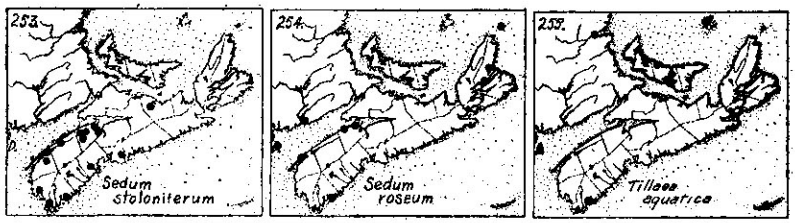
2. TILLAEA (Mich.) L.

1. **T. aquatica** L. Map 255.

Restricted to brackish muddy shores or sand flats near the coast; sand flats back of the beach at Villagedale, Shelburne Co.; forming pure mats on the wet borders of the fresh-water ponds on Sable Is.

Locally near the coast from Que. to Md. and southward; Pacific Coast; Eu & N. Afr.



52. SAXIFRAGACEAE SAXIFRAGE FAMILY

a. Low herbs; fruit a capsule or follicle.
b. Leaves opposite, scattered, flowers less than 2 mm wide; plant forming mats in wet areas. 4. *Chrysosplenium*
b. Leaves mostly basal; flowers much larger; plants erect.
c. Basal leaves thick, in a dense rosette, with the teeth lime-encrusted. 1. *Saxifraga*
c. Basal leaves thin, long-petioled, without encrusted teeth.
d. Leaves toothed; flowers in a raceme.
e. Leaf sharply cut into hard teeth; petals not lobed; capsule unequally valved. 2. *Tiarella*
e. Leaf bluntly and shallowly toothed, the teeth without a hard sharp point; petals finely divided; capsule equally valved. 3. *Mitella*
d. Leaves not toothed; flowers solitary. 5. *Parnassia*
a. Shrubs; leaves palmately-lobed; fruit a berry; ovary inferior. 6. *Ribes*

1. SAXIFRAGA (Tourn.) L.

1. **S. Aizoon** Jacq. LIVELONG SAXIFRAGE.

Occasional on rocks and coniferous hillsides in northern C. B.; above Cheticamp on a dry mossy hillside by the side of the Cabot Trail. June-July. Lawson also notes that on one of their collecting trips they found the basalt

cliffs at Blomidon hanging with dozens of plants in full bloom.

Greenland & Lab. to Sask. locally south to N. S. & N. B.

2. TIARELLA L.

1. **T. cordifolia** L. FALSE MITERWORT. Fig. 66, g.

Typical of the richest hardwoods and intervales in Colchester and Pictou Cos. In many cases the anthers are bright orange instead of yellow. This is forma *allanthera* Vict. & Rousseau, Contr b. Bot. Inst. Univ. Montreal **36**: 20. 1940. May 15-June 15

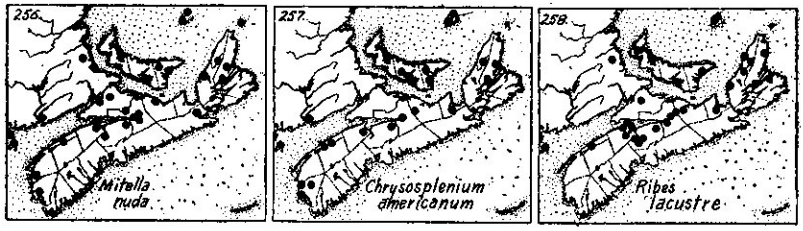
N. S. to Minn. south to Ga. & Ark.

3. MITELLA (Tourn.) L.

1. **M. nuda** L. MITERWORT. Fig. 66, e. Map 256.

Wooded swamps, rich woods, mossy thickets; common throughout. May 20-June.

Lab. to A aska south to Conn., Mich. & Mont.



4. CHRYSOSPLENIUM (Tourn.)L.

1. **C. americanum** Schwein. GOLDEN SAXIFRAGE. Fig. 66, f. Map 257.

Common throughout; wet mucky woods, cold springs, over the bottom of small trickling shady rills. Early May, the flowers very small and inconspicuous.

N. S. to Minn. south to Ga.

5. PARNASSIA (Tourn.) L.

1. **P. parviflora** DC. GRASS-OF-PARNASSUS.

Mentioned in Gray's Manual as occurring south to

C. B. No recent collections have been made, and specimens have been seen only from the Magdalen Islands.

Nfld. to Alaska south to C. B., Wisc. & Utah.

6. **RIBES** L. CURRANTS AND GOOSEBERRIES

Besides the species listed below, *R. odoratum* Wend., the Golden Currant, is frequently cultivated as an ornamental; *R. nigrum* L. is the Black Currant of gardens; and various hybrids between *R. sativum* and *R. rubrum* comprise the majority of the cultivated currants.

Berger. A taxonomic review of currants and gooseberries. N. Y. State Agr. Exp. Sta. Tech. Bull. **109**: 1-118. 1924.

a. Flowers in clusters of 1-4; stems with spines at the base of the leaves, and often on the internodes; gooseberries. 1. *R. hirtellum*

a. Flowers in hanging racemes; stems spineless, except in *R. lacustre* which is densely bristly; currants.

b. Canes, at least young ones, densely bristly. 2. *R. lacustre*

b. Canes not bristly.

c. Ovary and fruit glandular-hispid; leaves 5-7-lobed; plant low, reclining, strong-smelling when bruised. 3. *R. glandulosum*

c. Ovary and fruit not hispid; leaves mostly 3-lobed; plant not strong-smelling.

d. Flowers purplish; plant weak and ascending, about 5 dm high; pedicels with pale red glands; leaves with the terminal lobe triangular, as wide or wider then long. 4. *R. triste*

d. Flowers greenish or greenish-yellow; plants erect and stouter; pedicels mostly smooth or with a few not-reddish glands; terminal lobe of the leaf often longer than wide, the base the same width or often narrower than the middle; cultivated. 5. *R. sativum*

1. **R. hirtellum** Michx. GOOSEBERRY. Fig. 67.

Common throughout; pastures, edges of woods, along stone walls, and even occasionally in swamps or bogs. Var. **calcicola** Fern., Rhodora **13**: 76. 1911, is a more pubescent extreme which is probably more common than the glabrous plant in the province. *R. oxyacanthoides* L. is now recognised to be a more western plant. June 1-June 15.

Nfld. to B. C. & Yukon south to Penn. & Dakota.

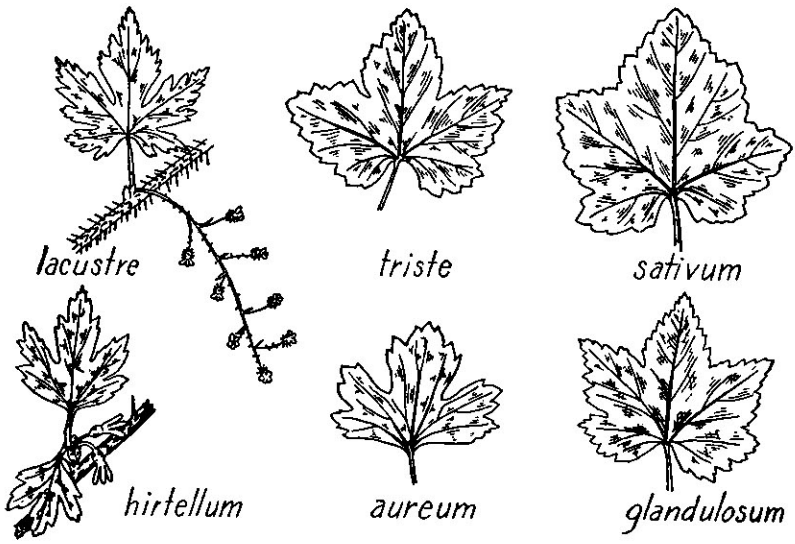


Fig. 67.—**Ribes**, all x 1/3.

2. **R. lacustre** (Pers.) Poir. BRISTLY CURRANT. Fig. 67. Map 258.

Rocky or swampy woods, along stream banks and ravines, scattered in the hardwood forest; Annapolis to northern C. B. It prefers rich moist soil and is frequently common in its habitat. June.

Nfld. to Alaska south to the mts. of Penn. & Colo.

3. **R. glandulosum** Grauer. SKUNK CURRANT. Fig. 67. Map 259.

Common to abundant throughout; open rocky woods, in low alluvial areas, or in sphagnous thickets and wet coniferous forests. May 15-June 15. (*R. prostratum* L'Her.)

Lab. to Athabasca south to N. Eng., N. C., Mich. & Minn.

4. **R. triste** Pall., var. **albinervium** (Michx.) Fern. WILD RED CURRANT. Fig. 67. Map 260.

Rich low woods and alluvial ground; rare in the northern counties from Digby and Amherst to C. B.

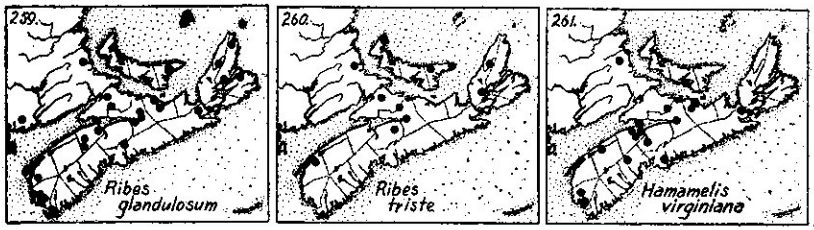
Nfld. to Alaska south to Me. & Wisc.

5. **R. sativum** Syme CULTIVATED RED CURRANT.

Occasionally escaped or persisting in sem.-domestic areas. *R. vulgare* Lam., also including *R. rubrum* L., and

hydrids between them, included by Berger under *R. houghtonianum* Jancz.

Native of Eu.; widely cultivated.



53. HAMAMELIDACEAE WITCH-HAZEL FAMILY

I. HAMAMELIS L.

1. **H. virginiana** L. WITCH-HAZEL. Fig. 68, a. Map 261.

Rocky woods, thickets and near cliffs; common from Kings to Colchester Co.; scattered to Yarmouth, apparently rare eastwards. Forma **parvifolia** (Nutt.) Fern., Rhodora **38**: 233, 1936, with comparatively small, thick, and densely pubescent leaves, was reported from thickets bordering Great Pubnico Lake and the east branch of the Tusket River, Quinan (Fernald, 1921).

N. S. to Minn. south to Fla. & Tex.

54. ROSACEAE ROSE FAMILY

a. Leaves simple, or merely lobed.
 b. Plants herbaceous, small.
  c. Leaves orbicular, shallowly toothed, all basal, to 4 cm wide; flowers solitary, white, long-peduncled. 12. *Dalibarda*
  c. Leaves more or less lobed, larger, scattered on the stem.
   d. Flowers solitary, white, over 1 mm wide; fruit an aggregation of druplets. 11. *Rubus Chamaemorus*
   d. Flowers numerous, yellowish, to 3 mm wide; fruits dry, enclosed in the calyx. 13. *Alchemilla*
 b. Plants woody.
  e. Leaves with 3-7 shallow lobes; flowers large, rose-colored. 11. *Rubus odoratus*
  e. Leaves not lobed.
   f. Plants with thorns; flowers in corymbs; fruit a berry-like pome, with 3-5 large nutlets. 6. *Crataegus*
   f. Plants without thorns; prickles sometimes present.
    g. Flowers 5 mm wide or less, very numerous in conical or narrow terminal inflorescences; pistils 5-6, partly superior; fruits follicles. 1. *Spiraea*

g. Flowers more than 6 mm wide, in umbels, corymbs, or racemes; fruit fleshy.
h. Petals several times longer than broad; ovary inferior, forming a berry-like pome with 10 seeds. 5. *Amelanchier*
h. Petals little if any longer than broad.
i. Ovary superior in a cup-like calyx, forming a drupe with one stone; cherry and plums. 17. *Prunus*
i. Ovary inferior, forming a pome with 2 or more seeds in each of the five cells.
j. Flowers 3-7 cm wide; fruit a fleshy pome; stout shrubs or trees; apples. 2. *Malus*
j. Flowers less than 1 cm wide; fruit small, berry-like, black to red; slender shrubs; leaves with a row of dark glands along the upper side of the mid-rib. 3. *Aronia*

a. Leaves compound.
k. Plants low and herbaceous.
l. Leaves palmately divided.
m. Fruit fleshy; flowers white; plants with long runners; strawberry (*Rubus pubescens* may key here also). 7. *Fragaria*
m. Fruit dry; flowers yellow, or if white with the plant without runners and the leaflets with 3 terminal teeth only. 8. *Potentilla*
l. Leaves pinnately lobed; fruits dry and hard.
n. Calyx of both flowers and fruit with hooked bristles; flowers yellow in a spike-like raceme. 14. *Agrimonia*
n. Calyx without hooked bristles; flowers not in a slender raceme.
o. Flowers in a dense spike-like head; pistils 1-3 enclosed by the calyx. 15. *Sanguisorba*
o. Flowers in an open inflorescence; pistils numerous, not tightly enclosed.
p. Styles long-plumose or hairy, hooked near the middle, the upper half deciduous in fruit; terminal leaflet several times larger than the others, irregularly lobed or compound. 10. *Geum*
p. Styles not plumose nor hairy, nor hooked near the middle; terminal leaflet little if any larger than the lower ones. 8. *Potentilla*
k. Plants woody, at least at the base.
q. Plants tree-like; flowers small, in a large cyme; fruit a small red berry-like pome. 4. *Sorbus*
q. Plants sub-herbaceous, or low and shrubby.
r. Plant sub-herbaceous, little branched; flowers very numerous and small; stem never prickly.
s. Flowers in a dense crowded spike; plant 1-6 dm high, erect; leaflets stalked, merely toothed. 15. *Sanguisorba*

s. Flowers in a diffuse inflorescence; plants taller; leaflets sessile, irregularly cut or dissected. 9. *Filipendula*

r. Plant low, shrubby and diffusely branched or else forming canes, often long-trailing and semi-herbaceous; flowers 1-5 cm wide, few to several in the inflorescence.

t Leaflets pinnately compound; plant much branching.

u. Leaflets 3-7, not toothed; flowers yellow; fruit of numerous achenes. 8. *Potentilla fruticosa*

u. Leaflets usually more numerous; finely toothed; flowers rose; fruit orbicular to elliptical, fleshy, enclosing the pistils and achenes. 16. *Rosa*

t. Leaves palmately compound; plants of upright or trailing canes; fruit of numerous drupelets upon a common receptacle; raspberries and blackberries. 11. *Rubus*

1. **SPIRAEA** (Tourn.)L.

a. Leaves smooth beneath or nearly so; flowers white or pale pinkish. 1. *S. latifolia*

a. Leaves densely rusty-woolly beneath; flowers rose. 2. *S. tomentosa*

1. **S. latifolia** Borkh. MEADOW-SWEET, HARDHACK. Fig. 68, c. Map 262.

Very common throughout; in wet land, ditches, swamps, meadows and low pastures, especially in wet mucky soil where it replaces the heath plants. July.

Nfld. to Sask. south to Va.

2. **S. tomentosa** L. STEEPLEBUSH. Fig. 68, b. Map 263.

Common in poorly drained and acid soils, low pastures and barrens with clayey soils, becoming less common east to C. B. It is abundant along the North Shore in areas of heavy or poorly-drained soils. July-Aug.

N. S. to Minn. south to Ga.

2. **MALUS** Mill.

1. **M. pumila** L. APPLE.

A common escape in the Annapolis Valley, and scattered elsewhere in the southern or central parts of the province

wherever apples are grown. (*Pyrus Malus* L.) Late May-early June.

Eu. and Asia; long cultivated.

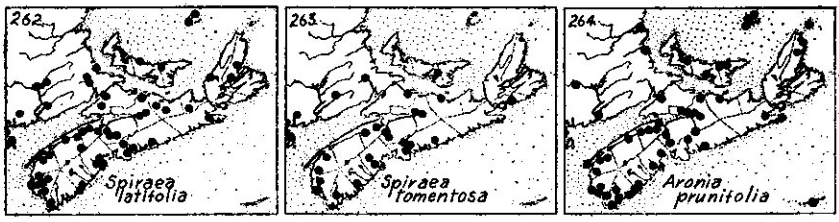
3. ARONIA Medic.

a. Twigs, lower surface of the leaves, pedicels and calyx more or less white-woolly at flowering time, some of the tomentum persisting to maturity.
b. Fruit 6-7 mm thick, maturing late in the summer, becoming cherry red; mostly rare. 1. *A. arbutifolia*
b. Fruit 8-10 mm thick, maturing in mid-summer, becoming purplish black; common throughout. 2. *A. prunifolia*
a. Twigs, leaves and calyx glabrous or nearly so at flowering time, entirely without wool at maturity. 3. *A. melanocarpa*

1. **A. arbutifolia** (L.) Elliott. RED CHOKEBERRY.

Scattered in Yarmouth Co.; found in thickets at Harper L., in Shelburne Co.; at Lily L. in Kings Co.; and about Halifax; sterile meadows, thickets and near lake shores. June. [*Pyrus arbutifolia* (L.) L. f.].

N. S.; Mass. to Minn. southward.



2. **A. prunifolia** (Marsh.) Rehd., Journ. Arnold Arb. **19**: 74. 1938. CHOKEBERRY. Fig. 68, d. Map 264.

Common throughout; meadows, swamps, barrens and even in bogs. It flowers in mid-May and produces dark fruit by the end of July. [*Pyrus arbutifolia* var. *atropurpurea* (Britt.) Robinson].

Nfld. to Mich. south to Fla.

3. **A. melanocarpa** (Michx.) Elliott. BLACK CHOKEBERRY.

Rarer than the preceeding in the province, but scattered throughout and more common in the eastern regions. Mid-June.

Nfld. to Mich. south to Fla.

Fig. 68.—**Hamamelis.** a, **H. virginiana,** fruiting twig and flowers, x ½. **Spiraea.** b, **S. tomentosa,** x 1/3. c, **S. latifolia,** x 1/3. **Aronia.** d, **A. prunifolia,** flowering twig, leaf and fruit, x 1/3. **Rosa.** e, **R. nitida.** f, **R. virginiana.**

4. **SORBUS** (Tourn.)L.

Jones, George Neville. A synopsis of the North American species of *Sorbus.* Journ. Arnold Arb. **20**: 1-43. 1939.

a. Winter buds densely and long white-hairy; branches of the inflorescence, pedicels and calices whitish-hairy at flowering time; leaflets small, blunt, 3-5 cm long. 1. *S. Aucuparia*

a. Winter buds shiny and sparsely hairy; inflorescence not so whitish-hairy; leaflets 4-9 cm long, more pointed to acute.

b. Flowers 5-6 mm wide; fruit 4-6 mm thick; leaflets 3.5-5 times as long as wide, long pointed, each with 50-75 teeth running to or nearly to the base. 2. *S. americana*

b. Flowers about 10 mm wide; fruit 8-10 mm thick; leaflets short-pointed, 2-3 times as long as wide, each with 30-45 teeth which are found chiefly above the middle. 3. *S. decora*

1. **S. Aucuparia** L. ROWAN TREE. Fig. 69.

Common as an escape along roadsides, especially in the center of the province from Halifax to Amherst and Antigonish; scattered and often planted elsewhere. June.

Introduced from Eu.; widely naturalized.

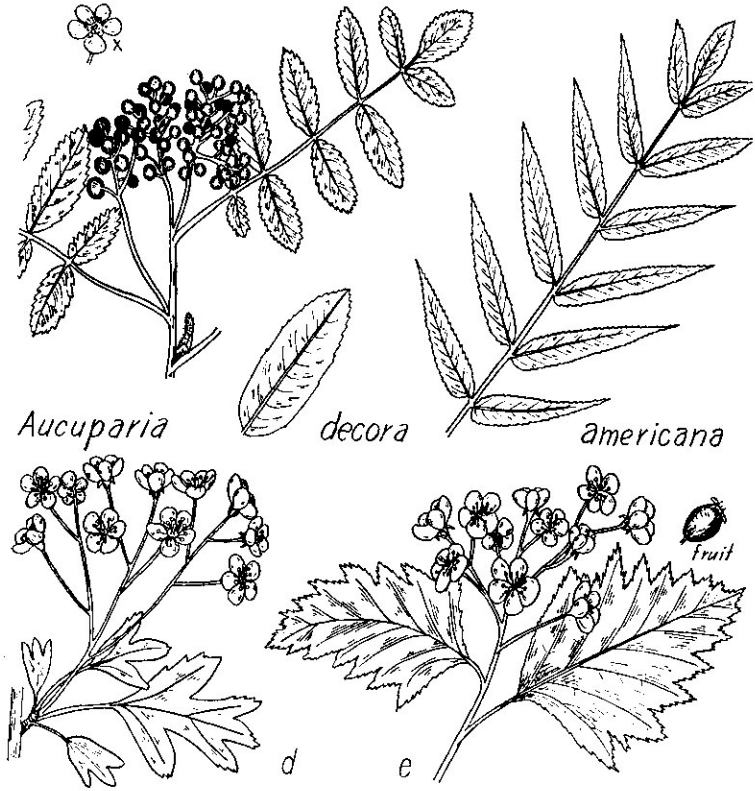


Fig. 69.—**Sorbus.** a, **S. Aucuparia,** fruiting branch, x ½; flower, x 1. b, **S. decora,** leaflet, x ½. c, **S. americana,** leaf, x ½. **Crataegus.** d, **C. monogyna,** x ½. e, **C. macrosperma** var. **acutiloba.**

2. **S. americana** Marsh. MOUNTAIN ASH. Fig. 69. Map 265.

This is the commonest species in N. S. and is frequent from Yarmouth to C. B. in open woods, hillsides and along roadsides. It flowers in June; and the small fruits ripen in late August or September and persist into the winter.

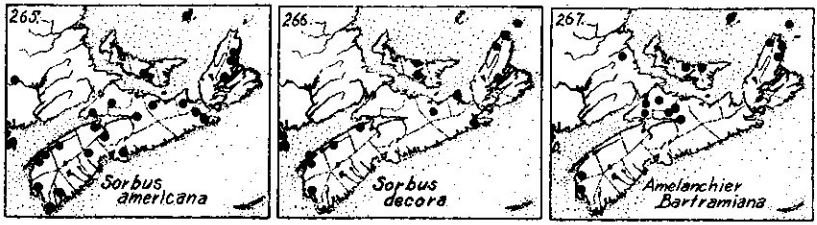
Nfld. to northern Minn. south to Tenn. & N. C.

3. **S. decora** (Sarg.) Schneid., Bull. Herb. Boissier **6**: 313. 1906. Map 266.

Scattered throughout, less common than the last in

most areas of the province, but becoming common in the poorly-drained soils and swamps on the tablelands of northern C. B. The clusters of bright large fruits are conspicuous in early autumn. [*Pyrus sitchensis* (Roem.) Piper of Gray's Man. *Pyrus dumosa* (Greene) Fern. and *Pyrus sambucifolia* Cham. & Sch. of other authors]. June.

Hybrids are occasionally found between this species and *Aronia prunifolia:* St. Paul Is., frequent (Perry, 1931). This is known as *Sorbaronia Arsenii* (Britt.) Jones.



5. **AMELANCHIER** Medic. SHADBUSH, WILD PEAR

Wiegand, K.M. *Amelanchier* in eastern North America. Rhodora **14**: 117-161. 1912.

a. Flowers several to many, in racemes; leaves folded when young, mostly round to cordate at the base; fruit mostly globular; ovary summit rounded.

b. Tall shrubs or trees, not stoloniferous; leaves acute to acuminate, oblong to oval, with 11-17 pairs of primary veins, and 30-70 teeth on each side.

c. Young leaves more or less whitish-tomentose, greenish, still folded at the beginning of flowering; lower pedicels about 15 mm long; ovary-summit usually woolly, but sometimes nearly or quite glabrous. 1. *A. Wiegandii*

c. Young leaves glabrous or merely with a few silky hairs beneath, mostly bronze-purple, soon opening flat; lower pedicels 15-30 mm long; ovary-summit glabrous. 2. *A. laevis*

b. Low shrubs, up to 1.5 dm high, stoloniferous and forming colonies or patches; leaves oval to obovate, round at the tips or barely acute

d. Ovary-summit tomentose; fruit dark-purple and succulent.

e. Leaves glabrous and green from the first; calyx-tube 5 mm wide; low shrubs to 6 dm high, loosely stoloniferous. 3. *A. Fernaldii*

e. Leaves densely tomentose beneath when young, dull when older; calyx-tube 3-4 mm wide; erect much branched shrubs to 1.5 m high; of sandy soils. 4. *A. stolonifera*

d. Ovary-summit glabrous or practically so; older leaves thick, and shining above; fruit smaller and not so succulent. *A. stolonifera* var. *lucida*

a. Flowers 1-3, in the axils of the leaves; leaves flat when young, nearly glabrous, mostly tapering to the base, pale beneath; fruit ellipsoid-ovoid; ovary-summit woolly, pointed. 5. *A. Bartramiana*

1. **A. Wiegandii** Niels., Amer. Midl. Nat. **22**: 180. 1939. Fig. 70, b. SHADBUSH, WILD PEAR, BILBERRY.

Common throughout, extremely variable as to pubescence, length of petals, and other characteristics. Reports of *A. canadensis* are placed here, as most of the Nova Scotian plants have woolly summits to the ovary and do not fit the description of *A. canadensis*. The few collections with glabrous ovary seem to be mere variations. *A. intermedia* Spach. is a puzzling plant reported from southwestern N. S. and from P. E. I. (Rhodora **23**: 103). A number of collections sent to Wiegand from Kings Co. to northern N.S. were all identified as *A. Wiegandii*. Whether there is one variable species in the province or several closely related species is yet to be settled. Hybrids often occur with *A. Bartramiana* and show varying intermediate characters. Not X *A. neglecta*.

N. S. to Minn. south to N. Y.

2. **A. laevis** Wieg., Rhodora **14**: 154-158. 1912. SHADBUSH. Fig. 70, a.

Common throughout; conspicuous in flower by its bronze foliage and its loose racemes of large flowers. This species also hybridizes with *A. Bartramiana* and also apparently with *A. Wiegandii*. Open clearings and pastures often contain a multitude of forms that cannot be satisfactorily named. (*A. canadensis* in Gray's Man.). Forma **nitida** Wieg., Rhodora **14**: 155. 1912, has the leaves thicker, deep green and glossy above. Common in many places. May 10-early June.

Nfld. to Mich. & Kans. south to Ga. & Ala.

3. **A. Fernaldii** Wieg., Rhodora **22**: 149. 1920.

Rare in eastern N. S. and in C. B.; little known in the province and needing further collecting. It was reported from the margin of Ethyl L., St. Paul Is. (Perry, 1931).

Nfld., N. S., the Magdalens & Gaspe.

4. **A. stolonifera** Wieg., Rhodora **14**: 144-147. 1912.

Rather local; scattered in Yarmouth Co. and becoming common in thickets and boggy depressions of the sand plains of the Annapolis Valley. This plant flowers

a week or ten days later than the previous species and the fruits are large, purple and of good quality. (*A. spicata* of some authors). Nfld. to Me. and Va., sparingly inland to Mich.

Var. **lucida** Fern., Rhodora **23**: 267. 1921, is found on sandy areas, rocky barrens, roadsides, and edges of thickets; common from Yarmouth to Halifax and Cumberland Cos.; the eastern distribution is unknown. *A. laevis* in this part of its range often becomes lower and more stoloniferous, and may be confused with this variety. The leaves of *A. stolonifera* should have more oval leaves, only 7-11 pairs of primary veins and with 20-28 teeth along one side of the leaves. Described from N. S.

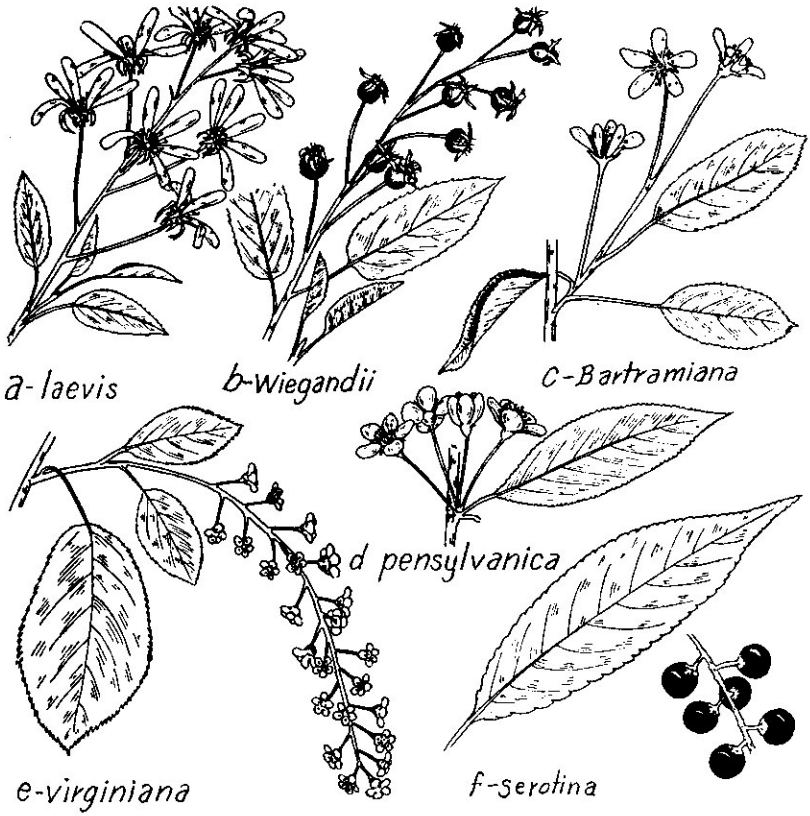


Fig. 70.—**Amelanchier.** a, b, c, all x ½. **Prunus.** d, e, f, x ½.

5. **A. Bartramiana** (Tausch) Roem., see Wiegand, Rhodora **14**: 158-161. 1912. Fig. 70, c. Map 267.

Scattered in the more acid regions or colder areas of the province; scattered in the southwestern counties; common from Truro north through Cumberland Co. and to northern C. B.; acid, poorly-drained soils, bogs and wet thickets. Intermediates with the flowers in short racemes, but with the leaves resembling this species, are often found around the edges of bogs, especially in northern C. B. (*A. oligosperma* (Michx.) Roem.).

Lab. to Mich. and Minn. south to the mts. of Mass., N. Y. & Penn.

6. CRATAEGUS L. HAWTHORN*

a. Leaves deeply cut, the lowest incisions often extending more than half way to the midrib; veins running both to the sinuses and to the points of the lobes; nutlet usually single (Fig. 69, d).
1. *C. monogyna*

a. Leaves serrate, dentate or more or less lobed, but not deeply cut; veins running only to the points of the lobes; nutlets 2-5 (Fig. 69, e).
b. Sepals entire or sometimes with a few minute teeth or glands; nutlets not conspicuously pitted on the inner surface; fruit glabrous; nutlets 2-4, rarely 5.
c. Flowers 1.3-2.2 cm wide; fruit usually over 1 cm long, or if shorter, with a sessile calyx.
d. Leaves attenuate to the base, the terminal often 8-10 cm long; flowers 1.8-2.2 cm wide, in loose villous corymbs; fruit oval or ovoid, 1.5-1.6 cm long. 2. *C. Jonesae*
d. Leaves cuneate or rounded at base, the terminal seldom over 7 cm long.
e. Leaves mostly elliptic or oblong-ovate, cuneate, or on the terminal shoots rounded to subcordate at base.
f. Leaves sharply and conspicuously lobed, broadly ovate to suborbicular on terminal shoots; mature fruit usually 1-1.3 cm wide.
g. Petioles and inflorescence more or less villous.
3. *C. chrysocarpa*
g. Petioles and inflorescence glabrous.
C. chrysocarpa var. *phoenicea*
f. Leaves with small spinulose lobes, ovate to broadly oblong-ovate on terminal shoots.
h. Stamens 5-10, usually less than 10; leaves mostly entire below the middle. 4. *C. Brainerdi* var. *Egglestoni*
h. Stamens 8-15, usually 10 or more; leaves lobed to below the middle. *C. Brainerdi* var. *scabrida*

*Text written by Mr. Ernest J. Palmer of the Arnold Arboretum. General range according to Rehder's Manual.

e. Leaves mostly ovate, the terminal ones broadly rounded, truncate or rarely subcordate at the base.

i. Lobes of the leaves broad and shallow with spreading tips. 5. *C. macrosperma*

i. Lobes of the leaves deeper and sharper, often with recurved tips. *C. macrosperma* var. *acutiloba*

c. Flowers 0.8-1 cm wide; fruit oval or obovoid, 1 cm or less long, with slightly elevated calyx. 6. *C. Robinsoni*

b. Sepals deeply glandular-serrate.

j. Flowering corymbs densely tomentose; nutlets usually 5, not pitted on the inner face; fruit minutely pubescent near the base. 7. *C. submollis*

j. Flowering corymbs but slightly hairy; nutlets conspicuously pitted on the inner face; fruit glabrous. 8. *C. succulenta*

1. **C. monogyna** Jacq. ENGLISH OR EUROPEAN HAWTHORN. Fig. 69, d.

Commonly planted and occasionally escaping to thickets and roadsides. Collections are known from Pictou, Colchester, Halifax and Hants Cos.; and it is common throughout the Annapolis Valley and to Yarmouth.

Europe; widely introduced.

2. **C. Jonesae** Sarg.

A shrub or small tree growing along banks of streams or of inlets, often near salt water. This is a handsome and distinct species on account of its large flowers and large brightly colored fruit. Found in Pictou, Colchester, Kings, Queens, and in Yarmouth and Digby Cos.

N S. and Me.

3. **C. chrysocarpa** Ashe.

A thorny much-branched shrub in thickets and open ground. The fruit with relatively large seeds and thin flesh ripens late in the season, becoming dark red. The typical variety has been found only in Pictou Co. (*C. rotundifolia* Moench, in part, not Lam. *C. rotundifolia* var. *pubera* Sarg.).

Var **phoenicea** Palmer differs from the last variety in its entirely glabrous inflorescence and petioles. It grows in similar situations and is more abundant, having been found in Pictou, Colchester, Hants, Lunenburg, Annapolis, Queens, and Yarmouth counties. (*C. rotundifolia* Moench, in part, not Lam.).

N.S. to Sask. south to Penn. and Mich.

4. **C. Brainerdi** Sarg.

The typical variety has not been found in N. S., but is represented by the following:

Var. **Egglestoni** (Sarg.) Robinson is usually shrubby with a narrow top of erect or ascending thorny branches. It grows in thickets and borders of woods, in Pictou and Colchester Counties. N. S. to N. Y.

Var. **scabrida** (Sarg.) Eggl. is found in similar situations to the last, from which it can be distinguished only by slight differences in the leaves, flowers and fruit. It is more abundant and has been found in Pictou, Colchester Hants, Halifax, Lunenburg and Annapolis Counties. N.S. to Penn.

5. **C. macrosperma** Ashe

A shrub or small tree with spreading or ascending branches and slightly scaly bark. The trunk and larger branches are often angular or irregular in cross-section. The small fruit becomes bright red and soft when fully ripe. Found in thickets, borders of woods, rocky pastures and along roadsides in Halifax, Lunenburg, Queens, Yarmouth and Hants counties. N. S. to Minn. south to N.C. & Ill.

Var. **acutiloba** (Sarg.) Eggl. (fig. 69, e) is the commonest and mostly widely distributed thorn in N.S., found in similar situations to the last from Richmond to Yarmouth and Shelburne counties. It is well marked by its large, thin, sharply lobed leaves with reflexed tips. Very common through the Annapolis Valley. N. S. and N. Eng.

6. **C. Robinsoni** Sarg.

This rather distinct shrub with very small flowers and fruit is known from a few plants found near Loch Broom and Rustico, Pictou Co. Its rarity and the characters of the leaves, flowers and fruit suggest that it may be a hybrid, possibly between *C. chrysocarpa* and a variety of *C. Brainerdi*.

7. **C. submollis** Sarg.

This species is well distinguished by its densely tomentose inflorescence and young leaves, and by the highly-flavored, early-ripening, edible fruit. It is known only from Halifax Co.

N. S. to Que. south to Mass. & N. Y.

8. **C. succulenta** Link, var. **macracantha** (Lodd.) Eggl.

A thorny shrub found infrequently in thickets and along small streams in Pictou, Hants, Halifax and Kings counties. The small fruit, usually with two or three nutlets, remains hard and green until late n the season, but becomes bright red and succulent when fully ripe. The leaves are rather thick and glossy and have the veins deeply impressed on the upper side.

N. S. to N. Y. & Penn.

7. **FRAGARIA** (Tourn.) L. STRAWBERRY

a. Fruiting stems shorter than the leaves; seeds embedded in pits on the fruit; sepals appressed; leaves firm, often rugose.
b. Hairs of the peduncles and petioles spreading; those of the pedicels appressed. 1. *F. virginiana*
b. Hairs of the peduncles and petioles ascending or appressed. *F. virginiana* var. *terrae-novae*
a. Fruiting stems longer than the leaves; seeds borne on the unpitted surface of the fruit; sepals reflexed; leaves thin, often rather folded or plicate. 2. *F. vesca*

1. **F. virginiana** Duchesne. STRAWBERRY.

Common throughout; open woodlands, pastures, barrens, fields, etc. May-June. Nfld. to Dakota south to Fla. & Okla.

Var. **terrae-novae** (Rydb.) Fern., Rhodora **13**: 106. 1911, is a common form in exposed places, about the headlands of northern C. B. and scattered east and south. It seems distinct northwards, but in the central part of N. S. it grades into the species and both types can often be found in the same patch or field.

Lab. & Gaspe to the coast of Me. and the Mts. of Vt.

2. **F. vesca** L., var. **americana** Porter. Fig. 71. Map 268.

Scattered from Kings Co. to northern C.B.; occasionally found along the sides of ravines .n the Annapolis Valley; frequent in open woods, ravines or banks in the gypsum areas, often growing in dense patches with the slender plants freely producing runners.

Nfld. to Ind. south to Penn. & Ky.

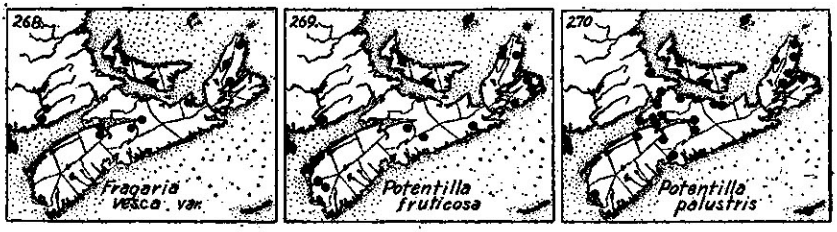
8. **POTENTILLA** L. CINQUEFOIL

a. Stem shrubby and diffusely branched; flowers yellow; leaves pinnately-compound with 5-7 leaflets. 1. *P. fruticosa*

a. Stem herbaceous, not shrubby.
b. Leaves pinnately compound, the leaflets not attached at any one point.
c. Leaflets 3-7, on a very short axis; flowers several in the inflorescence.
d. Leaflets deeply lobed; sepals green; petals yellow; rare on the northern coast. 2. *P. pectinata*
d. Leaflets finely toothed; sepals purplish; petals purple; marshes and ponds. 3. *P. palustris*
c. Leaflets 7-25, on a long axis, very small towards the base of the leaf; flowers usually solitary.
e. Achenes rounded on the back and not grooved; plants little-trailing, the leaves erect. 4. *P. pacifica*
e. Achenes grooved on the back; plants long-trailing, the leaves spreading. 5. *P. Anserina*
b. Leaves palmately compound, all leaflets attached at one place.
f. Leaflets 5-9, oblanceolate, prominently toothed; flowers large, sulphur-yellow. 6. *P. recta*
f. Leaflets 3 or 5.
g. Leaflets 3.
h. Flower parts in 5's; flowers numerous in a terminal inflorescence.
i. Flowers white; leaflets each with 3 teeth at the tip, and wedge-shaped. 7. *P. tridentata*
i. Flowers yellow; leaflets toothed around the entire margin, oval. 8. *P. norvegica*
h. Flower parts in 4's; flowers mostly solitary; leaflets coarsely toothed, chiefly so above the middle. 9. *P. procumbens*
g. Leaflets in 5's, finely toothed to near the base.
j. Leaflets silvery-silky beneath; plant erect or becoming prostrate, not trailing; flowers numerous in a terminal inflorescence. 10. *P. argentea*
j. Leaflets not silvery-silky beneath; plant trailing; flowers solitary in the axils of the leaves.
k. Flowers small, 6-16 mm wide; stems erect at first; later procumbent, much branched; leaflets with the stalks separate to the petiole.
l. Plant small, the stems thread-like, 0.3-1 mm thick at flowering time; first flower borne in the axil of the leaf from the first well-developed node when the stem is 1-1.5 dm high. 11. *P. canadensis*
l. Plant larger, the trailing stems 1-3 mm thick at the base; first flower borne from the second well-developed node when the plant is 1-4 dm high.
m. Stem, especially when young, long-hairy with spreading or somewhat appressed hairs. 12. *P. simplex*
m. Stem smooth, or with short stiff appressed hairs. *P. simplex* var. *calvescens*

k. Flowers 20-30 mm wide, deep yellow; stems long and trailing, often rooting at the nodes and unbranched; leaves with the pairs of lateral leaflets having their stalks united for a short distance at the base. 13. *P. reptans*

1. **P. fruticosa** L. SHRUBBY CINQUEFOIL. Fig. 71. Map 269.



