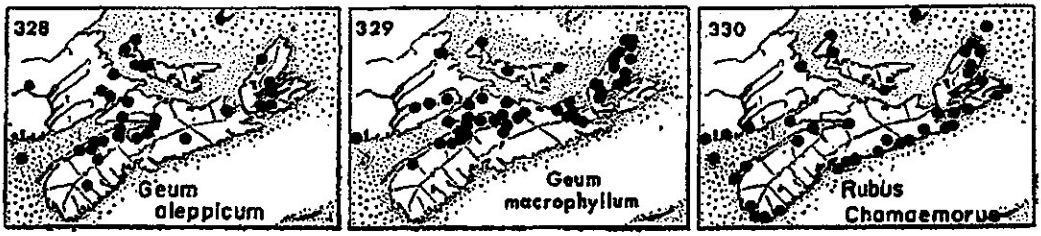
h. Primocanes erect, the second-year floricanes often prostrate or mounding, not long-running (Section *Setosi*); primocane leaflets usually 5; inflorescence usually glandular.
i. Leaves glabrous or essentially so beneath.
j. Bristles very abundant on the primocanes, 1000 or so per dm and not unpleasant to the touch, mixed with glandular hairs. 8. *R. setosus*
j. Bristles acicular and rather stiff, 50-500 per dm; primocane under 9 dm high, often rather weak, occasionally doming. 9. *R. vermontanus*
i. Leaves more or less pubescent beneath. 10. *R. semisetosus*
g. Primocanes with stout, recurved prickles which are often broad-based, or with prickles mixed with bristles, or tall and arching with more slender and often few prickles.
k. Leaves glabrous or essentially so beneath; the branches of the inflorescence without stalked glands.
l. Primocanes high-mounding or erect and arching, armed with straight acicular prickles varying to nearly unarmed.
m. Armature of 10-100 prickles per dm; primocanes often rather slender. 11. *R. elegantulus*
m. Armature of 0-10 thin prickles per dm; primocanes rather stout, erect. 12. *R. canadensis*
l. Primocanes prostrate or occasionally low-mounding and running, armed with stiff, hooked or straight retrorse prickles which are often strong and abundant. 13. *R. recurvicaulis*
k. Leaves more or less soft-pubescent on the lower surface.
n. Plants low-mounding or usually prostrate and trailing; inflorescence with few or no glands but with the axis and pedicels pubescent. 14. *R. arenicola*
n. Plants stout, usually erect and arching; sometimes high-doming with the tips reaching the ground.
o. Axis of the inflorescence pubescent, with numerous stalked glands. 15. *R. allegheniensis*
o. Axis pubescent but glandless or rarely with a few glands; leaves often lightly pubescent beneath. 16. *R. pensilvanicus*

1. R. Chamaemorus L. Fig. 88. Map 330. BAKEAPPLE, CLOUDBERRY

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; common around the whole coast except along Northumberland Strait. July.

Greenland to Alaska south to Me. and N.H.; Eurasia.



2. **R. odoratus** L. Fig. 88. FLOWERING RASPBERRY

Scattered as an old-fashioned garden plant and occasionally found along roadsides or about old houses in the Annapolis Valley; and elsewhere 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. However, the species is very variable in this respect.

N.S. to southern Ont. south to Ga. and Tenn.

3. **R. pubescens** Raf. Fig. 88. Map 331. DEWBERRY

Scattered in low and boggy land, swamps, mucky soils, over talus slopes and along intervales, in open sunlight or often growing luxuriantly under bushes or in open woods; scattered to common in the northern half of the Province, rare in sw. N.S. and not collected along the eastern Atlantic Coast. (*R. triflorus* Richards.). Flowering in early June and fruiting a month later.

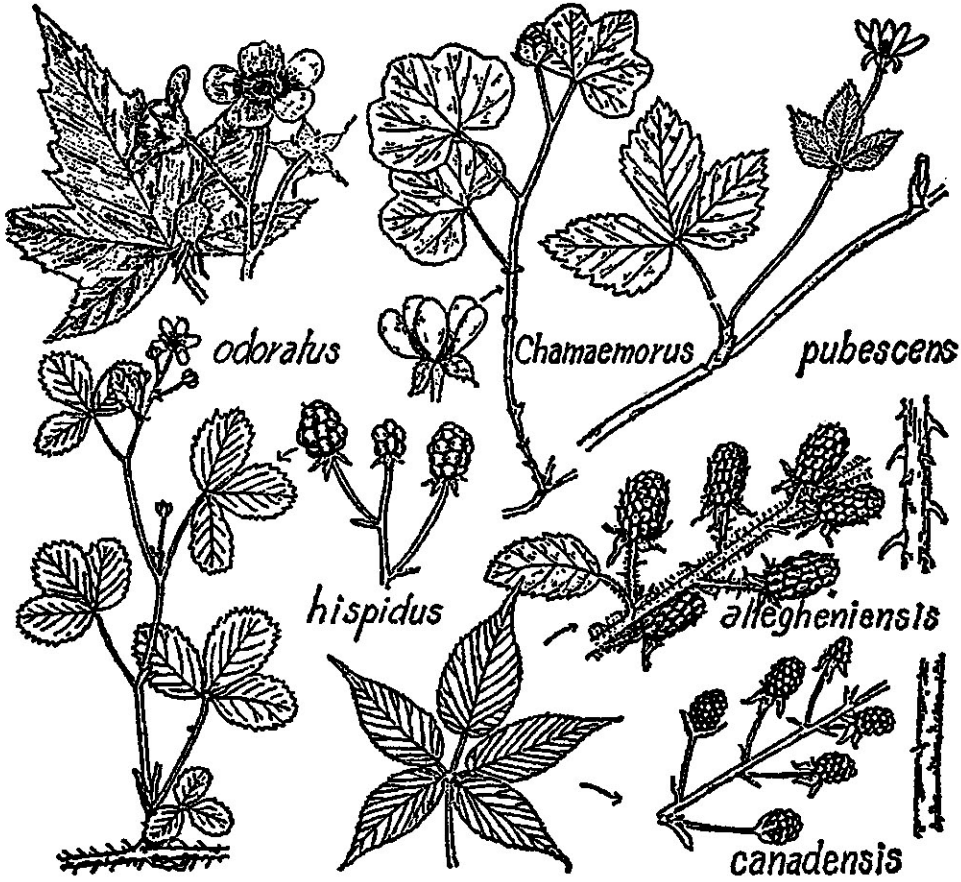


Fig. 88.—Rubus spp.

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.

Lab. to northern B.C. south to N.J., Penn. and Iowa.

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.

N.S., New Eng. and N.Y.

5. **R. idaeus** L. EUROPEAN or GARDEN-RASPBERRY

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

Introduced from Eu. and widely cultivated.

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

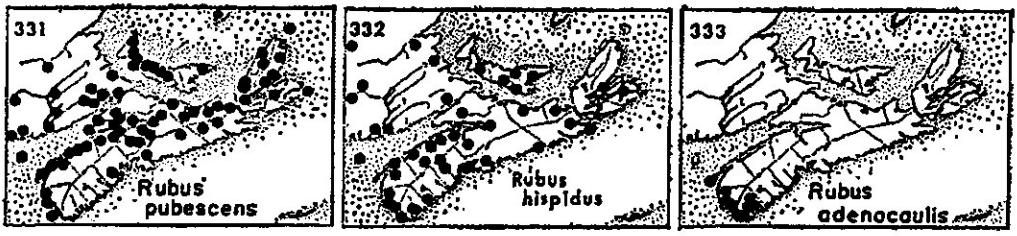
Common throughout; roadsides, barrens, clearings, after burns, on talus slopes and rocky ground. The young canes are variable in their armature, but these variations do not seem to be very consistent nor to have different geographical ranges. Forma **albus** (Fuller)Fern. is a white-fruited form collected at Cape Split, Kings Co. (Schofield and Smith, 1953). Bailey states that he has had no difficulty in distinguishing this species from the preceding one. However, judging from the various interpretations and names given to different varieties in the literature, other authors do not consider the differences so distinctive. Mid June-Aug.

Nfld. to Alaska south to N.C., Mich. and Colo.

7. **R. hispidus** L. Fig. 88. Map 332. TRAILING BLACKBERRY

This small prostrate blackberry is common in western N.S. and becomes rarer to Sydney and Baddeck. The leaflets are in 3's and are coriaceous and shining above, remaining on the plant over winter; armature of bristles and weak prickles which are not broad-based. It is the only species apt to be found in the acid peat bogs. Aalders and Hall found that 2n plants were present only in the western half of N.S. and that the more easterly-ranging plants were polyploids of various chromosome numbers. Considerable variation may thus be expected and several varieties have been named. A very slender form is often more common in the southeastern counties with only a few bristles or none. This is named var. **obovalis** Fern. Var. **culpifer** Bailey, with large flowers 18-24 mm wide, was described from the Look-off, near Cape Blomidon in Kings Co.

N.S. to Wisc. south to N.C., Ind. and Ill.



X Hispidi

This group is apparently a hybrid swarm with a great deal of variation in the number, shape and glossiness of the leaves, in the inflorescence and in the number of the bristles. The plants are low, doming to prostrate, often long-running and tending to root along the tips. They are extremely numerous and variable in southwestern N.S., with the plants becoming more scattered north and east to northern C.B. One of the parents is *R. hispidus*, accounting for any glossiness of the leaves and the tendency to have 3 leaflets. The other parent may be a member of the *Setosi* group, with the finer forms from crosses with *R. vermontanus* and the coarser ones from those with *R. setosus*.

A number of these intermediates have been named and ascribed to N.S. **R. pudens** is a very weak trailer with sparse stiff small bristles and 3 thin leaflets: to Louisburg and North Sydney in C.B. **R. trifrons** Blanch. is a trailer with the armature intermediate and the leaflets rather narrow and pointed; common from Yarmouth at least to Canso. **R. provincialis** Bailey is a stout runner with the leaflets wide and glossy and the stout primocanes shaggy with bristles; described from dry land near Pictou and noted frequently in north-central N.S. **R. segnis**, also described by Bailey from near Pictou, is a low mounding type with narrow leaves and the axis of the primocane not glandular and only sparsely setose. **R. adjacens** Fern., (see Fernald, 1940) is doming or arching with shaggy primocanes, often growing 2-3 m long, with 3-5 primocane leaflets which are abruptly pointed; including most of the earlier records of *R. jacens*. Map 334. Scattered in southwestern N.S. and into southern N.B. **R. vigoratus** Bailey is a strong mounding bramble with sharply toothed leaves and glandless primocanes. Bailey states that the material of *R. arcuans* from Sable I. belongs here. Other forms can be found which do not match any of the described types.

8. **R. setosus** Bigel.

Primocane arching to erect, about 1 m high, with an armature of very numerous soft bristles and glands. This species is scattered in north-central N.S. in open land or poorly-drained soil, waste places and cleared areas, becoming rare southward. **R. tectus** Bailey, described from near Truro, and several species described from southern N.B., seem to belong here. **R. Grautianus** Blanch. may be a hybrid of this and

the next species. Erect members and hybrids of section *Setosi* are scattered throughout in western and central N.S.

N.S. to Wisc. south to W. Va.

9. **R. vermontanus** Blanch.

Primocanes usually erect or arching up to 1 m high, less often doming or high-trailing, with acicular straightish bristle-like prickles and the floral axis often with glands. The "half-high" **R. tardatus** Blanch., which Fernald (1921) says is one of the most characteristic species of boggy thickets and lake-margins of N.S. and P.E.I., is considered, following Hodgdon and Steele, to be the smaller extreme of *R. vermontanus*. Bailey has described a number of species in this group. **R. supar**, described from near New Glasgow, is placed here; and **R. univocus**, described from elsewhere and ascribed in Gray's Manual to N.S. is also very similar. Common in sw. N.S. and scattered eastwards.

Nfld. to Minn. south to Penn., N.Y. and Mich.

10. **R. semisetosus** Blanch.

This species includes those members of the section *Setosi*, the half-high bristly forms, which have the leaves more or less pubescent beneath. **R. semisetosus** is a more southern species but some of its characters have apparently been incorporated into our species. **R. ortivus** Bailey and **R. perinvisus** Bailey have been ascribed to the three Maritime Provinces, so that the pubescent types may occasionally be found throughout the southwestern and the central regions.

N.S. and P.E.I. to N.Y. and Penn.

11. **R. elegantulus** Blanch.

Common throughout and rather variable, in many respects rather intermediate between *R. vermontanus* and *R. canadensis*, and it may hybridize with these species. Sometimes the plant is short and only one to several dm high; at other times large colonies of tall, arching, very prickly canes are found. **R. amicalis** is considered much the same plant but with the canes rather sparsely armed.

The low-arching or finally trailing, freely-branching type with lax and elongate racemes has been named **R. multiformis** Blanch. Common in sw. N.S. at least to the north-central counties; boggy thickets, river and lake margins, clearings, etc. The extreme of this type with the stems reddish and long, very freely-branching and growing usually in full sunlight is named **R. russeus** by Bailey; first described from Waverley, Halifax Co. and seen also from various places from Yarmouth to Cumberland Co. This plant at times is very distinctive but at other times, even on the same location, the plants are more erect or even arching.

Nfld. to Minn. south to Penn.

12. **R. canadensis** L. Fig. 88. Map 335.

Common throughout the central areas, becoming rarer to C.B. where it has not been found in the northern part of Inverness and Victoria Co. This high, almost smooth or slightly straight-prickly plant is one of the most characteristic and common high species of the Province. The plants of N.S. are triploid in nature and do not seem to hybridize frequently with other species. The leaves of this species and *R. elegantulus* have rather long stalks to the central leaflets and a rather hard appearance familiar in the field. The canes are usually stout with only scattered prickles.

Nfld. to Minn. south to Penn., Ga. and Tenn.

13. **R. recurvicaulis** Blanch.

This low-mounding, or prostrate and long-trailing species has the leaves glabrous beneath, the pedicels glandless, and the primocanes with stout recurved prickles. It is common in southwestern N.S. and is scattered east to northern C.B.; borders of fields, embankments, open fields and plains, lake margins, etc. **R. plicatifolius** Blanch., which has occasionally been reported from N.S., apparently refers to younger plants when the leaves are slightly plicate or folded. **R. bretonis** Bailey, described from dry land near Dingwall, Victoria Co., is a wide-leaved form with more slender prickles.

Hybrids may occur with members of the section *Setosi*. **R. arcuans** Fern. and St. John is a low-mounding and flat-running form with very shaggy-bristly, glandular primocanes with some of the retrorse hairs almost prickly. This has been interpreted as a hybrid with *R. setosus*. The type station is from Dundee, P.E.I.; collections from Kemptown, Colchester Co., N.S. are placed here. **R. severus** Brain. is a more slender form, perhaps a hybrid with *R. vermontanus*, with recurved prickles and abundant bristles and glands on the primocanes: Lunenburg Co. and central C.B.

Nfld. to Wisc. south to N.Y.

14. **R. arenicola** Blanch.

This flat trailer has long running primocanes which have stout recurved prickles; the leaves differ in being thick and rough, rather small and wide, and thinly to densely pilose beneath. This plant is scattered on the sand-plains of the Annapolis Valley; collected by Blanchard himself along a railroad embankment east of Granville, Annapolis Co.

Bailey later described **R. particeps** from sandy land at Kingston, Kings Co. This is very similar but the leaves are only thinly pubescent on the veins beneath and it has some glands on the pedicels. These characteristics could be derived from a cross with a form of *R. hispidus*.

N.S. and s. Me. to N. Eng. and N.Y.

15. **R. allegheniensis** Porter Fig. 88. Map 336.

This erect, prickly blackberry with large fruits is one of our most characteristic and common species. It is found in dry soils, along roadsides, in clearings and burns, old fields and open woodlands, often tall and arching or, on sandy soils, low and erect; common in southwestern N.S. and east to Antigonish. The stout prickly erect canes, the pubescent almost velvety foliage, and the abundantly glandular pedicels and large fruits are characteristic. However, the plant itself can be variable and hybrids, although not common, do occur. The diploid 2n plants were found by Aalders and Hall to be almost entirely in the southwestern region and most plants are polyploids.

Var. **neoscoticus** (Fern.)Bailey is a robust variety with abundant prickles on the rachis of the raceme, pedicels, petioles and petiolules. **R. pennus**, described by Bailey from dry land on Digby Neck, west of Sandy Cove, in a considerable area, is placed here.

Hybrids with members of the section *Setosi* also occur. Such plants are erect, have smaller, shorter fruit in a wider inflorescence; the leaflets are more sparsely pilose beneath; and the primocanes have both acicular prickles and abundant stalked glands freely intermixed with stouter recurved prickles. These have been named **R. glandicaulis** Blanch. and **R. acadiensis** Bailey, the second described from Hardwood Lands, Hants Co., N.S. and from south of Fredericton.

A low mounding or prostrate form with the characteristic thick pubescent leaves and with the primocanes with a mixture of stout prickles and bristles and glands seems to be a hybrid with one of the *Hispidi* group. This is named **R. biformispinus** Blanch. and is one of the most characteristic coarse trailers of the sandy roadsides and railway embankments in southern Yarmouth and Shelburne Co. (Fernald, 1921); scattered eastwards. This form ranges to Penn. and Que.

Another described species is **R. adenocaulis** Fern. (see Fernald, 1940). This is known only from southwestern N.S. (Map 333). The species appears much like a doming, low-mounding to prostrate *R. allegheniensis* but has a mixture of abundant stalked glands, bristles and stouter straight prickles on the primocane axis. Its characteristics seem intermediate between *biformispinus* and *allegheniensis*. Earlier records of *R. arcuans* and *R. abbrevians* largely belong here.

