RECENT DISCOVERIES IN THE NEWFOUNDLAND FLORA

M. L. Fernald

(*Continued from page 247*)

Corylus cornuta Marsh. Range extended north to Bonne Bay: margins of thickets and woods, alluvial islands and shores at mouth of Main River, *Fernald, Long & Fogg*, no. 1627.

Arceuthobium pusillum Peck. Extended north to Bonne Bay: on *Picea mariana*, Deer Brook, *Fernald, Long & Fogg*, no. 1656; Main River, *Fernald & Long*, no. 1657.

Oxyria digyna (L.) Hill. Extended southward to southern entrance to Bonne Bay: shelves and talus of diorite cliffs (essentially at sea-level), Western Head, *Fernald, Long & Fogg*, no. 1658. See p. 93 and map 11.

*Polygonum allocarpum Blake, Rhodora, xix. 234 (1917). District of Burgeo and La Poile: cobbly barrier-beach, Great Barachois (or Barasway Bay), *Fernald, Long & Fogg*, no. 228.

An extension north from Nova Scotia.

Salsola Kali L., var. caroliniana (Walt.) Mett. District of Burgeo and La Poile: with the pubescent form, upper border of sandy beach, Sand Bank, west of Burgeo, *Fernald, Long & Fogg*, no. 242.

Previously known from the Bay of Islands.

Arenaria marcescens Fern. To the stations already recorded add Bay of Islands: crests of dry serpentine ridge, North Arm, *Long & Fogg*, no. 250.

The species is on all the serpentine areas of western Newfoundland. Plate 255 shows flowering and fruiting branches, life-size, and seeds × 10.

A. cylindrocarpa Fern. Plate 256. Apparently on all the more exposed limestone or serpentine areas of the West Coast.

The plate shows small fragments of the extensively creeping *A. cylindrocarpa* and a small plant of *A. norvegica* Gunn. with which it has been confused; also characteristic mature fruits × 6, and seeds × 10. See p. 11.

Stellaria crassifolia Ehrh. The Newfoundland range extended south to St. John Bay: springy and mossy glades in spruce and larch swamp, Eastern Point, *Fernald, Long & Fogg*, no. 1680.

Cerastium Fischerianum Seringe. Extended south from the Straits to St. John Bay and Ingornachoix Bay: wooded talus of limestone cliff, Crow's Head, *Fernald, Long & Fogg*, no. 1684; dry peaty and turfy limestone barrens, Gargamelle Cove, no. 1683.

C. terrae-novae Fern. & Wieg. See p. 11, plate 257. Apparently on all the serpentine areas of the West Coast.

The plate shows a small plant, life-size, and seeds × 10.

C. VISCOSUM L. DISTRICT OF BURGEO AND LA POILE: roadsides, pastures and grassy banks, Burgeo, *Fernald, Long & Dunbar*, no. 26,675, *Fernald, Long & Fogg*, no. 260.

Although recorded by Waghorne and others from Newfoundland, the constant mixture in literature of *C. viscosum* and *C. vulgatum* L. makes it desirable to put a verified station on record.

LYCHNIS ALPINA L. To the stations already recorded add BAY OF ISLANDS: southerly slopes of dry serpentine ridge, North Arm, *Long & Fogg*, no. 263.

*SILENE ACAULIS L., var. EXSCAPA (All.) DC., forma CAULESCENS (Vaccari) Fiori. BONNE BAY: shelves and talus of diorite cliffs, Western Head, *Fernald, Long & Fogg*, no. 1693.

Var. *exscapa*, the common form in eastern America, has the flowers and fruiting capsules scarcely exserted from the leafy tips. Forma *caulescens* has calyx and capsule of var. *exscapa*, but the flowers well elevated on peduncles rising 1 cm. or more above the leafy mat. See p. 94.

THALICTRUM ALPINUM L.

In its simple, mostly scapose stems and slender racemes and its tiny dark and lustrous upper leaf-surfaces *Thalictrum alpinum* is unique, yet by a singularly innaccurate statement in American keys it would ordinarily be difficult to make a determination of the plant. In the *Synoptical Flora* (i. fasc. 1: 14) *T. alpinum* is said to have "Flowers hermaphrodite"; and in Britton & Brown's *Illustrated Flora* (ii. 86) *T. alpinum* and *T. clavatum* are separated in the key from other species by having "Flowers perfect," while in Trelease's detailed paper on the genus (Proc. Bost. Soc. Nat. Hist. xxiii. 297), upon which later treatments have been largely based, these species are said to have "Flowers all perfect." Nevertheless, *T. clavatum* is, as originally described by De Candolle, ordinarily monoecious and, in spite of the key-character and the description, it is so illustrated in the *Illustrated Flora*. Some herbarium-specimens indicate that it may rarely be dioecious, but perfect flowers are highly exceptional. Similarly, *T. alpinum* is so generally dioecious that monoecious colonies or plants are unusual and hermaphrodite or perfect flowers very exceptional. The dioecious character of *T. alpinum* is well brought out in the figure in the *Illustrated Flora*, although the text calls for "flowers perfect."

ANEMONE MULTIFIDA Poir. (var. HUDSONIANA DC., hardly separable from the typical form). The Newfoundland stations are so few that

the following additional ones are worthy of note. Bonne Bay: limestone cliffs and talus, Tucker's Head, *Fernald, Long & Fogg,* no. 1709; turfy limestone crest (alt. 650 m.), Killdevil, no. 1710. Lower Humber Valley: dominant in dry humus over limestone ledges and shingle, Hannah's Head, no. 1708, well-developed plants with 16 or more heads. See p. 47.

*Cochlearia groenlandica L. Pistolet Bay: wet rocky beaches, Raleigh, *Anne M. Jeffers,* no. 91.

Characteristic of the outer coast of Labrador, but not previously found in Newfoundland where the common species are *C. tridactylites* Banks and *C. cyclocarpa* Blake.

Cardamine pratensis L., var. palustris Wimm. & Grab. Already known from southeastern Newfoundland but not clearly vouched for heretofore from the West Coast. Bay of Islands: along spring-rill in thicket at base of Mt. Moriah, *Fernald, Long & Fogg,* no. 1720. See p. 15.

*C. flexuosa With. Lower Humber Valley: wet springy banks and thickets, Humbermouth, *Fernald, Long & Fogg,* no. 1721; springy and bushy slopes between Marble Mountain and Humbermouth, no. 1722. See p. 16.

A typical Eurasian species, new to North America; clearly indigenous, with characteristic endemic American plants of wet or springy banks. Quickly distinguished from the variable American *C. pensylvanica* Muhl. by its definitely petiolulate leaflets. Although appearing in every way indigenous on the lower Humber, *C. flexuosa* has been collected by Mrs. Ayre in a park at St. John's where it was possibly introduced.

Lesquerella **Purshii** (Wats.), n. comb. *L. arctica,* var. *Purshii* Wats. Proc. Am. Acad. xxiii. 254 (1888) and in Gray, Syn. Fl. N. Am. i.[1] 120 (1895); Fernald, Rhodora, xiii. 223 (1911); Payson, Ann. Mo. Bot. Gard. viii. 157 (1921). Plate 258.

