

1. PRIMULA L. PRIMROSE

Most of the *Primulas* inhabit the mountains of central Asia; and a number are cultivated. Our two native species are both rare. The chromosome number of *P. mistassinica*, from C.B. material determined by Vogelmann is $2n=18$. The number for *P. laurentiana* from Que. and Nfld., and probably for N.S., is $2n=36$, or more often 72 (Vogelmann, 1960).

- a. Plant glabrous; flowers white to pale lilac; calyx less than 7 mm long, close-fitting.
 b. Leaves mealy-whitened beneath; plant 1.4-5 dm high, with leaves 2.5-10 cm long; capsule 9-12 mm long. 1. *P. laurentiana*
 b. Leaves scarcely or not mealy beneath; plant 0.5-2 dm high, with leaves 1-4 cm long; capsule 5-8 mm long. 2. *P. mistassinica*
 a. Plant soft-hairy; flowers deep yellow or rarely purplish; calyx more than 10 mm long. 3. *P. veris*

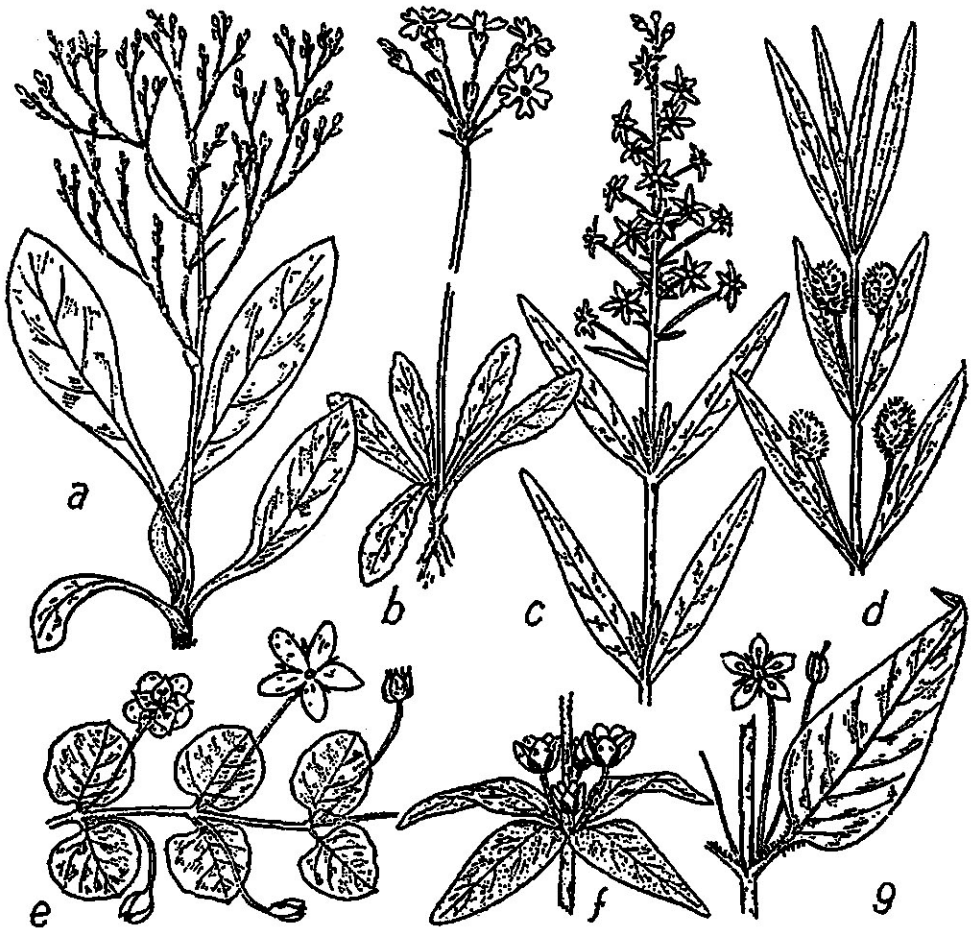


Fig. 111.—*Limonium*: (a) *L. Nashli* $\times \frac{1}{2}$. — *Primula*: (b) *P. laurentiana* $\times \frac{1}{2}$. — *Lysimachia*: (c) *L. terrestris*, top of plant $\times \frac{1}{2}$, (d) *L. thrysoflora* $\times \frac{1}{2}$, (e) *L. Nummularia* $\times \frac{1}{2}$, (f) *L. punctata* $\times \frac{1}{2}$, (g) *L. ciliata* $\times \frac{1}{2}$.

1. *P. laurentiana* Fern. Fig. 111,b. Map 431. PRIMROSE

Scattered along the Bay of Fundy on dripping cliffs and basaltic headlands; not known from the northern part of the Province. Late June. Fernald states it is found chiefly on calcareous areas and this may account partly for the limited distribution in N.S.

S. Lab., Nfld. and Ont. to N.S. and eastern Me.

2. *P. mistassinica* Michx. Map 434.

Springy bank of streams and dripping ledges; above Truro on a bank of the Salmon R. where it is locally common; Upper Stewiacke; and scattered in northern C.B., on gypsum banks at Cape North and on St. Paul I.

Lab. to Alaska south to N.S., n. Vt., Wisc. and Iowa.

3. *P. veris* L. COWSLIP

Commonly found as an ornamental in old gardens and about dwellings but gradually disappearing; reported by Macoun as well-established in meadows about a mile inland from North Sydney, as *P. officinalis* L. Introduced from Eu. and occasionally escaped, from N.S. to Conn.

2. LYSIMACHIA L. LOOSESTRIFE

About 140 species mostly of central Asia, ours all with yellow flowers and the corolla often marked with dark dots or lines. Two species are often placed in separate genera. *L. ciliata* L. becomes *Steironema ciliatum* (L.) Raf.; and *L. thrysiflora* becomes *Naumburgia thrysiflora* (L.) Duby.

- a. Flowers with stamens having the filaments united to the level of the top of the ovary; leaves with the margins of the petioles not ciliate; flowers 1 cm or more wide, numerous.
 - b. Plant usually densely glandular-pubescent; flowers large and showy, the petals wide, yellow and not dotted or lined; garden escapes, 1 m or more tall.
 - c. Calyx 4-5 mm long, with dark margin; flowers 1.5-2 cm wide, in terminal leafy panicles, the corolla-lobes entire. 1. *L. vulgaris*
 - c. Calyx 7-10 mm long, green; flowers whorled in the axils of the upper leaves; corolla-lobes glandular-ciliate. 2. *L. punctata*
 - b. Plant not glandular-pubescent; petals dotted or marked with black or reddish lines.
 - d. Plant erect; inflorescence a terminal raceme 0.5-2 dm long; native to wet habitats. 3. *L. terrestris*
 - d. Plant long-trailing; flowers large, cup-shaped, scattered in 1's or 2's in the axils of the leaves; garden escape. 4. *L. Nummularia*
- a. Flowers with the stamens all separate.
 - c. Flowers very small, the parts often in 6's, crowded into dense, long-stalked, oval heads in the axils of the middle leaves; petals linear; petioles not ciliate. 5. *L. thrysiflora*

- c. Flowers large, solitary or in groups of several with long pedicels from the axils of the upper leaves; petioles of the leaves narrowly winged, the two edges fringed with hairs; flowers with 5 slender sterile stamens between the anther-bearing ones.

6. *L. ciliata*

1. *I. vulgaris* L. GARDEN-LOOSESTRIFE

Occasional about gardens or as an escape; about Pictou and occasionally elsewhere. July-Sept.

Introduced from Eu.; N.S. and P.E.I. to Ont. south to Md.

2. *L. punctata* L. Fig. 111,f. FRINGED LOOSESTRIFE, GOLD-EN-CUP

This garden plant is thoroughly naturalized along roadsides and at the edge of marshes in many parts of the Province; common about Truro and often seen elsewhere, growing in large clumps or patches. July-Aug. 15. Our form may be designated var. *verticillata* (Bieb) Boiss.

Naturalized from Eu.; Nfld. to Ill. south to Penn.

3. *L. terrestris* (L.) BSP. Fig. 111,c. LOOSESTRIFE

Common throughout; boggy thickets, meadows, ditches and marshes, one of our common yellow-flowered summer plants. July.

Nfld. to Minn. south to Ga., Ky. and Iowa.

4. *L. Nummularia* L. Fig. 111,e. MONEYWORT

Occasional, at least from Yarmouth to Truro and probably throughout the settled areas. This garden escape is found mostly near gardens, where it is often grown, or in wet fields and meadows near habitations. July.

Introduced from Eu.; Nfld. to Ont. south to Ga., Mo. and Kans.

5. *L. thrysiflora* L. Fig. 111,d. Map 435. WATER LOOSE-STRIFE

Swamps, along brooks or growing into shallow water in muck, and edges of alkaline ponds; common in marshes about Truro and scattered north in Cumberland Co.; near James R. in Antigonish Co.; and now known to northern C.B.: Baddeck Forks, South Side Boularderie, Cheticamp and Bay St. Lawrence (Smith 1959) June 15-July.

A hybrid between this species and *L. terrestris* and intermediate between them has been named X *L. commixta* Fern. (Fernald, 1950-c). At its stations it is said to occur in extensive colonies. Reported from North L., Kings Co., P.E.I., and to be expected in N.S. where the two species occur together.

Que. to James Bay and Alaska south to Penn., Ohio and Calif.

6. *L. ciliata* L. Fig. 111,g. Map 436. FRINGED LOOSESTRIFE

Low, damp ground and wet thickets; rare in the southwestern part of the Province, scattered to Halifax and Cumberland Co.; rather common in the Annapolis Valley; common south of Truro, and to Antigonish Co., often abundant where found. Late July.

N.S. to B.C. south to Fla. and Texas.

3. TRIENTALIS L.

1. *T. borealis* Raf. Fig. 113,b. STAR-FLOWER

Coniferous or hardwood forests, and a forest pioneer; rather common throughout and one of the better-known woodland plants. The single whorl of thin leaves and the white, star-like flowers make it easily identified. Mid-June.

Lab. to B.C. south to Va. and Ill.

4. ANAGALLIS L.

1. *A. arvensis* L. Map 435. COMMON PIMPERNEL, POOR-MAN'S WEATHER-GLASS

Sandy beaches, fields and waste places; scattered from Digby Neck and Annapolis Co.; Lunenburg Co.; and in Pictou Co. and probably elsewhere on sandy moist soils, or along river sands. Late summer and early fall.

Naturalized from Eu.; Nfld. to Fla. west to the Pacific.

5. CENTUNCULUS L.

1. *C. minimus* L. CHAFFWEED

The only record for N.S. is that of St. John from Sable I.; locally found on bare sand flats which are occasionally flooded by the sea. The P.E.I. record was based on a mis-identification (Erskine).

Fla. to Tex. and Calif. north to Del., Que. and N.S.; Eu.

6. GLAUX L. SEA-MILKWORT

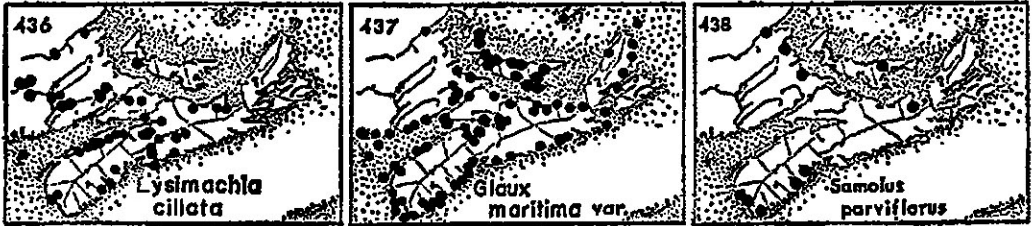
A low, seashore plant with thick, fleshy opposite leaves and pinkish flowers in their axils; corolla absent but the sepals petaloid, the stamens therefore alternate with its lobes.

1. *G. maritima* L., var. *obtusifolia* Fern. Fig. 113,a. Map 437. SEA-MILKWORT

Common around the coast in salt meadows, behind sandy shores or near the upper limits of the dykelands, sometimes abundant in low damp-er areas.

Occasionally much-branched prostrate plants and erect simple plants grow together and the difference between the two is conspicuous. The species is circumboreal and three varieties have been described from N. Amer. Our prostrate form has been ascribed to the typical European variety but it is dubious whether this should be done, although introductions may possibly occur. June 15-July 20.

Nfld. to Ont. south to N.J.



7. SAMOLUS L.

1. *S. parviflorus* Raf. Map 438. WATER PIMPERNEL, BROOK-WEED

Rather rare; brackish meadows, tidal banks and edges of salt marshes from the Tusket R. in Yarmouth to Bridgewater; Antigonish; and brackish shore in eastern P.E.I. July-Sept.

Fla. to Calif. north to N.S. and Ont.

93. PLUMBAGINACEAE LEADWORT FAMILY

1. LIMONIUM Mill. SEA-LAVENDER, MARSH-ROSEMARY

1. *L. Nashii* Small. Fig. 111,a. Map 439. SEA-LAVENDER

This is one of the characteristic plants of our salt marshes where the wide corymbs of small, bluish papery flowers are a common and conspicuous feature. Salt marshes and around seashores; common on the marshes about the head of the Bay of Fundy; an early pioneer on salt marshes in northern C.B.; scattered elsewhere and rarer eastward. July 20-Sept.

The northern plants have the calyx stiff-hairy, at least on the angles, to half way up its length. These have been named var. *trichogonum* Blake. In southwestern N.S. the plants are less strigose and in some cases have only a few hairs towards the base of the calyx. These may be placed in the typical variety. Further south occurs the very similar *L. carolinianum* with the calyx glabrous.

Salt marshes Fla. to Tex. north to Nfld. and the lower St. Lawrence R.

94. OLEACEAE OLIVE FAMILY

Trees or shrubs with opposite leaves; ovary superior, stamens ordinarily 2.

- a. Leaves compound; trees; flowers individually very small and with the corolla absent, usually unisexual. 1. *Fraxinus*
- a. Leaves simple; shrubs; flowers showy in terminal clusters, with the corolla 4-lobed; lilac. 2. *Syringa*

1. FRAXINUS L. ASH

Trees; flowers in large inflorescences; fruit a one-seeded samara with a terminal flattened wing. The ash and maple are our only opposite-leaved trees. The species are often difficult to determine without fruit because the leaves are quite variable. See Miller (1955).

- a. Samara with a terete body and flat wing; calyx present, persistent at the base of the fruit; flowers either staminate or pistillate.
 - b. Wing of fruit terminal or only slightly decurrent, the body usually over 3 cm long and 3 mm thick; leaflets definitely short-petioled, oblong to ovate, often rounded at the base, glaucous beneath, teeth often obscure or only on the upper half of the leaflets; twigs and petioles glabrous; terminal bud obtuse. 1. *F. americana*
 - b. Wing of fruit decurrent to about half-way down the body; the body rarely more than 2 mm thick; leaflets broadly lanceolate with their stalks decurrent to the base, usually plainly toothed, not glaucous beneath; terminal bud acute. 2. *F. pennsylvanica*
- a. Samara with a flat body little thicker than the wing, about 3 cm long; calyx absent or deciduous.
 - c. Leaflets sessile, rounded at the base, with the midribs densely brownish-hairy near the base, and at the axil of each leaflet. 3. *F. nigra*
 - c. Leaflets tapering to the base on short, winged petiolule; midribs slightly pubescent only. 4. *F. excelsior*

1. *F. americana* L. Fig. 112, a. WHITE ASH

Throughout; rather common in the center of the Province; intervale forests; low ground and open woods. Late May.

N.S. to Nebr. south to Fla. and Tex.

2. *F. pennsylvanica* Marsh., var. *Austini* Fern. Map 440.

This species, which is rather common further north in the St. John Valley is rare in N.S. It is found near lakes or ponds, or in low ground, in the center of the Province; in central Lunenburg Co.; and scattered near Mt. Uniacke in Hants Co. and at Lakelands. It is very doubtful if this tree is found in C.B. This native species can be distinguished from the other species by the densely short-pubescent twigs and petioles. The variety has wider wings on the fruit. Forma *colorata* Boivin, with purple-tinged samaras, is described from N.B.

The introduced trees, which may occasionally be found planted or near old habitations, belong to var. *subintegerrima* (Vahl) Fern. (Fernald, 1947). This variety has glabrous twigs and petioles and the wing of the fruit is not as wide (Var. *lanceolata* Borkh.).

N.S. and N.B. to Man. south to Va. and Iowa.