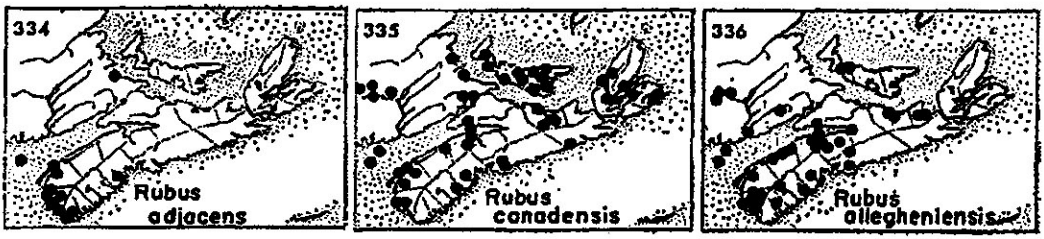
Some of the older cultivated blackberries have a shorter primary inflorescence nearly as broad as long, large flowers, and berries on long pedicels. This introduced more western type is named **R. alumnus** Bailey and may be a hybrid of *R. allegheniensis* with the next species. This will occasionally long persist where blackberries have formerly been grown.

N.S. to Minn. south to the uplands of N.C. and Tenn.

16. **R. pensilvanicus** Poir

The tall, prickly plants with the leaves more or less pubescent beneath but with glands wholly or nearly lacking on the axis of the racemes are placed here. Many of our collections show a little glandulosity and thus a slight trace of *R. allegheniensis*. The inflorescence is usually shorter than in that species and the berries are rounder and often of very good quality. Various names have been applied to variations within this species in N.S.: *canadensis* var. *pergratus*, *recurvans*, *Andrewsianus*, *orarius*, *amnicola* and *facetus*. Rather common in southwestern N.S., scattered eastward.

Lab. to Minn. south to Ala., Ark. and Okla.



13. DALIBARDA Kalm

1. **D. repens** L. Fig. 87, e. Map 337. DALIBARDA

This small, violet-like plant with solitary, erect, white flowers is scattered to local in open to rather moist woods. It is most common in the southwestern counties and gradually becomes rarer eastward to Pictou Co. This species is the only one in the genus. Aug.

N.S. to Ont. south to Conn. and the mts. of N.C.

14. ALCHEMILLA L. LADY'S-MANTLE

Aggressive weeds, often growing in large patches; flowers small and numerous, greenish yellow; sepals 4, with 4 smaller bracts between them; petals absent; very similar in both flower and fruit. Our plants are probably all introduced and all are apomictic. The last 4 species may conveniently be placed in the collective species as *A. vulgaris* L., as they are rather similar in appearance. However, many of the apomictic strains are local in our area and it seems desirable to name the different ones so their occurrence and spread may be observed in the future (Bradshaw, Dansereau and Valentine, 1964).

a. Annual, up to 1.5 dm high, with small leaves to 1.5 cm wide; flowers in sessile axillary clusters. 1. *A. arvensis*

a. Perennials, much coarser with basal leaves 5-8 cm wide; flowers numerous in terminal panicles.

b. Hypanthium of the flower (base to the point of attachment of the sepals) up to 1.5 mm long, faintly ribbed.
c. Pedicels and flowers glabrous or nearly so; leaves glabrous above or only sparsely hairy on the veins.
d. Plant slender, the stem sparsely hairy towards the base; leaves with the lobes widely overlapping across the sinus at the base; flowers yellowish, showy, to 4 mm wide. 2. *A. venosa*
d. Plant coarse, the stem often densely hairy near the base; leaves with a wide sinus and without the basal lobes overlapping; flowers greenish-yellow, up to 3 mm wide. 3. *A. xanthochlora*
c. Pedicels nearly glabrous but the flowers densely long-hairy on the hypanthium; leaves long-hairy on the upper surface. 4. *A. monticola*
b. Hypanthium of the flower 1.5-2 mm long, prominently ribbed.
e. Flowering stems hairy in the lower part only, up to the fourth internode; hypanthium nearly glabrous, usually with a few hairs; lower leaves usually only sparsely hairy beneath and with a few hairs to sparsely appressed hairy above. 5. *A. filicaulis*
e. Flowering stems hairy throughout; hypanthium hairy, often densely so; lower leaves often densely hairy on both sides. 6. *A. minor*

1. **A. arvensis** (L.)Scop.

According to Lawson this plant was introduced into N.S. No specimens have been seen and no plants collected. This plant was apparently a casual adventive and is known from no other location in N. Amer.

Native of Eu.

2. **A. venosa** Jus.

Bradshaw mentions that collections from Glendyer in Inverness Co. and from Boularderie I. in Victoria Co. may be this species. This plant is scattered about the Glendyer region where it has escaped from gardens. The overlapping bases of the leaf-blades are distinctive in the specimens collected. First flowering in late June.

Introduced from Eu.; N.S.

3. **A. xanthochlora** Rothm. Fig. 87, d. LADY'S-MANTLE

This weed is abundant and very aggressive in moist habitats from Digby around the coast to Yarmouth and Shelburne Co.; 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 south-western counties, especially near the sea-shore but it does not seem to spread inland to any great extent. This plant is widely distributed in the oceanic areas of western Europe and was early introduced into Australia. Known also as *A. pratensis* Schmidt and as *A. vulgaris* L. var. *vulgaris*.

N.S.; N.B. to Que. locally and south to New Eng. and N.Y.

4. **A. monticola** Opiz

A single collection, mentioned by Bradshaw, has been made from St. Peters, Richmond Co., N.S. (*A. vulgaris* L., var. *pastoralis* (Buser) Boivin).

Introduced; N.S. and very local Que. to Ont.

5. **A. filicaulis** Buser

Only scattered locations occur in N.S.; a large patch of this plant was found along the roadside just north of Boylston, Guysborough Co. This plant is frequent in northwestern Europe and is perhaps native further north in Nfld., Lab. and Greenland. Our locations seem to be scattered introductions. (*A. vulgaris* L., var. *filicaulis* (Buser)Fern. & Wieg.).

Western Nfld. and neighboring Que.; Ont.

6. **A. minor** Huds.

Grassy waste places, scattered, near the Dingle, Halifax, collected by H.P.Bell and S.M. Mason. These plants have the flowers, pedicels and upper surface of the leaves copiously stiff-hairy. The hypanthium of the flowers measures slightly over 1.5 mm. (*A. vulgaris* L., var. *vestita* (Buser)Fern. & Wieg.). Also at Chezzetcook in the same county.

Introduced from Eu.; Lab. and western Nfld.; N.S.

15. AGRIMONIA L. AGRIMONY

Tall, perennial herbs with small yellow flowers in spike-like racemes; leaves coarsely and pinnately divided. These plants are best known by their small, greenish fruits. Numerous hooked hairs around the top cause them to stick to the clothes like burs.

a. Axis of the inflorescence with open, long spreading hairs and numerous short-stalked glands, bristles of the fruit spreading, the longest over 3 mm long; hypanthium without short strigose hairs in the longitudinal furrows. 1. *A. gryposepala*

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

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

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

N.S. to N.D., south to N.C.; B.C. to Calif.

2. **A. striata** Michx. Map 338. Fig. 87, f.

Common throughout the northern regions from Digby to northern C.B. but becoming rare to sw. N.S. and along the Atlantic coast; thickets

along fields and roadsides, stonewalls, fences and waste places or cut-over areas. July-Aug.

Nfld. to B.C. south to Pa., Ill. and N. Mex.

16. SANGUISORBA L. BURNET

Flowers small and numerous in dense, erect spikes; without petals but with the sepals petaloid, in 4's; leaves pinnately compound with about 13 toothed leaflets.

a. Plants 5-15 dm high; leaflets 2-6 cm long; pistil and achene 1, stamens 4.
b. Spike long and slender; flowers white, stamens long-exserted. 1. *S. canadensis*
b. Spike ellipsoid, 1-3 cm long; flowers purplish, stamens not exserted. 2. *S. officinalis*
a. Plants 3-5 dm high; leaflets 0.8-1.5 cm long, nearly round; flowers pinkish-green in short ovoid spikes; stamens 12 or more. 3. *S. minor*

1. S. canadensis L. Fig. 89, a. Map 339. CANADIAN BURNET

Bogs, wet meadows and well-drained swamps; common in northern C.B. and often abundant near the coast. It has been reported from various places on the mainland but these possibly represent introductions; a moist meadow, Scots Bay in Kings Co.; Pubnico, Yarmouth Co.; and Port Mouton, Queens Co. Plants from St. Paul I., C.B., with wide leaves were erronously referred to the western var. *latifolia* Hook.

Lab. to Mich. and locally south to Long I., Del. and the mts. of Ga.

2. S. officinalis L. GREAT BURNET

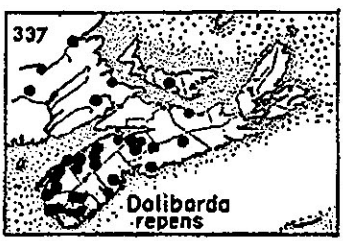
A long-established but not large station of this plant was found between a meadow and an oxbow pond beside the St. Mary's R., some 4 miles above Sherbrooke, Guysborough Co. (Erskine, J. S. 1953).

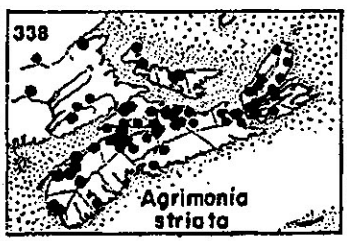
Eurasia; occasionally cultivated and rarely escaped; Alaska to B.C.

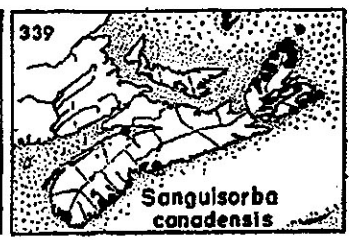
3. S. minor Scop. GARDEN-BURNET

Known only from near Windsor, where it may have been introduced in grass seed. (*Poterium Sanguisorba* L.).

Eurasia; locally established in fields and waste places from N.S. to Tenn.; N.B., Ont. and B.C.







17. ROSA L. ROSE

Various introduced species of roses may persist about old dwellings or occasionally escape to roadside banks. The tall, arching *R. multiflora* Thunb., a species with numerous small, white flowers, is occasionally planted for hedges or grows from the rootstocks of cultivated varieties. Our native species 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, 1934).

a. Twigs, prickles and bristles not pubescent.
  b. Flowers single, very rarely solitary; bracts of the peduncle not wide and ovate, green.
    c. Sepals deeply lobed or pinnatifid with several lanceolate lobes; styles shortly exserted; prickles stout and often broad-based and recurved; introduced species.
      d. Leaflets glandular beneath, often doubly serrate with gland-tipped teeth.
        e. Leaves heavily glandular on both sides; styles pubescent; sepals persistent. 1. *R. Eglanteria*
        e. Leaves only slightly glandular above; styles glabrous or nearly so; sepals soon decidous. 2. *R. micrantha*
      d. Leaves not glandular beneath except rarely on the veins, the sharp usually simple teeth glandless. 3. *R. canina*;
    c. Sepals not lobed or divided; styles mostly included or showing only as a cap; leaves not glandular or pubescent; native species.
      f. Stem low, densely bristly throughout; flowers in 1's to 3's; leaflets about 2 cm long, rather narrow and lanceolate; bogs (Fig. 83, c). 4. *R. nitida*
      f. Stems various, with stout infrastipular prickles or smooth and without bristles; sterile canes sometimes bristly at the base.
        g. Leaflets with 5-30, averaging less than 20, teeth on each side; stamens less than 150; leaves glabrous beneath.
          h. Stem stout, up to 2 m high, much branched; suckers few, rarely flowering the first season; prickles mostly flattened, sometimes absent; bristles often at the base of the plant (Fig. 83, f). 5. *R. virginiana*
          h. Stem low and slender, under 1 m high; suckers from the ground many, often flowering the first season; prickles, if present, small, straight and terete; bristles often scattered to the tip of the plant. 7. *R. carolina*
        g. Leaflets averaging 26 teeth on each side, small and about 0.5 mm high; stamens over 200; leaflets mostly more or less finely pubescent beneath. 6. *R. palustris*
  b. Flowers double, solitary with large ovate bracts upon the peduncles; twigs slender, cinnamon-colored; leaves pale and pubescent beneath; infrastipular prickles stout and curved (Fig. 89, e) 9. *R. cinnamomea*
a. Twigs, prickles and bristles finely pubescent; twigs stout, very prickly; leaves large, thick and rugose; corymbs of flowers small, the fruit large and usually pendent; cultivated or escapes. 8. *R. rugosa*

1. **R. Eglanteria** L. Fig. 89, d. SWEET-BRIER, EGLANTINE

Scattered to rather rare around old houses, in gardens and occasionally as an escape. There is considerable variation in the characteristics of these introduced garden escapes and it is often difficult to classify them definitely. They were formerly cultivated and now occur widely, although sometimes locally, as escapes.

Naturalized from Eu. and throughout our area.

2. **R. micrantha** Sm.

Rather frequent as an escape or an ornamental, growing in situations similar to those of the last species; similar and possibly grading into it.

Naturalized from Eu.; N.S. to Wisc. south to N.C. and Tex.

3. **R. canina** L. DOG-ROSE

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

Eu.; occasionally naturalized, N.S. to Va.

4. **R. nitida** Willd. Fig. 83, e. Map 340. SWAMP-ROSE

Scattered throughout, but perhaps more common in sw. N.S.; bog, 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 southern New Eng.

5. **R. virginiana** Mill. Fig. 83, f. COMMON WILD ROSE

Common throughout, extremely variable in all characteristics and grading into, or hybridizing with *R. carolina*; 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. *R. Bicknelli* of Rydberg is a form with pyriform fruit.

Our two common roses in much of N.S. are this species and *R. carolina*. Their appearance in the field seems to be more distinctive than the characteristics seen in herbarium collections. *R. virginiana* is a coarser plant throughout, with stouter and broader-based, recurved prickles. It tends to grow more in clumps and the flowers are almost always borne on branches from the old wood. *R. carolina* is a slender form, rarely more than 1 m high. It tends to grow in lighter soils from diffusely-spreading rootstocks; and shoots from the ground will often bear flowers on the first year's growth. Considerable field work will be necessary to determine how much the characters of these two species

overlap. Fernald separates off the very small extreme as forma *nanella* (Rydb.)Fern. July.

Nfld. to southern Ont. south to Ala.

6. **R. palustris** Marsh. Fig. 89, c. Map 341.

Scattered at the edges of ponds, wet thickets and in swamps; Digby, Yarmouth and Shelburne Co., scattered east to Lunenburg Co. August.

Fla. to Ark. north to N.S., western N.B. and Ont.

7. **R. carolina** L.

Scattered, at least in the western and central counties; dry pastures, roadsides, uplands, in light or sandy soils. This is the earliest of our native roses to flower; late June-early July. *R. gemella* Willd. is placed here.

Fla. to Tex. north to N.S. southern Me., and Minn.

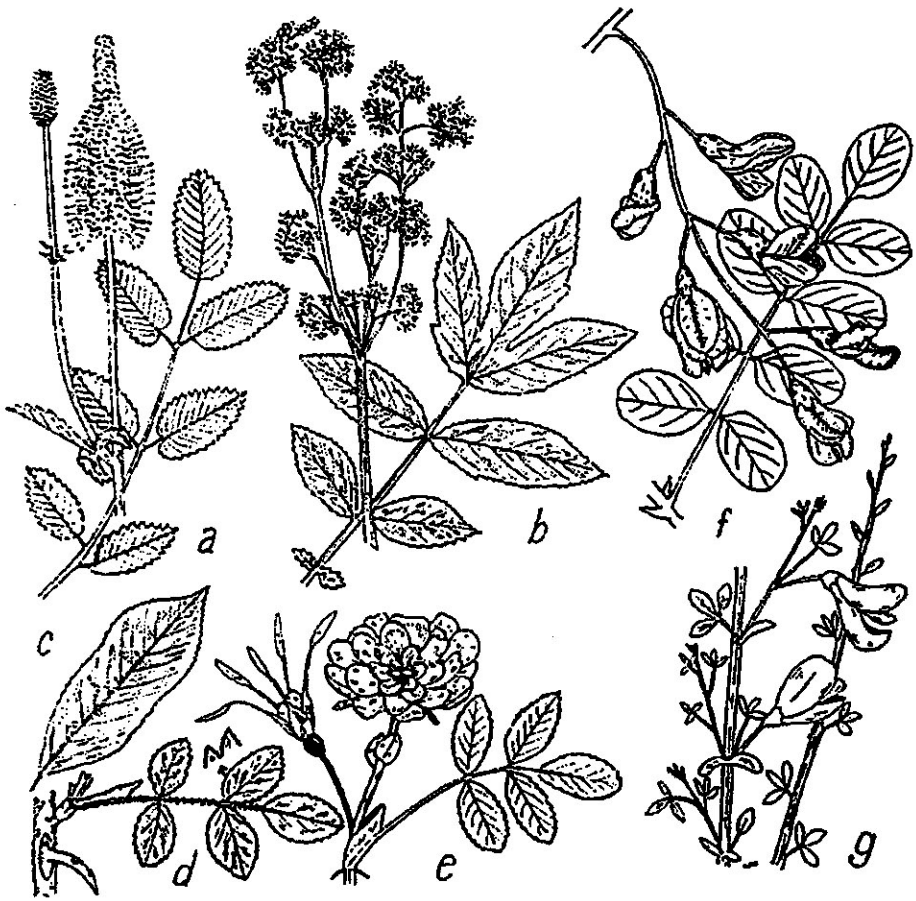


Fig. 89.—Sanguisorba: (a) *S. canadensis*, leaf and inflorescence x ¼. — **Filipendula:** (b) *F. Ulmaria*, leaf and inflorescence x ¼. — **Rosa:** (c) *R. palustris*, leaflet ⅓, (d) *R. Eglantaria*, leaf, (e) *R. cinnamomea* x ¼. — **Robinia:** (f) flowers and leaf x ½. — **Cytisus:** (g) *C. scoparius*, twigs and flowers x ½.

8. **R. rugosa** Thunb.

This coarse, very spiny rose is commonly cultivated and often escapes; becoming established about Yarmouth; scattered elsewhere to C.B. July-Sept.

Native of eastern Asia; widely cultivated and as an escape; N.S. to Ont.

9. **R. cinnamomea** L. CINNAMON ROSE Fig. 89, e.

Common about buildings, around old houses and farmsteads, and along roadsides from Yarmouth Co. east at least to Pictou Co. This was apparently one of the most popular of the old-fashioned roses and occasionally large patches of it may be seen. *R. spinosissima* L. is probably the correct name of this species (Boivin, 1948).