Common in southern Digby and Yarmouth Counties in spruce bogs and wet savannahs; usually around gypsum or limestone in the center of the province; scattered eastward and common in northern C. B., where again it is found on alkaline soils or in mountain swamps. Aug.-Sept.

Greenland to Alaska south to Penn.; Eurasia.

2. **P. pectinata** Raf. Fig. 71.

Known only from a small, sandy beach north of Cheticamp where the Cabot Trail begins to skirt the side of the mountains. This northern plant is found on the coast of Nfld., the Gaspe, and scattered from Lab. to Hudson Bay and south to N. H. & Me.

3. **P. palustris** (L.) Scop. MARSH CINQUEFOIL. Fig. 71. Map 270. See Fernald and Long. The American variations of *Potentilla palustris*. Rhodora **16**: 5-11. 1914.

Rare in the southwestern counties; scattered in the center of the province; becoming common northward to Cumberland Co. and east to C. B. It is found on muddy shores, in swamps above the river estuaries, or in undrained ponds. The plants are very variable. When growing on exsiccated places or towards the end of summer the leaflets may be densely silky-hairy. This phase is designated forma **subsericea** (Becker) Wolf. Plants with the petioles, peduncles and bractlets densely hairy and glandular, and the leaflets hairy, is var. **villosa** (Pers.) Lehm.

Lab. to Alaska south to N. J., Penn. & Calif,; Eurasia.

4. **P. pacifica** Howell

Common around the coast, especially on the marshes about the Bay of Fundy; on sand marshes and along shore-

lines, generally growing in muddy or poorly-drained areas, often in large colonies. June-Aug. (*P. Egedii* var. *groenlandica* (Tratt.) Polunin, in Rhodora **41**: 40. 1939.

Greenland to Conn. Alaska.

5. **P. Anserina** L. SILVER-WEED. Fig. 71.

Growing around the sea-coast, growing in drier places than the preceeding, often at considerable distances from the salt marshes more characteristic of sandy beaches or low areas of dunes where drainage is good. Forma **sericea** (Hayne) Fern., Rhodora **35**: 273. 1933, has the leaflets silvery-pubescent. June-Aug.

Arctic America south to N. J.; inland about the Great Lakes and westward; Eurasia.

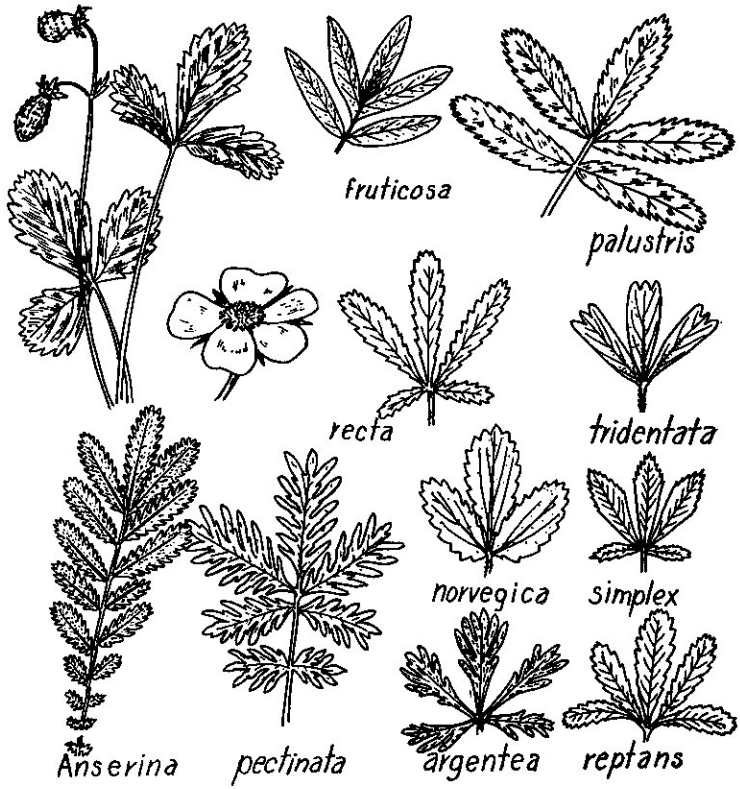


Fig. 71.—**Fragaria. F. vesca**, fruiting plant, x ½. **Potentilla.** Typical flower, x 1; leaves, x ½.

6. **P. recta** L. Fig. 71.

Becoming introduced into the province; scattered in

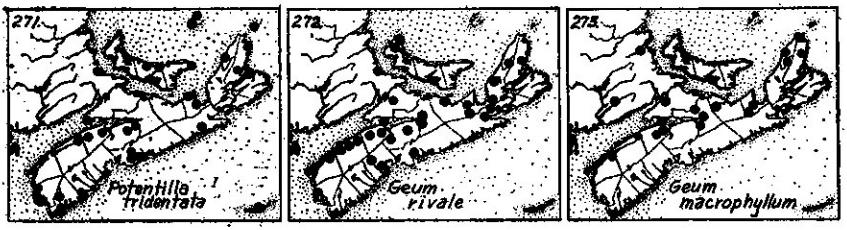
the Annapolis Valley and in Hants Co.; found in a large area above Parrsboro; seems to be becoming more common. June 20-July.

Introduced from Eu.; N. S. to Mich. south to Va.

7. **P. tridentata** Ait. Fig. 71. Map 271.

Common around the coast in exposed and rocky situations; found on sandy soil in the center of the Annapolis Valley, and about cliffs or bare rock outcrops inland; scattered elsewhere and very variable. Rousseau (1938) discusses this variation. Forma **hirsutifolia** Pease has the leaves hirsute both above and beneath, while the typical form has the leaves smooth or shining above; gravelly shore at Guysborough (Rousseau, 1938). June-Aug.

Lab. to N. Eng. and west around the Great Lakes.



8. **P. norvegica** L., var. **hirsuta** (Michx.) Lehm. NORWAY CINQUEFOIL. Fig. 71.

A common weed in fields, roadsides and gardens, practically always present, but rarely in any numbers; throughout. June-Sept.

Lab. to Alaska south to the middle states; Asia.

9. **P. procumbens** Sibth.

Sparingly introduced into the province; along a path in spruce and alder thicket, Lower Argyle, Yarmouth Co.; grassy road through spruce and fir woods, Baddeck (Fernald, 1921).

Eu.; Nfld. & N. S.

10. **P. argentea** L. SILVERY CINQUEFOIL. Fig. 71.

Rather common weed in most parts of the province; in gardens, dry fields, waste ground and roadsides; scattered throughout but not aggressively spreading.

Introduced from Eu.; widespread in eastern N. A.

11. **P. canadensis** L.

Rare on dryish soil or barren areas; Yarmouth, Shelburne and Point Pleasant Park, Halifax.

Me. to Minn. south to Ga.; sparingly introduced northwards.

12. **P. simplex** Michx., see Fernald, Rhodora **33**: 180-191. 1931. FIVE FINGER, CINQUEFOIL. Fig. 71.

Rather rare; central N. S. and southern N. B. to Minn. south to N. C. and Okla. The record for *P. pumila* Poir for Bridgewater belongs here (Fernald, l. c.).

Var. **calvescens** Fern. is found everywhere throughout the province; roadside banks on poor or leached soils, pastures, open woods and worn-out fields.

Nfld. to Minn. south to S. C. & Ill.

13. **P. reptans**. L. Fig. 71.

Sparingly found in the country and about the wharves of Yarmouth Co.

Introduced into N. A. locally about seaports, the European parallel of *P. simplex.*

9. FILIPENDULA (Tourn.) Hill

a. Leaflets of 12 or more pairs, each leaflet about 3 cm long, all similar in shape. 3. *F. hexapetala*

a. Leaflets few and large, the terminal one much the largest and palmately lobed.

b. Flowers white; leaves white-woolly beneath; lateral leaflets not lobed; plant tall, shrubby. 1. *F. Ulmaria*

b. Flowers pink; leaves green on both sides; lateral leaflets lobed; plant low, herbaceous. 2. *F. rubra*

1. **F. Ulmaria** (L.) Maxim. QUEEN-OF-THE-MEADOW. Fig. 74, b.

Abundantly naturalized in the southwestern counties and common at least to Pictou Co.; in low areas, around buildings, roadsides and waste places. Late July-Aug.

Introduced from Eu.

2. **F. rubra** (Hill) Robinson. QUEEN-OF-THE-PRAIRIE, MEADOWSWEET.

Rare; planted as a garden ornamental and occasionally escaped in Yarmouth Co. Late July-Aug.

Native of Penn. and south and west.

3. **F. hexapetala** Gilib. MEADOWSWEET.

Rare as a garden escape in Yarmouth Co.; introduced from Eu. and Asia.

10. GEUM L. AVENS

a. Sepals purplish, erect; corolla greenish or purplish-cream colored; upper joint of the style plume-like and the lower long-hairy; flowers nodding. 1. *G. rivale*

a. Sepals green, spreading or reflexed; corolla white or yellow; upper joint of the style hairy and the lower smooth or nearly so.

b. Terminal segment of the basal leaves much larger than the lateral lobes, heart-shaped at the base, almost round and finely toothed; lower stem-leaves 3-parted, with the lobes rounded; petals yellow, longer than the sepals. 2. *G. macrophyllum*

b. Terminal segment of the basal leaves much more divided, the divisions sharp-pointed and coarsely toothed; stem-leaves sharply lobed and toothed.

c. Petals whitish or greenish; stipules 7-15 mm long; some of the basal leaves usually unlobed or else 3-parted; head of fruits round.

d. Plant slender; lower part of the stem smooth or sparingly hairy with hairs 1 mm long; receptacle of the fruit densely bristly; achenes densely bristly; petals exceeding or equalling the sepals, white.

e. Achenes 30-60 in a head, broadly ovate, 2.5-3 mm long; peduncles finely velvety; leaves thin. 3. *G. canadense*

e. Achenes 60-160 in a head, narrower to wedge-shaped, 3-4 mm long; peduncles with longer hairs; leaves firmer. *G. canadense* var. *camporum*

d. Plant stout, bristly-hairy, with hairs 2 mm long; receptacle smooth or nearly so; petals cream-colored, narrow, about half the length of the sepals.

f. Achenes smooth. 4. *G. laciniatum*

f. Achenes bristly bear the apex. *G. lanciniatum* var. *trichocarpum*

c. Petals bright-yellow, about as wide as long, longer than the sepals; stipules 15-40 mm long; leaves all pinnate; head of the fruits obovoid with the receptacle downy; achenes hispid. 5. *G. aleppicum*

1. **G. rivale** L. PURPLE AVENS. Fig. 72, a. Map 272.

Common throughout; meadows, edges of swamps and springy places. June 20-July 10.

Lab. to Sask. south to Penn.; also in Eu.

2. **G. macrophyllum** Willd. Map 273. Fig. 72, b.

Wet ground, damp woods and along streams, usually in rich or mucky soils; Annapolis Co. and Amherst to northern C. B. It is common eastward along the river intervales. May 20-June 15.

Nfld. to the Great Lakes; also on the Pacific Coast.

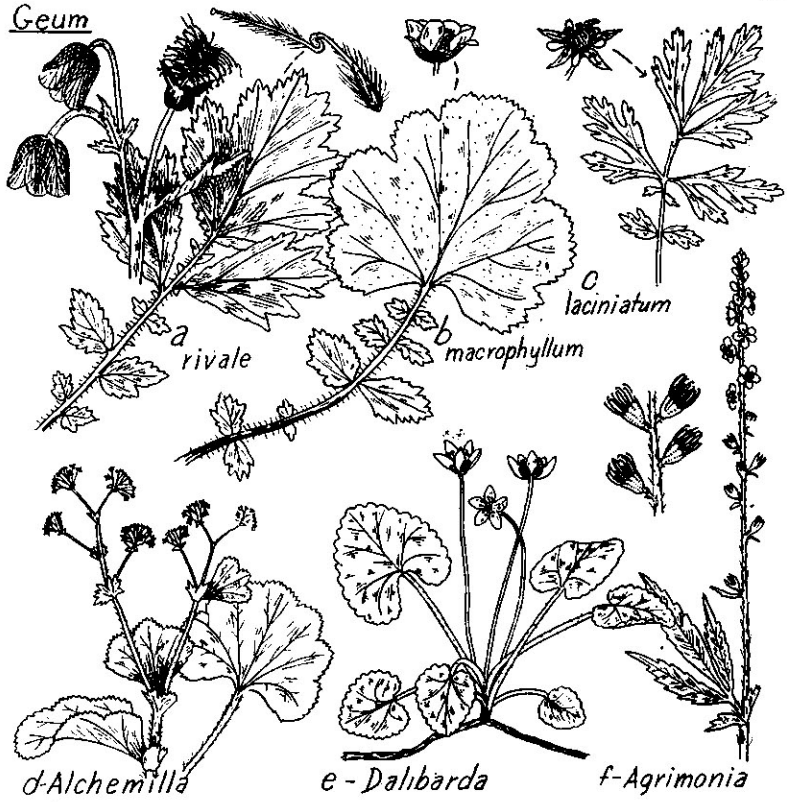


Fig. 72.—**Geum.** a, **G. rivale,** leaf and flowers, x ½; fruit showing hooked style, x 3. b, **G. macrophyllum,** basal leaf and flower, x ½. c, **G. laciniatum,** lower leaf and flower, x ½. **Alchemilla.** d, **A. pratensis,** upper part of plant, x ½. **Dalibarda.** e, **D. repens,** x ½. **Agrimonia.** f, **A. striata,** flowers and fruits, x ½.

3. **G. canadense** Jacq. WHITE AVENS. Map 274.

Along the intervales in the center of the province as at Ste. Croix and Five-mile R. in Hants Co.; scattered elsewhere. June 15-July 15. N. S. to Minn. south to W. Va.

Var. **camporum** (Rybd.) Fern. & Weatherby, Rhodora **24**: 49. 1922, is a common weed about towns, at the edges of woods, and along intervales throughout.

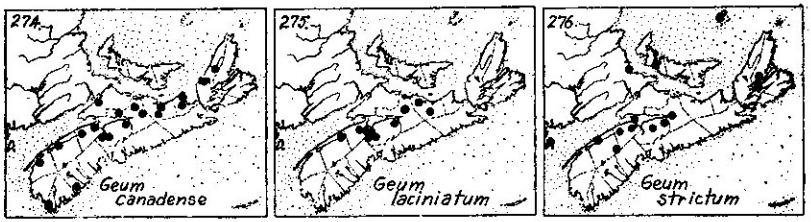
N. S. to N. D. south to Mass., N. Y. & Ala.

4. **G. laciniatum** Murr., see Fernald, Rhodora **37**: 292-294. 1935. Map 275. Fig. 72, c.

Scattered along the intervales and at the borders of rich woods; Annapolis Co. east to Pictou Co. and probably beyond (*G. virginianum* var. *Murrayanum* Fern.; probably *G. album* of Macoun). July-Aug. N. S. to Ont. south to N. Y. & Mass.

Var. **trichocarpum** Fern., Rhodora **37**: 293. 1935, is very rare in the province and grows in the same habitat; near Windsor.

N. S.; Mass. to Ont. south to Penn. & Mo.



5. **G. aleppicum** Jacq., var. **strictum** (Ait.) Fern., Rhodora **37**: 293-294. 1935. Map 276.

Rather common from Annapolis Co. east to C. B.; rich soil, along river banks, waste places, and occasionally as a weed about buildings. July-Aug. (*G. strictum* Ait.).

Nfld. to B. C. south to Penn,; closely related to the *G. aleppicum* of Eurasia.

11. **RUBUS** L. RASPBERRY, BLACKBERRY

Bailey, L. H. The genus *Rubus* in North America. Gentes Herbarum, Vol. V: 1-918. 1941-1945. The blackberries of Nova Scotia are in a very unsettled state as to nomenclature and distribution. Bailey has critically examined the identities of the older species and named many new forms. All records and collections should be reexamined in the light of this study, and many years' field study will be needed before any comprehensive idea of the brambles of this province can be obtained. This treatment includes only those species admitted to the province by Bailey. Other species have been recorded and may be present, particularly in southwestern N. S. The habit of the blackberry is of great importance in identification and both first and second year canes should be collected. The young canes are called primocanes; the second year ones that produce flowers and fruit are called floricanes. As a reference aid the number of the species in Bailey's treatment is also included.

a. Leaves simple, merely 3-5-lobed; prickles absent.

b. Herbaceous, low; lobes of the leaf rounded; flower solitary, white; fruit yellowish. 1. *R. Chamaemorus*

b. Woody and bush-like, to 1.5 m high; lobes of the leaf sharp; flower rose-purplish; fruit small, purplish. 2. *R. odoratus*

a. Leaves compound, with 3-7 leaflets.

c. Plant trailing, essentially herbaceous, unarmed; leaves with mostly three thin leaflets; fruit red, not separating easily from the receptacle. 3. *R. pubescens*

c. Plant trailing or erect, woody, often armed with bristles or prickles.

d. Leaves pinnately 3-7-lobed; fruit red, easily separating from the receptacle; raspberries.

e. Corolla 3-4 cm wide; fruit oblong, to 3 cm long; petals large, as broad as long; leaves often with 7 leaflets. 4. *R. illecebrosus*

e. Corolla smaller with the petals inconspicuous, much narrower than long; leaflets mostly 3, whitish beneath.

f. Plant glandless; inflorescence with relatively short, stout pedicels; drupelets firmly united in fruit, the remaining core elongated; unripe fruit commonly conic and gray-pubescent. 5. *R. idaeus*

f. Plant with stalked glands on some or all of its axes; pedicels slender; drupelets easily separating, leaving a short, broad core on the cane; unripe fruit not conic nor pubescent. 6. *R. strigosus*

d. Leaves palmately divided with 3-5 leaflets; petals showy; fruit black, not easily separating from the receptacle or core; blackberries.

g. Canes trailing or arching with the tips rooting.

h. Plants with hispid hairs or bristles on the canes and usually in the inflorescence, without prickles; leaves firm and often glossy, glabrous, or sparingly pubescent on the veins beneath. (*hispidi*)

i. Foliage deep glossy-green, thick and persisting over winter; flowers mostly less than 16 mm wide; trailing, common. 7. *R. hispidus*

i. Foliage larger and duller, not persisting over winter; flowers mostly over 20 mm wide.

j. Primocane leaflets broad, the main ones two-thirds or more as wide as long; primocane stout and shaggy, glandular; pedicels with long bristles and glandular hairs. 8. *R. provincialis*

j. Primocane leaflets barely more if any than one-half as wide as long; plants arching.

k. Axis of the canes sparingly setose, not glandular; pedicels not glandular. 9. *R. segnis*

k. Axis of the primocane shaggy-glandular; pedicels glandular. 10. *R. adjacens*

h. Plants prickly, sometimes with bristles mixed with the more or less hooked prickles (*Flagellares*).

l. Leaves sparsely pubescent or glabrous on the lower surface.

m. Glands absent on axes, petioles, pedicels and calyx.

n. Foliage with the forking veins prominently elevated on the upper surface giving a ruffled look on the margin; primocane leaflets slightly pubescent beneath. 13. *R. plicatifolius*

n. Foliage not plicate nor ruffled.

o. Canes reddish, very abundantly branching and trailing; leaves shiny, glabrous, resembling *R. canadensis*; stipules narrow. 22. *R. russeus*

o. Canes not prominently reddish nor branching; stipules and floral bracts prominent and wide; northern C. B. 12. *R. bretonis*

m. Glands present on some of the parts, at least on the pedicels.

p. Glands mostly on the calyx or pedicels only; leaflets mostly 3, the terminal one wide. 14. *R. particeps*

p. Glands common among the prickles on the primocanes; leaflets mostly in 5's. 15. *R. biformispinus*

l. Leaves velvety pubescent beneath, the leaflets 5; primocane and pedicels densely glandular. 16. *R. adenocaulis*

g. Canes upright or highbush, sometimes arching and touching the ground, but not truly tip-rooting

q. Canes and pedicels bristly with the prickles none or very few; leaves glabrous beneath; fruit small (*S. tosi*). 11. *R. Grautianus*

q. Canes and pedicels not bristly, usually stout and tall; fruit often attractive.

r. Inflorescence and petioles prominently glandular; leaves usually softly pubescent beneath (*Allegheniensis*).

s. Primocane axis nearly or quite devoid of stalked glands.

t. Teeth of the leaflets not deeply cut; prickles common but not unusually large. 17. *R. allegheniensis*

t. Teeth of the leaflets deeply dentate or incised, some 3-5 mm long; prickles very many and effective. 18. *R. pennus*

s. Primocane axis with abundant glandular hairs. 20. *R. acadiensis*

r. Inflorescence and petioles without or with but a very few scattered glands.

u. Leaves pubescent on the lower surface.

v. Pubescence of the leaves light; axis of the inflorescence and the pedicels prominently hairy-pubescent; leaves dull above. 19. *R. orarius*

v. Pubescence of the leaves dense, obscuring the lateral veins; axis of the inflorescence and pedicels lightly pubescent; leaves shining above. *R. canadensis* var. *pergratus*

u. Leaves shiny above and glabrous beneath; canes with scattered and short dull straight prickles. 21. *R. canadensis*

1-1. **R. Chamaemorus** L. Fig. 73. Map 277. CLOUDBERRY, BAKEAPPLE.

Sphagnum bogs, barrens, meadows near the coast and on headlands; common in C. B. and eastern N. S. where

considerable quantities are gathered; scattered and becoming rarer westward and inland, rarely flowering or fruiting in the more inland locations.

Nfld. & Greenland across the continent south to Me. and N. H.

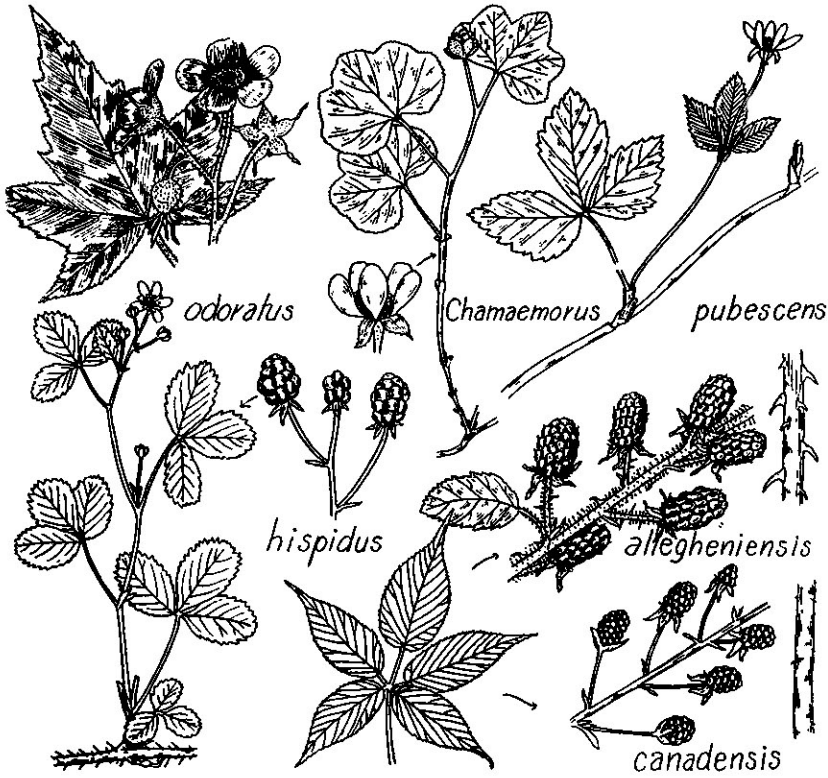


Fig. 73.—**Rubus.**

2-385. **R. odoratus** L. Fig. 73. FLOWERING RASPBERRY.

Scattered as an old-fashioned garden plant, and often found along roadsides or around old houses in the Annapolis Valley; doubtfully native. Fernald (1922) reports a collection from a thicket, Belleville, Yarmouth Co. as the type of var. *malachophyllus* Fern. This has the leaves densely pilose or almost velvety on both surfaces, with the upper surfaces of the young leaves and the veins beneath black-glandular.

N. S. to Mich. and Ind. south to Tenn. and Ga.

3-7. **R. pubescens** Raf. Fig. 73. Map 278. DEWBERRY.

Common throughout; in low and boggy land, swamps, mucky soils, over talus slopes and along intervales, in open sunlight or often luxuriantly under bushes or in open woods. (*R. triflorus* Richards.). Nfld. to Alaska south to N. J., and Iowa.

Var. **scius** Bailey is a compact plant forming mats and extensively stoloniferous, with the leaflets short and broad, 4-5 cm long and nearly as broad. The type is from Cheticamp, in great mats in open sun; also collected by Bailey from the Look-off near Cape Blomidon, Kings Co. N. S., Que. and Nfld.

4-. **R. illecebrosus** Focke. STRAWBERRY RASPBERRY.

An ornamental plant sparingly introduced from Japan for its large fruits; occasionally escaping. Fernald (1922) states that this plant is tending to escape from cultivation at Annapolis Royal. (Page 900 in Bailey).

5-369. **R. idaeus** L. EUROPEAN OR GARDEN RASPBERRY.

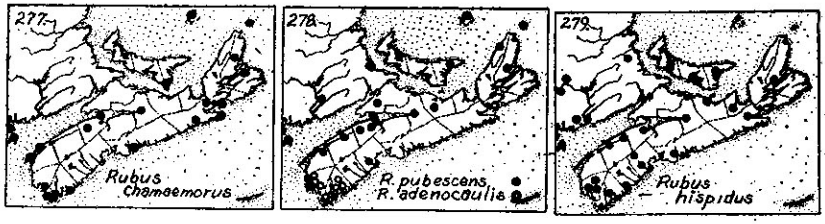
This is the cultivated raspberry best representated in the pomological red varieties; persisting or sometimes tending to escape; well established as a garden escape about Yarmouth (Fernald, 1921).

Introduced from Eu.; widely cultivated.

6-370. **R. strigosus** Michx. WILD RASPBERRY.

Common throughout; roadsides, barrens, clearings, after burns, on talus slopes and on rocky ground. The young canes vary greatly in their armature, but these variations do not seem to be very consistent nor to have different geographical ranges (See Fernald, Rhodora **21**: 96. 1919).

Nfld. to Alaska south to N. S., Mex. and Calif.



7-16. **R. hispidus** L. Fig. 73. Map 279. TRAILING BLACKBERRY.

This slender trailing plant with the rather evergreen glossy leaves is one of the commonest blackberries of old

fields, roadsides and open coniferous woods. Widespread on acid or mossy soil from N. S. to Wisc. south to N. C. & Tenn.

Var. **culpifer** Bailey has the flowers larger, 18-24 mm wide instead of 10-15 mm, the corolla cup-shaped, and the petals broad. The type is from the Look-off, near Cape Blomidon, Kings Co.; also in low land, Queensville, Inverness Co.

Var. **obovalis** Fern., in Rhodora **42**: 281. 1940, is a slender form with the primocane axis usually less than 2 mm thick, without or with few bristles, the leaves smaller and more rounded, to 4.5 cm long. Apparently commoner than the species in southwestern N. S. and grading into it. Widespread.

8-19. **R. provincialis** Bailey

The type is from dry land, Pictou; specimens were formerly confused with *R. arcuans*. Found also along the roadsides between Stewiacke and Truro. *R. arcuans* Fern. & St. John was described from Dundee, P. E. I., and may be confined to that province. The pedicels are glandiferous, but the leaflets are about half as wide as long, with some of the primocanes prickle-like. The *R. arcuans* reported from Sable Is. is related to *R. vigoratus* Bailey, l. c. page 111.

9-21. **R. segnis** Bailey.

Type from near Pictou, heavily foliaged colony on dryish land.

10-25. **R. adjacens** Fern., in Rhodora **42**: 290. 1940. Map 280.

Rocky or gravelly slopes, thickets, railroad embankments and woods in dry or moist soils; scattered in southwestern N. S. west to Lunenburg and into southern N. B. Records of *R. jacens* mostly belong here.

N. S. to Que. south to Me. & Mass.

11-66. **R. Grautianus** Blanchard

All the material of the section *Setosi*, plants with erect, setose canes which do not root at the tips, are here placed in this species. This plant is scattered throughout the peninsula in moist thickets, damp roadsides, edges of roads and along railroad embankments, often growing in large colonies. At least three closely related species are reported

for southern N. B.; and the section is undoubtedly more diverse in N. S.

N. S. to Conn. and northern N. Y.

12-138. **R. bretonis** Bailey

Described by Bailey from Cape Breton: Dingwall, Cape North region, Victoria County, on dry land in woodsy partially shaded places, where it was abundant, and showy in bloom on the 9th of July, 1937.

13-140. **R. plicatifolius** Blanchard

Light usually sandy land, N. B., N. S., Maine to R. I., and N. Y.; Wisc.; swampy woods and wet thickets by Eel Lake, Yarmouth Co. (Fernald, 1921); scattered elsewhere.

14-176. **R. particeps** Bailey

On sandy land at Kingston, Kings Co.; type collected by Bailey.

15-181. **R. biformispinus** Blanchard

One of the most characteristic coarse trailers of the sandy roadsides and railroad embankments in southern Yarmouth and Shelburne Cos. (Fernald, 1922); very common along roadsides and in light soils through the Annapolis Valley; scattered eastward.

N. S. & Maine.

16-188. **R. adenocaulis** Fern., in Rhodora **42**: 288. 1940. Map 278.

Damp to dryish roadside thickets, embankments, swamps and open woods; rather common in southwestern N. S., scattered eastward at least to Kings Co. *R. arcuans* and *R. abbrevians* Blanchard mostly of earlier records.

Southwestern N. S.

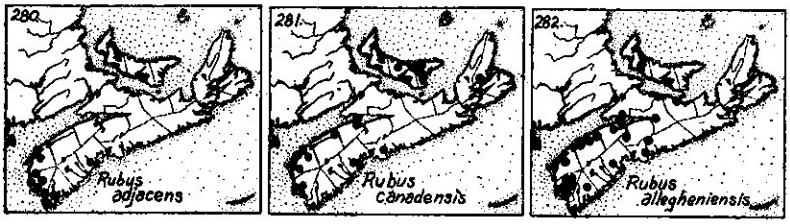
17-224. **R. alleghenlensis** Porter. Fig. 73. Map 282. HIGHBUSH BLACKBERRY.

The majority of the edible blackberries of the province are gathered from this species. The plant is characteristic of roadsides, clearings and burns, along fences and in thickets and open woodlands throughout; very variable in habit and habitat. (*R. nigrobaccus* Bailey). N. S. to Minn. south to N. C. & Mo.

Var. **neoscoticus** (Fern.) Bailey is a closely related form with the primocanes bearing pinhead glands, the inflorescence more hidden in the foliage and with the pedicels stouter and the fruit shorter and less thimble-shaped. (*R.*

glandicaulis Blanchard, var. *neoscoticus* Fern., Rhodora **23**: 268. 1921). Best developed and most characteristic in N. S.

N. S. to southern Me., & northern N. Y.



18-228. **R. pennus** Bailey.

This large very thorny briar was described from dry land on Digby Neck, Digby Co., west of Sandy Cove, in a considerable area. A roadside clump of a thorny type seen on the mountain slope north of Annapolis probably belongs to this same species.

19-236. **R. orarius** Blanchard

This erect large blackberry is much like *R. alleghenien-sis* except that the leaves are much less pubescent beneath and glands are sparingly present and inconspicuous. This species, or at least a plant very closely related to it, is reported by Fernald (1921) as frequent in damp thickets of Digby, Yarmouth and Shelburne Counties.

N. S.; southern Me. & Cape Cod.

20-258. **R. acadiensis** Bailey

Type from a dry bank among grass and low brush, near Hardwood Lands post-office, Hants Co., N. S.; also collected by Bailey from Havelock, N. B., and by Atwood from south of Fredericton.

21-207. **R. canadensis** L. Fig. 73. Map 281.

Common throughout; roadsides, thickets, clearings and open woods. N.S. to Minn. south to Tenn. & Ga.

Var. **pergratus** (Blanchard) Bailey has the leaves softly pubescent underneath with the lateral ribs more or less obscured. Scattered from P.E.I. and N. S. to Penn. *R. canadensis* is very variable. Many forms can be found and Bailey has described several related species from neighboring regions. One of these, *R. quaesitus* Bailey, has the type from Miscouche in P. E. I., and is reported from Dorchester, Westmoreland Co., in N. B. This has the inflores-

cence broad, partly hidden in the leaves, and the pedicels few and widely spreading.

22-221. **R. russeus** Bailey

Type from Waverley, Halifax Co., on high open land, trailing flat on the ground, the woody stems red in the sun; also from Middlefield, Queens Co.; Sandy Cove, and from Springhill. This species is very vigorous, roots commonly at the tips, and the primocanes are extensively branching. It is found along the roadsides between Bedford and Waverley.

12. DALIBARDA Kalm

1. **D. repens** L. DALIBARDA. Fig. 72, e. Map 283.

Scattered to local in dry woods; it is commonest in the southwestern counties, becoming rarer to Pictou Co. Aug.

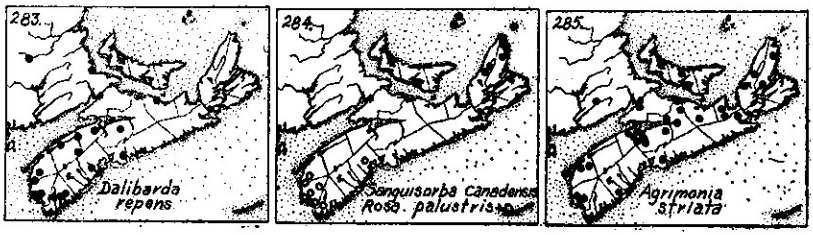
N. S. to Ont. south to N. J., Ohio & Mich.

13. ALCHEMILLA L.

1. **A. pratensis** F. W. Schmidt. LADY'S MANTLE. Fig. 72, d.

This weed is abundant and very aggressive from Digby around the coast to Yarmouth and Shelburne Cos.; scattered east to Halifax and Sydney. It was first found in Halifax about 1884; at Digby in 1879; and Macoun and Burgess noticed it growing in great abundance at Yarmouth in 1883. It is now a serious weed in the southwestern counties, but has not spread to any extent into the Annapolis Valley in spite of the fact that it was early present at Digby. The N. S. plants are introduced from Eu. and differ from the native species and varieties further north. For a discussion of this species see Fernald and Wiegand, Rhodora **14**: 229-234. 1912. (*A. vulgaris* L. of some authors).

Sparingly introduced into N. S. and Me. to N. Y.



14. AGRIMONIA (Tourn.) L.

a. Axis of the inflorescence with open, spreading long hairs and numerous short-stalked glands; bristles of the fruit spreading, the longest over 3 mm long. 1. *A. gryposepala*

a. Axis of the inflorescence downy with appressed hairs and often with longer spreading ones, without glands; bristles of the fruit about 2-2.5 mm long, ascending. 2. *A. striata*

1. **A. gryposepala** Wallr. AGRIMONY.

Scattered in rich woods and thickets along the intervales and rich slopes from Annapolis and Digby Cos. to C. B.; rare in the Atlantic regions of the province. July-Aug.

N. S. to Minn. & Calif. south to N. C., Tenn. & Mo.

2. **A. striata** Michx. Map 285. Fig. 72, f.

Common throughout; thickets along roadsides, stonewalls, fences, and waste places or cut-over areas. July-Aug.

Nfld. to Sask. south to Va., Ill. & N. M.

15. SANGUISORBA (Rupp.)L.

a. Plants 3-15 dm high; leaflets 2-5 cm long; flowers in long spikes; stamens 4. 1. *S. canadensis*

a. Plants 3-5 dm high; leaflets 8-15 mm long; flowers in short ovoid spikes; flowers pinkish-green; stamens 12 or more. 2. *S. minor*

1. **S. canadensis** L. CANADA BURNET, SANGUISORBA. Fig. 74, a. Map 284.

Bogs, wet meadows and well-drained swamps; common in C. B. and often abundant near the coast. It has been reported from Pictou, Truro and from near Halifax, but I believe that all these stations represent introductions, as the plant has not been seen recently on the mainland side of the Strait of Canso. Var. *latifolia* Hook., an Alaskan variety known in the east from the north shore of the St. Lawrence and from Anticosti, has been reported from St. Paul Island, C. B. (Perry 1931). These plants, however differ but very slightly from the other collections from C. B. Aug.

Lab. to Man. south to the mts. of Ga.

2. **S. minor** Scop. GARDEN BURNET.

Known only from near Windsor, where it may have been introduced in grass seed.

Eurasia; introduced from N. S. to Md.

16. ROSA L. ROSE

The native species of rose are extremely variable in the shape and size of the prickles, abundance of bristles, shape of the fruit, position of the achenes on the wall of the fruit and in the height and habit of the bush. Some species easily hybridize and form fertile hybrids; and progeny from the same plant may differ widely. Erlanson, Eileen Whitehead. Experimental data for a revision of the North American Roses. Bot. Gaz. **96**: 197-259. 1934.

a. Twigs, prickles and bristles finely pubescent; twigs stout, very prickly; leaves large, thick and rugose; corymbs of flowers small, the fruit usually pendent; cultivated or escapes. 1. *R. rugosa*

a. Twigs, prickles and bristles not pubescent.

b. Flowers double, solitary with large ovate bracts upon the peduncles; twigs slender, cinnamon-colored; leaves pale and pubescent beneath; infra-stipular prickles stout and curved. 2. *R. cinnamomea*

b. Flowers single, very rarely solitary; bracts of the peduncle not wide and ovate, green.

c. Stem low, densely bristly throughout; flowers in 1's to 3's; leaflets about 2 cm long, rather narrow; bogs. 6. *R. nitida*

c. Stems various,. with stout infrastipular prickles or smooth and without bristles; sterile canes sometimes bristly at the base.

d. Leaves glandular beneath, often doubly serrate with gland-tipped teeth.

e. Leaves glandular above; styles pubescent. 3. *R. Eglanteria*

e. Leaves not glandular above; styles glabrous or nearly so. 4. *R. micrantha*

d. Leaves not glandular beneath, nor glandular-toothed.

f. Sepals pinnately lobed; fruit ellipsoid, the pedicels naked; flowers 1-3; prickles stout, hooked; leaves glabrous or nearly so. 5. *R. canina*

f. Sepals not lobed.

g. Leaflets with 5-30 (averaging 13) teeth on each side; stamens less than 150; leaves glabrous beneath.

h. Stem stout, much branched; suckers few, rarely flowering the first season; prickles mostly flattened, sometimes absent; bristles often at the base of the plant. 7. *R. virginiana*

h. Stem low and slender; suckers many, often flowering the first season; prickles, if present, small, straight and terete; bristles often scattered to the tip. 8. *R. carolina*

g. Leaflets averaging 26 teeth on each side; stamens over 200; leaves mostly more or less pubescent beneath. 9. *R. palustris*

1. **R. rugosa** Thunb. ROSE.

Commonly cultivated; becoming established as an escape about Yarmouth. Introduced from eastern Asia.

2. **R. cinnamomea** L. CINNAMON ROSE. Fig. 74, e.

Common about buildings, around old houses and farmsteads, and along roadsides from Yarmouth Co. east at least to Pictou Co. (*R. spinosissima* L. in part).

Eurasia; widely introduced and escaping.

3. **R. Eglanteria** L. SWEET-BRIER, EGLANTINE. Fig. 74, d.

Scattered around old houses, in gardens, and occasionally as an escape. Most of the material examined seems to be closely allied to the next species, or to grade into it (*R. rubiginosa* L.).

Eu.; widely naturalized in N. A.

Fig. 74.—**Sanguisorba.** a, **S. canadensis,** leaf and inflorescence, x ¼. **Filipendula.** b, **F. Ulmaria,** leaf and inflorescence, x ¼. **Rosa.** c, **R. palustris,** leaflet, x ⅓. d, **R. Eglanteria,** leaf. e, **R. cinnamomea,** x ¼. **Robinia.** f, flowers and leaf, x ½. **Cytisus.** g, **C. scoparius,** twigs and flowers, x ½.

4. **R. micrantha** Sm.

Rather frequent as an escape or an ornamental, growing in situations similar to those of the last species.

Eu.; a common escape throughout N. A.

5. **R. canina** L. DOG ROSE.