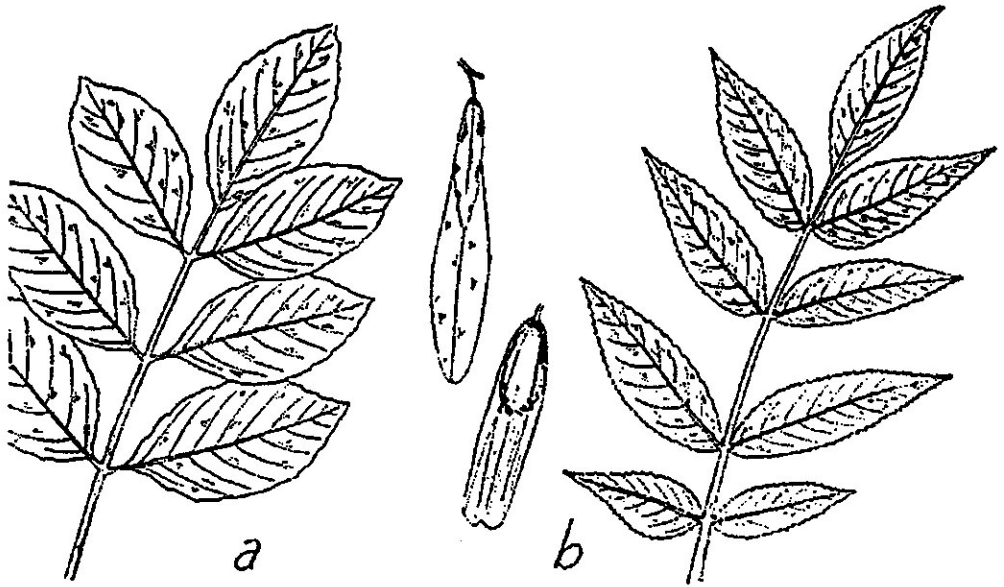


Fig. 112.—*Fraxinus*: (a) *F. americana*, leaf $\times \frac{1}{2}$, fruit $\times \frac{1}{2}$, (b) *F. nigra*, leaf $\times \frac{1}{2}$, fruit $\times \frac{1}{2}$.

3. *F. nigra* Marsh. Fig. 112,b. Map 441. BLACK ASH

Low ground, damp woods and swamps; Digby and central Lunenburg Co. to northern C.B., scattered through the northern parts of the Province, rare elsewhere. The species listed by Nichols as characteristic of wooded and poorly-drained swamps in northern C.B. probably belongs here. The trees are usually small, with a yellow bark.

Nfld. to Man. south to Va. and Ind.

4. *F. excelsior* L. EUROPEAN ASH

Occasionally planted and becoming a large, wide-spreading tree. It shows a tendency to escape and is rather vigorous. Escaped to roadsides, railroad-embankments, etc. Pictou; waste ground, Dartmouth; naturalized, LaHave R., Bridgewater, Fernald (1948). At West River, in Pictou Co. a considerable colony of it has grown, starting apparently from a tree in a door-yard.

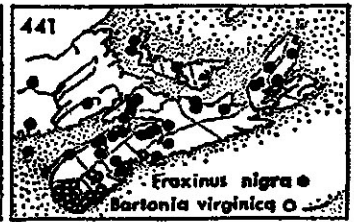
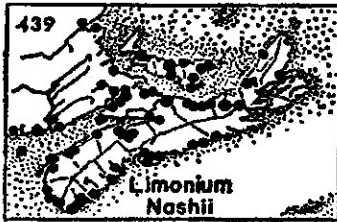
Introduced from Eu.

2. SYRINGA L. LILAC

1. *S. vulgaris* L. LILAC

An ornamental that is widely planted and persists around old house-sites and sometimes along roadsides. The persistent types all have lilac-purple flowers although white varieties may be cultivated. It does not spread from seed but, once-established, it may persist indefinitely. Early June.

Introduced from Eu.



95. GENTIANACEAE GENTIAN FAMILY

Various glabrous herbs with opposite leaves (except *Menyanthes*); flowers regular with superior ovary; stamens as many as the corolla-lobes and alternate with them; fruit a capsule.

- a. Leaves not typically lily-like or floating; plants of dry land or marshes.
- b. Leaves opposite, sessile, simple and untoothed.
- c. Leaves of normal size, green; corolla large.
 - d. Style long and thread-like; petals not spurred, rose-purple.
 - e. Corolla showy with a very short tube, with 5-12 lobes; flowers peduncled (Fig. 113,c)
 - 1. *Sabatia*
 - e. Corolla with a long tube, usually with 5 lobes, about 10 mm wide; flowers mostly sessile.
 - 2. *Centaurium*
 - d. Style short or none; petals 4, mostly prominently spurred at the base, yellowish-purple; flowers all peduncled, 4-5 mm wide (Fig. 113,f)
 - 3. *Halenia*
 - c. Leaves reduced to scales; petals 4, 3-4 mm long, greenish; plants wiry, insignificant (Fig. 113,e)
 - 4. *Bartonia*
 - b. Leaves alternate, stalked, with 3 leathery leaflets (Fig. 113,d); corolla white, the lobes conspicuously fringed within.
 - 5. *Menyanthes*
- a. Leaves lily-like, round with a v-shaped notch at the base; floating on the surface of quiet waters (Fig. 113,g); flowers white, about 1 cm wide.
 - 6. *Nymphaoides*

1. *SABATIA* Adans.1. *S. Kennedyana* Fern. Fig. 113, c. Map 434. PLYMOUTH GENTIAN

Known only from the Tusket Valley, Yarmouth Co., where it is common to rare locally on the cobbly and sandy beaches and peaty

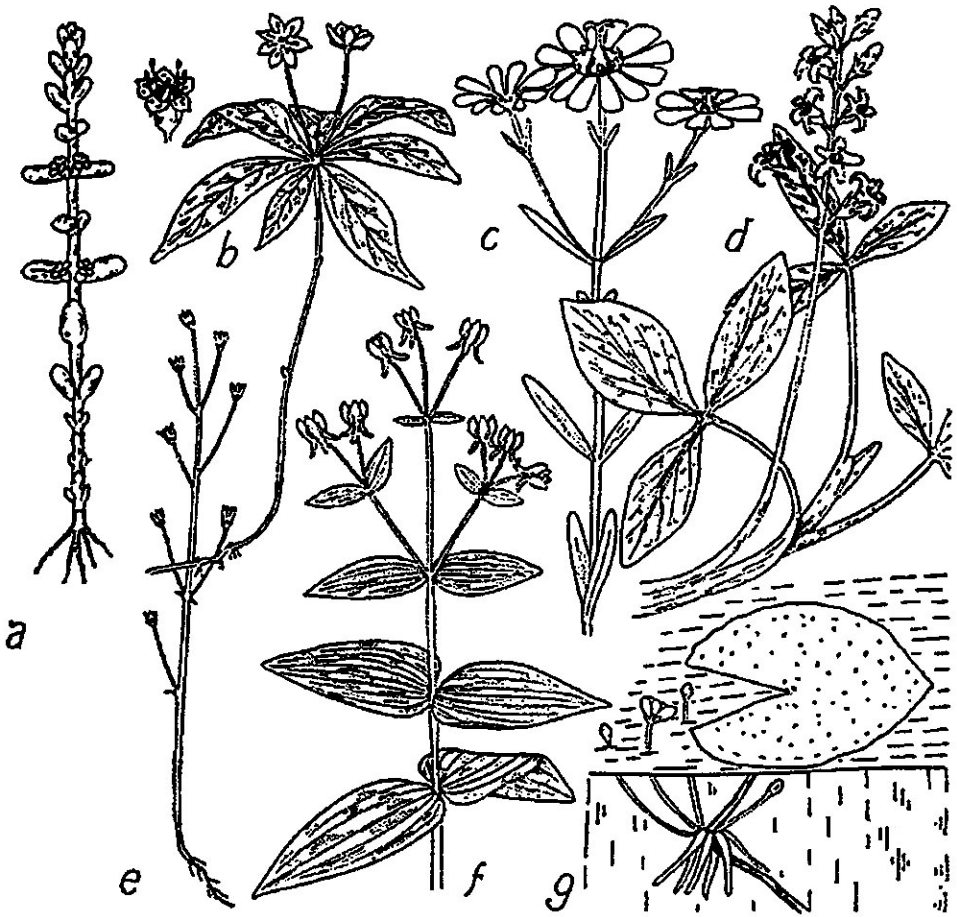


Fig. 113.—Glaux: (a) *G. maritima*, plant $\times \frac{1}{2}$, flower $\times 2$. — *Trientalis*: (b) *T. borealis* $\times \frac{1}{2}$. — *Sabatia*: (c) *S. Kennedyana* $\times \frac{1}{2}$. — *Menyanthes*: (d) *M. trifoliata* $\times \frac{1}{2}$. — *Bartonia*: (e) *B. virginica* $\times 1$. — *Helenia*: (f) *H. deflexa* $\times \frac{1}{2}$. — *Nymphoides*: (g) *N. cordata* $\times \frac{1}{2}$.

margins of rivers, lakes and boggy savannahs, from near Tusket to near Kempt. Two variations occur with the same general distribution as the species. *Forma candida* Fern. has the flowers white; *forma eucycla* Fern. has the lobes of the corolla broadly obovate and more or less overlapping. Both forms are rare. August.

Southwestern N.S.; e. Mass. and R.I.

2. CENTAURIUM Hill

1. *C. umbellatum* Gilib. CENTAURY

Found in the Maritimes on Sable I., where it is common in the wet dune hollows and sandy borders of freshwater ponds; reported erroneously in the 7th edition of Gray's manual from waste grounds,

N.S. Also found by T.M. Taschereau at Tidnish, N.S. by saltwater in brackish pastures, August 1967, in flower and fruit. Aug.-Sep.

Sparingly introduced from Eu.; N.S., Que. to Mich. south to Ga.; B.C.

3. *HALENIA* Borkh.

a. Plant 10-90 cm high, the main internodes 5-10 cm long; stem simple or branched above; flowers greenish, numerous, short-stalked, in a loose cyme.

1. *H. deflexa*

a. Plant 3-15 cm high, the internodes 1-3 cm long; stem much branched; flowers purplish, in a 3-flowered cyme, the central one long-stalked.

H. deflexa var. *Brentoniana*

1. *H. deflexa* (Sm.) Griseb. Map 440. Fig. 113,f. SPURRED GENTIAN

Damp soil, exposed places and sea-bluffs; rare on mainland of N.S. and found only at Halls' Harbour and near Sherbrooke; common on bleak exposed headlands around northern C.B. and on the east side from near Scatari I. Late-flowering colonies occasionally bear flowers without or with only one or two spurs. These belong to forma *heterantha* (Griseb.) Fern.

Var. *Brentoniana* (Griseb.) Gray (see Allen, 1933) is a dwarf form found on exposed headlands in northern C.B., the Magdalen I. and northward.

Lab. south to mts. of N.Y. west to B.C. and Mont.; central Mex.

4. *BARTONIA* Muhl.

These thin, wiry almost-leafless plants grow to 3 dm high and are almost invariably found scattered in the colder bogs. The key to the varieties of *B. paniculata* is largely that of Fernald (1921). See also Gillett (1959).

a. Corolla-lobes oblong or gradually widening to a rounded summit, blunt and usually toothed at the apex; stigma columnar, about 1 mm long; leaf-scales essentially opposite, the numerous nodes becoming more crowded towards the base.

1. *B. virginica*

a. Corolla-lobes lanceolate to oblong or obovate, blunt or acutish; stigma 0.5 mm long or less; leaf-scales essentially alternate, the few nodes but slightly closer near the base.

b. Calyx cleft nearly or quite to the base, the lobes lanceolate or narrowly oblong, acuminate or at least acute.

c. Plant yellowish-green, rarely purplish; flowers 2.5-5 mm long; corolla-lobes mostly creamy-white, 0.7-1.5 mm wide; anthers mostly yellowish, to 0.5 mm long.

2. *B. paniculata*

c. Plant purplish or fulvous; flowers 3.8-6 mm long; corolla-lobes purple-tipped or watery-white, 1.2-2 mm wide; anthers purplish, to 1 mm long.

B. paniculata var. *intermedia*

- b. Calyx cleft, at least on one side, only $2/3$ or $3/4$ to the base; the lobes herbaceous, oblong to ovate; corolla-lobes 1-2 mm long; plants purplish; anthers about 1 mm long.
- d. Flower-stalks club-shaped; two or three calyx-lobes cut to the base; corolla 3-5 mm long, creamy-white; anthers mostly yellowish. *var. sabulonensis*
- d. Flower-stalks thread-like; calyx-tube 1-2 mm long, the lobes not distinct to the base; corolla 4-7 mm long, often purple-tinged; anthers mostly purple. *var. iodandra*

1. *B. virginica* (L.) BSP. Fig. 113,e. Map 441. BARTONIA

Lake beaches, sandy and peaty bogs, even into dry barrens; rather common in southwestern N.S., becoming rarer to e. Halifax Co. and Middleton. Hybrids occur occasionally with the next species and Gillett (1959) mentions intermediates from Port Mouton and Shelburne.

Fla. to La. north to St. P. and Miq. I., s. Que. and Minn.

2. *B. paniculata* (Michx.) Muhl. Map 442. SCREW-STEM

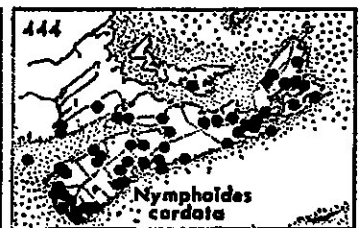
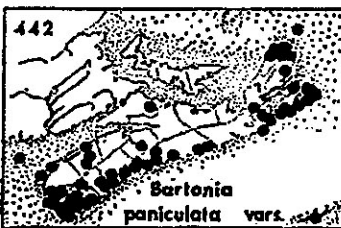
Michaux described *B. paniculata* in 1803 and Robinson described *B. iodandra* from Newfoundland in 1898. Fernald, on his expedition to N.S. found so many intermediates that he named *var. intermedia* in 1921. Gillett (1959) placed all the plants in two subspecies. The subspecies from Mass. south as sp. *paniculata*; and one mainly north of this named sp. *iodandra*. In N.S. there appears to be a complete gradation from plants typical of *var. paniculata* in south-western N.S. to purplish plants showing marked characters of *var. iodandra* in C.B.

Wet bogs, quagmires, peaty and cobbly shores; common in Yarmouth Co., found to Halifax and Digby, grading into the following varieties. Fla. and La. north to N.S., Ky. and Okla.

Var. intermedia Fern. is widely distributed in similar situations from Yarmouth to Richmond Co. and south to N.J.

Var. sabulonensis Fern. was first described from Sable I. It is usually more branched, with 4-30 flowers; rare in swales, sandy shores and cobbly margins in southern Yarmouth, Shelburne and Lunenburg Co., N.S. and St. P. and Miq. I.

Var. iodandra (Robins.) Fern. was first reported only from Nfld. and is represented in C.B. by the transitional *var. intermedia*. However, much of the material from Isle Madame and northern C.B. seems to resemble this variety. Nfld. and C.B.



5. *MENYANTHES* L. BUCKBEAN1. *M. trifoliata* L., var. *minor* Raf. Fig. 113,d. Map 443.

Stagnant pools, bogs, often dominant in its particular habitat and with the roots covered with water; common in marshes at Kentville, Truro, Advocate and Amherst to northern C.B.; rather rare southward; found but once on Sable I. Our plants are scarcely separable from the Eurasian and Pacific N. Amer. forms. June. $2n=54$.

Lab. to Alaska south to Md., Ohio, Mo. and Wyo.

6. *NYMPHOIDES* Hill1. *N. cordata* (Ell.) Fern. Fig. 113,g. Map 444. FLOATING-HEART

Common in lakes and ponds in quiet waters throughout; most numerous in the south-western parts of the Province where it may be found in ponds and lakes and slow-moving water in the pools of streams and rivers. The leaves are much like small water-lily leaves, but there is a tuft of roots just below the surface; the small white emerging flowers are sometimes conspicuous. July-Aug.

Nfld. to Fla. west to Ont. and La.

96. APOCYNACEAE DOGBANE FAMILY

About 1,000 species, most with milky juice, and more abundant near the tropics. Our plants have opposite leaves; flowers with 5 sepals, 5 united petals, and 5 stamens joined to the corolla and alternate with the lobes. The solitary pistil has two carpels which form two nearly separate follicles.

a. Plants slender and trailing, forming mats with evergreen glossy leaves; flowers blue, solitary in the leaf-axils. 1. *Vinca*

a. Plants stout, erect or prostrate; flowers white to pink, small, bell-like, in cymes. 2. *Apocynum*

1. *VINCA* L.1. *V. minor* L. Fig. 114,e. MYRTLE, PERIWINKLE

A garden plant, often planted in cemeteries, along shady lawns or roadsides, occasionally spreading and often persistent, grown mainly as a ground cover. May to early June.

