong and straight, those at tips of young shoots much narrower and scythe-shaped.

S. PEDICELLARIS Pursh var. HYPOGLAUCA Fernald. South end of Porters Swamp, Colchester. Mrs. Flynn, following the Manual strictly, gives *S. pedicellaris* only, but the only form known [1] in the Burlington Region is var. *hypoglauca* Fernald.

CARYA ALBA (L.) K. Koch. Pasture, alt. 570, Williston, 31 July; woods, alt. 695, Williston, 5 August.

(PARIETARIA PENSYLVANICA Muhl. There is a specimen in herb. N. E. B. C. collected in Shelburne by William Boott on 2 Oct. 1855.)

COMANDRA UMBELLATA (L.) Nutt. Railroad embankment, Essex Junction, 20 July; wooded hillside, Essex Junction, 21 July.

POLYGONUM AMPHIBIUM L. Sp. i. 361 (1753). (?*) *P. amphibium* var. *longispicatum* Peck, N. Y. State Mus. Rep. xlvi. 129 [repr. 49] (1893).— Shore of Winooski R., near mouth, Burlington, 27 July; shallow water in Winooski R., Colchester, 2 August; mud flats and sandy shore of Hinesburg Pond, alt. 684, Williston (*Blake* 2567, 2578 part: passing to f. *Hartwrightii*).

[1] See Fernald, RHODORA xi. 157–162 (1909).

P. AMPHIBIUM L. f. **Hartwrightii** (Gray) n. comb. *P. Hartwrightii* Gray, Proc. Am. Acad. viii. 294 (1870). *P. amphibium* var. *Hartwrightii* Bissell, RHODORA iv. 105 (1902).— Occurring as an emersed development on the same rootstock as the typical form, also sometimes isolated in dry woodlands and peat bogs. Bissell's paper should be consulted for evidence of the ecological nature of the form.— Rather open spot in woods, Burlington; swampy spot, Colchester (*Blake* 2455); sandy shore of Hinesburg Pond, alt. 684, Williston (2578 part); sandy shore of Malletts Bay (2651, 2652); shore of Potash Creek, South Burlington (passing to f. *terrestre*).

*P. AMPHIBIUM L. f. **terrestre** (Leers) n. comb. *P. amphibium* var. *β. terrestris* Leers in Willd. Sp. Pl. ii. 443 (1799); not of Gray's Man. ed. 1–5, which is *P. Muhlenbergii* (Meisn.) Wats.— Merely an emersed form of the type, with acute leaves very similar to those of *P. Muhlenbergii* but smaller, and pubescent like that species, but without the glandularity of the peduncles characteristic of it.— Meadow, Colchester, 2 August (*Blake* 2465).

P. ERECTUM L. Queen City Park, in paths, South Burlington.

P. PENSYLVANICUM L. A form was collected at Essex Junction, and later at Swanton, with leaves bearing a red spot as in *P. Persicaria* L.

RUMEX MEXICANUS Meisn. Waste land near L. Champlain, Burlington.

CHENOPODIUM GLAUCUM L. Lumber yard and railroad yard, Burlington.

SALSOLA KALI L. var. TENUIFOLIA G. F. W. Mey. Near Essex Junction railroad station.

*CERATOPHYLLUM DEMERSUM L. Shallow water in Hinesburg Pond, alt. 684, Williston, 7 August.

CASTALIA TUBEROSA (Paine) Greene. Shallow water in Winooski River, Colchester.

RANUNCULUS ABORTIVUS L. var. EUCYCLUS Fernald. Rocks in woods, alt. 660, Williston.

R. DELPHINIFOLIUS Torr. f. **terrestris** (Gray) n. comb. *R. multifidus* var. *terrestris* Gray, Man. ed. 5. 41 (1867). *R. lacustris* var. *terrestris* MacMillan, Metasp. Minn. Valley, 247 (1892). *R. delpheniifolius* var. *terrestris* Farwell, Ann. Rep. Comm. Parks Detroit xi. 63 (1900). *R. missouriensis* Greene, Erythaea iii. 20 (1895).— Merely a stranded development, often on the same stem with the typical aquatic form.— Colchester, 2 August (*Blake* 2451, 2461).

*Arabis canadensis L. Woods, alt. 765, Williston, 5 August.

*Barbarea vulgaris R. Br. Along brook, alt. 310, Essex Junction, 20 July.

Brassica nigra (L.) Koch. Waste land near L. Champlain, Burlington.

Radicula palustris (L.) Moench. Along the Winooski R., Essex Junction.

*Sisymbrium officinale (L.) Scop. About fifty plants, near farmhouse, Burlington,— the station discovered by Mrs. Flynn on 24 July; three plants in pasture, Shelburne, 30 July; one plant near farmhouse, Colchester, 2 August. See Flynn, Bull. 7 Vt. Bot. Club, 17 (1912); Blake, Rhodora xiv. 190–192 (1912).

Polanisia graveolens Raf. A single plant collected along the railroad at Twin Bridges, alt. 250, Colchester, 24 July, about five miles above the mouth of the Winooski.

*Amelanchier canadensis L. (Not of Mrs. Flynn's list.) Beside road, alt. 160, Burlington, 27 July (*Blake* 2278); shady roadside, alt. 140, Burlington 2 August (2497). This and the two following identified by Prof. K. M. Wiegand.

?A. humilis Wiegand. A doubtful collection, possibly of this species, made with the last (2496).

A. laevis Wiegand. (*A. canadensis* L. of Mrs. Flynn's list.) Essex Junction (2037) and Colchester (2472).

Crataegus macracantha Lodd. Edge of woods, Essex Junction.

C. punctata Jacq. Pasture, Williston, alt. 505.

*× Fragaria grandiflora Ehrh. Lumber yard, Burlington, 19 July.

Potentilla Anserina L. var. sericea Hayne. In addition to Mrs. Flynn's locality on the shore of L. Champlain in Burlington, the following stations were found for this variety: sandy soil, Colchester, between Barney Point and Colchester Point; rocky shore of Lake, between Mills Point and Porter Point, Colchester; shore of Malletts Bay; shore of Shelburne Bay, Queen City Park, South Burlington.

*P. monspeliensis L. var. norvegica (L.) Rydb. A single plant found in sand along railroad, Essex, 26 July.

*P. palustris (L.) Scop. f. subsericea (Becker) Wolf, Monog. Potentilla 76 (1908). *P. palustris* var. *subsericea* Becker, Deutsch. Bot. Monatsschr. xv. 85 (1897).— This handsome but inconstant form, first recorded from America by Fernald & Wiegand in Rhodora

for June 1910, twice came under my notice in the Burlington Region. It was collected in swampy soil at the south end of Porters Swamp, Colchester, 2 August (*Blake* 2442), and later the same day a less typical form of it was collected (2456), growing with *Polygonum amphibium* f. *Hartwrightii*, an analogous state of another amphibious species, in a swampy spot near Barney Point, Colchester. The latter number was clearly intermediate between the typical form and good *subsericea*, and the inconstancy of the character of pubescence, coupled with the presumptive evidence of its ecological nature afforded by the habitat — more or less exsiccated swampy ground or meadow in each case — shows that the plant is better considered a forma than a variety.

ROSA CINNAMOMEA L. Pasture about old house-site, Williston.

HYPERICUM ASCYRON L. Rocky shore of Winooski R. near High Bridge, Essex Junction, alt. 215. The only locality in the Region.

*H. BOREALE (Britton) Bicknell. Rather common. Collected twice at the same spot on the shore of Lake Champlain in Burlington, 27 July (*Blake* 2300) and 2 August; on sandy shore of Malletts Bay, Colchester, 9 August; flats of L. Champlain, and in meadow, Colchester, 2 August; mud flats of Hinesburg Pond, alt. 684, Williston.

H. CANADENSE L. Shore of Winooski R., alt. 270, Essex Junction (two small plants).

*H. MAJUS (Gray) Britton. Edge of woods, alt. 360, Essex Junction, 23 July (a single specimen); shore of Lake Champlain, Burlington; sandy shore of Malletts Bay; sandy shore of Hinesburg Pond, Williston.

VIOLA AFFINIS Le Conte. Edge of woods, Shelburne. Determined by Pres. Brainerd.

V. CUCULLATA? × FIMBRIATULA. A hybrid considered by Pres. Brainerd to be probably of this parentage was collected not very far from the last.

EPILOBIUM MOLLE Torr. Collected at Mrs. Flynn's Burlington station on 27 July, and also on two other occasions: meadow, Essex Junction, 29 July; near brook, alt. 430, Essex (a single plant).

OENOTHERA MURICATA L. A single specimen of this species, as understood in Gray's Manual, was collected in South Burlington near mouth of Potash Creek.

MYRIOPHYLLUM SPICATUM L. Shallow water, Malletts Bay, in fruit; Hinesburg Pond, Williston.

SANICULA TRIFOLIATA Bicknell. Woods, alt. 585, Williston, 31

July (2402). Mrs. Flynn's only record is of a specimen in the Gray Herbarium, collected by William Boott in Shelburne on 30 Sept. 1855.

*Gaylussacia baccata (Wang.) C. Koch f. glaucocarpa (Rob.) Mackenzie. Near the Winooski River, Colchester, 24 July (2367); dry woods, Burlington.

Rhododendron canadense (L.) BSP. Porters Swamp, Colchester, 2 August.

Vaccinium canadense Kalm. Dry hill, Essex, 3 August.

*V. pensilvanicum Lam. var. myrtilloides (Mx.) Fernald. Damp hollows, alt. 340, Essex Junction, 20 July (*Blake* 1929). New to the state.

Fraxinus pennsylvanica Marsh. var. lanceolata (Borkh.) Sargent. Waste land near L. Champlain, Burlington; damp soil, Colchester.

*Apocynum medium Greene. Rocky shore of Winooski River near High Bridge, alt. 215, Essex Junction, 28 July (2320).

Asclepias syriaca L. The members of a colony growing in pure sand, without shade, in Colchester, were strongly glutinous on stems, peduncles, pedicels, and upper leaf surfaces, evidently as a result of the unusual environment.

Convolvulus arvensis L. Sawdust bank, Essex Junction, 28 July.

*Galeopsis Tetrahit L. var. bifida (Boenn.) Lej. & Court. Essex Junction, 20 July; probably the only form occurring.

Hedeoma hispida Pursh. On a sand plain, alt. 495, Essex, 3 August, not far from the Essex Junction reservoir: native?

* × Petunia hybrida Hort. A single plant in sandy soil at Fort Ethan Allen, Essex, 23 July; like *P. nyctaginifolia* Juss., but with violet corolla.

Galium Aparine L. Damp soil, Essex, 23 July.

Viburnum dentatum L. Along stone wall, alt. 695, Williston near Hinesburg Pond, 7 August; also seen by roadside at 730 ft. alt., a short distance away.

*Campanula uliginosa Rydb. Meadow at south end of Shelburne Pond, Shelburne, 30 July (*Blake* 2375); meadow, Colchester, 2 August.

*Antennaria occidentalis Greene. Dry soil by roadside, alt. 125, Colchester, 22 July (2106).

A. Parlinii Fernald. Dry hill, Shelburne, 30 July.

(*Aster novi-belgii* L. Mrs. Flynn's record in Bull. 7 Vt. Bot. Club, 16, based on a doubtful report of mine, should be erased.)

*BIDENS VULGATA Greene. Shore of Winooski River, alt. 240, Essex Junction, 25 July (2229).

*EUPATORIUM PERFOLIATUM L. var. TRUNCATUM Gray. Sandy shore of Malletts Bay, Colchester, 9 August (2657).

*E. PURPUREUM L. Edge of woods along Winooski River, alt. 235, Essex Junction, 21 July (*Blake* 2039). On the doubtful list of the state flora since 1900, now first definitely reported.

*E. PURPUREUM L. var. FOLIOSUM Fernald. Along brook, Essex Junction, alt. 310, 20 July (1970). Also new to the state. This and the preceding identified by Dr. Robinson.

LACTUCA CANADENSIS L. var. MONTANA Britton. Beside road, Burlington (a single plant).

PRENANTHES TRIFOLIOLATA (Cass.) Fernald. Dry bank, Essex Junction.

TANACETUM VULGARE L. var. CRISPUM DC. Pasture (about old house-site), Williston; sandy shore of Malletts Bay, Colchester.

STOUGHTON, MASSACHUSETTS.

A PECULIAR VARIETY OF THE CANOE BIRCH.

M. L. FERNALD.

IN the genus *Betula* the 3-lobed bracts of the pistillate aments are so nearly universal as to be used as a generic character. In fact, so general is this character that the little shrub of the tundra of Newfoundland, southern Labrador and adjacent Canada, *B. nana* L., var. *Michauxii* (Spach) Regel, in which the bracts are commonly quite simple and oblong in outline, was made by Opiz a separate genus, *Apterocaryon*.[1] In habit, foliage, pubescence, nutlets, etc., this little shrub is, however, very similar to the polar *B. nana*, and, as already pointed out by the writer,[2] specimens occur which show a transition from the simple bract of the variety to the 3-lobed bract of the typical form of the species.

[1] Opiz, Lotus, v. 258 (1855).
[2] Fernald, Am. Jour. Sci., ser. IV. xiv. 187 (1902).

In view of the peculiarity of the bracts of *Betula nana*, var. *Michauxii*, it was interesting to find in the ravine of one of the headwaters of the Ruisseau à la Neige on Mt. Albert, Gaspé County, Quebec, a colony of small trees and shrubs of *Betula alba* L. (*B. pubescens* Ehrh.) which showed a similar variation. In the Mt. Albert trees the bracts are mostly oblong and unlobed but an occasional bract is 3-lobed as in the typical form of the species. This tree of Mt. Albert may be designated

BETULA ALBA L., var. **elobata**, n. var., trunco humili vel mediocri usque 6 m. alto; foliis maturis 4.5–6 cm. longis rhomboideo-ovatis basi rotundatis vel subcuneatis supra glabris subtus ad nervos pilosis; strobilis pendulis 1.5–2 cm. longis 7 9 mm. crassis, pedunculis 0.7–1.3 cm. longis; squamis oblongis integris vel undulatis ciliatis. Small or medium-sized tree (up to 6 m. high): mature leaves 4.5–6 cm. long, rhombic-ovate, rounded or subcuneate at base, glabrous above, pilose on the nerves beneath: strobiles pendulous, 1.5–2 cm. long, 7–9 mm. thick, on peduncles 0.7–1.3 cm. long: bracts oblong, entire or undulate, ciliate.— QUEBEC: crevices and talus of serpentine along Ruisseau à la Neige, Mt. Albert, Gaspé County, July 25, 1906, *Fernald & Collins*, no. 531 (TYPE in Gray Herb.).

GRAY HERBARIUM.

THREE PLANTS WITH EXTENSION OF RANGE.

FRANK S. COLLINS.

PANICUM BICKNELLII Nash. At Brewster, Barnstable County, Massachusetts, Sept. 10, 1912. Distribution given in Gray's Manual as Ct. to N. C.

JUNCUS BUFONIUS var. HALOPHILUS Buchenau & Fernald. Shore of "Sunken Meadow," Barnstable County, Massachusetts, Sept., 1911. According to the Manual, Gulf of St. Lawrence to Mass.; but the southernmost locality hitherto reported is Plum Island, near Newburyport.

While these extensions are worth recording, I take no credit for the discoveries; for the past few years, whenever I have been on Cape

Cod, I have collected everything I came across, unless I was sure I had already collected it from the same locality. As regards grasses, sedges etc., my ignorance is so thorough that I have seldom refrained from collecting, and at the end of the season I have turned over the whole lot to the Gray Herbarium. In each case Prof. Fernald has been good enough to name the plants, and each season some have been found that were growing outside of their recorded range. It only shows that one need not be a specialist to contribute to our knowledge of the flora of the region. The wayfaring man, even in the extreme case mentioned in the scriptures, will not err if he collects freely, and sends his specimens to Prof. Fernald.

POTENTILLA TRIDENTATA Ait. Sandy plain, Eastham, May 30, 1913. This is on a different footing from the two species already mentioned, as it is an old acquaintance of mine, with many pleasant associations. I first saw it at Bath, Maine, in August, 1880, where I had to stop over Sunday at a hotel there, in consequence of a sudden and unannounced change of time by a local steamer; I feel sure that every reader who has travelled on the Maine coast will recall some similar experience of his own. Then when Mr. Dame and myself were compiling the Flora of Middlesex County, we found this species on the summit of Mount Watatic. The boundary line between Worcester and Middlesex counties crosses this summit, and Mr. Dame, Dr. C. W. Swan and myself went all over the open ground on our hands and knees, until we were sure that the plant, not then in bloom, was actually on the Middlesex side of the line. At the time the Flora was published, this station was the only one in the county, but the plant was afterwards found at Wilmington. Though I have seen it many times since, it always has a special interest for me, but nothing could have been more unexpected than its occurrence along a "road" (three deep ruts in the open field) near the Bay shore of Eastham, about half a mile northwest of North Eastham station. The colony extended for some rods along the road, and the plants were in full flower, with abundant seed capsules from last year. The range is given in the Manual as Lab. to e. N. E., where common in exposed rocky or gravelly situations, N. J., and southward on the upper Alleghenies; also westward, chiefly along the Great Lakes. The Wilmington station is probably the nearest to Eastham.

NORTH EASTHAM, MASSACHUSETTS.

ADVANCE OF POTAMOGETON CRISPUS L.— The 7th edition of Gray's Manual gives the range of this species as extending from Massachusetts to Ontario and Virginia. Here in the lagoons of Jackson Park, Chicago, Ill., it is very abundant. Much work is needed to keep it cleaned out in the spring, when its growth is most vigorous. These lagoons are connected with Lake Michigan, and it seems reasonable to suppose that this species has made its appearance here by way of the Great Lakes. In the lagoons of Washington Park, about a mile west, which have no connection with the lake, a careful search has failed to reveal it, and it probably does not occur. It is also found in abundance at Wolf Lake, Indiana. This body of water lies near Lake Michigan, and is connected with it.

It would be interesting to know just when the plant first made its appearance in this region. That it has occurred here for a few years at least is well known to most botanists hereabouts, but I believe that nothing concerning it in this vicinity has ever appeared in print. Guided by the index to American botanical literature published monthly in the Bulletin of the Torrey Botanical Club, I have looked up every reference from 1899 to the present date that might concern the flora of Illinois and Indiana, both systematic and ecological treatises, but I have found nothing regarding this plant. There may be a reference to it, however, in some note which the Bulletin has not seen fit to index. If so, I have overlooked it, but I do not believe that this is the case. If nothing has appeared then this may be regarded as an addition to the flora of both states. The advent of the plant, however, has doubtless been very recent, perhaps within the last ten years. In 1883 E. J. Hill [1] noted nine species of *Potamogeton* from Wolf Lake, but made no mention of *P. crispus*. In 1899 S. Coulter's 'Flora of Indiana' appeared, but this species was not included therein. Following the publication of Coulter's book, notably from 1900–1905, many additions to the Indiana flora came out in the 'Proceedings of the Indiana Academy of Science,' but this plant, if it occurred at all, seems to have escaped notice. My own acquaintance with it began in 1909. By this time it had become common.