When Watson distinguished the plant of Anticosti as var. *Purshii* he recognized only two points of departure from the Greenland and arctic American *L. arctica* (Wormsk.) Wats.: "Pod somewhat pubescent; septum complete," as contrasted with the glabrous pod and fenestrate septum of the arctic plant. Later, Payson, in his *Monograph of the Genus Lesquerella,* stated in regard to the perforate septum, that "This character is apparently of no value, since specimens of typical *arctica* are at hand that show no perforations."[1] Payson, however, stated that var. *Purshii* (then known from western Newfoundland as well as Anticosti) is a "more slender plant . . . with narrower

[1] Payson, Ann. Mo. Bot. Gard. viii. 157 (1921).

leaves . . . the variety seems to have but 5–6 ovules in each cell, while the species has 6–8."

Since Watson's day, and even since Payson's, the material in the Gray Herbarium has vastly increased; when Payson studied the group we had 13 numbers of the two plants, now we have 45. With the large increase of material it becomes possible better to evaluate the differences and the similarities. As Payson says, the plant of Anticosti and Newfoundland tends to be more slender and to have narrower leaves: the rosette-leaves are narrowly oblanceolate and very slenderly petioled, those of the arctic plant broadly oblanceolate to spatulate. In *L. arctica* the raceme is short and corymbiform or subcorymbiform, with little tendency to elongate, the fruiting pedicels loosely ascending or spreading and commonly arcuate, the longest 1.4–2.6 (av. 1.6) cm. long; in the plant of the Gulf of St. Lawrence the raceme may be subcorymbiform but, when well developed, it becomes an elongate and stiff slender raceme, with ascending to stiffly spreading short and straight pedicels, the longest only 2–16 (av. 8) mm. long. The sepals of *L. arctica* taper gradually to the subacute tip; in *L. Purshii* they are gradually rounded at tip. The petals of *L. arctica* are rather marcescent, enveloping the capsule until it is nearly grown; in *L. Purshii* they quickly shrivel and have usually dropped before the young fruit is much distended. The capsules of *L. arctica* are glabrous, 6–9 mm. long and contain 6–8 seeds in each cell; those of *L. Purshii* oftenest lepidote (though sometimes glabrate) and averaging much smaller, 3.5–7 mm. long, with 4, 5 or 6 seeds in each cell. Although, as Payson says, the usually fenestrate septum of *L. arctica* may be complete, the fenestration is common and the opening large, while in *L. Purshii* the perforation only rarely occurs and it is then smaller than in *L. arctica.*

Differing, at least recognizably, in so many characters and isolated by more than 7 degrees of latitude, the two plants seem to be fairly segregated species. Their differences are summarized below.

L. ARCTICA. Rosette-leaves broadly oblanceolate to spathulate, broad-petioled: raceme corymbiform or subcorymbiform; the fruiting pedicels loosely ascending to spreading, often arcuate, the longest 1.4–2.6 (av. 1.6) cm. long: sepals gradually narrowed to subacute tip: petals subpersistent, often enveloping the nearly grown fruit: capsules glabrous, 6–9 mm. long, with 6–8 seeds in each cell: septum usually fenestrate, the perforation roundish or oval—Greenland and Arctic America, south to Rama (lat. 58° 43′), Labrador.

L. PURSHII. Rosette-leaves narrowly oblanceolate, slenderly pet-

ioled: raceme corymbiform to elongate, slender and stiff, with ascending to spreading straight pedicels, the longest 2–16 (av. 8) mm. long: sepals rounded at tip: petals soon shriveling, deciduous before the distension of the fruit: capsules lepidote, sometimes glabrate, rarely glabrous, 3.5–7 mm. long, with 4–6 seeds in each cell: septum usually complete, the perforation, when it occurs (not to be confused with rupturing), narrow and elongate.—Western Newfoundland and Anticosti Island, Quebec. NEWFOUNDLAND: dry gravelly limestone barrens, Burnt Cape, Pistolet Bay, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,336; dry gravel of limestone barrens, Cook Point, Pistolet Bay, *Fernald & Gilbert*, no. 28,337; dry mixed gravel on crest southwest of Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 28,338; gravelly limestone barrens back of Big Brook, Straits of Belle Isle, *Pease & Griscom*, no. 28,334; limestone barrens west of Big Brook, *Long & Gilbert*, no. 28,335; dry gravelly limestone barrens, St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,339; dry gravelly or shingly limestone barrens, Old Port au Choix, *Fernald, Long & Fogg*, no. 1724; dry gravelly limestone barrens, Gargamelle Cove, Ingornachoix Bay, *Fernald, Long & Fogg*, no. 1725; limestone barrens, Pointe Riche, *Fernald & Wiegand*, no. 3464; limestone cliffs and talus, Tucker's Head, Bonne Bay, *Fernald, Long & Fogg*, no. 1726; dry limestone barrens, upper slopes and tablelands, alt. 200–300 m., Table Mountain, Port au Port Bay, *Fernald & Wiegand*, no. 3465, *Fernald & St. John*, nos. 10,835, 10,836 and in Pl. Exsicc. Gray. no. 216, *Mackenzie & Griscom*, no. 10,290; dry limestone barrens, Green Gardens, Cape St. George, *Mackenzie & Griscom*. Anticosti Island, QUEBEC: *Pursh;* platières de l'embouchure, Rivière Jupiter, *Victorin & Rolland*, no. 24,851; sur les platières récontes, Riv. Chicotte, *Victorin & Rolland*, no. 27,146; sur les platières, Riv. McKane, *Victorin & Rolland*, no. 27,262.

The close relationship of the arctic species in numerous genera and of their endemic representatives about the Gulf of St. Lawrence with an isolated species of southern South America has repeatedly been pointed out. It is therefore noteworthy that the nearest relative of *Lesquerella arctica* and *L. Purshii* should be South American. As early as 1829, Hooker identified the Andean plant as *Vesicaria arctica:* "nor can I distinguish from *V. arctica,* specimens I have in my Herbarium, gathered in the plains of Mendoza and hills above Cordova, South America, by Dr. Gillies and Mr. Cruikshanks."[1] There has been much confusion of the one to three species of *Lesquerella* in South America and their identity is still rather vague. The Gillies plant, represented in the Gray Herbarium by a full sheet collected in 1825 from "Half-way between Fort San Rafael & El Puerto del

[1] Hook. Fl. Bor.-Am. i. 48 (1829).

Monte" in the Andes is a good match for the original plate of *Vesicaria montevidensis* Eichl. in Mart. Fl. Bras. xiii[1]. 302, t. 67, fig. 2 (1865), said to come from Montevideo. Some authors reduce *Lesquerella montevidensis* (Eichl.) Wats. to *L. mendocina* (Phil.) Kurtz, but the material at hand indicates that Payson is right in keeping them apart. *L. montevidensis* is placed by Payson next to *L. arctica* and *L. Purshii* (*L. arctica*, var. *Purshii*). It has the elongating raceme, ascending pedicels and slightly elongate pods like those of *L. Purshii;* but its leaves incline to be sinuate, its flowers are much larger, the pubescence of the pods is a fine stellate tomentum, and its styles are slightly longer than in *L. Purshii.*

DRABA MEGASPERMA Fern. & Knowlt. Range in western Newfoundland extended south to ST. JOHN BAY: turf overlying limestone, Grassy Island, *Fernald, Long & Fogg*, no. 1731; dry gravelly limestone barrens, Eastern Point and Eddy's (Old Man's) Cove, nos. 1737, 1748½. In eastern Newfoundland known as far south as NOTRE DAME BAY: rocky shore, Pike's Arm, *Fernald, Wiegand & Bartram*, no. 5458.