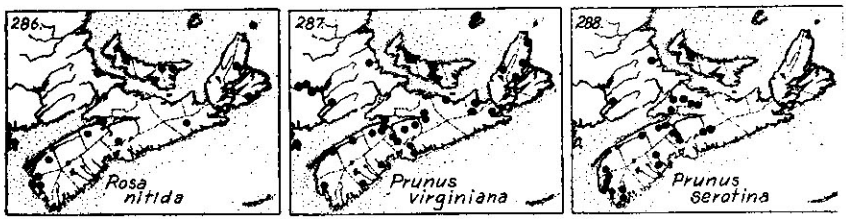
Rare; occasionally seen as an escape in the south-western part of the province. Since it was used as a stock for grafting, it may be expected wherever roses are grown in the province.

Eu.; occasionally naturalized in N. A.

6. **R. nitida** Willd. SWAMP ROSE. Fig. 68, e. Map 286.

Scattered throughout, becoming common eastward to C. B.; bogs, spruce swamps, sphagnum mats, and swampy thickets, especially near the coast. Hybrids with other species are occasionally found. *R. nitida X. R. virginiana* was found at the border of a spruce swamp, Markland, Yarmouth Co. (Fernald, 1922); and a collection from Tidnish is placed here. *R. nitida X. R. palustris* is reported from a wet rocky thicket bordering Sparrel L., southwest of Hasset, Digby Co. (Fernald. 1922).

Margins of swamps; Nfld. to N. Eng.



7. **R. virginiana** Mill. COMMON WILD ROSE. Fig. 68, f.

Common throughout, extremely variable in all characters and grading into, or hybridizing with the next species; wet pastures, thickets, and common along the heads of the salt marshes, dykelands and swamps.

Hybrids between this and *R. carolina*, intermediate in character, have been assigned to *R. obovata* Raf. by Erlanson. These luxuriant plants with larger leaflets and flowers may be the same as the *R. obovata* (See Rydberg, N. A. Flora **22**. 499, 1918) that was reported by Fernald from south-western N. S., in Rhodora **24**: 176. 1922. *R. Bicknelli* of Rydberg is a form with pyriform fruit.

Nfld. & Que. to N. Y. & Penn.

8. **R. carolina** L., see Rydberg in Bull. Torrey Bot. Club **47**: 51. 1920.

Scattered throughout; dry pastures, roadsides, uplands and light soil; characteristic in its habitat but grading into *R. virginiana* on the lower ground. (*R. humilis* Marsh. of Gray's Man.) *R. gemella* Willd. is placed here.

Nfld. to Minn. south to Fla. & La.

9. **R. palustris** Marsh., see Fernald, Rhodora **20**: 91. 1918. Fig. 74, c. Map 284.

Scattered at the edges of ponds, wet thickets and in swamps; Digby, Yarmouth and Shelburne Cos., scattered east to Lunenburg Co. Records of *R. carolina* may belong here, but in most cases they are based on luxuriant plants of *R. virginiana* or of the hybrid *R. obovata*. (*R. carolina* of Gray's Man.).

N. S. to Minn. south to Fla. & Miss.

17. **PRUNUS** (Tourn.) L. PLUMS and CHERRIES

Groh, Herbert and Harold A. Senn. Prunus in eastern Canada. Can. Jour. Res. C. **18**: 318-346. 1940.

a. Flowers few, in an umbel or short corymb.
b. Plums; fruit large, with a bloom, and a deep groove along one side.
c. Leaves rolled in the bud; flowers 1-2 per cluster.
d. Shrub; distinctly spiny; leaves 2-4 cm long; flowers usually solitary with pedicels glabrous; fruit round, mostly less than 1 cm thick. 1. *P. spinosa*
d. Shrubs or small trees, unarmed or nearly so; leaves 4-10 cm long; flowers 1-2, with the pedicels often pubescent; fruit more than 1 cm thick.
e. Leaves 5 cm long or longer, with closely and irregularly toothed margins; flowers 1.5-2.5 cm wide, with rarely pubescent pedicels; fruit 3-4 cm long. 2. *P. domestica*
e. Leaves 2.5-4 cm long, with closely serrate margins; flowers 0.8-1.5 cm wide, with pubescent pedicels; fruit 1.2-2 cm long. 3. *P. insititia*
c. Leaves folded in the bud; flowers usually 3 or more per cluster, 2-3. cm wide, white to pinkish; branches becoming spiny when older. 4. *P. nigra*
b. Cherries; fruit round, smooth without a bloom; leaves folded in the bud; flowers several to numerous.
f. Flowers 2-3 cm wide; fruit 15-20 mm thick; involucral bracts of the inflorescence persistent; leaves coarsely and bluntly toothed; cultivated trees.

g. Leaves thin, hairy on the veins when young, with 10-14 pairs of veins; flower-spurs leafless, the buds-scales enlarged to 10-15 mm long, becoming recurved; calyx-lobes smooth edged. 5. *P. avium*

g. Leaves firm, waxy, smooth or nearly so; flower-spurs leafy, the bud-scales erect and scarcely enlarged; leaves with 6-8 pairs of veins; calyx-lobes round-toothed. 6. *P. Cerasus*

f. Flowers 1-1.5 cm wide; fruit 7-8 mm thick, the involucral bracts of the inflorescence deciduous; leaves with sharp inturned teeth; native tree. 7. *P. pensylvanica*

a. Flowers numerous in an elongated, drooping, leafy raceme (Fig. 70, e. f).

h. Leaves thin, with sharp teeth, smooth on the mid-rib beneath; sepals plainly glandular-serrate, disappearing in fruit; shrubs. 8. *P. virginiana*

h. Leaves thick and waxy, with inturned teeth, often with the mid-rib fringed with rusty hairs on the under side; sepals obscurely glandular, persisting on the fruit; trees. 9. *P. serotina*

1. **P. spinosa** L. BLACKTHORN, SLOE.

Rare; collected at Wolfville, and at Summerville Beach in Queens Co. Probably irregularly scattered. Late May.

Eurasia; introduced and long cultivated.

2. **P. domestica** L. GARDEN PLUM.

Commonly planted; escaping to roadsides and thickets.

3. **P. insititia** L. BULLACE PLUM.

This form generally appears when cultivated plums grow up from the rootstocks, and is to be expected wherever cultivated plums are grown in the province. Late May.

Eurasia; long cultivated.

4. **P. nigra** Ait. CANADA PLUM.

Scattered at various places in the Annapolis Valley; Wolfville, Gaspereau, Church St.; and at Landsdowne in Digby Co. This species has been introduced also in the form of rootstocks for cultivated varieties of plums.

Central and northeastern Canada and the U. S.; introduced into N. S.

5. **P. avium** L. MAZZARD OR SWEET CHERRY.

Grown throughout the Annapolis Valley; common as an escape, especially in the western part. Middle and late May.

Eurasia.

6. **P. Cerasus** L. SOUR CHERRY.

Frequently found in orchards, often persisting or as an

escape along roadsides or fence-rows; commonest in the southwestern counties and in the Annapolis Valley; rarer eastwards. Late May.

Eurasia; escape and cultivated tree in eastern N. A.

7. **P. pensylvanica** L. f. BIRD OR PIN CHERRY. Fig. 70, d.

Common throughout; barrens, sandy soil, burnt-over land, thickets and edges of fields. May 25- June 20.

Lab. to B. C. south to Penn.

8. **P. virginiana** L. CHOKE CHERRY. Fig. 70, e. Map 287.

Common throughout; a weed shrub around fields, along stone walls, and in sandy, barren or waste land. It is especially common along the edges of the intervale meadows throughout the center of the province, and along the edges of thickets near rocky lake shores. June 10-25.

Nfld. to S. Dak. south to Fla.

9. **P. serotina** Ehrh. WILD BLACK CHERRY. Fig. 70, f. Map 288.

Common in the southwestern counties; characteristic of most of the rich or silty intervales from Kings Co. to Colchester and Cumberland Co.

N. S. to Dakota south to Fla.

55. LEGUMINOSAE PEA or LEGUME FAMILY

a. Trees or shrubs.
 b. Large trees with spines or thorns; leaves pinnately compound.
  c. Flower regular; leaves once or twice compound; spines long and branched; flowers greenish. 1. *Gleditsia*
  c. Flowers pea-like; leaves once compound, short stipular thorns present; flowers whitish to pink. 7. *Robinia*
 b. Low shrub about 1 m high, with stiff, green squarish branches, leaves small, mostly with three leaflets; spines and thorns absent; flowers bright yellow. 2. *Cytisus*

a. Herbaceous plants.
 d. Leaves pinnately compound.
  e. Terminal leaflets of the leaves modified to tendrils.
   f. Flowers 1-3, sessile. 10. *Vicia*
   f. Flowers several to numerous on a stalked inflorescence.
    g. Blades of the leaflets less than 2 cm long; styles filiform with a tuft of hairs at the summit; wings of the flower coherent with the keel. 10. *Vicia*
    g. Blades of the leaflets more than 2 cm long; styles flattened and bearded down the inner face; wings nearly free. 11. *Lathyrus*

e. Terminal leaflets not modified to tendrils.
h. Leaflets 13-19; plants low and tufted; rare in C. B. 8. *Oxytropis*
h. Leaflets 5-7; plants long-trailing or twining. 12. *Apios*
d. Leaves palmately compound.
i. Leaves with numerous leaflets; lupines. 3. *Lupinus*
i. Leaves with 3 leaflets.
j. Plant not slender and twining, at most prostrate or creeping.
k. Leaflets not toothed; flowers purplish, in long narrow racemes; pod made up of separate joints which easily separate; plants tall and erect. 9. *Desmodium*
k. Leaflets toothed or serrulate.
l. Flowers in a dense head; fruit straight and membranous; clovers. 4. *Trifolium*
l. Flowers in a short spike or in long racemes.
m. Flowers in very short spike; pods coiled; terminal leaflet stalked; plants 1-10 dm high. 6. *Medicago*
m. Flowers in tall racemes; pods straight, 1-2-seeded; plants 1-2 m high. 5. *Melilotus*
j. Plants slender and twining; leaflets with a smooth edge; flowers purplish. 13. *Amphicarpa*

1. GLEDITSIA L.

1. **G. triacanthos** L. HONEY LOCUST.

Occasionally planted and persisting in hedges, around old habitations or along roadsides. June.

Penn. to Iowa south to Tex.; introduced northwards.

2. CYTISUS (Tourn.) L.

1. **C. scoparius** (L.) Link. SCOTCH BROOM. Fig. 74, g.

Long known from Shelburne Co., and still spreading in the open ground along the roadsides, into pastures and open woods between Jordan Falls and Shelburne and especially in the vicinity of Swanburg L.; formerly gathered to some extent for the drug market. This plant does not seem to be able to persist in the colder regions inland or northward. July.

Locally introduced into N. A. mostly near the east and west coasts.

3. **LUPINUS** (Tourn.) L.

a. Leaflets 6-9, widest near the tip, blunt. 1. *L. nootkatensis*
a. Leaflets 10-17, widest near the middle and narrowed to each end. 2. *L. polyphyllus*

1. **L. nootkatensis** Donn.

Abundantly naturalized at Chebogue Point along the Lupine Trail, Yarmouth. June 15-July.

Introduced in Nfld. & N. S.; Alaska to Vancouver Island.

2. **L. polyphyllus** Lindl. GARDEN LUPINE.

Frequently grown as an ornamental and occasionally escaping to become a weed; very common along the Salmon River and the dykelands at Truro; common at Chebogue Point; occasionally seen elsewhere. June 15-July.

Introduced into N. S. & P. E. I.; native from B. C. to Calif.

4. **TRIFOLIUM** (Tourn.) L. CLOVER

a. Flowers in dense heads, sessile, pinkish to purple.
b. Calyx-teeth silky-plumose and longer than the corolla; corolla whitish; head much longer than thick. 1. *T. arvense*
b. Calyx-teeth ciliate-hairy or smooth, not longer than the corolla; corolla purplish; heads round to ovoid. 2. *T. pratense*
a. Flowers stalked, in looser heads; flowers nearly white to yellow.
c. Corolla whitish to purple-tinged
d. Stems loosely creeping and rooting; flower-stalks arising from the surface of the ground; flowers white; tip of the leaflets usually notched (Fig. 75). 3. *T. repens*
d. Stems erect or ascending, not rooting at the nodes; flowers larger, pinkish-tinged; leaflets blunt to rounded at the apex. 4. *T. hybridum*
c. Corolla yellow; plants and leaves small.
e. Terminal leaflet sessile. 5. *T. agrarium*
e. Terminal leaflet stalked.
f. Plants large; heads densely flowered; corolla conspicuously striate with age. 6. *T. procumbens*
f. Plants small and slender; heads loosely flowered, short with few flowers; corolla not striate. 7. *T. dubium*

1. **T. arvense** L. RABBIT-FOOT CLOVER.

Local; a weed in sandy, stony or dry soil; known from Halifax, and scattered about Wolfville; occasionally seen elsewhere.

Introduced from Eurasia; N. S. & Ont. to Mo. and south to Fla.

2. **T. pratense** L. RED CLOVER. Fig. 75.

Common in fields and meadows throughout; rarely persisting except in limited amount along roadsides or dwellings. Fernald, Rhodora **45**: 331. 1943, separates the coarser, longer-lived cultivated plant as var. **sativum** (Mill.) Schreb. Var. **frigidum** Caudin, a dwarf variety with stems to 2 dm high, and very small leaves with rounded obovate leaflets only 0.5-1.5 cm long, is reported from a seepy open slope near Yarmouth (Fernald, 1921).

Widely naturalized from Eurasia.

3. **T. repens** L. CREEPING WHITE CLOVER. Fig. 75.

Common throughout in pastures, roadsides, fields and acid soils. It is the first legume found growing on acid, wet or eroded soils. In natural areas it is found mixed with brown top, *Agrostis tenuis*, in hollows or along moister places in pastures and meadows.

Widely naturalized from Eu.

4. **T. hybridum** L. ALSIKE CLOVER. Fig. 75.

Extensively planted as a forage crop, especially on the wetter soils; often found naturalized in meadows and waste places. More slender plants with smaller heads, leaves and flowers, have been segregated as var. **elegans** (Savi)Boiss, see Fernald, Rhodora **43**: 331. 1941.

Widely naturalized from Eu.

5. **T. agrarium** L. YELLOW OR HOP CLOVER. Fig. 75.

Occasional throughout in gravelly neutral or slightly acid soils; generally less common than the next species.

Introduced from Eu.; Nfld. to Ont. & Iowa south to Ga.

6. **T. procumbens** L. HOP CLOVER. Fig. 75.

Common throughout; along roadsides, old fields, waste places and in towns.

Introduced from Eu.; N. S. to Wash. south to Ga. & Miss.

7. **T. dubium** Sibth. LITTLE HOP CLOVER.

Common in southern Yarmouth and through Digby Co.; spreading into the Annapolis Valley, where it is found at Coldbrook and near Windsor.

Native of Eu.; N. S.; Mass. to Miss.; B. C. southward.

5. MELILOTUS (Tourn.) Mill. SWEET CLOVER.

a. Corolla yellow; flowers 4-7 mm long, the wings and keel as long as the standard; calyx-tube rounded at the base.
b. Ovary and pod glabrous; pod strongly reticulated and cross-ribbed. 1. *M. officinalis*
b. Ovary and pod pubescent; pod weakly reticulated, not cross-ribbed. 2. *M. altissima*
a. Corolla white; flowers 3-5 mm long; calyx-tube narrowed evenly to the base; pod glabrous. 3. *M. alba*

1. **M. officinalis** (L.) Lam. YELLOW SWEET CLOVER.

Yellow sweet clovers are much less common than are white species in the province. This species is abundant along roadsides near coal-mining towns, and in alkaline soils as around Windsor. July 15-Aug.

Introduced from Eu.; widely naturalized in N. A.

2. **M. altissima** Thuill.

The distribution of this species is unknown but it is probably nearly as common as the last species. It is known from Annapolis, and from Brooklyn in Hants Co. July-Aug.

Introduced from Eu.; widely naturalized.

3. **M. alba** Desr. WHITE SWEET CLOVER. Fig. 75, b.

A common weed in every town, and often along roadsides in the country. It has been little grown as a forage crop, but has nevertheless become well established in many regions, especially about ports and in limestone or gypsum areas. Very common from Pictou to Halifax and Annapolis; scattered elsewhere. It has spread rapidly along the new roadside embankments where roads have been paved. July-Aug.

Introduced from Eu. and widespread.

6. MEDICAGO (Tourn.) L.

a. Perennial; flowers bluish-purple; pods spirally twisted; plant mostly erect; alfalfa. 1. *M. sativa*
a. Annuals; flowers yellow; pods curved or tightly twisted; plants small, usually prostrate. 2. *M. lupulina*

1. **M. sativa** L. ALFALFA. Fig. 75, c.

Planted as a forage crop, occasionally persisting for a time; found along roadsides and in waste places in limited amounts. As yet alfalfa is little known, and is rather rare on the prevailing acid or wet soils. July.

Native of Eu.; widespread.

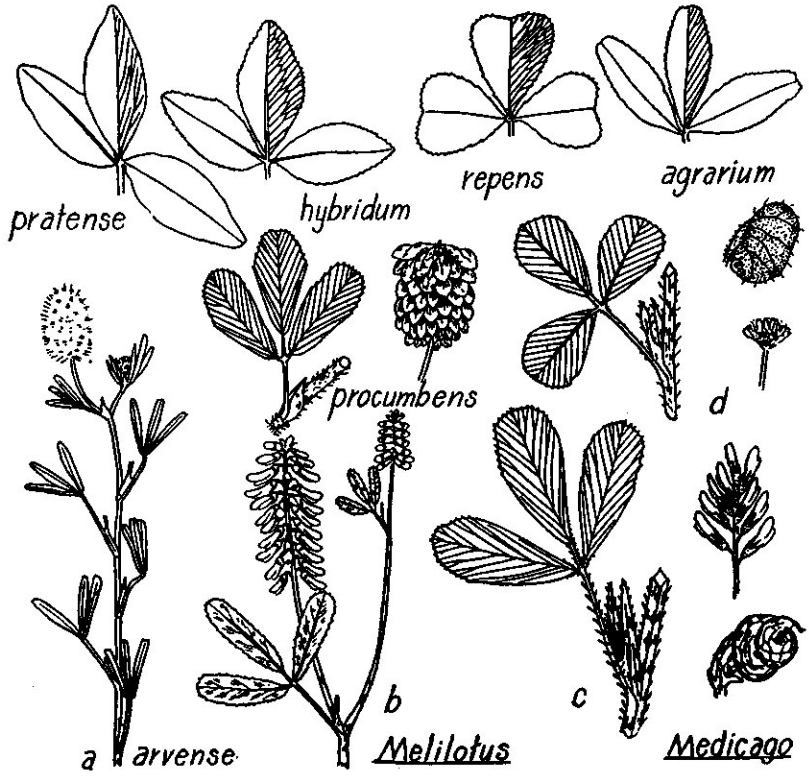


Fig. 75.—**Trifolium.** a, leaves and flowering-heads of various species, x ½. **Melilotus.** b, **M. alba**, top of plant, x ½. **Medicago.** c, **M. sativa**, leaf, flowers and fruit, x 1. d, **M. lupulina**, leaf, and flowers, x 1; fruit, x 4.

2. **M. lupulina** L. BLACK MEDICK. Fig. 75, d.

Common throughout; especially in the Annapolis Valley where it is found along roadsides, in lawns, waste places and occasionally in cultivated fields. This plant is easily confused with the clovers but the teeth of its leaves are not bristly and the stalks of the leaflets are pubescent instead of glabrous. June-Aug.

Native of Eu.; widely introduced.

7. ROBINIA L.

a. Branchlets, petioles and flowers smooth; flowers white. 1. *R. Pseudo-Acacia*

a. Branchlets, petioles and flowers glandular-pubescent; flowers pinkish. 2. *R. viscosa*

1. **R. Pseudo-Acacia** L. BLACK LOCUST. Fig. 74, f.

Occasionally planted as an ornamental tree; rarely found as an escape, but sometimes occurring along roadsides or on hillsides where it has spread out from the original trees. Rarely fruiting in the province. June.

Introduced; native from Penn. to Ind. south to Ga. & Okla.

2. **R. viscosa** Vent. CLAMMY LOCUST.

Common along roadsides, growing in large clumps or thickets, often like a weed in the Annapolis Valley; scattered elsewhere. June.

Introduced; native in the mts. of Va. to Ga.

8. OXYTROPIS DC.

1. **O. johannensis** Fern., Rhodora **30**: 143. 1928.

Abundant at the northeast end of St. Paul Island, C. B. (Perry, 1931). It was reported from the same island in Macoun's Catalog as *O. arctica* as being collected by McKay.

Western Nfld., eastern Que. south to northern Me. and the St. John Valley in N. B.

9. DESMODIUM Desv.

a. Leaflets 3, ovate and pointed; leaves clustered at the top of the stem; raceme terminal and long-stalked. 1. *D. acuminatum*

a. Leaflets 3, oblong-lanceolate and obtuse; leaves scattered on the stem; racemes not long-stalked. 2. *D. canadense*

1. **D. acuminatum** (Michx.) DC., see Fassett, Rhodora **38**: 96-97. 1936.

Known only from the edge of beech woods along the Gaspereau R., about two miles above White Rock, Kings Co. Local. July. [*D. grandiflorum* (Walt.) DC.].

N. S. to N. D. south to Fla. & Tex.

2. **D. canadense** (L.) DC. CANADA TICKCLOVER.

Collections of this plant exist from along the river above Truro, where it is either very rare or extinct. Robinson (1902, 1906) reports it from each of the three Pictou rivers. Late July. [*Meibomia canadensis* (L.) Kuntze].

N. S. to Man. south to N. C. & Okla.

10. VICIA (Tourn.) L. VETCH

a. Flowers sessile or nearly so in the axils of the upper leaves.
b. Flowers 1-3 in a place; plants annual; calyx-teeth about equal to the tube in length.
c. Flowers 2-3 cm long; pods 4-6 cm long, pubescent and pale tawny at maturity. 1. *V. sativa*
c. Flowers 1-1.8 cm long; pods 3-4 cm long, smooth and black at maturity. 2. *V. angustifolia*
b. Flowers 2-5, in a nearly sessile raceme; plant perennial; calyx-teeth much shorter than the tube. 3. *V. sepium*
a. Flowers in a one-sided spike or raceme with a well-developed peduncle.
d. Flowers 1-6, small, 2-4 mm long; pods short, with 2-4 seeds.
e. Pods hairy, 2-seeded; leaf with 6-8 pairs of leaflets. 4. *V. hirsuta*
e. Pods smooth, 4-seeded; leaf with 4-6 pairs of leaflets. 5. *V. tetrasperma*
d. Flowers numerous, much larger and 12-15 mm long; pods with 6-10 seeds.
f. Flowers narrow, at least 5 times as long as broad; calyx-teeth with thread-like hairy lobes; plant with spreading whitish hairs. 6. *V. villosa*
f. Flowers about 4 times as long as broad or less; calyx-teeth short, the lower long-triangular; plant with appressed pubescence. 7. *V. Cracca*

1. V. sativa L. CULTIVATED VETCH.

Occasional along roadsides and in fields where it has been planted, not persisting.

Naturalized from Eurasia and North Africa; wide spread.

2. V. angustifolia L. WILD VETCH. Fig. 76, a.

Common throughout, especially about towns, seashores, dykelands and railroads. It is extremely variable and is often included as a variety of the preceeding species. The following three varieties are reported. The typical variety has leaflets about 5 mm wide and tapering to a pointed tip. Var. **segetalis** (Thuill.) Koch is very common and has leaflets of about the same width but truncate at the apex and with a tiny mucronate tip. Var. **uncinata** (Desv.) Rouy & Foucaud has very narrow, elongate-linear leaflets which are truncate and mucronate at the apex. In extreme forms the leaves may be less than 1 mm wide. This is found around seaports from Nfld. to Me.

Native of Eurasia; widely introduced in eastern N. A.

3. **V. sepium** L. BUSH VETCH.

Very local; reported from a field at Annapolis (Fernald, 1922). Naturalized from Eu.; N. S. to Ont. southward.

4. **V. hirsuta** (L.) S. F. Gray.

Rare, occasionally found about the edge of the dykelands, and to be expected about towns and seaports.

Introduced from Eu.; scattered from N. S. to Fla., occasionally inland.

5. **V. tetrasperma** (L.) Moench. SLENDER VETCH. Fig. 76, e.

Frequent in the Annapolis Valley and often a bad weed in orchards, gardens, strawberry patches and fields; scattered and becoming more common elsewhere. July.

N. S. to Ont. south to Fla.

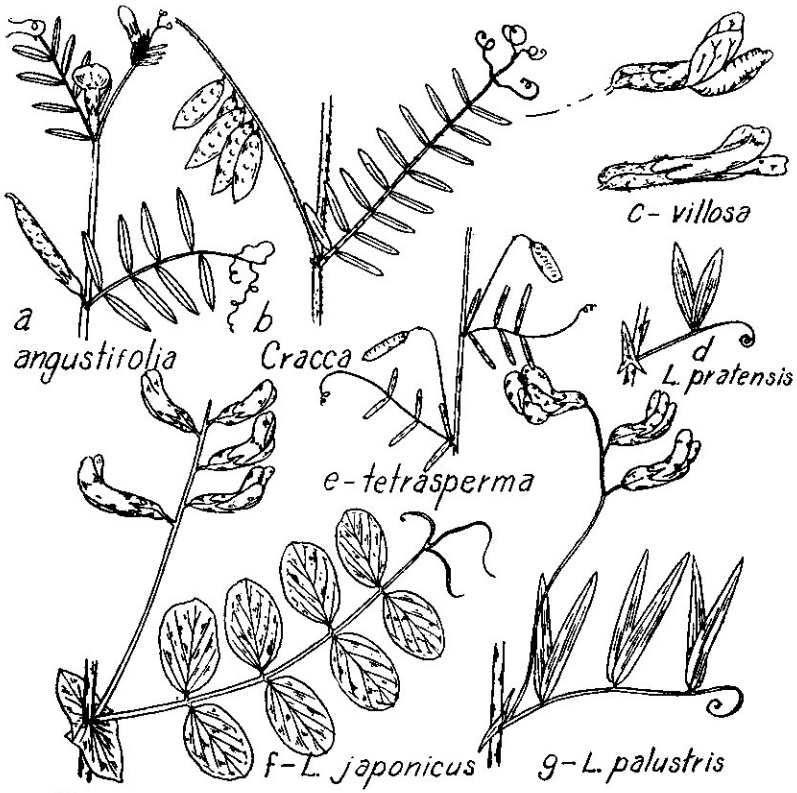


Fig. 76.—**Vicia.** a, **V. angustifolia,** x ½. b, **V. Cracca,** x ½; flower, x 2. c, **V. villosa,** x 2. e, **V. tetrasperma,** x ½. **Lathyrus.** d, **L. pratensis,** showing leaf and stipules, x ½. f, **L. japonicus,** x ½. g, **L. palustris** var. **pilosus,** leaf and flowers, x ½.

6. **V. villosa** Roth. HAIRY OR WINTER VETCH. Fig. 76, c.

Frequently sown, and persisting for a time in open or sandy soil. Occasional throughout Kings Co.; scattered elsewhere. June-Sept.

Native of Eurasia; widely introduced.

7. **V. Cracca** L. TUFTED VETCH. Fig. 76, b.

This is the commonest vetch of the province and is abundant along roadsides throughout; scattered elsewhere in waste places, cultivated ground and about towns. June-Aug.

Nfld. to Minn. southward.

11. LATHYRUS (Tourn.)L. PEA

a. Leaves with but a single pair of leaflets above the stipules.
  b. Petiole widely winged; flowers purplish. 1. *L. sylvestris*
  b. Petiole not winged; flowers yellow (Fig. 76, d). 2. *L. pratensis*
a. Leaves with 2-6 pairs of leaflets; plants native, growing near the sea-shore.
  c. Stipules like an arrow-head, with 2 basal lobes; leaflets 8-12, oval; flowers 7-25 on each peduncle (Fig. 76, f).
    d. Plant glabrous or nearly so. 3. *L. japonicus* var. *glaber*
    d. Plant densely pubescent with fine short erect pubescence. *L. japonicus* var. *pellitus*
  c. Stipules with but one basal lobe (Fig. 76, g).
    e. Mature leaflets 7-23 mm wide, 2-3.5 times as long as wide.
      f. Mature leaflets nearly glabrous. 4. *L. palustris*
      f. Mature leaflets finely pubescent. *L. palustris* var. *macranthus*
    e. Mature leaflets 3-9 mm wide, 5-15 times as long as broad, finely pubescent. *L. palustris* var. *pilosus*

1. **L. sylvestris** L. EVERLASTING PEA.

Cultivated as an ornamental; occasionally escaping to roadsides; several large perennial clumps have been found at South Berwick. July.

Introduced from Eu.; N. S. to Wisc. south to D. C.

2. **L. pratensis** L. YELLOW VETCHLING.

Rare; found sparingly along the North Shore at the edge of fields or along roadsides where it may be locally abundant; Wallace, Springhill Junction, and near Merigomish. July.

Nfld. to N. Y. & Ont.

3. **L. japonicus** Willd., var. **glaber** (Seringe) Fern, see Fernald, Rhodora: **34**: 177-187. 1932. Fig. 76, f.

Common around the coast, usually growing in company with the following variety; found along the strand line, mostly in light or sandy soil. Occasionally, however, as in northern C. B., it may invade fields or grow along the waste places and streets of towns. July and late June. Nfld. south along the coast to N. J.; inland around the Great Lakes; B. C. to Calif. [L. *maritimus* (L.) Bigel.].

Var. **pellitus** Fern. differs from the last only in its pubescence, and is usually found growing mixed with it. Nfld. to Que. & N. J.; northern N. Y. and found about the top of L. Michigan.

4. **L. palustris** L. WILD PEA. See Fernald, Rhodora **13**: 47-52. 1911. Fig. 76, g.

Damp thickets or edges of marshes near the shore, southwestern N. S. and in C. B. Nfld. to Man. south to N. Y. & Mo.; B. C. & Ore. northwards.

Var. **macranthus** (White) Fern. is found on grassy slopes, headlands or wet areas near the coast; around the province and common on Sable Island. Nfld. to Cape Cod, scattered inland across the continent.

Var. pilosus (Cham.) Ledeb. (Map 289) is common around and on the dykelands, along sea-shores and in sea-side swamps and meadows around the whole coast. June 20-July. Lab. to N. Y. and scattered to the West Coast. Var. *linearifolius* Seringe is similar to this variety except that the leaves are glabrous. This has been found on P. E. I. but is as yet unknown from N. S.

Var. **retusus** Fern. & St. John, Boston Proc. Nat. Hist. **36**: 81-82. 1921, differs from all other varieties in having the leaflets broadest near the tip and tapering to a cuneate base. Known only from Sable Island.

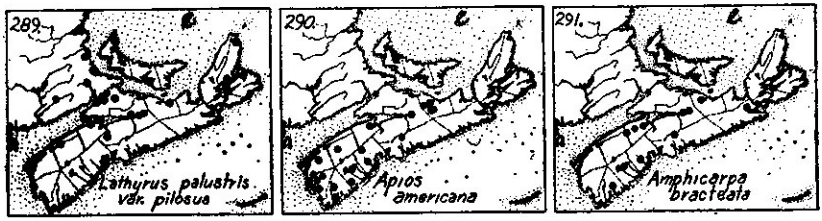
12. **APIOS** (Medik.) Ludwig

1. **A. americana** Medik. GROUND NUT. Fig. 77, b. Map 290. See Rehder, in Rhodora **36**: 88-90. 1934.

Common in thickets in southwestern N. S.; scattered along rivers in the central district east to Pictou Co. Prest (1905) says that he never saw it east of Halifax, but it occurs

in alluvial soil to some extent. Late July. (*A. tuberosa* Moench.).

P. E. I., N. S. to Minn. south to the Gulf of Mexico.



13. **AMPHICARPA** Ell.

1. **A. bracteata** (L.) Fern., Rhodora **35**: 267. 1933. Fig. 77, a. Map 291.

Moist thickets and river banks, abundant locally from Yarmouth to Pictou and Guysborough Co.; scattered in the Annapolis Valley, and rather common along the intervales of Colchester and Pictou Cos. August. [*A. monoica* (L.) Ell.].

N. S. to N. Dak. south to the Gulf of Mexico.

56. **LINACEAE** FLAX FAMILY

a. Flower-part in 5's; plants more than 10 cm high; capsules obscurely 10-celled, with 10 seeds; flax. 1. *Linum*

a. Flower-part in 4's; plants about 3 cm high; capsules with 4 nearly 2-celled carpels, each carpel with 4 seeds. 2. *Radiola*

1. **LINUM** (Tourn.)L. FLAX.

a. Petals blue, 1 cm long or longer; plant 2-6 dm high; leaves 10-30 cm long. 1. *L. usitatissimum*

a. Petals white, 4-8 mm long; plant 8-20 cm high; leaves 4-10 mm long. 2. *L. catharticum*

1. **L. usitatissimum** L. COMMON FLAX.

Formerly planted but not persisting, now rarely seen except where planted or occasionally in waste ground. July-Aug.

Introduced from Eu.; widely distributed.

2. **L. catharticum** L. DWARF FLAX. Fig. 77, c. Map 292.

Scattered on grassy hillsides, roadside banks, or in

fields; Cape Breton west to Pictou Co. It has been introduced from Eu.; or it may possibly be native to C. B. N. S. to Ont.

Fig. 77.—**Amphicarpa.** a, **A. bracteata,** x ½. **Apios.** b, **A. americana,** x ¼. **Linum.** c, **L. catharticum,** x ½. **Radiola.** d, **R. linoides,** x 1. **Oxalis.** e, **O. montana,** x ½. f, **O. europea,** leaf and flower, x ½; fruit, x 1. **Polygala.** g, **P. sanguinea,** x ½.

2. **RADIOLA** Roth

1. **R. linoides** Roth. TINY ALL-SEED. Fig. 77, d.

Discovered at Louisburg by John Macoun over 40 years ago; now scattered along the coast as far as Shelburne Co.; abundant along the shore east of Halifax, where it often grows like grass over some of the wet pasture slopes close to the sea. July-Aug. (*Millegrana* Adans.).

Introduced from Eu.; known only in N. S. in America.

57. OXALIDACEAE WOOD SORREL FAMILY

1. OXALIS L.

a. Plant stemless; flowers with petals white, veined with rose or purple. 1. *O. montana*

a. Plant with leafy stems; flowers small, yellow.

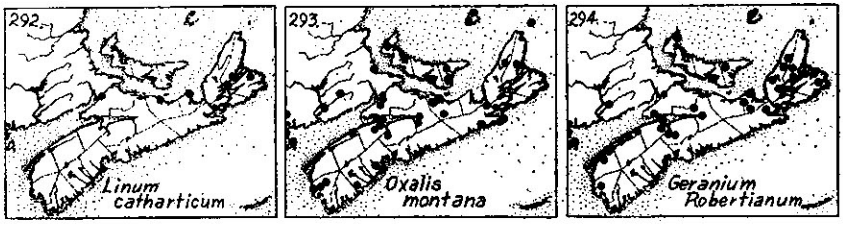
b. Flowers umbellate or solitary with the fruiting pedicels usually horizontally deflexed; capsules crisp-hairy, 15-25 mm long; sepals 4-7 mm long; rarely with rootstocks or stolons. 2. *O. stricta*

b. Flowers cymose; fruiting pedicels spreading or ascending; capsules with scattered spreading hairs or glabrate, 8-12 mm long; sepals 3-5 mm long; plants producing slender horizontal rootstocks or runners. 3. *O. europaea*

1. **O. montana** Raf., see Rhodora **22**: 143-144. 1920. Fig. 77, e. Map 293. WOOD SORREL.

Common throughout, damp woods, mossy banks, along ravines or in wooded swamps. Early June-July. (*O. Acetosella* L. of Gray's Man.).

N. S. to Sask. south to N. Y. and N. C.



2. **O. stricta** L.

Two varieties of this species are known northeastward to P. E. I. However, neither one has as yet been definitely found in N. S. although both probably occur.

P. E. I. to B. C. south to Fla. & Mex.

3. **O. europaea** Jord. YELLOW WOOD SORREL. Fig. 77, f.

Common throughout the province; along roadsides, in thickets, waste ground, fields and near dwellings. Numerous varieties and forms have been described on the basis of the pubescence of the stems and pedicels. (See Wiegand, in Rhodora **27**: 113-130: 133-139. 1925). The commonest form in N. S. is forma **villicaulis** Wieg.

N. S. to N. D. south to Ga. & Ariz.

58. GERANIACEAE GERANIUM FAMILY

a. Leaves palmately lobed or divided; anther-bearing stamens 10; tails of the carpels or seeds not bearded. 1. *Geranium*

a. Leaves pinnately and finely divided; anther-bearing stamens 5; tails of the carpels bearded on the inner face. 2. *Erodium*

1. GERANIUM (Tourn.) L.

a. Flowers large, the petals 15-20 mm long, purplish, much exceeding the calyx; plant perennial with thick crowns and stout rhizomes. 1. *G. pratense*

a. Flowers smaller, the petals less than 10 mm long, shorter to slightly exceeding the calyx; plants annual or biennial, with tap roots.

b. Outer sepals 6-10 mm long, with slender awns.

c. Leaves divided, with the terminal division stalked, and all divisions with broad mucronate lobes; beak of the fruit smooth. 2. *G. Robertianum*

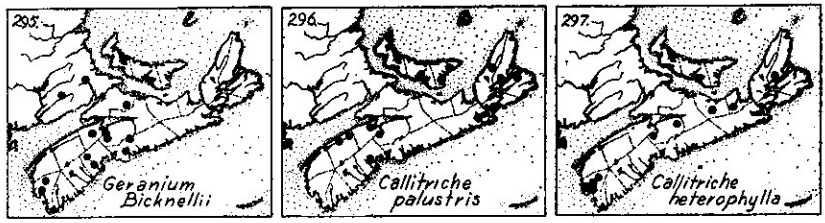
c. Leaves merely cleft, the divisions narrowly divided with acute lobes; beak of the fruit pubescent. 3. *G. Bicknellii*

b. Outer sepals 2.5-4 mm long, awnless; leaves orbicular in outline, mostly less than 3 cm wide. 4. *G. molle*

1. **G. pratense** L. MEADOW GERANIUM. Fig. 78, c.

Often grown as a garden plant, scattered as an escape in various places in the province; Yarmouth, Bridgewater, Wallace, Pictou and Springville. June-Aug.

Introduced from Eurasia; Nfld. to Me., Mass. & N. Y.



2. **G. Robertianum** L. HERB ROBERT. Fig. 78, a. Map 294.

Common from Digby northeastward to northern C. B.; cold ravines, rocky woods, talus slopes, and rich woods. It is growing mostly on rather rich soil or in alkaline areas. It is abundant along the North Mt. in the Annapolis Valley, and in rich hardwoods eastward. June-Sept.

Nfld. to Man. south to Penn.; Eurasia and Africa.

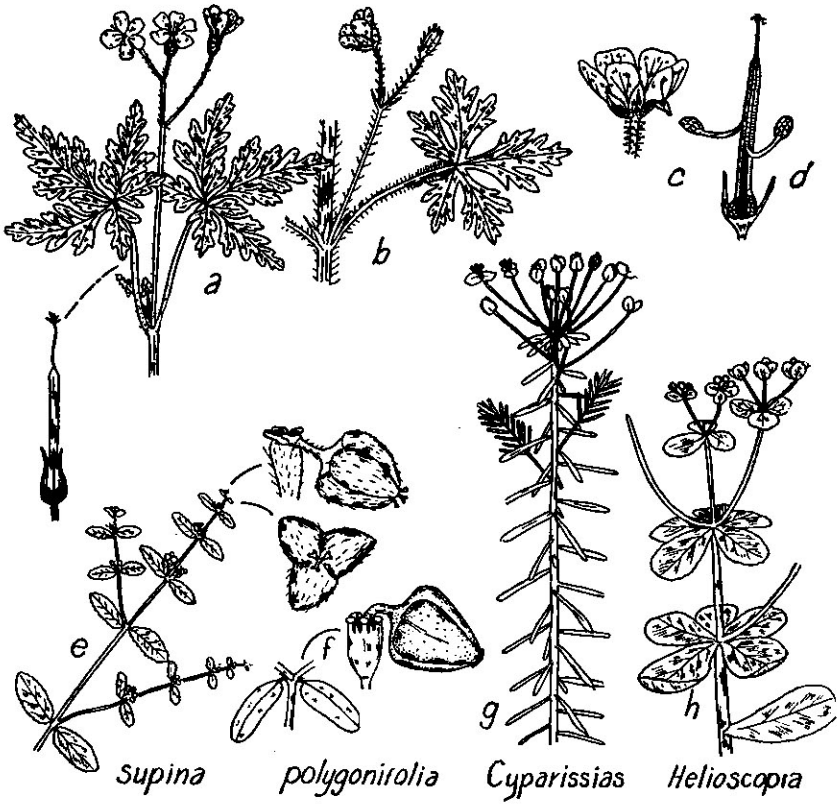


Fig. 78. **Geranium.** a, **G. Robertianum,** x ½; fruit, x ½. b, **G. Bicknellii,** x ½. c, **G. pratense,** flower. d, representative mature flower to show the fruits twisting off. **Euphorbia.** e, **E. supina,** x 1/3; fruits, x 5. f, **E. polygonifolia,** leaves, x ½; fruit, x 5. g, **E. Cyparissias,** x ½. h, **E. Helioscopia,** tip of branch, x ½.