The plant should, I think, now be found still further westward, especially along the Illinois and Mississippi Rivers, as it can reach the Illinois, which flows into the Mississippi, by way of the Drainage Canal.

[1] Bot. Gaz. **9**:45–48. 1884.

When currents are favorable, a steady stream of branches can be seen flowing from the lagoons out into the lake.

A specimen has been sent to the Editor to verify its identity.— EDWIN D. HULL, CHICAGO, ILL.

FURTHER WOOL-WASTE PLANTS AT WESTFORD, MASSACHUSETTS.— It has been my custom to visit a wool-waste dump near here several times a year. Generally I have found some of the Medicks, *Erodium cicutarium* (L.) L'Hér. and (I regret to name the next) *Centaurea maculosa*, established in two pastures and spreading into mowings even to the other side of the road several rods away.

No wool-waste has been placed here for three years, yet I found in June, 1913, two plants quite new to our region, *Erodium ciconium* L. and *Trifolium purpureum* Lois., there being a single individual of the *Erodium* and seven of the *Trifolium*.

I have learned from Dr. B. L. Robinson the following regarding the specimens I sent him: "Of *Erodium ciconium* L. we have at the Gray Herbarium only one specimen from America and that is from ballast at Philadelphia, where it was collected by the late Isaac C. Martindale, in August, 1877. On the sole basis of this specimen the species is mentioned in the Synoptical Flora by Prof. Trelease, who revised the *Geraniaceae* for that work. We find no more recent record of the species from America.

Of *Trifolium purpureum* Lois. there seems to be no record of American occurrence. These species both come from southern Europe and adjacent Asia."— EMILY F. FLETCHER. Westford, Massachusetts.

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INHERITANCE OF SEX FORMS IN PLANTAGO LANCEOLATA.

By Harley Harris Bartlett.

In a former paper in this journal the writer[1] reported upon the first filial generation of a "second form hermaphrodite" of *Plantago lanceolata*,— a form which is structurally hermaphrodite but functionally pistillate. This F_1 generation, which resulted from unguarded wind-pollination of the 2d form mother plant by pollen from 1st form hermaphrodites, included, if certain aberrant plants are disregarded, about 60% of plants like the seed parent (called "yellows" for short, on account of the color of the anthers) and about 40% of plants like the pollen parent ("whites"). Because of the rarity of the 2d form hermaphrodite in the locality where the original mother plant was found, it is likely that the pollen parents of the F_1 generation were for the most part either whites which did not belong to any gynodioecious strain, or else members of a gynodioecious strain consisting of 1st form hermaphrodites and structurally pure pistillates. In its second flowering season the original mother plant was surrounded by its own progeny, and isolated in one of the inner houses of a long range of greenhouses from other plants of the species. Consequently, it is fair to conclude that it was this time pollinated by whites belonging to the gynodioecious strain. A second F_1 generation was therefore grown in order to determine whether or not the progeny would show the same forms as when pollinated by unrelated plants of other strains.

[1] Bartlett, H. H.: On gynodioecism in *Plantago lanceolata*. Rhodora, xiii. (1911) pp. 199–206.

Moreover, certain plants of the first F_1 generation, including both whites and yellows, were chosen as the parents of a second filial generation, and their seeds which also resulted from pollination within the gynodioecious strain, were planted in the spring of 1912. So many of the plants of the 1912 cultures failed to flower the first year that it was necessary to wait until this year to report upon the second F_1 and the F_2 generations.

It may be recalled that the first F_1 generation of 137 plants contained 13 plants which could not be classified either as typical 1st form or 2d form hermaphrodites. Some of them did not flower; others were short-spiked gynomonoecious plants. They were kept in order to see what they would be like if they flowered in the second year. Eight of them died or again failed to flower; five of them flowered.

Plant No. 7, which had abortive round spikes the first time it flowered, had long spikes about half of which were bifurcated the second season. The flowers were strictly pistillate, with the stamens reduced to mere rudiments. This plant, structurally the only purely pistillate plant of the entire culture, flowered so imperfectly in 1911, that it could only be referred to in the former paper (l. c. p. 206) as a possible exception to the rule that none of the progeny of the 2d form hermaphrodite approached the pistillate condition more closely than the mother itself. This plant, either because it was sterile or because the season was so late when it flowered that no pollen was available, failed to set seed. It died after flowering.

Plant No. 28 was short-spiked and gynomonoecious the first year. In the second year some of the spikes were as long as in the rest of the culture. The long spikes, which flowered first, had only 2d form flowers in the lower $\frac{3}{4}$ of the spike and 1st form flowers above. The shortest spikes, which were the last to bloom, had only 1st form flowers. Between the extremes there were various transitions.

Plants Nos. 41 and 53 did not flower the first year. In the second year they were typical 1st form hermaphrodites.

Plant No. 63 did not flower the first year. The second season some of the spikes had first form flowers only. Other spikes were gyno-monoecious with the two flower types variously intermingled.

These records show that plants which were short-spiked the first year did not maintain this character the second year. This fact throws grave doubt upon the taxonomic validity of *Plantago lanceolata* var. *sphaerostachya*, set apart by De Candolle on account of its short

spikes, and accords with the experience of Druce,[1] who cultivated a short-spiked plant and found that it lost its distinctive character in the second year.

As a check upon the accuracy of the classification of the first F_1 generation, 18 whites and yellows, including all the individuals chosen as seed parents of the F_2 generation, were retained until they flowered a second time. They were essentially alike in both years. The original mother plant of all the cultures has likewise held perfectly to the characters which it showed the first year. It has now flowered four times and has been divided into 6 plants.

Four of the F_1 plants chosen as parents of an F_2 were yellows. Of these, two, Nos. 9 and 20 were altogether typical and quite indistinguishable from the mother plant, one, (No. 12) had the stamens of the same length and shape as the mother plant, but the anthers were slightly greener, and one, (No. 65), had the anthers just as in the mother plant, but the filaments were longer. The second form progeny of Nos. 9 and 20 reproduced the mother plant exactly. The 2d form progeny of No. 12 (50 plants) were also typical yellows with the exception of one plant, the anthers of which were slightly greenish as in the mother. Since the mother plant itself was recorded as a typical yellow in its second flowering season, its variation in the first season from the typical yellow character may have been due to some environmental factor which likewise affected the solitary one of its progeny which resembled it. If, however, the variation toward greenish anthers indicated a stronger pistillate tendency in No. 12 than in the other yellows, it is significant that the progeny of the greenish-stamened mother included a greater proportion of yellows than any other F_2. The 2d form progeny of No. 65 showed a continuous variation in the length of the filaments. In some plants they were as long as in the mother plant, in others as short as in any typical yellow, but the anthers of all were of the typical 2d form. If the long stamens of No. 65 indicated a weaker pistillate tendency than existed in the other yellows, the long-stamened character is no doubt to be correlated with the fact that the F_2 included a higher proportion of whites than the progeny of any other yellow.

[1] Druce, G. Claridge: *Plantago lanceolata* var. *sphaerostachya*. Brit. Journ. Bot. xlix (1911) p. 235. "A plant of this, which I brought back from Jersey last year, retained its short spike during the year, but has this year developed spikes indistinguishable from the type, as Dillenius says it did in the Eltham Garden. (See Dill. Herb. 97.)"

The F_1 whites which were chosen as mother plants were all alike, and typical. Their progeny consisted of both 1st and 2d form hermaphrodites, quite indistinguishable from those which were descended from yellow mother plants.

In all of the F_2 cultures a few of the whites showed a more or less pronounced gynomonoecious tendency. When only a very few flowers were of the 2d form, and the spikes were typical, the plants were counted as whites. If, however, the flowers were very aberrant, the stamens crumpled, or the perianth did not expand, and the spikes were abbreviated, the plants were regarded as "unclassified." In the following table, which summarizes all the cultures, the "unclassified" column includes both these aberrant plants and those which after being kept under favorable conditions for two years had still not flowered.

	1st form hermaphrodites (whites).	2d form hermaphrodites (yellows).	Unclassified	Total
First F_1 from original yellow.	53 = 39%	73 = 53%	11 = 8%	137
Second F_1 from original yellow.	53 = 52%	43 = 42%	6 = 6%	102
Total F_1	106 = 44%	116 = 48%	17 = 8%	239
F_2 from No. 9, yellow.	44 = 48%	47 = 52%	0	91
F_2 from No. 12, yellow.	34 = 40%	50 = 60%	0	84
F_2 from No. 20, yellow.	52 = 46%	59 = 52%	2 = 2%	113
F_2 from No. 65, yellow.	57 = 59%	38 = 39%	2 = 2%	97
Total F_2 from four F_1 yellows.	187 = 49%	194 = 50%	4 = 1%	385
Total F_1 and F_2 from yellows.	293 = 47%	310 = 50%	21 = 3%	624
F_2 from No. 46, white.	96 = 67%	36 = 25%	12 = 8%	144
F_2 from No. 49, white.	55 = 50%	56 = 50%	0	111
F_2 from No. 56, white.	51 = 50%	49 = 48%	2 = 2%	102
Total F_2 from three F_1 whites.	202 = 57%	141 = 40%	14 = 3%	357
Total F_1 and F_2 progeny of mother plant.	495 = 50.5%	451 = 46%	35 = 3.5%	981

There is no apparent explanation for the difference in constitution between the two F_1 cultures, one of which resulted from foreign pollination and the other from pollination within the physiologically gynodioecious strain. It will be noticed that the first F_1 culture agrees fairly well with the F_2 cultures from typical F_1 yellows Nos. 9 and 20. To ascribe the discrepancy between the two F_1 cultures to the source of the pollen would necessitate the assumption of a much

greater tendency to produce 2d form plants in the megaspores of Nos. 9, 12 and 20 than in the megaspores of their mother. The pollen parents of the first F_1 were of course unknown, but if it is safe to argue from the frequency of the sex forms of *Plantago lanceolata* in nature they were probably whites belonging to a non-gynodioecious strain. Would pollen from a pure 1st form strain be likely to have *less* tendency to produce whites than pollen from a strain consisting of two forms? — But in view of the small number of plants in the F_1 cultures and the relatively large number of unclassified plants which they contained, it is hardly profitable to speculate on their unexpected divergence.

As a whole, the table shows beyond doubt that in the physiologically gynodioecious strain of *Plantago lanceolata* which the writer has cultivated there are 1st and 2d form hermaphrodites in practically equal numbers in the progeny of both 1st and 2d form mothers. The mode of inheritance of the 2d form hermaphrodite in the physiologically gynodioecious strain is probably the same as that of the purely pistillate form in the structurally gynodioecious strains which have been studied by Correns.[1] This investigator has shown by pollinating the same mother plant with pollen from different plants, and, conversely, by pollinating different mother plants with pollen from the same plant, that both the seed parent and the pollen parent influence the proportion of sex forms in the progeny. The inheritance of the sex forms is not wholly determined by either parent. It should, therefore, throw some light on the mode of inheritance of the sex forms if a 2d form hermaphrodite were pollinated by a 1st form hermaphrodite belonging to a strain not only functionally but also structurally pistillate and, conversely, if a structurally pure pistillate plant were pollinated by a 1st form hermaphrodite belonging to the physiologically gynodioecious strain. Such crosses might result in a progeny in which one could distinguish by their morphological characters between those pistillate plants which had inherited the pistillate tendency through the pollen parent and those which had inherited it through the seed parent. In this connection attention may again be called to the one aberrant structurally pistillate plant (No. 7) which occurred in the first (open-pollinated) F_1 generation. Of 451 functionally

[1] Correns, C.: Die Rolle der männlichen Keimzellen bei der Geschlechtsbestimmung der gynodioecischen Pflanzen. Ber. d. deutch. bot. Ges. xxvia, pp. 686–701. 1908.

pistillate descendents of the original 2d form mother plant only this one transgressed the limits of what may fairly be interpreted as the limits of fluctuating variability of the 2d form hermaphrodite. It must either be interpreted as the result of chance pollination by a 1st form hermaphrodite belonging to a structurally gynodioecious strain through which it inherited the purely pistillate character, or else as a mutation.

Since 1910, the writer has been on the lookout for 2d form hermaphrodites in nature. Although many of them have been found in the region about Washington, they constitute but a negligible proportion of the total Plantago population. This seems not to be the case in some parts of France, where the yellow 2d form hermaphrodite is very common and has recently been described as *Plantago lanceolata* var. *androxantha*, a new variety, by Biau[1] and Lemasson. Of course these authors would not have accorded taxonomic standing to a sex form if they had recognized its true nature.

Typical plants from the cultures described in this paper have been turned over for cytological study to Dr. A. B. Stout of the New York Botanical Garden. It is to be hoped that his investigations will show whether there can be discovered a cytological basis for the inheritance of these forms.

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[1] Biau, A.: Nouveautés phytographiques. Bull. Soc. Bot. France, 4e ser. xii, pp. 711–716, 1912. (Feb. 1913).

"*Plantago lanceolata* L. var. *androxantha* Biau et Lemasson.

A *Pl. lanceolata* differt *antheris lutescentibus* vel viridi-lutescentibus, multo *angustioribus*; filamentis bis aut ter *brevioribus*; calycis carina *valde ciliata*, etc.

Ce Plantain est remarquable par ses anthères jaunâtres, lui donnant à la floraison un facies tout particulier, ce qui permet de le reconnaître à distance et de le distinguer très aisément du type à anthères blanches avec lequel il croît pêle-pêle.

Très commun dans les Vosges, aux environs du Bruyères et dans toute la vallée de la Vologne, où il nous a paru presque aussi répandu que le type.

Doit exister ailleurs, mais il faut le rechercher au moment de sa floraison, en mai de préférence, car ensuite il est difficile à distinguer du *Pl. lanceolata*; nous l'interprétons d' ailleurs comme une simple variété d'accord avec l'abbé Coste qui nous a fait l'honneur d'examiner quelques échantillons de cette nouvelle forme."— *p. 713.*

THE INDIGENOUS VARIETIES OF PRUNELLA VULGARIS IN NORTH AMERICA.

M. L. Fernald.

In recent years specimens of *Prunella vulgaris* L. have been sent to the Gray Herbarium by various New England botanists who have found the plant growing in lawns or roadsides and have urged that it is somewhat different from the common American plant passing as *P. vulgaris*. Upon receipt recently of such a specimen, the writer undertook a somewhat detailed examination of *Prunella vulgaris*. It was quickly obvious that most of the American material, the common plants from Newfoundland to Alaska, south through the Northeastern States, about the Great Lake region, and among the Rocky Mountains into Mexico, differed from the European *P. vulgaris* in the outline and proportions of the cauline leaves.

In the European type the principal cauline leaves (the median ones) are of an ovate or ovate-oblong outline and rounded at base, averaging fully one-half as broad as long. In North America an apparently identical broad-leaved plant occurs, chiefly in lawns and fields of the Eastern States, eastern Canada and Newfoundland, where it generally appears like an introduced weed. This is the broad-leaved plant which has recently been collected in New England lawns and by various collectors seen to be somewhat different from the indigenous *Prunella* of the region.

The clearly indigenous plants, found in open woods, on banks of streams and in mountain-meadows, but freely spreading into the cleared areas, from Newfoundland to Alaska, south to the Carolina mountains, Kansas, and mountains of Mexico and of southern California, have the principal or median cauline leaves narrower than in the common European *Prunella vulgaris*, lanceolate to oblong, and gradually tapering or cuneate at base, averaging only one-third as broad as long; [1] and although during the past few decades these American plants have been passing without comment as *P. vulgaris*, it is note-

[1] Measurements of 28 specimens of the European plant with the leaves rounded at base show the median cauline leaves to vary from $\frac{2}{5}$ to $\frac{2}{3}$ as broad as long (average $\frac{1}{2}$), while 60 specimens of the indigenous American plants with cuneate-based leaves show the median leaves to range from $\frac{1}{5}$ to $\frac{1}{2}$ (average $\frac{1}{3}$) as broad as long.

worthy that the keen earlier generations of American and European botanists were perfectly aware of a difference and treated the commoner native plant of America either as a distinct species or an American variety. In 1804 Willdenow, in *Hortus Berolinensis*, described and illustrated from Pennsylvania *Prunella pensylvanica*,[1] said to differ from *P. vulgaris* by slight characters of the flowers but shown in the plate as a plant with remarkably toothed leaves such as it is impossible to match by any American material known to the writer. Whether Willdenow's plate was based upon an American plant seems very doubtful and his herbarium material, according to Bentham,[2] was a mixture; but under the name *P. pennsylvanica* the commonest lanceolate-leaved American plant was taken up by Jacob Bigelow (1814), Pursh (1814), Amos Eaton (1818) and others and kept apart as a species from the ovate-leaved *P. vulgaris*.

Others of the same and immediately succeeding generations treated this narrow-leaved plant as a variety of the broader-leaved one. Thus we find Nuttall saying (without, however, any definition or other indication of just what he included in his variety): "*β pennsylvanica*. A mere variety of the preceding [*P. vulgaris*], which is certainly an introduced plant, never appearing far beyond the precincts of habitations."[3] Barton, in the same year, took up *P. pennsylvanica* as a species, apparently to cover all the Eastern American material, and divided it into two varieties: *α ovata*, with "leaves ovate" [true *P. vulgaris*] and *β lanceolata*, with "leaves lanceolate";[4] and subsequently supplied a beautiful plate and detailed description[5] of his *P. pennsylvanica, β. lanceolata* so that there is no question that he had the common American plant with lanceolate leaves gradually narrowed to the base, and the bracts and calyces green, the former copiously ciliate. Subsequently many authors, Bigelow in the 2d edition of the *Florula Bostoniensis* (1824), Beck (1833) and others, recognized that *P. pennsylvanica*, at least of Pursh and subsequent authors, though not exactly of Willdenow, was an American variety of *P. vulgaris*.

In 1834 the same plant was treated by Bentham in his monograph of the *Labiatae* as *P. vulgaris*, "*γ elongata*, foliis integris oblongo-lanceolatis, glabris vel parce villosis. . . . in America boreali vulgaris, in

[1] Willd. Hort. Berol. t. ix (1804).
[2] Benth. Lab. Gen. et Sp. 417 (1834).
[3] Nutt. Gen. ii. 37 (1818).
[4] Barton, Fl. Phil. ii. 37 (1818).
[5] Barton, Fl. N. A. ii. 69, t. 60 (1822).