Eurasia; widely introduced and escaping; N.S. to Ont.

18. PRUNUS L. PLUM, CHERRY

About 200 species, chiefly of the north temperate zone. Our wild species consist of only 3 native cherries. Various cultivated plums and cherries are found as escapes, especially in the Annapolis Valley; and the peach, *Prunus Persica* (L.)Batch., may appear occasionally from seed. The members of this genus can usually be distinguished by the small glands near the apex of the petioles (Groh and Senn, 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. 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 2.5-4 cm long, with closely serrate margins; flowers 0.8-1.5 cm wide, with pubescent pedicels; fruits 1.2-2 cm long. 1. *P. insititia*
        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*
      d. Shrub; very spiny; leaves 2-4 cm long; flowers usually solitary, with pedicels glabrous; fruit round, mostly less than 1 cm thick. 3. *P. spinosa*
    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; branches not spiny.
    f. Flowers 1-1.5 cm wide; fruit 7-8 mm thick, the involucral bracts of the inflorescence deciduous, not subtended by green leafy bracts; leaves with sharp inturned teeth; native tree. 5. *P. pensylvanica*
    f. Flowers 2-3 cm wide; fruit 15-20 mm thick; involucral bracts of the inflorescence persistent; leaves closely and bluntly toothed; flowers subtended by large green leafy bracts; cultivated trees or escapes.
      g. Leaves thin, hairy on the veins when young, with 10-14 pairs of veins; flower-spurs leafless, the bud-scales enlarged to 10-15 mm long, becoming recurved; calyx-lobes smooth edged. 6. *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. 7. *P. Cerasus*

a. Flowers numerous in an elongated, leafy, drooping raceme (Fig. 85, e, f).

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. 8. *P. serotina*

h. Leaves thin, with sharp teeth, smooth on the mid-rib beneath; sepals plainly glandular-serrate, disappearing in fruit; shrubs. 9. *P. virginiana*

1. **P. insititia** L. BULLACE-PLUM

This form may appear 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.

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

Commonly planted; occasionally escaping to roadsides and thickets.

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

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

Eurasia; introduced and long cultivated.

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

Scattered at various places in the Annapolis Valley; Wolfville, Gaspereau, Church St., Grand Pré and near Kentville; and at Landsdowne in Digby Co. This species has been introduced also in the form of rootstocks for cultivated varieties of plums. It seems to be an aggressive species and forms colonies.

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

5. **P. pensylvanica** L. f. Fig. 85, d. BIRD- or PIN-CHERRY

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

Lab. to B.C. south to N.C.

6. **P. Avium** L. MAZZARD or SWEET CHERRY

Grown throughout the Annapolis Valley; occasional as an escape, especially in the western part. The black cherry, *P. Mahaleb* L. is rather similar but has the flowers in a short raceme instead of the pedicels being separate to the base. Middle and late May.

Eurasia.

7. **P. Cerasus** L. SOUR RED CHERRY

Frequently found in orchards, often persisting or as an escape along roadsides or fence-rows; most common in the southwestern counties and in the Annapolis Valley; rarer eastward. Late May.

Eurasia; escape and cultivated tree in eastern N. Amer.; B.C.

8. **P. serotina** Ehrh. Fig. 85, f. Map 342. WILD BLACK CHERRY

See "A Revision of the North American Black Cherries" by McVaugh (1951).

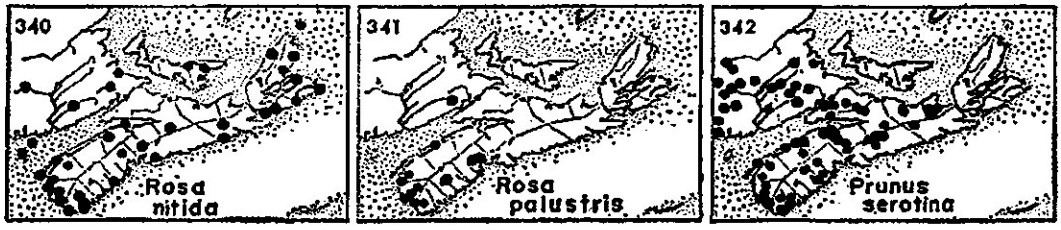
Common in the southwestern counties; characteristic of most of the rich or silty intervales from Cumberland and Halifax Co. to near Antigonish.

Fla. to Tex. north to N.S. and Minn.

9. **P. virginiana** L. Fig. 85, e. Map 343. CHOKE-CHERRY

Common throughout the northern areas and probably scattered 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 province; also along the edges of thickets near rocky lakeshores. June 10-25.

Nfld. to B.C. south to N.C.



58. LEGUMINOSAE PEA or LEGUME FAMILY

The legumes comprise a large family with perhaps 10,000 species of herbs, shrubs and trees. All our members except the honey locust, which is sometimes placed in a separate division, have typical pea-like flowers; and all have alternate compound leaves with stipules. The fruit is commonly called a pod. The garden peas, beans and soybeans are typical representatives of the family.

a. Trees or shrubs.
  b. Large trees with spines or thorns; leaves pinnately compound.
    c. Flowers regular, small, greenish, pistillate and staminate; leaves once or often twice compound; spines long and branched. 1. *Gleditsia*
    c. Flowers pea-like, whitish to pink, showy; leaves once compound only; only stipular thorns present. 9. *Robinia*
  b. Low shrubs about 1 m high, with stiff, green branches; leaves small, spines and thorns absent; flowers bright yellow.
    d. Leaves simple, lanceolate; stem terete and ridged; flowers 2-2.5 cm long, the calyx 2-lipped. 2. *Genista*
    d. Leaves with 3 leaflets or the upper simple; stem strongly 4-angled; flowers 1.2-1.5 cm long, the calyx deeply 5-lobed. 3. *Cytisus*
a. Herbaceous plants.
    e. Leaves pinnately compound.
      f. Terminal leaflet of the leaves absent or modified to a tendril.
        g. Flowers 1-3, sessile. 14. *Vicia*

g. Flowers several to numerous in a stalked inflorescence.
h. 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. 14. *Vicia*
h. Blades of the leaflets more than 2 cm long; styles flattened and bearded down the inner face; wings nearly free. 15. *Lathyrus*
f. Terminal leaflet present and not modified to a tendril.
i. Leaflets 9-31; plants low and tufted; rare; flowers in short racemes or umbels.
j. Leaves arising at the ground level from the very short stem; flowers 15-20 mm long; corolla purple; leaflets 15-30. 11. *Oxytropis*
j. Leaves scattered along the slender stem; leaflets 9-17.
k. Flowers about 10 mm long, purple, in short spikes; pods not jointed; rare. 10. *Astragalus*
k. Flowers 10-15 mm long, rose, in umbels; pods jointed; roadside planting. 12. *Coronilla*
i. Leaflets 1-7.
l. Leaflets 1, or occasionally 3; flowers small, yellow; pods very slender. 12. *Coronilla*
l. Leaflets 5-7.
m. Plant long-trailing or twining, native; flowers brownish purple. 16. *Apios*
m. Plant erect, many-stemmed; introduced field plant; flower yellow to reddish. 8. *Lotus*
e. Leaves palmately compound.
o. Leaflets numerous; lupins. 4. *Lupinus*
o. Leaflets three.
p. Plant not slender and twining, at most prostrate or creeping.
q. Leaflets not toothed; flowers purplish, in long narrow erect racemes; pod made up of separate joints which easily separate; tall and erect woodland plants. 13. *Desmodium*
q. Leaflets toothed or serrulate.
r. Flowers in a dense head, the petals turning brown and persistent on the fruit; fruit straight and membranous; clovers. 5. *Trifolium*
r. Flowers in a short spike or in long racemes, the petals deciduous after flowering.
s. Flowers in tall racemes; pods straight, 1-2 seeded; plants 1-2 m high. 6. *Melilotus*
s. Flowers in a very short spike; pods coiled, recurved or nearly straight; terminal leaflet stalked; plants 1-10 dm high. 7. *Medicago*
p. Plants very slender and twining; leaflets with a smooth edge; flowers purplish. 17. *Amphicarpa*

1. GLEDITSIA L.

1. G. triacanthos L. HONEY-LOCUST

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

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

2. GENISTA L.

1. G. tinctoria L. DYER'S GREENWOOD

Established in a field near North Sydney where it was considered to be a weed; flowers bright yellow and resembling the scotch broom. Early July.

Naturalized from Eu.; N.S. to Va.

3. CYTISUS L.

1. C. scoparius (L.)Link Fig. 89, g. SCOTCH BROOM

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.; recently collected in Yarmouth Co.; 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 sandy areas in N. Amer. near the east and west coasts; N.S., Me. and N.Y. to Ga.

4. LUPINUS L. LUPIN

Our lupins are garden ornamentals or escapes introduced from far-western N. Amer. where some 90 species are present.

a. Leaflets 10-17, widest nearest the middle and narrowed to each end, glabrous to slightly hairy beneath. 1. *L. polyphyllus*

a. Leaflets 6-9, widest near the tip, blunt, densely silky hairy beneath. 2. *L. nootkatensis*

1. L. polyphyllus Lindl. GARDEN-LUPIN

Frequently grown as an ornamental and occasionally escaping to become a weed; very common along the Salmon R. and the dykelands at Truro; common at Chebogue Point in Yarmouth Co.; frequently planted along roadsides elsewhere. June 15-July. The newer garden lupins are hybrids of mixed ancestry.

B.C. to Calif.; introduced from P.E.I. and N.S. to New Eng.

2. L. nootkatensis Donn

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

Alaska to Vancouver I.; introduced from the Avalon Pen. to northern New Eng.

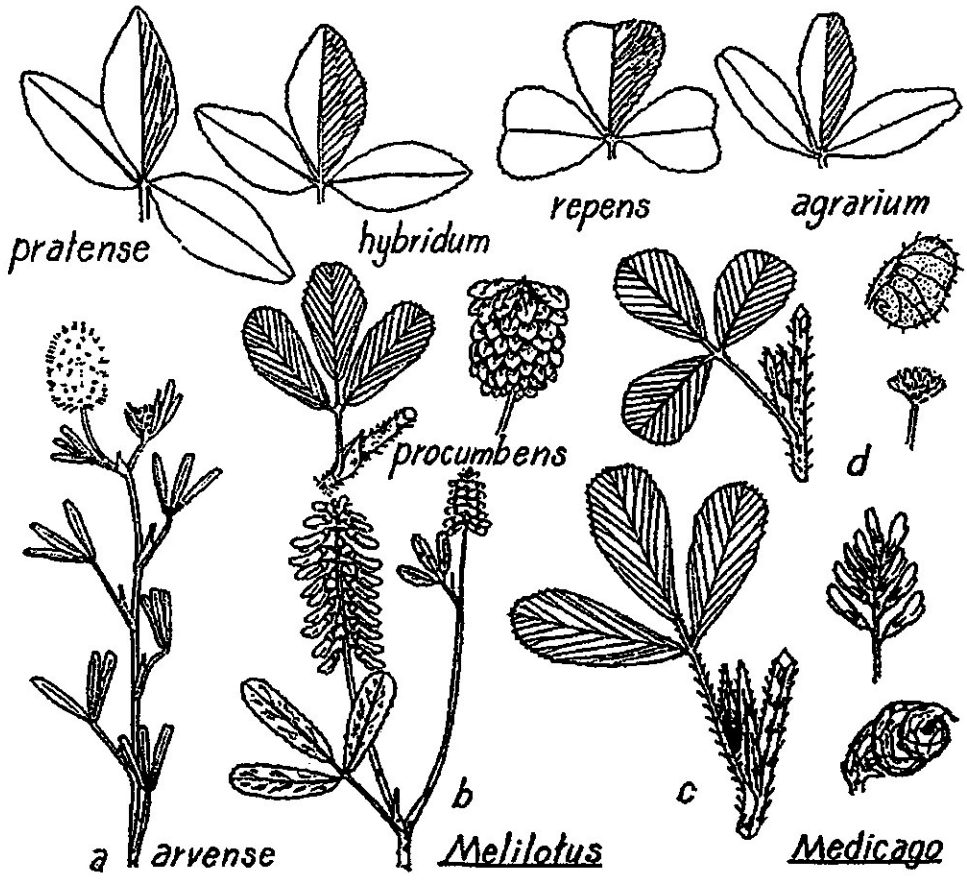


Fig. 90. Trifolium: (a) leaves and flowering heads of various species x ½. — Melilotus: (b) *M. alba*, top of plant x ½. — Medicargo: (c) *M. sativa*, leaf, flowers and fruit x 1, (d) *M. lupulina*, leaf and flowers x 1, fruit x 4.

5. TRIFOLIUM L. CLOVER

Our species of clover have all been introduced from Eu. The genus *Trifolium* is also common near the Pacific Coast where over 50 species are known. (Fig. 90).

a. Flowers white to pinkish or red, never yellow.
  b. Flowers sessile in the heads.
    c. Flowers 5-7 mm long in small heads which are much longer than thick; calyx-teeth silky-plumose and longer than the corolla. 1. *T. arvense*
    c. Flowers 12-20 mm long in large spherical heads; calyx-teeth ciliate-hairy or smooth, not longer than the corolla. 2. *T. pratense*
  b. Flowers conspicuously stalked in the heads.
    d. Stems loosely creeping and rooting; flower-stalks arising from the surface of the ground; flowers white; tip of the leaflets usually notched (Fig. 90). 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*

a. Flowers yellow; plants small.
  e. Terminal leaflet sessile. 5. *T. agrarium*
  e. Terminal leaflet stalked.
    f. Plants relatively large; heads densely flowered with 20-30 flowers; flowers 3.5-4.5 mm long, the corolla conspicuously striate with age. 6. *T. procumbens*
    f. Plants small and slender; heads loosely flowered with 5-15 flowers; flowers 2.5-3.5 mm long, the corolla not becoming striate. 7. *T. dubium*

1. **T. arvense** L. Fig. 90, a. RABBIT-FOOT CLOVER.

Local; a weed in sandy, stony or dry soil; known from Halifax and scattered about Wolfville; now rather frequently seen on the gravelly shoulders of roads where patches may extend for considerable distances, occasionally elsewhere and becoming common.

Introduced from Eurasia; N.S. to Fla. westward.

2. **T. pratense** L. Fig. 90. RED CLOVER

Common in fields and meadows throughout; rarely persisting except in limited amounts along roadsides or dwellings. Fernald (1943-b) separates the coarser, longer-lived cultivated plant as var. **sativum** (Mill.) Schreb. European botanists have named numerous varieties and forms which may have originated through cultivation and selection. Red clover grown from English seed has larger, paler flowers and smoother leaves. In some areas, as in Antigonish Co., this strain persists and is rather conspicuous. Var. *frigidum* Caudin, reported from Yarmouth by Fernald (1921), is probably a minor variation.

Widely naturalized from Eurasia.

3. **T. repens** L. Fig. 90. CREEPING WHITE CLOVER

Common throughout in pastures, roadsides, fields, and lawns, often in 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. Ladino clover is a giant form introduced from Italy and now widely grown in northeastern N. Amer.

Widely naturalized from Eu.

4. **T. hybridum** L. Fig. 90. ALSIKE CLOVER.

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 (1943-b). This is said to be the more common wild form.

Widely naturalized from Eu.

5. **T. agrarium** L. Fig. 90. YELLOW or HOP-CLOVER

Occasional throughout along roadsides, in waste places and in dryish fields and meadows; generally less common than the next species. Late June-Sept.

Widely naturalized from Eu.

6. **T. procumbens** L. Fig. 90. LOW HOP-CLOVER

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

Introduced from Eu.; N.S. to N.D. south to Ga.; Pacific Slope.

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.

Naturalized from Eu.; N.S. to Wisc. south to Miss.; B.C. southward.

6. MELILOTUS Mill. SWEET-CLOVER

About 20 species of annual or perennial plants of the Old World. The small, white or yellow flowers are in long erect racemes from the upper axils; with pods mostly 1-2-seeded.

a. Corolla yellow.
  b. Perennials; flowers 4-7 mm long; calyx-tube rounded at the base.
    c. Ovary and pod glabrous; pod strongly reticulated and cross-ribbed, 2.5-3.5 mm long. 1. *M. officinalis*
    c. Ovary and pod pubescent; pod weakly reticulated, not cross-ribbed, 4.5-6 mm long. 2. *M. altissima*
  b. Annual; flowers 2-3 mm long; fruit about 2 mm long, deeply reticulate. 3. *M. indica*
a. Corolla white; flowers 3-5 mm long; calyx-tube narrowed evenly to the base; pod 3-4 mm long, glabrous. 4. *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 mining towns and on or near gypsum in Hants Co.; scattered elsewhere. July 15-Aug.

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

2. **M. altissima** Thuill.

This species is very similar in appearance to the last and is probably often confused with it. Common around Brooklyn in Hants Co.; scattered elsewhere as at Annapolis and at Port Howe in Cumberland Co. July-Aug.

Introduced from Eu.; widely naturalized, at least from C.B. to N.Y. and Ont.

3. **M. indica** (L.)All.

Ballast-heaps, Pictou. Collected by Macoun in 1883 and cited as *M. parviflora* Desf. (Fernald, 1948).

A casual adventive from Eurasia; N.S. to Minn.

4. **M. alba** Desr. Fig. 90. WHITE SWEET-CLOVER

A common weed in every town and often along roadsides in the country. It has been little grown as a forage crop, but it 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 new roadside embankments where the subsoil has been turned up. July-Aug.

Introduced from Eu. and widespread.

7. MEDICAGO L. MEDICK

About 50 species of Eurasia. The flowers are in short, axillary head-like racemes and the pods are coiled, incurved, or in one species nearly straight.

a. Perennial; flowers 6-12 mm long; plants tall and ascending.
  b. Corolla bluish-purple; pods spirally twisted; alfalfa. 1. *M. sativa*
  b. Corolla yellow; pod nearly straight. 2. *M. falcata*
a. Sprawling annual; flowers yellow, 2-5 mm long; pods curved or tightly twisted. 3. *M. lupulina*

1. **M. sativa** L. Fig. 90, c. ALFALFA

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 planted except in the best locations and is rather rare on the prevailing acid or wet soils. July-Aug.