3. **G. Bicknellii** (Britt.) Fern., see Rhodora **44**: 92. 1942. Fig. 78, b. Map 295.

Rather rare, usually found in recently-burnt or cleared areas from Yarmouth east to Halifax and Cumberland Cos. Late June-July.

Nfld. to B. C. south to N. Eng., N. Y. & Utah.

4. **G. molle** L.

The only collection seen from northeastward of Mass. was one from Annapolis, collected by Geo. Morris, July 30, 1902.

Introduced from Eu.; N. S. to B. C. & southward.

2. ERODIUM L'Her.

1. **E. circutarium** L'Her. STORKSBILL.

Centreville, Kings Co., scattered in sandy ground. June-Sept.

N. S. to Ont. south to Texas, often a bad weed.

59. POLYGALACEAE MILKWORT FAMILY

1. POLYGALA (Tourn.) L.

a. Flowers in an erect raceme, short-pedicelled; upper part of the underground rootstocks covered with cleistogamous flowers. 1. *P. polygama*

a. Flowers in a dense globular to broadly oblong head; rootstocks without cleistogamous flowers. 2. *P. sanguinea*

1. **P. polygama** Walt., var. **obtusata** Chodat., see Rhodora **42**: 258-259. 1940. MILKWORT.

Very rare, probably introduced; Halifax and Clementsvale in Annapolis Co.

N. S. to Man. south to Fla. & Tex.

2. **P. sanguinea** L. Fig. 77, g.

Occasional in the northern part of Hants and Cumberland Cos.; poor or acid fields, damp slopes and in open woods or bush.

N. S.; Ont. to Minn. south to N. C. & Kans.

60. EUPHORBIACEAE SPURGE FAMILY

a. Flowers not enclosed in an involucre, with a true calyx; plants large, erect, with thinnish leaves on long petioles.

b. Staminate flowers in a terminal interrupted bractless spike; leaves opposite. 1. *Mercurialis*

b. Staminate and pistillate flowers in the axils of the leaves, usually inclosed in a large palmately-lobed bract; leaves alternate. 2. *Acalypha*

a. Flowers included in a cup-shaped small involucre, the staminate consisting of a single stamen, and the pistillate of a 3-lobed pistil, the whole group often similar to a single flower in appearance (Fig. 78, e-h). 3. *Euphorbia*

1. MERCURIALIS (Tourn.) L.

1. **M. annua** L. HERB MERCURY.

Rare, doubtfully persisting; Pictou, ballast heaps, collected by Macoun, July 23, 1883.

Introduced from Eu.; N. S. to Fla.

2. ACALYPHA L.

1. **A. rhomboidea** Raf., see Weatherby, Rhodora **39**: 14-16. 1937. THREE-SEEDED MERCURY.

Along stones and grass along roadsides, Clearland, Lunenburg Co.; the only collection known for the province.

Abandoned fields, N. S. to Minn. south to Fla. & Kans.

3. EUPHORBIA L. SPURGE.

Wheeler, Louis Cutter. *Euphorbia* subgenus *Chamaesyce* in Canada and the United States exclusive of southern California. Rhodora **43**: 97-154; 168-205; 223-286. 1941.

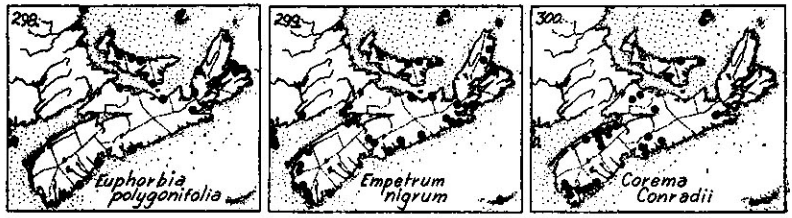
a. Flowers axillary or on short leafy branches; leaves opposite, 6-12 mm long; plants low and prostrate (Fig. 78, e).
  b. Plant glabrous throughout; leaves not toothed, rather thick and shiny; seeds smooth. 1. *E. polygonifolia*
  b. Plant pubescent to long-hairy; leaves smooth to minutely toothed; seeds minutely roughened or wrinkled.
    c. Ovary and capsule hairy with incurved hairs; leaves sub-entire; seeds about 1 mm long, whitish-brown. 2. *E. supina*
    c. Ovary and capsule glabrous; leaves finely toothed; seeds 1.1-1.3 mm long, smooth to slightly wrinkled, grayish-brown. 3. *E. vermiculata*

a. Flowers forming a sort of umbel at the top of the erect stems; lower leaves all alternate, serrate or entire; plants 1-10 dm high.
  d. Plant perennial; leaves entire, linear or nearly so; seeds smooth dark-colored.
    e. Stem-leaves 4-12 mm wide. 4. *E. Esula*
    e. Stem-leaves 1-3 mm wide. 5. *E. Cyparissias*
  d. Plants annual or biennial; leaves ovate to obovate; seeds pitted or reticulated, light to ash-colored.
    f. Leaves finely serrate. 6. *E. Helioscopia*
    f. Leaves entire. 7. *E. Peplus*

1. **E. polygonifolia** L. SEASIDE SPURGE. Fig. 78, f. Map 298.

Sandy beaches above high tide level, samp dunes and sand flats; on the South Shore from Shelburne to Lunenburg Co.; scattered through C. B. and along Northumberland Strait.

Magdalen Islands south to Ga.; shores of the Great Lakes.



2. **E. supina** Raf., see Rhodora **43**: 254. 1941. CREEPING SPURGE. Fig. 78, e.

Occasionally introduced and spreading; along the Salmon R. above Truro; a weed at Kentville; occasionally elsewhere.

N. S.; Que. & Ont.; general in the eastern States.

3. **E vermiculata** Raf. HAIRY SPURGE.

Sparingly introduced, and as yet found only around railroad stations: Windsor, Weymouth and North Sydney. Reported as *E. hirsuta* (Torr.) Wiegand.

N. S. to Ont. & Mich. south to Penn.; B. C. to N. M.

4. **E. Esula** L., including *E. virgata* Wald. & Kit.

Collected by H. Groh at Wilmot, June 26, 1928; and at Annapolis on the same date. June-July.

N. S. to Mich. south to N. J.

5. **E. Cyparissias** L. CYPRESS SPURGE. Fig. 78, g.

Scattered as an escape from gardens; often seen around cemetaries, along roadsides and in waste places. Generally the plants do not set seed; but on one farm near West R., Pictou Co., both staminate and pistillate plants were present, and the weed had over-run the fields and was becoming almost impossible to control. June-Aug.

N. S. to Colo. south to Va.; native of Eu.

6. **E. Helioscopia** L. SUN SPURGE. Fig. 78, h.

Waste places and roadsides, occasional throughout, but rarely in any abundance.

Introduced from Eu. and escaped from old gardens.

7. **E. Peplus** L. PETTY SPURGE.

Occasional in towns and waste places as an introduction; collected long ago in the streets of Pictou; collected by H. Groh at Windsor, July 8, 1930.

Native of Eu.; N. S. to Iowa south to Penn.

61. CALLITRICHACEAE WATER-STARWORT FAMILY

1. CALLITRICHE L.

a. Fruit longer than broad, slightly notched, each half with the two lobes sharply keeled or narrowly winged, and separated by a wide groove. 1. *C. palustris*

a. Fruit as broad as long or broader, widely notched, each half with the lobes obtusely keeled and separated by narrow groove. 2. *C. heterophylla*

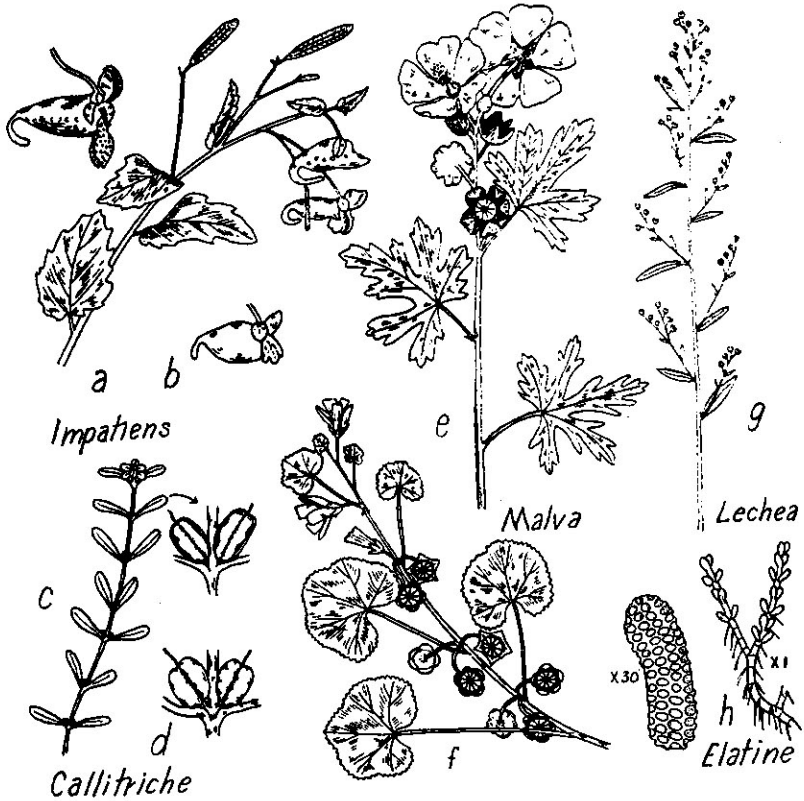


Fig. 79.—**Impatiens.** a, **I. biflora,** x ½. b, **I. pallida,** flower, x ½. **Callitriche.** c, **C. palustris,** x ½. fruits, x 10. d, **C. heterophylla,** fruits, x 10. **Malva.** e, **M. Moschata,** x ½. f, **M. neglecta,** x ½. **Lechea.** g, **L. intermedia,** x ½. **Elatine. E. minima,** plant and seed.

1. **C. palustris** L. Fig. 79, c. Map 296. WATER-STARWORT

Common in ponds, along streams and on wet mud

from Annapolis County and Lunenburg to C. B.; probably absent from most of the acidic regions. Common throughout N.A.; & Eu.

2. **C. heterophylla** Pursh. Fig. 79, d. Map 297.

The only species seen by the Gray Herbarium expedition in the southwestern counties; scattered through the province on habitats similar to the preceeding.

Nfld. to Man. south to Fla. & Colo.

62. EMPETRACEAE. CROWBERRY FAMILY

a. Plants prostrate or extensively trailing; flowerers scattered, solitary in the axils of the leaves; fruit a berry; bogs and seacoasts. 1. *Empetrum*

a. Plants bushy and erect, 1-6 dm high, in extensive mats or clumps; flowers in terminal heads; fruit dry, with 3 nutlets; sandy or rocky barrens. 2. *Corema*

1. EMPETRUM. (Tourn.)L. CROWBERRY

Fernald, M.L. & K.M. Wiegand. The genus *Empetrum* in North America. Rhodora **15**: 211-217. 1913.

a. Branches minutely hairy or smooth, leaves reflexed with age; berries black, about 5 mm thick. 1. *E. nigrum*

a. Branches whitish-woolly; leaves not reflexed with age; berries reddish.

b. Leaves loosely divergent, loosely woolly on the margins, those of the leading shoots with blades 4.5-6.5 mm long; fruit red to tomentose on the margins, 2.5-4 mm long; fruit pinkish or light purplish black, 5-7 mm thick. 2. *E. atropurpureum*

b. Leaves ascending, becoming only slightly divervent, white tomentose on the margins, 2.5-4 mm long; fruit pinkish or light reddish, becoming translucent, 4-5 mm thick. 3. *E. Eamesii*

1. **E. nigrum** L. Fig. 80. Map 299. BLACK CROWBERRY.

Bogs, acid barrens, sea-cliffs and headlands around the whole province; in places in the southern region of acidic rocks it is one of the predominant plants in bogs; inland and northward it is rarer and confined to more exposed locations; characteristic of cliffs along the Bay of Fundy; abundant in northern C. B. and on Sable Is.

Greenland to Alaska south to Me. and to the mts. of N. Eng.

2. **E. atropurpureum** Fern. & Wieg. PURPLE CROWBERRY.

A collection made by Macoun, 1883, from Point Plea-

sant, Halifax Co., belongs to this species. It is scattered along the North Shore of P.E.I., and grows in mats in the hollows of the sand hills at Bothwell. [E. *nigrum* var. *andinum* (Philippi) DC.].

P.E.I. south to Me. & N.H., and probably of scattered distribution along the coast or on the outer islands.

3. **E. Eamesii** Fern. & Wieg.

Rare, but like the last it may prove to be relatively common along the outer Atlantic Coast. Fernald (1925) reports it from the northeastern tip of the province; and it was collected by Dore on the headlands of Halifax Co.

Common in Nfld. and adjacent Lab.; St. Pierre & Miquelon.

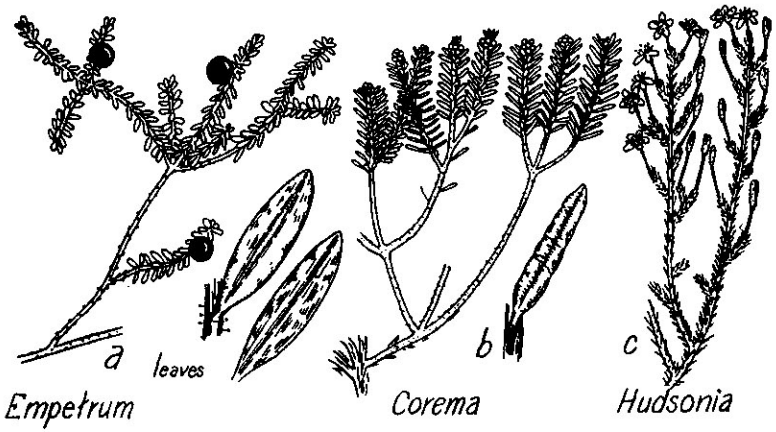


Fig. 80.—**Empetrum.** a, **E. nigrum,** x ½; leaves showing the lower sides, x 5. **Corema.** b, **C. Conradii,** x ½, leaf, x 5. **Hudsonia.** c, **H. ericoides,** x ½.

2. COREMA D. Don.

1. **C. Conradii** Torr. Fig. 80. Map 300. BROOM CROWBERRY.

Sandy or rocky soils; scattered in southern Yarmouth and Shelburne Cos.; common on the sand plains of the Annapolis Valley, and in Colchester and Cumberland Cos. on the sandiest soils; on the rocky barrens of Halifax Co., and scattered east to Guysborough.

Nfld. south to N.J. near the coast.

63. ANACARDIACEAE. SUMACH FAMILY

1. RHUS L.

a. Leaves pinnate compound, with numerous leaflets; tall erect shrubs. 1. *R. typhina*

a. Leaves with 3 leaflets; low shrubs, often prostrate.

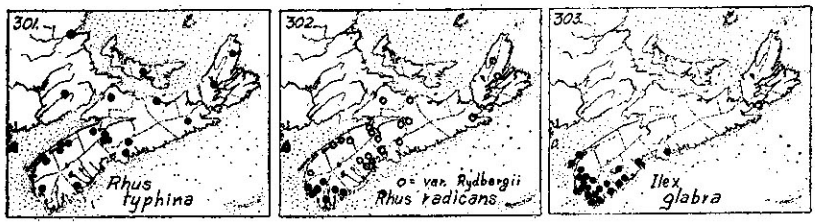
b. Stems strongly woody; plants much branched; erect, trailing or climbing; with aerial roots; leaves alternately scattered along the branches, glabrous. 2. *R. radicans*

b. Stems woody only near the creeping base; plant simple, or very sparingly branched, without aerial roots; leaves aggregated near the top of the stem, often stiffly hairy on the veins beneath. *R. radicans* var. *Rydbergii*

1. **R. typhina** L. Fig. 82, a. Map 301. STAGHORN SUMACH.

Abundant in the southwestern counties, becoming rarer to northern C.B.; edges of woods, in dry or rocky soil, along roadsides, or open areas on hillsides. The pubescence is very variable and may at times be almost lacking [*R. hirta* (L.)Sudworth].

N.S. to S.D. south to Ga. & Miss.



2. **R. radicans** L.* Fig. 82, b. Map 302. POISON IVY.

See Fernald in Rhodora **43**: 589-599. 1941.

Restricted to the southwestern counties; thickets, open woods, along roadsides or damp areas, scattered and rarely becoming obnoxious. (*R. toxicodendron* of earlier manuals). N.S. and southern Que. to Minn. south to Fla. & Ky.

Var. **Rydbergii** (Small)Rehd. is scattered throughout the province on stony land, rocky woods, wet roadsides, around lakes and in damp shady spots. It is rarely common although specimens are present from most areas. In central N.S. it is seen but once or a few times a year; along the North Shore it is scattered along roadsides; luxuriant on some of the gypsum hillsides near Windsor.

N.S. & Gaspe south to Tex. and west to the West Coast.

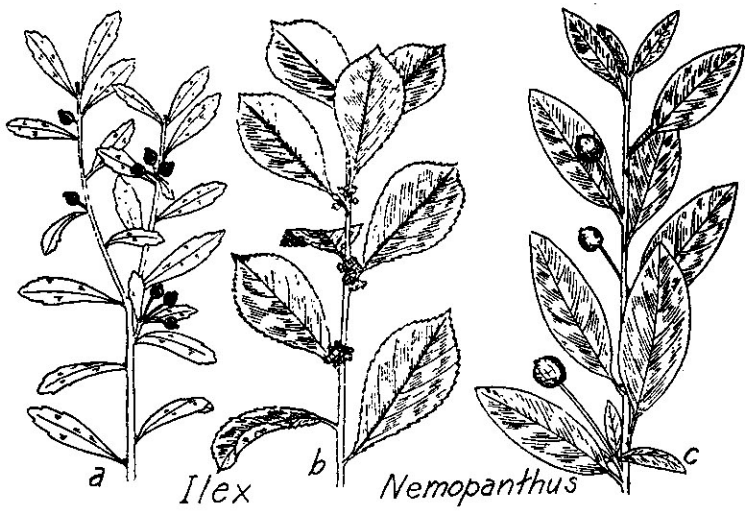


Fig. 81.—**Ilex.** a, **I. glabra,** with young fruits, x ½. b, **I. verticillata** in flower, x ½. **Nemopanthus.** c, **N. mucronata,** x 1/3.

64. AQUIFOLIACEAE HOLLY FAMILY

a. Leaves never entire; petals united at the base; pedicels of the fruit less than 1 cm long; flowers mostly in clusters (Fig. 81, a, b). 1. *Ilex*

a. Leaves entire, or rarely with a few teeth; petals not united; pedicels of fruits more than 1 cm long; flowers solitary, or a few together (Fig. 81, c). 2. *Nemopanthus*

1. ILEX L. HOLLY

a. Leaves leathery, bluntly toothed near the end, smooth and shining green, turning black when pressed; fruit black. 1. *I. glabra*

a. Leaves thinner, toothed, dull and veiny; fruit red. 2. *I. verticillata*

1. **I. glabra** (L.)Gray. INKBERRY. Fig. 81, a. Map 303.

Common to local in Digby and Yarmouth Cos., becoming rarer east to Halifax Co.; rocky barrens, swamps, dense spruce woods or dry hillsides. Mid-July.

N. S.; Mass. south to Fla.

2. **I. verticillata** (L.)Gray. BLACK ALDER, CANADA HOLLY. Fig. 81, b.

Common throughout, often fruiting abundantly with the hard red berries persisting after the leaves fall in autumn. Very variable and grading into the following varieties. Var.

tenuifolia (Torr.)S. Wats. is a woodland form with the leaves larger and thinner, obovate, and with the flowers tending to be solitary. Damp woods, Windsor Junction; moist, rocky wooded slope, Tusket; and Deception L., Shelburne Co. (Fernald, 1922). Var. **padifolia** (Willd.) Torr. & Gray has the leaves tomentulose over the whole surface beneath. Wet, boggy thickets near Louis L., Port Joli, Shelburne Co. (Fernald, 1921). Var. **fastigiata** (Bickn.) Fern. has dense ascending branches; leaves mostly oblong-lanceolate and only 2-4 cm long, acuminate and cuneate at the base. Spruce woods, thickets and wet woods, scattered in Yarmouth and Shelburne Cos. (Fernald, 1921, 1922). Mid-July.

Nfld. to Wisc. south to Fla.

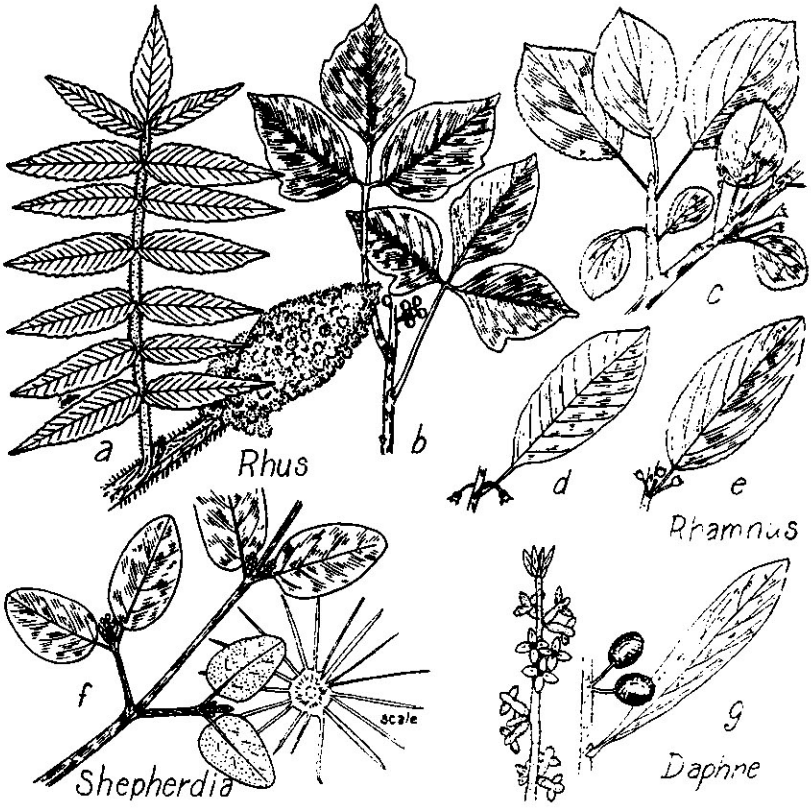


Fig. 82.—**Rhus.** a, **R. typhina,** fruiting twig, x ¼. b, **R. radicans,** x ¼. **Rhamnus.** c, **R. cathartica,** x ½. d, leaf and flowers of **R. Frangula,** x ½. e, **R. alnifolia,** x ½. **Shepherdia.** f, **S. canadensis,** twig, and leaf-scale much enlarged. **Daphne.** g, **D. Mezereum,** flowering branch, x ½; fruiting twig, x ½.

2. NEMOPANTHUS Raf.

1. **N. mucronata** (L.)Trel. FALSE HOLLY. Fig. 81, c.

Common throughout; wet woods, edges of bogs, and in low barrens, rarely absent in the proper habitat. June 1.

Nfld. south to the mts. of Va. west to Wisc.

65. ACERACEAE MAPLE FAMILY

1. ACER Lindl. MAPLE

a. Leaves pinnately divided; flowers appearing with the leaves, without petals; wings of the fruit stout and incurved, the two halves almost separate. 1. *A. Negundo*

a. Leaves palmately lobed only.

b. Leaf-margins not finely toothed, with large lobes only; flowers before or with the leaves.

c. Flowers drooping on long pedicels, without petals; wings of the fruit scarcely divergent; leaves thinnish with long pointed lobes. 2. *A. saccharum*

c. Flowers erect in a stout corymb, with large petals; wings of the fruit large, widely spreading; leaves thick, dark green, with shore lobes. 3. *A. platanoides*

b. Leaf-margins finely toothed.

d. Flowers in dense clusters, appearing before the leaves; leaves whitened beneath firm, not soft hairy; trees.

e. Petals none; fruit woolly when young; leaves closely serrate only on the upper part of the long lobes; wings of fruit wide, incurved. 4. *A. saccharinum*

e. Petals present; fruit smooth, with narrower lobes; leaves evenly serrate around the whole margin. 5. *A. rubrum*

d. Flowers in racemes, appearing after the leaves; leaves green beneath, thin, and soft hairy.

f. Racemes drooping; petals about 5 mm long; leaf finely serrate, almost fringed; bark of young growth striped with white; wings of fruit widely spreading. 6. *A. pensylvanicum*

f. Racemes erect in flower and fruit; petals about 2 mm long; leaf coarsely serrate; bark of young branches reddish, not striped; wings of fruit scarcely spreading. 7. *A. spicatum*

1. **A. Negundo** L. BOX ELDER, MANITOBA MAPLE. Fig. 83.

This rapidly growing tree is frequently planted about towns and along roadsides, often escaping. It is well established above Bridgewater, and is often seen as an escape in the Annapolis Valley.

Introduced from further west.

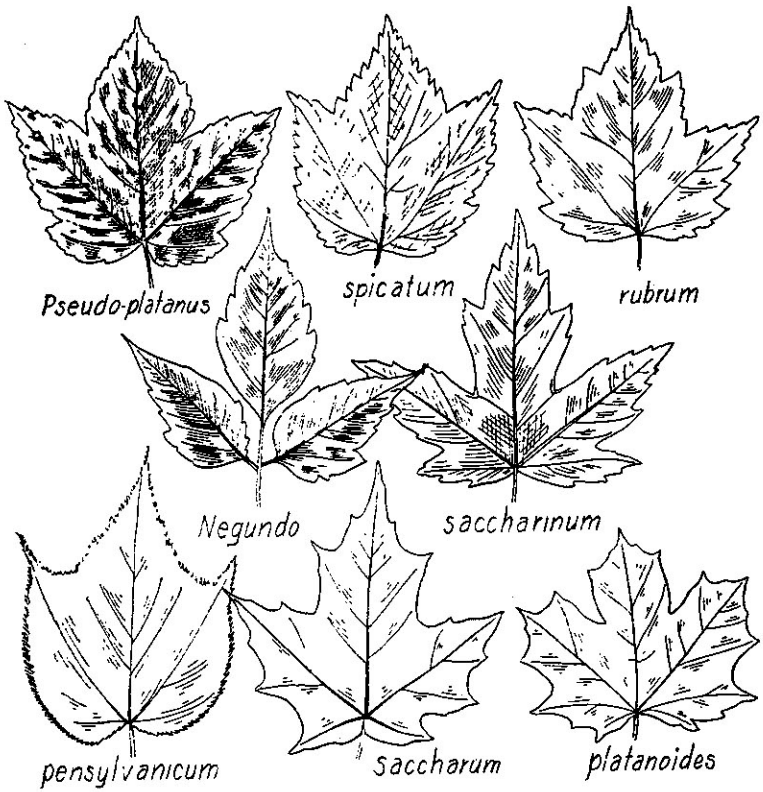


Fig. 83.—**Acer**; leaves, x ½.

2. **A. saccharum** Marsh. SUGAR MAPLE. Fig. 83.

Found throughout; commonest and best developed in well-drained soils and on the slopes of hills in the Cobequids and east to northern C.B. It is also planted extensively as a shade tree. Early May.

Nfld. to Man. south to Fla.

3. **A. platanoides** L. NORWAY MAPLE. Fig. 83.

Often planted as a shade tree or ornamental, occasionally found on roadsides. Forms with reddish leaves, var. **Schwedleri** Nichols., are frequent.

Introduced from Eu.; and widely planted.

4. **A. saccharinum** L. SILVER MAPLE. Fig. 83.

Occasionally planted as a shade tree, but the trees are usually much split and torn by the wind and snow. It is not native to the province and earlier records usually belong to *A. saccharum*. Early May.

N.B. to Dakota south to Fla.

5. **A. rubrum** L. RED OR SWAMP MAPLE. Fig. 83.

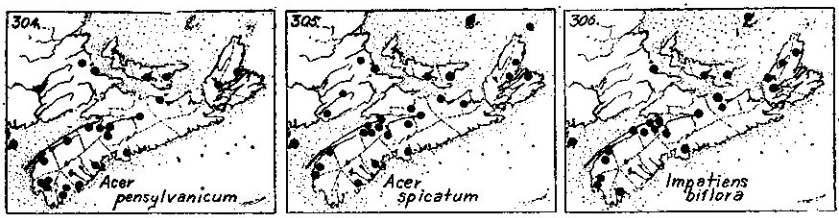
Very common throughout, and becoming increasingly abundant in cut-over areas, burnt land and in barrens. The tree is rather small in general, much branched, and of inferior quality. Var. **tomentosum** (Desv.)K. Koch has the leaves whitish-pubescent or soft tomentose beneath. The maples of the province are very variable in this respect, and show all intermediates between a glabrous and a tomentose condition. Var. **trilobum** K. Koch, (Var. *tridens* Wood), has the leaves rounded at the base and with only three terminal lobes. This is occasional from Yarmouth to northern C.B. along lake margins or wet thickets. In many places, as about Halifax, it grades into the species. Early May or late April.

Nfld. to Man. south to Fla.

6. **A. pensylvanicum** L. STRIPED MAPLE. Fig. 83. Map 304.

Throughout, rarely abundant; rocky woods, along streams, in rich hardwoods, and wooded slopes. June.

N.S. to Ont. south to the mts. of Ga.



7. **A. spicatum Lam.** MOUNTAIN MAPLE. Fig. 83. Map 305.

Common throughout; characteristic of high banks or near the tops of ravines, along rivers or brooks, wet thickets or moist roadsides, rare in dense woods. It is especially abundant on the highlands of northern C.B. June.

Nfld. to Man. south to Conn. and the mts. of Ga.

66. BALSAMINACEAE TOUCH-ME-NOT FAMILY

I. IMPATIENS (Riv.)L.

a. Flowers pale yellow, sparingly dotted; sac broader than long; spur short, at right angles to the sac (Fig. 79, b). 1. *I. pallida*

a. Flowers orange, thickly spotted with reddish-brown; sac longer than broad, spur long and strongly incurved (Fig. 79, a). 2. *I. biflora*

1. **I. pallida** Nutt. PALE TOUCH-ME-NOT. Fig. 79, b.

Rich alluvial soil, damp thickets or along river intervales; rather rare from Kings Co. to northern C.B.,becoming more common eastwards.

N.S. west to Sask, south to Ga.

2. **I. biflora** Walt. SPOTTED TOUCH-ME-NOT. Fig. 79, a. Map 306.

Common throughout the northern region from Yarmouth to C.B.; moist open places, wet ground, along brooks and ditches and in wet thickets. It prefers alluvial ground where the organic matter and nitrogen is high and is much commoner than the preceeding species. Numerous color forms have been described, but only occasionally are plants with paler flowers seen. Although the map shows a limited distribution, there seems to be no good reason why this plant has not been collected throughout. July-Aug.

Nfld. to Sask. south to Fla. & Nebr.

67. RHAMNACEAE BUCKTHORN FAMILY

I. RHAMNUS (Tourn.)L.

a. Leaves not toothed, with 7-8 pairs of veins straight nearly to the margins; nutlets smooth. 3. *R. Frangula*

a. Leaves serrate, with 2-5 pairs of veins curving towards the tip; nutlets grooved.

b. Flowers with parts in 4's; petals present; leaves blunt or with a short sharp point, with 2-3 pairs of main veins; introduced. 1. *R. cathartica*

b. Flowers with parts in 5's; petals absent; leaves acute, with 4-5 pairs of main veins. 2. *R. alnifolia*

1. **R. cathartica** L. COMMON BUCKTHORN. Fig. 82, c.

Formerly planted for hedges and as an ornamental shrub throughout the province, now persisting in many places, or locally common as an escape. It is common in many places in the Annapolis Valley and about Pictou. This and the next species are alternate hosts for the crown rust of oats; and leaves of both species are found with abundant infection during June. Late May-June.

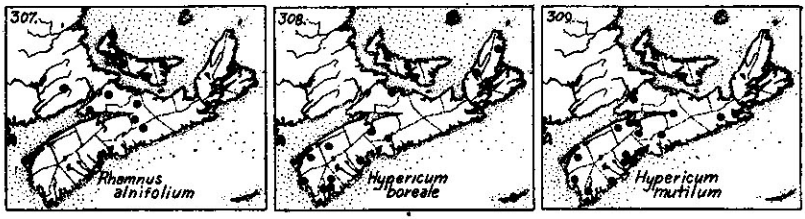
Introduced from Eu.; formerly widely planted.

2. **R. alnifolia** L'Her. ALDER-LEAVED BUCKTHORN. Fig. 82, e. Map 307.

Swampy woods and boggy meadows from Hants Co.

to northern C.B.; on intervales on alluvial soil, or on alkaline soil or near marl. Nichols (1918) says that it is characteristic of poorly-drained swamps in northern C.B. May 15-June.

Nfld. to B.C. south to N.J. & Calif.



3. R. Frangula L. Fig. 82, d.

Scattered shrubs are found about some of the towns, as Wolfville and Truro. South of Amherst it occurs along the roadside and has spread into a pasture where it grows like alder bushes. June.

Introduced from Eu.; locally naturalized.

68. VITACEAE GRAPE FAMILY

I. PARTHENOCISSUS Planch.

a. Tendrils with 5-8 branches, ending in adhesive tips; cymes of flowers mostly forming terminal panicles. 1. *P. quinquefolia*

a. Tendrils with 3-5 branches, rarely with an adhesive disk; cymes solitary on peduncles 3-7 cm long. 2. *P. inserta*

1. **P. quinquefolia** (L.)Planch. VIRGINIA CREEPER, BOSTON IVY.

Fernald, Rhodora **41**: 430. 1939, states that all material of the genus from the Maritime Provinces belonged to *P. inserta*(Kern.)K. Fritsch. The introduced form, however, is mostly *P. quinquefolia* and it is very commonly cultivated and found around old houses, and escaping or persisting along roadsides.

N. Eng. to Wisc. south to Fla. & Mex.; introduced.

2. **P. inserta** (Kern.)K. Fritsch, Journ. Arnold Arb. **20**: 419. 1939.

Occasional from Annapolis to Yarmouth, seen along the roadside near the river at Stewiacke, Colchester Co., clambering over low shrubs and stone walls; doubtfully native.

Eastern Can. to Man. south to N.Y., Kans. & Tex.

69. MALVACEAE MALLOW FAMILY

a. Plants 6-12 dm high, stout; leaves heart-shaped and acuminate; calyx without involucral bracts. 1. *Abutilon*

a. Plants 1-8 dm high; leaves lobed, or rounded at the tip; calyx with involucral bracts.

b. Corolla yellow; involucral bracts 6 or more; column of stamens bearing anthers for a considerable part of its length. 2. *Hibiscus*

b. Corolla pink or white; involucral bracts 2 or 3; column of stamens with anthers only at the top. 3. *Malva*

1. ABUTILON (Tourn.)Mill.

1. **A. Theophrasti** Medic. VELVET LEAF.

Rare; collected near Kentville.

Naturalized from India; occasionally seen in eastern Amer.

2. HIBISCUS L.

1. **H. Trionum** L. FLOWER-OF-AN-HOUR.

Occasionally seen as a garden escape or about greenhouses.

Native of southern Eu.; widely introduced.

3. MALVA (Tourn.)L.

a. Flowers sessile or very short-pedicelled in the axils of the leaves; plants erect; leaves shallowly lobed, with angular teeth, often crisped. 1. *M. verticillata*

a. Flowers and fruits long-pedicelled;

b. Stem leaves deeply lobed or cut; petals 6-8 times as long as the calyx; plants erect. 2. *M. moschata*

b. Stem leaves with shallow rounded lobes; petals about twice as long as the calyx; plants prostrate. 3. *M. neglecta*

1. **M. verticillata** L. WHORLED MALLOW.

Waste places or as a weed about towns, rare: Windsor. Various mallows were formerly cultivated as ornamentals and have been reported from the province, but it is questionable whether they exist as escapes.

Adventive from Eu.; N.S. to S.D. south to Penn.

2. **M. moschata** L. MUSK MALLOW. Fig. 79, e.

Common in waste places, roadsides, and old gardens in many parts of the province. In the Annapolis Valley it is

often showy along roads or in old hay-fields; rather local. Late June-July.

Native of Eu.; Nfld. to B.C. south to N.J., Va. & Wisc.

3. **M. neglecta** Wallr. DWARF MALLOW, CHEESES. Fig. 79, f.

Becoming a weed in many parts of the Annapolis Valley; scattered elsewhere in towns and waste places. June-Oct. (*M. rotundifolia* in part of most authors). The various species of small-flowered mallows are keyed out in Rhodora **39**: 98-99. 1937. This is the only one observed so far in N.S., although other ones have been seen from neighboring regions.

Introduced from Eu.; widely distributed.

70. HYPERICACEAE ST. JOHN'S WORT FAMILY

1. HYPERICUM (Tourn.)L. ST. JOHN'S WORT.

a. Plant stout, woody at the base, much branched, 4-10 dm high; stamens numerous in 3-5 clusters; weed. 1. *H. perforatum*

a. Plant slender, not woody, 0.5-4, rarely to 5 dm high; native plants of low ground.

b. Leaves with 3-7 strong veins from the base, or narrow and with a mid-rib only; stamens 5-12.

c. Leaves about twice as long as broad, their bases clasping the stem.

d. Upper flowers with reduced but rounded leaves at the base; branches of the inflorescence appearing like continuations of the stem. 2. *H. boreale*

d. Upper flowers with narrow pointed scale-like leaves at their base 3. *H. mutilum*

c. Leaves 3 or more times as long as broad; leaf-bases not clasping the stem.

e. Leaves 1-4 mm wide, 1-3 veined; fruits 3.5-5.5 mm long. 4. *H. canadense*

e. Leaves 2-6 mm wide, 3-5 veined; fruits 2-4 mm long. 5. *H. dissimulatum*

b. Leaves pinnately-veined, with veins coming at intervals from the mid-rib.

f. Petals yellow; leaves less than 1 cm wide; stamens numerous. 6. *H. ellipticum*

f. Petals purplish; leaves 1.5 cm or more in width.

g. Styles on the mature fruit 2-3 mm long; sepals pointed and 5-7 mm long. 7. *H. virginicum*

g. Styles on the mature fruit 0.5-1 mm long, rarely to 2 mm; sepals mostly blunt, 2.5-5 mm long. *H. virginicum* var. *Fraseri*

1. H. perforatum L. COMMON ST. JOHN'S WORT. Fig. 84, a.

Scattered throughout the province; abundant in the

Annapolis Valley; mostly on light or sandy soil, on the gravelly borders of rivers, or on well-drained roadsides. July 10-Aug.

Introduced from Eu.; widely naturalized.

2. **H. boreale** (Britt.) Bickn. Map 308. Fig 84, d.

Common throughout and on Sable Is.; low ground, edges of ponds, etc. July-Aug.

Nfld. to Ont. south to Ind. & Va.

3. **H. mutilum** L., var. **parviflorum** (Willd.) Fern., Rhodora **41**: 549. 1939. Map 309. Fig. 84, c.

Common throughout the peninsula, but not collected on C.B. Island; swamps, borders of ponds, river shores, and wet areas. July-Aug.

N. S. to Man. southward.

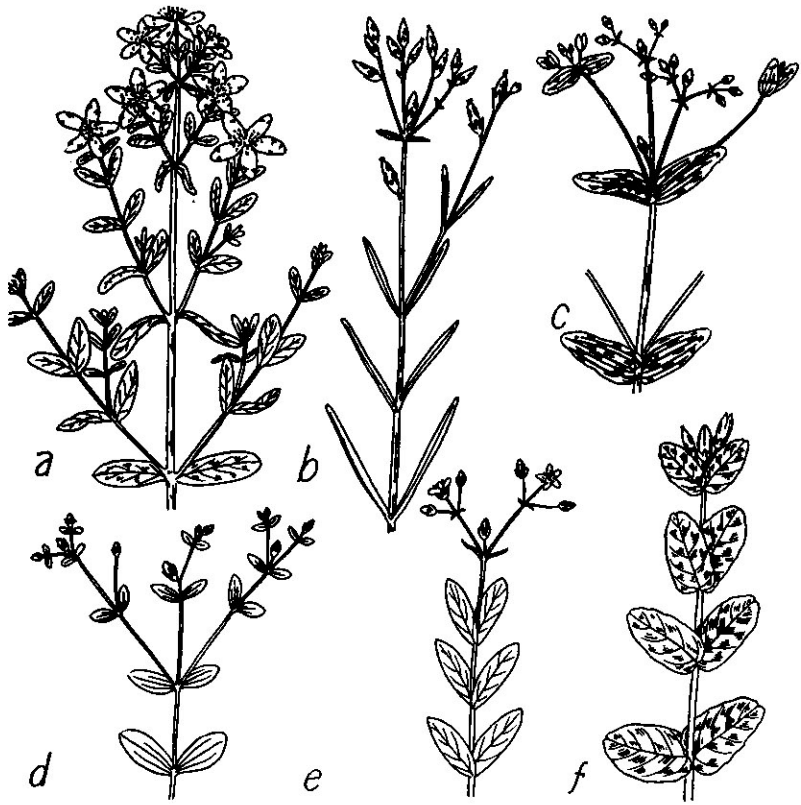


Fig. 84.—**Hypericum.** a, **H. perforatum,** top of plant, x ½. b, **H. canadense,** x½. c, **H. mutilum,** top of plant, x 1. d, **H. boreale,** x 1. e, **H. ellipticum,** x ½. f, **H. virginicum,** x ½.