D. ARABISANS Michx., var. ORTHOCARPA Fern. & Knowlt. Extended north from Bay of Islands to BONNE BAY: limestone cliffs and talus, Tucker's Head, *Fernald, Long & Fogg*, no. 1749.

D. RUPESTRIS R. Br. The southern known limits in Newfoundland are on BONNE BAY: limestone cliffs near Stanleyville, *Fernald, Long & Fogg*, no. 1727; shelves and talus of diorite cliffs, Western Head, no. 1728. NOTRE DAME BAY: turfy and rocky crests, Twillingate, *Fernald, Wiegand & Bartram*, no. 5459; exposed ledges, Castle Rocks, Tilt Cove, *Fernald, Wiegand & Darlington*, no. 5460.

ARABIS ALPINA L. General in calcareous soils, either wet or moderately dry, south to INGORNACHOIX BAY. The typical plant has conspicuous milk-white petals with delicate and obscure veins. On Doctor Hill and about St. John Bay the petals are often firm, greenish-white and coarsely veined. This is

A. ALPINA, forma **phyllopetala**, f. nov., petalis firmis viridiscentibus valde venosis.—NEWFOUNDLAND: shaded shelves of limestone cliff, Crow's Head, St. John Bay, July 28, 1929, *Fernald, Long & Fogg*, no. 1753 (TYPE in Gray Herb.); thickets on quartzite gravel along brook, Deep Gulch, Doctor Hill, August 7, 1929, no. 1754.

A. DRUMMONDI Gray. Additional station on BONNE BAY: turfy slopes below limestone crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1756.

In view of the occurrence of *Arabis Drummondi* in New England at low altitudes it is a striking fact that in western Newfoundland it is known only on the high limestone escarpments and crests of the Highlands of St. John and of Killdevil.

*DROSERA OBOVATA Mert. & Koch. BONNE BAY: with *D. anglica*,

intermedia and *rotundifolia* in peaty borders of ponds in the barrens at about 365 m., Lookout Mt., *Fernald, Long & Fogg*, no. 1759; with the same associates, often forming pure colonies of considerable extent, wet peaty bog-barrens at 400–550 m. alt., tableland of Lookout Mt., no. 1760.

The first record, apparently, for North America. *D. obovata* is usually considered a hybrid of *D. anglica* and *D. rotundifolia*. The Lookout Mt. plant is abundant in spots, sometimes more so than its associates. See p. 87.

D. LINEARIS Goldie. To the single known Newfoundland station (on Blomidon, Bay of Islands) should be added the following extensive one. POINTE RICHE: quagmire-margin of pool in limestone barrens, *Fernald, Long & Fogg*, no. 1761, the plant making essentially continuous turf about a single pool, hundreds of other neighboring and apparently similar pools quite lacking it.

*SARRACENIA PURPUREA L., forma HETEROPHYLLA (Eaton) Fern. RHODORA, XXVI. 174 (1922). BONNE BAY: open upland marsh, *Harlow Bishop*, no. 336; open savannah near mouth of Main River, *Fernald, Long & Fogg*, no. 1762, all the pale form, no purple flowers seen.

?*SAXIFRAGA ADSCENDENS L.

In the Roemer herbarium at the British Museum, received through Shuttleworth, there is a specimen of characteristic *Saxifraga adscendens* (the identification confirmed for me by Mr. A. J. Wilmott) originally labeled: "*Saxifraga tricuspidata*," with the pencilled data: "Grönlandia, Terra nova," and the pencilled name of the author (of *S. tricuspidata*) "Rottb." Shuttleworth has added: "vix Rottb. an *petraea* vel *adscendens* Vahl" and "Herb. Roem." *Saxifraga tricuspidata* is, of course, a characteristic plant of Greenland and northern Labrador (not yet definitely known from Newfoundland) and the specimen of *S. adscendens* from "Grönlandia, Terra nova" may have accidentally replaced one of *S. tricuspidata*. On the other hand, *S. adscendens* is a western European plant which might well be in Newfoundland;[1] *S. adscendens* is, likewise, found in cordilleran North America, consequently, since hundreds of other cordilleran species are isolated in Newfoundland, it is to be expected in the latter region.

*PARNASSIA CAROLINIANA Michx. ST. JOHN BAY: wet bog back of Eddy's (Old Man's) Cove, *Fernald, Long & Fogg*, no. 1778; wet boggy margin of pond, Back (or Bustard) Cove, no. 1779. BONNE BAY: alluvial islands and shores at mouth of Main River, no. 1780.

An attractive but long expected addition to the flora of western

[1] See Fernald, RHODORA, XXVIII. 50 (1926) and Proc. Intern. Congr. Pl. Sci. ii. 1501–1506 (1929).

Newfoundland, since it was known eastward to the tip of the Gaspé Peninsula and to Anticosti and the Mingan Islands.

RIBES HIRTELLUM Michx., var. SAXOSUM (Hook.) Fern. RHODORA, xiii. 76 (1911). A rather striking extreme, with leaves of the fertile branches rounded to cordate at base. Probably somewhat general on the West Coast. The following collections are at hand. POINTE RICHE: bushy talus of limestone sea-cliffs at base of the Point, *Fernald, Long & Fogg*, no. 1782. BAY OF ISLANDS: wet woods, Crabb's, June 12, 1896, *Waghorne*.

AMELANCHIER FERNALDII Wiegand, RHODORA, xxii. 149 (1920). Range extended north to ST. JOHN BAY: peaty thicket bordering limestone barrens, Old Port au Choix, *Fernald, Long & Fogg*, no. 1792; shrubs 0.5–1 m. high. See p. 56.

A. LAEVIS Wiegand, RHODORA, xiv. 154, t. 96, fig. 7 (1912). Range on the West Coast extended north to BONNE BAY: talus of limestone cliff opposite Lomond, *Fernald, Long & Fogg*, no. 1791.

CRATAEGUS LAURENTIANA Sarg. Very rare and local; the following are the known stations. VALLEY OF THE EXPLOITS: sandstone ridges and banks, Rushy Pond, and ledges and gravel by the river, Bishop Falls, *Fernald, Wiegand & Darlington*, nos. 5642, 6606. BAY OF ISLANDS: brought from wild thicket at Hugh's Brook to garden of James Pennell, Esq. at Curling, *Fernald, Long & Fogg*, no. 1794. See p. 49.

*POTENTILLA STERILIS (L.) Garcke (*P. Fragariastrum* Ehrh.). AVALON PENINSULA: exact locality not definitely known, 1928, *A. M. Ayre*.

Potentilla sterilis is a noteworthy addition to the flora of North America. Unfortunately, Mrs. Ayre, in collecting it, was not fully aware of the significance of the discovery and there is some question as to the exact source of the specimens. In the winter of 1930–31, while going over with Mrs. Ayre a large collection of the very variable *Fragaria virginiana* marked "Strawberries near Murray's Pond, all wild," I found in the series two individuals (now in the Gray Herbarium) of most characteristic *Potentilla sterilis*. Mrs. Ayre had drawn a similar plant, probably from cliffs at Brigus. Subsequent search has, thus far, failed to rediscover the exact spots whence the collections came. *P. sterilis* is a typical plant of central, western and southern Europe; and its discovery in Newfoundland adds another to the long series of western Eurasian types which are apparently also indigenous there.