Native of Eu.; widespread.

2. **M. falcata** L.

This species is similar to alfalfa in general appearance but differs in the flowers and fruit. On the dyke of the tidal Kennetcook R., Hants Co., collected by J. S. Erskine in 1956.

Occasionally introduced from Eu.; N.S. to Del. and Mich.; Que. to B.C.

3. **M. lupulina** L. Fig. 90, d. BLACK MEDICK

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.

Var. **glandulosa** Neilr. has the peduncles and fruits with numerous small stalked glands. This seems to be as common as the species but the glands are variable in number and sometimes occur only on the fruits. June-Sept.

Native of Eu.; widely introduced.

8. LOTUS L. TREFOIL

About 140 species of Eurasia and western North America; clover-like plants with yellow flowers and five leaflets of which two are stipules.

a. Plants without stolons; inflorescence with fewer than 8 flowers; seeds 1.4 mm long, rich brown in color and speckled. 1. *L. corniculatus*
a. Plants with well-developed runners or rhizomes; inflorescence with 7-11 flowers; seeds about 1 mm long, uniform olive-green in color. 2. *L. uliginosus*

1. L. corniculatus L. BIRD'S-FOOT-TREFOIL

This plant is used as a forage plant further west and south, and it is planted experimentally in N.S. so that it may occasionally be found in semi-native habitats. A strain has been introduced, possibly at Pugwash in ballast; and it is occasionally seen along roadsides and in fields in northern Cumberland Co. July-Sept.

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

2. L. uliginosus Schkuhr

Perennial, like the last species with conspicuous yellowish flowers in head-like umbels on long peduncles. This plant is occasionally introduced and has been reported from N.S. Plants growing in waste places should be checked as they may be this species; well-established on bank of stream, Dartmouth.

Introduced from northern and central Eu.; N.S. to Sask. and B.C. southward.

9. ROBINIA L. LOCUST

About 20 species of trees and shrubs from the southern U.S. and Mex. Their finely divided leaves and racemes of large flowers make them attractive as ornamental plants.

a. Branchlets, petioles and flowers smooth; flowers white. 1. *R. Pseudo-Acacia*
a. Flowers rose-purple.
b. Branchlets, petioles and flowers viscid with many sessile glands; leaflets 13-25. 2. *R. viscosa*
b. Branchlets, petioles and flowers bristly and glandular; leaflets fewer, 7-13. 3. *R. hispida*

1. **R. Pseudo-Acacia** L. Fig. 89, f. BLACK LOCUST

Formerly planted as an ornamental tree; occasionally found as an escape in the western and central counties, 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. and Okla.

2. **R. viscosa** Vent. CLAMMY LOCUST, ROSE ACACIA

Often planted for a small ornamental tree and occasionally seen along roadsides; growing in large clumps or thickets, often like a weed in the Annapolis Valley; scattered elsewhere. June.

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

3. **R. hispida** L. BRISTLY LOCUST

South of Wolfville; unlikely to spread far, but still persisting on the bank opposite the College University Avenue dump. (Erskine, D.S., 1951).

Introduced: Va. and Tenn. southward.

10. ASTRAGALUS L.

One of the largest genera of flowering plants in both North America and Asia but rare and often occurring as relic species in eastern Canada.

1. **A. Robbinsii** (Oakes) Gray

Depressed clumps on exposed cliff headlands, Cape d'Or. The treatment of Barneby in the New Britton and Brown Flora (Gleason, 1952) has been followed. The above specimens differ only superficially from the description in the manual, and have therefore been included under the typical variety. It is relatively common and easily accessible at Cape d'Or. These collections are of particular interest as they represent the rediscovery of a taxon thought to be extinct from its type area on "dry calcareous ledges, Winooski R., Vt." (Schofield, 1955).

Local in Me., Vt. and N.H. with the identities problematical.

11. OXYTROPIS DC.

About 200 species of circumboreal distribution and, like the last genus, rare and local in eastern Canada.

1. **O. johannensis** Fern. Map 344.

Abundant at the northeast end of St. Paul Island, C.B. (Perry, 1931). It was reported from the same island in Macoun's Catalogue as *O. arctica* as being collected by McKay. Frequent in cliff crevices and on exposed cliff headlands, Cape d'Or in Cumberland Co. (Schofield, 1955). Sometimes classified as a variety of the circumboreal *O. campestris* (L.)DC.

Western Nfld. to Man. south to northern Me. and the St. John Valley in N.B.

12. CORONILLA L. CROWN-VETCH

About 25 species of Eurasia and N. Afr. with odd-pinnate leaves, and the yellow or rose flowers in umbels on long peduncles.

a. Leaflets 1-3, the terminal elliptical to oval with the lateral, if present, much smaller; flowers yellow, small, 2-5 in an umbel. 1 *C. scorpioides*
a. Leaflets 11-21; flowers rose, the keel tipped with purple, 10-15 mm long, 10-15 in an umbel. 2. *C. varia*

1. **C. scorpioides** (L.)Koch

This is listed by Boivin for N.S. and N.B. The plant is a native of s. Eu. and is occasionally adventive in eastern N. Amer.

2. **C. varia** L. CROWN-VETCH

This perennial plant is being used to seed roadside banks to prevent erosion. It is doubtfully hardy in N.S. but in some locations, as near Glenholme in Colchester Co., it grows luxuriantly and is a pretty and very conspicuous roadside plant.

Introduced; Me. and Que. to Man. south to N.C.

13. DESMODIUM Desv.

A world-wide genus with numerous species. The pods are peculiar in that they are strongly constricted between the seeds and break up into one-seeded sections when mature.

a. Leaflets ovate and pointed, nearly as wide as long; leaves clustered at the top of the stem; raceme terminal and long-stalked. 1 *D. glutinosum*
a. Leaflets oblong-lanceolate and obtuse, about one-fourth as wide as long; leaves scattered on the stem; racemes not long-stalked. 2. *D. canadense*

1. **D. glutinosum** (Muhl.)Wood Map 344.

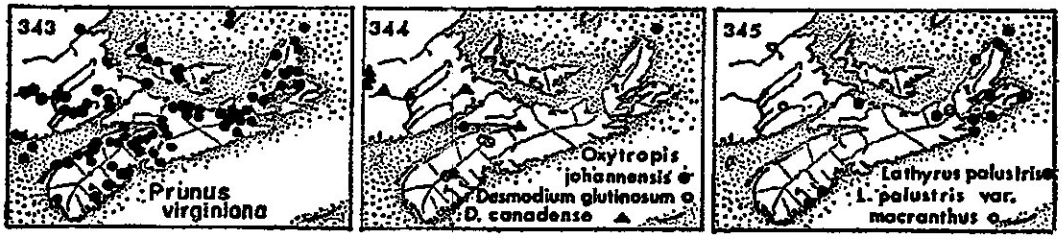
Known from the edge of beech woods along the Gaspereau R. about 2 miles above White Rock, Kings Co.; on gypsum bluff among *Rhus radicans*, Halfway R., Hants Co. (Erskine); collected by J.F. Donly along a wood-road near the fish hatchery, Grafton, Queens Co. (*D. acuminatum* (Michx.)DC.). July.

N.S., N.B. and central Me. to Minn. south to Fla. and Tex.

2. **D. canadense** (L.)DC. Map 344. CANADA TICK-CLOVER

Collections of this plant exist from along the river above Truro, where it is now either very rare or extinct. Robinson (1901-2, 1907) reports it from each of the three Pictou rivers. Occasional in clumps on the upper portions of the beach, Kedgemakoogie L., west of New Grafton, Queens Co. Late July.

N.S. to Man. south to W. Va. and Okla.



14. VICIA L. VETCH

About 200 widely distributed annuals or perennials, as cultivated plants, escapes or weeds. *V. Faba* is the cultivated Broad or Horse Bean.

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

1. V. sativa L. CULTIVATED VETCH

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

Naturalized from Eurasia and N. Afr.; widespread.

2. V. angustifolia Reichard Fig. 91, a. WILD VETCH

Common throughout, especially about towns, sea-shores, dykelands and railroads. It is extremely variable and is often included as a variety of the preceding 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.) W.D.J. 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 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. Amer.; B.C.

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

Very local; reported from a field at Annapolis (Fernald, 1922).

Naturalized from Eu.; Nfld. to Ont. south to northern New Eng.

4. **V. tetrasperma** (L.) Moench Fig. 91, e. SLENDER VETCH

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

Nfld. to Ont. south to Fla.; B.C.

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

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

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

6. **V. Cracca** L. Fig. 91, b. TUFTED VETCH

This is the most common vetch of the Province and it is abundant along roadsides and railroads throughout; scattered elsewhere in waste places, cultivated ground and about towns; often common in older dykelands, as about Amherst. Forma **albida** (Peterm.) Gams has white flowers: railway embankment. Truro, R.W. Ward, 1927 (Schofield and Smith, 1952). Late June-Aug.

Nfld. to B.C. southward; introduced or perhaps partly native.

7. **V. villosa** Roth Fig. 91, c. HAIRY or WINTER VETCH

Occasionally sown and persisting for a time in open or sandy soil. Occasional throughout Kings Co.; scattered elsewhere.

Native of Eurasia; widely introduced.

15. LATHYRUS L. PEA

About 150 annual and perennial herbs in the northern hemisphere and South America. Our cultivated sweet pea is *L. odoratus* L. The garden pea belongs to a closely related genus and is *Pisum sativum* L. *L. Aphaca* L. is a peculiar species with the leaf reduced to a tendril; rarely appearing as a waif.

a. Leaves with 2-6 pairs of leaflets; plants native, growing near the sea-shores.
b. Stipules like an arrow-head, with 2 basal lobes; leaflets 8-12, oval; flowers 7-25 on each peduncle (Fig. 91, f).
c. Plants glabrous or nearly so. 1. *L. japonicus* var. *glaber*
c. Plants densely pubescent with fine, short, erect pubescence. *L. japonicus* var. *pellitus*

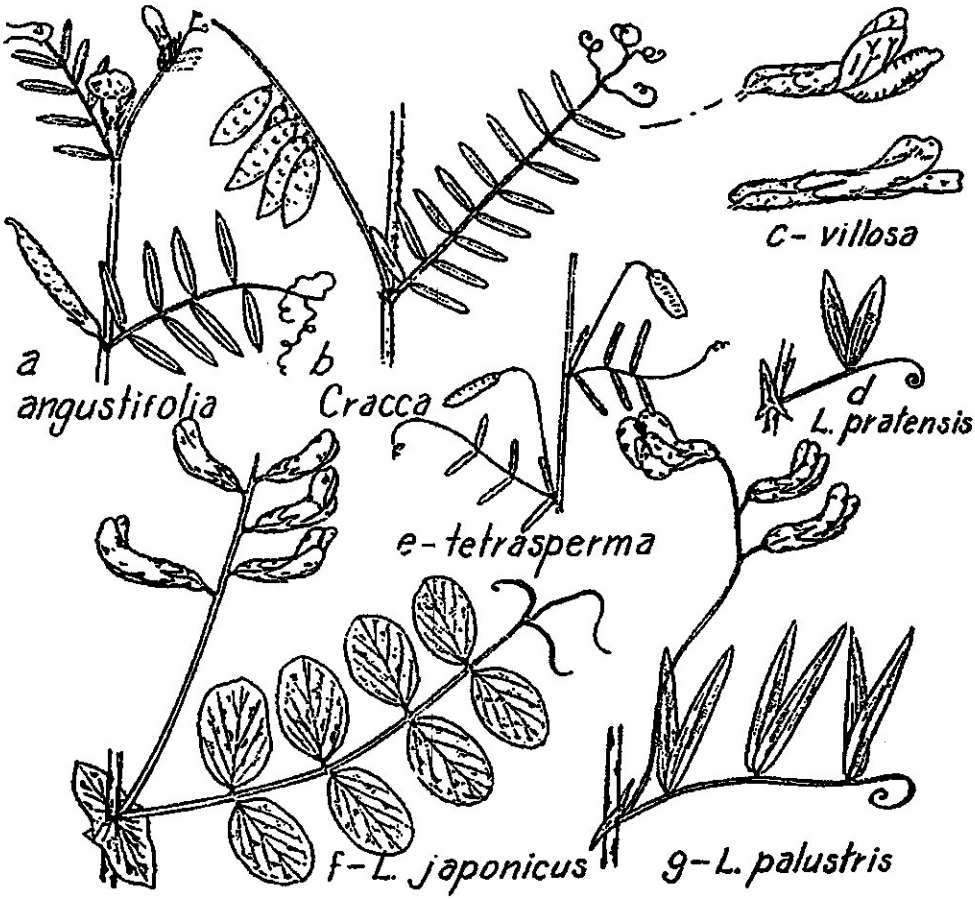


Fig. 91.—Vicia: (a) *V. angustifolia* x ½, (b) *V. Cracca* x ½, flower x 2, (c) *V. villosa* x 2, (e) *V. tetrasperma* x ½. — Lathyrus: (d) *L. pratensis*, leaf and stipules x ⅓, (f) *L. japonicus* x ½, (g) *L. palustris* var. *pilosus*, leaf and flowers x ½.

b. Stipules with but one basal lobe (Fig. 91, g).
  d. Mature leaflets 7-23 mm wide, 2-3.5 times as long as wide.
    e. Mature leaflets nearly glabrous. 2. *L. palustris*
    e. Mature leaflets finely pubescent. *L. palustris* var. *macranthus*
  d. Mature leaflets 3-9 mm wide, 5-15 times as long as broad.
    f. Plant glabrous or nearly so *L. palustris* var. *linearifolius*
    f. Plant pubescent. *L. palustris* var. *pilosus*
a. Leaves with but a single pair of leaflets above the stipules.
    g. Petiole not winged; flowers yellow (Fig. 91, d). 3. *L. pratensis*
    g. Petiole widely winged; flowers purplish; lobes of calyx unequal, the lower much the longer; seeds numerous in pod. 4. *L. latifolius*

1. **L. japonicus** Willd., var. **glaber** (Ser.)Fern. Fig. 91, f. BEACH PEA

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 at considerable distances from the salt water. July-Sept. (*L. maritimus*).

Nfld. south along the coast to N.J.; inland around the Great Lakes; B.C. to Calif.

Var. **pellitus** Fern. differs only in its pubescence and the two varieties are usually found growing together. Forma **candida** Fern., with white corolla, has been collected at Whycocomagh, Inverness Co.

Nfld. to Que. and N.J.; northern N.Y. and locally around the Great Lakes.

2. L. **palustris** L. Fig. 91, g. Map 345. WILD PEA

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

Var. **macranthus** (T.G. White) Fern. is found on grassy slopes, headlands and 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 346) is common around and on the dykelands, along sea-shores and in sea-side swamps and meadows, probably around most of the coastline. June 20-July. Lab. to N.Y. and scattered to the West Coast.

Var. **linearifolius** Ser. is similar to the preceding variety except that the leaves are glabrous. Found by J.S. Erskine on the Tusket I. in Yarmouth Co. and on Sable I. Local across N. Amer.

Var. **retusus** Fern. & St. John (St. John, 1921) differs from all other varieties in having the leaflets broadest near the tip and tapering to a cuneate base. This was originally described from Sable Island; now reported also from St. Pierre and Miquelon.

3. L. **pratensis** L. Fig. 91, d. YELLOW VETCHLING

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

Nfld. to Ont. locally south to N.Y.; introduced from Eu.

4. L. **latifolius** L.

Cultivated as an ornamental; occasionally escaping to roadsides and waste places, persisting; several large perennial clumps were found at South Berwick. *L. sylvestris* L. is very similar and here is included with it. This seems like a more slender type with narrower leaflets and stipules.

Introduced from Eu.; N.S. south to Va. and west to Kans.

16. APIOS Medic.

About 7 species of eastern N. Amer. and China.

1. **A. americana** Medic. Fig. 92, b. Map 347. GROUND-NUT

Common in thickets in southwestern N.S.; scattered along rivers in alluvial soil in the central district east to Pictou Co. Prest (1905) says that he never saw it east of Halifax; and it does appear to be absent in Cumberland Co. and from Halifax and central Pictou Co. eastward. Late July.

N.S. to Minn. south to the Gulf of Mex.

Fig. 92.—Amphicarpa: (a) *A. bracteata* x ½. — Apios: (b) *A. americana* x ½. — Linum: (c) *L. catharticum* x ½. — Millegrana: (d) *M. 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.

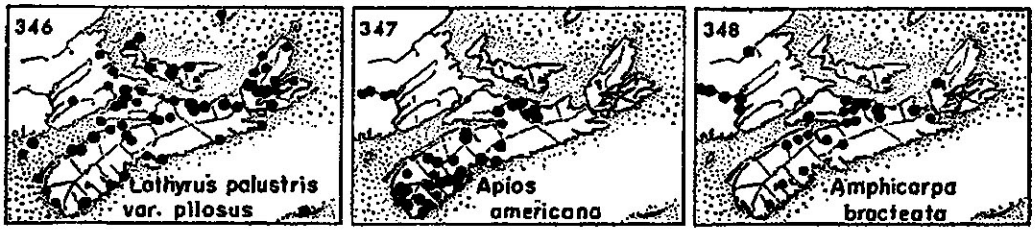
17. AMPHICARPA Ell.

Seven known species; the others found in eastern Asia.

1. **A. bracteata** (L.)Fern. Fig. 92, a. Map 348.

In shaded areas and alluvial soils, moist thickets and river banks, abundant locally from Shelburne and Cumberland Co. to Guysborough and Antigonish; scattered in the Annapolis Valley and rather common along the intervales of Colchester and Pictou Co.; Southwest Mabou in C.B. August. All our plants are very slender and twining.

N.S. to Man. south to the Gulf of Mex.



59. LINACEAE FLAX FAMILY

About 150 species of wide distribution. Our representatives are rather wiry, erect herbs. The filaments of the stamens tend to be joined at the base; the fruit is a dry capsule.

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

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

1. LINUM L. FLAX

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

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

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

Formerly planted but not persisting, now rarely seen except where seeds happen to fall in waste ground or along railroad tracks. July-Aug.

Introduced from Eu.; widely distributed.