Europa et Asia rarior," while the ovate- or oblong-leaved "*β vulgaris*" was said to be "in Europa et Asia vulgatissima. . . . in America boreali rarior."[1] In Hooker's *Flora Boreali-Americana*, in 1838, true *P. vulgaris* was recognized only from eastern Canada and Newfoundland, while the plants of the Northwest were treated as "*β. major*, foliis angustioribus. P. Pennsylvanica."[2]

The preceding citations and quotations are sufficient to show that the earlier students of our flora studied *Prunella;* but in recent discussions of the North American flora few mentions seem to occur of the fact that we have several well marked variations, one perhaps only introduced, the others indigenous. In the several editions of Gray's *Manual, Prunella* (or *Brunella*) *vulgaris* has been treated as purely indigenous, though in the *Synoptical Flora* Gray implied that it is introduced as well as native, saying "evidently indigenous in some of the cooler districts."[3] By Britton & Brown it is said to be "Naturalized from Europe. Native also of Asia. Possibly native in northern British America";[4] while in Britton's *Manual* it is said to be merely "Nat. from Europe."[5] To those who know the flora of the northern States and Canada in the field, however, there is no question of the indigenous character of the narrow-leaved variations of *P. vulgaris;* and Professor John Macoun, although not indicating the differences between the varieties, was expressing a widely felt conviction when he wrote: "It is probable there are two forms in the east where there may be an introduced one, but the western and Ontario form is certainly indigenous."[6]

In the commonest North American variety of *Prunella vulgaris* (Barton's *P. pennsylvanica β lanceolata*) as in the true *P. vulgaris* the bracts are copiously bristly-ciliate with long white hairs; but in the Northwest, from Vancouver Island to northern California and Wyoming, there are found other varieties, with the margins of the bracts quite smooth or at most with sparse and comparatively short ciliation. These varieties appear to have been unrecognized heretofore; as does a very beautiful plant of the Aleutian Islands with the ciliate bracts and the calyx deep purple, the bracts almost lanate with white tomentum.

[1] Benth. Lab. Gen. et Sp. 417, 418 (1834).
[2] Hook. Fl. Bor.-Am. ii. 114 (1838).
[3] Gray, Syn. Fl. ii. pt. 1, 382 (1878).
[4] Britton & Brown, Ill. Fl. iii. 88 (1898).
[5] Britton, Man. 788 (1901).
[6] Macoun, Cat. Can. Pl. i. 389 (1884).

Another variety, with the ovate-oblong cauline leaves rounded to the base but with the stems, petioles, and often the lower surfaces of the leaves densely villous-hispid, is found in dry woods from Kentucky and North Carolina to Florida and Louisiana. This is Rafinesque's *Brunella cinerea*, recently described by Pollard & Ball as a new variety, *P. vulgaris scaberrima*,[1] but it closely matches material received at the Gray Herbarium from Bentham of his *P. vulgaris*, *a hispida*[2] from India and southern Europe. It would seem, therefore, that var. *hispida*, like the plant which Bentham called var. *elongata* (*P. pennsylvanica*, var. *lanceolata* Barton), is indigenous in America as well as in Eurasia, though of less boreal range on both continents.

The preceding discussion may be briefly summarized as follows:

A. Principal or median cauline leaves ovate or ovate-oblong, rounded at base, $\frac{2}{3}$–$\frac{2}{3}$ (averaging $\frac{1}{2}$) as broad as long *B*.
  B. Plant sparingly and not conspicuously pilose.
    Corolla bluish, violet or lavender.....*P. vulgaris*.
    Corolla white.....*P. vulgaris*, forma *albiflora*.
  B. Stems, petioles, and often the lower surfaces of the leaves densely villous-hispid with white pubescence.....var. *hispida*.
A. Principal or median cauline leaves lanceolate to oblong, gradually narrowed or cuneate at base, $\frac{1}{5}$–$\frac{1}{2}$ (averaging $\frac{1}{3}$) as broad as long *C*.
  C. Bracts of the inflorescence with margins copiously bristly-ciliate with long white hairs *D*.
    D. Bracts green or at most with purple-tinged margins, glabrous to sparingly pilose on the back.
      Calyx green or at most with purple-tinged margins.
        Corolla bluish, violet or lavender.....var. *lanceolata*.
        Corolla white.....var. *lanceolata*, forma *candida*.
      Calyx purple.
        Corolla bluish or violet.....var. *lanceolata*, forma *iodocalyx*.
        Corolla pink.....var. *lanceolata*, forma *rhodantha*.
    D. Bracts and calyx dark purple, the former densely tomentose or lanate on the back.....var. *aleutica*.
  C. Bracts of the inflorescence with glabrous or sparingly short-ciliate margins.
    Leaves and stems glabrous or essentially so; bracts green, or at most with purple-tinged margins; corolla violet.var. *calvescens*.
    Leaves pilose beneath: stems pilose: bracts mostly deep purple: corolla dark or blackish purple.....var. *atropurpurea*.

Prunella vulgaris L. Sp. Pl. 600 (1753); Am. auth. in part. *Brunella vulgaris* Scop. Fl. Carn. ed. 2, i. 415 (1772); Am. auth. in part.[3] — Fields, roadsides, waste grounds, etc., Newfoundland and

[1] Pollard & Ball, Proc. Biol. Soc. Wash. xiii. 134 (1900).

[2] Benth. Lab. Gen. et Sp. 417 (1834).

[3] In his New Flora, pt. 2, 29–32 (1837) Rafinesque described ten species of *Brunella* from eastern America. Without authentic specimens it is impossible to identify them with certainty. *B. microphylla* and *B. sessilifolia* seem too indefinite for a guess. *B. heterophylla*, *cordata*, and *obtusifolia* are presumably *B. vulgaris*; *B. petiolaris*, *hirsuta*, and *reticulata* are referred to var. *lanceolata* or one of its forms; *B. rosea* may possibly be the same as the plant here called var. *lanceolata*, forma *rhodantha*; and *B. cinerea*, from its description and range, is almost certainly var. *hispida*.

eastern Quebec to North Carolina, west to Minnesota and Iowa; Wyoming; Mexico. Naturalized from Europe.

Forma ALBIFLORA (Bogenhard) Britton, Bull. Torr. Bot. Cl. xvii. 125 (1890) as *Brunella*. *Prunella vulgaris*, var. *albiflora* Bogenhard, Fl. Jena, 315 (1850).—Rare. Seen by me only from Brookline, Massachusetts, August 6, 1885, *Faxon*. Naturalized from Europe.

Var. HISPIDA Benth. Lab. Gen et Sp. 417 (1834). *P. hispida* Benth. in Wall. Pl. As. Rar. i. 66 (1830). *Brunella cinerea* Raf. New Fl. pt. 2, 30 (1837). *P. vulgaris scaberrima* Pollard & Ball, Proc. Biol. Soc. Wash. xiii. 134 (1900).—Dry woods from Kentucky and North Carolina to Florida and Louisiana. India and southern Europe.

Var. **lanceolata** (Barton), n. comb. *P. pennsylvanica* Bigel. Fl. Bost. 149 (1814); Pursh, Fl. Am. Sept. ii. 411, in part (1814); Eaton, Man. ed. 2, 383 (1818); not Willd. Hort. Berol. t. ix (1804). *P. vulgaris β pennsylvanica* Nutt. Gen. ii. 37 (1818). *P. vulgaris β lanceolata* Barton, Fl. Phil. ii. 37 (1818) and Fl. N. A. ii. 69, t. 60 (1822). *P. vulgaris γ elongata* Benth. Lab. Gen. et Sp. 417 (1834). *P. vulgaris β major* Hook. Fl. Bor.-Am. ii. 114 (1838).—This variety occurs in several color-forms. The typical plant illustrated by Barton has the bracts and calyces green and the corolla lavender or lilac-purple, but the corollas may be of quite deep purple tones. This typical var. *lanceolata* has been examined as follows. NEWFOUNDLAND: moist woods near Salmonier River, August 26, 1894, *Robinson & Schrenk*, no. 72; talus slopes of the marble region between Mt. Musgrave and Humber Mouth, Bay of Islands, July 18, 1910, *Fernald & Wiegand*, no. 3926; damp thicket, Bay St. George, August 5–7, 1901, *Howe & Lang*, no. 1008 (passing to forma *iodocalyx*). QUEBEC: gravel beaches near mouth of Dartmouth River, August 26 & 27, 1904, *Collins, Fernald & Pease*; mossy bog, altitude 600 m., between the River Ste. Anne des Monts and Table-top Mountain, July 31, 1906, *Fernald & Collins*, no. 713; Little Métis, August 1, 1906, *J. Fowler;* recent clearing, Basin Island, Magdalen Islands, *Fernald, Bartram, Long & St. John*, no. 7964. MAINE: fields, Orono, August 16, 1887, *Fernald;* South Poland, 1894, 1896, *Kate Furbish;* NEW HAMPSHIRE: roadside, Randolph, July 28, 1897, *E. F. Williams;* Crawford Notch, July 3, 1898, *J. M. Greenman*, no. 1013. VERMONT: Manchester, June 30, 1898, *M. A. Day*, no. 133. MASSACHUSETTS: Malden, July, 1880, *R. Frohock;* Oak Island, Revere, July 9, 1882, *H. A. Young*. CONNECTICUT: meadow and pasture, Southington, July 22, 1898, *L. Andrews*, no. 455. NEW YORK: Stony Creek Ponds, July 9, 1899, *Rowlee, Wiegand & Hastings*. PENNSYLVANIA: Buckhorn, Columbia Co., July 21, 1899, *A. A. Heller*. WISCONSIN: Milwaukee, *Lapham;* St. Croix Falls, July, 1899, *Mrs. N. E. Baker*. KANSAS: wet places, Riley Co., August 6, 1895, *J. B. Norton*, no. 412. MONTANA: Ravalli, July 15, 1908, *Mrs. Joseph Clemens*. COLORADO: Mancos, June 23, 1898, *Baker, Earle & Tracy*, no. 54; among willows, Steamboat Springs, Routt Co., July 20, 1903, *L. N. Goodding*, no. 1605. UTAH:

Bear River Cañon, August, 1869, *Watson*, no. 833; moist soil under trees, Farmington Cañon, alt. 4300–5500 ft., July 14, 1902, *Pammel & Blackwood*, no. 3666. NEW MEXICO: Mogollon Mts., alt. 7500 ft., July 23, 1903, *Metcalfe*, no. 300. IDAHO: moist rich soil, Fall Creek, Elmore Co., alt. 4500 ft., August 15, 1910, *Macbride*, no. 613 (passing to forma *iodocalyx*). ARIZONA: semi-shaded grassy places along streams, Thompson Ranch, White Mts., July 12, 1910, *L. N. Goodding*, no. 555. CALIFORNIA: Yosemite Valley, August 8, 1891, *Coville & Funston*, no. 1849. OREGON: stream-banks, Wallowa Mts., August 19, 1898, *Cusick*, no. 2072. WASHINGTON: moist places, meadows near Mabton, Yakima Co., July 25, 1902, *J. S. Cotton*, no. 750. ALASKA: Sitka, *Ferd. Bischoff*. JAPAN: Yokohama, 1862, *Maximowicz*. CHINA: Ichang, March, 1886, February, 1887, *A. Henry*, nos. 198, 1923; Tsingten, 1901, *Zimmermann*, no. 287.

Var. LANCEOLATA, forma **candida**, n. f., bracteis calycibusque viridibus; corolla albida.— QUEBEC: alluvial wooded banks of River Ste. Anne des Monts, July 16, 1906, *Fernald & Collins*, no. 245. MAINE: sandy shore, Fort Fairfield, July 8, 1893, *Fernald*, August 9, 1909, *Fernald*, no. 2084 (TYPE in herb. Gray). NEW HAMPSHIRE: roadside 1 mi. north of Clarkesville, July 11, 1907, *Pease*, no. 10,982 in part. MASSACHUSETTS: Acton, June 27, 1885, *W. Deane;* mountain road, Mt. Wachusett, July 13, 1893, *J. F. Collins;* Stockbridge, August 20, 1902, *R. Hoffmann*. MICHIGAN: Keweenaw Co., July, 1890, *O. A. Farwell*, no. 769.

Var. LANCEOLATA, forma **iodocalyx**, n. f., bracteis viridibus vel marginibus purpurascentibus glabris vel sparse pilosis; calycibus purpureis; corolla violacea vel subcaerulea.— NEWFOUNDLAND: calcareous gravelly bank, Port à Port, August 15, 1910, *Fernald & Wiegand*, no. 3927 (TYPE in herb. Gray). QUEBEC: *Mrs. Shepard;* Little Métis, August 2, 1907, *J. Fowler;* vicinity of Montmorenci Falls, July 5, 1905, *J. Macoun*, no. 67,845; NOVA SCOTIA: dry field, near Pictou, July, 1901, *Howe & Lang*, no. 533. NEW BRUNSWICK: St. Andrews: June 30, 1900, *J. Fowler*. MAINE: dry pasture, Dover, June 29, 1896, *G. B. Fernald*, no. 156; woods and fields, Hartford, June, 1885, *J. C. Parlin;* Gilead, *Kate Furbish;* woodroad, Pembroke, July 17, 1909, *Fernald*, no. 2085; Westport, August 14, 1907, *I. W. Anderson;* Manchester, September 12, 1873, *F. Lamson-Scribner;* East Livermore, *Kate Furbish;* Brunswick, 1880, *Kate Furbish;* woods and fields, North Berwick, June 17, 1893, *Parlin*. NEW HAMPSHIRE: pasture, Whitefield, July 24, 1897, *W. Deane;* roadside, Metallak, Pittsburg, July 6, 1907, *Pease*, no. 10,194; above tree-line, near Cape Horn, Mt. Washington, July 23, 1903, *B. L. Robinson*, no. 823; open grassy places, Jaffrey, July 4, 1897, *B. L. Robinson*, no. 128. VERMONT: sandy barrens, Westminster, June 16, 1898, *B. L. Robinson*, no. 37; MASSACHUSETTS: Manchester, July 13, 1877, *W. C. Lane;* East Boston, July 1, 1879, *C. E. Perkins;* West Roxbury, *Faxon;* Brewster, September 11, 1912, *F. S. Collins*, no. 1537; Eastham, July 10, 1901,

F. S. Collins, no. 257. CONNECTICUT: wet meadow, July 16, 1906, *R. W. Woodward*. WEST VIRGINIA: along Shaver Fork, Parsons, Tucker Co., September, 1904, *Greenman*, no. 210. NORTH CAROLINA: Cullowhee, 1887, *R. Thaxter*. ONTARIO: Flat Rock Portage, Lake Nipigon, July 20, 1884, *J. Macoun;* Pic River, *Loring*. ILLINOIS: wet soil, Makanda, July 18, 1902, *H. A. Gleason*. MONTANA: Spanish Basin, Gallatin Co., June 30, 1897, *Rydberg & Bessey*, no. 4902. IDAHO: common in meadows, valley of Big Potlatch River, June 9, 1892, *Sandberg, MacDougal & Heller*, no. 366; dry river banks, St. Anthony, July 5, 1901, *Merrill & Wilcox*, no. 791. NEW MEXICO: *Fendler*, no. 604. ARIZONA: Summit Spring, alt. 8000 ft., July, 1874, *Rothrock*, no. 198. CALIFORNIA: Yosemite Valley and Mountains, 1865, *J. Torrey*, no. 411; north side of Donner Lake in a hillside swamp, July 22, 1903, *Heller*. OREGON: Clearwater, *Spalding;* banks of streams, Swan Lake Valley, Klamath Co., June 30, 1896, *Applegate*, no. 432. WASHINGTON: wet places near streams, Waitsburg, June 8, 1897, *Horner*, no. B412; Clark Springs, Spokane, July 10, 1902, *F. O. Kreager*, no. 128; gravel flat, Quinault Valley, June 28, 1902, *Conard*, no. 212. BRITISH COLUMBIA: edge of swamp at Goldstream, August 3, 1905, *C. H. Shaw*, no. 1075. MEXICO: numerous collections from the mountains. JAPAN: Sapporo, June, 1878, ex herb. Sapporo Agric. Coll. COREA: *W. R. Carles*, no. 33; Tsu-sima Island, 1859, *C. Wilford*. FAEROE ISLANDS: August 12, 1903, *Paulsen*.

Var. LANCEOLATA, forma **rhodantha**, n. f., bracteis viridibus vel marginibus purpurascentibus; calycibus purpureis vel purpurascentibus; corolla rosea.— QUEBEC: field near Cedar Lodge, Georgeville, July 2, 1909, *A. S. Pease*, no. 11,957. NEW HAMPSHIRE: in a moist meadow, 1 mile east of Canaan line, Pittsburg, July 11, 1907, *A. S. Pease*, no. 10,992 (TYPE in herb. N. E. B. C.); maple grove, Lombard Hill, Colebrook, July 13, 1907, *Pease*, no. 11,048; stony field, Randolph, June 24, 1908, *Pease*, no. 11,188; rocky river bank, Northumberland, July 31, 1909, *Pease*, no. 12,136.—*Brunella rosea* Raf. New Fl. pt. 2, 31 (1837) from the Alleghanies may belong here.

Var. **aleutica**, n. var., caulibus pilosis apice albido-tomentosis vel -lanatis; foliis oblanceolatis vel lanceolato-oblongis basi attenuatis pubescentibus integris vel undulato-dentatis; bracteis atropurpureis albido-tomentosis vel -lanatis ciliatis; calycibus atropurpureis; corolla violacea.— ALASKA: along the river, just back of the town of Unalaska August 14, 1907, *E. C. Van Dyke*, no. 99 (TYPE in herb. Gray).

Var. **calvescens**, n. var., caulibus foliisque glabris vel glabratis; foliis caulinis oblongis vel oblanceolatis apice obtusis vel acutis basi attenuatis laminis 3–7 cm. longis 1–2.5 cm. latis integris vel dentatis; bracteis viridibus vel marginibus purpurascentibus eciliatis vel sparse breviter ciliatis; calycibus purpureis glabris vel sparse setulosis; corolla violacea.— BRITISH COLUMBIA: vicinity of Nanaimo, Vancouver Island, July 14, 1893, *J. Macoun*, no. 17,954; edge of forest, District of Renfrew, Vancouver Island, June–July, 1901, *Rosendahl &*

Brand, no. 1 (TYPE in herb. Gray); Howser Station, Selkirk Mts. June 20, 1905, *C. H. Shaw*, no. 734. WASHINGTON: Cascade Mts., lat. 49°, 1859, *Lyall;* near Kettle Falls, Old Fort Colville, October 3, 1880, *S. Watson*, no. 332; Muckleshute Prairie, *Dr. Ruhn;* low ground Western Klickitat Co., June 21, 1894, *Suksdorf*, no. 1445. IDAHO: West Kootenay, 1861, *Lyall.* WYOMING: moist ground about the Mammoth Hot Springs, Yellowstone National Park, July 21, 1899, *A. & E. Nelson*, no. 6042 in part (this number in herb. Gray is a mixture of var. *calvescens* and var. *lanceolata*, forma *iodocalyx*).