P. PECTINATA Raf. To the very few Newfoundland stations add BAY OF ISLANDS: crests of sandstone sea-cliffs, Woody Island, *Fernald, Long & Fogg*, no. 299. See p. 9.

P. NORVEGICA L., var. LABRADORICA (Lehm.) Fern. RHODORA,

xxviii. 213 (1926). Range extended from the Straits of Belle Isle south to Bonne Bay: shaded limestone rocks near crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1801. See p. 89.

*P. erecta (L.) Hampe (*P. Tormentilla* Neck.). Avalon Peninsula: a large patch in moss, Quidi Vidi, August 26, 1930, July, 1931, *A. M. Ayre*.

Potentilla erecta, more familiarly known in Europe as *P. Tormentilla*, is as significant an addition to the indigenous flora of southeastern Newfoundland as *P. sterilis* (see above) or as were some other typical western Eurasian species now long known from the Avalon Peninsula: *Potamogeton polygonifolius* Pourret, *Festuca capillata* Lam., *Glyceria fluitans* (L.) R. Br., *Nardus stricta* L., *Juncus bulbosus* L., *Montia rivularis* C. C. Gmel., *Ranunculus hederaceus* L., *R. Flammula* L., *Potentilla procumbens* Sibth., *Pedicularis sylvatica* L., etc.

*P. Anserina L., forma **sericea** (Hayne), comb. nov. *P. Anserina*, var. *sericea* Hayne, Arzneigew. iv. 31 (1816). *P. Anserina*, β. *concolor* Wallr. Sched. Crit. i. 226 (1822). *P. Anserina*, β. *holosericea* Gaud. Fl. Helv. iii. 405 (1828). *P. Anserina*, α. *argentea* Neilr. Fl. Nied. Österr. 909 (1859). *P. Anserina* α. *unicolor* Schur, Enum. Pl. Transs. 189 (1866). *P. sericea* (Hayne) Zimmeter, Eur. Art. Gatt. Pot. 6 (1884), not L. *P. concolor* (Wallr.) Zimmeter, Bot. Kal. 1887: 66 (1887). *Argentina Anserina concolor* (Wallr.) Rydb. Mon. N. Am. Pot. 160 (1898). *A. argentea* Rydb. Bull. Torr. Bot. Cl. xxxiii. 143 (1906). *A. Anserina sericea* (Hayne) Piper, in Piper & Beattie, Fl. Se. Wash. 142 (1914). *P. Anserina*, var. *argentea* (Rydb.) Jepson, Man. Fl. Pl. Calif. 485 (1925), not Neilr. (1859) as to type.—Bay of Islands: upper border of gravelly sea-beach, Governor Island, *Fernald, Long & Fogg*, no. 300.

In Newfoundland, eastern Canada and northern New England *Potentilla Anserina* (var. *vulgaris* Hayne), with the upper leaf-surfaces deep-green, passes as it gets into drier habitats (like the upper borders of beaches) by a perfect transition into the very striking extreme with the upper surfaces silvery-sericeous. The latter extreme is at best a mere form, certainly not a true variety. It is quite parallel with *P. palustris*, f. *subsericea* (Becker) Wolf. Although Rydberg set up his *Argentina argentea* as an American species quite apart from the Old World *P. Anserina* var. *argentea* Neilr., I am quite incapable of finding the differences. Several Eurasian collections seem to me inseparable from the American plants.

Dryas integrifolia Vahl, forma **canescens** (Simmons), comb. nov. *D. integrifolia*, var. *canescens* Simmons, Vasc. Pl. Fl. Ellesmereland, 46 (1906).—The Newfoundland stations are Pointe Riche: scarce (and sterile), on peaty and turfy limestone barrens, with the abundant and typical form with green upper surfaces of the leaves,

Fernald, Long & Fogg, no. 1812. PORT AU PORT BAY: dry exposed ledges and shingle on the limestone tableland, alt. 200–300 m., Table Mt., *Fernald, Wiegand & Kittredge*, no. 3598, *Fernald & St. John*, no. 10,846, *Mackenzie & Griscom*, no. 10,317. CAPE ST. GEORGE: dry limestone barrens, local, Green Gardens, *Mackenzie & Griscom*, no. 11,078.

Dryas integrifolia, f. *canescens* is quite parallel with *Potentilla Anserina*, f. *sericea*, *P. palustris*, f. *subsericea*, and numerous other cases. It is likely to be found in the most arid situations throughout the range of *D. integrifolia*. Abundant collections from Greenland indicate that such is the case there, just as it is in western Newfoundland.

ALCHEMILLA VULGARIS L., var. VESTITA (Buser) Fern. & Wiegand, RHODORA, xiv. 233 (1912). *A. minor* Huds. Extended south on the West Coast to BONNE BAY: damp thickets under limestone crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1821.

On the mountains of western Newfoundland *Alchemilla vulgaris*, var. *vestita* and var. *filicaulis* (Buser) Fern. & Wieg. are both conservative and rather localized plants of remote subalpine habitats. Nevertheless, at some places on the island they are both inclined to become aggressive weeds. Mrs. Ayre sends var. *vestita* from St. John's, where it is a "terrible weed" in lawns, etc., just as typical *A. vulgaris* has become an almost indestructible pest in western Nova Scotia.

PRUNUS VIRGINIANA L. The Choke Cherry extends north on the West Coast to BONNE BAY: swales and margins of wet thickets along Winterhouse Brook, *Fernald, Long & Fogg*, no. 1825.

ASTRAGALUS EUCOSMUS Robinson. Our first station on the West Coast south of Pistolet Bay is on BAY OF ISLANDS: turfy spots on slaty calcareous talus, Cutwater Head, *Fernald, Long & Fogg*, no. 1827. See p. 50.

OXYTROPIS FOLIOLOSA Hook. The first station on the West Coast south of Pistolet Bay is on BAY OF ISLANDS: turfy spots on slaty calcareous talus, Cutwater Head, *Fernald, Long & Fogg*, no. 1828. See p. 50 and MAP 3.

It will be noted that neither *Oxytropis foliolosa* nor *Astragalus eucosmus* have been found on the West Coast of Newfoundland between Pistolet Bay and the Middle Arm of Bay of Islands. In describing our very hurried and wholly superficial botanizing on Cutwater Head (p. 50), I noted the occurrence there of a new *Taraxacum* with extraordinarily large heads, a plant collected also in evening light of the same day on the cliff at neighboring Cod Cove. This *Taraxacum* (to be described and illustrated in Part III), like the *Astragalus* and the *Oxytropis*, is likewise known in western Newfoundland only

on Pistolet Bay and the Middle Arm of Bay of Islands. Whatever the peculiar factors, as yet not wholly apparent (probably similarity of rock), which concentrate at points 200 miles apart these highly localized species, it is probable that, if our incidental five-minute landing on Cutwater Head had been extended to half-a-day, many other specialties of Pistolet Bay might have been found: such plants as *Carex capitata* L., *Cerastium Regelii* Ostenf., *Ranunculus pedatifidus* J. E. Sm., var. *leiocarpus* (Trautv.) Fern., *Draba nivalis* Lilj., *Parnassia Kotzebuei* C. & S., *Potentilla usticapensis* Fern., *Astragalus stragulus* Fern., *Arctostaphylos rubra* (Rehder & Wilson) Fern., *Bartsia alpina* L., *Antennaria eucosma* Fern. & Wieg., *A. vexillifera* Fern., *Arnica plantaginea* Pursh and *Crepis nana* Richardson. Here is a real challenge and an opportunity for a worth-while vacation for a pair of intelligent cliff-climbers.