2. **L. catharticum** L. Fig. 92, c. Map 349. FAIRY-FLAX

Scattered on hillsides, roadside banks or in old fields or grassy areas, often on moist or seepy ground. Central and southern C.B. becoming

rarer through Antigonish to Pictou Co. It has been introduced from Eu.; or it may possibly be native to C.B.

Western Nfld.; N.S. to Ont. locally south to N.Y.

2. MILLEGRANA Adans.

1. **M. Radiola** (L.)Druce Fig. 92, d. Map 349. TINY ALL-SEED

Discovered at Louisburg by Macoun over 60 years ago; now scattered along the coast west to Yarmouth Co. and around to Brier I.; Cheticamp on the west side of C.B.; abundant along the shore east of Halifax, where it may grow thick as grass over some of the wet pasture slopes close to the sea. July-Aug. (*Radiola linoides* Roth).

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

60. OXALIDACEAE WOOD-SORREL FAMILY

Low herbs with watery juice and leaves with three obcordate leaflets much like those of white clover; stamens 10, their filaments united at the base into a short tube; ovary 5-celled with 5 styles, and forming an elongated, often 5-sided, capsule. See Eiton (1963) and Wiegand (1925).

1. OXALIS L. WOOD-SORREL

a. Leaves all basal; petals white, veined with rose or purple; native woodland plants. 1. *O. montana*

a. Leaves scattered on erect stems or branches; petals yellow, small; weedy species.

b. Plants creeping and rooting at the nodes; leaves small and purplish or bronze; stipules ovate-oblong; seeds brown. 2. *O. corniculata*

b. Plants with leafy stems, erect or decumbent but not creeping, sometimes with rootstocks; stipules narrow or lacking.

c. Flowers umbellate or solitary with the fruiting pedicels usually horizontally deflexed with erect capsules; capsules 15-25 mm long, grayish with crisp incurved hairs which have no cross-partitions. 3. *O. Dillenii*

c. Flowers cymose, on short branching pedicels; fruiting pedicels spreading or ascending; capsules 8-12 mm long, glabrate or with soft spreading hairs which are septate and show several cross-walls under magnification. 4. *O. stricta*

1. **O. montana** Raf. Fig. 92, e. Map 350. WOOD-SORREL

Common throughout; damp woods, mossy banks, along ravines and in wooded swamps, early June to July. Our plants are very closely related to the Eurasian *O. Acetosella* L. and may be included with this species as var. *rhodantha* (Fern.)Knuth.

Southern Nfld. to Ont. and Minn. south to N.C. and Tenn.

2. **O. corniculata** L. CREEPING WOOD-SORREL

Waste places and gardens, chiefly near greenhouses and showing little tendency to persist or spread in other locations; Truro, Wolfville and Kentville. Gleason considers the application of this name to be confused and calls our plants *O. repens* Thunb.

Widely distributed southward and scattered north to Nfld.

3. **O. Dillenii** Jacq.

This includes the plants named *O. stricta* in our manuals but Eiton (1963) considers this name properly belongs to the following species. Rare, occasionally collected in the Annapolis Valley in waste places and woodland clearings from Annapolis to north of Kentville. The type of hairs on or near the capsules seems to be a definite characteristic but this is difficult to see without considerable magnification. A slender type occurring north to southern N.B. is included as subspecies *filipes* (Small) Eiton.

Fla. west to the Rocky Mts. north to N.S. and B.C.

4. **O. stricta** L. Fig. 92, f. YELLOW WOOD-SORREL

Common throughout; along roadsides, in thickets, waste ground, fields and near dwellings. Numerous forms have been described on the basis of the pubescence of the stems, leaves and pedicels but the value of these is very dubious. The typical form has the hairs of the pedicels appressed and the stem with ascending pubescence or glabrate; common. From the central part of the Province westward the hairs of the pedicels tend to be spreading and the stems densely hairy. The name *O. europaea* Jord. is usually applied to this species but Eiton considers Linnaeus to have had the N. Amer. plant when he named *O. stricta*.

N.S. to Sask. south to Va. and Ariz.; introduced in Europe.

61. GERANIACEAE GERANIUM FAMILY

This distinctive family has the leaves deeply lobed or divided; flowers with 10 stamens more or less united at the base; and the pistil has a long beak and 5 carpels which form 5 dry, one-seeded fruits which separate at maturity and remain attached by the extension to the tip of the beak of the pistil. Our cultivated geraniums and pelargoniums belong to this family.

a. Leaves palmately lobed or divided; fertile stamens 10. 1. *Genanium*
a. Leaves pinnately and finely divided; fertile stamens 5. 2. *Erodium*

1. Geranium L.

a. Flowers large, the petals 15-20 mm long, purplish, much exceeding the calyx; plant perennial with thick crown and stout rhizomes. 1. *G. pratense*
a. Flowers smaller, the petals less than 10 mm long, shorter than to slightly exceeding the calyx; plants annual or biennial with tap roots.

b. Leaves cleft but not divided into leaflets, the divisions lobed; carpel-bodies (seeds) at maturity remaining attached to the styles.
c. Leaves 4-7 cm wide, deeply cleft with the divisions narrowly divided with acute lobes; sepals 6-10 mm long, slenderly awn-tipped. 2. *G. Bicknellii*
c. Leaves mostly less than 5 cm wide, orbicular in outline, more shallowly cleft; sepals 2.5-4 mm long, blunt or with minute callous tips.
d. Style of the fruit 2-5 mm long; carpel-bodies glabrous, minutely wrinkled. 3. *G. molle*
d. Style, the slender part at the tip, practically absent; carpel-bodies smooth, minutely pubescent. 4. *G. pusillum*
b. Leaves completely divided into stalked leaflets which are again pinnately cleft, terminal leaflets stalked; seeds at maturity promptly separating from the styles, with two long hair-like appendages. 5. *G. Robertianum*

1. **G. pratense** L. Fig. 93, c. MEADOW-GERANIUM

Scattered or occasionally seen from Yarmouth to Pictou Co.; probably as an escape from gardens; along roadsides or near dwellings. June-Aug.

Nfld. to Ont. south to Mass. and N.Y.; introduced from Eu.

2. **G. Bicknellii** Britt. Fig. 93, b. Map 351. WILD GERANIUM

Rather rare, usually found in recently burned or cleared areas from Yarmouth east to Halifax and Cumberland Co.; abundant on talus overgrown with poison ivy, base of cliff, New Prospect, Cumberland Co. (Schofield, 1955). Late June-July.

Nfld. to B.C. south to Mass., N.Y. and Iowa.

3. **G. molle** L.

Rare; the only collection seen from northeastward of Mass. was one from Annapolis, collected by George Morris, July 30, 1902.

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

4. **G. pusillum** L.

Local; becoming a weed in lawns and about gardens in Wolfville, aggressive when once established.

Naturalized from Eu.; N.S. to B.C. southward.

5. **G. Robertianum** L. Fig. 93, a. Map 352. HERB-ROBERT

Common from Digby northeastward to northern C.B.; cold ravines, rocky woods, talus slopes and rich woods. It is growing on rather rich soil or in alkaline areas; abundant along the North Mt. of the Annapolis Valley and in rich woods eastward. In sw N.S. it is found on the cobble areas back of the sea-beaches, as near Port Joli, at Roseway and Bon Portage I. in Shelburne Co., the rocky bank of the river at Tusket and on the Tusket I. June-Sept.

Nfld. to Ont. south to W. Va.; B.C.; Eurasia and Africa.

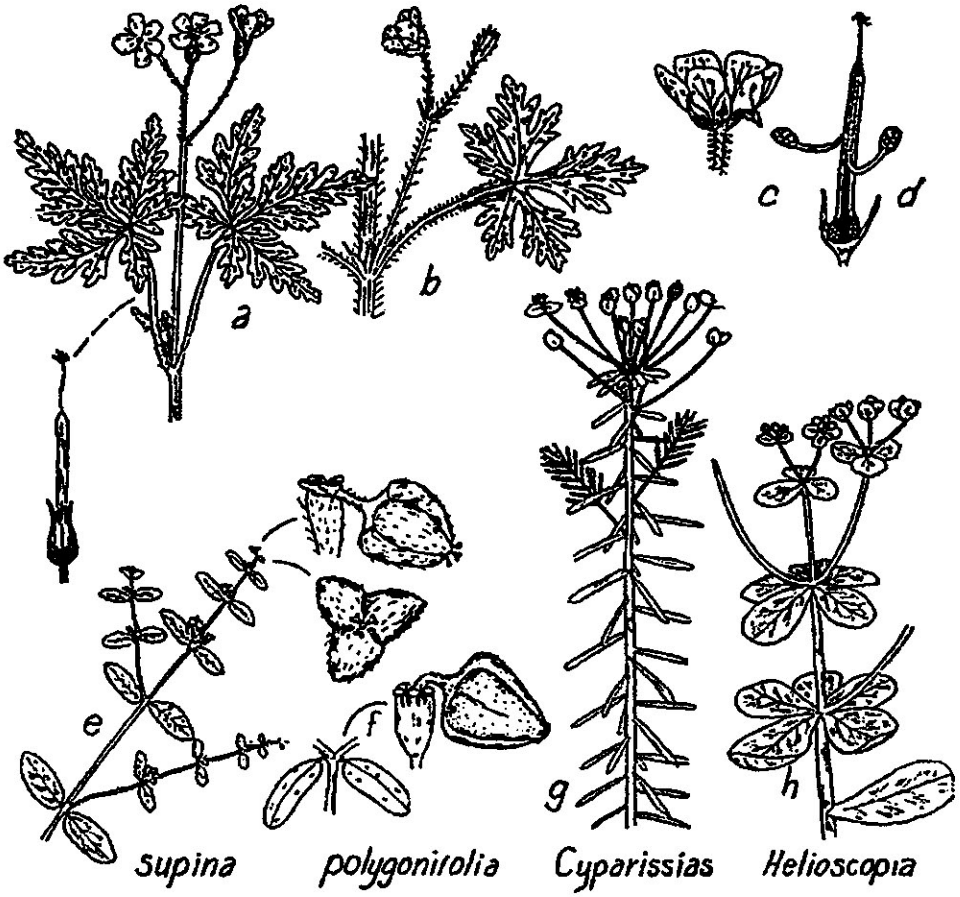
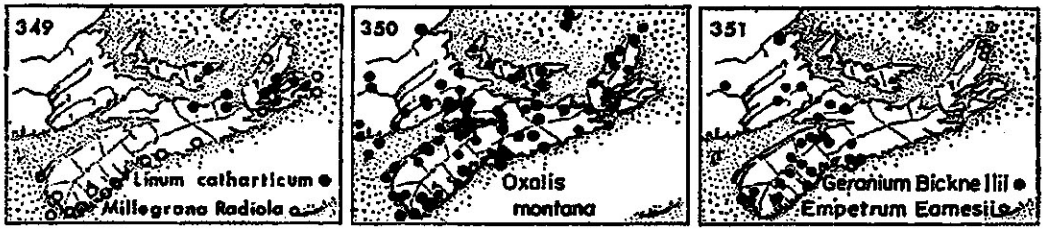


Fig. 93.—Geranium: (a) *G. Robertianum* x ½, fruit x ½, (b) *G. Bicknellii* x ½, (c) *G. pratense*, flower, (b) mature flower to show fruits twisting off. — Euphorbia: (c) *E. supina* x ½, fruits x 5, (f) *E. polygonifolia*, leaves x ½, fruits x 5, (g) *E. Cyparissias* x ½, (h) *E. Helioscopia*, tip of branch x ½.



2. ERODIUM L'Her. STORKSBILL

1. **E. cicutarium** (L.)L'Her. STORKSBILL.

Centreville, Kings Co.; scattered in sandy ground; also at Halifax. June-Sept.

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

62. POLYGALACEAE MILKWORT FAMILY

This family is represented in our area by only two rather small and rare herbaceous plants plus the taller woodland *P. Senega* L. in N.B. Our plants are relatively unbranched, up to 2 dm. high, and have whitish to pink irregular flowers. The 2 inner of the 5 sepals may be showy and petal-like; and the lower of the 3 petals is different from the other 2 and is keeled.

1. POLYGALA L. MILKWORT

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

a. Flowers crowded in a dense globular to broadly oblong head; rootstocks without cleistogamous flowers (Fig. 92, g). 2. *P. sanguinea*

1. **P. polygama** Walt., var. **obtusata** Chodat

Very rare, probably introduced; Halifax, and Clementsvale in Annapolis Co. The variety is the northern form.

N.S., Que. and Ont. to Minn. south to Fla. and Tex.

2. **P. sanguinea** L. Fig. 92, g.

Occasional in the northern part of Hants and Cumberland Co.; poor or acid fields, damp slopes and in open woods or bush; near New Glasgow; and on the sand barren at Middleton in Annapolis Co. A collection from a nursery near Halifax may be an introduction.

N.S. to Ont. and Minn. south to N.C. and Kans.

63. EUPHORBIACEAE SPURGE FAMILY

This huge family is represented with us by a few escapes or weedy species, all of which are herbaceous plants with simple alternate or opposite leaves. The flowers are small with no petals and sometimes without even a calyx. The stamens and pistils are usually in different flowers.

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

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

b. Staminate and pistillate flowers in the axils of the leaves, usually enclosed 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. 93, e-h); juice milky. 3. *Euphorbia*

1. MERCURIALIS 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 Ont. south.

2. ACALYPHA L.

1. **A. rhomboidea** Raf. THREE-SEEDED MERCURY

Among stones and grass along roadsides, Clearland, Lunenburg Co., the only collection known for the Province.

Abandoned fields; N.S. to Nebr. south to Fla. and Ark.

3. EUPHORBIA L. SPURGE

The spurges can usually be recognized by the insignificant flowers and fruit and by the milky juice. Many, but not all, have smooth bright green leaves which are rather thickish. *E. marginata* Pursh, or snow-on-the-mountain, is a garden annual with the upper leaves margined with white or entirely white.

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.
  b. Leaves finely and sharply serrulate; glands of the involucral cup elliptic to nearly rotund without appendages (Fig. 93, h). 1. *E. Helioscopia*
  b. Leaves entire; glands crescent-shaped with 2 horn-like appendages sticking outward.
    c. Leaves linear or nearly so.
      d. Plants perennial from running rootstocks or deep roots; seeds smooth; primary rays of the umbels usually more than 5.
        e. Stem-leaves 1-3 mm wide; plants about 3 dm high, growing in dense beds (Fig. 93, g). 2. *E. Cyparissias*
        e. Stem-leaves 4-12 mm wide; plants 3-7 dm high, not densely crowded in the beds. 3. *E. Esula*
      d. Plants erect to ascending, annual; seeds tuberculate; primary rays of the umbel 3-5. 4. *E. exigua*
    c. Leaves ovate to obovate; seeds pitted on the outside face and furrowed on the inside faces. 5. *E. Peplus*
a. Flowers axillary or on short leafy branches; leaves opposite, 6-12 mm long; plants low and prostrate (Fig. 93, e).
  f. Plant glabrous throughout.
    g. Leaves not toothed, rather thick and glossy; seeds smooth (Fig. 93, f). 7. *E. polygonifolia*
    g. Leaves minutely serrulate under a lens; seeds with 3 or 4 transverse ridges. 9. *E. glyptosperma*
  f. Plant pubescent to long-hairy; leaves smooth to minutely toothed; seeds minutely roughened or wrinkled.
    h. Ovary and capsule hairy with incurved hairs; leaves sub-entire; seeds about 1 mm long, whitish-brown (Fig. 93, e). 6. *E. supina*

h. Ovary and capsule glabrous; leaves finely toothed; seeds 1.1-1.3 mm long, smooth to slightly wrinkled, grayish-brown. 8. *E. vermiculata*

1. **E. Helioscopia** L. Fig. 93, h. SUN-SPURGE

Waste places, around buildings and gardens throughout, occasional but rarely in any abundance. This weedy plant is probably not as common now as it was formerly. July-Sept.

Introduced from Eu. and widely distributed in gardens.

2. **E. Cyparissias** L. Fig. 93, g, CYPRESS SPURGE

Scattered as an escape from gardens; often seen around cemeteries, along roadsides and in waste places. Generally the plants do not set seed but on one farm near West R., Pictou Co., and near Baddeck, both staminate and pistillate plants were present. The weed had overrun the fields and was becoming almost impossible to control. This may be the tetraploid race, which Erskine mentions from Brackley Point, P.E.I. June-Aug.

Sterile, scattered infestations which are not weedy were found to have $2n = 20$, while the aggressive fertile plants have 40 (Moore and Lindsay, 1953).

Native of Eu.; widely planted and escaped in N. Amer.

3. **E. Esula** L.

Collected by H. Groh at Wilmot, June 26, 1928; and at Annapolis on the same date. Several of these species of spurge have appeared sporadically but they have not persisted. (Including *E. virgata*). June-July.

N.S. to B.C. south to Penn. and Iowa.

4. **E. exigua** L.

This plant has not been collected recently in the Province but it is reported from C.B. in Gray's Manual and the range is given in Britton and Brown as eastern Can. Like some of the other species, this may appear sporadically without becoming established.

Adventive from Eu.; C.B. to N.Y. and W.Va.; Ont. and B.C.

5. **E. Peplus** L. PETTY SPURGE

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

Native of Eu.; Nfld. to Sask., and B.C. south to Md. and Ind.

6. **E. supina** Raf. Fig. 93, e. CREEPING SPURGE

Occasionally introduced and spreading, most of the records being from the Annapolis Valley from Weymouth to Windsor; a weed at Kentville, along the Salmon R. above Truro, and occasionally elsewhere in locations where there is little competition from grass or taller-growing plants.

N.S.; Que. to s. Ont. and N.D.; general in the eastern U.S.

7. **E. polygonifolia** L. Fig. 93, f. Map 353. SEASIDE SPURGE

Sandy beaches above high tide level, damp dunes and sand flats; restricted to the neighborhood of salt water; Isle Haute and Brier I.; Yarmouth along the South Shore to Green Bay, Lunenburg Co.; scattered through C.B. and along Northumberland Strait to Pictou and Port Howe. It seems to be most common in southwestern N.S. behind the sandy beaches. July-Oct.

Magdalen I., P.E.I. and e. N.B. south to Ga.; shores of the Great Lakes.