Var. **atropurpurea**, n. var., caulibus pilosis apice albido-tomentosis; foliis caulinis lanceolatis 5–8 cm. longis 1–2.5 cm. latis integris vel undulato-dentatis apice subacutis basi attenuatis subtus pilosis; bracteis inferioribus viridibus pilosis, reliquis purpureis glabris marginibus breviter ciliatis vel eciliatis; corolla atropurpurea.— CALIFORNIA: Santa Rosa, Sonoma Co., June 4, 1902, *A. A. Heller*, no. 5639 (TYPE in herb. Gray).

GRAY HERBARIUM.

LUZULA CAMPESTRIS, VAR. FRIGIDA IN NEW HAMPSHIRE.— Early this summer I noticed in a grassy field near the village of Wolfeboro, New Hampshire, a number of dense tufts of a dark green *Luzula.* It ripened ten days or more later than *Luzula campestris*, var. *multiflora*, which was also abu dant, and proved to be *L. campestris*, var. *frigida*, a northern form of the species. Later I found the var. *frigida* abundantly in an adjoining field, and then in another some three miles distant, indicating that it is not very uncommon here.

As Professors Fernald and Wiegand in their revision of the group in RHODORA for February, 1913, give eastern Maine as the southern limit of this variety, the discovery of it in Wolfeboro makes a considerable southern extension of the range, and it may be expected elsewhere in New Hampshire and Maine. Specimens have been deposited in the herbarium of the New England Botanical Club and in the Gray Herbarium.— H. E. SARGENT, Brewster Free Academy, Wolfeboro, New Hampshire.

CAREX TINCTA A VALID SPECIES.— CAREX **tincta** (Fernald), n. comb. *C. mirabilis*, var. *tincta* Fernald, Proc. Am. Acad. xxxvii. 473 (1902). When this plant was first put forward as a variety of *C. mirabilis* it was so treated with some doubt and with the comment: "Resembling northwestern forms of the polymorphous *festiva* group

but not satisfactorily referable to any of them." In the succeeding twelve seasons since the publication of *C. mirabilis*, var. *tincta* much material of the plant has accumulated and the writer now has before him specimens representing 39 different collections of the plant. These form a thoroughly consistent series; differing from *C. mirabilis* not only in the fewer dark-colored spikes with almost appressed perigynia barely exceeding the scales but in the low stature, slender culms, narrow leaves and closer sheaths — as different from *C. mirabilis* as is *C. straminea* from *C. mirabilis*, var. *perlonga*.

In well developed *C. mirabilis* the greenish spikes are rather numerous and form a head 2–4.5 cm. long, and the perigynia are much longer than the pale scales and with strongly spreading tips, much as in *C. projecta* Mackenzie (*C. tribuloides*, var. *reducta* Bailey). In *C. tincta* the brown spikes are few, 3–7, in a head 1.5–3 cm. long, and the perigynia are ascending and barely exceed the deep brown or castaneous scales. In *C. mirabilis* the culms are rather stout and ordinarily very tall, up to 1.5 m. high; the leaves 2.5–6 mm. broad, with comparatively loose sheaths. In *C. tincta* the culms are slender and comparatively low, 2.5–9 dm. high, and the leaves are 1–4 mm. wide, with rather close sheaths. Geographically, too, *C. tincta* is of quite different range from *C. mirabilis*. While the latter is generally distributed from central Maine to Manitoba and south to North Carolina, Missouri, and Kansas, *C. tincta* is more boreal, occurring from Newfoundland to northern and western New England.

In its dark scales nearly equaling the perigynia and in its approximate spikes *C. tincta* is nearly related to *C. Macloviana* D'Urv. of northern Europe, Greenland and Labrador and, as stated in the original publication, to the various plants of the Northwest which constitute the polymorphous *C. festiva* Dewey. From all these it is quickly separated by the looser inflorescence in which the spikes though approximate are not crowded. It is also suggestive of the very local *C. oronensis* Fernald, but differs in its broad ovate winged perigynia about 2 mm. broad.— M. L. Fernald, Gray Herbarium.

Festuca octoflora in Vermont.— This delicate grass was listed as *F. tenella* Willd. in Wm. Oakes's Catalogue of Vermont Plants, in Thompson's History of Vermont (1852). The station given was Bellows Falls, the collector, Carey. Messrs. Brainerd, Jones and

Eggleston in their Flora of Vermont (1900) were unable to verify this report, or to find other stations for this grass, so it was omitted from their list.

Last year, June 27, 1912, I collected this species, with other plants, at Red Rocks, near the shore of Lake Champlain, South Burlington. It grew in thin dry soil over red sandrock in light shade. The specimens are in my herbarium. This grass is so slender that it is easily overlooked, but it ought to occur in other similar places in the region. — Clarence H. Knowlton, Hingham, Massachusetts.

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THE HEATHER, CALLUNA VULGARIS, ON MARTHA'S VINEYARD.

EUGENE P. BICKNELL.

So much has been made of the heather growing wild on Nantucket that a sort of distinction has come to that island by reason of this plant. As well might the plural form be used — of these plants — for, in addition to the better known common Heather or ling (*Calluna vulgaris* (L.) Salisb.) two other heaths are found on Nantucket — the Bell Heather (*Erica cinerea* L.) and the Cross-leaved Heath (*Erica tetralix* L.). In respect of the *Calluna* it is to be reported that the island of Martha's Vineyard has equal if not greater claim to honor. Yet so little had this been suspected that when I chanced upon the heather growing there, in far greater profusion and in altogether wilder surroundings than on Nantucket, it seemed by first impression almost like an intrusion on a prerogative of the more seaward island.

Among the botanical elect of Nantucket its heather secrets have long been held in loyal reserve. But for this circumspection it is doubtful if any heather at all would be growing wild there today. It cannot be thought ungracious therefore if I particularize here no more fully as to the Martha's Vineyard locality than to report it as being in pitch pine woods in the southeastern quarter of the island.

An obscure woodland road passes the spot not many rods distant and an abandoned farm house, not yet a ruin, occupies an old clearing not very far away, but the general surroundings are quite uninhabited tracts of scrub oak, and woodland of oak and pine, traversed by sandy cartways and remote from any highway or any cultivated ground. The main growth of the heather carpets the level floor of

the woods over an irregular area some twenty-seven paces in length and twenty-four paces in greatest breadth. No garden spot could show a more perfectly continuous bed of color than here lies hidden among the pines in September when the heather is in full bloom. On three sides it is well screened by thick woodland growth, but from one direction no alert botanist in passing would fail to catch glimpses of its rosy glow through openings among the trees while yet eight or ten rods away. Of the few outlying patches the most distant is about fifty paces from the favored spot; another, thirty-five paces distant, lies quite outside the grove-like tract of pines in the adjoining scrub oak. In September, 1912, it was found that this patch had been discovered and much of it had been torn up and left lying about to die. The main growth, still undisturbed, had evidently been established for many years. The larger pines that gave it partial shade were from twenty to nearly thirty feet in height. When discovered, on September 24, 1909, it was in full flower; on October 10 fresh flowers were still appearing but the mass of bloom had lost its bright color of two weeks before. Few other kinds of plants grew close about it; the most noteworthy were *Cypripedium acaule, Hypopitys lanuginosa, Monotropa uniflora, Vaccinium pennsylvanicum, Epigaea repens, Pyrola rotundifolia, Trientalis americana* and *Carex pennsylvanica.*

This Martha's Vineyard heather appeared so different from the Nantucket plant — more straggling in habit with shorter less tapering racemes of deeper pink and somewhat different flowers and, in effect, glabrous foliage — that it gave me the instant impression of being quite like a different species. Nor was this impression an altogether misleading one. The plant is indeed true *Calluna vulgaris,* that is to say, the typical glabrate form of the species. The Nantucket *Calluna,* on the other hand, proves to be the markedly pubescent form of the plant which by some European botanists has been esteemed a distinct variety or even a valid species. It is the *Calluna vulgaris* var. *pubescens* of Koch (Syn. ed. 2: 547, 1844).

It does not clearly appear from the specimens examined how worthy of distinction from the more glabrous type this pubescent heather may be, or whether the minute pubescence of its younger parts and sometimes even of the leaves, is to be taken as evidence that the two plants readily interblend. The glabrate plant appears to be the prevailing and more widely diffused form in Europe. In the collections at the New York Botanical Garden I find specimens from England, France,

Germany, Hungary and Iceland, the pubescent form appearing from England only. But it is to be noted that it is reported by Schur from Kronstadt (Enum. Pl. Transs. 447, 1866).—"*Calluna vulgaris* b. *pubescens* Koch. (*Erica ciliaris* Hudson [non L.]—*Calluna ciliaris* Schur, herb. Transs.)." Specimens of the glabrate plant from America in the same Herbaria are as follows: Massachusetts — Andover, 1861, ex herb. A. Gray; Tewksbury, 1874, Thos. Morong; Nantucket; Rhode Island — Worden's Pond, Sept., 1894, J. F. Kemp; New Jersey — near Hammondton, Aug., 1891, W. A. Stowell. That the glabrate plant is found also in Newfoundland is clearly shown by the figure in Journ. Bot. **4**: 306, 1866, where the American heather was mistakenly proposed as distinct from the European under the name *Calluna atlantica* by Doctor Seemans.

The only notably pubescent specimens seen from any place in America are from Nantucket. There the plant has held its pubescent character from the time of its introduction thirty-six years ago. The evidence is interesting. There is preserved in the Herbarium of Columbia University an old Nantucket specimen, ex herb. O. R. Willis, bearing on the label no date or record other than the name of the collector, Mrs. C. C. Pearson. Mr. Willis seems to have been the first to have reported this heather, and also of *Erica Tetralix* from Nantucket. His note of announcement was published in the Bulletin of the Torrey Botanical Club for December, 1886, and records that the discovery of both species was made that same year by Mrs. Charlotte C. Pearson who had sent him specimens. This establishes beyond question the date and history of the Willis specimen. It is an excellent example of the pubescent form, and was from the same station where that form is found today.

It would seem to follow that no connection is to be supposed between the introduction of this pubescent heather on Nantucket and that of the glabrate form on Martha's Vineyard. There is even good reason for believing that the *Calluna* on Nantucket, even at the time of its earliest discovery there, must have come to the island from two different lines of approach, for both forms of the plant have been found there. A cluster that I came upon on the open plains in June, 1909, far away from the locality of the pubescent plant, was of the glabrate variety. Mrs. Owen has told us (RHODORA, **10**: 173–179, 1908) that it has been sought to spread the heather on Nantucket by scattering seed and even by setting out young plants. The existence of this isolated

cluster is perhaps thus to be explained. But there is evidence that the glabrate plant grew on Nantucket long before any effort had been made to introduce the heather there. The Herbarium of Columbia University contains another old specimen of *Calluna* labeled simply "Nantucket" without other record. It belongs among the earlier collections of the heather on that island and is of the glabrate form. It would seem to be most unlikely that both forms had come to the island together from the same place in Europe, and it is therefore to be inferred that Nantucket has received this addition to its flora from at least two sources of origin. Indeed Mrs. Owen believes (loc. cit.) that a solitary plant of *Calluna* found on Nantucket in 1880 far away from the locality where it was brought in with European conifers three years before was not of that introduction. How it came there is not less a mystery than is the presence of the heather at the other widely separated localities from Newfoundland to New Jersey where it has been found on the American Continent.

NEW YORK CITY.

TWO NEW SPECIES OF STIGONEMA.[1]

FRANK N. BLANCHARD.

(Plate 105.)

IN some material collected in October, 1909, by Dr. F. D. Lambert of Tufts College, from Chebacco Pond in the town of Essex, Essex County, Massachusetts, there was found very abundantly a blue-green alga, that apparently had not been described before, belonging to the family *Stigonemaceae*. This material was put into formalin and left until November, 1912, when Dr. Lambert and myself secured fresh material from the same place and found the same alga still plentiful. In April, 1913, I visited the pond and found the alga very scarce, but in exactly the same growing condition as in the previous November. It was found free-floating among other algae, chiefly blue-greens, where dead leaves and stems had collected in masses at the edge of the pond. Its filaments form loose, wiry-looking clusters from one to several millimeters in diameter.

[1] Contributions from the Biological Laboratories of Tufts College, No. 55.

The plant in the vegetative condition consists of blue-green filaments, 20–36 microns wide, that are repeatedly branched in every direction. Occasionally three or four branches may arise from adjacent cells, but the branches are usually more scattered. Although it is usually true that a branch is narrower than the filament it comes from, it may be equal to it in width, but never greater. In all the material collected the majority of branches appeared to be developed for the sole purpose of forming hormogones. No free vegetative ends of filaments, that were not forming or that had not already formed hormogones, were observed in all the material examined. The filaments are usually composed of a single row of cells, but two cells very frequently occur side by side. The colorless connections between the cells are plainly shown in formalin preserved material (fig. 8).

Lateral heterocysts are common (fig. 3). Intercalary heterocysts often occur just below a hormogone, and sometimes in other places, but they are less common than the lateral heterocysts. They contain no granules and vary in color from a light brown to a very dark blue.

The sheath is usually colorless, but many times is tinged at the ends of branches with a light, golden brown. The sheath varies from four to eight microns in thickness.

Filaments grow in length and develop branches by simple division of cells. Early stages in formation of a branch are shown in figures 1, 2, and 3. Hormogones are found of all lengths up to 196 microns, and their width is the same as that of the vegetative cells. They are developed in special branches and at the ends of main branches; they may occupy the whole of a branch and project down into the main filament, or may occupy only a part of the branch (figs. 3 and 6). When the plant is most actively forming hormogones, the vegetative cells become more and more vacuolated (figs. 1, 2, 3, and 6), and after the hormogones have escaped, the vegetative cells, sometimes if not always, degenerate. In one plant observed, every hormogone had escaped, and the sheath and cells had become a uniform brown, showing evident degeneration after escape of hormogones. Intermediate stages in this degeneration are easy to find.

The hormogones escape by a breaking off of the end of the sheath as in figure 6, or by apparent disorganization of the end of the sheath. The actual discharge of the hormogone is a slow process and appears to be accompanied by the discharge of a mucilaginous mass (figs. 4 and 5). The hormogone may escape from the sheath as a whole or

may break up into groups of one, two or more cells, either before or after leaving the sheath, as shown in figures 4, 5, and 7. In very young hormogones, the line of division between the cells is not clear, but as they grow older this line of separation increases in distinctness. The color of the hormogones changes as they mature, from the light blue-green of the vegetative cells to a very dark blue-green, which under the microscope appears almost black. This is probably due to a concentration of material. For this alga I propose the name

STIGONEMA **anomalum** sp. nov. Filis liberis, inter algas varias sparsis, repetite et irregulariter vel subsecundatim ramosis, 20–36 μ crassis; ramis patentibus, filo primario nunc aequicrassis, nunc tenuioribus, omnibus hormogoniferis; vagina 4–8 μ crassa, continua, hyalina vel ad apices aureo-fusca; cellulis diametro brevioribus, rectangularibus vel disciformibus, uni- vel biseriatis, aerugineis; heterocystis lateralibus, rarius intercalaribus, fuscis vel coeruleis; hormogoniis terminalibus, longitudine variis, usque ad 196 μ, aerugineis.

Filaments unattached, floating among other algae, repeatedly branched in every direction, or somewhat secundly, 20–36 μ diam.; branches patent, of the same size as the primary filament or sometimes thinner, all producing hormogones; sheath 4–8 μ thick, even, hyaline or sometimes golden brown at the apex of a branch; cells shorter than their diameter, mostly disciform or rectangular, of one or two series of cells, blue green; heterocysts lateral, less commonly intercalary, from brownish to blue-green; hormogonia terminal, of varying length, up to 196 μ.

Forming loose clumps, free floating among other, mostly blue-green, algae, Chebacco Pond, Essex, Massachusetts.

S. anomalum is a typical *Stigonema* for the following reasons: It is composed of one or two rows of cells; it is repeatedly branched in every direction; all branches bear hormogones; the cells are usually shorter than wide; the sheath is sometimes colored a light brown. It is allied to *Fischerella* and *Hapalosiphon* by its tendency to unilateral branching; by its smooth sheath; by the first cell of a branch projecting into the main filament; and by its generally rectangular cells.

Stigonema ocellatum is the only plant that could be confused with *S. anomalum*. I examined the specimen labeled *S. ocellatum* collected by G. T. Moore, in 1897 and distributed in Collins, Holden & Setchell, Phyc. Bor.-Am., No. 455, and concluded that my plant was not a new one after all, as it agreed very closely with Moore's plant. I then examined, through the kindness of Mr. Charles Bullard, the specimen of *S. ocellatum* from the Farlow Herbarium, originally from the herbarium of Bornet and Thuret, and decided that Moore had wrongly identi-

fied the plant he sent out, and that he had distributed *S. anomalum* under the name of *S. ocellatum*. *S. anomalum* has main filaments of about the size of *S. ocellatum;* as in that species, they consist usually of a single series of cells, occasionally two cells being side by side; otherwise, there is little resemblance. *S. anomalum* differs from *S. ocellatum* in the following ways:

1st. The wall is not very thick; the outline is straight, not following the individual cells.

2nd. There is no lamination either of the general wall, or about the individual cells. This latter, annular lamination, is what gives *S. ocellatum* its specific name.

3rd. The wall is usually colorless; in *S. ocellatum* it is generally colored, sometimes very strongly.

4th. In *S. anomalum* the cells are not rounded, but are mostly disciform.

5th. The branching is repeated, usually with diminution of diameter.

6th. The hormogones are generally longer than in *S. ocellatum*.

7th. The way the branches arise in *S. anomalum* is rather of the *Hapalosiphon* type, the one or two cells in the main filament appearing to belong to the branch rather than to the main filament.

Specimens of *Stigonema anomalum* will be distributed in the Phycotheca Boreali-Americana; the material was preserved in formalin before it was dried, and somewhat shrunken specimens are the result.

In the material collected in 1909, as above described under *Stigonema anomalum*, there was also found a new species of *Hapalosiphon*. Although there is no doubt that it is a *Hapalosiphon*, yet it is even more an intergrading form between *Hapalosiphon* and *Stigonema* than is *S. anomalum*. It was found free-floating under the same conditions as *S. anomalum*, but in appearance it is a small, soft sod a few millimeters across, of a blue-green to brownish color.