Naturalized from Eu.; N.S. to Ont. southward.

2. APOCYNUM L. DOGBANE

Plants with milky juice and opposite leaves; flowers small and bell-like, white or pinkish. See Boivin (1966-a).

- a. Leaves drooping or spreading, hairy to glabrous beneath; corolla at least twice the length of the calyx-lobes; hair of the seeds pale tawny.
- b. Leaves drooping; corolla at least 3 times the length of the calyx lobes, 5-10 mm long; seeds 2 mm long, the hairs 1.5-2 cm. long. 1. *A. androsaemifolium*
- b. Leaves spreading or ascending-spreading; corolla about twice the length of the calyx-lobes, 4-5 mm long; seeds about 4 mm long; the hairs pale-tawny, 2 cm long. 2. *A. medium*
- a. Leaves ascending, nearly or quite without petioles, smooth or glaucous beneath; corolla with erect lobes, barely exceeding the calyx, 2-3.5 mm long; follicles straight 4-10 cm long; seeds 3.5-4 mm long with hairs 8-12 mm long. 3. *A. cannabinum*

1. *A. androsaemifolium* L. Fig. 114,a. SPREADING DOGBANE

The typical variety has the leaves glabrous beneath. This is widely distributed in the western states and in B.C.; it is known from Kentville, N.S., St. John, N.B., and from Quebec. Var. *incanum* DC. is the common form with the leaves more or less pubescent on the lower surface. This is a weed in the Annapolis Valley and along roadsides and occasionally in fields in the central part of the Province; common along streams and intervalles in eastern N.S.; scattered through the rest of the Province, usually on sandy or light soils. July-Aug.

Nfld. to Alaska south to N.C. and Mex.

2. X *A. medium* Greene

Reported by Woodson (1930) from the cobbly border of Shubenacadie Grand L. and at the edge of Wentzell L. in Lunenburg Co. This has been found to be a fertile hybrid of the preceding and the following species and may be expected when these two species grow together. See Anderson (1936).

Nfld. to B.C. south to Va. and Tex.

3. *A. cannabinum* L. Fig. 114,b. Map 445. INDIAN HEMP

The plants of eastern Canada are variable in the shape of the leaves. Plants with rather narrow lanceolate leaves tending to be cuneate at the base with a definite petiole have been named var. *glaberrimum* DC. This is rather rare in N.S. but is known from river-banks in central N.S. and from north of Judique in Inverness Co.

Var. *hypericifolium* Gray has the median stem-leaves more ovate, subcordate at the base, and sessile or nearly so. Gravelly beaches and cobbly or sandy banks of streams; Kings Co. and Lunenburg Co. to northern C.B.; most common in Colchester and Pictou Co., becoming rarer along the South Shore. (*A. sibiricum* Jacq.) The plants are often prostrate rather than erect. This is forma *arenarium* (F.C. Gates) Boivin. July-Aug.

Nfld. to B.C. south to Tex.

97. ASCLEPIADACEAE MILKWEED FAMILY

Our species are erect, scarcely branched, perennials up to 1.5 m high, with opposite or whorled leaves and with milky juice. The flowers are purplish or rose-purple, numerous in terminal umbels, and are regular but elaborate in structure; each flower starting two but usually maturing only one large, many-seeded follicle.

1. ASCLEPIAS L.

a. Leaves lanceolate, smaller and tapering to an acute tip, irregularly veined with the few veins curved towards the tip, smooth or finely pubescent beneath.

1. *A. incarnata*

a. leaves oblong to oval, 12-20 cm long, regularly pinnately veined with the veins straight, densely woolly beneath.

2. *A. syriaca*

1. *A. incarnata* L. Fig. 114, g. Map 446. SWAMP-MILKWEED

Rare in wet or rocky thickets, usually near a lake or stream from Yarmouth Co. through the center of the Province to central C.B.; outlet to Lake Paul in Kings Co.; headwaters of Gays R. in Halifax Co.; along river north of New Germany; and near Whycomagh and Black R. in C.B. Three varieties have been reported from N.S. but, as J. S. Erskine (1953) observes: "The three varieties are all found and do not separate satisfactorily. Each colony found seemed to have differences nearly as important as those of number and size and pilosity of leaves".

The typical variety has the leaves and the upper part of the stem glabrous or nearly so; while var. *pulchra* (Ehrh), Pers. has these densely pubescent or pilose. Smaller plants with only 7-11 pairs of leaves, and with leaves almost smooth beneath, were named var. *neoscotica* Fern. (Fernald, 1921). This variety was then reported from a gravelly beach along the Shubenacadie Grand L. and along the Tusket L. in Yarmouth Co. Known only from N.S. Early Aug.

N.S. to Man. south to Ga. and Tex.

2. *A. syriaca* L. COMMON MILKWEED

Sparingly introduced as a weed in light soil; at scattered places in the Annapolis Valley; at LeBreau's Creek in Hants Co.; and near Mabou in C.B.; presumably being introduced also elsewhere. Scattered throughout the Maritime Provinces. July.

N.S. to s. Man. south to Ga. and Kans.; introduced eastward.

98. CONVULVACEAE BINDWEED FAMILY

This family includes about 47 genera and 1,100 species. Our representatives are the wild morning-glory and the parasitic dodders. The plants are twining; and the flowers are regular with the parts in 5's, with a tubular or funnel-form corolla. The sweet potato and the cultivated morning glory belong to the genus *Ipomoea*.

- a. Plants large with green leaves; corolla large, showy; plants with stout rootstocks; leaves sagittate. 1. *Convolvulus*
- a. Plants without green leaves, yellowish, parasitic; corolla small, short, whitish. 2. *Cuscuta*

1. CONVULVULUS L. BINDWEED

Consult Tryon (1939) and Fernald (1949-b)

- a. Calyx enclosed by two large green bracts; stigma oval or oblong; corolla 4-8 cm long. 1. *C. sepium*
- a. Calyx not enclosed by green bracts; style filiform; leaf-blades 3-5 cm long; corolla about 2 cm long. 2. *C. arvensis*



Fig. 114.—Apocynum: (a) *A. androsaemifolium* $\times \frac{1}{2}$, (b) *A. cannabinum*, leaves, fruits and flowers, $\times \frac{1}{2}$. — Convolvulus: (c) *C. sepium* $\times \frac{1}{2}$, (d) *C. arvensis* $\times \frac{1}{2}$. — Vinca: (e) *V. minor* $\times \frac{1}{2}$. — Cuscuta: (f) *C. Gronovii* $\times \frac{1}{2}$. — Asclepias: (g) *A. incarnata*, flowers much enlarged, fruit with seeds $\times \frac{1}{2}$.

1. *C. sepium* L. Fig. 114,c. BINDWEED, WILD MORNING-GLORY

Common along the coast, often a bad weed in towns, waste places, along roadsides and spreading into fields and orchards; along lake-shores or clambering over vegetation near open areas. The native plants are sometimes considered to be a separate variety because the basal leaf-lobes are possibly more rounded instead of being angular (Var. *americanus* Sims). Forma *coloratus* Lange is our common form. It has pinkish flowers instead of white ones. Forma *malachophyllus* Fern. has the leaves, petioles and stems soft-pilose. Plants growing near the coast may show this trait. July-Aug.

Var. *dumetorum* Pospichal has the leaves roundish to sub-orbicular, with the apex rounded or blunt, and the white flowers only 4-4.5 cm long instead of 5-8 cm. This variety is an introduction from the Adriatic and Fernald reports this from roadsides, waste places and ballast-lands, Yarmouth; and from grassy or bushy roadsides near a house at Barrington.

Nfld. to B.C. south to Fla. and N. Mex.

2. *C. arvensis* L. Fig. 114,d. FIELD-BINDWEED

Rare; occasionally found in fields and along roadsides in the Annapolis Valley; seen at Lunenburg, Windsor and Truro. Macoun reports it from ballast heaps at Pictou; and Robinson found it at Pictou Landing in 1906. The plant does not seem to be very aggressive here.

Introduced from Eu.; throughout N.Amer. and a bad weed westwards.

2. CUSCUTA L. DODDER

The introduced members are left out of the key since they appear so rarely as parasites of our cultivated crops. Very rarely a garden crop such as Summer Savoury, may be contaminated with dodder but no recent instances are known. This may be due to *C. pentagona*, which is one of the commoner species. Clover dodder likewise has not been seen, although a collection exists from Lawrencetown, Annapolis Co. and was probably *C. Epithymus* Murr. Two native species are present and need further study to determine their exact distribution. Consult Yuncker (1932).

n. Flower-parts mostly in 4's, occasionally in 3's; petals tending to be erect or spreading; capsule tending to be depressed globose, or wider than long.

1. *C. Cephalanthi*

a. Flower-parts in 5's; petals reflexed; capsule globose, rarely wider than long.

2. *C. Gronovii*

1. *C. Cephalanthi* Engelm.

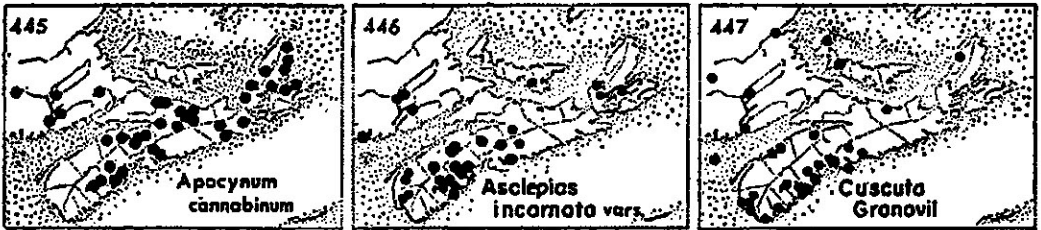
This plant is reported in Gray's Manual as from N.S. and possibly some of the collections recorded as *C. Gronovii* var. *latiflora* belong here. A collection from Loch Broom, Pictou Co., where it was luxuriantly growing near the seashore on asters, is placed here.

N.S. to s. B.C. south to Tenn. and Texas.

2. *C. Gronovii* Willd. Fig. 114,f. Map 447. COMMON DODDER

Scattered along the borders of lakes, back of brackish shores, or in wet thickets; rather common and found on a variety of hosts, mostly in dampish habitats. It is most common in southwestern N.S. and is scattered eastward to northern C.B. Var. *latiflora* Engelm. was first thought to be a coastal plain variety but does not now seem distinct. A short discussion of the N.S. plants is given by Fernald (1922). Late July-Aug.

N.S. to B.C. south to Fla. and Ariz.



99. POLEMONIACEAE PHLOX FAMILY

A small family, chiefly of N. Amer., characterized by having the corolla-lobes and stamens in 5's, but with the superior ovary having only three carpels. The genus *Phlox* is the main group of the family; all our members are introduced. The *Polemonium* mentioned in the 1st ed. of this Flora (Roland, 1947) was surely the cultivated *P. caeruleum* L.

a. Leaves mostly alternate; flowers small, slender and insignificant; scattered weed.

1. *Collomia*

a. Leaves opposite or mostly so; flowers showy, at least 1 cm wide; garden escapes.

2. *Phlox*

1. *COLLOMIA* Nutt.

1. *C. linearis* Nutt. Fig. 115,b.

Scattered near the railroad north from Truro, carried south from the Bay of Chaleur region where abundant and perhaps native.

N.B. to B.C. s. to Wisc. and Calif.; introduced southward.

2. PHLOX L.

- a. Plant creeping in mats; leaves needle-like, rigid.
 a. Plants erect; leaves wide and flat.

1. *P. subulata*
 2. *P. paniculata*

1. *P. subulata* L. Fig. 115,a. GROUND-PINK, MOSS-PINK

This garden plant is occasionally found along roadsides or in waste places; most often persisting where it had once been planted. The old-fashioned pink form is more persistent than the newer varieties.

N.Y. to Mich. s. to N.C.; an escape elsewhere.

2. *P. paniculata* L. GARDEN-PHLOX

Occasionally in waste places or along roadsides near gardens where it may persist for some time; doubtfully persisting for any length of time without cultivation.

N.Y. to Iowa s. to Ga.; cultivated and escape elsewhere.

100. BORAGINACEAE BORAGE FAMILY

Herbaceous, often rough-hairy, plants with simple, untoothed alternate leaves and bluish, or very rarely white, flowers. The inflorescence is usually a coiled simple or branched raceme with the flowers developing from the base upwards as it straightens out. The fruit consists of 2-4, usually 4, nutlets formed from the lobes of the superior ovary.

- a. Corolla regular or nearly so.
 b. Corolla rotate (like the flower of the potato), bright blue, 1 cm wide or wider; stamens large, exerted, surrounding the pistil. 1. *Borago*
 b. Corolla tubular, or if flattish much less than 1 cm wide.
 c. Flowers solitary in the axils of the upper leaves, remote at maturity, 3-4 mm wide; nutlets not bristly. 5. *Lithospermum*
 c. Flowers in coiled racemes which straighten after flowering.
 d. Nutlets armed with hooked bristles; throat of the corolla closed by 5 scales.
 e. Leaves 5-15 cm long, lanceolate to ovate; nutlets flattened and horizontal, covered uniformly with short bristles; stem simple. 6. *Cynoglossum*
 c. Leaves less than 5 cm long, lanceolate to linear; nutlets erect, with 2 rows of bristles up each side of the dorsal face. 9. *Lappula*
 d. Nutlets without bristles.
 f. Plants coarse and stout, 5-10 dm high, much-branched; throat of the corolla closed by scales (Fig. 118,a). 2. *Symphytum*
 f. Plants weak or trailing, up to 6 dm high.
 g. Corolla slightly irregular, the throat closed by scales and the tube funnel-shaped; plant very bristly-hairy; racemes leafy-bracted. 3. *Lycopsis*
 g. Corolla regular, throat not closed by scales.
 h. Plants not succulent; racemes without bracts, at least in the upper part; flowers 8 mm wide or less, the corolla-tube very short; leaves up to 1 cm wide (Fig. 115,c,d). 7. *Myosotis*
 h. Plants succulent, glabrous, of seashores; racemes with leafy bracts; flowers 10-15 mm wide; leaves 1-3 cm wide (Fig. 115,f). 8. *Mertensia*

a. Corolla very irregular, the throat spreading, not closed; stamens exerted on long filaments; plants large, coarse and bristly (Fig. 115,e); flowers a vivid blue.

4. *Echium*

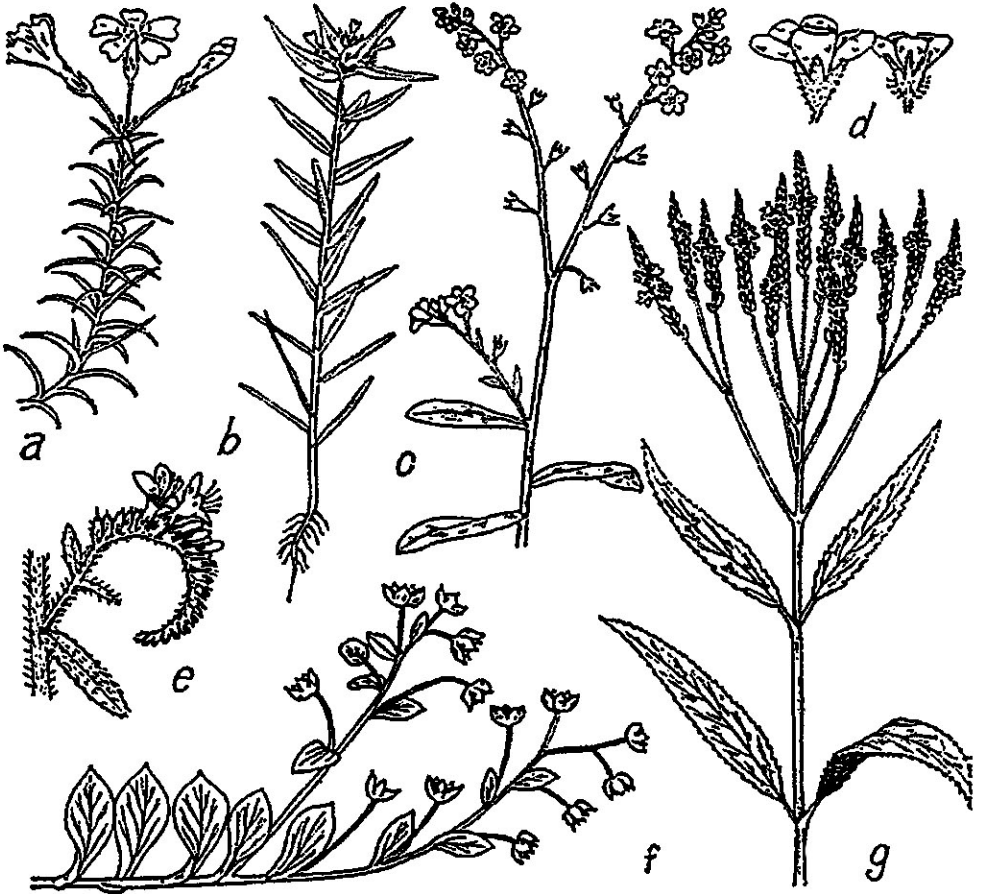


Fig. 115.—Phlox: (a) *P. subulata* $\times \frac{1}{2}$. — Collomia: (b) *C. linearis* $\times \frac{1}{2}$. — Myosotis: (c) *M. laxa* $\times \frac{1}{2}$, (d) flowers $\times 3$. — Echium: (e) *E. vulgare*, branch of inflorescence $\times \frac{1}{2}$. — Mertensia: (f) *M. maritima* $\times \frac{1}{2}$. — Verbena: (g) *V. hastata*, top of plant $\times \frac{1}{2}$.