4. **H. canadense** L. Map 310. Fig. 84, b.

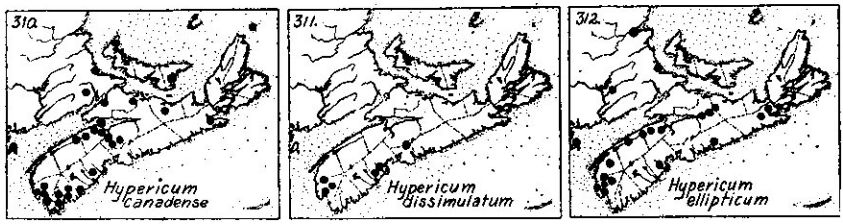
Common throughout in swamps, wet meadows, brooksides, edges of lakes, etc. Forma *minimum* (Choisy)Rousseau seems to be merely a much-reduced ecological form. July-Aug.

Nfld. to Man. south to Ga. & Wisc.

5. **H. dissimulatum** Bickn., Bull. Torrey Bot. Club **40:** 610. 1913. Map 311.

Scattered in swales, wet moss and on lake beaches from Digby around the coast to Halifax Co. It is much rarer than the preceeding species and is closely related to them.

N.S.; Mass. south to N.C. near the coast.



6. **H. ellipticum** Hook. Map 312. Fig. 84, e.

Common in swamps and on borders of streams and lakes. Like several of the preceeding species, it has been little collected in eastern N.S. July-Aug.

N.S. to Man. south to Penn.

7. **H. virginicum** L. Map 313. Fig. 84, f.

Common on muddy shores, boggy margins of lakes, beaches, and low areas; the exact distribution is unknown but it is at least common in the southwestern counties. N.S. to Ind. south to Fla.

Var. **Fraseri** (Spach) Fern., Rhodora **38:** 434. 1936, is more common than the species, and is perhaps the only form present eastward. July-Aug.

Nfld. to Man. south to Penn. & Iowa.

71. ELATINACEAE WATERWORT FAMILY

1. ELATINE L.

Fassett. ELATINE in North America. Rhodora **41:** 367-376. 1939.

a. Seed-coat with pits rounded at the ends, their ends not extending between the ends of pits in adjacent rows; pits scarcely reduced in size towards the ends of the seed; carpels usually 2. 1. *E. minima*

a. Seed-coat with pits 6-sided, angled at their ends, their ends extending between the ends of pits in adjacent rows; pits somewhat narrower and less distinct towards the ends of the seed; carpels 3. 2. *E. triandra*

1. **E. minima** (Nutt.)Fisch. & Meyer. WATERWORT. Map 314. Fig. 79. h.

Shallow water at sandy, muddy or gravelly margins of lakes or rivers: common in Digby, Yarmouth and Shelburne Cos.; scattered east to Lunenburg and Hants Cos. (Fernald, 1921, 1922). It sometimes fruits when only a few mm high.

Nfld. to Minn. south to Dela.

2. **E. triandra** Schkuhr. var. **americana** (Pursh)Fassett

Not yet collected in N.S.; found on various muddy tidal shores in the southeastern part of N.B. to Que. & N.Y.;Mo.

72. CISTACEAE ROCKROSE FAMILY.

a. Plants herbaceous; leaves 10-30 mm long, spreading.
b. Petals 5, showy, yellow; primary capsules about 6 mm long with smaller secondary ones present; pubescence stellate. 1. *Helianthemum.*
b. Petals 3, minute, purplish; capsule about 2 mm long; pubescence of simple hairs. 3. *Lechea*
a. Plants shrubby, low; leaves 1-3 mm long, awl-like, closely overlapping. 2. *Hudsonia*

1. HELIANTHEMUM (Tourn.)Mill.

1. **H. canadense** (L.) Michx. ROCKROSE.

Rare and local; in small numbers on the sand plains between Aylesford and Middleton; reported by Weatherby (1942) from Queens Co.: a large colony on the border of dry mixed woods, Greenfield, associated with *Aster undulatus.* June 15.

N. S. to Wisc. south to N.C.

2. HUDSONIA L.

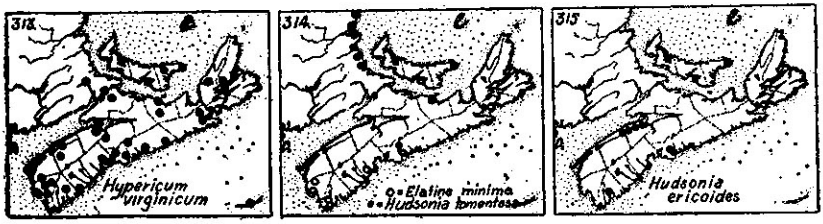
a. Flowers on slender naked pedicels; leaves awl-like, spreading to loosely appressed; plants greenish. 1. *H. ericoides*
a. Flowers nearly sessile; leaves small, densely appressed; plant densely whitish-pubescent. 2. *H. tomentosa*

1. **H. ericoides** L. HUDSONIA. Map 315. Fig. 80, c.

Dry, rocky and sandy barrens about Shelburne;

scattered on rocky soil near Halifax; abundant on the sandy soils of the Annapolis Valley on recently disturbed areas, often invading cultivated land, orchards, and becoming abundant in plowed areas reverting to native vegetation. Early June.

Nfld. to Va.



2. **H. tomentosa** Nutt. WOOLLY HUDSONIA. Map 314.

King's Head, Pictou; reported in Lindsay's Catalog from North West Arm, Halifax. This last record probably refers to the previous species. This plant is found along the sand dunes about the Gulf of St. Lawrence and south to N.C. west to the Mackenzie and Wisc.

3. LECHEA (Kalm)L.

Hodgdon, A.R. A taxonomic study of *Lechea*. Rhodora **40**: 29-69; 87-131. 1938.

a. Inner sepals broader and more obtuse, equal to or shorter than the depressed-globose capsule; basal leaves darker green, decidedly oblong, often purplish. 1. *L. intermedia*

a. Inner sepals narrowly ovate and acute to subacute, exceeding the globose capsule; basal leaves bright-green, narrowly lanceolate. *L. intermedia* var. *juniperina*

1. **L. intermedia** Leggett PINWEED. Fig. 79, g.

Common in dry open soils, open woods and sterile fields, in rocky, siliceous or sandy regions of the province. In the northern part of the province and around the seacoast it is largely replaced by the following very similar variety. P. E. I. and N. S. to Minn. south to Va.

Var. **juniperina** (Bickn.)Robinson intergrades with the species. It is found mostly around the coast from Halifax to northern C.B., where it becomes common in the lea of the dunes and back of the sandy beaches. C.B. to southern N.H., mostly along the coast.

73. VIOLACEAE VIOLET FAMILY

1. VIOLA (Tourn.)L.

a. Plants stemless; leaves and flowers-stalks directly from the root-stocks or from runners (Fig. 85).
b. Rootstock short and stout, 3-10 mm thick; flowers blue.
c. Leaves heart-shaped, with the margins rounded-toothed.
d. Beard of the lateral petals, or part of it, with strongly club-shaped hairs; flowers usually on peduncles longer than the leaves; spurred petal shorter than the lateral ones, glabrous. 1. *V. cucullata*
d. Beard of the lateral petals long, not club-shaped; flowers on peduncles usually equalling or shorter than the leaves; spurred petal as long as the lateral, glabrous or hairy.
e. Plant essentially glabrous. 2. *V. nephrophylla*
e. Plant hairy, with the sepals ciliate. 3. *V. septentrionalis*
c. Leaves ovate or widely lanceolate. 4. *V. sagittata*
b. Rootstocks slender, 2-4 mm thick near the top, often long and creeping.
f. Style scarcely enlarged above, hooked; flowers large, fragrant, blue or whitish; gardens. 5. *V. odorata*
f. Style enlarged above and beaked at the summit in front; flowers comparatively small.
g. Flowers light-blue; spur two-thirds as long as the limb of the petal; sinus of the leaf very deep, the lobes overlapping; leaf with short stiff hairs above. 6. *V. Selkirkii*
g. Flowers white; spur one-quarter as long as the limb; leaves with the basal sinus shallower, the lobes not overlapping.
h. Leaves widely heart-shaped or narrower, usually pointed at the tip, generally dull, relatively small.
i. Leaves glabrous on both sides; cleistogamous capsules green, on erect peduncles; flowers on peduncles usually longer than the leaves.
j. Leaves lanceolate or linear-lanceolate. 7. *V. lanceolata*
j. Leaves ovate, acute at the tip with a squarish or tapering base. 8. *V. primulifolia*
j. Leaves heart-shaped, small. 9. *V. pallens*
i. Leaves pubescent on one side; peduncles longer than the leaves; cleistogamous capsules ovoid, usually purplish, erect only when ripe.
k. Leaves pubescent beneath and on the petioles. 10. *V. incognita*
k. Leaves pubescent above, glabrous beneath and on the petioles. *V. incognita* var. *Forbesii*
h. Leaves orbicular to reniform, large, usually rounded at the tip, waxy-glossy; lateral petals beardless.
l. Leaves pubescent on both sides. 11. *V. renifolia*

l. Leaves glabrous above, pubescent beneath.
V. renifolia var. *Brainerdii*

a. Plant leafy-stemmed, with axillary flowers (Fig. 86).
m. Flowers violet-like; stipules entire or finely toothed.
n. Style capitate, beakless, bearded at the summit; spur short; stipules nearly or quite entire; plants large.
o. Petals yellow; stipules narrowly ovate; capsule 9-13 mm long, glabrous. 12. *V. pensylvanica*
o. Petals white within, violet without; stipules lanceolate, white, scarious; capsule 4-6 mm long, downy or puberulent.
13. *V. canadensis*
n. Style slender, the tip bent downwards, slightly pubescent at the summit; spur twice or more as long as wide; stipules slightly toothed; petals blue.
p. Stipules ovate-lanceolate, bristly serrate; leaves often 4-5 cm wide. 14. *V. conspersa*
p. Stipules linear with a tooth or two at the base; leaves not more than 2 cm wide. 15. *V. labradorica*
m. Flowers pansy-like; stipules large, leaf-like, and pinnatifid; style much enlarged above into a round hollow summit with a wide opening on the lower side.
q. Petals seldom longer than the sepals; flowers small and pale yellow. 16. *V. arvensis*
q. Petals 2-3 times longer than the sepals; flowers large.
17. *V. tricolor*

1. **V. cucullata** Ait. BLUE VIOLET. Fig. 85.

Common throughout in wet fields, swamps, rocky beaches and meadows. May-June. N. S. to Ont. south to Ga.

Forma **prionosepala** (Greene) Brainerd, Rhodora **15**: 112. 1913, has the leaves more hairy, and the margins of the sepals often interruptedly serrate and ciliate. It is commoner than the glabrous form, in similar situations.

Var. **microtitis** Brainerd, Rhodora **15**: 112-116, 1913, has the auricles of the sepals 1-2 mm long, much shorter than the above two varieties. Rare; reported from mixed woods at Hectanooga, Digby Co., and from wet thickets at Yarmouth (Fernald, 1921).

2. **V. nephrophylla** Greene. Map 317. Fig. 85.

Cold mossy bogs, borders of streams, damp woods; rare in the eastern regions of N.S.

Nfld. south to Conn. and west to the Rockies.

3. **V. septentrionalis** Greene. Map 316.

Common throughout; open woods, often under conifers,

along roadsides and on light soils, one of the earliest of the blue violets to flower.

N. S. & P. E. I. to Ont. south to Penn.

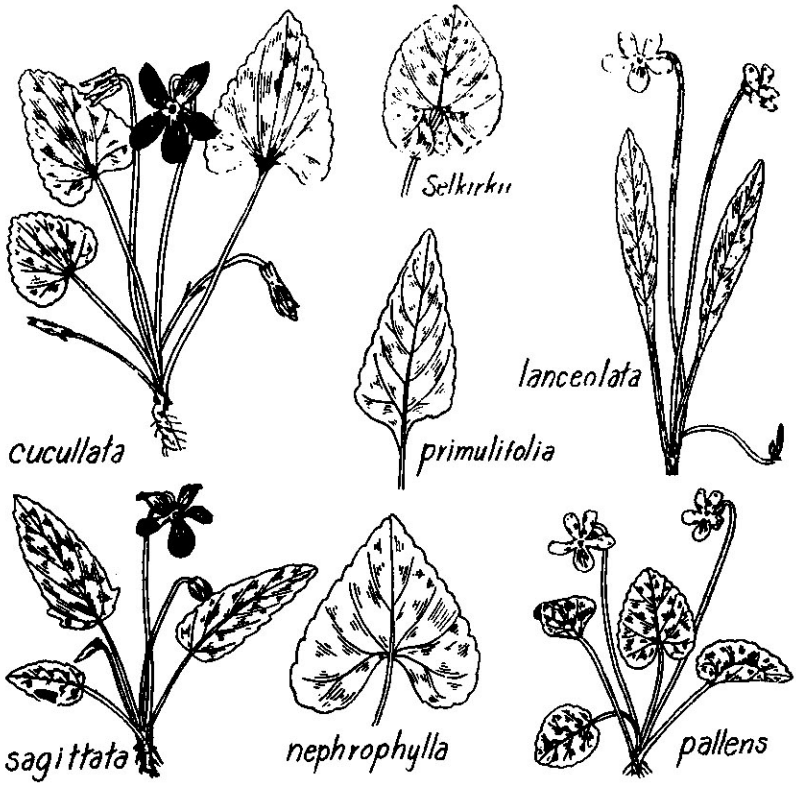


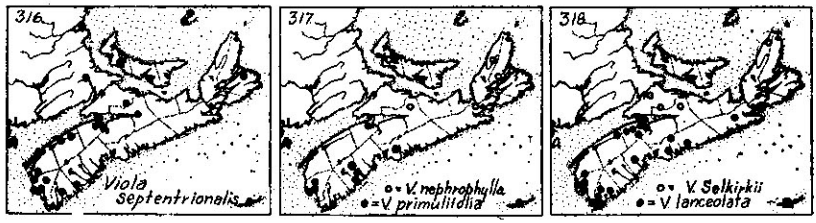
Fig. 85.—**Viola**, all x ½.

4. **V. sagittata** Ait., var **ovata** (Nutt.) Torr. & Gray. Map 321. Fig. 85.

Common on open soil from Yarmouth to Halifax and Kings Co., not collected eastward. (*V. fimbriatula* Sm.). On some of the dry hillsides of the Annapolis Valley, and particularly on the south slope of the ridge above Wolfville occurs a form with deeply toothed leaves and early flowering season. The shape of the leaves shows a tendency towards *V. sagittata*, but it does not have the smoother leaves of that species. Specimens collected at Point Pleasant Park, Halifax, likewise seem to be a variation of this variety. Var. *ovata* often hybridizes with *V. septentrionalis*, and the resulting plants are large, with elongated leaves, and ciliate sepals.

This cross is especially abundant in the Annapolis Valley, and on the slopes of Cape Blomidon. Early May to June.

In various forms south to the Gulf of Mexico.



5. **V. odorata** L. ENGLISH or SWEET VIOLET

Occasionally planted in gardens and persisting for a short time. Introduced from Eu.

6. **V. Selkirkii** Pursh Map 318. Fig. 85.

Characteristic of rich hardwood forests from Kings and Cumberland Cos. to northern C.B.; local, usually occurring in small numbers.

Nfld. to Penn. and Lake Superior northwestward.

7. **V. lanceolata** L. Map 318. LANCE-LEAVED VIOLET Fig. 85.

Common in the western half of the province, becoming rarer eastward. It is found on the edges of pools, around lakes, on mud flats and in boggy places; abundant on Sable Island, and in grassy fields or on headlands around the mainland.

N.S. to Minn. south to the Piedmont.

8. **V. primulifolia** L. Map 317. Fig. 85.

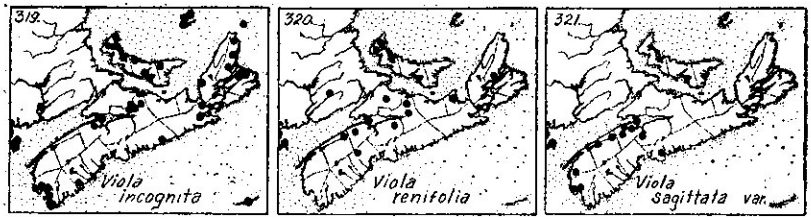
Damp sand, gravel and peat; Yarmouth to Halifax; rare on sandy banks on Sable Is.; plants from wet fields in Kings Co. probably belong here It is local to rare except in the southwestern counties, where it is found around the lakes or in the river gravels.

N.S. to Fla. & Tex.; scattered inland to Minn.

9. **V. pallens** (Banks) Brainerd. SMALL WHITE VIOLET Fig. 85.

Very common throughout in moist ground, meadows, bogs, borders of lakes, wet thickets, etc. Var. *subreptans* Rousseau, Nat. Canad. **65**: 306. 1938, is a form with the stolons bearing cleistogamous flowers; scattered in the range of the species. May-early June.

Lab. to Alberta south to S.C. & Colo.



10. **V. incognita** Brainerd HAIRY WHITE VIOLET. Map 319.

Common in wet woods and thickets throughout. Lab. to N.D. south to Tenn.

Var. **Forbesii** Brainerd, Bull. Torrey Bot. Club **38**: 8. 1912, is common, usually in drier or more upland woods than the preceeding. Both this variety and the species are more common in thickets than is *V. pallens*. Collected by Güssow on Sable Is.

N.S. to Wisc. south to Tenn.

11. **V. renifolia** Gray. Map 320. Fig. 86.

Rare; occasionally seen in rich woods or on slopes in the center of the province. N.S. south to Penn. westward.

Var. **Brainerdii** (Greene) Fern., Rhodora **14**: 88. 1912, is rather common in rich calcareous woods, on hillsides, under coniferous trees and on gypsum; Annapolis Co. to C.B., where Nichols lists it as characteristic of wooded swamps.

Lab. & Nfld. to Alaska southward.

12. **V. pensylvanica** Michx., var. **leiocarpa** (Fern. & Wieg.) Fern., Rhodora **43**: 617. 1941. YELLOW VIOLET Map 322.

Edges of woods, rich banks, and along shady streams or rich intervales, usually in calcareous soils. In the Annapolis Valley it is common along the North Mt., and very rare and local on the South Mt.; it is common along the intervales in the north-central part of the province; characteristic of rich hardwoods from Cumberland Co. to northern C.B. Early May. (*V. eriocarpa* Schwein., var.).

N. S. to Minn. southward.

13. **V. canadensis** L. CANADA VIOLET.

Very rare; known only from Newport, Hants Co., near the plaster quarries. The report of Nichols from northern C.B. belongs to the previous species.

N.S. to Sask. south to Ala. & Ariz.

14. **V. conspersa** Reichenb. DOG VIOLET Map 323. Fig. 86.

Digby Neck to C.B.; frequent in alluvial meadows in the Annapolis Valley, and along the North Mt.; frequent in Cumberland and Colchester Co.; characteristic of mountain swamps in northern C.B. Late May-June.

N.S. to Minn. south to Ga.

15. **V. labradorica** Schrank. Map 324. Fig. 86.

Rare; in ravines, along spring brooks or in cold woods from Annapolis Co to northern C.B.

Greenland and Lab. south to Me. & northern N.Y.

16. **V. arvensis** Murr. FIELD PANSY Fig. 86.

Occasional in old fields and seeded ground. It is probably introduced in clover seed; persisting but a short time.

Introduced from Eu.; Nfld. to Ont. and southward.

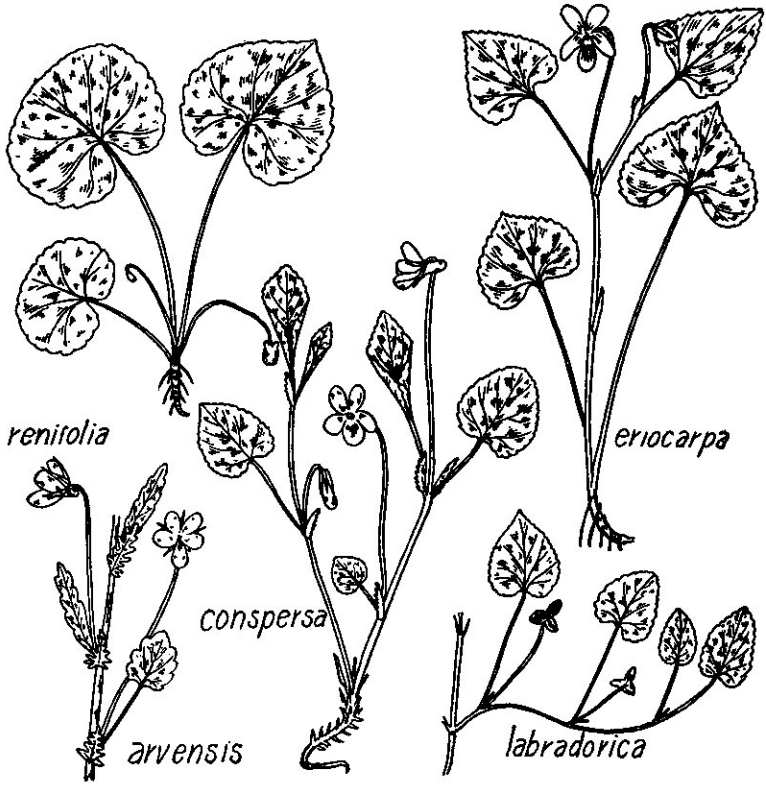


Fig. 86.—**Viola**, all x ½.

17. **V. tricolor** L. PANSY, JOHNNY JUMP-UP

This tiny pansy is occasionally found as an escape to roadsides, fields or around old gardens. Introduced from Eu.

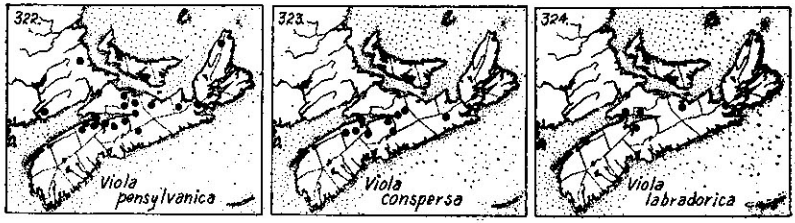
74. THYMELAEACEAE MEZEREUM FAMILY

1. DAPHNE L.

1. **D. Mezereum** L. DAPHNE. Fig. 82, g.

Introduced by the French and locally established at Annapolis, Grand Pre, Louisburg, and at scattered places elsewhere in the province. It occurs in abundance along the roadsides and in thickets in parts of Kings Co., the pale rose flowers appearing in late April or early May before the leaves unfold. The berries are deadly poisonous.

N.S. to Ont., locally southward; Eu.



75. ELAEAGNACEAE OLEASTER FAMILY

1. SHEPHERDIA Nutt.

1. **S. canadensis** (L.) Nutt. SHEPHERDIA. Map 325. Fig. 82, f.

Local, but usually abundant where found. In Hants Co. it is abundant on gypsum between Windsor and Brooklyn; and in C.B. it is found on gypsum or on talus slopes growing with plants like *Potentilla fruticosa* and *Senecio pauperculus*. Early June.

Nfld. to Alaska south to N.S., Me., Ind. & N.M.

76. LYTHRACEAE LOOSESTRIFE FAMILY

a. Leaves tapering to the base, sometimes in 3's; stems prostrate at the base and often spongy; calyx about as wide as long. 1. *Decodon*

a. Leaves cordate at the base, opposite or the upper alternate; stems erect, not spongy at the base; calyx much longer than wide. 2. *Lythrum*

1. DECODON J. F. Gmel.

1. **D. verticillatus** (L.)Ell., var. **laevigatus** Torr. & Gray, see Rhodora **19**: 154. 1917. SWAMP LOOSESTRIFE. Map 325.

Quaking margins of ponds or lakes, or sphagnous borders; rare. It is scattered in Shelburne Co., and found at New Tusket, Digby Co.

N. S., Me. to Wisc. south to Va. & Tenn.

Fig. 87.—**Circaea.** a, **C. alpina,** x ½. **Oenothera.** b, **O. muricata,**top of plant, x ⅓. c, **O. perennis,** x ⅓. **Panax.** d, **P. trifolium,** x ½.

2. LYTHRUM L.

1. **L. Salicaria** L. PURPLE LOOSESTRIFE. Fig. 88, a.

Low ground, marshes and ditches; local: rare near Yarmouth; along the Annapolis River above Middleton; very common in the marshes about Truro; and in small numbers at several other places in the province. July 15, early Aug.

Introduced from Eu.; N.S. to Ont. & Wisc. south to D.C.

77. MELASTOMACEAE MELASTOMA FAMILY

1. RHEXIA L.

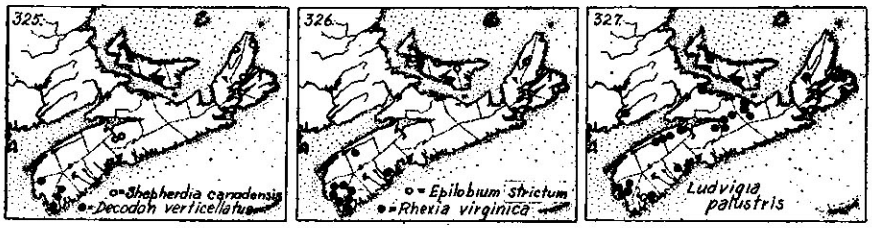
1. **R. virginica** L. MEADOW BEAUTY. Map 326. Fig. 88, g.

Wet thickets, peaty swales and lake margins; scattered in the southwestern counties north to the lakes of Annapolis Co., and west to Bridgewater. July-Aug.

N.S.; Me. to Fla.; scattered inland to Ont. & Ind.

78. ONAGRACEAE EVENING PRIMROSE FAMILY

a. Flower-parts in 4's or more numerous; fruit without hooked hairs.
b. Plant prostrate and rooting at the nodes; petals absent, or minute and reddish; leaves opposite; fruit to 4 mm long (Fig. 88, b). 1. *Ludvigia*
b. Plant erect; petals conspicuous; leaves mostly alternate; fruit long, cylindrical to linear.
c. Flowers purplish to white; calyx-tube scarcely prolonged beyond the ovary; seeds tufted with white hairs (Fig. 88, b-f). 2. *Epilobium*
c. Flowers yellow; calyx-tube conspicuously prolonged; seeds without hairs (Fig. 87, b-c). 3. *Oenothera*
a. Flower parts in 2's; flowers minute, white; fruit with hooked hairs; plants thin-leaved, delicate (Fig. 87, a). 4. *Circaea*



1. LUDVIGIA L.

1. **L. palustris** (L)Ell., var. **americana** (DC). Fern. & Grisc., Rhodora **37**: 176. 1935. MARSH PURSLANE. Map 327. Fig. 88, h.

Common throughout, on wet shores, bottoms of ditches, and shallow water at the edges of lakes or streams. Forms found in deep water, with limp stems and broad, thin distinctly-petioled leaves, belong to forma *elongata* Fassett.

N. S. to Man. & Ore. south to Fla. & Calif.; Bermuda, etc.

2. EPILOBIUM L. WILLOW-HERB

Fernald M. L., The identities of *Epilobium lineare*, *E. densum* and *E. ciliatum*. Rhodora **46**: 377-386. 1944.

a. Petals 10-20 mm long; stigma 4-lobed; plant 3-30 dm. high. 1. *E. augustifolium*

a. Petals 10 mm long or less; stigmas entire.

b. Stem round, with no lines running down from the bases of the leaves; leaves entire or nearly so, with inrolled margins.

c. Capsules and stems velvety with spreading hairs; leaves 4-8 mm wide; petals 7-9 mm long. 2. *E. strictum*

c. Capsules and stems glabrous to crisp-pubescent with sub-appressed or inturned hairs.

d. Upper part of the stem and upper surface of leaves densely pubescent; tips of the stem or branches, and buds before flowering, arching or ascending.

e. Plant usually much branched; petals 4-6.5 mm long; calyx 4.5-7 mm long; capsules not glandular. 3. *E. leptophyllum*

e. Plant usually simple or little branched towards the top; petals 7-8 mm long; calyx 3-4.5 mm long; capsule very glandular; Sable Island. 4. *E. nesophilum*

d. Upper part of stem and upper surface of leaves with scattered hairs, or becoming glabrous; stem-tips, and pedicels before flowering, nodding.

f. Leaves thin, the middle ones 3-6 cm long and 4-10 mm wide. 5. *E. palustre*

f. Leaves thickish, the middle ones 1-3 cm long and 4 mm wide. *E. palustre* var. *monticola*

b. Stem angled, with lines running down from the bases of the leaves; leaves toothed, flat, the margins not inrolled.

g. Seeds 1.5 mm long, not striate, beakless; hairs of the seeds bright-tawny to dirty-white; leaves closely and irregularly serrate, with more than 35 serrations on each side; mature fruit erect or nearly so. 6. *E. coloratum*

g. Seeds 1 mm long or less, distinctly striate, with a very short beak; hairs white; leaves more remotely serrate; mature fruit spreading.

h. Plant little or not branched: middle leaves sessile, 4-9 cm long, 8-22 mm wide, widest and rounded near the base and evenly tapered to a long tip; plant usually reddish. 7. *E. glandulosum* var. *adenocaulon*

h. Plant much branched, bushy; leaves 2-5 cm long, 8-15 mm wide, tapering and slightly rounded at the base; plant green. *E. glandulosum* var. *occidentale*

1. **E. angustifolium** L. FIREWEED, LARGE WILLOW-HERB. Fig. 88, b.

Common and conspicuous in burnt-over areas, along roadsides, fence-rows, edges of thickets, etc.; throughout. July 10-Aug.

Greenland to Alaska south to N.C. and Calif.; Eurasia.

Fig. 88.—**Lythrum.** a, **L. Salicaria,** x ⅓. **Epilobium.** b, **E. angustifolium,** flowers and leaf, x ½. c, **E.** stem showing pubescence, x 1. d, **E. strictum,** stem, x 1. e, **E. palustre,** x 1. f, **E. glandulosum,** x ½. **Rhexia.** g, **R. virginica,** x ½; stem and flower enlarged. **Ludvigia.** h, **L. palustris.** x 1.

2. **E. strictum** Muhl. Map 326. Fig. 88, d.

Rare in the northern part of the province; Louisburg and Big Intervale, collected by Macoun. Records from other parts of the province are considered doubtful. (*E. molle* Torr.).

N. S. to Minn. South to Va., Ind. and Ill.

3. **E. leptophyllum** Raf. BOG WILLOW-HERB. Map 328. Fig. 88, c.

Scattered to common in swales, wet meadows, bogs and lake and stream margins throughout. (*E. densum* Raf.). July-Sept.

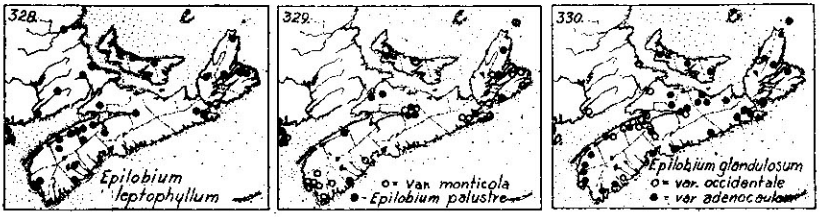
N. S. to Alta. south to Va. Ind. and Colo.

4. **E. nesophilum** Fern., var. **sabulonense**, Fern., see Rhodora **20**: 31. 1918, & **46**: 383. 1944. This is the only *Epilobium* found upon Sable Is., and has as yet been found nowhere else. (*E. molle* var. *s*).

5. **E. palustre L.** Map 329. Fig. 88, e.

Wet thickets, swales and moist areas; scattered throughout, but more common in the northern regions of the province. July-Sept. Nfld. to Alaska south to N. Eng. & Lake Superior.

Var. **monticola** Haussk. is found in open bogs and damp peaty barrens, more characteristic of the Atlantic Region of the province. Nfld. to Man. south to Penn. & the Great Lakes.



6. **E. coloratum** Muhl.

Open spot near the railway station at Weymouth. "First east of the Penobscot region, the earlier records from eastern Canada resting on *E. glandulosum* vars. *adenocaulon* (Haussk.) Fern. and *occidentale* (Trel.)Fern.", (Fernald, 1922.)

N.S., Me. to Wisc. south to S.C. & Kans.

7. **E. glandulosum** Lehm., var. **adenocaulon** (Haussk.) Fern., Rhodora **20**: 35. 1918. WILLOW-HERB. Map 330. Fig. 88, f.

Rich damp soil, commonly in dried-out muddy spots; throughout. July-Aug. Nfld. to B.C. south to Va. & Calif.

Var. **occidentale** (Trel.)Fern., Rhodora **20**: 35. 1918, is rare in the southwestern counties, commoner eastward to C.B.; cultivated land, thickets, rich soil, etc., grading into the last in general appearance. Nfld. to the West Coast south to N. Eng. & N.Y.

Small plants related to this variety but with slender stems, often alternate petioled, leaves which are wider and thinner, and small pale flowers, may be separated off as

E. ciliatum Raf. A northern form extending south to N.S., Penn. & N.M.

3. **OENOTHERA** L. EVENING PRIMROSE

a. Plants slender, 1-5 dm high; capsule winged on the angles.
b. Buds and tip of the inflorescence erect; petals mostly about 10 mm long; inflorescence in fruit much less than half the length of the plant. 1. *O. tetragona*
b. Buds and tip of the inflorescence nodding; petals 5-10 mm long; inflorescence in fruit about half the length of the plant. 2. *O. perennis*
a. Plants stout, erect, more than 5 dm high; capsules not winged on the angles.
c. Petals obovate, nearly as wide as long.
d. Petals 5-8 mm long. 3. *O. parviflora*
d. Petals 10-23 mm long.
e. Petals 10-16 mm long; capsules 25-40 mm long. 4. *O. muricata*
e. Petals 18-23 mm long; capsules very long, to 60 mm long. 5. *O. ammophiloides*
c. Petals linear, 5-12 mm long. 6. *O. cruciata*

1. **O. tetragona** Roth, see Munz, Bull. Torrey Bot. Club **64**: 287-306. 1937, for this and the following species.

Scattered at various places in Digby Co.; old fields, edges of thickets and roadsides in dry, open sandy soil; unknown elsewhere. (*O. hybrida* Michx., and possibly *O. fruticosa* L. of earlier records).

N. S. to Ga. & Tenn.

2. **O. perennis** L. SUNDROPS. Fig. 87, c.

Common in light soils or in sandy places throughout; collected but rarely in the Atlantic coastal region. July-Sept. (*O. pumila* L.). Var. **rectipilis** Blake, Rhodora **25**: 47. 1923, with the stem having short spreading hairs instead of appressed stiff ones, is scattered near the coast of New Brunswick on the Gulf of St. Lawrence but has not yet been collected in northern N.S.

N.S. to Man. south to Ga. & Kans.

3. **O. parviflora** L.

Rousseau (1938) states that this plant is rare near Arichat, Ile Madame, growing on the rocks with *Empetrum nigrum.* The length of the petals of the Nova Scotian plants of this group vary greatly in length, but rarely are they found as short as characterizes this extreme.

N.S. to Me.; Que. etc.

4. **O. muricata** L. COMMON EVENING PRIMOSE. Fig. 87, b.

This is the common plant throughout the province. It is a complex type and different variations exist in the color of the plant, the shape of the leaves, position of the sepals, size and shape of fruit, etc. which have not been studied throughout the province. *O. novae-scotiae* Gates, Trans. N.S. Inst. Sci. **14**: 141-145. 1916, was separated on the basis of the rosette leaves being nearly smooth and with relatively narrow, pale pink midribs; stems red, with leaves tapering at both ends and bracts somewhat curled; buds green and petals about 15 mm long. It was described from plants grown from seed collected near the reservoir on the North Mountain above Middleton. Other plants in the same general region seem to be as distinctive as this segregate.

N.S. to Sask. south to Colo.

5. **O. ammophiloides** Gates & Catcheside, Journ. Linn. Soc. London **49**: 180-181. 1933.

This species was described from plants grown from seed collected in the neighborhood of Guysborough by Jacques Rousseau. The plant grows there in the region of the bay; and is now known to be common also in the halophytic zone or near it on the shores of the St. Lawrence River in Que.

6. **O. cruciata** Nutt.

Occasional on the slopes of the dry dunes on Sable Island (St. John).

N. S.; Me. to western Mass. & N.Y.

4. **CIRCAEA** (Tourn.)L. ENCHANTER'S NIGHTSHADE

Fernald, M. L. The identity of *Circaea canadensis* and *C. intermedia*. Rhodora **19**: 85-88. 1917.

a. Leaves firm, shallowly undulate-dentate; mature pedicels strongly reflexed; disk of flower cup-shaped, prolonged about 0.5 mm above the petals; anthers 0.7-1 mm long; stigma shallowly 2-lobed; mature fruit with strong-hooked bristles, 3.5-5 mm thick. 1. *C. quadrisulcata*

a. Leaves flaccid, coarsely sharp-dentate; mature pedicels spreading or only slightly reflexed; disk of flower inconspicuous; stigma deeply cleft; mature fruit with soft hairs, 1-3 mm thick.

b. Rhizome slender, scarcely tuberous-thickened; anther 0.5-0.8 mm long; petals 2.3-3.5 mm long; fruit unequally 2-celled, 1.5-3 mm thick. 2. *C. canadensis*

b. Rhizome tuberous-thickened; anthers 0.2-0.3 mm long; fruit 1-celled, 1-1.5 mm thick. 3. *C. alpina*

1. **C. quadrisulcata** (Maxim.) French. & Sav., var. **canadensis** (L.) Hara, Rhodora **41**: 386. 1939. LARGE ENCHANTER'S NIGHTSHADE.

Scattered in rich or alluvial woods in the center of the province. July-Sept. (*C. lutetiana* of Amer. authors).

N. S. to Minn. south to N. C. & Okla.

2. **C. canadensis** Hill

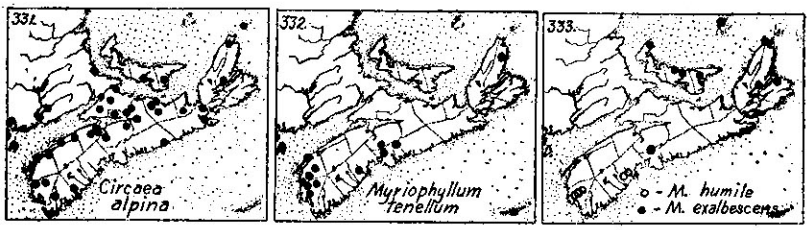
Alluvial woods and rich wooded slopes in central N. S. to northern Cape Breton, rather rare. July-Aug. (*C. intermedia* Ehrh.).

N. S. to eastern Que. south to N. Y.; Eu.

3. **C. alpina** L. SMALL ENCHANTER'S NIGHTSHADE. Map 331.

Common in rich or w t woods, ravines, dripping slopes and borders of wooded streams and swamps, throughout. This is one of the commonest plants in its habitat, often carpeting the ground. July-Aug.

Lab. to Alaska south to Ga. & S. D.; Eurasia.