In the vegetative condition the plant consists of blue-green or brownish filaments from eight to sixteen microns wide that are repeatedly branched in every direction. There is a tendency for the branching to be unilateral as in *S. anomalum*, and for the secondary branches to be less in number than the primary branches. The branches do not taper toward the extremities, but are sometimes slightly clavate. The branches may or may not be slightly narrower than the primary filament. The cells are nearly always disposed in a single row. The

exception shown in figure 9 is rare. All the figures of this plant were made from material preserved in formalin and although there is very little shrinkage, yet there is just enough to show, in many places, the colorless connections between the cells. The cells are mostly cylindrical, usually longer than wide, and closely packed in the sheath. The colorless intercalary heterocysts are common (fig. 10). The sheath is mostly smooth, always colorless, and from two to four microns in thickness. At the ends of hormogone-bearing branches, the sheath is often thickened up to twelve microns (fig. 12). The cells of the branches are sometimes longer than those in the main filament, but are often shorter.

Filaments grow in length and develop branches by simple division of cells as shown in figure 9. Hormogones 37–163 microns in length and 8–12 microns in width occur at the ends of all branches or in short special branches. The cells of the hormogones are not well marked off from each other. Their color remains blue-green throughout their growth. The short hormogone-bearing branches are all variously curved (fig. 10).

STIGONEMA **medium** sp. nov. Filis liberis, inter algas varias sparsis, repetite et irregulariter vel subsecundatim ramosis, 8–16 μ crassis; ramis patentibus, filo primario plerumque tenuioribus, cylindricis vel clavatis; vagina 4–8 μ crassa, ad apices usque ad 12 μ, continua, hyalina; cellulis plerumque diametro longioribus, cylindricis, uniseriatis, aerugineis vel fuscis; heterocystis forma et magnitudine cellulis normalibus similibus, hyaliniis, intercalaribus; hormogoniis terminalibus, 37–163 $\times$ 8–12 μ, aerugineis.

Filaments unattached, floating among other algae, repeatedly branched in all directions or somewhat secundly, 8–16 μ diam.; branches patent, generally thinner than the primary filament, cylindrical or clavate; sheath 4–8 μ thick, up to 12 μ at the ends of the branches, even, hyaline; cells usually longer than their diameter, cylindrical, in one series, blue-green or brownish; heterocysts similar to ordinary cells in form and size, hyaline, intercalary; hormogonia terminal, 37–163 $\times$ 8–12 μ, blue-green.

Forming a minute, soft sod, among other algae, mostly blue-green, Chebacco Pond, Essex, Massachusetts, October, 1909.

This plant shows characteristics of both *Hapalosiphon* and *Stigonema*. It is characteristically a *Hapalosiphon* from its single row of cylindrical cells usually longer than broad; from its method of branching, and in that it usually has the cells in the branches longer than those in the main filament. It has the characteristics of a *Stigonema* in its habit of forming hormogones in the apices of the branches; in

the fact that in many of the branches the cells are no longer than those of the main filament or are shorter; in its secondary branching, and in its branching not being distinctly unilateral.

The genera *Hapalosiphon*, *Stigonema*, and *Fischerella* are in many respects alike. In the table on the next page their chief characteristics may be compared at a glance. This table gives a little more latitude than some of the best writers allow; O. Kirchner, for instance, does not admit secondary branching in *Hapalosiphon*. Different accounts of the same species in these genera often vary greatly, but a safe ground has been taken in compiling this table.

It will be seen from this summary that these genera are separated from each other by no clear and definite lines. There are several intergrading forms. The characters that are used to distinguish them are as follows:

Hapalosiphon grows free-floating in fresh water.

Fischerella grows in moist earth, on wet stones, and in hot springs.

Stigonema grows free-floating or on wet stones.

Stigonema is usually much wider than either of the other two; is often composed of several rows of cells, and the cells are usually more rounded than in *Hapalosiphon*.

The branches in *Fischerella* come from a creeping main filament and are unilateral. In *Hapalosiphon*, the branching is unilateral and secondary branching is relatively uncommon, while in *Stigonema* the filaments may be repeatedly branched in every direction. In contrast to *Stigonema*, *Hapalosiphon* has the cells of its branches longer than those of the main filament. A brown or black sheath is characteristic of *Stigonema*, but some of its species have a colorless sheath.

The question now is whether these differences are sufficient to separate three genera, especially after considering the characteristics of the two new plants above described. Bornet and Flahault in "Revision des Nostocacées Hétérocystées," 1887, class those forms now known as *Stigonema* under the subgenus *Sirosiphon*, and treat *Fischerella* as another subgenus of the genus *Stigonema*. Later, 1895, Gomont proposed raising *Fischerella* to the rank of genus, basing his proposal "sur la différenciation très marquée des filaments primaires rampants, relativement aux filaments dressés." West, in "British Fresh Water Algae" considers *Fischerella* to belong with *Hapalosiphon*.

Thus, there has already been considerable difference of opinion as to the relationship of these forms. *Stigonema anomalum* shows simi-

	Reproduction	Width of Filament	Length of Hormogones	Number of rows in Filaments	Style of Branching	Sheath	Cells	Heterocysts
Hapalosiphon	Hormogones and spores; chiefly spores	4 to 24 microns	All lengths	One, rarely two	Chiefly unilateral; secondary branching relatively uncommon	Smooth; colorless	Generally rectangular	Intercalary
Fischerella	Hormogones and spores	6 to 13 microns	Very long	One or two	Unilateral; branches from creeping main filament; no secondary branching	Smooth; colorless	Rectangular, or rounded	Intercalary
Stigonema	Hormogones and spores; chiefly hormogones	7 to 90 microns	All lengths	One, two, or more	In every direction; frequent secondary branching	Smooth or rough; colorless or brown to black	Rounded; less commonly rectangular	Intercalary or lateral

larity to *Hapalosiphon* in that its cells are commonly nearly rectangular; its sheath is smooth; there is a distinct tendency to unilateral branching; and the first cell of a branch usually projects into the main filament as in *Hapalosiphon*. *S. medium* shows itself distinctly like a *Stigonema* in its repeated branching; in the fact that the branches do not taper in the least and are often slightly clavate; and in the fact that hormogones are formed in abundance in all the branches. It also differs from the *Hapalosiphon* in having the cells of the branches often shorter than those of the main filament. It therefore seems necessary to put these three genera together as subgenera of the genus *Stigonema*, and let *Sirosiphon* be the subgenus comprising those forms now known as *Stigonema*. Thus:—

Genus, Stigonema Agardh.

1. Subgenus Sirosiphon Bornet & Flahault.
2. Subgenus **Hapalosiphon** (Nägeli) subg. nov.
   Nägeli ex Bornet & Flahault, Revision des Nostocacées Heterocystées, part 3, p. 54, 1887, as genus.
3. Subgenus Fischerella Bornet & Flahault.

Acknowledgement is due to Mr. Frank S. Collins for loan of books and assistance by suggestion, to Mr. Charles Bullard for loan of herbarium specimens, and to Dr. F. D. Lambert for material and assistance.

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Explanation of Plate 105.

Magnification: Figures 1 to 8, × 280; 9 to 12, × 420.

Figures 1 to 8 inclusive are *Stigonema anomalum*.

Fig. 1. The beginning of a branch.
" 2. Young branch and intercalary heterocyst.
" 3. Primary filament with short hormogone-bearing branches, unilaterally arranged. Lateral heterocysts and vacuolated cells.
" 4. Escaping hormogones.
" 5. Escaping hormogone.
" 6. A branch after escape of hormogone.
" 7. Hormogones.
" 8. Formalin material showing connections between cells.

Figures 9 to 12 inclusive are *Stigonema medium*.

Fig. 9. Shows that branching is not unilateral; young branch; division of a cell; two cells side by side.
" 10. Hormogone-bearing branch, and heterocyst.
" 11. Escaping hormogone.
" 12. Thickened portion of sheath at end of hormogone.

AGRICULTURAL COLLEGE, Amherst, Massachusetts.

SIX WEEKS' BOTANIZING IN VERMONT,— II.

ADDITIONAL NOTES ON PLANTS NEAR BURLINGTON.[1]

SIDNEY F. BLAKE.

OSMUNDA CINNAMOMEA L. f. INCISA (Huntington) Gilbert. Alt. 3670, Mt. Mansfield, 11 August (*Blake* 2733).

PICEA MARIANA (Mill.) BSP. f. **semiprostrata** (Peck) n. comb. *P. brevifolia* var. *semiprostrata* Peck, Spruces of the Adirondacks 12, 13 (1897).— In moss, alt. 3900 ft., Mt. Mansfield, Underhill, 11 Aug. 1911 (*Blake* 2745).— A creeping alpine form of the Black Spruce, eight or ten decimeters long or more, with short crowded branches mostly fascicled toward the erect apex of the stem, and tiny four-grooved glaucous needles 3–6 mm. long.

SAGITTARIA ARIFOLIA Nutt. Mud flats of Lake Champlain, North Ferrisburg, 8 August 1911.

CYPERUS STRIGOSUS L. f. **capitatus** (Boeckl.) n. comb. *C. strigosus* var. *capitatus* Boeckl. Linnaea xxxvi. 347 (1869–1870). *C. capitatus* Smyth, Trans. Kansas Acad. Sci. xvi. 163 (1899).— Pasture, Cobble Hill, Milton, growing with the typical form.— A form not very well marked, often — as in Boeckler's original specimens — small and seeming only a dwarfed state of the typical plant, but occasionally larger and more definitely distinguished.

SCIRPUS ATROCINCTUS Fernald f. BRACHYPODUS (Fernald) Blake. Pasture, alt. 1400, Mt. Mansfield, Underhill.

S. HETEROCHAETUSS Chase. Meadow, North Ferrisburg.

[1] The notes of this list relate to plants collected on several short excursions from Essex Junction, outside the limits of the Burlington Region as defined by Mrs. Flynn.

JUNCUS EFFUSUS L. var. SOLUTUS Fernald & Wiegand. Beside wood road, alt. 1260 ft., Mt. Mansfield, Underhill, 11 August (*Blake* 2757).

J. TORREYI Coville. Roadside, alt. 360, Charlotte, 8 August (2612). Previously collected in Vermont by Kirk, in July 1908, in sandy ditch by railroad at Rutland.

SALIX SERICEA Marsh. Mud flats of Hinesburg Pond, Hinesburg, alt. 684, 7 August (2594).

BETULA ALBA L. Woods, alt. 3500, and rocky summit, alt. 3860, Mt. Mansfield, Underhill.

B. ALBA L. var. CORDIFOLIA (Regel) Fernald. Mt. Mansfield, Underhill, alt. 3670.

PARIETARIA PENSYLVANICA Muhl. Dry soil, alt. 600, Mt. Philo, Charlotte.

POLYGONUM AMPHIBIUM L. f. HARTWRIGHTII (Gray) Blake. Mud flats of Hinesburg Pond, Hinesburg (2596).

EPILOBIUM DENSUM Raf. Damp pasture, alt. 465, Milton.

E. MOLLE Torr. With the last.

SANICULA TRIFOLIATA Bicknell. Woods, alt. 810, Mt. Philo, Charlotte.

VACCINIUM ULIGINOSUM L. and var. PUBESCENS Lange. Like so many other species of our blueberries, *Vaccinium uliginosum* possesses both a glabrous and a pubescent form, which have been long distinguished in Europe but not hitherto separated in this country. The plant with the leaves more or less puberulent, sometimes extremely so, beneath, which is V. ULIGINOSUM var. PUBESCENS Lange, Consp. Fl. Groenl. 90 (1880), seems with us to be about as common and well distributed as the typical glabrous *V. uliginosum* L. I have seen Vermont material of *V. uliginosum* from Mt. Mansfield, and of var. *pubescens* from Mt. Mansfield, Jay Peak, and Johnson.

PYCNANTHEMUM VIRGINIANUM (L.) Durand & Jackson. Dry soil, Mt. Philo, Charlotte, alt. 595.

VERBASCUM BLATTARIA L. Pasture, North Ferrisburg.

ANTENNARIA BRAINERDII Fernald. Dry soil, Mt. Philo, alt. 500.

EUPATORIUM PURPUREUM L. Woods, alt. 680, Mt. Philo, 8 August 1911 (*Blake* 2611). Second record for the state.

STOUGHTON, MASSACHUSETTS.

A NEW STATION FOR SCIRPUS LONGII.— Since the publication of the very distinct *Scirpus Longii*[1] in 1911, many students of our flora have sought the plant at favorable localities between the two regions from which it was described,— the Pine Barrens of New Jersey and the Charles River valley in eastern Massachusetts — but so far as the writer has learned quite without success. In the original discussion of the plant it was pointed out that the occurrence of species characteristic of the Pine Barrens is not unprecedented in the valleys of the Charles and the adjacent small rivers, the Neponset, Concord, Mystic, &c., where numerous plants of Coastal Plain distribution occur at isolated stations. It is therefore of at least local interest to record *Scirpus Longii* from the Concord River. In organizing the herbarium of the late Edward S. Hoar, recently presented to the New England Botanical Club, many plants of unusual local interest have been found, collected either by Mr. Hoar or by his intimate friend, Thoreau. Among the sedges are two fine sheets of *Scirpus Longii* collected by Thoreau in 1859 and bearing the original penciled labels "*Scirpus sylvaticus?* [later scratched and marked "*Eriophorum*"] Grt. meadows, May 28" and "*Scirpus Eriophorum.* Great Meadows, July 17, '59." The earlier plant is beginning to flower; the later is fully developed, with good fruit and lingering anthers.[2]— M. L. FERNALD, Gray Herbarium.

THE JOSSELYN BOTANICAL SOCIETY of Maine met at Thomaston, Tuesday, August 12, 1913 for its Nineteenth Annual Meeting and Field Day. The sessions and field work continued through Wednesday, Thursday and Friday. Collections were made over quite a large area including portions of Thomaston, Rockland, Rockport, Camden, South Thomaston, St. George, Warren and Islesboro. Twenty-five members and guests were in attendance, and by dividing the company into small parties for visiting different localities a large field was covered. Excursions were made to Mt. Megunticook in Camden, to the Lily Pond in Rockport, a large bog in Rockland, to the "Indian Garden" in Warren and to Isleboro and Spruce Head and Elwell Point.

[1] Fernald, RHODORA, xiii. 6 (1911).

[2] Since this note went into type, the writer, while crossing the West Cambridge marshes, on July 8, 1913, came upon a large colony of *Scirpus Longii*, thus demonstrating its presence in the valley of the Mystic River.

The Lily Pond, its shores and the abandoned lime quarries near yielded *Linum catharticum, Daphne mezerium* in fine fruit, several species of *Potamogeton* of unusual occurrence which have not yet been fully determined, *Scirpus occidentalis*, and *Dirca palustris*.

Among the species collected at Isleboro were *Dianthus plumarius*, a large form of *Deschampsia caespitosa, Galium labradoricum* and *Fragaria virginiana*, var. *terrae-novae*.

The "Indian Garden" is a rich alluvial tract on the St. Georges river, where, according to tradition, the medicine man had his garden of herbs. In close proximity to this is a field from which innumerable arrow-heads and other relics have been taken. In this vicinity were seen several trees of *Quercus macrocarpa, Potamogeton americanus*, var. *novaeboracensis* (the first station east of the Connecticut), and a profusion of river-bottom plants growing in great luxuriance.

The party visiting South Thomaston and Elwell Point collected *Euphrasia Randii*, var. *Farlowii, Suaeda linearis, Distichlis spicata, Sparganium americanum* and *Glyceria laxa*.

Collections made during the four days added more than four hundred species from this locality to the Herbarium of the Portland Society of Natural History.

On Thursday evening, August 14, Prof. Fernald gave a highly interesting and important talk on "The Coastal Plain Element in the Maine Flora."

The other evenings were devoted to business meetings and to informal discussion of collections.— D. W. Fellows, Secretary.

The Nineteenth Annual Field Meeting of the Vermont Botanical Club was held at Townshend, Vermont, July 1 and 2, in conjunction with the Vermont Bird Club, with an attendance of thirty.

The first day was spent by some in climbing Ball Mountain where nothing of particular botanical interest was seen. Others explored the banks of the West River where *Sanguisorba canadensis, Habenaria flava, Prunus pumila* and various interesting carices were found.

The second day was spent in a trip to the top of Newfane Hill where Prof. A. J. Grout entertained the Clubs, at his log cabin and showed them stations for some rare mosses.

July 3 a party which varied in number from thirteen to nineteen

went on a camping trip into the wilds of Stratton about fifteen miles from Townshend. The headquarters were at Grout's Mill the place where six of the members on July 4, 1895, formed a temporary organization which later resulted in the Club, which has grown to a membership of over two hundred.

During the week following, trips were made to Stratton Mountain and to several ponds and old lumbering operations within tramping distance. *Lobelia Dortmanna, Sisyrinchium atlanticum, Habenaria fimbriata, Carex limosa, C. Michauxiana, C. lenticularis* and other interesting plants were secured.

Particular attention was paid to the blackberries. Mr. W. H. Blanchard's study of the Vermont members of this genus, was made chiefly in Windham Co., and several members of the Club, aware of this fact, visited his stations at Townshend, which were indicated with exactness in a letter to Mr. Wheeler, and his eight new species for this region recognized in the new Gray Manual were all seen. Later the study was carried on with much enthusiasm by the party at Stratton and all of his species for that region were found.

The weather was all that could be hoped for and a very profitable time was spent.— MRS. NELLIE F. FLYNN, Burlington, Vermont.

A CORRECTION CONCERNING DICKSONIA PUNCTILOBULA, FORMA CRISTATA.— It is necessary to correct the report of the collection of *Dicksonia punctilobula* (Michx.) Gray, forma *cristata* (Maxon) Clute, which was made in RHODORA, XV, 44 (1913). The report was made from a mistaken determination, and the specimen proves to be merely a forked state of the typical form.— MARTHA LOUISE LOOMIS, Sherborn, Massachusetts.