OXYTROPIS JOHANNENSIS Fern. RHODORA, XXX. 145, t. 173 (1928). To the few Newfoundland stations already recorded add BONNE BAY: limestone rocks near crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1831.

O. TERRAE-NOVAE Fern. l. c. 147, t. 174 (1928).

Apparently somewhat general on dry calcareous shingle and exposed limy ledges from the eastern entrance of Hudson Strait to southwestern Newfoundland (MAP 22). This type of distribution is shown by *Arnica terrae-novae* and *A. plantaginea* (to be considered later) and several other species.

MAP 22. Range of OXYTROPIS TERRAE-NOVAE.

HEDYSARUM ALPINUM L. Our only stations (as yet) between Cow Head and the limestone barrens of Port au Port Bay are on Bonne Bay and Bay of Islands. BONNE BAY: limestone rocks near crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1835; basaltic talus near mouth of Wallace's Brook south of Bonne Bay, no. 1834. See p. 94. BAY OF ISLANDS: turfy spot on slaty calcareous talus, Cutwater Head, no. 1832. See p. 50.

*H. ALPINUM L., var. AMERICANUM Michx., forma **albiflorum** (Standley), comb. nov. *H. americanum* (Michx.) Britton, f. *albiflorum* Standley, Field Mus. Pub. Bot. viii. 15 (1930).—The only Newfound-

land collection of the albino is from VALLEY OF THE EXPLOITS: ledges and talus, north bank of the river below the falls, Grand Falls, *Fernald, Wiegand, Bartram & Darlington*, no. 5801.

*VICIA CRACCA L., var. SERICEA Peterm. This very striking silvery-sericeous extreme was found on BONNE BAY: gravelly beach near old lumber camp (obviously introduced), Beachy Cove, *Fernald, Long & Fogg*, no. 1837.

LATHYRUS JAPONICUS Willd., var. ALEUTICUS (Greene) Fern. RHODORA, XXXIV. 179 (1932). Extending locally south to Notre Dame Bay and to Port au Port Bay. Frequently producing cleistogamous flowers and reniform fruits, resembling those of *Amphicarpa bracteata*.[1]

[1] AMPHICARPA **bracteata** (L.), comb. nov. *Glycine bracteata* L. Sp. Pl. ii. 754 (1753). *G. monoica* L. Sp. Pl. ed. 2, ii. 1023 (1763). *A. monoica* (L.) Ell. Journ. Acad. Phil. i. 373 (1818). *Falcata comosa* Britt. in Britt. & Br. Ill. Fl. ii. 334, fig. 2225 (1897), not *Glycine comosa* L. Sp. Pl. ii. 754 (1753).

In eastern North America we have two well marked species of *Amphicarpa:* (1) the very common plant with filiform stems, slight or short pubescence and few whitish to pale-lilac petaliferous flowers, the plant called for many years *A. monoica* (L.) Ell. (1818) and described and illustrated in Britton & Brown as *Falcata comosa* (L.) Kuntze (1891); and (2) the much coarser villous plant with longer pubescence and the deeper purple flowers more numerous. This plant, no. 2, is *A. Pitcheri* T. & G. (1838).

Although by Britton & Brown *Falcata comosa* (L.) Kuntze, based on *Glycine comosa* L. (1753), is made to include as a synonym *Amphicarpa monoica* (L.) Ell., based on *Glycine monoica* L. (1763), while *Falcata Pitcheri* (T. & G.) Kuntze is maintained as a separate species, it is to be noted that in 1753 Linnaeus clearly recognized the two American species, basing them both on characteristic specimens of Clayton's and on clear diagnoses by Gronovius. Both the Linnean species were on the same page (754) of Species Plantarum (1753): (1) *Glycine comosa*, with the original Linnean diagnosis "GLYCINE foliis ternatis hirsutis, racemis lateralibus" and (2) *G. bracteata* with the original Linnean diagnosis "GLYCINE foliis ternatis nudiusculis, caule piloso, racemis pendulis, bracteis ovatis." Both go back directly to the fuller accounts of Gronovius and, therefore, the Clayton specimens (no. 182 as type of *G. comosa*, no. 592 as type of *G. bracteata*) which formed the bases of the Gronovian and, following him, the Linnean descriptions; and both came from "Virginiae *madidis umbrosis*," the habitats given by Clayton and Gronovius. In case of *G. comosa* Linnaeus, following Gronovius, cited also the *Phaseolus marianus scandens* of Petiver, which is now unidentifiable but presumably correctly placed with Clayton, no. 182.

Since the Gronovian descriptions upon which Linnaeus based his two species, *Glycine comosa* and *G. bracteata*, so well differentiate our two species and since Linnaeus would presumably not have divided into two species the more slender plant, as has been generally assumed, it seemed desirable to study the types in connection with a series of typical American plants. In the summer of 1930 Mr. Bayard Long and I made such a study at the British Museum. The type of *Glycine comosa* is beautifully characteristic *Amphicarpa Pitcheri*, so well defined by Gronovius: "late scandens, floribus coeruleis in racemos parvos ad genicula congestis, foliis hirsutis." Consequently, A. PITCHERI T. & G. *should be called* A. COMOSA (L.) G. Don in Loud. Hort. Brit. 314 (1830).

Glycine bracteata L. (1753) was renamed by Linnaeus in 1763 *G. monoica*, because he thought this new name more descriptive of a plant notable for its two types of flowers and fruits; and by the old Kew Rule the correct name (the first combination of generic and specific names) was *Amphicarpa monoica* (L.) Ell. The type of *G. bracteata*, therefore of *G. monoica*, is clearly the slender plant long called *Amphicarpa monoica* and well defined by Linnaeus (following Gronovius) with "foliis . . . nudiusculis . . . *Alae & Carina albae, Vexillo pallide violaceo.*" Consequently, as indicated in the opening paragraph, AMPHICARPA MONOICA (L.) Ell. must be called A. BRACTEATA (L.), comb. nov.

L. JAPONICUS Willd., var. GLABER (Ser.) Fern. l. c. 181 (1932). Extending northward on the West Coast to Cow Head.

*L. JAPONICUS Willd., var. GLABER, f. ACUTIFOLIUS (Bab.) Fern. l. c. 182 (1932). The only American collection seen is from BONNE BAY: upper border of beach, White Point, *Fernald, Long & Fogg*, no. 1840.

L. JAPONICUS Willd., var. PELLITUS Fern. l. c. 183 (1932). Extending north to Notre Dame Bay and to St. John Bay.

*L. PRATENSIS L. LOWER HUMBER VALLEY: springy glades in spruce woods between Marble Mountain and Humbermouth, *Fernald, Long & Fogg*, no. 1844.