79. HALORAGIDACEAE WATER-MILFOIL FAMILY

a. Leaves whorled, or irregularly crowded on the stem.
b. Leaves pinnately divided into linear segments (Fig. 89, a-d). 1. *Myriophyllum*
b. Leaves ribbon-like, entire, 1-10 cm long (Fig. 89, h). 3. *Hippuris*
a. Leaves not crowded, alternate.
c. Leaves about 1 cm long or longer, toothed to lobed (Fig. 89, e-g). 2. *Proserpinaca*
c. Leaves about 1 mm long (Fig. 89, a). 1. *Myriophyllum*

1. MYRIOPHYLLUM (Vaill.) L.

a. Leaves small, inconspicuous, to 1 mm long. 1. *M. tenellum*

a. Leaves deeply lobed, or cut into narrow or linear segments.
b. Foliage leaves all whorled.
c. Floral bracts mostly scattered, shorter than the flowers; leaves 5-12 mm long, the rachis and segments thread-like.
2. *M. alterniflorum*
c. Floral bracts whorled; leaves 10-30 mm long.
d. Floral bracts sparingly dentate or serrate; rarely as long as the flowers or fruit; rachis of the leaves terete, of nearly equal diameter throughout, the segments not broadened at the base.
3. *M. exalbescens*
d. Floral bracts deeply lobed, about twice as long as the flowers or fruit; rachis of the leaves flattened, much broader towards the base, the segments also broadened at the base.
4. *M. verticillatum*
b. Foliage leaves partly whorled and partly scattered.
e. Flowers and fruit borne below the surface of the water in the axils of ordinary leaves; leaves filiformly divided, the segments about 0.1 mm wide at base and tapering to the tip; fruits 2-2.5 mm long, the carpels with prominent tubercles along the dorsal ridge. 5. *M. Farwellii*
e. Flowers and fruit borne mostly above the surface of the water; leaves coarser; fruit 0.7 mm long, plump, without a ridge or tubercles on the back. 6. *M. humile*

1. **M. tenellum** Bigel. Map 332. Fig. 89, a.

Shallow water on the sandy or peaty lake-margins from Digby and Yarmouth to Grand Lake, Halifax Co., varying greatly in stature; abundant at the borders of freshwater lakes on Sable Is. Nichol's record of *M. humile* from C. B. belongs here (Fernald, 1921).

Nfld. & N. S. to Wisc. south to Penn. & N. J.

2. **M. alterniflorum** DC., var. **americanum** Pugsley, Journ. Bot. **76**: 51-53. 1938. Fig. 89, c.

Occasional in slow streams or shallow pools; Salmon River, Truro; in Pictou Co.; along the Margaree R., C. B.

Nfld. to Wisc. south to Conn. & Vt.

3. **M. exalbescens** Fern., Rhodora **21**: 120. 1919. Map 333. Fig. 89, d.

Brackish water, northern C. B.; Sydney Mines, Baddeck and Bay St. Lawrence. (*M. spicatum* L.).

Nfld. to Wash. south to Conn., N. Y. & Calif.

4. **M. verticillatum** L., including var. **pectinatum** Wallr.

Spring pools south of Amherst (Fernald, 1921); mentioned by Nichols as characteristic of ox-bow ponds in northern C. B.

Nfld. to B. C. south to N. Y., Ill. & Utah.

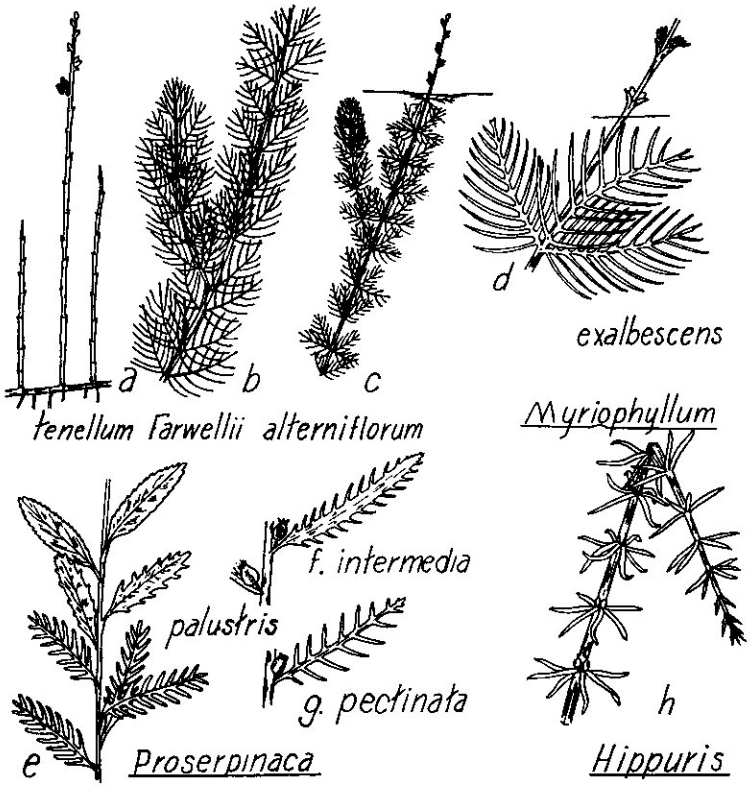


Fig. 89.—**Myriophyllum**, all x 1. **Proserpinaca**, x 1. **Hippuris vulgaris**, x $\frac{1}{3}$.

5. **M. Farwellii** Morong. Fig. 89, b.

Muddy cove in Lily Lake, Sandy Cove, Digby Neck. (Fernald, 1921).

N. S. & Que. to Wisc. south to Me., N. H., Vt. & N. Y.

6. **M. humile** (Raf.) Morong. Map 333.

Peaty, sandy or muddy shores from Yarmouth Co. to Hants Co.; local; passing in deep water to forma *natans* (DC.) Fern., with the stems erect and floating in the water instead of growing on the bottom.

N. S. to Vt. west to Ill.

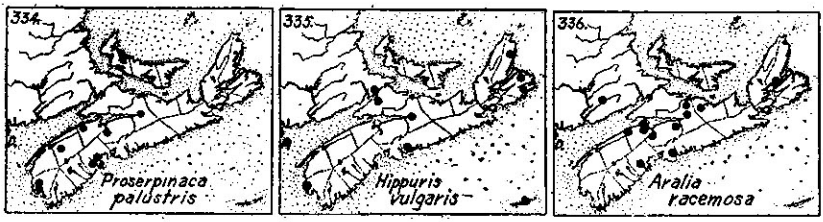
2. PROSERPINACA L. MERMAID-WEED

a. Leaves of two types, the submersed ones deeply lobed, those above water merely toothed; flowers in the axils of the unlobed leaves; fruit with calyx lobes as broad as long. 1. *P. palustris*

a. Leaves all alike, deeply lobed; fruit with the calyx lobes longer than broad.
b. Leaves with the rachis narrow, about as broad as the segments are wide. 2. *P. pectinata*
b. Leaves with the rachis wide, about as broad as the segments are long. 3. *P. intermedia*

1. **P. palustris** L., var. **crebra** Fern. & Grisc., Rhodora **37**: 177. 1935. Map 334. Fig. 89, e.

Boggy swales, savannahs, wet marshes and edges of streams; scattered throughout? In Lunenburg Co. it sometimes reaches a remarkable development, up to 15 dm high, with emersed leaves up to 8.5 cm long and 1.3 cm wide (Fernald, 1922). The variety is the more northern one, ranging from N. S. to Wisc. south to Ga. & Okla.



2. **P. pectinata** Lam. Map 341. Fig. 89, g.

Yarmouth east to central Lunenburg Co.; wet savannahs, peaty or muddy pond-holes, sphagnous swales, and sandy, gravelly or muddy borders of lakes or ponds. Rather common in the Medway Valley, Queens Co., generally growing in dense mats.

N. S.; Mass. to Fla. & La.

3. **X. P. intermedia** Mack., Torreya **10**: 250. 1910. Fig. 89, f.

Boggy savannah by Butler's Lake, Gavelton, Yarmouth Co., filling small depressions. Growing with *P. palustris* and *P. pectinata* and probably a hybrid between them.

N. S.; eastern Mass. to Ga.

3. HIPPURIS L.

1. **H. vulgaris** L. MARE'S-TAIL. Map 335. Fig. 89, h.

Local, but probably widely scattered; shallow pools, slow-moving streams and edges of ponds; swampy margins of a few of the larger fresh-water ponds on Sable Is.; lux-

uriant in the sink-holes near gypsum about Amherst. Forma **fluviatilis** (Hoffm.) Cosson & Germain is a submersed form with long stems and weak trailing leaves; occasionally found.

Lab. to Alaska south to N. Y., Minn. & N. M.

80. ARALIACEAE GINSENG FAMILY

a. Plants woody below; leaves with three main divisions, each further divided; inflorescence compound (Fig. 90). 1. *Aralia*

a. Plants herbaceous, low; leaves palmately compound, with 3-5 leaflets; inflorescence a simple umbel (Fig. 87, d). 2. *Panax*

1. ARALIA (Tourn.) L.

a. Stem almost absent; umbels 3, stalked on a naked scape. 1. *A. nudicaulis*

a. Stem woody, 8-20 dm high, much branched; umbels in a dense panicle on a zig-zag axis. 2. *A. racemosa*

a. Stem 4-8 dm high, woody and bristly below; umbels in a simple or much-branched corymb. 3. *A. hispida*

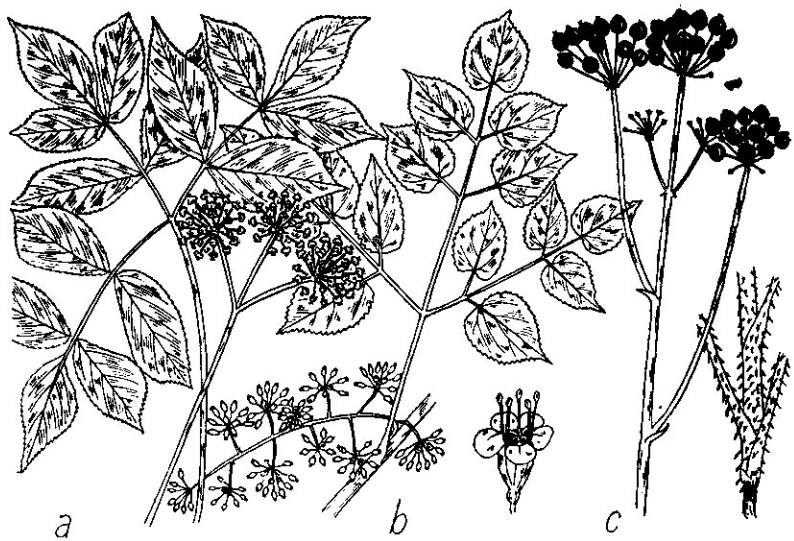


Fig. 90.—**Aralia.** a, **A. nudicaulis,** x ⅓. b, **A. racemosa,** x ⅓. c, **A. hispida,** inflorescence and stem, x ⅓; flower, x 3.

1. **A. nudicaulis** L. WILD SARSAPARILLA. Fig. 90, a.

Common throughout; dry woodlands and old forests. May 25-June.

Nfld. to Man. south to Ga. & Colo.

2. **A. racemosa** L. AMERICAN SPIKENARD. Map 336. Fig. 90, b.

Rich or calcareous wooded slopes; occasional from Annapolis and Lunenburg Cos. to C. B., usually as solitary plants.

N. S. to Minn. south to Ga.

3. **A. hispida** Vent. BRISTLY ARALIA. Map 337. Fig. 90, c.

Common in burnt areas, recently cut forest land, around saw-mills, and in light soil; throughout.

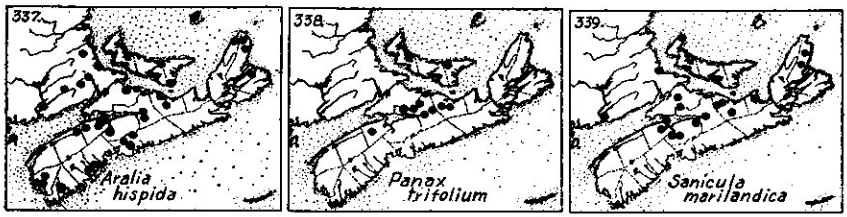
Nfld. to Hudson Bay south to N. C. & Minn.

2. PANAX L.

1. **P. trifolium** L. DWARF GINSENG, GROUND-NUT. Map 338. Fig. 87, d.

Rich deciduous woods or open woodlands, local; Kings Co., beech woods at Morristown; common on the intervales of northern N. S., from Cumberland Co., east at least to Pictou, growing with a number of other typical intervale plants. June.

N.S. & P.E.I., to Minn. south to Dela., Iowa, and the mts. of Ga.



81. UMBELLIFERAE PARSLEY FAMILY

a. Ovary and fruit densely prickly or bristly.
 b. Leaves palmately compound, the divisions simple (Fig. 91, f). 1. *Sanicula*
 b. Leaves pinnately compound, the divisions filiformly divided (Fig. 91, a). 19. *Daucus*
a. Ovary and fruit not bristly.
 c. Leaves simple.
  d. Leaves orbicular; plants small, creeping (Fig. 91, g). 2. *Hydrocotyle*
  d. Leaves reduced to thickened petioles. 9. *Lilaeopsis*
 c. Leaves compound.
  e. Leaves pinnately-compound with sessile leaflets (Fig. 91, b-e).

f. Leaflets less than 5 mm wide; each half of the fruit almost terete; flowers white.
g. Leaflets divided into numerous filiform divisions; bulblets absent; a common weed (Fig. 91, e). 7. *Carum*
g. Leaflets little or not divided; bulblets sometimes found in the upper axils; marsh plants (Fig. 91, h). 6. *Cicuta*
f. Leaflets more than 5 mm wide, coarsely cut or toothed.
h. Leaflets narrowly lanceolate, the upper not lobed nor cut; each half of the fruit nearly terete; flowers white (Fig. 91, c). 8. *Sium*
h. Leaflets elliptical, often nearly as wide as long, the upper often lobed or deeply cut; flowers yellow (Fig. 91, b). 14. *Pastinaca*
e. Leaves more or less palmately compound, with stalked leaflets.
i. Divisions of the leaf less than 4 mm wide; flowers white;

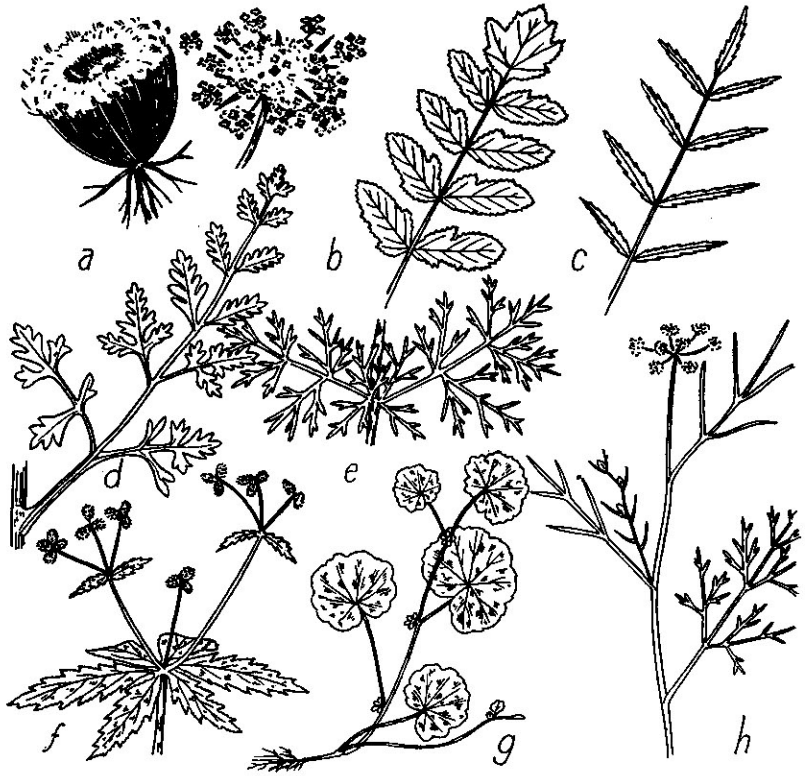


Fig.91—**Daucus.** a, **D. Carota,** fruiting inflorescence and flowering umbel, x ½; d, leaf, x ¼. **Pastinaca.** b, **P. sativa,** leaf, x ¼. **Sium.** c, **S. suave,** leaf, x ¼. **Carum.** e, **C. Carvi,** leaf divisions. x½. **Sanicula.** f, **S. marilandica,** inflorescence, x ½. **Hydrocotyle.** g, **H. americana,** x ½. **Cicuta.** h, **C. bulbifera,** tip of plant, x ¼.

fruit (except in *Conioselinum*) with the halves little flattened.

j. Involucre, at the base of the umbel, of many persistent bracts; plant 1-2 m high; leaves large. 4. *Conium*

j. Involucre absent, or 1 to a few bracts.

k. Divisions of the leaf long and ribbon-like, coarsely toothed; bulblets appearing in the axils of the upper leaves (Fig. 91, h). 6. *Cicuta*

k. Divisions of the leaf short and lanceolate, irregularly toothed or cut; bulblets absent.

l. Involucels (at the base of the tiny umbels) long and conspicuous, exceeding the flowers and fruit. 12. *Aethusa*

l. Involucels much shorter than the flowers or fruit.

m. Basal leaves coarsely divided; upper leaves with filiform divisions; fruit subglobose. 11. *Coriandrum*

m. Basal and upper leaves both ternately compound with the divisions 2-4 mm wide; fruit flattened. 17. *Conioselinum*

i. Divisions of the leaf more than 5 mm wide.

n. Umbels with 2-8 rays, fruit linear with stout appressed hairs (Fig. 92, a). 3. *Osmorhiza*

n. Umbels with more than 10 rays; fruit not linear nor with stout appressed hairs.

o. Leaves rather fleshy, smooth with anastomosing veins, the teeth few, averaging 5 mm long or more (Fig. 92, d).

p. Involucre of numerous conspicuous bracts; fruit strongly flattened; introduced and rare. 15. *Levisticum*

p. Involucre of a few linear deciduous bracts or absent; fruit almost round; native seashore plant. 10. *Ligusticum*

o. Leaves thinner, the teeth close and numerous, averaging 2 mm long or less (Fig. 92, c, e).

q. Upper leaf-sheaths much inflated, over 15 cm long (Fig. 92, e).

r. Leaves downy beneath; fruit pubescent, and strongly flattened; petals of the outer flowers irregularly enlarged. 16. *Heracleum*

r. Leaves glabrous to finely pubescent beneath; fruit glabrous; outer flowers not enlarged.

s. Fruit much flattened; involucels of few bracts or none; tall coarse plants of C. B. 18. *Angelica*

s. Fruit terete; involucels of numerous bracts; plants short and stout. 13. *Coelopleurum*

q. Upper leaf-sheaths little inflated, less than 12 mm long; fruit with each half nearly terete.
t. Leaves and stem glabrous; plant not spreading by rootstocks; plant 1-2 mm high, in marshes. 6. *Cicuta*
t. Leaves and stem downy to pubescent; plant 2-10 dm high, spreading by stout rhizomes to make large patches in dry ground. 5. *Aegopodium*

1. SANICULA (Tourn.) L.

a. Flowers greenish-white; sepals lanceolate, 1.5-5 mm long; fruit 6-7 mm long. 1. *S. marilandica*
a. Flowers yellowish-green; sepals obtuse and ovate, 0.7-0.9 mm long; fruit 3-4 mm long. 2. *S. gregaria*

1. **S. marilandica** L. BLACK SNAKEROOT. Map 339. Fig. 91, f.

Scattered to common in heavy soils from Annapolis Co. to northern C. B.; rich woods and borders of thickets. June-Aug.

N. S. to Alta. south to Ga. & N. M.

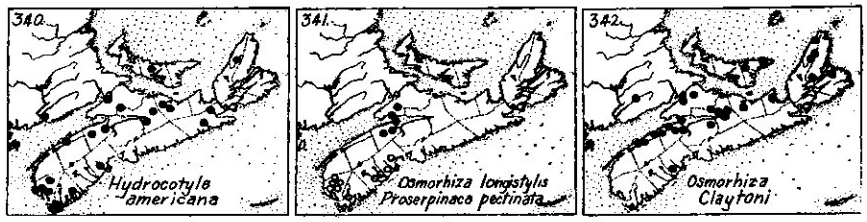
2. **S. gregaria** Bickn. SANICLE.

Rarer than the preceeding, growing only in rich alluvial woods and along intervales: Five-Mile R., Hants Co., and West River, near Pictou. July-Aug.

N. S. to Minn. & S. D. south to Ga. & La.

2. HYDROCOTYLE (Tourn.)L.

a. Leaves cordate, the petiole attached at a notch in the blade; umbels sessile, 1-5-flowered, in the leaf axils. 1. *H. americana*
a. Leaves peltate, the petiole attached to the center of the blade; umbels many-flowered, long stalked. 2. *H. umbellata*



1. **H. americana** L. WATER PENNYWORT. Map 340. Fig. 91, g.

Common throughout; moist half-shaded places, bottom

of depressions, bordering brooks, ditches, etc. July-Aug. N. S. to Minn. south to N. J., N. C. & Ohio.

2. **H. umbellata** L.

Very rare; known only from the wet sandy and gravelly margin of St. John (Wilson's) Lake, Yarmouth Co. "Very rare and local and appearing like a waif washed down from some as yet undiscovered station farther up the valley of the Tusket," (Fernald, 1922).

N. S.; Mass. south along the coast to Fla. & Tex.; occasionally inland; Ore. & Calif.

3. OSMORHIZA Raf.

a. Involucre of several persistent leafy bracts.
b. Styles and their bases 2-4 mm long.
c. Stems glabrous or nearly so. 1. *O. longistylis*
c. Stems puberulent with short spreading hairs. *O. longistylis* var. *brachycoma*
b. Styles and their bases 0.5-1 mm long. 2. *O. Claytoni*
a. Involucre absent; style 0.5-1 mm long; fruiting pedicels strongly ascending. 3. *O. divaricata*

1. **O. longistylis** (Torr.) DC. SWEET ANISE. Map 341.

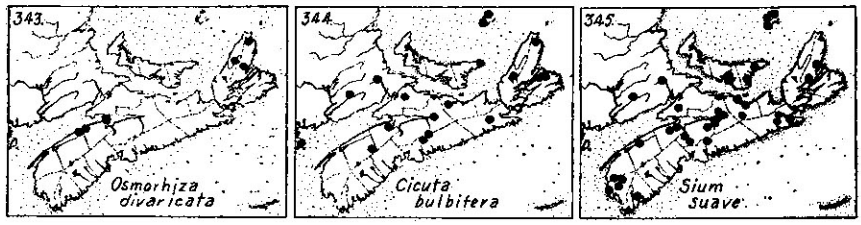
Rather common in rich woods and on intervales from Annapolis Co. east to Pictou Co. and probably to C. B. Robinson, 1906, states that it is a much commoner intervale plant in eastern N. S. than is usually supposed. June. N. S. to Sask. southward.

Var. **brachycoma** Blake, Rhodora **25**: 110. 1923, was collected along the edge of the intervale at Halfway R., Cumberland Co. N. S.; Ont. to Ohio & Ind.

2. **O. Claytoni** (Michx.) Clarke. HAIRY SWEET CICELY. Map 342. Fig. 92, a.

Rich, alluvial or calcareous woods from Annapolis Co. to northern C. B.; also near Bridgewater; rather common in upland hardwoods and along intervales. June 1-30.

N. S. to Dak. south to Ala. & Kans.



3. **O. divaricata** Nutt. Map 343.

Local and restricted to mixed or open hardwoods; along the North Mt. from Blomidon to Annapolis Co.; characteristic of climax hardwoods, and intervales in northern C. B. June-July.

Nfld., N. S., Gaspe & N. Eng.; B. C. to Calif.

4. CONIUM L.

1. **C. maculatum** L. POISON HEMLOCK.

Introduced and rare; found in waste places and dumps, Weymouth and Digby; deadly poisonous. July-Aug.

Europe; widely introduced.

5. AEGOPODIUM L.

1. **A. Podagraria** L. GOUTWEED. Fig. 92, b.

This weed is common around Boylston and Guysborough and frequent around Halifax, usually growing near buildings or along roadsides in large patches. A large form with green leaves has become an almost uneradicable weed in Guysborough Co. A smaller type with variegated leaves is less persistent and rarely fruits. June-July.

Introduced from Eu.; becoming common in northeast N. A.

6. CICUTA L.

a. Leaves lanceolate, 5-10 mm wide; fruit 3-3.5 mm long; without bulblets. 1. *C. maculata*

a. Leaves with divisions linear, 1 mm or less in width; fruit 1.5-2 mm long; upper leaf-axils with bulblets in autumn. 2. *C. bulbifera*

1. **C. maculata** L. WATER HEMLOCK. Fig. 92, c.

Marshes, swamps, ditches and wet pastures in mucky or alluvial soil; general from Yarmouth to C. B.; becoming more abundant northwards and eastward; common on wet marshes aboutthe head of the Bay of Fundy. July.

N. S. to Man. south to Fla. & Tex.

2. **C. bulbifera** L. BULBOUS WATER HEMLOCK. Map 344. Fig. 91, h.

Scattered from Annapolis Co. to northern C. B.;

usually growing in shallow water, at the edge of ponds, or in wet cat-tail marshes. Aug.

Nfld. to B. C. south to Md. & Ore.

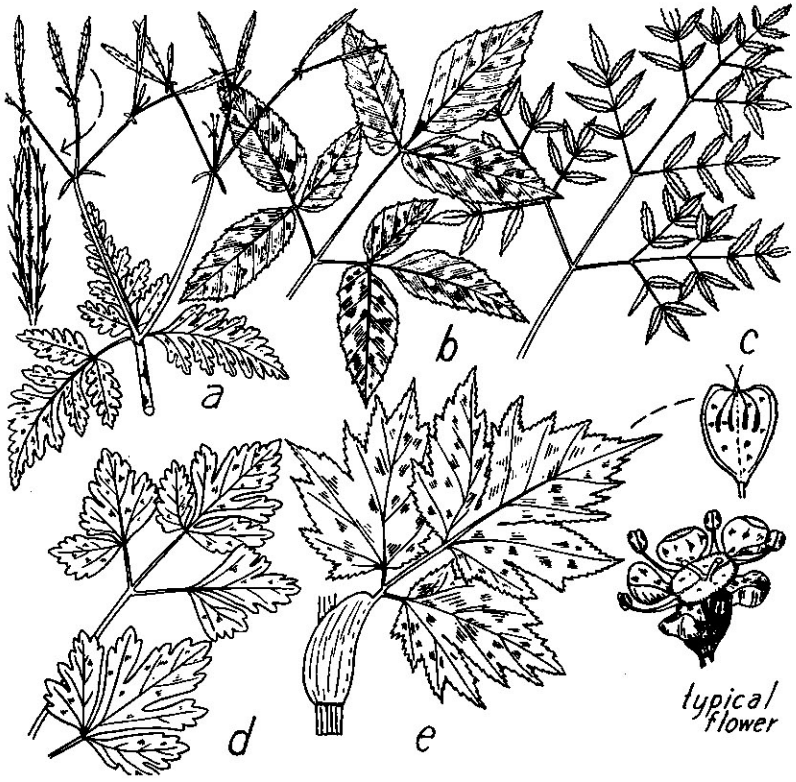


Fig. 92.—**Osmorhiza.** a, **O. Claytoni**, inflorescence, x 1; ripe fruit, x 2. **Aegopodium.** b, **A. Podagraria**, typical leaf, x ⅓. **Cicuta.** c, **C. maculata**, leaf, x 1/10. **Ligusticum.** d, **L. scothicum**, leaves x ⅓. **Heracleum.** e, **H. lanatum**, leaf showing the large sheath, x ¼.

7. CARUM L.

1. **C. Carvi** L. CARAWAY. Fig. 91, e.

Common throughout; damp fields, around houses and along roadsides. June 15-July 15. Forma **rhodochranthum** A. H. Moore, with delicate pink flowers, was found scattered among the typical whitish-flowered plants at Advocate.

Introduced from Eu.; widespread.

8. SIUM (Tourn.) L.

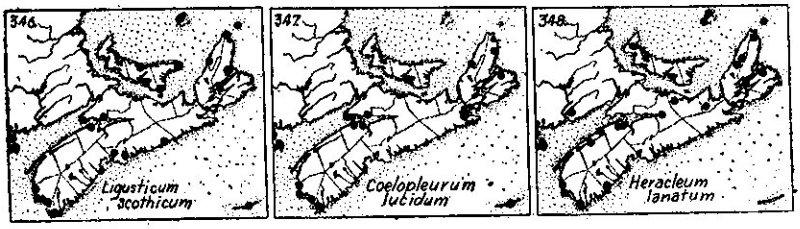
1. **S. suave** Walt. WATER PARSNIP. Map 345. Fig. 91, c.
Common throughout; muddy shores of rivers and lakes, ditches and marshes. Submersed leaves are often finely dissected. July 15-Aug. (*S. cicutaefolium* Schrank).
Nfld. to B. C. south to Fla. & Calif.

9. LILAEOPSIS Greene

1. **L. lineata** (Michx.) Greene.
Known in Canada only from the muddy and rocky tidal banks of the Tusket R., at Tusket. July-Aug.
N. S. to Fla. west to Miss.; along the coast.

10. LIGUSTICUM L.

1. **L. scothicum** L. SCOTCH LOVAGE. Map 346. Fig. 92, d.
Scattered around the coast; rocky cliffs, sea-shores, and headlands. July-Aug.
N. Y. northwards along the coast; also on the West Coast.



11. CORIANDRUM (Tourn.) L.

1. **C. sativum** L. CORIANDER.
Waste places, rarely introduced and not persisting.
N. S. southward and westward; adventive from Eu.

12. AETHUSA L.

1. **A. Cynapium** L. FOOL'S PARSLEY.
Rare; waste ground in barnyard, Shelburne.
Introduced from Eu.; N. S. to Minn. south to Penn.

13. COELOPLEURUM Ledeb.

1. **C. lucidum** (L.) Fern., Rhodora **21**: 146. 1919. Map 347.

Scattered on gravelly sea-shores and headlands around the coast; infrequent on the slopes of the turf-covered dunes on Sable Is. (*C. actaeifolium* (Michx.) C. &. R. of earlier authors). July-Aug.

Sea-coast; Greenland to Long Is., N. Y.

14. PASTINACA L.

1. **P. sativa** L. WILD PARSNIP. Fig. 91, b.

Escaped from cultivation and a common weed in parts of the province; most often seen in the Annapolis Valley, scattered elsewhere; roadsides, old fields and orchards. July.

Naturalized from Eu.; widely distributed.

15. LEVISTICUM (Riv.) Hill

1. **L. officinale** (L.) Koch. LOVAGE.

Rare; railway bank, Lake Annis, Yarmouth Co. (Fernald, 1921).

Introduced from southern Eu.; N. S., to Penn.

16. HERACLEUM L.

a. Leaves woolly beneath, large, divided into three main divisions which are irregularly and sharply cut. 1. *H. lanatum*

a. Leaves pubescent beneath only, pinnately divided, the division rather bluntly-lobed and toothed. 2. *H. Sphondylium.*

1. **H. lanatum** Michx. COW PARSNIP. Map 348. Fig. 92, e.

Wet meadows and brooksides in alluvial soil; scattered throughout; a common intervale plant in eastern N. S.; common on sea-bluffs in northern C. B. Early July.

Nfld. to the Pacific south to N. C. & Kans.

2. **H. Sphondylium** L.

Common along roadsides and vacant lots in Truro.

Introduced from Eu.; chiefly about ports in N. A.

17. CONIOSELINUM Fisch.

1. **C. chinense** (L.) BSP. HEMLOCK PARSLEY.

Scattered in swamps, mossy coniferous woods or swales near the coast; common on St. Paul Is., rare on the mainland and in C. B. Aug.-Oct.

Nfld. to Minn. south to N. Y., N. C. & Ind.

18. ANGELICA L.

a. Plant puberulant or minutely pubescent above and on the upper surface of the leaves; leaflets less than 4 cm wide; uppermost leaves reduced mostly to inflated petioles; fruits 5-6 mm long. 1. *A. sylvestris*

a. Plant glabrous throughout; leaflets 3-7 mm wide; uppermost petioles not so prominent; fruit 6-8 mm long. 2. *A. atropurpurea*

1. **A. sylvestris** L. ANGELICA.

Common around Sydney; introduced into old fields and along roadsides at Louisburg; probably somewhat general in this part of C. B. July-Sept.

Introduced from Eu.; local.

2. **A. atropurpurea** L. PURPLE ANGELICA.

Rare near the coast; Shelburne, Mabou and Bay St. Lawrence; swamps, low ground, along streams.

Nfld. to Minn. south to Dela. & Iowa.

19. DAUCUS (Tourn.) L.

1. **D. Carota** L. WILD CARROT, QUEEN ANNE'S LACE. Fig. 91, a, d.

A too common weed in hay fields and along roadsides from Yarmouth to Hants Co.; spreading rapidly in Pictou Co.; local in a few other regions of the province. It is distinguished from caraway by the hairy leaves and stem; the leaflets are also less crowded on the leaf-rhachis. July-Sept.

Introduced from Eu., throughout N. A.

82. CORNACEAE DOGWOOD FAMILY

1. Cornus (Tourn.) L.

a. Low herbs, the flowers in a head surrounded by a 4-leaved white petaloid involucre.

b. Leaves more or less whorled near the top of the stem; flowers (not the involucral bracts) whitish-green. 1. *C. canadensis*

b. Leaves all opposite; flowers deep violet. 2. *C. suecica*

a. Shrubs.

c. Leaves alternate, clustered toward the ends of the twigs; berries deep blue. 3. *C. alternifolia*

c. Leaves opposite.

d. Leaves ovate to lanceolate with appressed hairs beneath, or smooth; branches not normally speckled, bright red the first year; berries white. 4. *C. stolonifera*

d. Leaves oval, thinly woolly beneath, with 7-9 pairs of veins; branches rather pale, speckled or streaked with purple; berries light blue or almost white. 5. *C. rugosa*

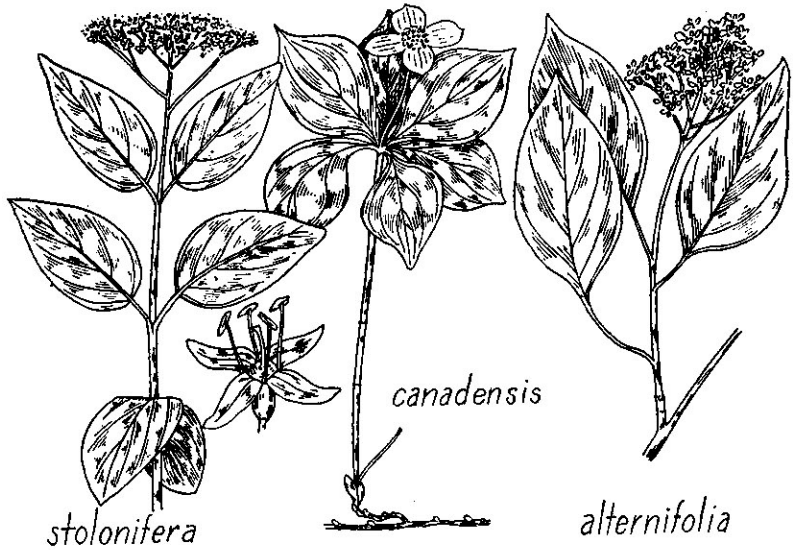


Fig. 93.—**Cornus**, all x $\frac{1}{3}$.

1. **C. canadensis** L. BUNCHBERRY. Fig. 93.

Common throughout; heaths, barrens, woodland pioneer, edges of thickets, mature bogs, etc. June. Forma *elongata* Peck, with the leaves in two or more whorls or often the lower ones opposite, is occasionally seen. (Reported as var. *intermedia* Farr. in Rhodora **40**: 274. 1938).

Lab. to Alaska south to N. J., Ind. & Calif.

2. **C. suecica** L.

Sphagnous depressions in barrens, St. Paul Is., gravelly shore at Canso, growing with *Empetrum nigrum* (Rousseau, 1935).

Greenland & Nfld. south around the Gulf St. Lawrence; Alaska; rare.

3. **C. alternifolia** L. f. ALTERNATE-LEAVED DOGWOOD. Map 350. Fig. 93.

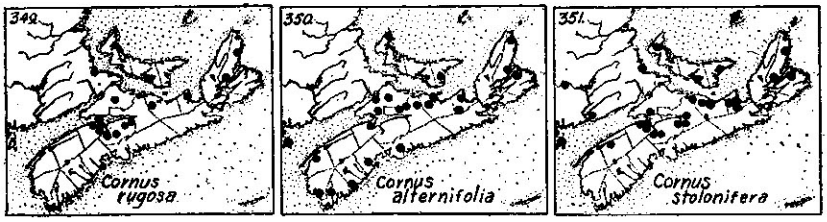
Rare in Yarmouth Co.; common from northern Digby Co. to northern C. B., where Nichols reports it as scattered in the climax forest; rich woods, ravine slopes and intervales. June 15-July 15.

Nfld. to Minn. south to Ga. & Mo.

4. **C. stolonifera** Michx. RED OSIER DOGWOOD. Map 351. Fig. 93.

Common from Annapolis to C. B.; edges of intervales, brook-sides and wet meadows. June.

Lab. to MacKenzie south to Va. & Calif.



X. C. acadiensis Fern., Rhodora **43**: 411-412. 1941, is considered a hybrid of the previous two species, and has the leaves crowded near the tips of the branches as in *C. alternifolia*, but opposite and more like the outline of those of *C. stolonifera*. This is the shrub reported from a cold brook at the head of Baddeck Bay as *C. Amomum*, Rhodora **23**: 278. 1921. *C. Amomum* is not known to occur east of southwestern Maine (Fernald, l. c.).

5. **C. rugosa** Lam. ROUND-LEAVED DOGWOOD. Map 349.

Open woods, ravines, and talus of cliffs in nearly neutral or alkaline areas. It is always found near the gypsum areas; common on the side of Cape Blomidon on the basic trap rock; and scattered elsewhere from Kings Co. to C. B. Early July. (*C. circinata* L'Her.).

N. S. to Man. south to Va., Ill. & N. D.

83. ERICACEAE HEATH FAMILY

a. Ovary superior.

b. Plants saprophytic, without green color; pollen-grains separate;

anthers opening by slits; fruit a capsule.
1. INDIAN PIPE SUBFAMILY

b. Plants with green leaves; pollen grains in 4's.
c. Petals separate or nearly so; low, evergreen herbs; fruit a capsule.
2. WINTERGREEN SUBFAMILY

c. Petals united to form a tube; plants various, often shrubby; fruit a capsule or berry. 3. HEATH SUBFAMILY

a. Ovary inferior, so that the sepals form a blow-end on the tip of the berry-like fruit; pollen grains in 4's; sepals and petals in 4's nearly separate, or else in 5's and united to form a tube.
4. BLUEBERRY SUBFAMILY

1. INDIAN PIPE SUBFAMILY

a. Flowers 10-25 mm long, the petals separate; stem-leaves scale like (Fig. 94, a b). 1. *Monotropa*

2. WINTERGREEN SUBFAMILY

a. Leaves scattered on the stem, lanceolate; flowers in a terminal short inflorescence; styles very short (Fig. 94, c). 2. *Chimaphila*

a. Leaves mostly basal, almost round; flowers solitary, or in an erect narrow raceme.
b. Flowers solitary (Fig. 94, d). 3. *Moneses*
b. Flowers numerous (Fig. 94, f-k). 4. *Pyrola*

3. HEATH SUBFAMILY

a. Leaves 5 mm long or longer, not scale-like.
b. Leaves densely rusty-woolly beneath, the edges strongly inrolled; flowers irregular, white, with petals separate (Fig. 95, b).
5. *Ledum*

b. Leaves greenish or whitish beneath; petals united.
c. Plants erect and shrubby; fruit a capsule.
d. Leaves with the margin nearly or entirely without teeth; flowers pinkish or flesh-colored.
e. Flowers before the leaves unfold; corolla funnel-form, split irregularly to the base; fruit a capsule 3 times as long as thick; leaves oval, with scattered brownish hairs beneath, smooth above (Fig. 95, c). 6. *Rhododendron*

e. Flowers after the leaves appear; corolla saucer- or bell-shaped, the petals united; fruit almost round; leaves shiny above, whitish beneath or with very short hairs.
f. Flowers saucer-shaped; leaves flat or with the margins very slightly inrolled, white and powdery beneath, the tips blunt (Fig. 95, f). 8. *Kalmia*

f. Flowers vase- or bell-shaped; leaves inrolled so that they are almost linear, finely pubescent beneath, with a sharp prickle at the tip (Fig. 95, a). 9. *Andromeda*

d. Leaves with the margins coarsely toothed; flowers white, vase-formed, in a slender raceme (Fig. 95, d). 10. *Chamaedaphne*

c. Plants low, prostrate or trailing, more or less woody; leaves thick and evergreen; fruit a berry or capsule.

g. Leafy branches prostrate and trailing; leaves not toothed.

h. Leaves glabrous, the veins obscure or only the mid-rib prominent, tapering to the base; flowers in June-July.

i. Margin of leaves not involute; flowers vase-shaped; fruit a red mealy berry. 11. *Arctostaphylos*

i. Margin of leaves strongly involute; flowers funnel-shaped; fruit a capsule. 7. *Loiseleuria*

h. Leaves hairy beneath, oval, cordate at the base, the veins prominent; flowers in late April or early May, tubular, woolly in the throat. 12. *Epigaea*

g. Leafy branches small and erect; leaves toothed, often reddish; fruit a berry with fleshy calyx (Fig. 94, e). 13. *Gaultheria*

a. Leaves 1-2 mm long, scale-like; introduced. 14. *Calluna*

4. BLUEBERRY SUBFAMILY

a. Plants small, trailing, with leaves less than 10 mm long; corolla deeply 4-cleft; berry with 5 cavities.

b. Leaves almost round, 3-6 mm wide, with a sharp point; flower bell-like, 4 mm long; berry white. 15. *Chiogenes*

b. Leaves 2-3 times longer than wide, 1-6.5 mm wide; corolla almost flat or with long flaring or reflexed lobes, 1.2-2 cm wide; berry red or brownish. 17. *Vaccinium*

a. Plants mostly erect, much-branched, shrubby; leaves more than 10 mm long; corolla 4- or usually 5-lobed, bell-shaped.

c. Berry 4- or 5-celled, many-seeded; leaves not resinous-dotted beneath. 17. *Vaccinium*

c. Berry 10-celled, 10-seeded; leaves resinous-dotted beneath (Fig. 95, e). 16. *Gaylussacia*

1. MONOTROPA L.

a. Flowers solitary, white, turning blackish. 1. *M. uniflora*

a. Flowers several, yellowish, usually pubescent. 2. *M. Hypopitys*

1. **M. uniflora** L. INDIAN PIPE. Map 352. Fig. 94, a.