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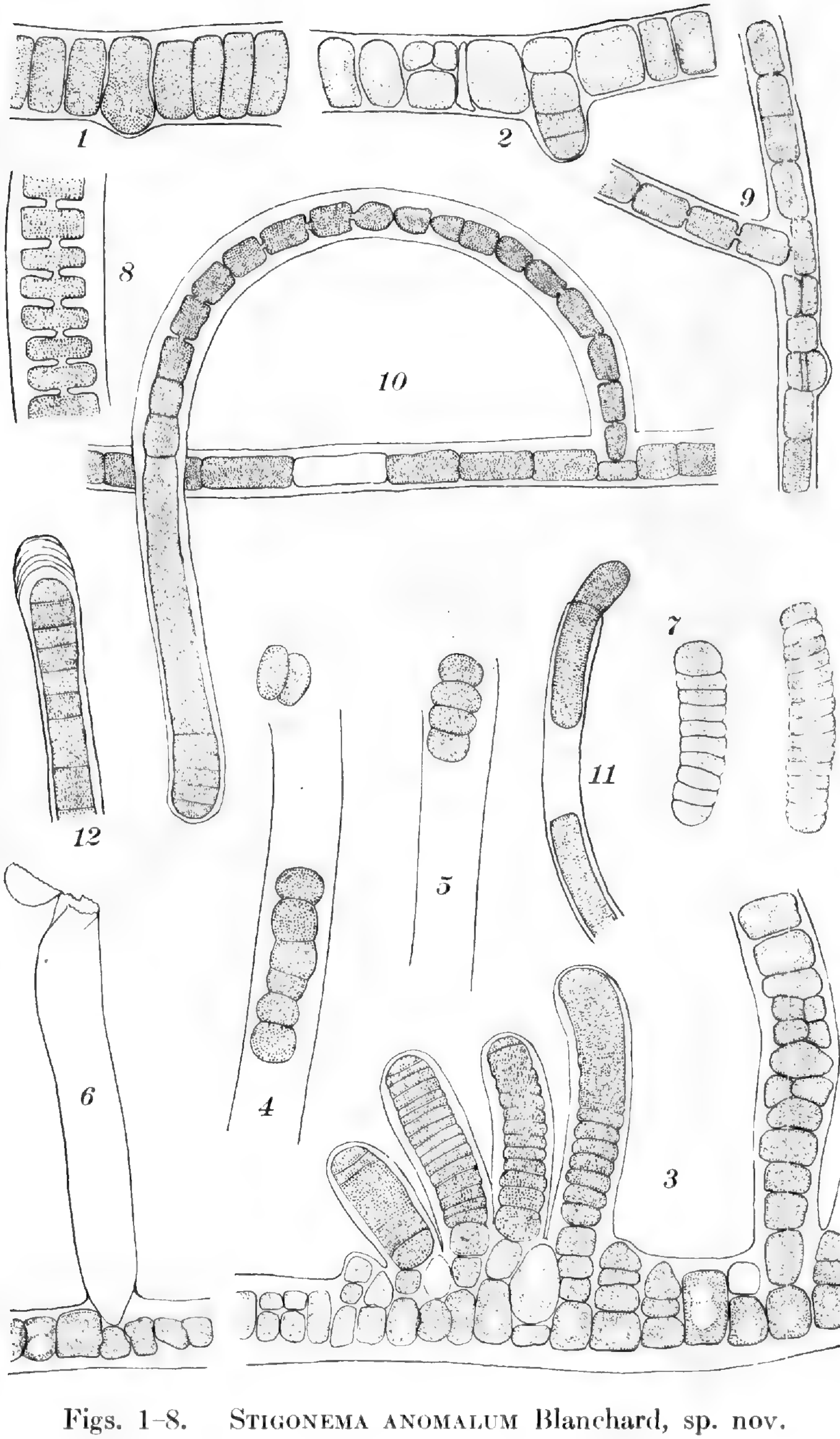

Figs. 1–8. STIGONEMA ANOMALUM Blanchard, sp. nov.
Figs. 9–12. STIGONEMA MEDIUM Blanchard, sp. nov.

Rhodora

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ERIGERON PUSILLUS A VALID SPECIES.

B. L. Robinson.

While collecting during the spring of 1912 in the neighborhood of Charleston, South Carolina, I found in sandy soil on the Isle of Palms a small and rather loosely branched *Erigeron*, obviously close to *E. canadensis* L., yet with smoother stem and narrower leaves than are found in the common and familiar weed of fields and dry open roadsides. On returning to the Gray Herbarium a few weeks later I tried to separate the coastal plant in question from *E. canadensis*, but found such variety of habit, stature, pubescence, leaf-breadth, etc., among the specimens long referred to the species, that no feasible planes of cleavage were discovered, and the South Carolina plant was reluctantly referred to the common species.

In examining recently some sets of phanerogams collected for the Gray Herbarium in the Bermuda Islands by Mr. F. S. Collins, I was much interested to find again the smoothish form of *Erigeron*. This led to its more careful examination. Noticing that the involucral scales had minute purplish quasi glandular tips, I found at once that it was possible to sort very definitely some forty individuals of Bermuda material into two kinds, some having these purple-tipped scales, and the others having more attenuate white-tipped scales. Soon concomitant differences appeared and it was evident that the form with purple-tipped scales was consistently smoother, more slender, entire-leaved and tended to have fewer and slightly smaller heads on more elongated pedicels together forming a more open inflorescence.

With these leading characters in mind, the considerable mass of *E. canadensis* in the Gray Herbarium and the herbarium of the New

England Botanical Club was re-examined and quickly found to be similarly divisible. The form with purple-tipped scales proved to have a generally coastal distribution from eastern Massachusetts to Florida, Central America, Colombia, Guiana, and the West Indies, with a single outlying specimen from New South Wales, while the form with attenuate white-tipped scales extends across the North American continent, showing some variations to the westward, and being also frequent as an introduced plant in various parts of the Old World.

Study of the literature of the group leaves no doubt that the widely distributed plant with white-tipped scales is the typical *E. canadensis* L., while the coastal plant with purple-tipped scales is the *E. pusillus* of Nuttall, who long ago recognized its lower stature, smoother stem, and more slender, open, and fewer-headed inflorescence, as well as its consistently entire leaves. The small purple dot at the apex of the involucral scale, though a valuable differential character, is inconspicuous except under a lens, and seems to have been overlooked by Nuttall, but all characters mentioned by Nuttall correspond perfectly with the plant in question. Furthermore, there is confirmation in the identity of a specimen labelled *E. pusillum* Nutt., now in the Gray Herbarium, which was received from the herbarium of Nuttall apparently at the time when Torrey and Gray were preparing the manuscript of the *Compositae* for their Flora of North America. It is interesting to find that this doubtless authentic specimen exhibits not only all the characteristics attributed to his species by Nuttall but shows the purple-tipped involucral scales.

The examination of many specimens from numerous widely separated stations shows the same distinctions between *E. canadensis* and *E. pusillus*, and as yet no tendency toward intergradation has been observed. It seems therefore that Nuttall's *E. pusillus* may be reinstated as a valid species, near to, though readily distinguishable from, *E. canadensis*. It will be interesting to learn whether its range can be extended further toward the northeast.

The only attempt, which I have found in recent literature, to reinstate *E. pusillus* Nutt. is apparently a mistaken one. It is the *Leptilon canadense pusillum* (Nutt.) Daniels, Flora of Boulder, Colorado, 239 (1911). No description is given beyond the statement: "The common form of the foothills, $\frac{1}{2}$–1 dm. high and but few-flowered, 6000–8000 ft. (Daniels, 694)." An examination of a considerable number of specimens of *E. canadensis* L. from the Rocky Mountain

region, while disclosing great variability in such matters as stature, number of heads, etc., has failed to show a single specimen of *E. pusillus* Nutt.— a matter by no means surprising in consideration of the generally coastal distribution of the species. It is to be inferred therefore that the plant to which Prof. Daniels referred was merely a starved and depauperate state of the common *E. canadensis* L.

An examination of *E. canadensis* L. as it occurs in the southwestern part of the United States indicates that Dr. Gray's long neglected var. *glabratus* is capable of recognition and worthy of more careful restatement as to character and range.

Much more doubtful is *E. strictus* DC., originally collected by Berlandier near the boundary between Texas and Mexico. In all matters of foliage, pubescence, involucre, etc., it appears to be indistinguishable from *E. canadensis*, yet it may be worth while to draw attention to the compact thyrsoid almost spicate form of the young inflorescence in the type material of *E. strictus*, since the young inflorescence in *E. canadensis* is commonly rather loose and open. However, while this is a matter which should be watched by those who have opportunities to study southwestern specimens of the group, the material at present available of the so-called *E. strictus* DC. is not sufficient to show whether this distinction of the young inflorescence has any value in classification. For the present *E. strictus* DC. would better be included as heretofore in the synonymy of *E. canadensis* L.

Of the other synonyms of *E. canadensis*, it is clear that *E. paniculatus* Lam. is a mere renaming of the Linnaean species, and *Senecio ciliatus* Walt., described as pilose and 6–8 feet high, was doubtless *E. canadensis* L. rather than *E. pusillus* Nutt.

The plants here discussed may be summarized as follows: —

Involucral scales minutely purple-tipped.....*E. pusillus.*
Involucral scales with attenuate whitish tips.
  Stems spreading-hirsute. Heads cymosely disposed in panicle. *E. canadensis.*
  Stems glabrous or with few scattered appressed short hairs. Heads quasi racemose on long branches of panicle.....*E. canadensis*, v. *glabratus.*

E. PUSILLUS Nutt. Stem .08–1 m. high, nearly or quite glabrous, the trichomes if present minute and subappressed: leaves mostly oblanceolate-linear and very narrow, the earliest lance-oblong, the upper linear, all entire, ciliate at least toward the contracted base: inflorescence inclining to be open; involucral scales straight, nearly or quite glabrous, with regular (not crisped) white subscarious margins, the tip slightly bluntish (under a lens), obscurely fimbriolate and

dorsally marked with a purplish spot at or just below the apex.— Gen. ii. 148 (1818); Ell. Sk. ii. 398 (1824); DC. Prod. v. 289 (1836); Reade, Plants of the Bermudas, 40 (1883); all as *E. pusillum*. *E. canadensis*, var. *pusillus* Bart. Fl. Philad. ii. 108 (1818), as *pusillum*. *Caenotus pusillus* (Nutt.) Raf. Fl. Tellur. ii. 50 (1837), by implication; Hook. f. & Jacks. Ind. Kew. i. 370 (1893).— MASSACHUSETTS: Plymouth, *Oakes;* sandplain, Cataumet, Bourne, 26 Oct. 1913, *Fernald;* head of sand beach, Wild Harbor, Falmouth, 25 Aug. 1906, *Batchelder;* dry sandy soil, Chatham, 9 Sep. 1913, *Fernald & Long;* Chilmark, Martha's Vineyard, *Harris*. RHODE ISLAND: waste places, Providence, August, 1844, *Thurber*. Without stated locality but probably in New Jersey or Pennsylvania, *Nuttall*. KENTUCKY (southeastern part): near Poor Fork Post Office, *Kearney*, no. 218 (Gray Herb.); Pine Mountain, Harlan County, *Kearney*, no. 218 in part (herbarium of W. Deane). SOUTH CAROLINA: Charleston, *Beyrich;* common in fields, Santee Canal, *Ravenel;* in loose sand, Isle of Palms, *Robinson*, no. 51. GEORGIA: in fields, *Beyrich*, no. 3263. FLORIDA: Biscayne Bay, *Palmer*, no. 246; Braidentown, *Tracy*, no. 7077; weed in waste places, Meyers, *Hitchcock*, no. 144. MISSISSIPPI: Biloxi, *Tracy*, no. 6349; Horn Island, *Tracy*, no. 6348. TEXAS: Huntsville, Walker Co., *Dixon*, no. 411. YUCATAN: Izamal, *Gaumer*, no. 846. STATE OF VERA CRUZ: alt. 825 m., Cordoba, *Seaton*, no. 446; Coatzacoalcos, *C. L. Smith*, no. 582. GUATEMALA: Laguna de Ayarza, alt. 2440 m., *Heyde & Lux*, no. 3801 (distrib. J. D. Smith). COSTA RICA: cultivated ground, Tuis, *Tonduz*, no. 11,478; Copey, *Tonduz*, nos. 11,773, 11,766; hills of Santiago near San Ramón, *Brenes*, no. 14,363. COLOMBIA: Santa Marta, *H. H. Smith*, no. 527. DUTCH GUIANA: *Kappler*, no. 1212. BERMUDA ISLANDS: sand dunes, Paget, 10 June, 1905, *Harshberger;* waste ground, Somerset Island, *S. Brown*, no. 641; roadsides, Devonshire, *Collins*, no. 48; roadsides, Flatts Village, *Collins*, no. 405; Middle Road, *Collins*, no. 310. BAHAMA ISLANDS: dry lime sand, Nassau, *Wight*, no. 1313. JAMAICA: St. Margaret's Bay, *Millspaugh*, no. 1918. ST. CROIX: roadside, *Rickseeker*, no. 484. ST. VINCENT: *H. H. & G. W. Smith*, no. 1930. GRENADA: Tempé, St. George, 25 Sep. 1905, *Broadway*. NEW SOUTH WALES: Kurnell, Botany Bay, *Boorman*, no. 2.

E. CANADENSIS L. Stem 0.1–2 m. high, spreading-hirsute with scattered long horizontally divergent trichomes: leaves narrowly lanceolate or oblanceolate to linear, ciliate, the lower usually toothed: heads in an at length elongated cymose panicle; involucral scales linear-attenuate with scarious usually more or less crisped margins and gradually pointed whitish tips.— Spec. Pl. ii. 863 (1753), as *E. canadense*. *E. paniculatum* Lam. Fl. Fr. ii. 141 (1778). *Senecio ciliatus* Walt. Fl. Car. 208 (1788). *E. strictum* DC. Prod. v. 289 (1836), a form with the young inflorescence compactly thyrsoid. *Caenotus canadensis* (L.) Raf. Fl. Tellur. ii. 50 (1837), by implication; Hook. f. & Jacks. Ind. Kew. i. 370 (1893). *Conyzella canadensis* (L.)

Rupr. Mém. Acad. Pétersb. sér. 7, xiv. n. 4, 51 (1869). *Leptilon canadense* (L.) Britton in Britton & Brown, Ill. Fl. iii. 391 (1898). *L. canadense pusillum* Daniels, Fl. Boulder, Col. 239 (1911), as to plant but excl. name-bringing synonym.— Common and widely distributed through temperate North America, Mexico, and in scattered localities south even to Chili; also an introduced weed in waste places, etc., in the Old World.

Var. GLABRATUS Gray. Tall and (for the species) robust, with smoothish stem, the trichomes few, scattered, and very short, ascending or subappressed: branches of the large inflorescence long (1--1.5 dm.) simple, apt to be closely flowered and appearing inversely racemose or even almost spicate.— Pl. Lindh. ii. 220 (1850).— TEXAS: between the Colorado and Nueces Rivers, *Berlandier*, no. 2555; fields in sandy loamy soil near Bracken, Bexar Co., *Groth*, no. 83; prairie north of the Llano among granite rocks, *Lindheimer*, no. 626 (444). NEW MEXICO: Forest Nursery, Fort Bayard, Watershed, Grant Co., *Blumer*, no. 33; cañons, Tierra Blanca, Sierra Co., *Metcalfe*, no. 1229. CHIHUAHUA: near Lake Santa Maria, *E. W. Nelson*, no. 6388. CALIFORNIA: Wilson's Lake, *Nevin*, no. 8.

GRAY HERBARIUM.

ON VARIATION IN ARENARIA LATERIFLORA.

R. W. WOODWARD.

WHILE collecting on the low grounds near the beach at Westerly, Rhode Island, June 5, 1913, I was struck by the display of *Arenaria lateriflora*, the season's vegetation not being far enough advanced to overtop the *Arenaria*, which was abundant, and conspicuous with its white flowers, over considerable areas. Equally abundant, but growing by itself and not mingling with the other, was a plant with smaller white flowers, which I at first took to be a different species, but which proved on examination to be a form of *Arenaria lateriflora*, or at least closely related to it. Many specimens of these plants were examined, both in the field and later, and the differences between them are so marked and so constant that it seems worth while to place them upon record.

The petals of the first plant average 7.5 mm. in length, and the prominent stamens are about twice the length of the calyx, equalling

or exceeding the styles, and have comparatively large anther cells. The length of the calyx is 2.5 mm.

In the other plant the petals have an average length of 4 mm., while the stamens, which are quite inconspicuous, are shorter than the calyx or barely equal it, and much shorter than the styles, and the anther cells are small. The sepals are about 2.5 mm. long. There are no marked differences in the foliage. Later, in Franklin, a typical hill town of eastern Connecticut, an *Arenaria* was found, growing profusely in dry open woods, which matches exactly the small-flowered plant from Westerly. In wet meadows and open swamps, on the other hand, the only form was one with large flowers, which proved to be an equally good match for the large-flowered Westerly plant. In one instance, in passing from a wet meadow to the surrounding gravel, there was an abrupt transition from the large to the small-flowered form, the former growing freely in the meadow, and the latter being common on the drier gravel, where it was the only form. I soon learned that knowledge of local soil conditions enabled me to predict with certainty which form would occur at any given station in Franklin. It is not so easy to get at the determining factors on the low lands at Westerly. On returning there, however, a few weeks later, to secure fruiting specimens, I discovered that the stations for the large-flowered *Arenaria* were covered with so tall and dense a growth of grasses and sedges that it was exceedingly difficult to find the specimens for which I was looking, while the places where the small-flowered plant grew, were comparatively free from other vegetation, and possess probably a drier and more siliceous soil. As already mentioned, the anthers are noticeably smaller in the small-flowered *Arenaria*, and the cells often seem to be imperfectly developed. The plant fruits freely, however, as, for instance, in dry open woods at Franklin, where there is no admixture of the large-flowered *Arenaria*. Specimens from Westerly and Franklin have been deposited in the Gray Herbarium.

New Haven, Connecticut.

THE GENUS EMPETRUM IN NORTH AMERICA.

M. L. Fernald and K. M. Wiegand.

In 1902 attention was called to the fact that we have more than a single Crowberry in eastern North America;[1] and subsequent study has demonstrated that, besides the circumpolar *Empetrum nigrum*, we have in northern New England and Eastern Canada a second very well marked species and in Newfoundland and southern Labrador a third species, which is abundant upon Newfoundland and the French Islands but barely reaches the American Continent in the neighborhood of the Straits of Belle Isle. In checking the characters of these two seemingly endemic species of northeastern North America, we have studied closely not only the material in the Gray Herbarium and the herbarium of the New England Botanical Club, rich in their representation from New England, eastern Canada, and Newfoundland; but have had the advantage of working with the material in the United States National Herbarium, with a remarkable strength in Alaskan specimens, and that of the Academy of Sciences of Philadelphia, strong in its representation from the Canadian Rocky Mountains. For the use of these two collections we are indebted to Messrs. W. N. Maxon and Witmer Stone respectively.

As understood by us our Crowberries belong to three species distinguished as follows:

A. Branchlets or margins of expanding leaves glandular, the latter not tomentose; mature leaves divergent, soon reflexed.
  Berries black, with or without a bloom.....1. *E. nigrum.*
  Berries red or purple: branchlets glabrous, glandular-pulverulent or at most minutely viscid-pilose....1a. *E. nigrum*, var. *purpureum.*

A. Branchlets and margins of expanding leaves white-tomentose; plant not glandular: leaves ascending to divergent, rarely (and then very tardily) reflexed: fruit pink, red, or purplish-black.
  Fruit 5–9 mm. in diameter, red to purplish-black, opaque: seeds 2–2.4 mm. long: leaves soon loosely divergent, rarely becoming reflexed; those of the leading shoots with blades (4–)4.5–6.5 mm. long.....2. *E. atropurpureum.*
  Fruit 3–5 mm. in diameter, pink or light red, becoming translucent: seeds 1.2–1.5 mm. long: leaves crowded, ascending, becoming slightly divergent; those of the leading shoots with blades 2.5–4 mm. long.....3. *E. Eamesii.*

1. E. NIGRUM L. Sp. Pl. 1022 (1753); Michx. Fl. Bor. Am. ii. 255 (1803); Pursh, Fl. i. 93 (1814); Bigelow, Fl. Bost. ed. 2, 365 (1824);

[1] Fernald, RHODORA, iv. 147–151 (1902).