1. BORAGO L.

1. *B. officinalis* L. BORAGE

Introduced and occasionally seen about old gardens or in waste places, doubtfully persisting. Native of the Mediterranean and sparingly introduced into many parts of N. Amer. from N.S. to Alta. south.

2. SYMPHYTUM L. COMFREY

a. Plants with stout, prickly recurved hairs; leaves very slightly decurrent; flowers usually purple; tips of the corolla-lobes erect.

1. *S. asperum*

- a. Plants rough-hairy; leaves decurrent and forming broad wings down the stems; flowers usually cream-colored; tips of the corolla-lobes recurved.

2. *S. officinale*1. *S. asperum* Lepechin. Fig. 118,a. ROUGH COMFREY

Dry and sandy areas and waste places, rare; reported by Macoun from Pictou; abundant at Grand Pré and Yarmouth. June 15-July. Both this and the next species are coarse, perennial garden plants which persist chiefly in patches near old habitations.

Introduced from Eu.; N.S. to Man. south to Md.; B.C.

2. *S. officinale* L. COMMON COMFREY

Waste land, a garden escape; scattered and probably throughout; most common in Kings and Pictou Co. June 15-July.

Naturalized from Eu.; Nfld. to w. Ont. south to La.; Alta. and B.C.

3. LYCOPSIS L.

1. *L. arvensis* L. SMALL BUGLOSS

Dry sandy fields and waste places; rare, reported by Macoun from Pictou. Not recently collected in N.S. although Erskine records this sporadic weed from a number of locations in P.E.I.

Adventive from Eu.; P.E.I. to Alta. south to Va.; Calif.

4. ECHIUM L.

1. *E. vulgare* L. Fig. 115,e. BLUE DEVIL, VIPER'S BUGLOSS

Rare or local; a weed of waste places and roadsides. It has been found at Truro, New Glasgow, near Antigonish and above Parrsboro, where it was abundant for some distance along the road. Other scattered locations are known. It rarely invades fields. However, it does not seem to spread actively in N.S.; very conspicuous when in flower.

Var. *pubulatum* (Sibth. & Sm.) Coincy has the pubescence of the leaves and inflorescence with conspicuous blister-like bases and the inflorescence is looser and wider. This is reported from N.S. in Britton and Brown (Gleason, 1952). In view of the sporadic nature of the introductions this variety could be expected.

Naturalized from Eu.; widely distributed.

5. LITHOSPERMUM L.

1. *L. arvense* L.

This annual weed is scattered and may be introduced at any time; collected by W. B. Schofield around a chicken-run at Cambridge, Kings Co.

Native of Eu.; waste places throughout Can. and the U.S.

6. CYNOGLOSSUM L.

Rare, coarse pubescent plants up to 10 dm high, with broad corollas about 8 mm wide and the large nutlets with conspicuous hooked bristles.

- a. Stem leafy to the summit; flowers dull reddish; nutlets 5-8 mm long.
 - 1. *C. officinale*
- a. Stem leafy mostly near the base; flowers blue; nutlets 4-5 mm long, uniformly bristly.
 - 2. *C. boreale*

1. *C. officinale* L. HOUND'S TONGUE

This native of Eurasia is occasionally reported from fields and the edges of open woods; reported from both N.S. and N.B. although no collections have been seen.

Widely introduced; N.S. to Ont. and Alta. to B.C. south.

2. *C. boreale* Fern. WILD COMFREY

Rare; in open beech woods on dryish soil just west of Kentville and on gypsum near Windsor, only occasional plants have been found.

Woods and thickets from N.S. to Iowa south to N.Y.; B.C.

7. MYOSOTIS L. FORGET-ME-NOT

Our common plants of moist soils have small blue flowers in early summer. There are about 40 species of wide distribution, with all of ours except one introduced.

- a. Flowers blue; pedicels much longer than the calyx.
 - b. Hairs of the calyx straight and appressed; stems and leaves with stiff appressed hairs; calyx with the lobes wide and much shorter than the tube or merely equaling it.
 - c. Corolla 5-8 mm wide, the tube distinctly longer than the calyx; inflorescence without bracts.
 - 1. *M. scorpioides*
 - c. Corolla 3-5 mm wide, with the tube about the length of the tips of the calyx-lobes; inflorescence with usually one or two leaves near the base of the longest branch.
 - 2. *M. laxa*
 - b. Hairs of the lower part of the calyx prominently hooked; calyx with the lobes as long or usually much longer than the tube.
 - d. Flowers 5-8 mm wide; escaped ornamental.
 - 3. *M. sylvatica*
 - d. Flowers 2-4 mm wide; plants of dryish habitats.
 - 4. *M. arvensis*
- a. Flowers yellow when young; pedicels shorter than the calyx; corolla about 2 mm wide.
 - 5. *M. versicolor*

1. *M. scorpioides* L. FORGET-ME-NOT

Common in wet muddy places, in ditches, meadows and along brooks throughout, sometimes growing in large masses in very wet areas. Early June-July.

Nfld. to Man. south to Ga.; B.C.; introduced from Eu.

2. *M. laxa* Lehm. Fig. 115,c,d. SMALL FORGET-ME-NOT

Very common throughout; wet muddy places, edges of streams, ditches and meadows. June-July.

Nfld. to Ont. and N.C. south to Ga. western America; Eurasia.

3. *M. sylvatica* Hoffm. GARDEN FORGET-ME-NOT

Grown as an ornamental with many strains for early spring flowers in rock-gardens and moist borders; occasionally escaping or persisting where it has been discarded in waste places and dumps, occasionally also in ditches or along roadsides. Late May-June.

N.S. to Mich. south to New Eng.; introduced from Eu.

4. *M. arvensis* (L.) Hill. Fig. 115,d. Map 448. ROUGH FORGET-ME-NOT

Wet runs and moist places, but more often growing on dryish soils, a plant rough to the touch and with small pale flowers. It is common in the Annapolis Valley, scattered elsewhere in western N.S., and known only from Sydney east of Truro. May 15-June.

Introduced from Eu.; Nfld. to Sask. and B.C. south to Penn. and W.Va.

5. *M. versicolor* (Pers.) Sm.

This species has long been known from dryish to moist hill-slopes along the Gaspereau road and on the ridge south of Wolfville where it is scattered. The corolla is a pale yellow but it gradually changes to a bluish and then a violet color as it gets older (*M. discolor* Pers.). Early May-June.

Sparingly introduced from Eu.; N.S., Mass. and N.Y. to Va.

8. MERTENSIA Roth

1. *M. maritima* (L.) S. F. Gray. Fig. 115,f. SEA-LUNGWORT

Common around the Province, on sandy beaches, dunes and shore-lines just above high tide level; flowers blue or rose-tinted. The clumps of this plant with the fleshy glaucous leaves form a common feature of most sea-shore vegetation. Forma *albiflora* Fern. is a white-flowered form found on various beaches of Queens, Shelburne, Yarmouth and Digby Co. June 15-Aug.

Mass. north around the coast to Greenland and Alaska; Eurasia.

9. LAPPULA Moench

1. *L. echinata* Gilib. STICKSEED

Waste land, railroad yards and introduced in feed grain, as around poultry yards. It may often be found in dryish soils, but although it is

scattered throughout and sometimes is common in one location it does not long persist. June-Sept.

Introduced from Eu.; Nfld. to Alaska south to W.Va. and Tex.

101. VERBENACEAE VERVAIN FAMILY

This large cosmopolitan family is represented here by only one native species. The cultivated *Verbena hybrida* Vess. is a common garden flower.

1. VERBENA L.

1. *V. hastata* L. Fig. 115,g. BLUE VERVAIN

This tall plant with the numerous spikes of small blue flowers is rare; in river bottoms or in rich or mucky soils; scattered from Queens, Annapolis and Cumberland Co. east to C.B. Aug-Sept.

N.S. to B.C. south to Fla. and Ariz.

102 LABIATAE MINT FAMILY

A large family of about 3,500 species, ours all herbaceous and many aromatic. The leaves are opposite or whorled; the stems are commonly square in cross-section. The flowers may be nearly regular but more often are strongly 2-lipped, with the stamens 4 in 2 sets, or only 2. The single style arises from a 4-lobed ovary and the fruit consists of 4 nutlets. The genera are separated on highly technical characteristics. *Coleus* and *Salvia* are cultivated representatives.

a. Corolla with the upper lip apparently absent, the lower one 5-lobed, 12-18 mm long; flowers purplish in an interrupted terminal spike (Fig. 116, a).

1. *Teucrium*

a. Corolla with both upper and lower lips, or regular.

b. Calyx with a swelling on the upper side; flowers blue, solitary or in one-sided axillary panicles (Fig. 116,b,c).

2. *Scutellaria*

b. Calyx without such a swelling.

c. Inflorescence axillary, in numerous whorls, or in a few whorls with the subtending leaves but little reduced in size.

d. Corolla almost regular; whorls numerous in the axils of the leaves; calyx-teeth not rigid and nettle-like.

e. Calyx strongly irregular; stamens 2; plant small, usually unbranched, very strongly aromatic (Fig. 116,h).

11. *Hedeoma*

c. Calyx nearly regular.

f. Stamens with anthers 2; plants smooth, not aromatic; flowers sessile in the leaf-axils, white (Fig. 117,f,g).

16. *Lycopus*

f. Stamens with anthers 4; plant often hairy, aromatic; flowers with pedicels 0.5-2 mm long by flowering time; flowers bluish (Fig. 117).

17. *Mentha*

d. Corolla very irregular with a prominent upper and lower lip.

g. Sepals rigid and sharp-pointed, so that the flowers are nettle-like (*Stachys* may key out here, but the flowers are in more of an interrupted spike with the upper leaves reduced, sepals rigid but not so definitely awn-tipped).

- h. Leaves narrow, thick, the lower deeply and sharply lobed, palmately veined; whorls of flowers many; plants 1 m high or more, unbranched (Fig. 117,h). 7. *Leonurus*
- h. Leaves all ovate, toothed, pinnately veined and rough-hairy; plants much branched and with flowers clustered toward the tips of the branches (Fig. 117,a). 8. *Galeopsis*
- g. Sepals herbaceous and the flowers not nettle-like.
- i. Stem prostrate and creeping; flowers blue, long pedicelled, usually 3 in each leaf-axil; leaves almost round, shallowly toothed (Fig. 116,d). 5. *Glechoma*
- i. Stem erect; flowers white or pinkish, sessile or nearly so in the axils of the upper, little-reduced leaves.
- j. Stamens included in the tube of the corolla; calyx nearly regular, the 5-10 small lobes hooked at the apex. 3. *Marrubium*
- j. Stamens ascending under the upper lip of the corolla; lobes of the calyx not hooked at the apex.
- k. Calyx distinctly 2-lipped, with the long slender teeth grayish hairy; flowers in 1 or 2 dense whorls near the tip of the plant; native plants (Fig. 116, g). 12. *Satureja*
- k. Calyx nearly regular, not grayish; flowers few and less densely crowded; small introduced weeds. 9. *Lamium*
- c. Inflorescence terminal in a compact spike, or often interrupted with the whorls subtended by much-reduced leaves or bracts.
- l. Flowers in a many-flowered, rounded or pyramidal, often compound panicle usually as wide as long, pinkish to purple; plants 4-8 dm high. 14. *Origanum*
- l. Flowers in an inflorescence more spike-like and longer than wide.
- m. Leaves less than 1 cm long, elliptic to ovate, blunt and untoothed; plant extensively trailing in mats; flowers rose-colored, aggregated into a long inflorescence about 1 cm wide; plants aromatic (Fig. 116, f). 15. *Thymus*
- m. Leaves with blades over 1 cm long.
- n. Inflorescence of small clusters crowded in a spike or an oblong, uninterrupted head; leaves not sharply toothed; flowers usually blue or bluish-purple.
- o. Inflorescence an oblong, uninterrupted head; flowers blue; leaves wavy-margined; plants low and prostrate at base; common lawn and roadside weed (Fig. 116, e). 6. *Prunella*
- o. Inflorescence of whorls closely grouped in a spike; flowers blue-purple; leaves lanceolate to linear, entire. 13. *Hyssopus*
- n. Inflorescence usually interrupted and composed of numerous whorls of flowers; leaves sharply toothed; plants tall and erect.
- p. Leaves heart-shaped, nearly as wide as long, long-petioled; lower groups of flowers stalked, as if on side branches. 4. *Nepeta*
- p. Leaves lanceolate; flowers all nearly sessile on the main axis.
- q. Corolla irregular, the stamens placed under the upper lip; calyx-teeth rigid; leaf-blades truncate at the base with short petioles; not aromatic (Fig. 117, e). 10. *Stachys*
- q. Corolla nearly regular, the stamens exerted; calyx-teeth herbaceous; leaf-blades tapering to the base; very aromatic (Fig. 117, e). 17. *Mentha*

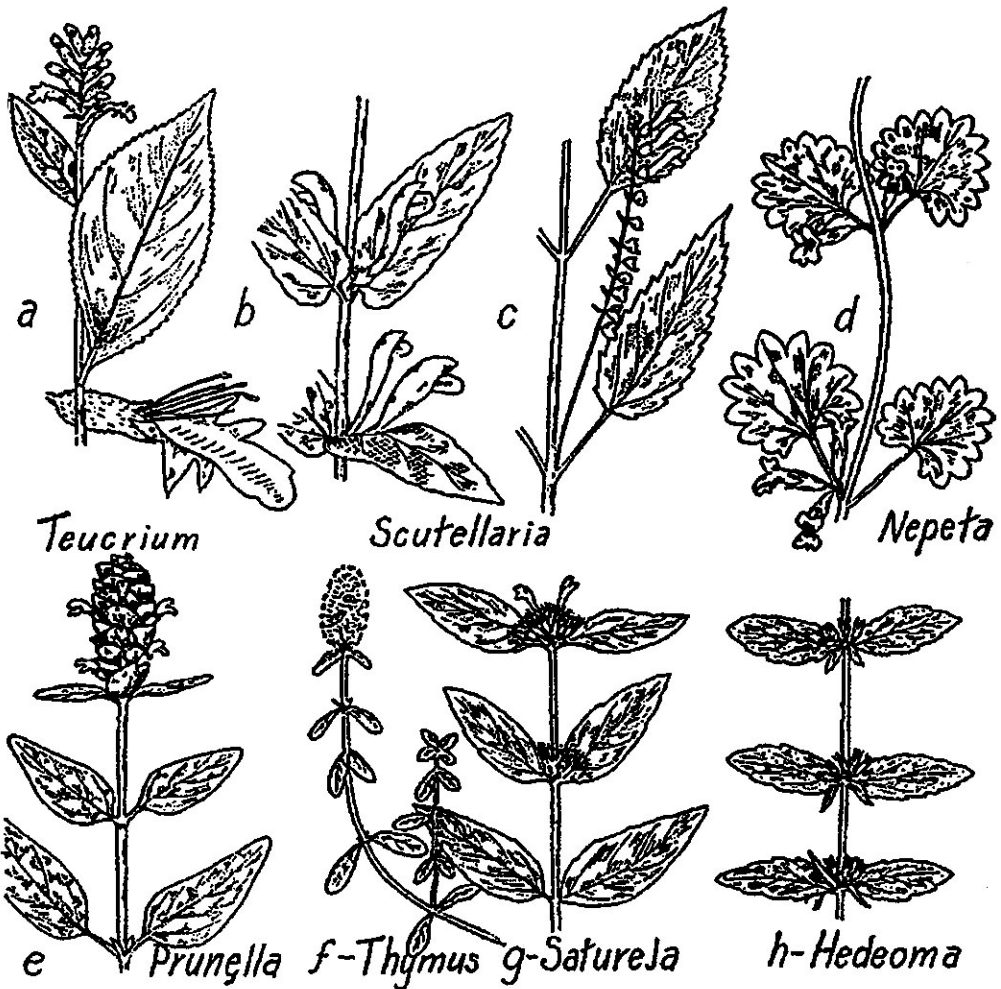
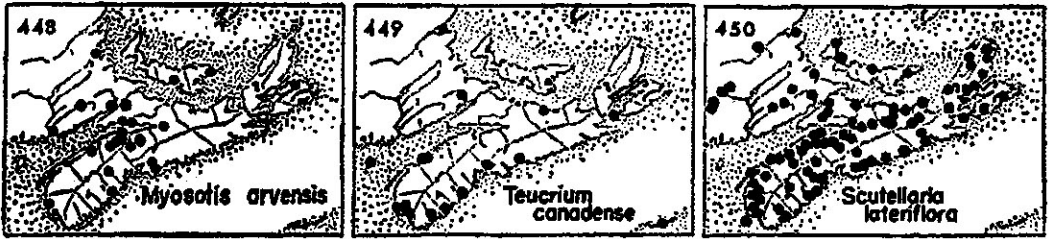


Fig. 116.—*Teucrium*: (a) *T. canadense* $\times \frac{1}{2}$, flowers enlarged. — *Scutellaria*: (b) *S. galericulata*, part of plant $\times 1$, (c) *S. lateriflora* $\times \frac{1}{2}$. — *Glechoma*: (d) *G. hederacea* $\times \frac{1}{2}$. — *Prunella*: (e) *P. vulgaris* $\times \frac{1}{2}$. — *Thymus*: (f) *T. Serpyllum* $\times \frac{1}{2}$. — *Satureja*: (g) *S. vulgaris* $\times \frac{1}{2}$. — *Hedeoma*: (h) *H. pulegioides*, one third of plant $\times 1$.