8. **E. verminculata** Raf. HAIRY SPURGE

Sparingly introduced and mainly found in the vicinity of railroad stations; Windsor, Weymouth and North Sydney; also more recently at Curry Corner near Windsor, at Folly L.; and at Conn's Mills in Cumberland Co. Reported earlier as *E. hirsuta* (Torr.) Wieg.

N.S. to Ont. and Mich. south to Penn.; B.C. to N. Mex.

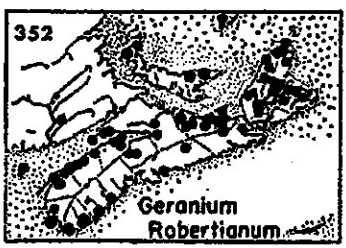
9. **E. glyptosperma** Engelm.

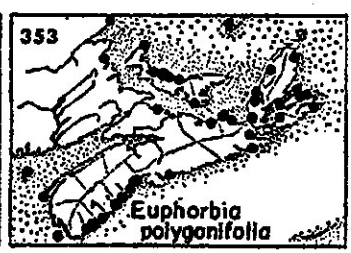
Collected by P.M. Tachereau from between ties of the railroad track at South Maitland, Hants Co., Aug. 1967.

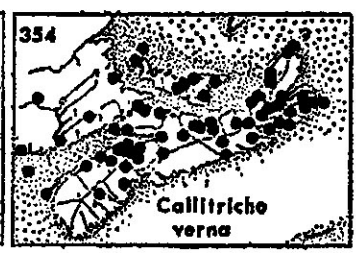
Dry sandy soil, N.S. to B.C. south to N.Y., Mo. and Texas.

64. CALLITRICHACEAE WATER-STARWORT FAMILY

This family consists only of one world-wide genus. The plants are open or tufted, chickweed-like in appearance with small, entire opposite leaves. They are very common in shallow water or stranded out on wet mud. The flowers are in the axils of the leaves, the staminate one consisting of one stamen only and the pistillate of a single pistil. The fruit is indehiscent and consists of two carpels with a longitudinal furrow between them; and each carpel forms two flattish one-seeded sections called mericarps. Fruits are necessary for identification and a magnification of at least 20 times is desirable for study. See *Callitriche* in the New World by Fassett (1951).







1. CALLITRICHE L. WATER-STARWORT

The species reported from N.S. have a narrow membranous wing connecting the two opposite leaves. One other species, *C. hermaphroditica* reported from southern N.B., has linear-lanceolate leaves with the bases not connected.

a. Height of fruit exceeding the width by 0.2 mm; carpels with a wing at summit that narrows and usually disappears down the sides; reticulation on mericarps tending to run in vertical lines. (Fig. 94, d). 1. *C. verna*

a. Height of fruit exceeding the width by 0.1 mm or less, or not at all; carpels wingless or with an obscure false wing; reticulation of mericarps not running in vertical lines.

b. Foliage relatively coarse; fruit widest above the middle; linear submersed leaves with tip of vein scarcely excurrent. 2. *C. heterophylla*

b. Foliage delicate; fruit of equal width above and below the middle; linear submersed leaves with tip of vein slightly excurrent. 3. *C. anceps*

1. **C. verna** L. Fig. 94, c. Map 354.

Shallow water or stranded on mud at the edge of ponds or along streams from Annapolis Co. and Lunenburg to C.B., not seen by the Gray Herbarium expedition in the southwestern counties. Fassett considers that this species should be called *C. verna* L. instead of *C. palustris* L., following the usage of the European botanists.

Greenland to Alaska south to Ohio and Md.; Eu.

2. **C. heterophylla** Pursh

The only collection cited by Fassett from the Maritime Provinces is one from Rockville, Yarmouth Co. Much of what has been called *C. heterophylla* from Nfld. and eastern N.S. is apparently the next species; and *C. heterophylla* may be another of the species confined to sw. N.S.

N.S. and Me. to Wisc. south to the Gulf States; scattered in the Pacific States.

3. **C. anceps** Fern. Fig. 94, d. Map 355.

In shallow water and stranded on mud, probably throughout. Fassett cites collections from Springhaven, Tusket and Tusket Falls in Yarmouth Co.; Charcoal in Pictou Co.; and from Antigonish.

Nfld. and Greenland s. to n. New Eng. and N.Y. with widely scattered locations elsewhere.

65. EMPETRACEAE CROWBERRY FAMILY

Trailing or small, shrubby, evergreen plants of a heathlike aspect with leaves folded so the margins meet on the lower side. The flowers are small and inconspicuous. There are only 3 small genera in the family.

a. Plants prostrate or extensively trailing; flowers scattered, solitary in the axils of the leaves, with 3 sepals, 3 petals and 3 stamens; fruit a berry; bogs and sea coasts. 1. *Empetrum*

a. Plants bushy and erect, 1-6 dm high, in extensive mats or areas; flowers in terminal heads, corolla none, with 3-4 stamens; fruit dry, with three nutlets; sandy or rocky areas. 2. *Corema*

1. EMPETRUM L. CROWBERRY

The crowberries of N. Amer. have recently been intensively studied and the material from the Maritimes examined by Löve and Löve (1959) and D. Löve (1960). The following 3 species apparently hybridize freely and are considered as 3 closely related subspecies of *E. Eamesii* by these authors.

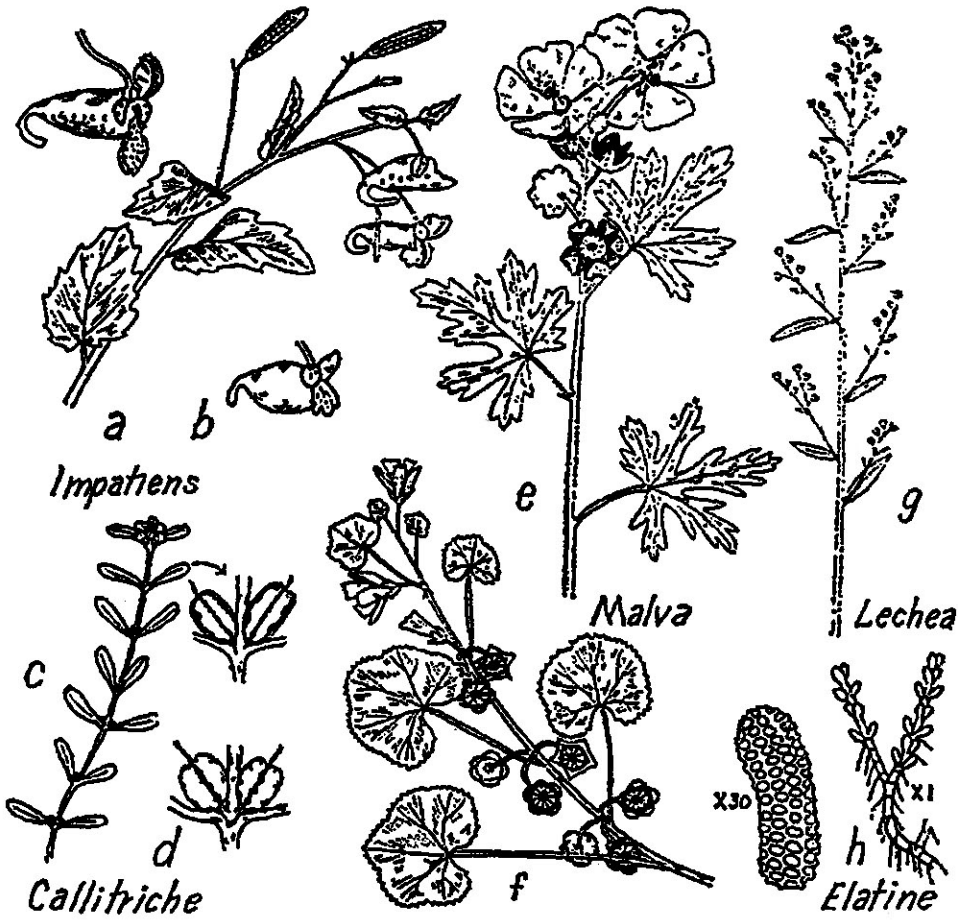


Fig. 94.—Impatiens: (a) *I. capensis* x ½, (b) *I. pallida*, flower x ½. — Callitriche: (c) *C. vera* x ½, fruits x 10, (d) *C. anceps*, fruits x 10. — Malva: (e) *M. moschata* x ¼, (f) *M. neglecta* x ½. — Lechea: (g) *L. intermedia* x ½. — Elatine: (h) *E. minima*, plant and seed.

a. Fruits black, often with a bloom; leaves long-linear, soon reflexed; young twigs glabrous. 1. *E. nigrum*

a. Fruits red or purplish; young twigs densely white-hairy.

b. Fruits dark red or purplish, opaque; leaves about 4-6 mm long, linear, ascending or soon divergent, not crowded. 2. *E. atropurpureum*

b. Fruits light red, nearly translucent, 3-5 mm in diameter; leaves short, about 2.5-4 mm long, oval, crowded, erect or ascending and very glossy. 3. *E. Eamesii*

1. E. nigrum L. Fig. 95. Map 356. 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 more to damp and exposed locations; characteristic of cliffs along the Bay of Fundy; abundant in northern C.B. and on Sable I. July-Sept.

The plants of eastern N. Amer., according to Löve and Löve (1959), have the tetraploid number of 52 chromosomes and a tendency to have the stamens and pistils on the same flower or plant. They separate these plants from the European diploid *E. nigrum*, which has the male and female flowers on separate plants, as *E. hermaphroditum* Hagerup. The plants, around Halifax at least, seem to be dioecious and it would seem desirable to have more chromosome counts on our material.

Greenland to Alaska south to alpine areas of New Eng. and N.Y., Minn. and Calif.

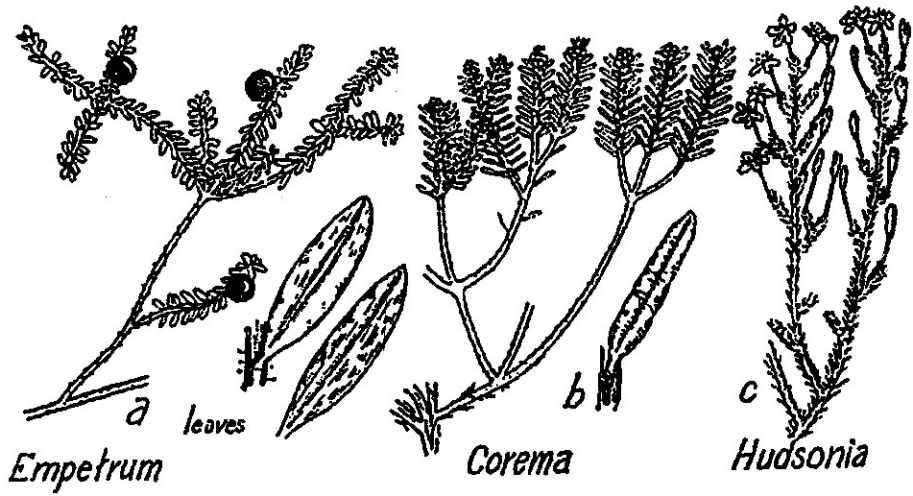


Fig. 95.—**Empetrum**: (a) *E. nigrum* x ½, lower sides of leaves x 5. — **Corema**: (b) *C. Conradii* x ½, leaf x 5. — **Hudsonia**: (c) *H. ericoides* x ½.

2. E. atropurpureum Fern. & Wieg. Map 355.

Forming a loose trailing growth on exposed sand dunes, rarely around bogs, occasionally on rocky habitats, sometimes growing with the last species; along the north coast of P.E.I. and abundant in mats in

the hollows of the sand hills at Bothwell; northern Inverness and Victoria Co. in N.S.; at Canso and from near Halifax, where it was first collected by Macoun in 1883 from Point Pleasant Park. This plant seems intermediate in some ways between our two other species and in fact our plants seem to be interfertile so that various combinations of characteristics may be found.

North Shore of the Gulf of St. Lawrence; Magdalen I.; N.S. and the mts. of Me. and northern New Eng. and N.Y.; L. Mistassini westward around L. Superior.

3. **E. Eamesii** Fern. and Wieg. Map 351.

Rare, northern tip of C.B.: Lockhart Brook, Salmon R.; Ingonish Barrens, 7 miles west of Neil's Harbour, here growing with *E. atropurpureum* on hummocks in the barren (Erskine, D.S., 1951); scattered on rocky cliffs around the coast near Halifax. The habitat of this species is different from that of the first species, growing on exposed headlands, on top of rocks with thin soil and with lichens.

Much of the material from N.S. has been considered to be hybrids with the first two types. Crosses with *E. hermaphroditum* are named by Löve from St. Paul I., Ciboux I. and Lockhart Brook in northern C.B.; Spicer's Cove in Cumberland Co.; and from Sambro in Halifax Co. These have purple or darker fruit and intermediate vegetative characteristics. Hybrids with *E. atropurpureum* are indicated at Halibut Cove and from Sambro in Halifax Co.; and from Stanhope in P.E.I. In these the fruit is light pink and the leaves are longer and narrower than in typical *E. Eamesii.*

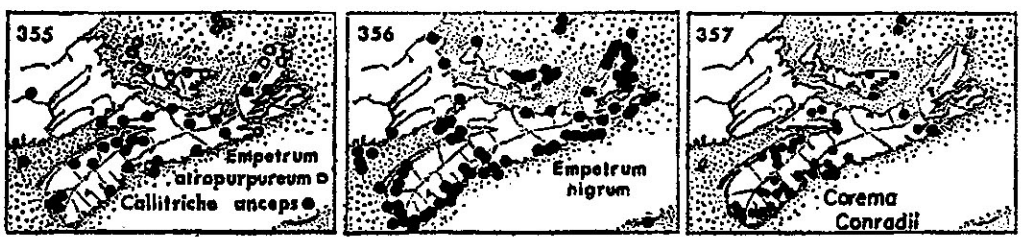
Common in southern Lab. and Nfld.; St. Pierre and Miquelon, the northern tip of C.B. and around Halifax.

2. COREMA D. Don

1. **C. Conradii** Torr. Fig. 95. Map 357. BROOM-CROWBERRY

Sandy or rocky soils; scattered in southern Yarmouth and Shelburne Co.; common on the sand plains of the Annapolis Valley, and in Colchester and Cumberland Co. on the sandiest soils; on the rocky barrens of Halifax Co. near the coast and rare to Antigonish and Guysborough. Flowering about the first of May.

Nfld.?, and P.E.I. to Que. s. to the sand barrens of N.J.



66. LIMNANTHACEAE FALSE MERMAID FAMILY

This is a small family with 2 genera and 11 species in N. Amer.

1. FLOERKEA Willd. FALSE MERMAID

1. F. proserpinacoides Willd. Map 360.

A weak, inconspicuous herbaceous plant 1-3 dm high with alternate, pinnately divided leaves with 3-5 narrow lobes. The small white flowers are solitary in the axils of the leaves and the flower-parts are in 3's with the petals shorter than the sepals and the 3 carpels joined only at the base.

First found by W.B. Schofield in slow-moving water at Sheffield Mills in Kings Co.; forming carpets in ravine hardwoods, Glenora Falls, Inverness Co. (Erskine, D.S., 1951); now known from several other places in north-central C.B.: locally abundant in mats in a meadow south to sw. Margaree; brook-bank near Queensville, Victoria Road, Inverness Co.; mat in low muddy depression, South R., Antigonish Co.; Salmon R., Truro.

N.S. and sw. Que. to N.Dak. south to Del. and Tenn.

67. ANACARDIACEAE SUMACH FAMILY

About 600 species of woody plants, many of which are tropical. The cultivated smoke tree is *Cotinus Coggygria* Scop. Our species have alternate, compound leaves and numerous, small regular flowers with 5 sepals, stamens and petals; pistil 1.

1. RHUS L.

a. Leaves pinnately compound, with numerous leaflets; tall erect shrubs; fruits small and reddish, hairy, in crowded terminal panicles. 1. *R. typhina*

a. Leaves with 3 leaflets; low shrubs, often prostrate; fruits smooth, grayish white, becoming ridged.

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, to 6 dm high; 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. 97, a. Map 358. STAGHORN SUMACH

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

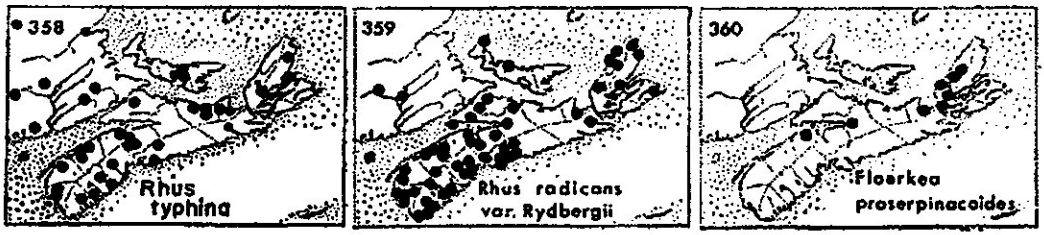
N.S. to Minn. south to N.C. and Ill.

2. **R. radicans** L. Fig. 97, b. Map 359. POISON IVY

Restricted mainly 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. and 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. The most luxuriant and best fruiting plants have been found on shaded talus slopes, often by gypsum. This plant is also sometimes found in bogs and around the edges of salt marshes or on barrier beaches.

N.S. and Gaspé south to Tex. and west to the West Coast.