Hook, Fl. Bor.-Am. ii. 140 (1838); Torr. Fl. N. Y. ii. 178 (1843); Gray, Man. 409 (1848); Fernald, RHODORA, iv. 150 (1902). *E. purpureum* Raf. New Fl. pt. iii. 50 (1836) in part.— Arctic and boreal regions, extending southward in peaty soils to Newfoundland, Nova Scotia, the Maine coast, the mountains of northern New England and northern New York; Pictured Rocks, northern Michigan (*G. H. Hicks*); Pipestone Valley and Lake Louise, Alberta (*Stewardson Brown*); Selkirk Mts., British Columbia (*J. M. Macoun*); Mt. Rainier, Washington (*E. C. Smith, C. V. Piper*) and Crescent City, California (*Howell*).

Extremely variable in the length and breadth of leaves, which range from linear to elliptic in outline and from 2.5–7 mm. in length. The branchlets, too, are sometimes nearly glabrous, with only minute glandular puberulence, but in our northern regions and the Northwest quite as often minutely pilose with sordid or viscid, not white, hairs. The seeds of the more northern material are commonly about 2 mm. long, ranging between 1.8 and 2.6 mm. and in very rare cases to 3 mm. in length, while toward the southern edge of the range the seeds are frequently smaller, from 1.4–1.8 mm. long. In much of the small-seeded material the leaves run decidedly shorter than in most of the more northern plants and upon first studying the group we inclined to separate as a southern variety the plants with shortest leaves and smallest seeds. The study of a fuller series of specimens shows, however, that no satisfactory line can be drawn either upon the basis of length or shape of leaf or size of seed. The most extreme illustration of this lack of concomitance in these characters is a sheet of specimens from the Mealy Mountains, Labrador (coll. *Dr. A. P. Brown*), with leaves only 3–4 mm. long, but with a fully developed seed 3 mm. long, the largest seed measured by us in the species.

1a. Var. PURPUREUM (Raf.) DC. Prodr. xvi. pt. 1, 26 (1869); Simmons, Vasc. Pl. Fl. Ellesmereland, 43 (1906); Robinson & Fernald in Gray, Man. ed. 7, 551 (1908) in part. *E. purpureum* Raf. New Fl. pt. iii. 50 (1836) in part. *E. rubrum*, Durand, Proc. Acad. Sci. Phila., 1863, 95, not Vahl.— Northwestern Greenland, Ellesmereland, and Labrador.— A very little-known plant, resting upon an insecure basis. Rafinesque, assuming a larger knowledge of the northern flora than was at all justified, described his complex *E. purpureum* as follows:

"EMPETRUM PURPUREUM Raf. E. nigrum Mx. and all our Amer. botanists, not of Lin. and European bot. E. rubrum Lapilaye fl.— Procumbent smooth, leaves scattered crowded, lower patent, upper imbricate, oblong-linear sessile uninerve obtuse flat on both sides, thickish, berries purple, sessile equal to the leaves and costate.— in Canada, Labrador, Newfoundland, White Mountains, Lake Superior, near the rocky shores. Michaux who first noticed this blended it

with the boreal sp. of Europe, and has been followed by all our subservient botanists except Lapilaye who has blended it with *E. rubrum* of Austral America in his Newfoundland Flora. My specimen is from Labrador and has red berries strikingly like those of Phytolacca! Those of our Botanists who saw the berries are few, they mostly copy Michaux! is there a sp. in boreal America with black berries? My sp. is perfectly distinct, the branches are terete smooth but sulcate among the leaves, these are only 2 or 3 lines long," etc.

Just how Rafinesque's *Empetrum purpureum* should be interpreted is something of a problem. It is clearly a confusion of different elements, for the plant of Michaux and "all our subservient botanists" up to Rafinesque's time was certainly *E. nigrum*. Michaux's plant has been examined by one of the present writers, it comes from a region where *E. nigrum* abounds, and Michaux's own note upon finding it is to the point: "Le 2 Aoust [1792] arrivé à la Malbaye. . .Depuis le Baye St. Paul, les Eboulements et la Malbaye les Montagnes sont formées de terre argilleux sables et Pierres roulées. Le Cap. Tourmente est formé de roches du Quartz. Sur les rochers un peu avant d'entrer dans la Baye, se trouve un arbuste rampant, Empetrum nigrum, f. touj. vertes, petites, ovales, reflechies,. . . .Baye noire, aqueuse, semences 9." [1] *E. rubrum* of La Pylaie's *Voyage à l'isle de Terre-Neuve* (his *Flora* mentioned by Rafinesque was never completed), as shown by La Pylaie's own collections and by abundant modern collections from Newfoundland, could not have been the plant which Rafinesque was describing from Labrador; for La Pylaie's Newfoundland *E. rubrum* has the berries bright pink or light coral-red, not "purple" or "strikingly like those of Phytolacca!" as emphasized by Rafinesque, and La Pylaie's plant has the branches and young foliage densely white-tomentose while Rafinesque said of his *E. purpureum:* "the branches are terete smooth."

After eliminating from *Empetrum purpureum* the true *E. nigrum* with black fruit of Michaux "and all our Am. botanists" and the *E. rubrum* of La Pylaie, there remains Rafinesque's description of a plant from Labrador with *smooth* branches and berries "purple" or "red. . . .strikingly like those of Phytolacca!" (which are ordinarily very dark purple). We are not familiar with such a plant but it is possible that it is correctly identified by Simmons with the red-fruited *E. nigrum* of Northwestern Greenland and Ellesmereland. But even

[1] Journal of André Michaux, 1787–1796, ed. C. S. Sargent — Proc. Am. Phil. Soc. xxvi., no. 129, 73 (1888).

then there seems to be almost as much question about the actual occurrence of such a red-fruited plant as there was in Rafinesque's mind in regard to the occurrence of black fruit in America.[1]

2. E. **atropurpureum** n. sp., a E. nigro recedit ramulis prostratis junioribus albido-tomentosis; foliis junioribus tomentosis vel arachnoideis primo adscendentibus deinde laxe patentibus haud vel rare reflexis, eis ramulorum vegetarum laminis (4–) 4.5–6.5 mm. longis; baccis 5–9 mm. diametro rubris vel atropurpureis opacis; seminibus 2–2.4 mm. longis.

Differing from *E. nigrum* in its trailing branchlets white-tomentose at least when young: leaves tomentose or arachnoid when young, at first ascending, finally loosely spreading, not at all or rarely reflexed; those of the leading shoots with blades (4–) 4.5–6.5 mm. long: berries 5–9 mm. in diameter, red or purplish black, opaque: seeds 2–2.4 mm. long.— *E. nigrum,* var. *andinum* Fernald, RHODORA, iv, 150 (1902); C. H. Knowlton, Rhodora, iv. 196 (1902); Robinson & Fernald in Gray, Man. ed. 7, 551 (1908); not DC. Prodr. xvi. pt. 1, 26 (1869).— Exposed sands or granitic or silicious gravels and ledges, Magdalen Islands, Prince Edward Island and mountains of Maine, New Hampshire and possibly Vermont. MAGDALEN ISLANDS: sand hills between East Cape and East Point, Coffin Island, July 19, 1912, *Fernald, Bartram, Long & St. John,* no. 7733. PRINCE EDWARD ISLAND: sand hills between South Lake and the Gulf, near Bothwell, August 24, 1912, *Fernald, Long & St. John,* no. 7732. MAINE: Mt. Katahdin, August 25, 1847, *G. Thurber,* without date, *E. C. Hamlin;* floor of North Basin, Mt. Katahdin, July 13, 1900, *Fernald;* ledges, north face of Boarstone Mt., altitude 610 m. (2000 ft.), August 16, 1895, *Fernald;* tableland above the pond, altitude 915 m. (3000 ft.), Squaw Mt., July 9, 1895, *Fernald,* no. 277; extensively covering the ledges at about 1065 m. (3500 ft.) altitude, Mt. Saddleback, Rangeley, August 17, 1894, *Fernald* (TYPE in Gray Herb.); above timberline, Mt. Saddleback, Rangeley, July 10, 1895, *F. V. Coville,* no. 73 in U. S. Nat. Herb.; Bald Mt., alt. 455–610 m. (1500–2000 ft.), Plantation No. 4, Franklin Co., July 16, 1902, *Knowlton & Chamberlain;* White Cap, Rumford, August 1, 1889, June 9, 1890, *J. C. Parlin;* Speckled Mt., altitude 610 m. (2000 ft.), Franklin, July 29, 1896, *J. A. Allen.* NEW HAMPSHIRE: White Mts., *Oakes;* Mt. Ingalls, Success, June 25, 1908, *A. S. Pease,* no. 11,165; Carter Notch, August 14, 1855, *Wm. Boott;* on a boulder, Carter Notch, altitude 915 m. (3000 ft.), September 6, 1904, *A. S. Pease,* no. 4086; Mt. John Quincy Adams, July 22, 1907, *Pease,* no. 10,876; Mt. Washington carriage-road, August 12, 1910, *Pease,* no. 12,842; ledgy summit of Mt. Crawford, August 18, 1908, *Pease,* no. 11,460; summit of Mt. Webster, August 21, 1908, *Pease,* no. 11,784; near summit of Mt. Kearsarge, *A. Commons* in

[1] For detailed discussion see Simmons, Vasc. Pl. Ellesmereland, 42 (1906).

herb. Phil. Acad.; Moat Mountain, Conway, July 28, 1879, *W. C. Lane;* disintegrated granite, top of Mt. Chocorua, Sept. 7, 1855, *W. Boott,* August 20, 1898, *C. A. Weatherby,* September 10, 1910, *F. T. Lewis.* VERMONT: Mt. Mansfield, June 5, 1877, *C. G. Pringle* in U. S. Nat. Herb. (a possible confusion since the plant seems not to have been collected by others on Mt. Mansfield, where *E. nigrum* occurs, and the label accompanying the specimen is not an original one).— Sterile specimens from Passage Island, Lake Superior (*W. S. Cooper,* no. 107) may belong here.

E. atropurpureum, heretofore taken to be DeCandolle's *E. nigrum,* var. *andinum* of Chili, proves, throughout its known range in northern New England and the islands of the Gulf of St. Lawrence, to be a constant plant with closely trailing white-tomentose branchlets and it cannot, therefore, be longer maintained as identical with *E. nigrum,* var. *andinum,* for that little-known plant, though having red berries, is described by DeCandolle as having "Ramuli et folia glabriuscula." As already pointed out by Knowlton,[1] in Maine *E. nigrum* "grows best in peat-moss, and the prostrate habit is not particularly prominent, as most of the branchlets are suberect"; while the very trailing *E. atropurpureum* "prefers as a soil the gravel formed by the decomposition of coarse granite, usually containing very little vegetable matter." Similarly, on Prince Edward Island and the Magdalen Islands, where *E. nigrum* is chiefly a plant of the bogs and the humus of headlands, *E. atropurpureum* carpets the open sand hills. In Maine and New Hampshire *E. nigrum* is a plant of the bleak eastern coast (from Penobscot Bay eastward) and the highest alpine districts; *E. atropurpureum,* on the contrary, grows chiefly near timber-line or slightly above it or upon the summits and slopes of the lesser mountains.

3. E. **Eamesii,** n. sp., fruticulus ramulis arcte prostratis junioribus albido-tomentosis; foliis coarctatis adscendentibus plus minusve imbricatis deinde paullo patentibus haud reflexis elliptico- vel spathulato-oblongis ad oblongo-linearibus valde coreaceis nitidis apice rotundatis, eis ramulorum vegetorum laminis 2.4–4 mm. longis; baccis 3–5 mm. diametro roseis vel pallide rubris, pelli tenui translucenti, pulpa aquosa propre ecolorata; seminibus 1.2–1.5 mm. longis.

Shrub with closely prostrate branchlets, the young ones white-tomentose: leaves crowded, ascending and more or less overlapping, in age slightly spreading, elliptic- or spatulate-oblong to oblong-linear, very coriaceous and lustrous, round-tipped; the blades of the leading shoots 2.5–4 mm. long: berries 3–5 mm. in diameter, pink or light red, with thin translucent skin and watery nearly colorless pulp: seeds 1.2–

[1] C. H. Knowlton, RHODORA, iv. 196 (1902).

1.5 mm. long.— *E. rubrum* La Pylaie, Voyage à l'isle de Terre-Neuve, 6, 10 (1825); Gray, Mem. Am. Acad., n. s. iii. 8 (1846); Brunet, Notes sur les Plantes recueilles en 1858 par M. l'Abbe Ferland, 7 (186–); Delamare, Renauld & Cardot, Florule de l'ile Miquelon, 28 (1888); Waghorne, Summary Acct. of Wild Berries and other Edible Fruits of Nfd. and Lab. 9 (1888); as to the plant of British America, not Vahl. *E. purpureum* Raf. New Fl. pt. iii. 50 (1836), as to plant of Nfd. *E. nigrum*, var. *purpureum* DC. Prodr. xvii, pt. 1, 26 (1869), as to the plant of Nfd.; Simmons, Vasc. Pl. Ellesmereland, 43 (1906), as to the plant of Nfd.; Fernald, RHODORA, xiii. 117, 123 (1911); not D. C. l. c. (1869) in its restricted sense. *E. nigrum*, var. *andinum* Fernald, RHODORA, iv. 150 (1902) as to the plant of Nfd.; Eames, RHODORA, xi. 95 (1909); not DC. l. c. (1869).— Exposed sands or granitic or silicious gravels or ledges, southern Labrador, Newfoundland, St. Pierre et Miquelon, and coast of Saguenay County, Quebec, westward to the Mécatina region. LABRADOR: sand, l'Anse au Clair, July 7, 1893, *Waghorne* in U. S. Nat. Herb.; abundant on sand and gneissoid rocks, Blanc Sablon, August 4, 1910, *Fernald & Wiegand*, no. 3661 — plant also noted on the Quebec side of Blanc Sablon River. NEWFOUNDLAND: "les points culminans," *La Pylaie;* St. John's, July 12, 1892, *L. L. Dame;* dry exposed summit of hill south of St. John's, August 12, 1911, *Fernald & Wiegand*, no. 5821; Baccalieu Island, Notre Dame Bay, July, 1902, *J. D. Sornborger;* open granite slopes, altitude 180–350 m., Mt. Steepmore (or Seemore), July 12, 1910, *Fernald & Wiegand*, no. 3659 (TYPE in Gray Herb.); alpine heath and open granite ledges at the summit, altitude 565 m., Mt. Musgrave, July 16, 1910, *Fernald & Wiegand*, no. 3660; dry exposed rocky slopes of Blomidon ("Blow-me-Down") Mts., July 31, 1908, *Eames & Godfrey*, no. 7032; diorite tableland, altitude about 550 m., northern region of Blomidon, August 22, 1910, *Fernald & Wiegand*, no. 3662; Bluff Head, September 7, 1898, *Waghorne;* edge of rock, high upon hill, vicinity of Balena, Hermitage Bay, June 6, 1903, *Wm. Palmer*, no. 1335 (distributed as *Phyllodoce coerulea*); cited by Waghorne and by Eames from numerous other stations on the South Coast. ST. PIERRE ET MIQUELON: St. Pierre, *La Pylaie;* August, 1902, *Bro. Louis Arsene.* QUEBEC: Blanc Sablon (see note above); La Tabatière, 1858, *Abbé Ferland.*

It is a great pleasure to associate with this local and handsome shrub, which has been held to be distinct from *Empetrum nigrum* by most botanists whose field-experience has acquainted them with it, the name of so discriminating a collector as Dr. Edwin H. Eames who, on his herbarium specimens, has written: "seems to be specifically distinct from *E. nigrum.* It's habit, place of growth, small size and color of fruit, leaves, etc., are constantly different"; and who, in discussing the plant in RHODORA (as *E. nigrum*, var *andinum*), presented

a strong case for the specific recognition of the Newfoundland shrub. The impossibility of taking up for *E. Eamesii* the name *E. purpureum* Raf. has been sufficiently discussed. Similarly its distinctness from *E. nigrum*, var. *andinum*, with which it has been confused, is apparent from the quotation above given from DeCandolle's description. La Pylaie, and following him, Asa Gray, identified the shrub without question as *E. rubrum* Vahl, from the Straits of Magellan, the former writing: "Le détroit de Magellan produit, comme nos hautes montagnes,. . . .l'*Empetrum rubrum*, que y'ai retrouvé sur la crête des monticules de l'île Saint-Pierre. Cette plant est identique avec les échantillons magellaniques conservés dans l'herbier de M. DE JUSSIEU." But all the Magellanic material examined by the writers (several specimens) agrees in being much coarser, with more ascending branches and larger darker-colored opaque berries.

A NEW FORM OF LILIUM PHILADELPHICUM.

E. F. WILLIAMS.

ON July 8, 1913, I was driving through an old road in Warren township, New Hampshire, when my wife called my attention to a yellow flowered *Lilium philadelphicum* growing by the roadside. We left our carriage to secure this unusual form of the species and were delighted to find a good many such plants in a sandy clearing near by and in thin woods surrounding the clearing. Typical red flowered *Lilium philadelphicum* grew abundantly at this station and perhaps twenty per cent of the individuals had petals of about the same shade of yellow as typical *Lilium canadense*. A few plants were of as pale a yellow shade as *Hemerocallis flava* and in one specimen the outer whorl of stamens was petaloid and sterile. This old road crosses the lower slopes of the southern foot hills of Mt. Moosilauke and it connects East Warren, a tiny hamlet, with Warren Summit on the Boston & Maine Railroad. Many years ago there were seven or eight mountain farms on this road but only one remains inhabited. All the others have been abandoned for a long time and the road is now seldom used. The station for the yellow form of *Lilium philadelphicum* is about a mile

from East Warren and is now a wild and solitary spot. I have been unable to find any reference in botanical literature to this remarkable variation from the type and Prof. Fernald of the Gray Herbarium has advised me to put this form on record. Inquiry among the members of the New England Botanical Club and others, has brought forth information about three other stations for this color form. Dr. Dana W. Fellows tells me that he has found it at Cape Elizabeth, near Portland, Maine. Mr. Charles W. Parker writes me that "five or six years ago I found a specimen growing by the roadside in Bath, Maine. I took up the bulb and brought it home to Marblehead Neck, planted it, but never saw it afterwards. Two or three years ago, a gardener for Mr. Hollander, of Marblehead Neck, brought me another specimen (found at Marblehead). I planted that and lost it also." It seems worth while to give a name to this unusual form of this beautiful lily of our native flora and I propose

LILIUM PHILADELPHICUM L. forma **flaviflorum**, forma nova, formae typicae statura habitu foliis etc. simile differt segmentis perianthii flavis (nec rubris) cum maculis laetius purpureis ornatis.— Perianth-divisions clear yellow splashed with purplish spots, inside, near the base not so deeply colored as in the typical plants.— Type sheet in Gray Herbarium from Warren, N. H. Other stations reported, Bath, Me., Cape Elizabeth, Me., Marblehead, Mass.