As stated on p. 15, *Lathyrus pratensis* in the mossy glades in typical spruce forest of the Lower Humber has every appearance of a native plant. It has as associates or near neighbors in the natural glades and woodlands other European species (*Cardamine flexuosa* With., *Linum catharticum* L., *Scrophularia nodosa* L. and *Cirsium palustre* (L.) Scop.) which, likewise, have every aspect of indigenous species. With them are the usual circumpolar or amphigean species of the Canadian forest-flora (*Thelypteris Dryopteris* (L.) Slosson and *T. Phegopteris* (L.) Slosson, *Botrychium virginianum* var. *europaeum* Ångstr., *Cinna latifolia* (Trev.) Griseb., *Carex capillaris* L. and *lepidocarpa* Tausch, *Streptopus amplexifolius* (L.) DC., *Caltha palustris* L., *Pyrola minor* L., etc.), as well as the usual endemic American species of wet calcareous woods (*Cystopteris bulbifera* (L.) Bernh., *Taxus canadensis* Marsh., *Carex stipata* Muhl., *Habenaria dilatata* (Pursh) Gray, *Listera convallarioides* (Sw.) Nutt., etc., etc.). These are not weeds and our conviction was, that *Lathyrus pratensis* and its other European associates are as definitely indigenous in western Newfoundland as are the endemic American species with which they are found.

In this connection it is worth while to record some other stations for *Lathyrus pratensis*. On PRINCE EDWARD ISLAND: springy meadow, Rocky Point, Queens Co., *Fernald & St. John*, no. 7709. In NOVA SCOTIA: border of boggy swale, Springhill Junction, *Pease & Long*, no. 21,732. Although an occasional introduction along railroads and roadsides on the continent of North America, *L. pratensis* may prove to be quite as indigenous in Prince Edward Island and Nova Scotia as in Newfoundland.

LINUM CATHARTHICUM L. Known in Newfoundland from the LOWER HUMBER VALLEY: wet slaty border of ditch, near Humbermouth, July 4, 1910, *Fernald, Wiegand & Kittredge*, no. 3654; railway gravel near Humbermouth, July 18, 1910, no. 3655; wet springy banks and thickets, Humbermouth, *Fernald, Long & Fogg*, no. 1845; dry humus over limestone ledges and shingle, Hannah's Head, no. 1846;

damp limestone gravel between Marble Mt. and Humbermouth, *Fernald & Long*, no. 1847.

See discussion on p. 15 and under *Lathyrus pratensis* (preceding). Although Wiegand and I, in 1910, took *Linum catharticum* to be a railroad introduction, it has not spread in 20 years as a railroad weed. It is quite possible that the railroad merely invaded its natural area.

*EMPETRUM NIGRUM L. f. PURPUREUM (Raf.) Fern. RHODORA, XXV. 83 (1923). BONNE BAY: abundant with the common black-fruited form, peaty and turfy upper quartzite slopes (alt. 600–650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1851. See p. 89.

The combination *Empetrum nigrum*, f. *purpureum* was independently made by R. Good, Trans. Linn. Soc. xlvii. 519 (1927), Good obviously overlooking its publication in 1923.

ELATINE MINIMA (Nutt.) Fisch. & Meyer. See Fernald, RHODORA, xix. 13 (1917). To the two recorded stations in Newfoundland add from DISTRICT OF BURGEO AND LA POILE: sandy and gravelly margin of pond, Burgeo, *Fernald, Long & Fogg*, no. 326. See p. 13.

VIOLA PALUSTRIS L. To the stations on the Straits of Belle Isle add from HIGHLANDS OF ST. JOHN: springy meadow on quartzite slope near head of Yellow Brook, and slopes, ledges and gravel near head of Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, nos. 1862–1864. See p. 58.

*EPILOBIUM ANGUSTIFOLIUM L., var. MACROPHYLLUM (Hausskn.) Fern. RHODORA, XX. 4 (1918). HIGHLANDS OF ST. JOHN: wet quartzite ledges and gravel along brook, Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, no. 1872.

The only other known stations in eastern North America are on the Magdalen Islands. See p. 58.

E. PYLAIEANUM Fern. RHODORA, XXVII. 33 (1925). To the four stations originally recorded add the following. DISTRICT OF BURGEO AND LA POILE: wet moss and peat on gneiss hills, Sand Bank and Burgeo, *Fernald, Long & Fogg*, nos. 331, 332. See p. 12.

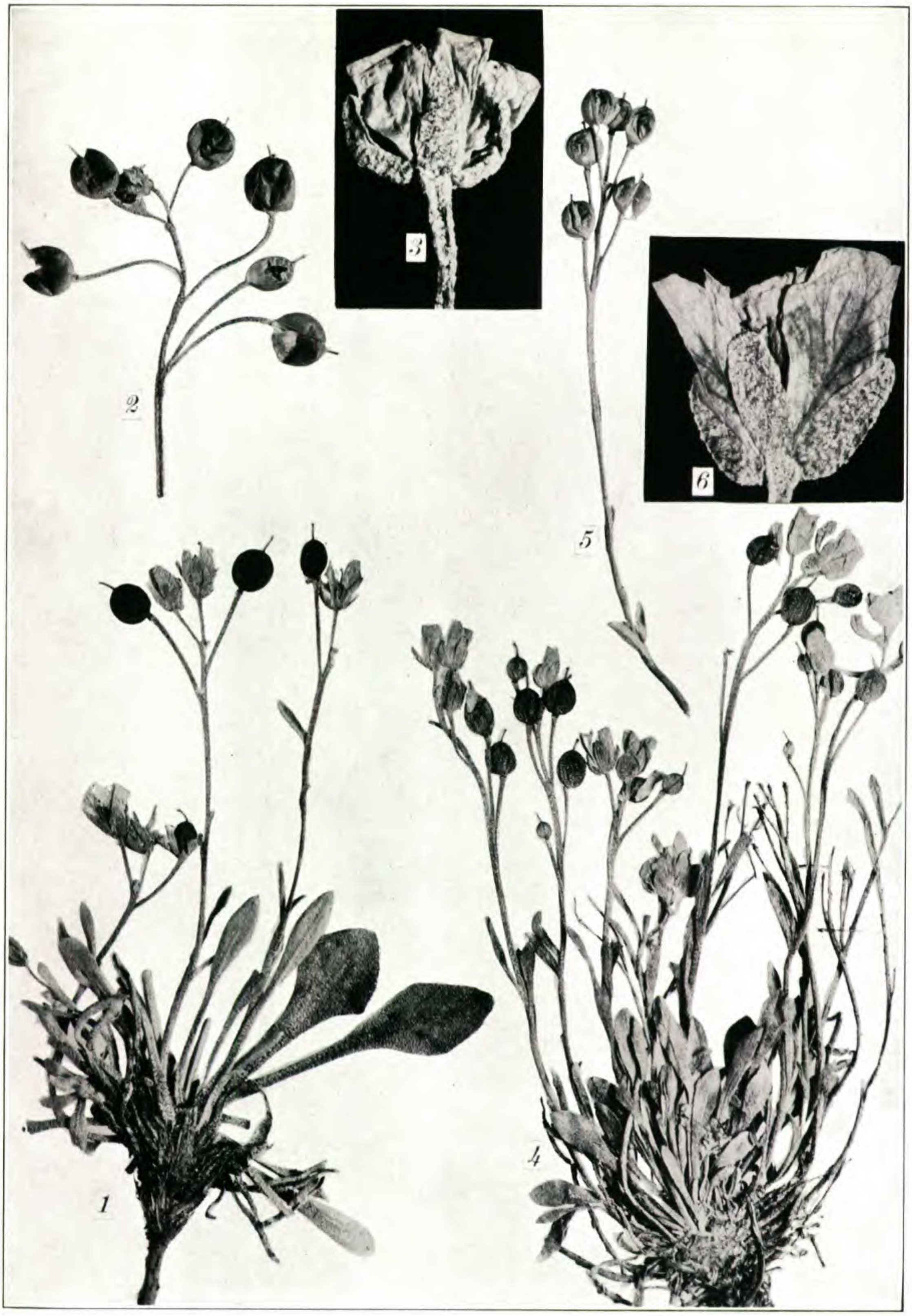
In view of the difficulty of the genus *Epilobium* and the seeming restriction of *E. Pylaiaeanum* to southernmost Newfoundland, it seems desirable to illustrate it. PLATE 259 shows well-developed plants, life-size, and characteristic calyx, × 6, and seed, × 10.