1. TEUCRIUM L.

1. *T. canadense* L. Fig. 116,a. Map 449. AMERICAN GERMANDER

Gravelly sea-coasts, generally found at the crests of the beaches beyond the reaches of the tide; rather rare and scattered from Annapolis to Shelburne Co.; Halifax Co., barrier beach at Queensland; and by the bridge to Is. Madame in Richmond Co. (Erskine, D. S., 1951); Sable I. Fla. to Tex. and north to N.S., N.B. and Ont.



2. SCUTELLARIA L. SKULLCAP

Rather common, usually branched herbs with showy pale to bright blue 2-lipped flowers. The conspicuous bump on the top of the calyx distinguishes these plants both in flower and fruit.

- a. Flowers in axillary one-sided racemes, straight and 5-8 mm long; middle stem-leaves with petioles 1-2 cm long. 1. *S. lateriflora*
- a. Flowers in the axils of the leaves, or towards the ends of the branches in the axils of smaller leaves, upwardly curved from the calyx; middle stem-leaves with petioles up to 10 mm long.
- b. Petioles of middle stem-leaves 3-10 mm long; corolla 9-12 mm long. 2. *S. Churchilliana*
- b. Petioles of leaves very short, less than 4 mm long; corolla 15-23 mm long. 3. *S. galericulata*

1. *S. lateriflora* L. Fig. 116,c. Map 450. SKULLCAP

Common throughout; marshes, along streams, lakes, river-thickets and rich ground often in rather wet areas. July-Aug.
Nfld. to B.C. south to Ga. and s. Calif.

2. *S. Churchilliana* Fern.

Lunenburg Co.: scattered on lake-shore at Wentzell's L., collected by J. S. Erskine; abundant on lake shore, Lewis L. (Smith and Erskine, 1954). This species seems intermediate in many respects between the first and the next species and is suspected of being hybrid between them.
Western Que. to s. N.B., N.S. and s. Me.

3. *S. galericulata* L. Fig. 116,b.

Common throughout, growing in more open locations than the first species; behind sea-beaches, cobbly borders of lakes, edges of ponds and marshes and along rivers. The American plants may be named *S. epilobifolia* A. Hamilton if they are considered sufficiently distinct from the European ones. Different geographic varieties seem to exist and our plants have been named var. *pubescens* Benth. July 15-Aug.
Lab. to Alaska south to Del., Ohio and Calif.

3. MARRUBIUM L.

1. *M. vulgare* L. HOREHOUND

Introduced from Eurasia and formerly cultivated as a medicinal herb, rarely found as an escape near gardens or in waste places. July-Aug.

Scattered from N.S. to B.C. southward.

4. NEPETA L.

1. *N. Cataria* L. CATNIP

Waste places throughout; rare, usually in small patches near dwellings and showing little tendency to spread. Above Cheticamp, northern C.B., it was found spreading along roadsides and over the talus of cliffs. July-Sept. Plants from N.S. and P.E.I. had $2n=34$ (Mulligan, 1957).

Native of Eu. and se. Asia; throughout much of N.Amer.

5. GLECHOMA L.

1. *G. hederacea* L. Fig. 116,d. GROUND-IVY, GILL

The larger plant with the corolla 1.6-2.3 cm long, with green leaves, is only occasionally seen, generally growing in shady, rather rich soil; Arcadia, Yarmouth Co.; Earltown, Colchester Co., abundant in rich thickets. Introduced from Eu. and somewhat local from Nfld. to Ont. south to Tenn. (*Nepeta* L.).

Var. *micrantha* Moricand is the usual form. This has smaller flowers only 1-1.5 cm long and the leaves are reddish. It is a common weed around buildings, in shady places, on roadsides and in fields, and often a bad weed around habitations where it forms large patches almost impossible to eradicate. (var. *parviflora* Druce). May-Aug.

Introduced from Eu.; Nfld. to Alta. south to Ga.; Pacific Coast.

6. PRUNELLA L.

1. *P. vulgaris* L. Fig. 116,e. HEAL-ALL, SELF-HEAL

This neat weed of grassy habitats is common throughout. As with a number of our other plants, the population consists of a native element and in part of plants introduced from Europe. These differ in minor characteristics such as leaf size and shape but are usually difficult to tell apart. The species is most common in Europe and is scattered in N.Amer.; shady places and thickets, in rich soil or rarely as a weed in fields or gardens. This has the main stem-leaves ovate or ovate-oblong, rounded or abruptly cuneate at the base, and $2/5$ to $2/3$ as broad as long. Nfld. to B.C. southward.

Var. *lanceolata* (Bart.) Fern. is considered to be native; common throughout, often a weed; fields, roadsides, pastures and thickets. This has the principal leaves more lanceolate and tapering to the base, the blades $1/5$ to $1/2$ as broad as long. Forma *candida* Fern, with white corollas, is scattered on the west coast of C.B. and is common around Pleasant Bay. Both the calyx and the corolla may vary in their color. Forma *rhodantha* Fern. has a pink corolla; lawn at Truro, growing with the typical blue form.

Nfld. to Alaska south to N.C. and Ariz.

7. LEONURUS L.

1. *L. Cardiaca* L. Fig. 117,h. MOTHERWORT

Scattered around old houses and gardens, rarely becoming a weed in cultivated land and showing little tendency to spread; probably less common now than formerly. The calyx lobes are prolonged into stiff spines so that the long, interrupted inflorescences are prickly to the touch.

Introduced from Eu.; N.S. to Sask. south to N.C. and Tex.; B.C.

8. GALEOPSIS L. HEMP-NETTLE

Annual weedy plants of Eurasia and N.Afr., with several whorls of flowers in the axils of the upper leaves and the sepals with sharp pointed tips.

a. Stems swollen under the nodes, bristly-hairy; leaves ovate, coarsely serrate.

1. *G. Tetrahit*

a. Stems not swollen under the nodes, covered with soft appressed hairs; leaves lanceolate, obscurely serrate or entire.

2. *G. Ladanum*

1. *G. Tetrahit* L. Fig. 117,a. HEMP-NETTLE

This rough, weedy plant is common throughout, a bad weed of gardens and sometimes fields in the agricultural areas; and elsewhere in waste places, around sea-shores and in towns. The plant is known to be a tetraploid hybrid and is quite variable. Two varieties are commonly recognized. The typical variety has the leaf-blades rounded at the base, the flowers about 20 mm long with the lowest corolla-lobe nearly square. This has been introduced from Nfld. to Alta. south to N.Y. but is apparently rare in the Maritime Provinces.

Var. *bifida* (Boenn.) Lej. & Court. is our common plant. This has the leaf-blades tapering at the base, and the flowers smaller from 12-16 mm long, with the lowest corolla-lobe notched at the tip. The flowers vary in color from a spotted purple to pinkish to white. The white-flowered form is scattered, especially in northern C.B., and may be called forma *albiflora* House.

Nfld. to Alaska south to N.C.; introduced from Eu.

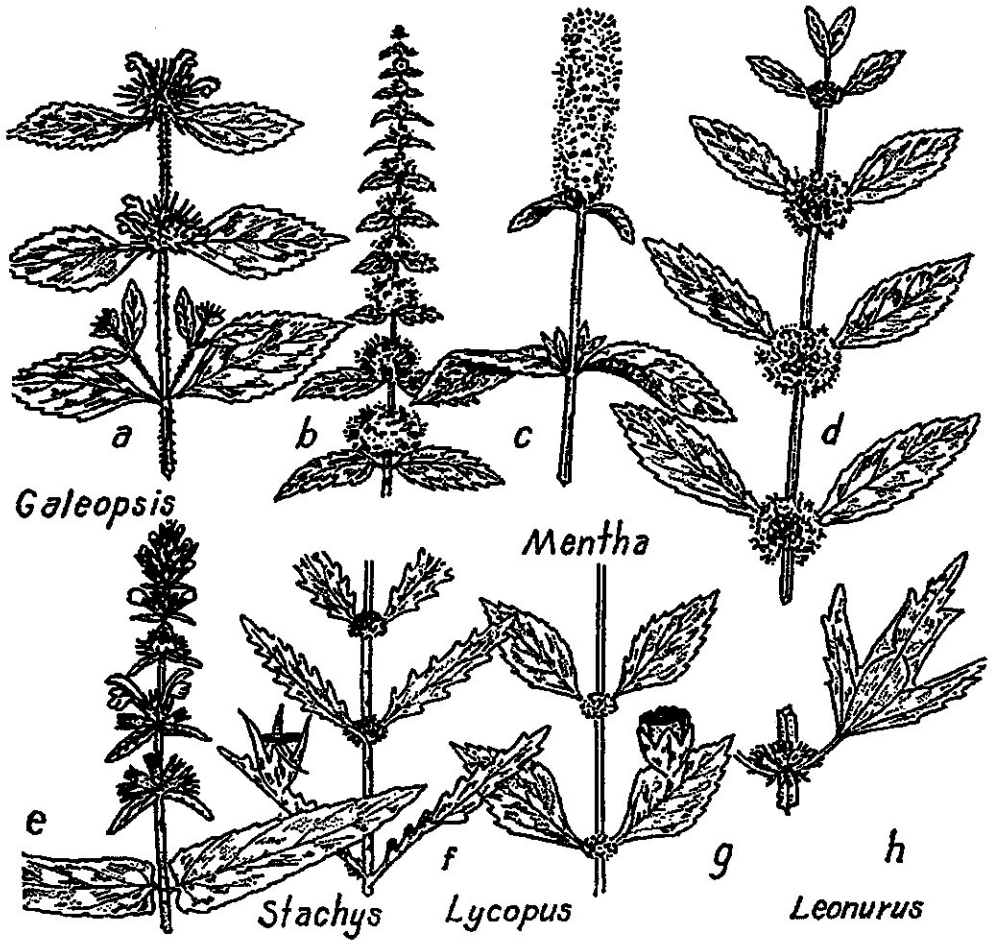


Fig. 117.—*Galeopsis*: (a) *G. Tetrahit* x $\frac{1}{2}$. — *Mentha*: (b) *M. Cardiaca*, top of plant x $\frac{1}{2}$, (c) *M. piperita* x $\frac{1}{2}$, (d) *M. arvensis* x $\frac{1}{2}$. — *Stachys*: (e) *S. palustris*, top of plant x $\frac{1}{2}$. — *Lycopus*: (f) *L. americana* x $\frac{1}{2}$, flowers enlarged, (g) *L. uniflorus* x $\frac{1}{2}$, flowers enlarged. — *Leonurus*: (h) *L. Cardiaca*, node x $\frac{1}{2}$.

2. *G. Ladanum* L.

Occasionally adventive about ports in eastern Canada; listed for N.S., although we have no collections and the plant must be rare.

Nfld. to Que. south to N.J. and Ind.

9. LAMIUM L.

Small, decumbent to erect annuals with small reniform or ovate leaves.

- a. Upper leaves sessile and clasping.
 a. Upper leaves petioled, crowded.

1. *L. amplexicaule*
 2. *L. purpureum*

1. *L. amplexicaule* L. HENBIT

Rare; collected by H. Groh in waste ground at Bridgewater. A small cleistogamous form exists around the Agricultural College at Truro and continues to flower until winter. This is forma *clandestinum* (Reichenb.) G. Beck. Here occasional plants also have normal expanded flowers.

Native of Eurasia and N.Afr.; across N.Amer.

2. *Lamium purpureum* L. RED DEAD-NETTLE

Occasionally reported as found on waste ground or on ballast heaps; North Sydney, Pictou, and Quoddy, Halifax Co.; weed in a garden at Truro. A very similar species, *L. hybridum* Vill. is reported by Erskine on P.E.I. and some of the above records may refer to this species. *L. hybridum* has the leaf-blades more deeply and doubly toothed instead of only shallowly toothed; and its corolla-tube has no ring of hairs inside. July-Aug.

Introduced from Eurasia; scattered from Nfld. to Mich. and N.C.

10. STACHYS L. HEDGE-NETTLE

About 200 species of annual or perennial herbs with the flowers in loose or interrupted spikes; calyx nearly regular; corolla strongly 2-lipped; stamens 4.

- a. Annual with fibrous roots; stems diffuse or decumbent; leaves ovate, rounded at the tip. 1. *S. arvensis*
 a. Perennial with extensive, thick rootstocks; stems erect, 3-5 dm high, little branched; leaves lanceolate and acute at the tip. 2. *S. palustris*

1. *S. arvensis* L. ANNUAL HEDGE-NETTLE

Occasionally introduced and scattered; Halifax Co.: gardens and roadsides, Halifax and by Bedford Basin; Lunenburg Co.: swamp at Chester; abundant weed in cultivated field at Windsor; and edge of lawn, Main Street, Kentville (Smith and Erskine, 1954).

Local; N.S. to N.Y. and Penn.; B.C.

2. *S. palustris* L. Fig. 117,e. Map 451. WOUNDWORT, HEDGE-NETTLE

Ditches, thickets, around sea-ports and shores in many parts of the Province, now often becoming a very aggressive weed, difficult to control in some fields and orchards; luxuriant in places and apparently becoming much more common recently. The plant is variable, especially as to the amount and type of pubescence, and a number of varieties and forms have been described. Ours closely approach the species; and it may be that all of our plants are introduced from Eu.

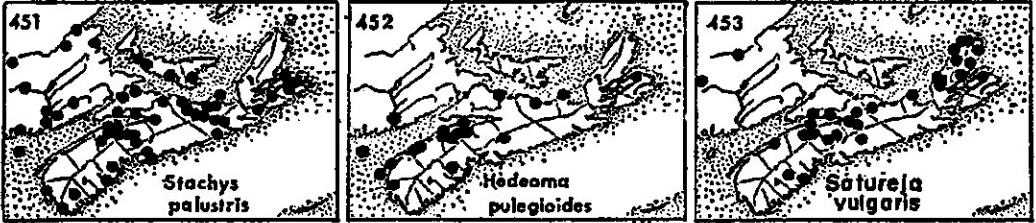
Nfld. to Ont. south to N.Y., all or mostly introduced from Eu.

11. HEDEOMA Pers.

1. *H. pulegioides* (L.) Pers. Fig. 116,h. Map 452. PENNY-ROYAL

This small, strongly-aromatic plant is characteristic of stony soil and upland pastures throughout the northern part of the Province, occasionally near the sea-shores; rather rare and most common on the slopes of the Annapolis Valley. Aug.

N.S. to Minn. south to Fla. and Calif.



12. SATUREJA L.

1. *S. vulgaris* (L.) Fritsch, var. *neogaea* Fern. Fig. 116,g. Map 453. BASIL, CALAMINT

Grasslands, pastures and borders of woods, usually on hillsides, and characteristic of rocky, seepy sides of ravines throughout the northern regions from Annapolis and Cumberland Co. to northern C.B.; rare in Halifax and Queens, unknown in the southwestern counties. The variety is the N. Amer. plant.

Nfld. to Man. south to N.C.; B.C. to N.Mex.