CAMBRIDGE, MASSACHUSETTS.

ELYMUS ARENARIUS AT PROVINCETOWN — NATIVE OR INTRODUCED?

JOHN MURDOCH, JR.

IN 1904 the writer collected on the beach at Provincetown, Massachusetts, two specimens of a grass which, at the time of pressing, seemed to him to resemble the descriptions of *Elymus arenarius* L. Being no agrostologist, he laid them aside to wait for a leisure moment and the assistance of an expert. This combination was not secured until last May, when Mr. Fernald at the Gray Herbarium confirmed the tentative identification. He stated that the southernmost station hitherto reported for the species is at Hampton Point, New Hampshire, making this apparently a considerable extension of range.

Further reflection led to the thought that, since a large portion of the town is included in the "Province Lands," on which the Harbor and Land Commission has for many years been endeavoring to fix the moving sand dunes, possibly the *Elymus* might be one of the species thus introduced. A desire for further information on this point, as well as for more duplicates, led the writer to make another visit to the station this summer.

Not much more than a hundred yards south of the present opening of Race Run, and a half mile or so south of Race Point Light, is one large clump of the Wild Wheat. This covers an area of perhaps three hundred square feet, and seems to be spreading, though the earlier notes are not definite enough to make sure. It is located on the low "fore dune," and is surrounded by a vigorous growth of *Ammophila*. For at least a mile along the beach to the south, there is no more *Elymus*. To the best of the writer's recollection, the same is true for the beach to the north and east. Less than a quarter of a mile back from the beach at this point are high dunes on which quantities of *Ammophila* have been planted, but that on the "fore dunes" shows every appearance of being natural. Not a sign of the *Elymus* was seen in this section either.

Since it thus seemed fairly evident that this clump of *Elymus* was not planted in its present position, the next question that arose was whether it might not have escaped from a possible plantation in some other part of the "Province Lands." Accordingly a search was made of the records in the office of the Harbor and Land Commission. Their reports and those of their Superintendent at Provincetown from 1894, when they first took charge of the lands, to 1904, when the *Elymus* was first found, show that the only grass used was *Ammophila*, although many kinds of imported trees and shrubs have been tried. There are references to previous efforts at checking the drift of the sands, made by inhabitants of the town. These seem, however, merely to have consisted, like the present grass work, of transplanting shoots of *Ammophila* from places where it was abundant to the surface of the shifting portions. It seems quite probable, then, that this station really represents an extension of range.

The single duplicate from the collection of 1904 has been placed in the Herbarium of the New England Botanical Club, while duplicates of this summer have been deposited both there and in the Gray Herbarium.

Newtonville, Massachusetts.

Chenopodium carinatum on Cape Cod.— In Rhodora, February, 1911 (Vol. 13, No. 146, p. 22) Mr. Frank S. Collins notes the collection of *Chenopodium carinatum* R. Br. in Eastham and Truro, Cape Cod, which appears to be the first report of this plant in New England. Mr. Collins has given in his article a good description of the plant which need not be repeated here and the object of this note is to put on record some additional information regarding it.

I find in my herbarium specimens collected in Wellfleet, August 2, 1886 and August, 1887 which I took to be immature *Chenopodium Botrys* L. and labeled accordingly, thus showing that the plant has been on Cape Cod for at least twenty-seven years.

The only other report of this species in the United States that I have been able to discover is in Watson's Botany of California in which it is said to have been introduced from Australia. That it should have jumped across the continent from the Pacific coast to the Atlantic is one of the mysteries of plant distribution but being a rather inconspicuous and weedy herb it has been doubtless overlooked in other localities. In its younger stages it closely resembles *Chenopodium Botrys* and as I have passed it by as this species other collectors may have done the same.

In September of the present year I looked up the occurrence of the plant in Truro and found it abundant along a road and spreading down to a saltmarsh beach. It was also very abundant as a weed in an orchard a half-mile away.— W. P. Rich, Boston, Massachusetts.

A second edition of Britton and Brown's Illustrated Flora.— The general plan of Britton and Brown's Illustrated Flora is so familiar that a review of the second edition [1] must of necessity be a comparison with the first. In both editions the greater part of the specific descriptions and the figures are identical. Aside from the introduction of 504 species which were not in the first edition and are now mostly interpolated with only a few words of comparison, the revision has consisted in large part of putting into practice Dr. Britton's recently expressed view in regard to the status of the subspecific categories,— the subspecies, variety and form. As expressed in the preface to the new edition of the Illustrated Flora (p. vii) his view is that

[1] An Illustrated Flora of the northern United States, Canada and the British Possessions . . . by Nathaniel Lord Britton . . . and Hon. Addison Brown . . . The descriptive text chiefly prepared by Professor Britton . . . Second edition — revised and enlarged. In 3 volumes. New York, Chas. Scribner's Sons . . . 1913.

"many species, perhaps all, are composed of a greater or lesser number of races, differing from each other too little to cause them to be regarded as species, notwithstanding the fact that they may breed true from seed to such slight or trivial differentiations... In the present edition...the view is taken that the races composing many species are often too numerous and too slightly characterized to be described so as to be recognized; many of them have been described as species and many more as varieties, and varieties of different degrees of differentiation have been suggested. We here regard species alone as entitled to distinct botanical appellation..." In accord with this doctrine the names and descriptions of varieties have as a rule been omitted from the second edition.

It is just as true today as it was a generation ago that there is no unfailing or even generally applicable criterion as to what constitutes a species. Asa Gray said that "species...are not facts or things, but judgments, and, of course, fallible judgments; how fallible the working naturalist knows and feels more than any one else" (Letters, vol. ii, p. 657). Darwin said that "few well-marked and well-known varieties can be named which have not been ranked as species by at least some competent judges" (Origin of Species, 6th ed., p. 37). Certainly any author who assumes to write about species only, to the exclusion of varieties, providing, of course, that he does not consider every distinguishable form as a "species," places a higher evaluation on his own judgment than anyone else is likely to do. And when he remands to synonymy species which he arbitrarily decides to consider as varieties (or "races") and almost in the same breath announces that the aim of his work "is to illustrate and describe *every species*... recognized as distinct by *botanists*" (*v.* introduction, p. v; italics the reviewer's) we may well be pardoned some display of astonishment! What will they say who were formerly wont to protest long and vigorously against botanical dictatorship? For now Dr. Britton not only decrees what species are species but even what botanists are botanists!

Dr. Britton's failure to attempt a rational treatment of varieties and critical species unfortunately involves a neglect of the very problems which bring taxonomy most vitally into touch with other kinds of botanical investigation. From many standpoints the forms which are generally treated as critical species and as varieties are of greater interest than the more conspicuous but often not sharply defined groups which by common tradition have long been classed as species. Even if the varieties can not be sharply distinguished from the species, and if the critical species rest upon technical characters, they should by no means be omitted from any descriptive flora which is designed to be of general interest and utility. A few examples will bear out the truth of this. In the new Illustrated Flora *Scirpus georgianus* is placed in the synonymy of *S. atrovirens;* of *Scirpus atrocinctus* we are told little except that it "may be specifically distinct" from *S. cyperinus;* it is said of *Scirpus Longii* that it "appears to be

the same as *S. atrocinctus*"; both *Scirpus Eriophorum* and *S. pedicellatus* are referred without qualification to *S. cyperinus*. Now it must be apparent from considerable recent literature that many discriminating botanists are regularly distinguishing these forms of Scirpus, and they will very justly view as unsatisfactory a treatment of the genus which does not define them in some category,— if not as species at least as varieties. In this connection attention may be called to the fact that in the new edition *Scirpus Fernaldi* and *S. novae-angliae* are retained as species, although it is certainly difficult to understand how they can consistently be retained even as weak varieties in a treatment which denies the distinctness of *Scirpus atrocinctus, S. Eriophorum* and *S. Longii.*

For a further example of Dr. Britton's extremely unsatisfactory treatment of critical species we may turn to the genus Rubus. None of the species which Blanchard has recently proposed is even mentioned in the Illustrated Flora, either in synonymy or elsewhere. Doubtless it was by way of extenuation that this note was introduced under the generic description: "All the British brambles were reduced to a single species, *R. fruticosus* L., by Bentham, but other authors have recognized and described a large number." Even this distinguished precedent gives little justification for ignoring all the recent propositions in Rubus, however, for Bentham's knowledge of the British flora was notoriously superficial. Darwin, in 1858, wrote to Hooker, "I have ordered Bentham, for, as ——— says, it will be very curious to see a Flora written by a man who knows nothing of British plants!!" Today conservative British botanists recognize the distinctness of more species of Rubus than even the most extreme splitters would have admitted to their floras fifty years ago.

Perhaps the recently proposed blackberries are not yet well enough attested so that their omission from a popular work should be criticised. In the case of many other genera, however, it is impossible to overlook the omission or reduction to synonymy of species which are considered distinct by many excellent botanists. It would seem that such species as *Potamogeton bupleuroides, Eleocharis diandra, E. nitida, E. Macounii, Salix coactilis, Populus virginiana, Salicornia rubra, Comandra Richardsiana, Anemone riparia, Amelanchier humilis, Antennaria fallax,* and *A. petaloidea* have stronger claims to recognition than the apocryphal *Ophioglossum arenarium, Eleocharis Smallii, Betula alleghaniensis, Fragaria canadensis, F. americana, Xanthoxalis Bushii, X. rufa, Ilex bronxensis, Acer carolinianum,* etc. which are maintained as species.

Dr. Britton believes in small genera; nevertheless he does not go so far as some of his more radical associates in breaking up the older genera. Thus, he does not maintain in the new edition a number of generic segregates, such as Nemexia, Rubacer and Negundo, which have attained more or less currency since the publication of the former edition. In general, however, he has carried the subdivision

of the families into small genera further than many of us consider necessary or desirable, and in a few cases we are inclined to interpret more literally than was probably intended, and heartily to subscribe to, the author's statement (introduction, p. vii) that " . . . . a number of genera have been separated or distinguished from their congeners." Much of the recent tendency to subdivide genera has no basis whatever in sound scholarship. It is typical of the whole movement that Dr. Britton should accept as one of the key characters for separating Raimannia and Anogra "ovules and seeds in 2 rows" as opposed to "ovules and seeds in 1 row" and yet let his flora pass through two editions with illustrations showing exactly the opposite condition (*v.* figures of *Raimannia laciniata* and *Anogra coronopifolia*). Again, one of the key characters for Galpinsia is "stigma disk-like, entire." Unless our eyes deceive us (for the illustration is somewhat ambiguous) *Galpinsia interior* is figured with a four-lobed stigma. Furthermore, if Kneiffia can be keyed out of Onagra, Oenothera, Anogra, etc., by having the alternate stamens longer, why do the figures show them all alike in length? The reviewer does not care to express any opinion as to the validity of the genera which have been segregated from Oenothera, but points out these inconsistencies merely in order to show that we are not justified in reposing any great confidence in the finality of generic lines in the cases of these minor groups, which by most taxonomists of worldwide outlook are treated merely as subgenera or sections, unless their sponsors can make out for them far stronger claims as genera than is done in the Illustrated Flora.

The figures of the old Illustrated Flora have been retained in the new edition with a few exceptions. The problematic figure of *Alisma tenellum* has happily disappeared and is replaced by an excellent one under the altered name of *Helianthium parvulum*. The figure which passed for *Picea mariana* in the first edition now illustrates *P. rubens* (= *P. rubra*), the old figure of *P. rubra* has dropped out, and there is a new figure for *P. mariana*. The only striking change in the appearance of the new edition is due to the nonconformity of the newly inserted figures. The old ones, although drawn by several artists and of widely varying merit were certainly remarkably uniform. Some of the new illustrations are very much better, some unfortunately not so good; and perhaps, because of their freshness, the new figures stand out conspicuously on the pages. Some of them are truly excellent, notably those of the added species in Paspalum, Panicum and Cenchrus. Some of the less successful are those of the *Juncus tenuis* group and Isoëtes. The newly figured species of Isoëtes are *I. hieroglyphica* and *I. Gravesii*. The spore drawings of the former are exceedingly crude; while the putative spores in the figure of the latter must be seen to be appreciated. The new drawings of several Junci are as unconvincing to a student of the group as those of Isoëtes. The illustrations in the group of *Juncus tenuis* are particularly unsatisfactory, for not only do the new figures mostly fail to show the

diagnostic features of the recent segregates, but even the figure of *J. tenuis*, held over from the former edition, is insufficient for identification. It was satisfactory enough before the components of the aggregate species were recognized, but now might pass almost equally well for any of the segregates as for *J. tenuis*. To make the confusion in the illustration of this group complete, the figures of *J. Vaseyi* and *J. secundus* have become transposed.

Of course the nomenclature of the new Britton and Brown is not in accord with the International Code.

The reviewer cannot refrain from mentioning the subject of common names, although there is really little to say except that the manufacture of "English" names has been continued with unabated zeal. (A distinction is made at New York between "English" and "vernacular" names.) We notice that *Rubus canadensis* (a Linnaean species!) is christened "Millspaugh's Blackberry," because a few years ago Dr. Britton unwittingly added the name *Rubus Millspaughii* to its synonymy. The "English" name is just as superfluous as the Latin synonym. The name *Agrimonia Brittoniana* goes to the synonymy of *A. striata*, but translated as "Britton's Agrimony" it remains to satisfy an imaginary demand for a common name. An indefinite number of Crataegi have been given "English" names, notwithstanding the fact that not more than three or four specialists make any pretense of knowing the species. Incidentally, they are called various kinds of "thorn" although the more frequent "vernacular" name for Crataegus over much of this country is red-haw. The generic name Agalinis has been very recently brought forward for the purple-flowered species of the group which is familiarly known as Gerardia, and without further ado the "English" names change also, and we have Purple Agalinis, etc. We are naïvely informed in the Introduction that many of the "English" names cannot be found in the dictionary! Dr. Britton has used the name Dasystephana for part of the gentians, but he has not changed such pseudonyms as "Elliott's Gentian" to Elliott's Dasystephana. We surmise that the older "English" names here remain as an indication that this is one of the cases where a genus has been separated or distinguished from its congeners!

On the whole it cannot be considered that the new Illustrated Flora shows evidence of a judicial or sympathetic weighing of the results of much of the scholarly activity which has taken place in the study of our flora since the publication of the former edition. Failure to keep fully abreast of the times is further indicated by the retention of the English system of measurements, now practically obsolete in scientific works. In spite of all its shortcomings, however, the Illustrated Flora will doubtless continue to be a very popular work.— H. H. BARTLETT, Washington, D. C.

VIOLA SELKIRKII IN CONNECTICUT.— Several years ago I collected in the Beaver Dam Swamp in Salisbury, Connecticut, a number of plants of a violet which seemed to me of more delicate growth than the violets to which I was accustomed. These were pressed and forgotten until the past season (spring of 1913) when the finding of the same type of violet in another part of the town brought to mind the earlier collection.

April 27, a party of us walked to the Wolf Den. This is a deep cold gorge, which looks as though water had eaten out the underlying lime stone until the outer shell was so weakened that it caved in from its own weight. Huge blocks of stone are piled in confusion and between them grow trees whose tops fail to tower above the moss hung sides of the gash. In the moss flourish delicate ferns, and flowers which love cool damp places. *Lycopodium lucidulum* grows in great patches; *Polypodium vulgare*, and *Camptosorus rhizophyllus* run riot but I had never known of any plant (except mosses) to grow there which had not been found in many other places. The violets were in full bloom and we gathered a quantity.

On arriving home we found to our delight that we had unknowingly gathered *Viola Selkirkii* Pursh. Not willing to trust our own determination we sent a specimen to Mr. M. L. Fernald who verified it and pronounced the plant the first *V. Selkirkii* Pursh reported from Connecticut. A specimen has been placed in the Gray Herbarium.— ORRA PARKER PHELPS, Canton, New York.

BERBERIS THUNBERGII NATURALIZED IN NEW HAMPSHIRE.— On October 4th I found Thunberg's Barberry (*Berberis Thunbergii* DC.) growing in the McCoy pasture on the side of Monadnock Mountain, Jaffrey, New Hampshire, at an elevation of about 1400 feet above sea level. It was about two miles from the summer home of Mr. F. H. Gilson, who was one of our party, and about two miles from the hotel called The Ark, they being the nearest habitations. At neither place did I notice plants of Japanese Barberry. It is likely that seed from this plant was brought from some distance by birds, but it is possible, of course, that someone may have planted the seed in this locality, as it is near a path that is occasionally used. The plant I should say was five or six years old, as it had made a growth of 2–3 feet; and the shrub was only scantily fruiting. It was with Huckleberry and other

low shrubs. It is quite obvious that it will thrive in open fields and pastures, and it certainly would be a good thing for the birds. A specimen has been deposited in the New England Botanical Club Herbarium, as I thought it worth while to draw attention to this adventive.

I think that this Barberry is likely to be introduced in many places in a few years, because I am constantly finding seedlings at some distance from the original plants in private places. I have also found *Rosa setigera* growing vigorously in a field in Hopedale, Massachusetts. The locality has recently been destroyed, however.

Clematis paniculata is another plant that is likely to become introduced into the wild, as I find occasional strays outside of artificial plantations.— WARREN H. MANNING, Boston, Massachusetts.

ERRATA.

Page 37, line 3; for *sylvicola* read *silvicola*.
" 42, " 29; *after* west *insert* to.
" 44, " 1; *for* Fora *read* Flora.
" 48, " 1; *after* 29 cm. omit the comma.
" 68, " 12; for *Wollfia* read *Wolffia*.
" 69, " 34; *for* frustescent *read* frutescent.
" 75, " 33; *after* system *insert* ".
" 76, " 15; for *simile* read *similis*.
" 78, " 10; for *simile* read *similis*.
" 90, " 27; for *parictina* read *parietina*.
" 121, " 9; for *Torreya* read *Torreyana*.
" 121, " 10; for *olia* read *folia*.
" 186, " 22; *for* abu dant *read* abundant.
" 200, " 31; for HETEROCHAETUSS read HETEROCHAETUS.

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