E. WYOMINGENSE Nelson. To the few recorded Newfoundland stations add from BAY ST. JOHN: wet bog back of Eddy's (Old Man's) Cove, *Fernald, Long & Fogg*, no. 1873.

E. DAVURICUM Fisch. To the few recorded stations add the following: ST. JOHN BAY AND INGORNACHOIX BAY: damp open depressions in limestone barrens, Eastern Point and bare wet peaty depressions, Pointe Riche, *Fernald, Long & Fogg*, nos. 1877, 1878.

E. BOREALE Hausskn. Newfoundland range extended south to

CERASTIUM TERRAE-NOVAE: FIG. 1, small plants, × 1, from Bonne Bay, Newfoundland; FIG. 2, seeds, one showing ruptured testa, × 10, from the TYPE, Blomidon, Newfoundland.



LESQUERELLA ARCTICA: FIG. 1, small plant, × 1, from Greenland; FIG. 2, fruit, × 1, from Greenland; FIG. 3, shriveled flower, showing lance-acuminate sepals, × 4, from Greenland.

L. PURSHII: FIG. 4, small plant, × 1, from Newfoundland; FIG. 5, fruit, × 1, from Newfoundland; FIG. 6, flower, showing oblong, obtuse sepals, × 4, from Newfoundland.

Bonne Bay: damp thicket under limestone crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1881.

E. lactiflorum Hausskn. To the stations already recorded add the following. Highlands of St. John: wet quartzite ledges and gravel along brook, Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, no. 1882. Bonne Bay: damp thicket under limestone crests (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1884.

Oenothera perennis L. The northern limit in western Newfoundland seems to be on Bonne Bay: scarce, along trail in spruce woods and thickets, slope of Lookout Mt., *Fernald, Long & Fogg*, no. 1887.

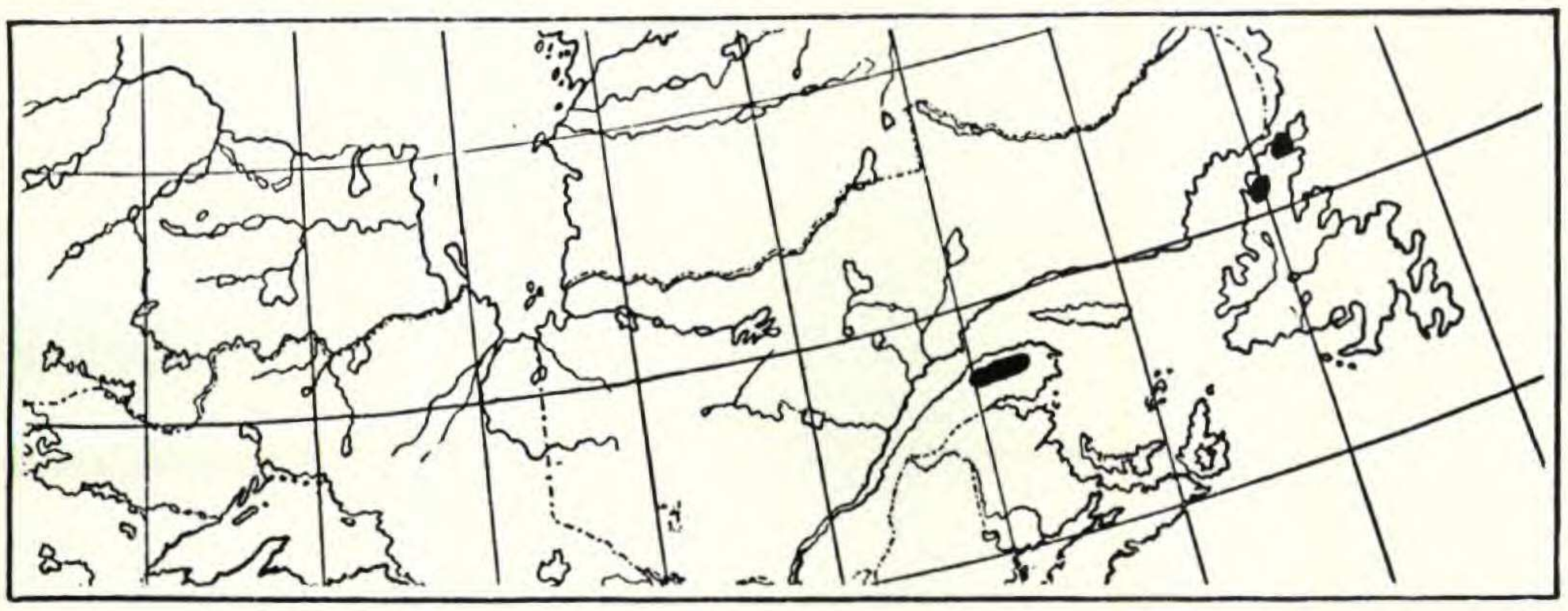
Conioselinum pumilum Rose. In Newfoundland apparently confined to the serpentines of the West Coast and to the north side of Notre Dame Bay. Notre Dame Bay: boggy places on hill southwest of Tilt Cove and border of Castle Pond, Tilt Cove, *Fernald, Wiegand & Darlington*, nos. 5961, 5962. Bonne Bay: serpentine tablelands, alt. about 380 m., *Fernald, Wiegand & Kittredge*, no. 3788; damp humus on serpentine gravel, slopes (above 300 m.) and summit (alt. 710 m.), The Tableland, *Fernald, Long & Fogg*, no. 1895. Bay of Islands: wet depressions and borders of rills, slopes and crests of serpentine ridge, North Arm, *Long & Fogg*, no. 347; serpentine tableland, alt. 550 m. and slopes, Blomidon, *Fernald & Wiegand*, nos. 3785–3787. See pp. 10, 83.

Angelica laurentiana Fern. Rhodora, xxviii. 222 (1926). Abundant at low altitudes about St. John Bay: very abundant (dominant) on Grassy Island, *Fernald, Long & Fogg*, no. 1899, and on Savage's Island, and frequent in clearings about Old Port au Choix. See p. 60.