13. HYSSOPUS L.

1. *H. officinalis* L. HYSSOP

Growing along a brook-side at Wallbrook, Kings Co., perhaps escaped from a near-by garden, collected by D. S. Erskine.

Introduced from Eu.; scattered from N.S. to Sask., more abundant southward.

14. ORIGANUM L.

1. *O. vulgare* L. WILD MAJORAM

Hants Co.: covering a considerable area along the Wentworth Road, a mile west of Sweets Corner, collected by J. S. Erskine. At this station it set no fruit and is spreading vegetatively only (Erskine, D. S., 1951).

Introduced from Eu.; N.S. and Ont. south to N.C.

15. THYMUS L.

1. *T. Serpyllum* L. Fig. 116, f. THYME

This plant, reported from Cumberland Co. by Macoun over 60 years ago, is now a common weed throughout the northern part of the county and scattered to Folleigh L. It grows on well-drained or lighter soils, often in large mats along roadsides, pastures and waste places. July-Aug. The smaller cultivated garden Thyme is *T. vulgaris* L.

Northern N.S., common in central P.E.I. to Ont. and N.C.

16. LYCOPUS L.

Perennial herbs with small, dense axillary clusters of small white flowers, usually growing in damp situations. See Henderson (1962).

- a. Calyx-teeth short and triangular, not tipped with spines, shorter than the mature nutlets. 1. *L. uniflorus*
- a. Calyx-teeth narrowly triangular, with a strong mid-nerve that forms an awn on the tip of the lobe, surpassing the mature nutlets.
- b. Leaf-blade ovate to oblong in general outline, the upper surface more or less stiff-hairy; calyx-lobes about 2 mm long; introduced. 2. *L. europaeus*
- b. Leaf-blade lanceolate or narrowly oblong in general outline, commonly deeply cut or pinnatifid, smooth or nearly so above; calyx-lobes about 1.5 mm long; native. 3. *L. americanus*

1. *L. uniflorus* Michx. Fig. 117, g. BUGLE WEED

Common throughout in swamps, wet ditches, low ground and along streams, showing great variation in habitat and habit. Plants growing in shady places have the leaves larger and thinner; plants in impoverished soil and sandy areas are small, have thick leaves, and are often sterile. Plants growing in wet areas or on damp sand sometimes have long whip-like branches from the lower nodes. This is forma *flagellaris* Fern. In extreme cases the main stem and branches may recurve and root at the tip. This was first described from the sandy and cobbly margin of Pottle's L., North Sydney (Fernald, 1921). July-Sept. (*L. virginicus* L., var. *pauciflorus* Benth.).

Plants growing near the sea-shore in exposed places may have the leaves somewhat fleshy and the lower ovate and sparingly or not-at-all toothed. This was described as var. *ovatus* Fern. and St. John, based on plants from Sable I. but the variety does not seem to be a valid one.

Nfld. to B.C. south to N.C. and Okla.

2. *L. europaeus* L.

Halifax Co.: edge of ballast dump, Steele's Pond; Point Pleasant Park, Halifax. An adventive species very similar to *L. americanus*, newly recorded for the Maritimes (Erskine, D. S., 1951).

Introduced from Eu.; N.S. to southern Que. and Ont.; Mass. to Va.

3. *L. americanus* Muhl. Fig. 117,f. WATER-HOREHOUND

Common throughout; wet meadows, swamps, and sometimes brackish places, along brooks and in the margin of the sphagnum mat of ponds. July-Sept.

Nfld. to B.C. south to Fla. and Tex.

17. MENTHA L.

Perennial aromatic herbs with small pale blue or lavender flowers in apparent whorls in the axils of the leaves or these clustered to make a terminal spike or head. The flowers are regular or nearly so with 4 corolla-lobes and 4 exerted stamens. Our only native species is *M. arvensis*. Most of our introduced mints are hybrids of European species. See Stewart (1944).

- a. Flowers in heads or long, often interrupted, terminal spikes with the subtending leaves, if any, distinctly smaller than the foliage leaves.
- b. Bracts of the inflorescence narrow and barely exceeding the flowers in length.
- c. Spikes several to many times longer than wide; leaves lanceolate, with short petioles.
 - d. Spikes very long and narrow, the whorls of flowers globular; flowers small, the calyx to 2 mm long; leaf-petioles 0-3 mm long. 1. *M. spicata*
 - d. Spikes long-oblong, compact and rounded at the top; flowers larger with the calyx 3-4 mm long; leaves with petioles 4-15 mm long. 2. *M. piperita*
 - c. Spikes oval, with only 1-3 crowded whorls; leaves widely ovate with long petioles. 3. *M. citrata*
 - b. Bracts of the inflorescence much longer than the flowers, resembling but narrower than the foliage leaves; flowers in numerous interrupted whorls which are gradually smaller to the tip of the plant. 4. *M. Cardiaca*
- a. Flowers in whorls in the axils of ordinary foliage leaves, not crowded into spikes.
 - c. Leaves in the region of the inflorescence ovate to elliptic, with more or less rounded bases.
 - f. Angles of stems more pubescent than the sides; petioles, lower surfaces of leaves and stem slightly to very pubescent. 5. *M. arvensis*
 - f. Angles and sides of stem more or less equally pubescent with spreading hairs 1-3.5 mm long; petioles and lower sides of the leaves more or less densely pubescent. *M. arvensis* var. *lanata*
 - e. Leaves in the region of the inflorescence lanceolate with more or less cuneate bases.
 - g. Stem in the region of the first-flowering whorls pubescent on the sides and the angles. *M. arvensis* var. *villosa*
 - g. Stem in the region of the first-flowering whorls glabrous on the sides, and minutely pubescent on the angles.

M. arvensis var. *villosa* forma *glabrata*

1. *M. spicata* L. SPEARMINT

This large, widely-branched, handsome mint is occasionally introduced and grown in wet areas or on rich soil. It may possibly escape but our collections seem to be from locations near where it was formerly planted. July-Sept.

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

2. *X M. piperita* L. Fig. 117, c. PEPPERMINT

Scattered and rather local; wet areas, along streams or in meadows near open or cultivated areas. This plant is considered to be a hybrid between *M. spicata* and *M. aquatica*; and it more closely resembles *M. spicata* by its narrow leaves and longer spikes.

Introduced from Eu.; N.S. to Ont. south; B.C.

3. *X M. citrata* Ehrh.

This species is considered to have the same parentage as the preceding, but it resembles *M. aquatica* more closely by its wide leaves and ovoid heads. *M. aquatica* L., which differs in having the leaves, calyces and pedicels pubescent instead of glabrous, was reported from Pictou by Lindsay and from Truro by Macoun. It has not been observed in recent years and the occasional records may belong to this hybrid.

Introduced from Eu.; N.S. to Ont. south to Va.; B.C.

4. *X M. cardiaca* Baker. Fig. 117, b.

This tall, upright strongly aromatic plant is considered to have originated from a cross between *M. spicata* and *M. arvensis*. The upper leaves subtending the whorls are several times longer than the flowers and gradually become smaller to the top of the plant. One clone, widespread in C.B., has very vigorous running rootstocks; occasionally prostrate plants in very wet areas may have thick, almost oval leaves. Hundreds of mint hybrids occur and it is impossible to define the groups exactly. *M. gentilis* L., supposedly of the same origin, closely resembles a smooth *M. arvensis*. This is not definitely known from N.S.

Introduced; Nfld. to Mich. south to Va. and Ind.

5. *M. arvensis* L. Fig. 117, d. FIELD-MINT

Throughout; most frequent in the Annapolis Valley where it is common and occasionally a bad weed in orchards, cultivated fields and low ground. Partly and widely introduced and apparently partly native. Forma *lanata* (Piper) Stewart is a more hairy form scattered in eastern N. Amer.

Var. *villosa* (Benth.) Stewart is a common native plant; found along brooks, in ditches, swamps, along lake-margins or outlets throughout. Minor variations occur in the pubescence of the stems and leaves; and forma *glabrata* (Benth.) Stewart is wide-ranging in eastern N. Amer. July-Aug.

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

103. SOLANACEAE NIGHTSHADE FAMILY

This widespread family of possibly 3,000 species is represented with us only by cultivated plants and a few introduced weeds. The tomato, potato and pepper are typical representatives; and *Petunia* and *Salpiglossis* are flowering ornamentals. Some forms are poisonous. Leaves alternate, sometimes divided or deeply lobed; flowers regular or nearly so with 5 sepals, 5 partly-united petals, 5 equal stamens, and 1 pistil with the ovary having 2 locules and many seeds. *Petunia parviflora* Juss. has been reported as a waif at Pictou.

- a. Plant woody, climbing, with long drooping branches, without thorns; fruit a dryish orange-red ellipsoid berry; leaves not lobed; flowers pinkish-purple, about 1.5 cm wide. 4. *Lycium*
- a. Plants herbaceous (or partly woody and climbing, with lobed leaves in *S. Dulcamara*); fruit a fleshy berry or large capsule.
 - b. Corolla wheel-shaped (rotate) as in a potato flower; anthers touching, opening by terminal pores; fruit a berry, not enclosed by the calyx (Fig. 118, b,d). 1. *Solanum*
 - b. Corolla funnel-form; anthers opening by longitudinal slits.
 - c. Corolla yellow, 1.5-2.5 cm wide; flowers pendulous; calyx much inflated, turning yellowish and enclosing the fruit; fruit a 2-celled berry (Fig. 118, e). 2. *Physalis*
 - c. Corolla whitish, strongly veined with purple, or purple, 3-5 cm wide; flowers not pendulous.
 - d. Plant clammy-pubescent; corolla and stamens slightly irregularly placed; corolla greenish-yellow with a purple throat; fruit a capsule, opening by a lid. 5. *Hyoscyamus*
 - d. Plant not clammy; corolla and stamens regular.
 - e. Calyx deeply 5-parted, becoming inflated and 2-3 cm long; corolla purplish-blue; fruit a dryish pulpy berry. 3. *Nicandra*
 - e. Calyx merely 5-toothed; corolla white to purplish; fruit a prickly capsule, opening by teeth at the apex (Fig. 118, c). 6. *Datura*

1. SOLANUM L.

The potato, *S. tuberosum* L., and the Jerusalem cherry *S. Pseudo-capsicum* L., may occasionally be found on rubbish heaps. The tomato is the closely related *Lycopersicum esculentum* Mill.

- a. Plant trailing or climbing, 1-3 m long; flowers bluish-purple; berries red. 1. *S. Dulcamara*
- a. Plant erect, 1-6 dm high; flowers white; berries black. 2. *S. nigrum*

1. *S. Dulcamara* L. Fig. 118,b. BITTERSWEET

Scattered throughout; thickets, along roadsides, often in low ground along streams, on rubbish heaps, and in many cases in rough ground around buildings or along fences. This plant seems to be much more common than formerly and it is becoming a bad weed in a number of

orchards. The leaves are ordinarily minutely pubescent; distinctly hairy leaves have been segregated as var. *villosissimum* Desv. and are scattered in N.S. (Fernald, 1922). June-Sept.

Naturalized from Eu.; N.S. to Alta. south to Ga.; West Coast.

2. *S. nigrum* L. Fig. 118,d. BLACK NIGHTSHADE

Scattered around the coast on sandy sea-beaches, thoroughly established in gardens on Sable I. The berries of the wild forms are considered to be poisonous but some strains are edible and are cultivated in gardens under the name of Garden Huckleberry. July-Aug.

Introduced and cosmopolitan.



Fig. 118.—Symphytum: (a) *S. asperum*, branch $\times \frac{1}{2}$. — Solanum: (b) *S. Dulcamara* in fruit $\times \frac{1}{2}$, flowers $\times 2$, (d) *S. nigrum* $\times \frac{1}{2}$. — Datura: (c) *D. Stramonium*, flowers, leaf and fruit $\times \frac{1}{2}$. — Physalis: (e) *P. heterophylla*, top of branch $\times \frac{1}{2}$. — Chaenorrhinum: (f) *C. minus* $\times \frac{1}{2}$.

2. **PHYSALIS L.**1. ***P. heterophylla* Nees. Fig. 118,e. GROUND-CHERRY**

Occasionally seen around the edge of orchards in the Annapolis Valley, where it is a persistent weed. July-Aug.

Probably introduced; N.S. to Man. south to S.C. and Texas.

3. **NICANDRA Adans.**1. ***N. physalodes* (L.) Pers. APPLE-OF-PERU**

Found occasionally in waste ground near dwellings; Windsor; neglected rich land, Cambridge, Kings Co., rare but appearing annually and as a weed (Schofield, 1949); weed in moist places in a garden at Wolfville. It is rare and probably does not persist, occasionally cultivated as an ornamental.

Native of Peru; N.S. to Ind. and Mo. south to Fla.

4. **LYCIUM L.**1. ***L. halimifolium* Mill. MATRIMONY-VINE**

Occasionally found about old gardens or dwellings; Digby, 1933; Port Mouton, 1920; Sable I.; and along dyke at Hortonville in Kings Co.; now rarely cultivated. Late June-Sept.

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

5. **HYOSCYAMUS L.**1. ***H. niger* L. BLACK HENBANE**

Formerly occasional about old dwellings and gardens but no recent records exist; poisonous. Reported as a garden escape by Lindsay, and from the ramparts of the old fort at Annapolis by Macoun; collected at Annapolis in 1902.

Naturalized from Eu.; N.S. to Alta. south to New Eng. and N.Y.

6. **DATURA L.**1. ***D. Stramonium* L. Fig. 118,c. JIMSONWEED, THORN-APPLE**

Formerly more common but now only rarely seen about buildings, in towns, waste places or on roadsides; and occasionally sent in for identification. The plant, and especially the fruit, is poisonous and should be exterminated wherever it is found growing as a weed. July-Sept.

Probably introduced from Asia; widely distributed.

104. SCROPHULARIACEAE FIGWORT FAMILY

A large family of over 200 genera and about 2,600 species, ours herbaceous with simple, sometimes lobed, leaves without stipules. The corolla has 5 united petals and varies from nearly regular to strongly 2-lipped; stamens occasionally 5, or 4 with the upper one sterile, or sometimes reduced to 2. The superior ovary has 2 carpels and numerous ovules, forming a capsule. The snapdragon, *Antirrhinum majus* L., is a common ornamental.

- a. Leaves all or chiefly basal; plant filiform, matted or creeping, to about 6 cm high; flowers solitary, erect, whitish (Fig. 119, d). 10. *Limosella*
- a. Leaves scattered along the stem.
 - b. Middle stem-leaves mainly alternate.
 - c. Stamens 5; flowers in tall, elongated spike-like racemes; corolla saucer-shaped, yellow to white. 1. *Verbascum*
 - c. Stamens 4.
 - d. Corolla spurred at the base, the spur protruding under the calyx; leaves not pinnately lobed.
 - e. Leaves lanceolate to linear; plants erect, never trailing.
 - Flowers in terminal racemes, blue or yellowish; stem smooth (Fig. 119, a). 3. *Linaria*
 - Flowers solitary in the axils of the leaves, pink; stem glandular-pubescent (Fig. 118, f). 4. *Chaenorhinum*
 - c. Flowers in the axils of the leaves, blue with yellow palate, 7-10 mm long; leaves nearly orbicular; plant trailing. 2. *Cymbalaria*
 - d. Corolla not spurred at the base, pinkish-purple, about 2 cm long and very strongly arched; leaves deeply and finely pinnately lobed; plant 3-5 dm high; n. C.B. 18. *Pedicularis*
- b. Leaves predominantly whorled or opposite although the upper bract-leaves may sometimes be alternate.
 - f. Corolla a clear yellow.
 - g. Flowers tubular, nearly regular; plants procumbent or ascending, usually much branched; native in dry habitats.
 - h. Stamens 4; leaves petioled, ovate-oblong, villous and viscid (Fig. 119, f). 8. *Mimulus*
 - h. Stamens 2; leaves sessile, nearly glabrous, with minute dark glands, narrow, rounded at the base (Fig. 119, e) 9. *Gratiola*
 - g. Flower with the upper lip of the corolla strongly arched; stems wiry, erect and usually unbranched; calyx much inflated in fruit; introduced weeds of open fields (Fig. 121, c). 17. *Rhinanthus*
 - f. Corolla purplish to blue to white, often with darker lines.
 - i. Stamens with anthers 2; corolla nearly regular.
 - j. Calyx-lobes 4; stamens much exserted, sterile ones none; capsule flattened and often notched at the summit (Fig. 120). 12. *Veronica*
 - j. Calyx-lobes 5; stamens not exserted beyond the upper lobes of the corolla; sterile stamens 2; capsule ellipsoid, not notched; leaves narrowed to the base; plant 1-3 dm high. 11. *Lindernia*
 - i. Stamens 4.
 - k. Calyx-lobes 4 (very rarely 5); corolla strongly 2-lipped, the upper lip arching and hiding the stamens; plants low, rarely over 3 dm high.