68. AQUIFOLIACEAE HOLLY FAMILY

Trees and shrubs with simple alternate leaves; 3 genera and about 300 species. The flowers are small and whitish, solitary or in clusters in the axils of the leaves; fruit a red or black berry.

a. Leaves more or less toothed; petals united at the base; pedicels of the fruit less than 1 cm long; flowers mostly in clusters (Fig. 96, 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. 96, c). 2. *Nemopanthus*

1. ILEX L. HOLLY

a. Leaves thinnish, toothed, dull and rugose-veiny above; fruit red. 1. *I. verticillata*

a. Leaves leathery, bluntly toothed near the end, smooth and shiny-green above, turning black when pressed; fruit black. 2. *I. glabra*

1. **I. verticillata** (L.)Gray Fig. 96, b. BLACK ALDER, CANADA HOLLY

Common throughout, often fruiting abundantly with the hard red berries persisting after the leaves fall in autumn. Very variable under different environmental conditions 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

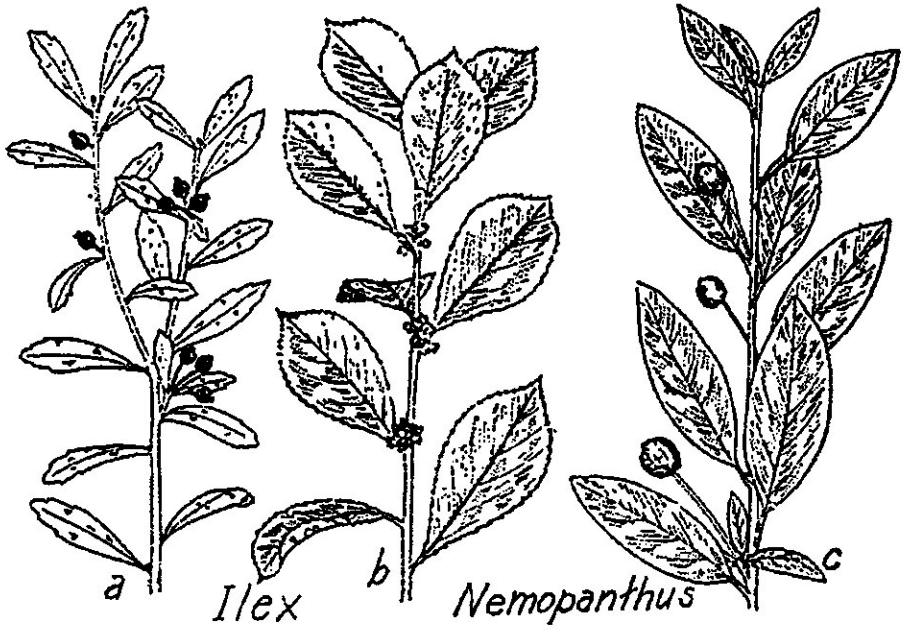


Fig. 96.—**Ilex**: (a) *I glabra* with young fruits x ½. (b) *I. verticillata* in flower x ½. — **Nemopanthus**: (c) *N. mucronata* x ½.

solitary. Damp woods and moist rocky wooded slopes at various places from Yarmouth to Halifax and Kings Co. This does not seem to be a good variety. Var. **padifolia** (Willd.)T. & G. 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 Co. (Fernald, 1921), to Shubenacadie Grand L. This again seems like an extreme as many collections show a tendency to the small, narrow leaves. Mid-July.

Nfld. to Minn. south to Ga. and Tenn.

2. **I. glabra** (L.)Gray Fig. 96, a. Map 361. INKBERRY

Common to local in Digby, Yarmouth and Shelburne Co., becoming rarer to the neighborhood of Halifax; rocky barrens, swamps, dense spruce woods, and even on dry hillsides. The habitat is very varied. Scattered collections have now been made further east on the Atlantic Coast: Half-Island Cove in Guysborough Co.; near Louisburg, where it was collected by G. C. Warren in 1938.

Fla. to La. north to Mass.; coast of Me. and N.S.

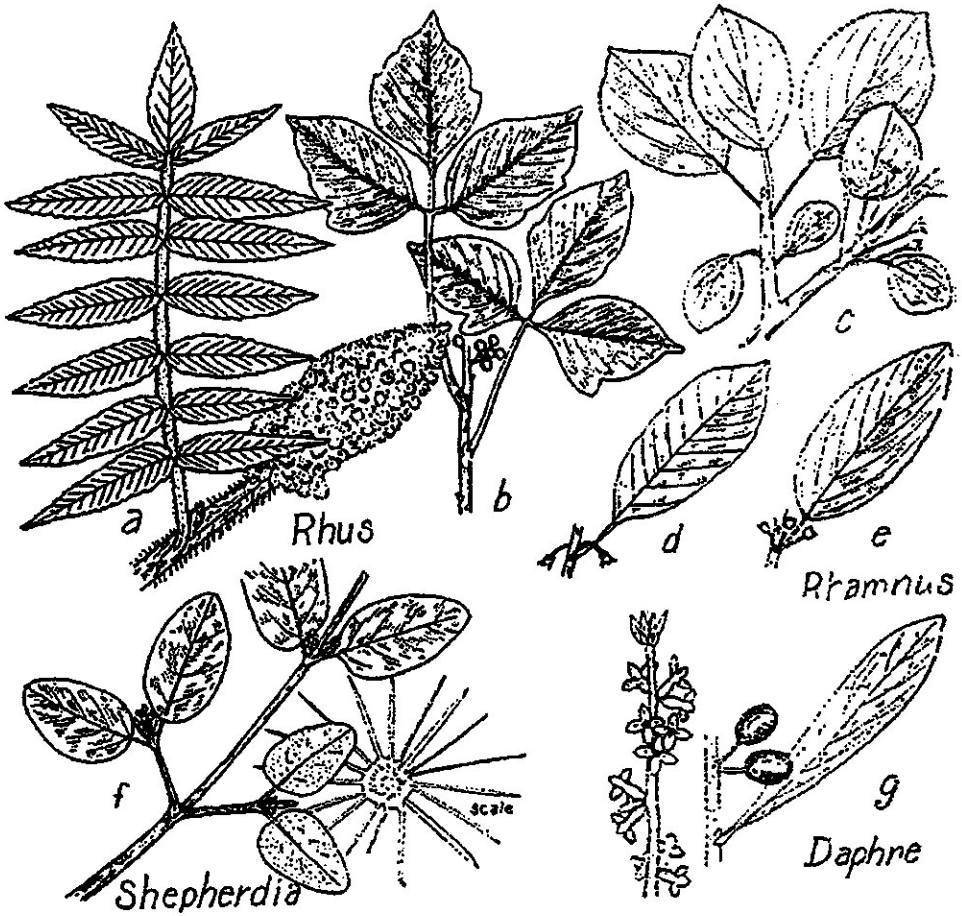


Fig. 97.—Rhus: (a) *R. typhina*, fruiting twig x $\frac{1}{4}$, (b) *R. radicans* x $\frac{1}{4}$. — Rhamnus: (c) *R. cathartica* x $\frac{1}{3}$, (d) *R. Frangula*, leaf and flowers x $\frac{1}{3}$. (e) *R. alnifolia* x $\frac{1}{3}$. — Shepherdia: (f) *S. canadensis*, twig and leaf-scale, much enlarged. — Daphne: (g) *D. Mezereum*, flowering branch x $\frac{1}{2}$, fruiting twig x $\frac{1}{2}$.

2. NEMOPANTHUS Raf.

1. **N. mucronata** (L.)Trel. Fig. 96, c. FALSE HOLLY

Common throughout; wet woods, edges of bogs, and in low barrens, rarely absent in damp and acid habitats. The leaves are thin and rather pale beneath, and the small greenish flowers are on long pedicels.

Nfld. to Minn. south to the uplands of Va.

69. ACERACEAE MAPLE FAMILY

Trees and shrubs, comprising the maples and one other genus of two species in China. This is one of the few families of shrubs or trees with opposite leaves. We have only 4 native maples, but others are exten-

sively planted as ornamentals or as roadside trees and occasionally escape. The sycamore maple, *A. Pseudo-platanus* L. is not included in the key but is shown in Fig. 98. This is planted to some extent in southwestern N.S., at Halifax and in many towns, and seems adapted to growing near salt water; the flowers are small, in long, hanging dense panicles.

1. ACER L. MAPLE

a. Leaves palmately lobed only.
  b. Leaf-margins finely toothed.
    c. Flowers in racemes, appearing after the leaves; leaves green beneath, thin, and soft hairy; small trees or shrubs.
      d. 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. 1. *A. spicatum*
      d. Racemes drooping, few-flowered; petals about 5 mm long; leaf finely serrate, almost fringed; bark of young growth striped with white; wings of fruit widely spreading. 2. *A. pensylvanicum*
    c. Flowers in dense clusters, appearing before the leaves; leaves whitened beneath, firm, not soft hairy; trees.
      e. Petals present; fruit smooth, with narrow lobes; leaves serrate around the whole margin. 5. *A. rubrum*
      e. Petals none; fruit woolly when young; leaves closely serrate only on the upper part of the long lobes; wings of fruit wide and incurved. 6. *A. saccharinum*
  b. Leaf-margins not finely toothed, with large lobes or very few teeth only; flowers before or with the leaves.
    f. Flowers erect in a stout corymb, with large petals, as the leaves unfold; wings of the fruit large and widely spreading; leaves thick, dark green, with short lobes. 3. *A. platanoides*
    f. Flowers drooping on long pedicels, without petals, just before the leaves; wings of the fruit scarcely divergent; leaves thinnish with long pointed lobes. 4. *A. saccharum*
a. Leaves pinnately divided; flowers appearing with the leaves, without petals; wings of the fruit stout and incurved, the two halves almost separate. 7. *A. Negundo*

1. A. spicatum Lam. Fig. 98. Map 362. MOUNTAIN MAPLE

Common throughout, forming a large, much-branched shrub; characteristic of high banks or the slopes of ravines, along river-banks, in wet thickets or in moist openings, rare in dense woods. It is especially common along the Bay of Fundy and in the highlands of northern C.B. June.

Nfld. to Sask. south to the mts. of Ga. and Tenn.

2. A. pensylvanicum L. Fig. 98. Map 363. STRIPED MAPLE

Widespread but rarely abundant, absent from the C.B. plateau; rocky woods, along streams, in rich hardwoods and on wooded slopes.

N.S. to Ont. south to the uplands of Ga. and Tenn.

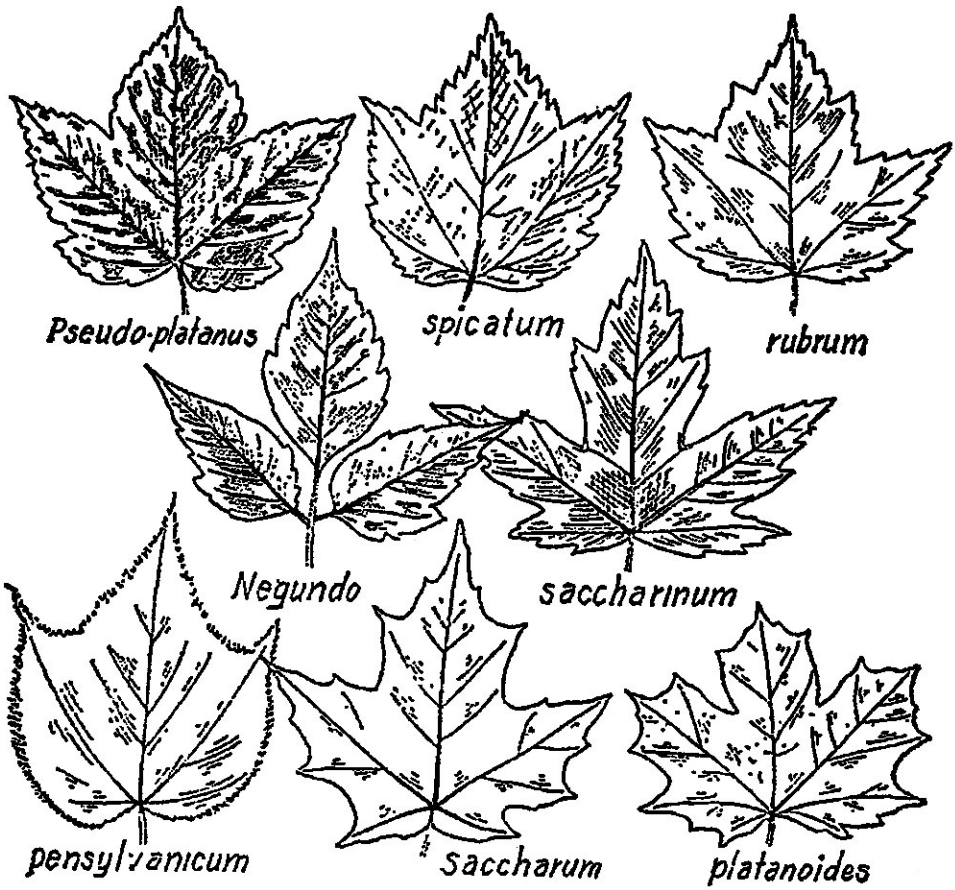


Fig. 98. Acer spp., leaves x ½.

3. **A. platanoides** L. Fig. 98. NORWAY MAPLE

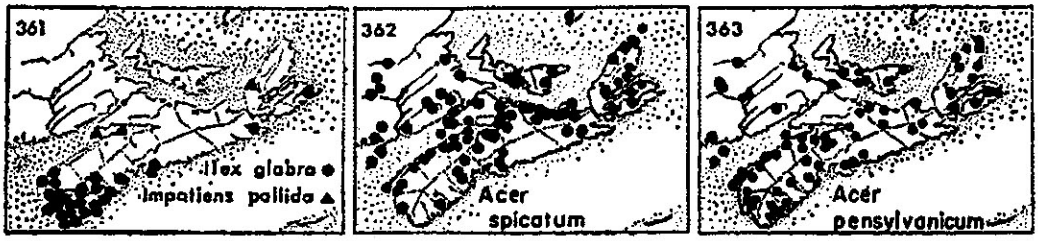
This is fast becoming our most-planted shade and ornamental tree. It is occasionally found along roadsides and will probably become more common as an escape. Forms with reddish leaves are also common, of which the older, var. **Schwedleri** Nichols., is common. Early June.

Introduced from Eu. and widely planted.

4. **A. saccharum** Marsh. Fig. 98. SUGAR-MAPLE

Found throughout; most common and best developed in well-drained soils and on the slopes of hills in the Cobequids and east to northern C.B. but absent from the plateau. Sugar maple once formed almost solid stands in many areas but these have now been heavily cut and opened up. Trees with the lower surface of the leaves softly pubescent occur more or less throughout in small numbers. This character is especially marked for all the trees on the lower part of Digby Neck and gradually disappears towards Digby. This and other characters seem to indicate an intergradation with *A. nigrum* in this area (*A. saccharophorum*).

C.B. and Gaspé west to Ont. south to Ga. and Ala.



5. **A. rubrum** L. Fig. 98. RED or SWAMP-MAPLE

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. Forma **tomentosum** (Desf.)Dansereau has the leaves whitish-pubescent or soft tomentose beneath. The maples of the Province are very variable in this respect and show all the 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 the 3 terminal lobes. This is occasional from Yarmouth to Mabou in Inverness Co., along lake margins or wet thickets. In many places, as about Halifax, it grades into the species. Late April to early May.

Nfld. to Ont. south to Fla.

6. **A. saccharinum** L. Fig. 98. SILVER MAPLE

Occasionally planted as a shade tree, but the trees seem brittle and usually are 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 Sask. south to Fla.

7. **A. Negundo** L. Fig. 98. BOX-ELDER, MANITOBA MAPLE

This rapidly-growing tree is frequently planted about towns and along roadsides. It produces a multitude of seeds, is very vigorous when young, and frequently escapes. It is well established above Bridgewater and at Tatamagouche, is often seen as an escape in the Annapolis Valley, and is now being found elsewhere.

B. Boivin (1966-b) discusses varieties of this species in Canada. The typical variety has the young branches glabrous and green. Var. **violaceum** (Kirchner)Jaeger has glaucous branches which become a deeper green or more often purplish under the glaucescence. In var. *interius* (Britt.)Sarg. the branches are densely and finely greyish puberuent. This variety has not yet been recognized in N.S. but it occurs in P.E.I. and is probably also introduced here.

Introduced from further west; Man. to Alta. southward.

70. BALSAMINACEAE TOUCH-ME-NOT FAMILY

A small family with about 400 species, most of which occur in India. Our genus consists of herbs with very watery juice and very distinctive, yellowish to reddish, flowers which hang on capillary pedicels with small petals at the front end and a large saccate sepal at the back which ends in an extension or spur. The name Jewel-weed is often applied to the plants because of the brightly-colored, pendent flowers. The cultivated Balsam is *I. Balsamina* L.

1. IMPATIENS L. TOUCH-ME-NOT

a. Leaves alternate; flowers orange to yellowish, to 3 cm long; plants much branched.
  b. Flowers with the spur bent under or reflexed; flowers 2-3 cm long, in axillary racemes.
    c. Flowers pale yellow, sparingly dotted with brown; sac about as broad as long; spur short, about 5 mm long, at right angles to the sac (Fig. 94, b). 1. *I. pallida*
    c. Flowers orange, thickly spotted with reddish-brown (color variations are often common); sac much longer than wide; spur to 8 mm long, strongly incurved (Fig. 94, a). 2. *I. capensis*
  b. Flowers with the spur straight back from the sac, small and only 8-13 mm long, many in erect racemes at the top of the stem and branches. 3. *I. parviflora*
a. Leaves whorled or occasionally opposite; flowers showy, pinkish with red spots, 3-4 cm long; plants stout, erect, and little branched. 4. *I. glandulifera*

1. **I. pallida** Nutt. Fig. 94. Map 361. PALE TOUCH-ME-NOT

Rich alluvial soil, damp thickets or along river-intervales; rather rare from Kings Co. to northern C.B., becoming more common eastward; luxuriant on slope, North Side, Isle Haute (Schofield, 1955). July-Aug.

Nfld. west to Ont. south to Ga. and Kans.

2. **I. capensis** Meerb. Fig. 94, a. Map 364. SPOTTED TOUCH-ME-NOT

Common, more or less throughout 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 are high. July-Aug. (*I. biflora* Walt.).

Numerous color forms have been described and variations are common, although only occasionally are plants with paler flowers seen.

From Cambridge, Kings Co., Schofield (1949) reports forma **citrina** (Weath.)Fern. & Schubert as growing in profusion among the typical form. The flowers are a rich yellow with red spots. Forma **albiflora** (Rand & Redf.)Fern. & Shubert has the flowers cream-colored with red to pinkish spots and is scattered sparingly among the other forms.

Nfld. to Alaska south to Fla. and Okla.

3. **I. parviflora** DC.

Erskine reports it as rather common at and about Charlottetown, P.E.I., from whence it may have been introduced into N.S.; Wolfville (Smith and Erskine, 1954).