Phyllodoce caerulea (L.) Bab. To the very few known Newfoundland stations add the following. Highlands of St. John: peat on quartzite slopes, head of Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, no. 1917. Bonne Bay: peaty and turfy upper quartzite slopes (alt. 600–650 m.) Killdevil, *Fernald, Long & Fogg*, no. 1918.

Vaccinium nubigenum Fernald, Rhodora, x. 53 (1908). Plate 260. To the recorded stations add the following from Highlands of St. John: peaty quartzite slopes, Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, nos. 1936, 1937. See p. 58.

In view of the very local occurrence (map 23) of *Vaccinium nubige-*



Map 23. Range of Vaccinium nubigenum.

num it is desirable to show its habit. Anthers of the two related species (*V. cespitosum* Michx. and *V. ovalifolium* Sm.) are shown for comparison. As stated on p. 58, *V. ovalifolium* in eastern America is always past anthesis when *V. nubigenum* (likewise *V. cespitosum*) is coming into bloom.

PRIMULA EGALIKSENSIS Wormsk. Extended slightly southward to INGORNACHOIX BAY: turfy borders of limestone beach and dry gravelly limestone barrens, Gargamelle Cove, *Fernald, Long & Fogg*, nos. 1952, 1953 (the latter exceptional in growing in *dry* gravel, consequently with scarcely developed scapes).

*ANDROSACE SEPTENTRIONALIS L. BONNE BAY: limestone talus, Tucker's Head, *Fernald, Long & Fogg*, no. 1954. See pp. 81, 96 and MAP 5.

Only two plants were found, one in fruit, the other a sterile rosette. These, presumably, were chance survivors of a colony which had become much depleted through failure to fruit during a series of adversely cold summers (see pp. 4, 95–97). The map has a single station in northwestern Greenland. So far as I can find, *Androsace septentrionalis* has never been recorded from Greenland. It and some other plants, not yet listed from Greenland, were collected on the Crockerland Expedition by Dr. Ekblaw. The sheet in the Gray Herbarium bears the data: dry warm gravel slope, Etah, July 15, 1915, *W. Elmer Ekblaw*. Dr. Ekblaw collected abundant material, but his Etah station and several from adjacent northeastern Ellesmereland are the only ones yet known in eastern Arctic America.

LYSIMACHIA TERRESTRIS (L.) BSP. Range in western Newfoundland extended north to BONNE BAY: gravel along Deer Brook, *Fernald, Long & Fogg*, no. 1955.

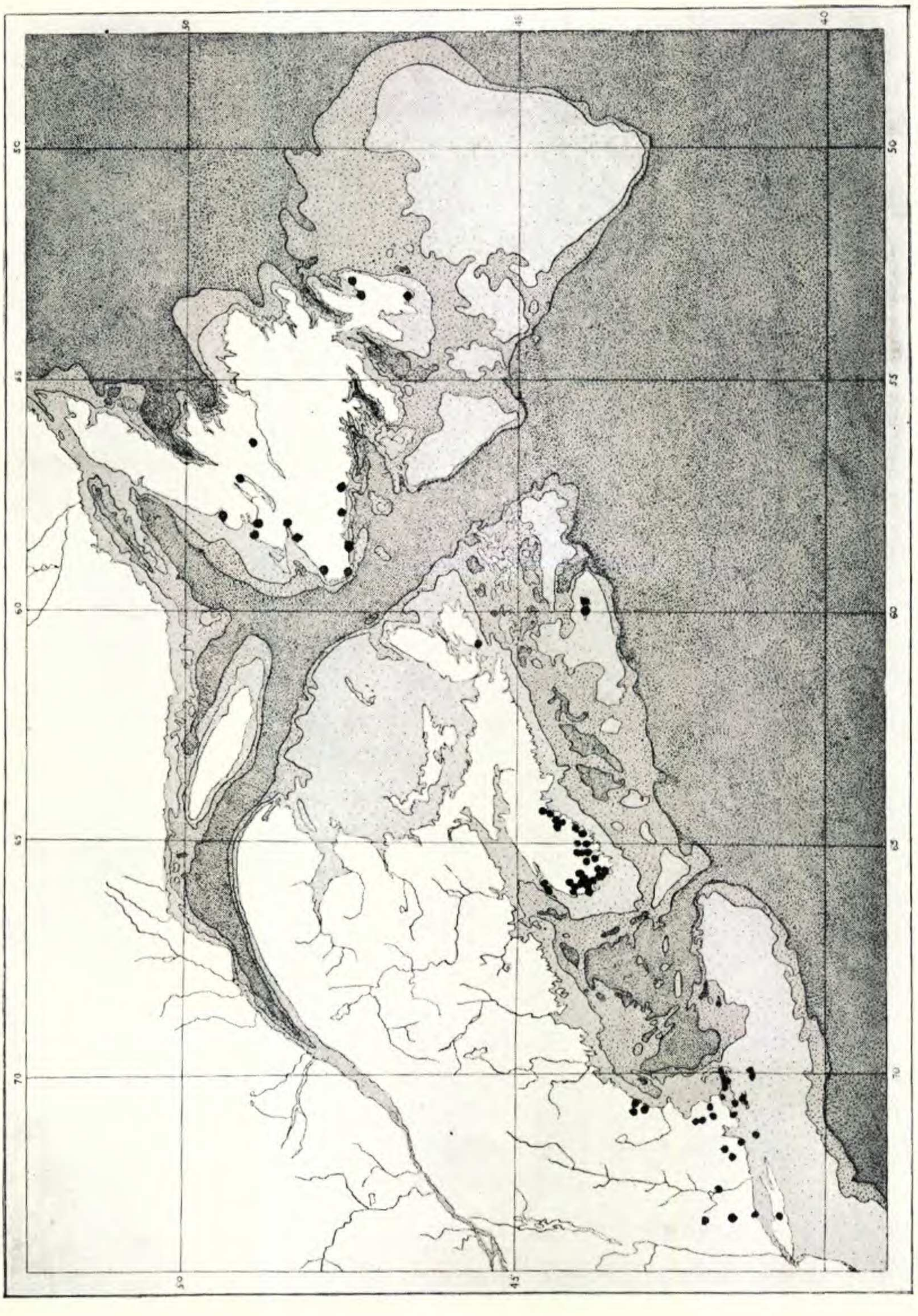
At this northern outpost of the species the plants, in late August, were all sterile and only 1–2 dm. high.

FRAXINUS NIGRA Marsh. Range on the West Coast extended north to BONNE BAY: talus of limestone cliff opposite Lomond, *Fernald, Long & Fogg*, no. 1958.

BARTONIA PANICULATA (Michx.) Muhl., var. IODANDRA (Rob.) Fern. RHODORA, xxiii. 228 (1922). Range on the West Coast extended north to BONNE BAY: wet peaty barrens at about 365 m., Lookout Mt., *Fernald, Long & Fogg*, no. 1962.

The migration of *Bartonia paniculata* (extending southward along the Coastal Plain to Louisiana) between New Jersey and Newfoundland, or *vice versa*, is well brought out by the map of its range northeast of New Jersey (MAP 24). The Newfoundland plant is all var. *iodandra*.

MYOSOTIS LAXA Lehm. Range in western Newfoundland extended



MAP. 24. Northeastern Range of BARTONIA PANICULATA (including Varieties).