General throughout; thickets, climax or old coniferous forest, and also common in mixed or deciduous growth. July-Aug.

Nfld. to B. C. south to Fla. & Mex.; Asia.

2. **M. Hypopitys** L., var. **rubra** (Torr.) Farw., Amer. Midl. Nat. **10**: 39. 1926. PINESAP. Map 353. Fig. 94, b.

Found throughout, but not as abundant as the preceeding and usually in coniferous woods; scattered in pine woods in the Annapolis Valley; in fir and spruce woods eastward; occasionally in older mixed woods. July-Aug. (*M. Hypopitys* L. of Gray's Man.).

N. S. to B. C. south to Fla. & Mex.

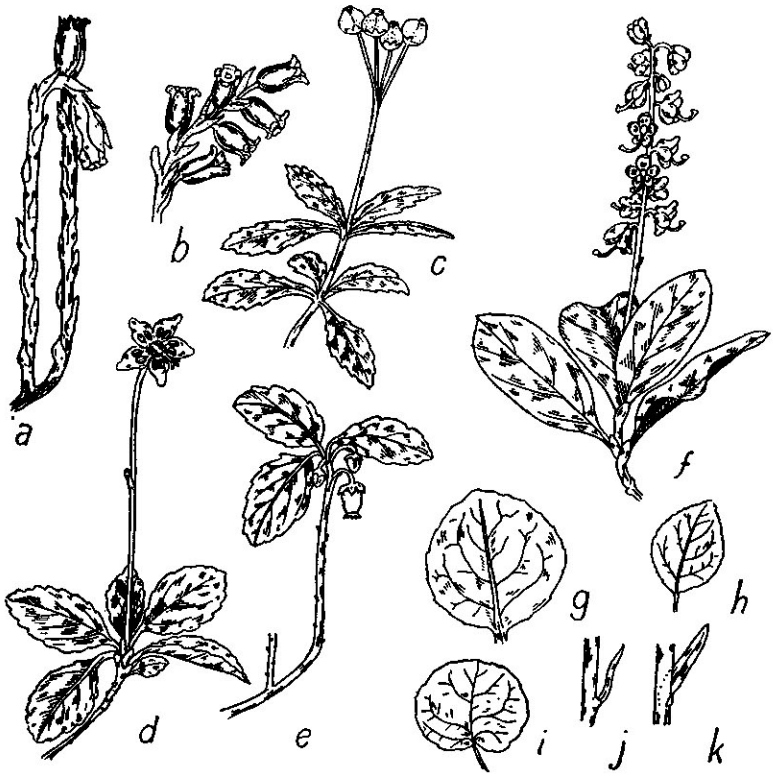


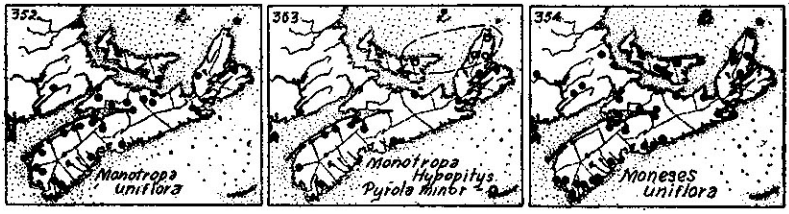
Fig. 94.—**Monotropa.** a, **M. uniflora**, x ½. b, **H. Hypopitys**, inflorescence, x ½. **Chimaphila.** c, **C. umbellata**, x ½. **Moneses.** d, **M. uniflora**, x ½. **Gaultheria.** e, **G. procumbens**, x ½. **Pyro a.** f, **P. elliptica**, x ½. g, **P. rotundifolia** var. **americana**, leaf, x ½. h, **P. secunda**, leaf, x ½. i, **P. asarifolia**, leaf, x ½. j, bracts on the stems of **P. elliptica** and **P. rotundifolia**, x 3.

2. CHIMAPHILA Pursh

1. **C. umbellata** (L.) Bart., var. **cisatlantica** Blake, Rhodora **19**: 241. 1917. PRINCE'S-PINE. Fig. 94, c.

Scattered throughout; in dryish soil, deciduous or sometimes in spruce or fir woods. Mid-July.

N. S. to Ga. west to the Pacific.



3. **MONESES** Salisb.

1. **M. uniflora** (L.) Gray. ONE-FLOWERED SHINLEAF. Map 354. Fig. 94, d.

Found throughout, often rather rare; deciduous or sometimes in coniferous woods; characteristic of both hardwoods and coniferous forests in northern C. B. June 20-July 20. Var. *reticulata* (Nutt.) Blake, Rhodora **17**: 28. 1915, is a western form which has been collected once in eastern America: St. Paul Is., northern C. B. This form has the leaves more ovate, usually acute, coarsely dentate and strongly veined. (See Porsild, Rhodora **41**: 271. 1939).

Lab. to Alaska south to Penn. & Minn.; Eurasia.

4. **PYROLA** (Tourn.)L. WINTERGREEN, SHINLEAF

a. Styles and stamens straight, extending outward; petals touching each other, forming a tube.
  b. Style shorter than the petals; flowers placed all around the axis of the raceme; the bracts intermingled with the leaves at the base crowded, usually 1 cm long or longer, often grading into the leaves. 1. *P. minor*
  b. Style longer than the petals; flowers forming a one-sided raceme; bracts at base of the stem 2-4 mm long, often absent, distinct from the leaves.
    c. Flowers 7-15, in a long raceme; leaves narrowed to a pointed tip, 1.5-6 cm long; stem leafy, elongated and trailing. 2. *P. secunda*
    c. Flowers 3-8, clustered; leaves rounded at the tip, 0.8-3 cm long; stem short with few leaves. *P. secunda* var. *obtusata*
a. Styles and stamens bent downward with the tips upwardly curved; petals wide and spreading so that the flower is saucer-shaped.
  d. Bracts on the stem none or 1-3, narrowly lanceolate and long-

tipped, not sheathing the stem at their base; sepals little or not at all longer than broad.

e. Blades of the leaves oval, 3-8 cm long, longer than the petioles; anthers blunt; bracts mixed with the leaves at the base numerous, usually 1 cm long, often grading into leaves, obtuse to truncate. 3. *P. elliptica*

e. Blades of the leaves almost round, 1-3 cm long, shorter than the petioles; anthers with a neck or point; basal bracts 2-4 mm long, distinct from the leaves, acute to acuminate.

f. Leaves rounded at the base and top, 1.5-3.4 cm wide, 4-11 in a rosette. 4. *P. virens*

f. Leaves wedge-shaped at the base and squarish at the tip, 0.7-2.5 cm wide, 0-7 in a rosette. *P. virens* forma *paucifolia*

d. Bracts on the stem 1-5, ovate-lanceolate, their bases somewhat sheathing the stem; sepals at least a half longer than wide.

g. Sepals oblong, blunt or sharp, very variable, twice as long as wide; flowers white, leaves not cordate.

h. Petals 6.5-10.5 mm long; plant larger; leaves 2.5-8 cm long; raceme 5-20-flowered, 2.5-20 cm long at flowering time. 5. *P. rotundifolia* var. *americana*

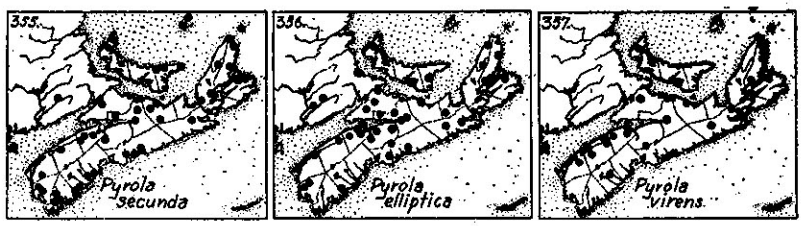
h. Petals 5-7 mm long; leaves 1.8-5 cm long; raceme 3-12-flowered, 2-9 cm long at flowering time. *P. rotundifolia* var. *arenaria*

g. Sepals triangular, sharp-pointed, about 1.5 times as long as wide; petals pink, about 5 mm long; leaves cordate at the base. 6. *P. asarifolia*

1. **P. minor** L. SMALL WINTERGREEN. Map 353.

Rare in cold woods; characteristic of maturer coniferous woods in northern C. B. (Nichols); scattered west to Colchester Co. July-Aug.

Greenland to Alaska south to northern N. Eng. & Minn.



2. **P. secunda** L. ONE-SIDED WINTERGREEN. Map 355. Fig. 94, h.

Scattered to common throughout; coniferous or mixed woods, and in newly-cleared pastures. July. Lab. to Alaska south to Md., Mich & Calif.

Var. **obtusata** Turcz., see Porsild in Rhodora **41**: 274.

1939, is rarer than the species. It was reported by Fernald from a sphagnous spruce swamp at Hectanooga, Yarmouth Co. (1921); and specimens are at Truro from a cool damp wood, Nuttby, Colchester Co.

N. S. to Penn. westward.

3. **P. elliptica** Nutt. SHINLEAF. Map 356. Fig. 94, f.

Common throughout; open woods, roadsides, open pastures and hillsides on light soils. July-Aug. 10.

Nfld. to B. C. south to DC., Iowa & N. Mex.

4. **P. virens** Schweigg. See Rhodora **43**: 167. 1941. GREEN-FLOWERED WINTERGREEN. Map 357.

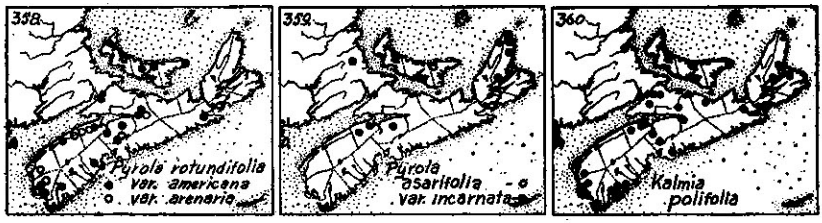
Dry or sandy woods, generally under conifers but also in mixed or deciduous woods. Forma *paucifolia* Fern. is the commonest form, but is hardly worth maintaining. Practically all of the N. S. collections show rosettes with few blunt-pointed leaves. Rare in the southwestern counties; scattered from Digby to Hants Co.; common to northern C. B. July-Aug. (*P. chlorantha* Sw.).

Nfld. to B. C. south to N. S., N. Eng. & Ariz.

5. **P. rotundifolia** L., var. **americana** (Sweet) Fern. Rhodora **22**: 121-122. 1920. ROUND-LEAVED PYROLA. Map 358. Fig. 94, g, k.

Scattered on the peninsula; open or rich woods, and on hillsides; commoner in the center of the province. July. N. S. to S. Dak. south to Ga.

Var. **arenaria** Mert. & Koch is found in dry places, open pastures, sandy plains and barrens from Yarmouth Co. east at least to Colchester Co. It is a smaller European form that is found in America from Greenland & Nfld. south to the Maritime Provinces.



6. **P. asarifolia** Michx. Map 359. Fig. 94, i.

Rare; found in rich hardwoods and in intervales; common in northern C. B., becoming rarer westward to Kings Co. June 15-July.

N. S. to the Yukon south to N. S. and northern N. Eng. etc.

5. LEDUM L.

1. **L. groenlandicum** Oeder. LABRADOR TEA. Fig. 95, b.

Common throughout; bogs, wooded swamps, wet barrens and poorly-drained opens and pastures. June 10-30.

Arctic America south to Penn., Minn. etc.

6. RHODODENDRON L.

a. Shrub, to 1 m high; leaves thin, deciduous, dull; corolla 2-lipped, less than 2 cm wide 1. *R. canadense*

a. Shrub 2 to 5 m high; leaves thick and smooth, 8-20 cm long; corolla bell-shaped, 3.5-5 cm wide. 2 *R. maximum*

1. **R. canadense** (L.) BSP. RHODORA. Fig. 95, c.

Very common throughout; swamps, rocky barrens, poorly-drained soils and around the edges of bogs. May 20-June 20. Forma **viridifolium** Fern., in Wilson & Rehder, Mon. Azal. 122. 1921, has the leaves and twigs lacking the grayish bloom which characterizes the species. Occasionally seen in wet areas in Yarmouth Co.

Nfld. to Que. south to N. J. & Penn.

2. **R. maximum** L. GREAT LAUREL

Collected over 50 years ago near Beaver Dam Gold Mines, Sheet Harbour, and unknown in the province since that time. An article in the Proc. N. S. Inst. Sci. (Lawson, 1887) gives an interesting account of the discovery and location of this plant.

N. S.; Me. south through the Alleghenies to Ga.

7. LOISELEURIA Desv.

1. **L. procumbens** (L.) Desv. ALPINE AZALEA.

Collected by Howe and Lang on dry humus, Kingsport, July 8 & 9, 1901. This is the only record known for the province.

Mts. of N. H., Me. & Que., and N. S. to Nfld. and northward.

8. KALMIA L.

a. Leaves smooth beneath, flat; twigs terete; flower-clusters lateral. 1. *K. angustifolia*

a. Leaves finely whitish-pubescent beneath, the edges inrolled; flowers terminal. 2. *K. polifolia*

1. K. angustifolia L. SHEEP LAUREL, LAMBKILL Fig. 95, f.

Very common throughout; pastures, barrens, roadsides, and open thickets everywheres. It is characteristic of dryish or run-out soils; found also in bogs; poisonous to cattle. June 20-early July.

Lab. to Ont. south to Ga. & Mich.

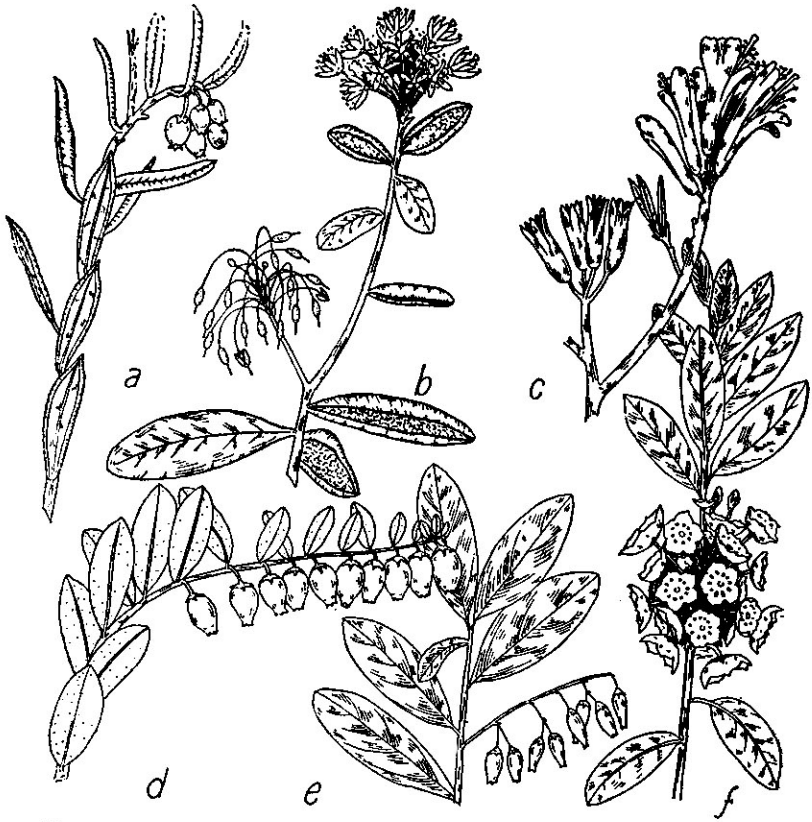


Fig. 95.—**Andromeda.** a, **A. glaucophylla,** x ½. **Ledum.** b, **L. groenlandicum,** x ½. **Rhododendron.** c, **R. canadense,** x ½. **Chamaedaphne.** d, **C. calyculata,** x ½. **Gaylussacia.** e, **G. baccata,** x ½. **Kalmia.** f, **K. angustifolia,** x ½.

2. K. polifolia Wang. PALE LAUREL. Map 360.

Scattered in peat bogs throughout; apparently much

commoner eastward, where bog conditions are more often found. Mid-June.

Lab. to Alaska south to Penn., Mich. & Calif.

9. ANDROMEDA L.

1. **A. glaucophylla** Link. Map 361. Fig. 95, a.

Peat bogs throughout; rather common in its habitat. Plants reported as *A. polifolia* belong here. Early June.

Lab. to Man. south to Penn. & Minn.

10. CHAMAEDAPHNE Moench.

1. **C. calyculata** (L.) Moench. LEATHER LEAF, CASSANDRA. Fig. 95, d.

Common throughout, found nearest the center of bogs or marshes or next to bog lakes; it is occasionally found on lake margins or in poorly-drained soil. May 15-June 10.

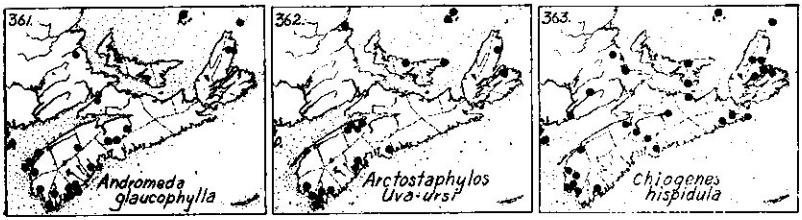
Lab. to Alaska south to Ga.; Eurasia.

11. ARCTOSTAPHYLOS Adans.

1. **A. Uva-ursi** (L.) Spreng., var. **coactilis** Fern. & MacBride, Rhodora **16**: 212. 1914. BEARBERRY. Map 362.

Common on the sandy barrens of Kings and Annapolis Cos.; scattered in dry areas from Yarmouth to Halifax Co.; local east to northern C. B. Early June.

Arctic regions south to Penn., Va. & Calif.



12. EPIGAEA L.

1. **E. repens** L., var. **glabrifolia** Fern., Rhodora **41**: 446. 1939. MAYFLOWER, TRAILING ARBUTUS.

Rather common; pastures, hillsides, barrens, open woods and on sandy soils, throughout. April 15-May 15.

Lab. to Sask. south to Va.

13. GAULTHERIA (Kalm) L.

1. **G. procumbens** L. TEABERRY, CHECKERBERRY. Fig. 94, e.

Very common throughout; woods, barrens, pastures, mostly in the open or nearly so, frequently the common plant of the ground cover over considerable areas. Late July-Aug.

Nfld. to Man. south to Ga.

14. CALLUNA Salisb.

1. **C. vulgaris** (L.) Hull. LING, HEATHER.

Growing in scattered places from Halifax and Pictou to C. B., probably scattered elsewhere. All records are probably of early introductions. Aug.

Introduced from Eu.; local.

15. CHIOGENES Salisb.

1. **C. hispidula** (L.) Torr. & Gray. SNOWBERRY, TEABERRY. Map 363.

Scattered throughout, often abundant on mossy woodland knolls, barrens and mature bogs; appearing like a tiny cranberry with rounded instead of narrow leaves. June.

Lab. & Nfld. to B. C. south to N. C.

16. GAYLUSSACIA HBK.

a. Leaves thin, oblong, acute and tapering similarly to both ends; ovary and fruit smooth. 1. *G. baccata*

a. Leaves thick, oval, rounded at the apex with a prominent short point formed by the extension of the mid-rib; ovary and fruit bristly-hairy. 2. *G. dumosa*

1. **G. baccata** (Wang.) K. Koch. HUCKLEBERRY. Map 364. Fig. 95, e.

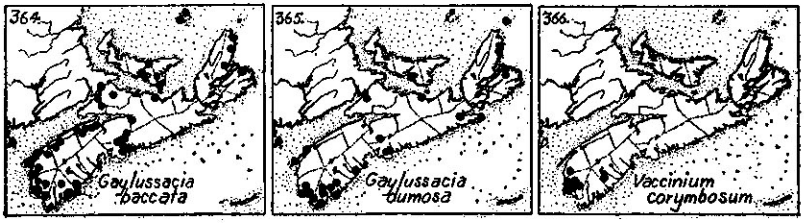
Rather general throughout, often common; rocky pastures, barrens, and mature bogs, sometimes in light soil, or on sand, but also in wet soil or on bogs; occasionally seen heavily fruiting. Early June.

Nfld. to Man. south to Ga.

2. **G. dumosa** (Andr.) Torr. & Gray., var. **Bigeloviana** Fern., Rhodora **13**: 99. 1911. BOG HUCKLEBERRY. Map 365.

Common in boggy barrens and sphagnous bogs from Yarmouth to Halifax Co.; scattered elsewhere. Early June.

Nfld. south to N. J. near the coast.



17. VACCINIUM L. BLUEBERRY, FOXBERRY, CRANBERRY.

Camp, W. H. The North American blueberries with notes on other groups of Vacciniaceae. Brittonia **5**: 203-275. 1945. Porsild, A. E. The Cranberry in Canada. Can. Field Nat. **52**: 116-117. 1938.

a. Plants erect; leaves thin, deciduous; corolla bell-shaped, shallowly lobed; fruit blue to black.
  b. Tall shrubs; leaves 3-8 cm long; corolla white, 6-12 mm long; Halifax to Yarmouth along the South Shore. 1. *V. corymbosum*
  b. Low shrubs, less than 1 m high, and usually only 1-4 dm; leaves 2-4 cm long or less; corolla white to rose.
    c. Leaves smooth, or pubescent on the mid-rib beneath; twigs hairy only in lines.
      d. Leaves green beneath, finely toothed with bristle-pointed teeth; fruit with a bloom.
        e. Plant dwarf, to 2 dm high; leaves 7-25 mm long, 3-8 mm wide; corolla 3-6 mm long. 2. *V. angustifolium*
        e. Plant erect, 2-6 dm high; leaves 15-35 mm long, 8-15 mm wide; corolla 4-8 mm long. *V. angustifolium* var. *laevigatum*
      d. Leaves whitish beneath, the edges smooth or finely toothed.
        f. Leaves oblong or elliptical, tapering to each end, finely and bristly toothed; fruit without a bloom or nearly so.
          g. Leaves greenish, without a whitish bloom. *V. angustifolium* var. *nigrum*
          g. Leaves with a noticeable whitish bloom. 3. *V. Brittonii*
        f. Leaves oval or broadly oblong, often blunt at the end, with the edge smooth or very rarely finely toothed; fruit with a bloom. 4. *V. pallidum*

c. Leaves downy, at least on the under side; margins always smooth; twigs densely and finely hairy; fruit with a bloom.
5. *V. myrtilloides*

a. Plants creeping or prostrate; leaves evergreen; corolla 4-lobed or 4- parted; fruit black or red.

h. Leaves oval, thick, with scattered black-pointed hairs beneath; corolla bell-shaped to round, shallowly lobed.

i. Fruit black; leaves slightly hairy beneath; plants woody, bushy and much branched, more or less prostrate. 6. *V. uliginosum*

i. Fruit red; leaves finely dotted with black hairs beneath; plants with short semi-woody erect branches. 7. *V. Vitis-Idaea*

h. Leaves oblong to linear, shining above and glaucous beneath; corolla deeply 4-parted with the lobes recurved; cranberries.

j. Leaves acute; stem slender and thread-like, not usually growing beyond the flowers and fruit; pedicels with two small reddish linear bracts; berry brownish-dotted.

k. Leaves 1-3 mm wide; flowers 1-4; corolla-lobes 5-8 mm long; berry 6-8 mm thick. 8. *V. Oxycoccos*

k. Leaves 3-6.5 mm wide; flowers 2-10; corolla-lobes 6-8 mm long; berry 8-10 mm thick. *V. Oxycoccos* var. *intermedium*

j. Leaves oblong and blunt; pedicels with wider, green bracts; corolla lobes 6-10 mm long; berry 10-20 mm thick, red.
9. *V. macrocarpon*

1. **V. corymbosum** L. HIGHBUSH BLUEBERRY. Map 366.

Southwestern counties from Digby Co. around to Halifax; bogs, upland rocky barrens, dry soil and along lake-margins. The plants are very variable, with the progeny from a single bush showing variable combinations in regard to pubescence, size and bloom of berry, habit of bush, etc. The typical form of the species, with the leaf-margins nearly smooth and the leaves more or less pubescent beneath, is rarely seen: thickets bordering Goven L., Yarmouth Co. Forma **albiflorum** (Hook) Camp, Amer. Midl. Nat. **23**: 177. 1940, with toothed leaves and the blades green on both surfaces, is the commonest form. (Var. *amoenum* (Ait.) Gray). This is found in bogs, on lake margins, thickets, swampy spruce woods, and new clearings. Forma **glabrum** (Gray) Camp, l. c. 1940, is much rarer than the preceeding form but is occasionally found in wet woods and swampy thickets. (Var. *pallidum* (Ait.) Gray). June.

N. S. & Me. to Minn. south to Fla. & Tex.

2. **V. angustifolium** Ait. LOWBUSH BLUEBERRY

This dwarf form is found on exposed heaths, headlands and mountain tops in C. B. It grades into the fol-

lowing variety in appearance, but plants of the eastern part of the province are noticeably smaller and have narrower leaves than those of the southwestern regions. In pastures, as around Truro, some clones may show plants as small and dwarf as those typical of the species. Nfld. to Minn. south to N. J. and W. Va.

Var. **laevifolium** House, Bull. N. Y. State Mus. **61**: 243-244. 1923, is our common low-bush blueberry. Common throughout; old fields, bogs, sandy barrens, beaches and headlands, generally preferring open areas with sunlight, gradually disappearing in thickets or in pastures growing up to bushes. (*V. pensylvanicum* Lam.). Camp finds that the more northern *V. angustifolium* has only half the number of chromosomes found in the relatively more southern var. *laevifolium*, and that the two do not hybridize. Consequently he has put the variety into a separate species with the name *V. Lamarckii* Camp, Bull. Torrey Bot. Club **71**: 180. 1945.

Var. **nigrum** (Wood) Dole, Fl. Vermont, ed. **3**: 212. 1937, is found mixed with the previous variety. It is supposed to be a hybrid with *V. Brittonii* Porter, and many variations occur. The taxonomic situation for the blueberries is very complex; and the occurrance of tetraploids and hybrids is the rule. The more vigorous plants are apparently tetraploids. These may further cross with the highbush blueberries to produce half-high bushes. Hybrids may also occur with *V. Brittonii* and *V. myrtilloides*.

Nfld. to Minn. south to N. C.

3. **V. Brittonii** Porter, Bull. Torrey Bot. Club **41**: 420. 1914.

Common throughout the western half of the province, probably throughout. In the southwestern counties it makes up about one-tenth of the blueberry population. It is usually found on light soil, and seems to grow in mild shade as well as in full sunlight. In the Annapolis Valley it frequently becomes dominant in open second growth on sandy soils. N. S. to N. Eng.

4. **V. pallidum** Ait. DRYLAND BLUEBERRY.

Rare; recorded with doubt by Lindsay from Halifax. It is reported by Fernald (1921) as dominant on the upper border of the cobble-beach of Butler's L., Gavelton, Yarmouth Co. This station is now under water, due to the

building of a power dam. However, the plant should be found elsewhere in the southwestern counties. (*V. vacillans* Kalm ex Torrey).

Dry soil; N. S. & Me. to Ga. inland to Ind.

5. **V. myrtilloides** Michx. CANADA BLUEBERRY.

Common throughout; sterile and dry soils, rocky barrens, roadside thickets and open woods, sometimes associated with conifers, and not growing well in open sunlight. The fruit is rather small, with a heavy bloom, and is generally of inferior quality. (*V. canadense* Kalm).

Lab. to Man. south to the mts. of Va. & to Ill.

6. **V. uliginosum** L., var. **alpinum** Bigel., see Malte, Rhodora **36**: 183. 1934. BOG WHORTLEBERRY.

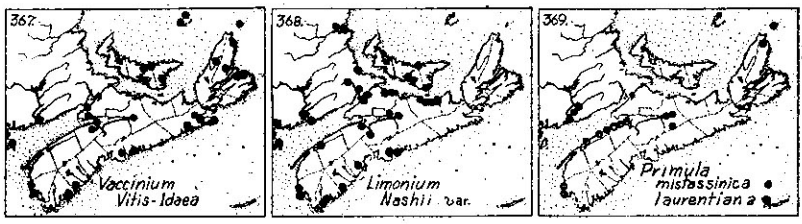
Nichols (1918) reports it from the top of Mount Franey, C. B., and says that it is characteristic of the dwarf-shrub heath in northern C. B.; Miss Perry (1930) reports it from the upper slope of headland, West Point, and South West Light on St. Paul Is. Prest (1905) says that it is found on barrens with blueberries, very rarely in swampy land. Not plentiful. Grows chiefly in the western and northern counties. It is not clear just what plant Prest is here referring to. The true status of the variety is also doubtful.

Circumboreal; ranging south to Me. and the mts. of N. Eng.

7. **V. Vitis-Idaea** L., var. **minus** Lodd. FOXBERRY. Map 367.

Common in any of the cooler regions of the province; bare headlands, barrens or other exposed situations generally near the sea; occasional on barrens or heaths inland. It is most abundant in Guysborough Co. and around C. B. June.

Artic America south to Mass. & L. Superior.



8. **V. Oxycoccos** L. SMALL CRANBERRY.

Found throughout; in moderately wet, open bogs or

poorly-drained swamps, almost always associated with *Sphagnum* since the plants are sensitive to the amount of water present. It is most abundant on lake margins of the Atlantic coastal region and in C. B. June 20-July 15. [*Oxycoccus quadripetalus* Gilib., var. *microphyllus* (Lange) M. P. Porsild]. Arctic America south to Penn. & Wisc.

Var. **intermedium** Gray is rare; spruce bog at Yarmouth collected by Bissell and Long, 22 230; edge of cliffs on St. Paul Is., C. B. (*O. quadripetalus* Gilib.). Found through much the same range as the species.

9. **V. macrocarpon** Ait. LARGE CRANBERRY.

Frequent to abundant in meadows, along brooks, on sphagnum mats around lakes, in poorly drained swamps, or bogs, in meadows covered by spring tides, and often growing into dryish fields or along the edge of salt marshes. On Sable Is. it is very abundant in most of the dune hollows. The virus disease causing false blossom is often found in old cultivated bogs, but has not been found in isolated native plants in the province. Mid-July. [*Oxycoccus macrocarpus* (Ait.) Pers.].

Nfld. to Wisc. south to Ark. and N. J.

84. PLUMBAGINACEAE LEADWORT FAMILY

1. LIMONIUM (Tourn.) Hill

1. **L. Nashii** Small, var. **trichogonum** Blake, Rhodora **25**: 58. 1923. SEA LAVENDER. Map 368. Fig. 96, a.

Salt marshes and around sea-shores; common on the marshes about the head of the Bay of Fundy; an early pioneer on salt marshes in northern C. B.; scattered elsewhere. July 20-Sept. [*L. carolinianum* (Walt.) Britt.].

Lab. to N. J. along the coast, grading into the southern *L. Nashii*.

85. PRIMULACEAE PRIMROSE FAMILY

a. Plant stemless; leaves smooth to mealy beneath, in a basal rosette (Fig. 96, b). 1. *Primula*

a. Plant with a leafy stem; leaves not mealy beneath.

b. Leaves alternate; plants rare.

c. Ovary joined at base to the base of the calyx; flowers stalked in erect racemes. 2. *Samolus*

c. Ovary wholly separate from the calyx; flowers small, sessile in the axils of the leaves. 7. *Centunculus*

b. Leaves opposite or whorled.

d. Flowers yellow, 1-2 cm wide; leaves numerous, scattered; plants 2-8 dm high (Fig. 96, c-g). 3. *Lysimachia*

d. Flowers scarlet, pinkish, lavender or white.

e. Leaves in a single whorl at the top of the stem; plant 10-15 cm high; flowers white (Fig. 98, b). 4. *Trientalis*

e. Leaves in numerous whorls or pairs; plants low.

f. Plants erect, 1-2 dm high, with oblong thickish leaves; flowers 3 mm wide; sea coast (Fig. 98, a). 5 *Glaux*

f. Plants trailing, with acute thin leaves; flowers 10-12 mm wide. 6 *Anagallis*

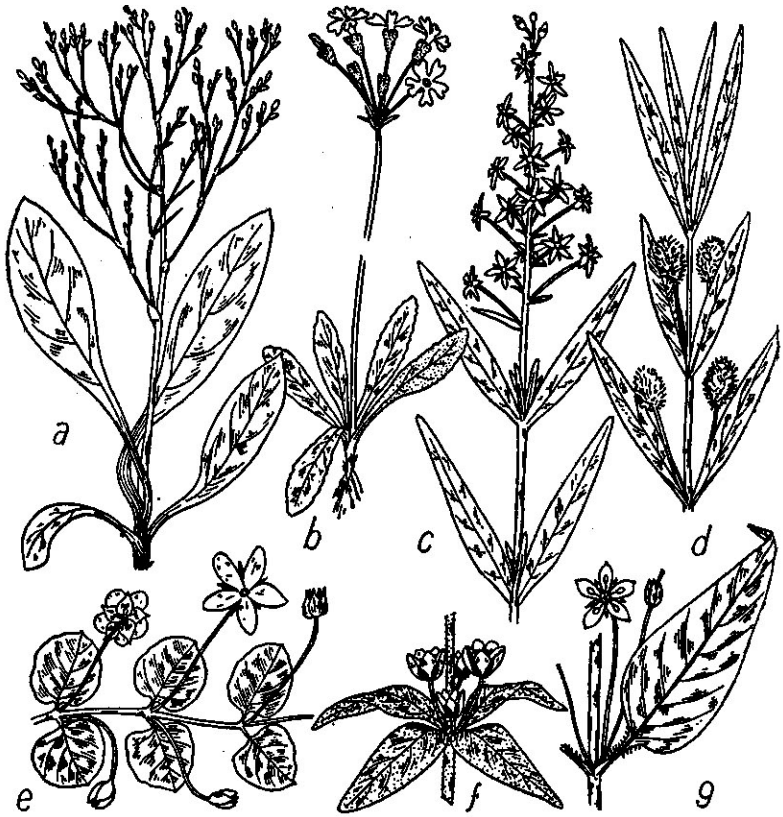


Fig. 96.—**Limonium.** a, **L. Nashii**, x ½. **Primula**, **P. laurentiana**, x ½. **Lysimachia.** c, **L. terrestris** top of , x ½. d, **L. thyrsiflora**, x ½. e, **L. Nummularia**, x ½. f, **L. pu** a, x ½. g, **L. ciliata**, x ½.

1. PRIMULA L.

Fernald, M. L. *Primula* Section *Farinosae* in America. Rhodora **30**: 59-77; 85-104. 1928.

a. Plant smooth; flowers white to pale lilac; calyx less than 7 mm long.
b. Leaves mealy-whitened beneath; plant 1.4-5 dm high, with leaves 2.5-10 cm long; capsule 9-12 mm long. 1. *P. laurentiana*
b. Leaves scarcely or not mealy beneath; plant 0.5-2 dm high, with leaves 1-4 cm long; capsule 5-8 mm long. 2. *P. mistassinica*
a. Plant soft-hairy; flowers deep yellow or rarely purplish; calyx more than 10 mm long. 3. *P. veris*

1. **P. laurentiana** Fern., Rhodora **30**: 68. 1928. PRIMROSE. Map 369. Fig. 96, b.

Scattered along the Bay of Fundy on dripping cliffs and basaltic headlands; not known from the northern part of the province. Late June (*P. farinosa* var. *macropoda* Fern.).

Southern Lab. to N. S. and Central Me.

2. **P. mistassinica** Michx. Map 369.

Springy banks of streams and dripping ledges; above Truro, where it is common; Upper Stewiacke; and in northern C. B. May 20-June 10.

Lab. to the Yukon south to N. S., northern Wisc. & B. C.

3. **P. veris** L. COWSLIP.

Commonly found as an ornamental in old gardens and around dwellings; reported by Macoun as well-established in meadows about a mile inland from North Sydney, as *P. officinalis* L. Introduced from Eu., and widespread.

2. SAMOLUS (Tourn.) L.

1. **S. pauciflorus** Raf., see House, Bull. N. Y. State Mus. **254**: 558. 1924. WATER PIMPERNEL, BROOK-WEED. Map 370.

Rather rare; brackish meadows, tidal banks, and edges of salt marshes from the Tusket R. in Yarmouth to Bridgewater; Antigonish. July-Sept. (*S. floribundus* HBK.).

N.S. to B.C. south into South America.

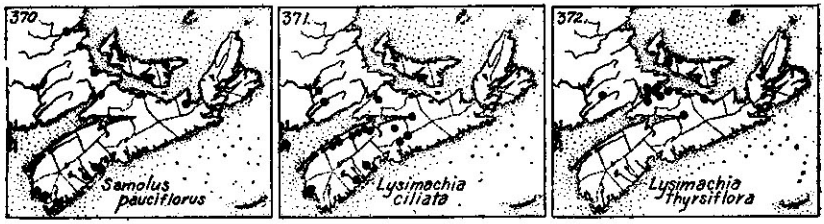
3. LYSIMACHIA (Tourn.) L. LOOSESTRIFE

a. Flowers 1 cm or more wide, not in stalked axillary heads; stems square in cross-section.
b. Plants tall, erect; leaves lanceolate to ovate-lanceolate, 25-80 mm long or more; flowers numerous.
c. Petioles of the leaves narrowly winged, the two edges fringed with hairs; flowers with 5 slender sterile stamens between the anther-bearing ones. 1. *L. ciliata*
c. Petioles of the leaves with the margins not fringed; flowers without sterile stamens, numerous.
d. Plant usually densely glandular-pubescent; flowers large and showy, the petals wide, and plain yellow; garden escapes.
e. Calyx 4-5 mm long, with dark margin; flowers 1.5-2 cm broad, in terminal leafy panicles. 2. *L. vulgaris*
e. Calyx 7-10 mm long, green throughout; flowers similar, but mostly whorled in the axils of the upper leaves. 3. *L. punctata*
d. Plant smooth, as is also the calyx; flowers smaller, the petals lanceolate and dark-lined; inflorescence a terminal raceme 0.5-2 dm long; native to wet habitats. 4. *L. terrestris*
b. Plants trailing, smooth; leaves orbicular, 10-25 mm wide; flowers large, cup-shaped, scattered in 1's or 2's in the axils of the leaves. 5. *L. Nummularia*
a. Flowers very small, crowded into dense, long-stalked, oval heads in the axils of the middle leaves; stems round in cross-section. 6. *L. thyrsiflora*

1. **L. ciliata** L. FRINGED LOOSESTRIFE. Map 371. Fig. 96, g.

Low and damp ground and thickets; rare in the southwestern part of the province, scattered to Halifax and Cumberland Cos.; rather common in the Annapolis Valley. Late July. [*Steironema ciliatum* (L.) Raf.].

N. S. to B. C. south to Ga., Kans. & N. M.



2. **L. vulgaris** L. GARDEN LOOSESTRIFE.

Occasional about gardens or as an escape; collections have been seen from Pictou and Charlottetown. July-Sept.

Introduced from Eu.; N. S. to Ontario southward.

3. **L. punctata** L. FRINGED or GARDEN LOOSESTRIFE. Fig. 96, f.

This garden plant is thoroughly naturalized along roadsides and marshes in many parts of the province; especially common about Truro. July-Aug. 15.

N. S. south to Penn.; naturalized from Eu.

4. **L. terrestris** (L.) BSP. LOOSESTRIFE. Fig. 96, c.

Common throughout; boggy thickets, meadows and marshes. July.

Nfld. to Man. south to Ga. & Ariz.

5. **L. Nummularia** L. MONEYWORT. Fig. 96, e.

Common, at least from Yarmouth to Truro, probably throughout. This garden escape is found mostly near old gardens, or in wet fields and meadows near habitations. July.

Introduced from Eu.; Nfld. to Wisc. south to N. J., Va. & Ill.

6. **L. thyrsiflora** L. WATER LOOSESTRIFE. Map 372. Fig. 96, d.