1. Leaves nearly round, rarely to 20 mm long, often with deeply-cut teeth, palmately veined; flowers prominently marked with purple or violet veins (Fig. 121, e, f). 15. *Euphrasia*
- l. Leaves lanceolate to linear, shallowly toothed, pinnately veined; flower not marked with lines.
- m. Flowers yellowish to greenish-purple; leaves entire or with several coarse projections near the base (Fig. 121, b). 14. *Melampyrum*
- m. Flowers an even rose color; leaves with shallow teeth; upper lip of the corolla entire (Fig. 121, d). 16. *Odontites*
- k. Calyx-lobes 5.
- n. Stems 0.5-1.5 dm high; leaves linear, not toothed; corolla rose-purple, obscurely 2-lipped, 1-1.5 cm long (Fig. 121, a). 13. *Gerardia*
- n. Stems 4-15 dm high; leaves wide and toothed; corolla strongly 2-lipped. 6. *Chelone*
- o. Flowers pure white, few in a short, dense terminal spike, 2-3 cm long (Fig. 119, b). 8. *Mimulus*
- o. Flowers axillary or scattered in a branched terminal inflorescence.
- p. Flowers axillary, solitary in the axils of slightly-reduced leaves, bluish (Fig. 119, c). 7. *Pentstemon*
- p. Flowers numerous in the axils of much-reduced leaves or scales.
- q. Flowers white, showy, about 2.5 cm long; leaves deeply, sharply and irregularly toothed, sessile. 5. *Scrophularia*
- q. Flowers reddish to greenish brown, 1 cm long and flattened; leaves shallowly dentate, long-petiolate (Fig. 121, g).

1. VERBASCUM L. MULLEIN

- a. Plant densely woolly; flowers in a dense cylindrical spike to 2 m high. 1. *V. Thapsus*
- a. Plant pubescent but not woolly; flowers in a more open inflorescence with pedicels 3-5 mm long. 2. *V. virgatum*

1. *V. Thapsus* L. COMMON MULLEIN

Throughout, usually on light soil, roadsides, hillsides, gravel plains or sandy pastures; a common weed in rough land. July-Aug.
Introduced from Eu.; throughout N.Amer.

2. *V. virgatum* Stokes. MOTH-MULLEIN

An early record of this plant is by Macoun: roadside near Mira Bay, C.B. Co. In a cemetery, Sydney, collected by G. C. Warren, 1946. From the same county as Macoun's sole record, this collection indicates the presence, although probably not persistence, of this species (Erskine, D. S., 1951).

Introduced from Eu.; N.S. and southern Ont. south to S.C. and Tex.

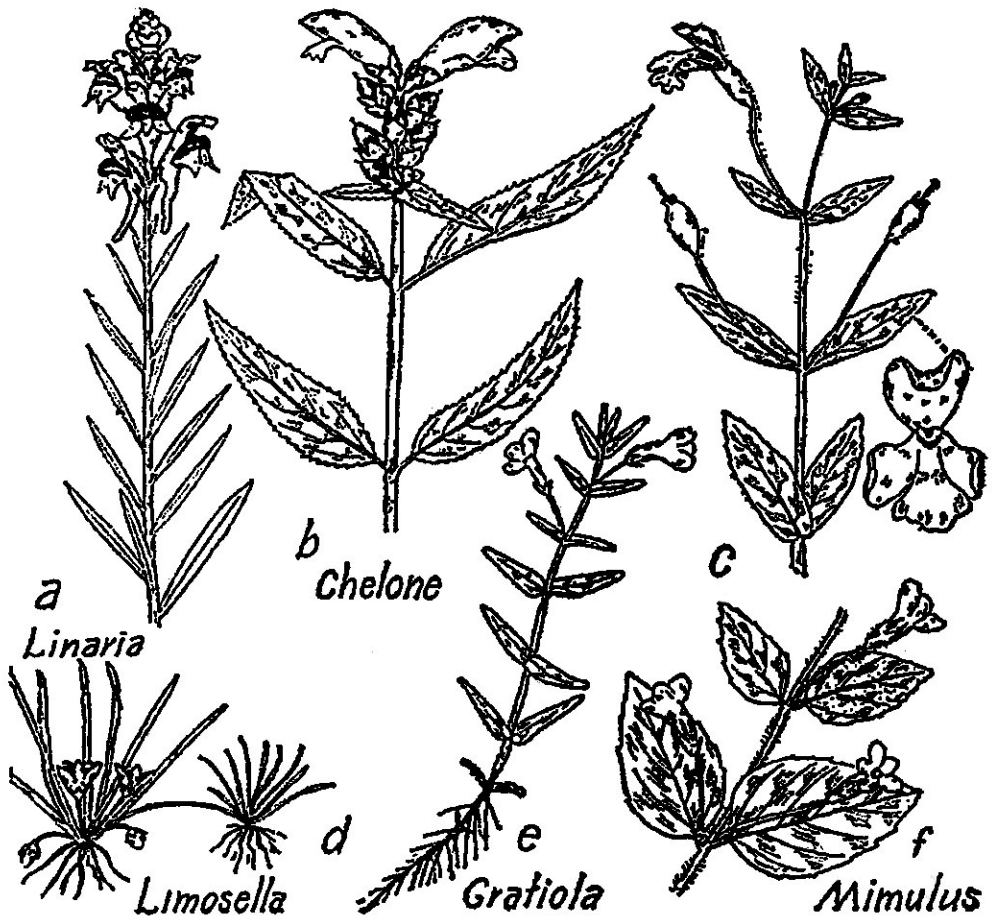


Fig. 119.—*Linaria*: (a) *L. vulgaris* $\times \frac{1}{2}$. — *Chelone*: (b) *C. glabra*, top of plant $\times \frac{1}{2}$. — *Mimulus*: (c) *M. ringens*, top of plant $\times \frac{1}{2}$, flower enlarged, (f) *M. moschatus* $\times \frac{1}{2}$. — *Limosella*: (d) *L. subulata* $\times 1$. — *Gratiola*: (e) *G. aurea* $\times \frac{1}{2}$.

2. CYMBALARIA Hill

1. *C. muralis* Gaertn., Mey. & Scherb. KENILWORTH-IVY

This small, trailing plant is often cultivated in greenhouses or in window-boxes, infrequently escaping from cultivation. Yarmouth Co.: shady roadside, Vancouver St., Yarmouth. This is the first report of the establishment of this introduction in N.S. (Erskine, D. S., 1951).

Introduced from Eu.; widespread.

3. LINARIA Mill. TOADFLAX

Corolla very irregular, with the upper lip erect; the conspicuous feature is the prominent spur below the base of the flower. All of our species are introduced and somewhat weedy.

- a. Plants slender; flowers pale blue or whitish, up to 1 cm long; leaves linear or nearly so.
 - b. Lower lip with a prominent palate, closing the throat; plant perennial from creeping rootstocks. 1. *L. repens*
 - b. Lower lip with only rounded ridges, the corolla with the throat open; plant very slender from fibrous roots. 3. *L. canadensis*
- a. Plants stout; flowers yellow, 2-4 cm long.
 - c. Leaves linear to linear-lanceolate, narrowed to a petiole-like base. 2. *L. vulgaris*
 - c. Leaves ovate to ovate-lanceolate, rounded and clasping at the base. 4. *L. dalmatica*

1. *L. repens* (L.) Mill. STRIPED TOADFLAX

Kings Co.; orchard back of the laundry, Acadia University.
Introduced from Eu.; local from Nfld. to Mass. and Penn.

2. *L. vulgaris* Mill. Fig. 119, a. BUTTER-AND-EGGS, TOAD-FLAX

Very common around towns and along roadsides throughout; spreading out into the country, especially in light soils, and in some cases a rather common and persistent weed. Forma *leucantha* Fern. has the corolla milky-white except for the yellow palate and is common in the north-central part of the Province where patches of a lighter color are often seen. July-Aug.

Introduced from Eu.; Nfld. to B.C. south to Fla. and Calif.

3. *L. canadensis* (L.) Dumont

Found sparingly introduced as a railroad weed from Halifax to Yarmouth; also about some of the sea-ports or on sandy shores as a rare introduction in sw. N.S. Collections by W. B. Schofield from Brier I., Digby Co., have the flowers reduced to a mere cap and fertilized without expanding. This is forma *cleistogama* Fern.

Introduced in the northeast; native from Mass. to Iowa, south to Fla. and Tex.

4. *L. dalmatica* (L.) Mill., see Alex (1962).

Reported by Fernald (1948) from fields and roadsides, South Ingonish, Victoria Co.; found also on Middle Head. Collected by J. S. Erskine from a roadside ditch at Hubbards, Halifax Co. This species as yet is very sparingly introduced.

Introduced from se. Eu.; N.S. to Penn. west to B.C.

4. CHAENORRHINUM Reichenb.

1. *C. minus* (L.) Lange. Fig. 118, f. DWARF SNAPDRAGON

This is a characteristic railroad weed from Halifax northward; found scattered in other towns and along railroad lines throughout the

Province but nowhere abundant, especially on cinders and often dirty because of the sticky glandular pubescence. July-Aug.

Native of the Mediterranean; N.S. to B.C. south to N.J. and Ill.

5. SCROPHULARIA L. FIGWORT

1. *S. lanceolata* Pursh. Fig. 121, g. FIGWORT

Rare; in open woods or dryish thickets, only occasionally in open ground. It is known from but three widely separated places: growing around the bases of apple trees in an orchard, Harmony, Kings Co.; Boylston, Guysborough Co.; and near Baddeck, Victoria Co. June-July.

N.S. to B.C. south to S.C. and Calif.

6. CHELONE L.

1. *C. glabra* L. Fig. 119, b. TURTLEHEAD, BALMONEY

Scattered throughout, rather common in the northern part of the Province; swamps, wet roadsides, along rocky streams, meadows and estuarine rivers above the influence of the salt water. *Forma tomentosa* (Raf.) Pennell is a form with the leaves densely hairy beneath. Found at Sandy Cove, Digby Co.; and scattered throughout the range of the species.

Var. *dilatata* Fern. & Wieg. is a more northern extreme with the leaves little if at all smaller towards the top of the stem and rounded to the petioles. This is common from Kings Co. to northern C.B., while the southwestern plants have the leaves much reduced upwards and tapering to the petiole. July 15-Aug.

Nfld. to Ont. south to Ga. and Ala.

7. PENTSTEMON Mitchell

1. *P. Digitalis* Nutt. BEARD-TONGUE

Kings Co.; north side of run-out field, top of Cape Blomidon. Originally in meadows and prairies in western America, now spread to fields and clearings; introduced.

Me. to Ont. and S.D. south to Ala. and La.

8. MIMULUS L. MONKEY-FLOWER

a. Plant erect, smooth; flowers violet-purple; leaves sessile, clasping, lanceolate.

1. *M. ringens*

a. Plant prostrate, soft-hairy and clammy; flowers yellow; leaves short-petioled, ovate.

2. *M. moschatus*

1. *M. ringens* L. Fig. 119, c. Map 455. MONKEY-FLOWER

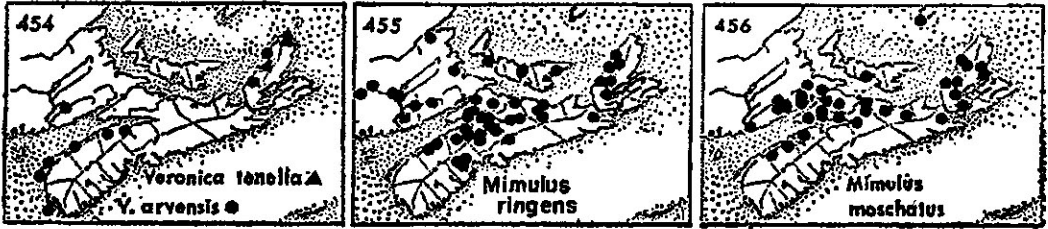
Moist ground, around lakes or along stream-bottoms, occasionally in marshes or wet meadows; scattered from Annapolis and Lunenburg Co. to northern C.B.; absent in sw. N.S. and along the Atlantic Coast from Halifax to eastern C.B. July-Aug.

N.S. to Sask. south to Ala. and Colo.

2. *M. moschatus* Dougl. Fig. 119, f. Map 456. MUSKFLOWER

Scattered from Annapolis and Cumberland Co. to northern C.B.; often forming dense mats on springy hillsides or over wet areas, perhaps introduced but often with the appearance of a native plant. Plants are without a musky odor. July-Aug.

Nfld. to Ont. south to N.C.; Pacific N.Amer.



9. GRATIOLA L.

Small annual or perennial herbs with opposite leaves and yellowish flowers which are solitary on slender pedicels from the axils of the leaves.

a. Leaves lanceolate, widest above the middle and with a narrower base, remotely toothed; corolla with a yellow tube and whitish lobes; capsules 3-5 mm long.

1. *G. neglecta*

a. Leaves lanceolate to ovate, with a wide base, usually not toothed; corolla yellow; capsule 2-3 mm long.

2. *G. aurea*

1. *G. neglecta* Torr.

Collected in a meadow swale on the south bank of the Stewiacke River at Middle Stewiacke in fruit, Aug. 21, 1954.

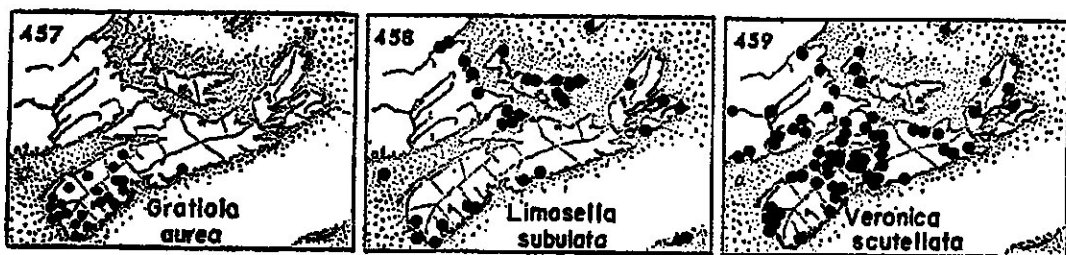
Usually found in wet or muddy places; N.S.; central Maine through southern Que. to B.C. southward.

2. *G. aurea* Muhl. Fig. 119, e. Map 457. GOLDEN-PERT

Common in Yarmouth and Shelburne Co.; scattered east to the Gaspereau L. in Kings Co. and to Bridgewater and Halifax Co.; often in mats on the slaty lake shores, low areas, and even onto dryish savannahs in the moister areas. Forma *leucantha* Bartlett, with the corolla pure white except for a yellowish tinge on the inside of the throat,

forms pure colonies on the pebbly strand of Ponhook L., Queens Co. (Weatherby, 1942); also found from Mass. to Del. July-Aug.

Se. Nfld.; Que. and N.S. and south along the coastal plain to Fla.



10. LIMOSELLA L.

1. *L. subulata* Ives. Fig. 119, d. Map 458. MUDWORT

Scattered near the coast of Yarmouth and Shelburne Co.; abundant on the brackish beach and sand flats near Wallace L. on Sable I., scattered elsewhere. Recent collections have now been made on both the south coast of the mainland and on C.B.; low area by ponds, gravel shores on lake mire, muddy edge of pond behind barrier beach; mud on river margin at Oxford, Cumberland Co.; marsh by estuary, Port Medway, Queens Co.; tidal mud of Eastern Passage, Halifax Co. (Smith, 1959).

The species shows two extremes. Those growing on tidal shores are coarse; those on the sandy margins of pools further back in the sand dunes usually have blacker capsules on more recurved pedicels, sepals less acute and leaves more slender. This is *forma maritima* (Raf.) Pennell.

Nfld. and the lower St. Lawrence R. south along the coast to Va. on brackish sand and mud; Alta. and B.C.

11. LINDERNIA All.

1. *L. dubia* (L.) Pennell FALSE PIMPERNEL

First collected in the Province at Sheffield Mills, Kings Co. by Fernald; abundant on bottom of drained millpond, Maitland Pond, Lunenburg Co. (Smith and Erskine, 1954); damp gravel pit near Shinimicas Bridge (these tiny plants, up to 3 cm, were growing among *Ludwigia palustris* and were flowering cleistogamously); damp, muddy bank of River Philip, near Oxford, Cumberland Co. (Schofield, 1955).

Wet areas and edges of streams, N.S. to Minn. south to Ala. and La.; B.C. to Calif.

12. VERONICA L. SPEEDWELL

Annual or perennial herbs with opposite leaves and white to blue, small flowers. The calyx is deeply 4-parted. There are about 250 species, mainly in Eu. Two subgenera are quite distinct; in the first the stem ends in an inflorescence while in the second the flowers are borne in racemes from the axils of the leaves.