Adventive from Eurasia; N.S., P.E.I. and Que.

4. **I. glandulifera** Royle

This showy garden escape is common in vacant lots at New Glasgow, Pictou Co.; common as a weed in dooryards at Westport on Brier I.; and growing with *I. capensis* in a swamp at North Sydney (Smith and Erskine, 1954); collected by E.G. Anderson at Guysborough and Ship Harbour in neglected yards, 1940. The pale form is forma **pallidiflora** (Hook. f.)Weath. Reported from N.S., N.B., Ont., and B.C. (*I. Roylei* Walp.).

Introduced from Asia; N.S. to Ont. south to n. New Eng.

71. RHAMNACEAE BUCKTHORN FAMILY

This is a large family of shrubs, trees or vines, with some 45 genera and 600 species. We have only one genus with one native and two introduced species of shrubby plants. The small whitish flowers are short-pedicelled in sessile umbels in the axils of the leaves; fruits are black berry-like drupes with 2-4 stones or "seeds".

1. RHAMNUS L. BUCKTHORN

a. Leaves serrate, with 2-5 pairs of veins curving towards the tip; flowers usually either staminate or pistillate; 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; erect, tall introduced shrub. 1. *R. cathartica*
  b. Flowers with parts in 5's; petals absent; leaves acute, with 4-5 pairs of main veins; low, little-branched native shrubs. 2. *R. alnifolia*
a. Leaves not toothed, with 7-8 pairs of veins straight nearly to the margins; nutlets smooth; flowers perfect. 3. *R. Frangula*

1. **R. cathartica** L. Fig. 97, c. COMMON BUCKTHORN

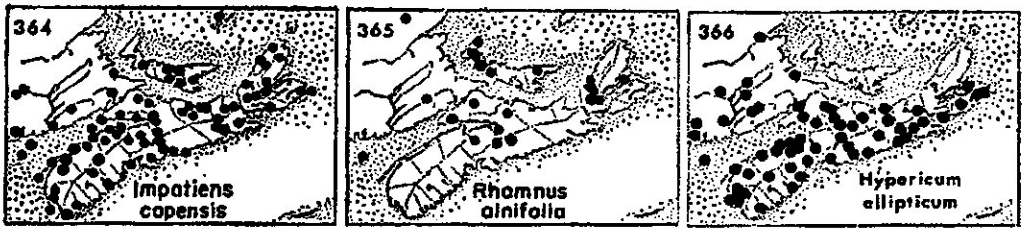
Formerly planted for hedges and as an ornamental shrub throughout the Province, now persisting in many places, or locally common as an escape. The shrub is gradually being eradicated, but it is common locally near Port Williams in Kings Co.; a considerable area exists in Pictou where it seeds and grows abundantly when the ground has sufficient organic matter. This and the next species are alternate hosts for the crown rust of oats; leaves of both species are often found with rust infection during June. Late May-early June.

Introduced from Eu.; formerly widely planted, N.S. to Sask.

2. **R. alnifolia** L'Her. Fig. 97, e. Map 365. ALDER-LEAVED BUCKTHORN

Swampy woods and boggy meadows; scattered in Cumberland Co. and central N.S.; and found again in southern Inverness Co. from Orangedale to Black River and on Boularderie I. It seems to grow largely in alkaline areas, often near limestone or in marl bogs, in rich alluvial soil. Nichols (1918) says that it is characteristic of poorly-drained swamps in northern C.B. May 15-June.

Nfld. to B.C. south to Penn. and Calif.



3. **R. Frangula** L. Fig. 97, d.

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

Introduced from Eu.; widely naturalized from N.S. to Man.

72. VITACEAE GRAPE FAMILY

Woody vines with simple, lobed or compound leaves which are alternate on the stem and often have tendrils or flower-clusters produced opposite them. We have no native grapes in N.S. but *Vitis riparia* Michx. does occur in N.B. The Boston Ivy, grown ornamentally on brick walls and chimneys, is *Parthenocissus tricuspidata* (Sieb. & Zucc.) Planch. In N.S. this is apt to be called Virginia Creeper; while the two following species, known further south as Virginia Creeper, are usually called Boston Ivy, probably because they were formerly much more common than the other species. These two usually have 5 leaflets.

1. PARTHENOCISSUS Planch.

a. Tendrils with 5-8 branches, ending in adhesive tips; cymes of the flowers mostly several to many, forming terminal panicles; leaves dull above. 1. *P. quinquefolia*

a. Tendrils with 3-5 branches, rarely with an adhesive disk; cymes usually in pairs on peduncles 3-7 cm long; leaves glossy above. 2. *P. inserta*

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

Fernald (1939) states that all material of the genus from the Maritime Provinces belonged to *P. inserta*. The introduced form, however,

is mostly or wholly *P. quinquefolia;* it is very commonly cultivated and found around old houses and escaping or persisting along roadsides or in waste places. Late June-early July.

Fla. to Tex. n. to s. Me. and Que.; cultivated elsewhere.

2. **P. inserta** (Kerner)K. Fritsch

This species is very similar to the first one and bears the same common name. It has very rarely been collected by local botanists although it is occasional from Annapolis to Yarmouth, clambering over low shrubs and stone walls; along the roadside near the river at Stewiacke, Colchester Co., and probably elsewhere in the north-central part of the Province. It is probably confused with the first species and its status is yet to be determined.

N.S. to Que. and Mont. south to Penn., Kans. and Calif.

73. TILIACEAE LINDEN FAMILY

Mostly tropical trees and shrubs, although one genus is extensively planted as a shade tree. The genus is readily recognized since the trees have leaves widely heart-shaped with one side of the base larger than the other; and the flower peduncle is joined for half its length to an elongate papery bract. We have no native lindens in N.S. but one species, *Tilia americana* L., does occur in the St. John Valley of N.B. This has large leaves 8-15 cm long, without any axillary tufts of hairs in the axils of the veins beneath.

1. TILIA L.

1. **T. europea** L. LINDEN, BASSWOOD

Extensively planted and occasionally escaping or persisting around old buildings or in hedge-rows. This species has smaller leaves than the N. Amer. species, only 5-10 cm long; and the leaves beneath are bright green with axillary tufts of hairs. A still smaller-leaved species is *T. cordata* with leaves glaucous beneath.

Introduced from Eu. and widely planted; N.S. to Ont.

74. MALVACEAE MALLOW FAMILY

This large family is represented here only by escaped garden flowers and weedy species. The Hollyhock, *Althaea rosea* L., is a typical representative. The flowers have numerous stamens with their filaments united in a tube about the pistil; petals showy and delicate in texture.

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

b. Corolla pink or white; involucral bracts 2 or 3; column of stamens with anthers only at the tip. 1. *Malva*

b. Corolla yellow with a central dark eye; involucral bracts 6 or more; column of stamens bearing anthers for a considerable part of its length. 2. *Hibiscus*
a. Plant 6-12 dm high, stout; leaves heart-shaped and acuminate at the apex; involucral bracts absent. 3. *Abutilon*

1. MALVA L. MALLOW

The flowers of the mallows and the hollyhock are distinctive in that the pistils consist of a ring of 10-20 one-seeded carpels.

a. Upper leaves rarely lobed as deeply as the middle, usually only with teeth or shallow rounded lobes; flowers small, the petals up to 2.5 cm long, not more than twice the length of the sepals.
b. Bractlets outside the calyx ovate-oblong; petals reddish-purple, up to 2.5 cm long. 1. *M. sylvestris*
b. Bractlets narrowly lanceolate to linear; petals white, often tinged with pink or purple, short, less than 2 cm long.
c. Mature carpels not netted-rugose on the back, rounded on the outer edge so that the whole ring has a crenate outline, the lateral faces not radially veined, usually softly pubescent. 2. *M. neglecta*
c. Mature carpels netted-rugose on the top surface, the outer side flat so the ring of fruits present a circular outline; the lateral faces strongly radially veined.
d. Stem stout and erect; upper leaves with progressively shorter petioles to often shorter than the blades; flower and fruits with very short pedicels. 3. *M. verticillata*
d. Stem prostrate to ascending; upper leaves with petioles several times longer than the blades; pedicels of the flowers and fruit more than twice as long as the calyx. 4. *M. rotundifolia*
a. Leaves 5-7-divided to below the middle or often nearly to the base; petals 2-3.5 cm long; flowers singly or crowded toward the top of the plant.
e. Bractlets narrowly lanceolate to linear, ciliate with simple hairs; segments of the upper leaves again deeply lobed. 5. *M. moschata*
e. Bractlets ovate to obovate, with dense stellate hairs; the 5-7 segments of the the leaves only shallowly lobed or coarsely toothed. 6. *M. Alcea*

1. M. sylvestris L. HIGH MALLOW

Collected as a street weed in Sydney, in flower Oct. 23, 1953, by G.C. Warren. Usually found as an escape from cultivation.

Introduced from Eu.; occasionally found in N. Amer.

2. M. neglecta Wallr. Fig. 94, f. DWARF MALLOW, CHEESES

Becoming a weed in many parts of the Annapolis Valley; scattered elsewhere in towns and waste places, around dooryards and in gardens. This is our most common species. June-Oct.

Introduced from Eu.; widely distributed from Nfld. to Man.; B.C.

3. M. verticillata L. WHORLED MALLOW

Collected at Windsor on a dump next to the plaster company. Like others of this family this plant is occasionally introduced and it is questionable if they long exist as escapes.

Adventive from Eu.; N.S. to Ont. and Iowa south to Penn.

4. **M. rotundifolia** L. ROUND-LEAVED MALLOW

Rather rare in N.S.; found at Cheticamp and at Red River in Inverness Co. in Cape Breton; street weed at Halifax. June-Sept.

Naturalized from Eu.; N.S. to B.C. southward.

5. **M. moschata** L. Fig. 94, e. MUSK-MALLOW

Scattered throughout in waste places, along roadsides and in old gardens. In the Annapolis Valley and occasionally elsewhere it may be showy along roads or in old hay-fields locally. Most plants have white flowers, although pink ones are not uncommon. There does seem to be considerable variation in the dissection of the leaves and even in their average size. Late June-July

Naturalized from Eu.; Nfld. to Man. south to Va.; B.C.

6. **M. Alcea** L.

This is another species which has occasionally escaped from cultivation in eastern Canada and which is included in the N.S. flora. No local collections have been seen although sheets are present from Woodstock and from Cape Tormentine in N.B. July-Aug.

Naturalized from Eu.; N.S. to Que. south to Penn.

2. HIBISCUS L.

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

Rarely seen as a garden escape or about greenhouses, only as a casual adventive and not persistent; Centreville, Kings Co.

Native of southern Eu.; scattered west to Sask.

3. ABUTILON Mill.

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

Rare; collected near Kentville; occasionally elsewhere in the Maritime Provinces as a casual adventive.

Naturalized from India; occasionally found west to Sask.

75. HYPERICACEAE ST. JOHN'S-WORT FAMILY

A small family with only 2 or 3 genera, sometimes placed in the large, primarily tropical, family *Guttiferae*. Our representatives are herbaceous plants with smooth, opposite, untoothed leaves with numerous, internal translucent glands which make them rather distinctive. The flowers have 5 petals, often numerous stamens, and one pistil which forms a many-seeded capsule.

1. HYPERICUM L. ST. JOHN'S-WORT

Our species, except the last, have bright yellow flowers. This one exception has the flowers flesh-colored or pinkish with other technical differences and it is sometimes placed in a separate genus named *Triadenum* (Fig. 99). Various species are among our most common mid-summer plants in damp places.

a. Flowers yellow; prominent glands between groups of stamens none; plants green.
  b. Stamens numerous, mostly 20-100; leaves pinnately veined, with veins arising at intervals from the midrib; plants perennial.
    c. Plants 4-10 dm high, stout; styles 3, separate to the base; capsule 3-celled; stamens in 3 or 5 fascicles.
      d. Branches sharply ridged below each leaf; seeds 1-1.3 mm long; petals dark-dotted on margins only, the sepals with few or no dark dots; inflorescence diffuse; leaves linear-oblong. 1. *H. perforatum*
      d. Branches terete or nearly so; seeds less than 1 mm long; petals streaked with dark dots and the sepals heavily dotted and lined with black; inflorescence rather compact; leaves elliptical to oblong. 2. *H. punctatum*
    c. Plants 3-5 dm high; styles united to make a slender beak on the capsule, splitting apart when the capsule opens; capsule 1-celled; stamens very numerous. 3. *H. ellipticum*
  b. Stamens fewer, often less than 12; leaves with 3-7 strong veins from the base, or narrow and with only a midrib; plants annual.
    e. Leaves about twice as long as broad, their bases clasping the stem.
      f. Upper flowers with reduced but rounded leaves at their bases; branches of the inflorescence appearing like continuations of the stem; sepals elliptic, much shorter than the capsule (Fig. 99,d). 4. *H. boreale*
      f. Upper flowers with narrow, pointed scale-like leaves or bracts at their bases; sepals linear-oblong, about equalling the capsule (Fig. 99,c). 5. *H. mutilum*
    e. Leaves 3 or more times longer than broad.
      g. Leaves 5-7 nerved, rounded at the base and the opposite leaves meeting around the stem, 5-10 mm wide and tapering from the base to the apex. 6. *H. majus*
      g. Leaves 1-5 nerved, tapering at the base, the opposite ones not meeting around the stem.
        h. Leaves 1-4 mm wide, 1-3-veined; sepals in fruit 4-6 mm long; mature capsules 5-6 mm long (Fig. 99,b). 7. *H. canadense*
        h. Leaves 2-6 mm wide, 3-5-nerved; sepals in fruit 2-4.5 mm long; capsules 3-5 mm long. 8. *H. dissimulatum*
a. Flowers flesh-colored or pinkish-mauve, with the whole plant having a slight reddish tinge; leaves 1.5 cm or more in width, little reduced in size toward the top of the plant; flowers few; stamens 9, in 3 groups of 3 each.
      i. Styles of mature fruits 2-3 mm long; sepals pointed and 5-7 mm long. 9. *H. virginicum*
      i. Styles of the mature fruits 0.5-1 mm long, rarely to 2 mm; sepals mostly blunt, 2.5-5 mm long. Var. *Fraseri*

1. H. perforatum L. Fig. 99, a. COMMON ST. JOHN'S-WORT

Scattered to common throughout; abundant in the Annapolis Valley and locally elsewhere to C.B.; mostly on light or sandy soils, on the gravelly borders of rivers or on well-drained fields. Occasionally it

may be so common that fields may be yellow when the plant is in flower. This species seems to be more common now than it formerly was. July 10-Aug.

Introduced from Eu.; widely naturalized.

2. **H. punctatum** Lam.

This plant has been listed for N.S. but we have made no collections of it here. It is possible that it has been often overlooked and it should be expected in the southwestern counties in dry or damp fields or along the borders of woods.

Fla. to Tex. north to Minn., southern Ont. and Que. and to N.S.

3. **H. ellipticum** Hook. Fig. 99, e. Map 366.

Common in the southwestern and central counties, absent from eastern and northern C.B.; swamps, borders of streams and lakes and in meadows. July-Aug.

Nfld. to Ont. and Iowa south to Md.

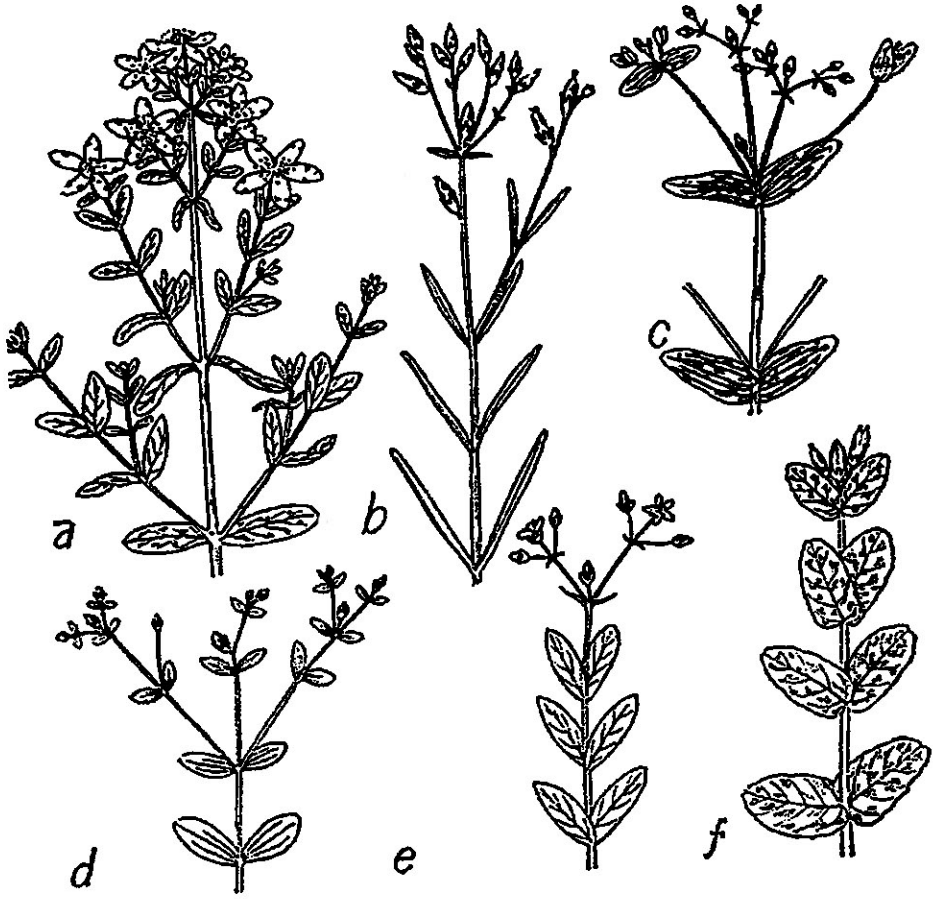


Fig. 99.—Hypericum: (a) *H. perforatum*, top of plant x ⅓, (b) *H. canadense* x ½, (c) *H. mutilum*, top of plant x 1, (d) *H. boreale* x 1, (e) *H. ellipticum* x ½, (f) *H. virginicum* x ½.