Cold swamps, along brooks or growing in shallow water in muck. Common in marshes about Truro and scattered east to Pictou and northwards in Cumberland Co. June 15-July.

N. S. & Que. to Alaska south to Penn., Mo. & Calif.; Eurasia.

4. TRIENTALIS (Rupp.) L.

1. **T. borealis** Raf., see Rhodora **11**: 236. 1909. STAR-FLOWER. Fig. 98, b.

Coniferous or hardwood forests, and a forest pioneer; rather common throughout, and one of the better-known woodland plants. Mid-June. [*T. americana* (Pers.) Pursh].

Lab. to Man. south to Va. & Ill.

5. GLAUX (Tourn.)L.

a. Plant diffusely branched with loosely ascending or prostrate branches; leaves crowded, oblong. 1. *G. maritima*

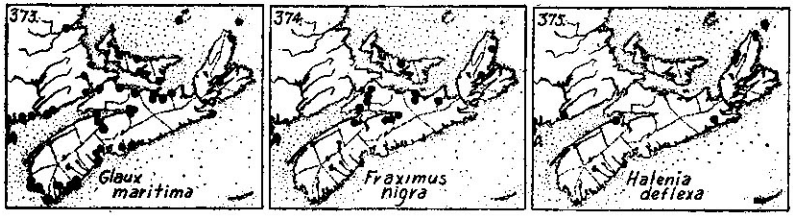
a. Plant unbranched or with a few erect branches; leaves broadly oval. *G. maritima* var. *oblusifolia*

1. **G. maritima** L. MILKWORT. Map 373. Fig. 98, a.

Rather rare; specimens from a gravelly beach, Shelburne Co., and from near Truro, belong here. Cape Cod northward; subalkaline soil Man. to Minn. westward.

Var. **obtusifolia** Fern. is common around the coast in salt meadows, on sandy shores, or near the upper limits of the dykelands. June 15-July 20.

N. J. northward; also on the Pacific Coast and in Asia.



6. ANAGALLIS (Tourn.) L.

1. **A. arvensis** L. COMMON PIMPERNEL, POOR-MAN'S WEATHERGLASS.

Sandy beaches, fields and waste places; scattered from Digby and Bridgewater to Pictou, and probably elsewhere. Late summer and early fall.

Naturalized from Eu.; Nfld. to Fla. west to the Pacific.

7. CENTUNCULUS (Dill.) L.

1. **C. minimus** L. CHAFFWEED.

The only record for N. S. is that of St. John from Sable Is.; locally found on bare sand flats which are occasionally flooded by the sea.

N. S.; P. E. I., central and southern U. S.; in Eu.

86. OLEACEAE OLIVE FAMILY

1. FRAXINUS (Tourn.) L. ASH

a. Lateral leaflets short-stalked, commonly 6; anthers linear; fruit terete, tapering to the tip; calyx present.
b. Petioles and shoots smooth. 1. *F. americana*
b. Petioles and shoots velvety pubescent; body of the fruit wing-margined. 2. *F. pensylvanica* var *Austini*

a. Lateral leaflets sessile, rounded at the base, commonly 10; anthers short-oblong; fruit flattened, not tapering to either end; calyx absent. 3. *F. nigra*

1. **F. americana** L. WHITE ASH. Fig. 97, a.

Throughout; rather common in the center of the province; intervale forests, low ground and open woods. Late May.

N. S. to Minn. south to Fla. & Tex.

2. **F. pensylvanica** Marsh., var. **Austini** Fern., Rhodora **40**:452. 1938.

Rather rare in bogs, near the margins of lakes and streams in the center of the province. Reports of Macoun of *F. pubescens* from Halifax, and the species listed by Nichols as characteristic of wooded and poorly-drained swamps in northern C. B., probably belong here. Found at Lakelands, Hants Co.

N. S. to Man. south to N. Y. & Mass.

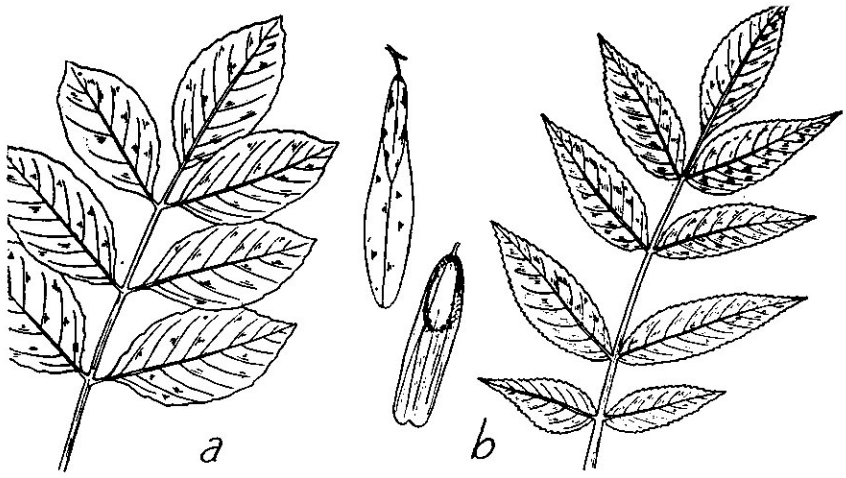


Fig. 97.—**Fraxinus.** a, **F. americana**, leaf, x ¼; fruit, x ½. b, **F. nigra**, leaf, x ¼; fruit, x ½.

3. **F. nigra** Marsh. BLACK ASH Map 374. Fig. 97, b.

Low ground, damp woods and swamps; rather common through the central and northern parts of the province, probably scattered throughout this region. (*F. sambucifolia* Lam.).

Nfld. to Man. south to W. Va., Ind. & Ark.

87. **GENTIANACEAE** GENTIAN FAMILY

a. Leaves not typically lily-like, nor floating; marsh or land plants.
b. Leaves opposite, sessile, simple and untoothed.
c. Leaves of normal size, green; corolla large.
d. Style long and thread-like; petals not spurred, rose-purple.
e. Corolla with a very short tube, with 5-12 lobes; flowers peduncled (Fig. 98, c). 1. *Sabatia*
e. Corolla with a long tube, usually with 5 lobes, about 10 mm wide; flowers mostly sessile. 2. *Centaurium*
d. Style short or none; petals 4, mostly prominently spurred at the base, yellowish-purple; flowers all peduncled, 4-5 mm wide (Fig. 98, f). 3. *Halenia*
c. Leaves reduced to scales; petals 4, 3-4 mm long, greenish; plants wiry, insignificant (Fig. 98, e). 4. *Bartonia*
b. Leaves alternate, stalked, with 3 leathery leaflets (Fig. 98, d). 5. *Menyanthes*
a. Leaves lily-like, round with a v-shaped notch at the base; floating on the surface of quiet waters (Fig. 98, g). 6. *Nymphoides*

1. **SABATIA** Adans.

1. **S. Kennedyana** Fern., Rhodora **18**: 150. 1916. PLYMOUTH GENTIAN. Fig. 98, c.

Known only from the Tusket Valley, Yarmouth Co., where it is common to rare on the sandy and cobbly beaches and peaty margins of river, lakes and boggy savannahs. Aug. Two variations occur with the same general distribution as the species. Forma **candida** Fern., Rhodora **24**: 180. 1922, has the flowers-white; forma **eucycla** Fern., l. c., has the lobes of the corolla broadly obovate and more or less overlapping. Both forms are rare.

Southern N. S.; Mass. & R. I.

2. **CENTAURIUM** Hill

1. **C. umbellatum** Gilib. CENTAURY.

Found in the Maritimes only on Sable Is., where it is common in the wet dune hollows and sandy borders of fresh-water ponds; reported erroneously in Gray's Man. from waste grounds, N. S.

Sparingly introduced from Eu.; N. S., Mass. to Mich.

3. **HALENIA** Borkh.

a. Plant 10-90 cm high; stem simple or branched above; flowers numerous, short-stalked, in a loose cyme. 1. *H. deflexa*

a. Plants 3-15 cm high; stem much branched; flowers in a 3-flowered cyme, the central one long-stalked. *H. deflexa* var. *Brentoniana*

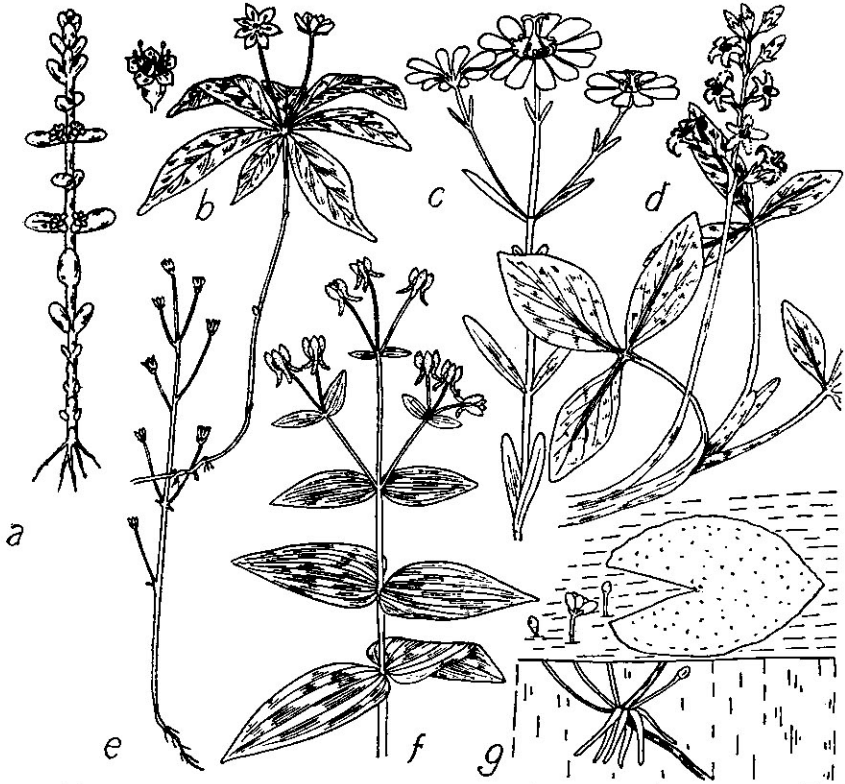


Fig. 98.—**Glaux.** a, **G. maritima**, plant, x ½; flower, x 2. **Trientalis.** b, **T. borealis.** x ¼. **Sabatia.** c, **S. Kennedyana,** x ½. **Menyanthes.** d, **M. trifoliata,** x ¼. **Bartonia.** e, **B. virginica,** x 1. **Halenia.** f, **H. deflexa,** x ½. **Nymphoides.** g, **N. cordatum,** x ⅓.

1. **H. deflexa** (Sm.) Griseb. SPURRED GENTIAN. Map 375. Fig. 98, f.

Damp soil, exposed places and sea-bluffs; rare on the peninsula and found only at Hall's Harbour and near Sherbrooke; common on bleak exposed headlands around northern C. B. Late flowering colonies occasionally bear flowers without spurs. These belong to forma **heterantha** (Griseb.) Fern., Rhodora **40:** 340. 1938.

Var. **Brentoniana** Gray, see Allen, Ann. Missouri Bot. Garden **20:** 167. 1933, is a dwarf form found around northern C. B., the Magdalen Islands, and northward.

Lab. south to N. Y. west to B. C. & Mont.; central Mex.

4. BARTONIA Muhl.

Fernald's key to the varieties of *B. paniculata*, Rhodora **23**: 287. 1921, is largely followed here.

a. Corolla-lobes oblong or gradually widening to a rounded summit, blunt and usually toothed at the apex; stigma columnar, about 1 mm long. 1. *B. virginica*

a. Corolla-lobes lanceolate to oblong or obovate, blunt or acutish; stigma 0.5 mm long or less.

b. Calyx cleft nearly or quite to the base, the lobes lanceolate or narrowly oblong, acuminate or at least acute.

c. Plant yellowish-green, rarely purplish; flowers 2.5-5 mm long; corolla-lobes mostly creamy-white, 0.7-1.5 mm wide; anthers mostly yellowish. 2. *B. paniculata*

c. Plant purplish or fulvous; flowers 3.8-6 mm long; corolla-lobes lobes purple-tipped or watery-white, 1.2-2 mm wide; anthers purplish. *B. paniculata* var. *intermedia*

b. Calyx cleft, at least on one side, only two-thirds or three-fourths to the base; the lobes herbaceous, oblong to ovate; corolla-lobes 1-2 mm long.

d. Flower-stalks club-shaped; two or three calyx-lobes cut to the base; corolla 3-5 mm long, creamy-white; anthers mostly yellowish. *B. paniculata* var. *sabulonensis*

d. Flower-stalks thread-like; calyx-tube 1-2 mm long; corolla 4-7 mm long, often purple-tinged; anthers mostly purple. *B. paniculata* var. *iodandra*

1. **B. virginica** (L.) BSP. BARTONIA. Map 376. Fig. 98, e.

Beaches, sandy and peaty bogs, even into dry barrens; rather common in southwestern N. S., becoming rarer to Bridgewater and Middleton. Late July-Sept.

N. S. to Minn. south to Fla. & La.

2. **B. paniculata** (Michx.) Robinson. Map 377.

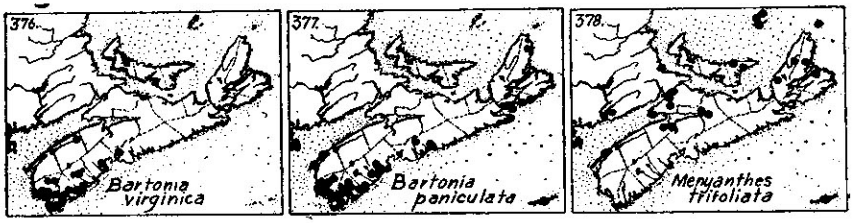
Wet bogs, quagmires, peaty and cobbly shores; common in Yarmouth Co., found to Halifax and Digby, grading into the following varieties. N. S. south along the coast to Fla. & La.

Var. **intermedia** Fern., Rhodora **23**: 287. 1921, is widely distributed in the province, in similar situations to the species, from Yarmouth and southern Digby Cos. to Richmond Co.

Var. **sabulonensis** Fern., Proc. Boston Soc. Nat. Hist. **36**: 89. 1921, was first described from Sable Is. It

is usually more branched, with 4-30 flowers; rare in swales, sandy shores, and cobbly margins in southern Yarmouth, Shelburne and Lunenburg Cos.

Var. **iodandra** (Robinson) Fern., Rhodora **23**: 288. 1921, is reported only from Nfld. and as represented in C. B. by the transitional var. *intermedia*. However, much of the material from Isle Madame and northern C. B. seems to resemble this variety.



5. **MENYANTHES** (Tourn.) L.

1. **M. trifoliata** L., var. **minor** Raf. see Fernald, Rhodora **31**: 195-198. 1929. BUCKBEAN. Map 378. Fig. 98, d.

Stagnant pools, bogs, often with the roots covered with water and dominant in its particular habitat; common in the marshes at Truro, Kentville, Advocate, and Amherst and to northern C. B., rare or absent southward; found but once on Sable Is. June.

Lab. to Alaska south to N. J., the Great Lakes, Iowa, etc.

6. **NYMPHOIDES** (Tourn.) Hill

1. **N. cordatum** (Ell.) Fern., Rhodora **40**: 338. 1938. FLOATING HEART. Map 379. Fig. 98, g.

Common in lakes and ponds throughout; most numerous in the southern or western part of the province. July-Aug. [*N. lacunosum* (Vent.) Fern.].

N. S. to Fla. west to Ont., Minn. & La.

88. **APOCYNACEAE** DOGBANE FAMILY

a. Plant slender and trailing; flowers blue. 1. *Vinca*

a. Plant stout, erect or prostrate; flowers white to pink. 2. *Apocynum*

1. VINCA L.

1. **V.. minor** L. MYRTLE, PERIWINKLE. Fig. 99, e.

A garden plant, often planted around cemeteries, shady lawns or roadsides, occasionally spreading and persistent. May to early June.

Naturalized from Eu.; N. S. to Ont. southward.

2. APOCYNUM (Tourn.) L.

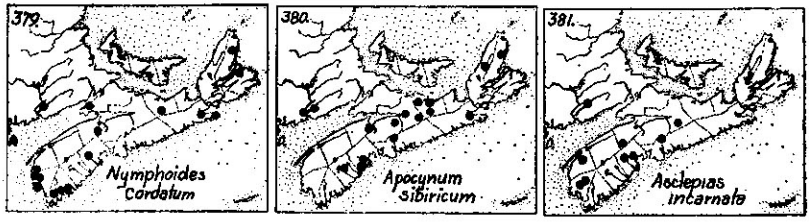
Woodson, Robert E., Jr. A Monograph of the Genus *Apocynum* Ann. Missouri Bot. Gard. **17**: 41-156. 1930.

a. Leaves dropping or spreading, hairy beneath; corolla at least twice the length of the calyx-lobes; hair of the seeds pale-tawny.
b. Leaves drooping; corolla at least 3 times the length of the calyx-lobes, 5-10 mm long; seeds 2 mm long, the hairs 1.5-2 cm long. 1. *A. androsaemifolium*
b. Leaves spreading or ascending-spreading; corolla about twice the length of the calyx- lobes, 4-5 mm long; seeds about 4 mm long, the hairs pale-tawny, 2 cm long. 2. *A. medium*
a. Leaves ascending, nearly or quite unstalked, smooth or glaucous beneath; corolla with erect lobes, barely exceeding the calyx, 2.3-5 mm long; follicles straight, 4-10 cm long; seeds 3.5-4 mm long with hairs 8-12 mm long. 3. *A. sibiricum*

1. **A. androsaemifolium** L. See Rhodora **34**: 30-31. 1932 as to nomenclature. SPREADING DOGBANE. Fig. 99, a.

A weed in the Annapolis Valley and along roadsides in the central part of the province; common along streams and intervales in eastern N. S.; scattered through the rest of the province, often on sandy or light soils. July-Aug.

Nfld. to B. C. south to Ariz. & Ga.



2. X **A. medium** Greene

Reported by Woodson from the cobbly border of Shubenacadie Grand Lake, and the edge of Wentzell L., Lunenburg Co. This has been found to be a fertile hybrid of the preceeding and following species, and may be expected

where these two species grow together. See Anderson, Ann. Missouri Bot. Gard. 23: 159-168. 1936.

N. S. to Nebr. south to Fla. & Tex.

3. **A. sibiricum** Jacq. INDIAN HEMP. Map 380. Fig. 99, b.

Gravelly beaches and cobbly or sandy banks of streams; Kings Co. to northern C. B.; commonest in Colchester and Pictou Cos., becoming rarer to Queens Co. along the south shore. Most of the plants are prostrate rather than erect. This is forma **arenarium** (Gates) Fern., Rhodora **37**: 327-328. 1935. [*A. cannabinum* L., var. *hypericifolium* (Ait.) Gray]. July-Aug.

Nfld. to Dak. south to Tex.

89. ASCLEPIADACEAE MILKWEED FAMILY

1. ASCLEPIAS (Tourn.) L.

a. Leaves oval, 12-20 cm long, closely and regularly veined, densely woolly beneath. 1. *A. syriaca*

a. Leaves smaller, tapering to an acute tip, irregularly veined, smooth or finely pubescent beneath.

b. Plants with 11-21 pairs of leaves which are pubescent beneath and 8-18 cm long. 2. *A. incarnata* var. *pulchra*

b. Plants with 7-11 pairs of leaves which are almost smooth beneath and 4.6-6.5 cm long. *A. incarnata* var. *neoscotica*

1. **A. syriaca** L. COMMON MILKWEED.

Sparingly introduced as a weed in light soil; at scattered places in the Annapolis Valley; near Mabou, C. B. July.

N. S. to Sask. south to Fla. & Ariz.; introduced eastwards.

2. **A. incarnata** L., var. **pulchra** (Ehrh.) Pers. SWAMP MILKWEED. Map 381. Fig. 99, g.

Rare, in wet or rocky thickets; scattered in the center of the province in the western area. N. S. to Ga. west to Minn.

Var. **neoscotica** Fern., Rhodora **23**: 288. 1921, is very rare: gravelly beach along the Shubenacadie Grand Lake, and along the Tusket Lakes in Yarmouth Co. Known only from N. S.

90. CONVOLVULACEAE BINDWEED FAMILY

a. Plants with green leaves; corolla large, showy; plants with stout rootstocks; leaves sagittate. 1. *Convolvulus*

a. Plants without green leaves, yellowish, parasitic; corolla small, short, whitish. 2. *Cuscuta*

1. CONVOLVULUS (Tourn.) L

Tryon, R. M., Jr. The varieties of *Convolvulus spithamaeus* and *C. sepium*. Rhodora **41**: 415-423. 1939.

a. Calyx enclosed by two large green bracts; stigma oval or oblong; corolla 3-5 cm long.
b. Flowers white. 1. *C. sepium*
b. Flowers pinkish. *C. sepium* var. *americanus*
a. Calyx not enclosed by green bracts; style filiform; leaf-blades 3-5 cm long; corolla about 2 cm long. 2. *C. arvensis*

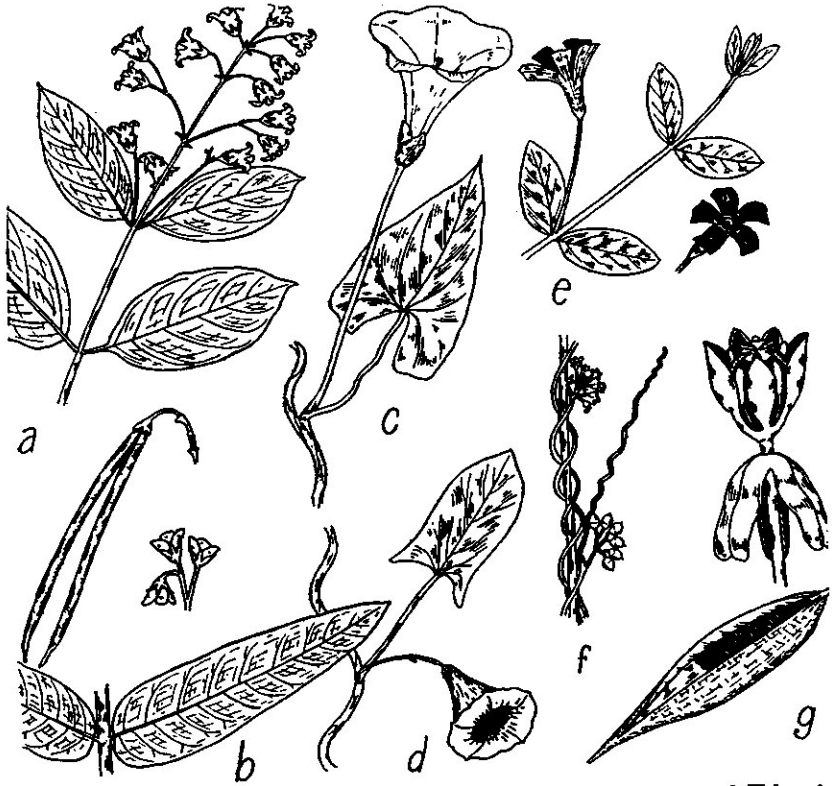


Fig. 99.—**Apocynum.** a, **A. androsaemifolium,** x ½. b, **A. sibiricum,** leaves, fruits and flowers, all x ½. **Convolvulus.** c, **C. sepium,** x ½. d, **C. arvensis,** x ½. **Vinca.** e, **V. minor,** x ½. **Cuscuta.** f, **C. Gronovii,** x ½. **Asclepias.** g, **A. incarnata,** flower much enlarged; fruit with seeds, x ½.

1. **C. sepium** L. BINDWEED, MORNING-GLORY. Fig. 99, c.

Sparingly introduced; more or less scattered along the sea-shore, probably also in waste ground or about towns. Nfld. to N. S & N. B.; introduced from Eu.

Var. **americanus** Sims. Common along the coast, often a bad weed in towns, waste places, roadsides and spreading into fields and orchards. Other varieties have been described which may range into the province, but the plant is so variable in its diagnostic characters that it seems preferable not to attempt the separation at the present time. [Var. *pubescens* (Gray) Fern.]. July-Aug.

Nfld. south along the coast; also about the Great Lakes.

2. **C. arvensis** L. FIELD BINDWEED. Fig. 99, d.

Rare; occasionally found in fields and along roadsides in the Annapolis Valley; seen at Truro, Macoun reports it from ballast heaps at Pictou, and Robinson found it at Pictou Landing in 1906.

Introduced from Eu.; throughout N. A. and a bad weed westward.

2. CUSCUTA (Tourn.)L. DODDER

Yuncker, T. G. The genus *Cuscuta*. Mem. Torrey Bot. Club **18**: 113-331. 1932.

a. Corolla-lobes obtuse, ovate and spreading; capsule globose-conic or depressed-globose.
  b. Calyx-lobes shorter than the corolla-tube; corolla lobes mostly shorter than the campanulate tube. 1. *C. Gronovii*
  b. Calyx-lobes mostly equalling the shallowly-campanulate corolla-tube; corolla-lobes about equal to the tube. *C. Gronovii* var. *latifolia*

a. Corolla-lobes acute, lanceolate to triangular, the tips often re-flexed inwardly; capsule globose or depressed globose.
  c. Clayx-lobes broadly overlapping at the sinuses to form angles; flowers 1.5-2 mm long. 2. *C. pentagona*
  c. Calyx-lobes not overlapping; flowers mostly 2-3 mm long. 3. *C. campestris*

1. **C. Gronovii** Willd. COMMON DODDER. Map 382. Fig. 99, f.

Scattered along the borders of lakes, back of brackish shores, or in wet thickets; rather common, and found on a variety of hosts, mostly plants of wet habitats. N. S. to Man. south to Fla. & Ariz.

Var. **latifolia** Engelm. was reported to be rather common on damp shores, and thickets, in the Tusket Valley, Yarmouth Co. (Fernald, 1922). This variety is of slight value and is perhaps not worth recognising. Yuncker places the N. S. collections with the species. Widespread.

2. **C. pentagona** Engelm. (*C. arvensis* Beyrich of Gray's Man.).

Dodder is occasionally introduced into the province with garden seeds. This species is one of the most frequent in eastern N. A. and may be expected. It is not known to persist.

Mass. to Fla. west to Calif.

3. **C. campestris** Yuncker. CLOVER DODDER.

Native, and widespread on clover and alfalfa, and a wide variety of other hosts. Clover dodder is rarely seen in the province. A collection exists from Lawrencetown, Annapolis Co. U. S., W. I.; & S. A.

91. POLEMONIACEAE PHLOX FAMILY

a. Leaves not divided nor toothed; plants of dryish soil.
  b. Leaves opposite; flowers showy; garden escape. (Fig. 100, a). 1. *Phlox*
  b. Leaves mostly alternate; flowers small, slender and insignificant; scattered weed (Fig. 100, b). 2. *Collomia*
a. Leaves pinnately divided with 3-21 leaflets; swamps, rare. 3. *Polemonium*

1. PHLOX L.

a. Plants erect; leaves flat, wide. 1. *P. paniculata*
a. Plants creeping; leaves needle-like, rigid. 2. *P. subulata*

1. **P. paniculata** L. GARDEN PHLOX.

This old-fashioned garden plant is occasionally found along roadsides, in waste places or thickets; very variable.

Introduced from southeastern U. S.; widespread.

2. **P. subulata** L GROUND PINK, MOSS PINK. Fig. 100, a.

Much planted; occasionally escaping, or persisting in former locations. May.

Naturalized from southward.

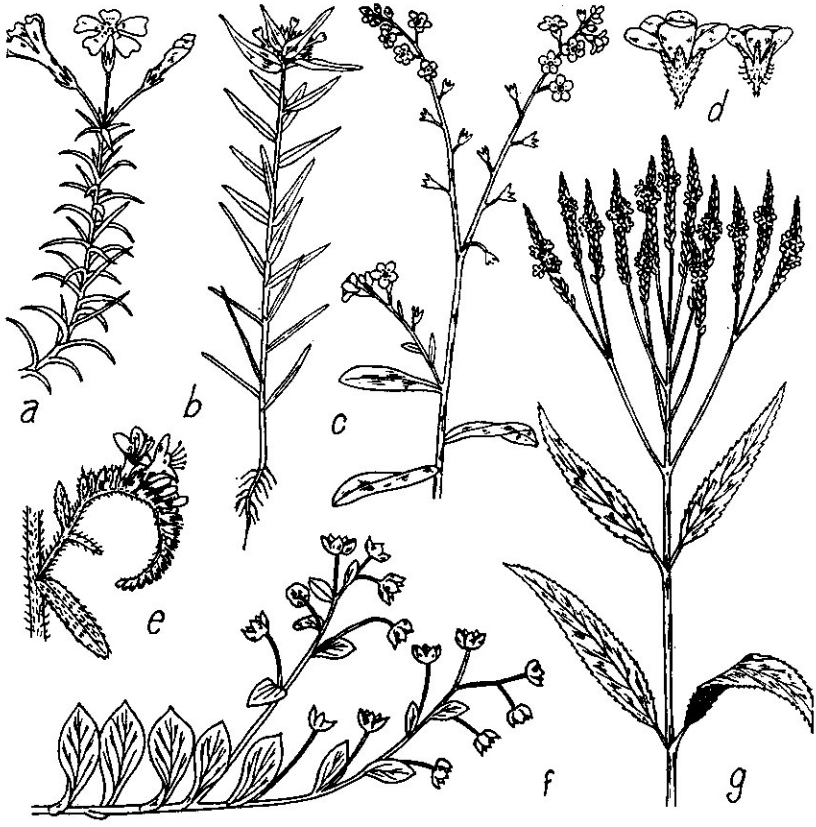


Fig. 100.—**Phlox.** a, **P. subulata,** x ⅓. **Collomia.** b, **C. linearis,** x ½. **Myosotis.** c, **M. laxa,** x ½. d, flowers of **M. laxa** and **M. arvensis,** x 3. **Echium.** e, **E. vulgare,** branch of the inflorescence, x ½. **Mertensia.** f, **M. maritima,** x ⅓. **Verbena.** g, **V. hastata,** top of plant, x ¼.

2. **COLLOMIA** Nutt.

1. **C. linearis** Nutt. Fig. 100, b.

Scattered near the railroad north from Truro, carried south from the Bay of Chaleur region where abundant and perhaps native. July-Aug. [*Gilia linearis* (Nutt.) Gray].

N. S. to B. C. south to Calif.

3. **POLEMONIUM** (Tourn.) L.

1. **P. Van-Bruntiae** Britt. GREEK VALERIAN.

Sent in for identification from swamps at Middle Musquodoboit, Halifax Co. No specimens exist. July.

Swamps, Vt. to N. Y. & Md.

92. BORAGINACEAE BORAGE FAMILY

Johnson, I. M. A synopsis of the American native and immigrant borages of the subfamily Boraginoideae Contrib. Gray Herb. Harvard Univ. **70**: 1-55. 1924.

a. Corolla regular or nearly so.
b. Corolla rotate (like the flower of the potato), bright blue, 1 cm wide or wider; stamens large, exserted, surrounding the pistil. 1. *Borago*
b. Corolla tubular, or if flattish much less than 1 cm wide.
c. Nutlets armed with barbed prickles; throat of the corolla closed by 5 scales.
d. Leaves 5-15 cm long, lanceolate to ovate; nutlets flattened and horizontal, covered with prickles; stem simple. 2. *Cynoglossum*
d. Leaves less than 5 cm long, lanceolate to linear; nutlets erect, barbed on the margins or back. 3. *Lappula*
c. Nutlets unarmed.
e. Plants coarse and stout, 5-10 dm high, much-branched; throat of the corolla closed by scales (Fig. 103, a). 4. *Symphytum*
e. Plants weak or trailing, up to 6 dm high.
f. Corolla slightly irregular, the throat closed by scales and the tube funnel-shaped; plant very bristly-hairy; racemes leafy-bracted. 5. *Lycopsis*
f. Corolla regular, throat not closed by scales.
g. Plants not fleshy; racemes without bracts; flowers 8 mm or less wide, the corolla-tube very short; leaves up to 1 cm wide (Fig. 100, c. d). 6. *Myosotis*
g. Plants fleshy, smooth, of sea-shores; racemes with leafy bracts; flowers 10-15 mm wide; leaves 1-3 cm wide (Fig. 100, f). 7. *Mertensia*
a. Corolla very irregular, the throat spreading, not closed; stamen exserted on long filaments; plants large and coarse (Fig. 100, e). 8. *Echium*

1. BORAGO (Tourn.) L.

1. **B. officinalis** L. BORAGE.

Introduced and occasionally seen about old gardens or in waste places, doubtfully persisting. Native of the Mediterranean and sparingly introduced into many parts of America.

2. CYNOGLOSSUM (Tourn.) L.

1. **C. boreale** Fern., Rhodora **7**: 250. 1905. WILD COMFREY.

Rare in open beech woods or on gypsum; found only near Kentville and Windsor. June.

N. S. to Que. south to N. Y. and northern Mich.; B. C.

3. **LAPPULA** (Rivin.) Moench.

1. **L. echinata** Gilib. STICKSEED.

Waste land, railroad yards, etc; scattered throughout, never common. June-Sept.

Naturalized from Eu.; N. S. to B. C. south to N. J., & Calif.

4. **SYMPHYTUM** (Tourn.) L.

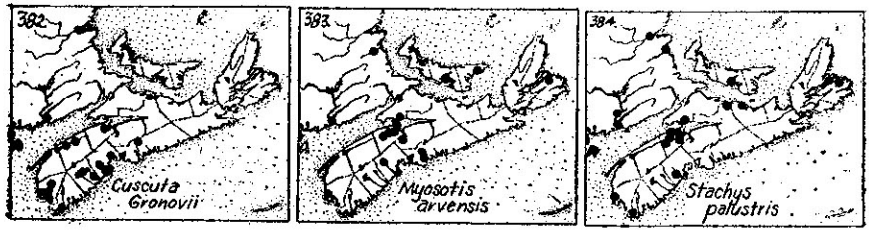
a. Plants rough-hairy; leaves decurrent and forming broad wings down the stems; flowers usually cream-colored; tips of the corolla-lobes recurved. 1. *S. officinale*

a. Plants with stout, prickly recurved hairs; leaves very slightly decurrent; flowers usually purple; tips of the corolla-lobes erect. 2. *S. asperum*

1. **S. officinale** L. COMMON COMFREY.

Waste land, a garden escape; scattered, probably throughout; commonest in Kings and Pictou Cos. June 15-July.

Naturalized from Eu.; Nfld. to Minn. south to La.



2. **S. asperum** Lep. ROUGH COMFREY. See Rhodora **18**: 23. 1916. Fig. 103, a.

Dry and sandy fields and waste places, rare; reported from Pictou (Macoun); abundant at Grand Pre and Yarmouth. June 15-July.

Introduced from Eu.; P. E. I., N. S., & Que. to Mich. south to Md.; B. C.

5. LYCOPSIS L.

1. **L. arvensis** L. SMALL BUGLOSS.

Dry sandy fields and waste places; rare, reported by Macoun from Pictou.

Adventive from Eu.; N. S. to Minn. south to Va.; Calif.

6. MYOSOTIS (Rupp.)L. FORGET-ME-NOT

a. Flowers blue; pedicels much longer than the calyx.
b. Hairs of the calyx straight; stems and leaves with stiff appressed hairs.
c. Corolla 5-8 mm wide; calyx-lobes shorter than the tube. 1. *M. scorpioides*
c. Corolla 2-4 mm wide; calyx-lobes as long as the tube. 2. *M. laxa*
b. Hairs of the calyx hooked; stems and leaves densely hairy. 3. *M. arvensis*
a. Flowers yellow when young; pedicels shorter than the calyx. 4. *M. versicolor*

1. **M. scorpioides** L. FORGET-ME-NOT.

Common in wet muddy places on the peninsula and probably throughout; occasionally grown as an ornamental. June 1-July.

Nfld. to Mich. south to La.; B. C.

2. **M. laxa** Lehm. SMALL FORGET-ME-NOT. Fig. 100, c, d.

Throughout; wet muddy places, edges of streams, ditches and meadows. June-July.

Nfld. to Ont. south to Ga.; B. C. to Calif.; Chile.

3. **M. arvensis** (L.) Hill. ROUGH FORGET-ME-NOT. Map 383. Fig. 100, d.

Wet runs and moist places, or sometimes growing on dryish soils; common in the Annapolis Valley, scattered elsewhere.

Introduced from Eu.; Nfld. south to R. I. & Ont.; B. C. to Ore.

4. **M. versicolor** (Pers.) Sm.

This species is known only from dryish to moist hillsides along the Gaspereau road, on the ridge above Wolfville. Early May-June.

Sparingly introduced from Eu.; N. S. to Que. south to Dela.; B. C. to Ore.

7. **MERTENSIA** Roth

1. **M. maritima** (L.) S. F. Gray. SEA LUNGWORT. Fig. 100, f.

Common around the province, on sandy beaches, dunes and shore-lines just above high tide level; flowers blue. Forma **albiflora** Fern., Rhodora **23**: 289. 1921, is a white-flowered form found on various beaches of Yarmouth Co. June 15-Aug.

Mass. north along the coast; Eurasia.

8. **ECHIUM** (Tourn.) L.

1. **E. vulgare** L. BLUE DEVIL, VIPER'S BUGLOSS. Fig. 100, e.

Rare or local; a weed of waste places and roadsides. It has been found at Truro, New Glasgow and above Parrsboro, where it is abundant for some distance along the road. June-Sept.

Introduced from Eu. and widely spread in N. A.

93. **VERBENACEAE** VERVAIN FAMILY

1. **VERBENA** (Tourn.) L.

1. **V. hastata** L. BLUE VERVAIN. Fig. 100, g.

Rare; in river bottoms, or in rich or mucky soil; scattered from Kings Co. and Cumberland Co. east to C. B.

N. S. to B. C. south to Fla. & Ariz.

94. **LABIATAE** MINT FAMILY

a. Corolla with the upper lip apparently absent, the lower one 5-lobed, 12-18 mm long; flowers purplish in an interrupted terminal spike (Fig. 101, a). 1. *Teucrium*

a. Corolla regular, or with both upper and lower lips.

b. Calyx with a swelling on the upper side; flowers blue, solitary or in one-sided axillary panicles (Fig. 101, b. c). 2. *Scutellaria*

b. Calyx without such a swelling.

c. Calyx strongly 2-lipped; leaves entire, or rarely toothed

d. Flowers in dense terminal spikes.

e. Corolla strongly 2-lipped, closed at maturity; stamens with anthers 4; calyx naked in the throat (Fig. 101, e). 4. *Prunella*

e. Corolla weakly 2-lipped, open at maturity; stamens with anthers 2; calyx hairy in the throat (Fig. 101, f). 11. *Thymus*

d. Flowers in axillary clusters, to half way down the plant (Fig. 101, h). 9. *Hedeoma*

c. Calyx not strongly 2-lipped; leaves toothed, nearly entire in *Satureja*.

f. Calyx 3.8-12 mm long; corolla more or less 2- lipped.

g. Flowers on short branches, the true pedicels thread-like with thread-like basal bractlets.

h. Corolla strongly 2-lipped, the upper lip arched; leaves kidney or heart-shaped, deeply crenate (Fig. 101, d). 3. *Nepeta*

h. Corolla weakly 2-lipped, the upper lip not arching; leaves tapering to the base, not crenate (Fig. 101, g). 10. *Satureja*

g. Flowers on unbranched pedicels attached directly to the stem or branch, without basal bractlets.

i. Leaves palmately veined.

j. Leaves deeply and sharply lobed (Fig. 102, h). 7. *Leonurus*

j. Leaves roundish; flowers scattered in the axils of the leaves. 6. *Lamium*

i. Leaves pinnately veined.

k. Calyx-teeth prominently spine-tipped; flowers in dense clusters in the axils of the upper leaves (Fig. 102, a). 5. *Galeopsis*

k. Calyx-teeth pointed but not spine-tipped; flowers in interrupted spikes at the ends of the branches (Fig. 102, e). 8. *Stachys*

f. Calyx 1.5-3.5 mm long; corolla regular, not 2-lipped.

l. Stamens with anthers 2; plants smooth, not aromatic; flowers sessile in the leaf axils (Fig. 102, f, g). 12. *Lycopus*

l. Stamens with anthers 4; plant often hairy, aromatic; flowers with pedicels 0.5-2 mm long by flowering time, in terminal spikes or in the axils of the leaves in glomerules (Fig. 102, b-d). 13. *Mentha*

1. **TEUCRIUM** (Tourn.) L.

1. **T. canadense** L., see Rhodora **35**: 395. 1933. AMERICAN GERMANDER. Fig. 101, a.

Gravelly sea-coasts, generally found at the crests of the beaches beyond the reaches of the tide; rather rare, Annapolis to Shelburne Co.; Sable Is.; Pictou. July-Aug. [*T. canadense* var. *littorale* (Bickn.) Fern.].

N. B. & P. E. I. south to Fla. along the coast.