- a. Flowers borne in the axils of the leaves or in a terminal spike so that the main stem terminates in an inflorescence; in all cases the upper bract-leaves alternate.
- b. Plants perennial from creeping rhizomes; flowers crowded in definite racemes with the bracts much smaller than the leaves.
- c. Racemes dense, spike-like; plants erect, 5-15 dm high. 1. *V. longifolia*
- c. Racemes loose; plant creeping and ascending at the tips, 5-15 cm high.
- d. Stem and pedicels with incurved, non-glandular hairs; corolla 3-5 mm wide, pale blue with blue lines. 2. *V. serpyllifolia*
- d. Stem and pedicels with spreading glandular hairs; corolla 5-8 mm wide, pale to deep blue with darker blue veins. 3. *V. tenella*
- b. Plants annual, fibrous rooted; flowers in the axils of most of the leaves.
- e. Pedicels shorter than the sepals, less than 2 mm long, so that the flowers and fruits are almost sessile; seeds less than 1 mm long, smooth.
- f. Flower white; plant glabrous and rather fleshy; leaves pinnately veined; style very short. 8. *V. peregrina*
- f. Flowers bluish; plant very hairy, not fleshy; leaves palmately veined; style evident. 9. *V. arvensis*
- e. Pedicels longer than the ovate sepals, 4 mm long or longer; seeds 1.3-3 mm long, roughened; plants creeping with the tips ascending.
- g. Capsule 3.5-5 mm wide, not reticulate, the lobes rounded in profile; slightly and narrowly notched; corolla scarcely exceeding the sepals. 10. *V. agrestis*
- g. Capsule 5-9 mm wide, strongly reticulate-veined, the lobes acutish in profile, widely notched at the top; corolla much exceeding the sepals. 11. *V. persica*
- a. Main stem never terminating in an inflorescence; leaves opposite throughout; flowers in axillary racemes.
- h. Plants pubescent, of dryish soils.
- i. Leaves sessile; plants creeping; corolla 3-4 mm long; pedicels much shorter than the bracts.
- j. Upper leaves 25-40 mm long, 15-28 mm wide, rounded at the tip. 4. *V. officinalis*
- j. Upper leaves 15-30 mm long, 5-15 mm wide, acute at the tip. *V. officinalis* var. *Tournefortii*
- i. Leaves narrowed to the petiole; plants erect, 1-3 dm high; corolla 5-6 mm long; pedicels much exceeding the bracts. 5. *V. Chamaedrys*
- h. Plants smooth or nearly so; swamp or aquatic plants.
- k. Leaves linear to lanceolate, with a few fine points for teeth, tapering to a long tip. 6. *V. scutellata*
- k. Leaves oblong or ovate, coarsely toothed, with a rounded tip. 7. *V. americana*



Fig. 120.—*Veronica* spp. $\times \frac{1}{2}$.

1. *V. longifolia* L. Fig. 120. GARDEN-SPEEDWELL

Commonly planted in gardens; an abundant roadside escape in roadside thickets through Yarmouth, Digby and Annapolis Co.; scattered to Pictou and Amherst. July-Aug.

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

2. *V. serpyllifolia* L. Fig. 120. THYME-LEAVED SPEEDWELL

Common throughout; in moist soils, pastures and damp runs, creeping in the grass and one of the early-flowering plants. (Including var. *nummularioides* Lec. & Lem.). May 15-Oct.

Introduced from Eurasia; Lab. to Ont., southward, B.C.

3. *V. tenella* All. Map 454.

Found in many of the cold northern ravines and along the brooks. The isolated populations in the different ravines seem to differ somewhat in flower color and in general appearance. Victoria Co.; abundant, wet mossy brook-banks, 8 miles from the mouth of the Salmon R.;

common along Gray Glen Brook; Inverness Co.; occasional on gravelly river bank, South Blair R.; abundant on wet cliff face, Big Intervale, Margaree (Smith and Erskine, 1954). (*V. serpyllifolia* var. *humifusa* (Dick.) Vahl.).

Lab. to Alaska south to Me. and n. N.Y.; Eurasia and S.Amer.

4. *V. officinalis* L. Fig. 120. COMMON SPEEDWELL

Roadsides, shady places and as a weed of cultivated fields, usually in richer and more shaded places than the variety. July-Aug. Probably introduced from Eu.; Nfld. to Dak. southward.

Var. *Tournefortii* (Vill.) Reichenb. is found everywhere throughout the Province in open fields, along roadsides, in lawns and thickets. It is rather doubtful if this is a clear-cut variety here as the leaves of this species vary greatly in size and shape according to the vigor of the plant.

Introduced from Eurasia; Nfld., P.E.I. and N.S.

5. *V. Chamaedrys* L. BIRD'S-EYE

Very rarely introduced about some of the towns; collections have been seen from Yarmouth, Windsor and Truro, and from the Gaspereau Valley in Kings Co.; Macoun reports it as sparingly naturalized at Windsor and Halifax.

Introduced from Eu.; Nfld. to B.C. south to Md.

6. *V. scutellata* L. Fig. 120. Map 459. MARSH-SPEEDWELL

Scattered throughout; shallow water, or more often at the base of rushes and cat-tails, in partly dried-out ponds and in swamps. It is more common in the northern and central parts of N.S.; and in P.E.I. it is found only west of Summerside. June 15-Sept.

Nfld. to Alaska south to Va., Colo. and Calif.

7. *V. americana* (Raf.) Schwein. Fig. 120. Map 460. AMERICAN BROOKLIME

Rather common in cold streams, springs, margins of rivers and along shaded ditches and swamps from Yarmouth to northern C.B. in the northern half of the Province; not known on the Atlantic side. June-Sept.

Nfld. to Alaska south to N.C. and Calif.; ne. Asia.

8. *V. peregrina* L.

Halifax Co.; edge of bare slate, in Point Pleasant Park by the Martello Tower, Halifax (Smith and Erskine, 1954).

A weedy species east to Que.; Que. to Minn. south to Fla.; B.C.

9. *V. arvensis* L. Fig. 120. Map 454. FIELD-SPEEDWELL

Dry fields, on slopes and in open woods, usually growing in dry and often very sandy soils; scattered from Yarmouth through the Annapolis Valley, in Pictou Co., and presumably elsewhere, often in large colonies. May-June.

Nfld. to Minn. southward; B.C. to Calif.; introduced from Eurasia.

10. *V. agrestis* L.

Waste ground and sandy fields, rare; Windsor, Halifax and Boylston; collected at Windsor by How, and from waste ground at Dartmouth by Fernald in 1922.

Introduced from Eu.; Nfld. to Alta. south to Penn.

11. *V. persica* Poir. Fig. 120. BIRD'S-EYE

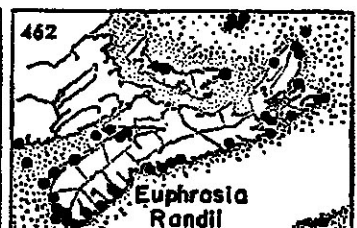
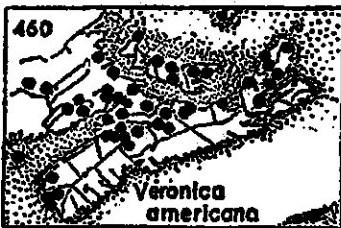
Fields, lawns or open woods; not uncommon about Truro and found at scattered places from Yarmouth to C.B. It was reported by Macoun, under the name *V. Buxbaumii* Tenore as very sparingly naturalized at North Sydney and Pictou. Introduced and occasionally appearing as a lawn weed. Our plants belong to var. *corrensiana* (Lehm.) Boivin (1952-b). The flowers are blue, including the lower lip.

Introduced from Eu.; Nfld. to Ont. southward.

13. GERARDIA L. GERARDIA

Small, erect annuals with opposite linear leaves; flowers tubular and a showy pink, lasting but a single day; western N.S.

- a. Calyx-lobes lanceolate, or lance-triangular and usually acute to acuminate; pedicels shorter than the length of the calyx; plants not fleshy.
- b. Calyx-lobes usually longer than the calyx-tube and capsule, 3-8 mm long; flower 1-1.5 cm long. 1. *G. neoscotica*
- b. Calyx-lobes usually shorter than the tube and capsule, 2-3.5 mm long; flowers 1.5-2.5 cm long. 2. *G. purpurea* var. *parviflora*
- a. Calyx-lobes oblong to semi-circular, blunt to round, much shorter than the tube; pedicels usually twice as long as the calyx; plants somewhat fleshy. 3. *G. maritima*

1. *G. neoscotica* Greene Fig. 121, a. Map 461.

This species was originally described from plants collected near Middleton in Annapolis Co. It is common in damp or exsiccated sandy or peaty open soil in Yarmouth and Digby Co., found along the Bay of Fundy into Annapolis Co., and in the Annapolis Valley to Middleton; scattered along the South Shore to Queens and Lunenburg Co.; on Sable I. It is very similar to *G. purpurea* L. and is often treated as a variety of it. (*Agalinis neoscotica* (Greene) Fern.). Late July-Sept.

Found only in N.S.

2. *G. purpurea* L., var. *parviflora* Benth.

This small-flowered form of *G. purpurea* has been little-studied in N.S. and is possibly confused with the preceding species. It has been listed for both sw. N.S. and sw. N.B. and larger, stout plants from western N.S. approach this variety. (*G. paupercula* (Gray) Britt.) Aug.

A northern variety from Me. and Penn. west to Iowa.

3. *G. maritima* Raf.

Local; known from salt marshes along the Argyle River at Argyle Head (Fernald, 1922); and elsewhere along the coast in Yarmouth Co. *Forma alba* D. S. Erskine, with white petals, is not uncommon and grows with the purple-flowered form in a salt marsh at Wedgeport, Yarmouth Co. (Klawe, 1955).

Saline marshes along the coast; N.S.; Me. to N.C.

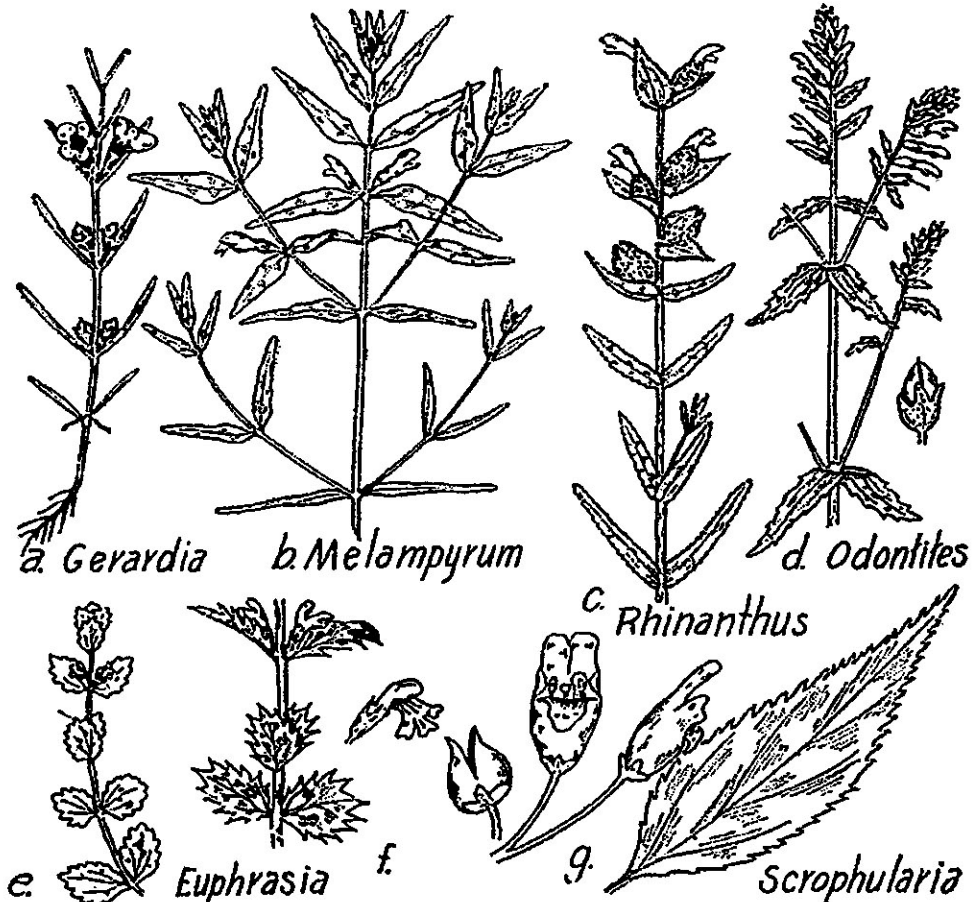


Fig. 121.—Gerardia: (a) *G. neoscottica* $\times \frac{1}{2}$. — Melampyrum: (b) *M. lineare* $\times \frac{1}{2}$. — Rhinanthus: (c) *R. Crista-galli* $\times \frac{1}{2}$. — Odontites: (d) *O. serotina* $\times \frac{1}{2}$. — Euphrasia: (e) *E. Randii* $\times \frac{1}{2}$, (f) *E. americana* $\times \frac{1}{2}$. — Scrophularia: (g) *S. lanceolata*, leaf $\times \frac{1}{2}$, flowers $\times 1$.

14. MELAMPYRUM L. COW-WHEAT

Slender wiry annuals with opposite, light-green leaves; flowers strongly 2-lipped, pale yellowish, often with a purplish tinge, scattered in the axils of the upper leaves. Our species is usually divided into 3 or 4 sub-species or varieties with different but overlapping ranges. Two occur in N.S. but they intergrade and collections cannot always be definitely named.

- a. Stem simple or nearly so, 0.5-2 dm high; foliage leaves and bracts linear, 1-5 mm wide, entire or the uppermost bracts rarely toothed at the base.
 - 1. *M. lineare*
- a. Stem bushy-branched, 2-5 dm high; foliage leaves 2-10 mm wide; bracts up to 20 mm wide, some or all sharply toothed at the base.
 - var. *americanum*

1. *M. lineare* Desr. Fig. 121, b. COW-WHEAT

Bogs, heaths, peaty or rocky barrens in rather exposed situations; rather common in its habitat. In northern C.B. it is characteristic of dwarf-shrub, sedge and other heath associations. Nfld. and southern Lab. to B.C. south to N.S., northern New Eng. and Wisc.

Var. *americanum* (Michx.) Beauverd is found on more favorable situations and soils, especially on sands; and it is common in the low-bush blueberry fields.

Dry woods, Anticosti to Minn. south to N.S., N.C. and Tenn.

15. EUPHRASIA L. EYEBRIGHT

Small annuals with almost round, sessile, opposite palmately-veined leaves; flowers nearly sessile, small and 2-lipped, the lower lip often with prominent purplish veins; calyx only 4-lobed; stamens 4. About 100 species in the cooler parts of the northern hemisphere. All species are probably semi-parasitic on the roots of other plants.

- a. Flowers 2.2-4 mm long, the lower lip not exceeding the upper and scarcely fan-shaped; mature calyx-lobes 1-2 mm long; teeth of the bracteal leaves obtuse or rounded; plants small, mostly 5-10 cm high.
 - 1. *E. Randii*
- a. Flowers 4-10 mm long, the lower lip generally exceeding the upper, spreading and conspicuous; mature calyx-lobes 2.5-3.5 mm long; plants usually much larger.
 - b. Flowers produced along the greater part of the plant, the lower fruits near the bases of the stems and branches.
 - c. Corolla 5-6.5 mm long, with pale lavender or bluish lines; the lower lip with the lobes not so strongly divergent, about to a 45 degree angle.
 - 2. *E. canadensis*
 - c. Corolla 6-10 mm long with dark purple lines, the lower lip with wide-spreading lateral lobes.
 - 3. *E. rigidula*
 - b. Flowers produced usually only on the upper third of the stem and branches; corolla 7-10 mm long with dark purple lines, the lower lip with wide-spreading lateral lobes diverging about 60°.
 - 4. *E. americana*

1. *E. Randii* Robins. Fig. 121, e. Map 462. SMALL EYEBRIGHT

Common on turfy soil and sea-cliffs along the Atlantic Coast and the Bay of Fundy and scattered elsewhere around the coast. This is the most common type and is occasionally very abundant in wet pastures near the coast. *Forma albiflora* (Fern. and Wieg.) Fern., with the lobes of the corolla whitish, is also often common. *Forma iodantha* (Fern. and Wieg.) Fern., with the lobes of the corolla purple, is reported by Rousseau (1938) from pastures at Fourchu. C.B.

The leaves are usually more or less pubescent on both sides. Plants with the leaves very densely hairy and the corolla generally whitish have been named var. *Farlowii* Robins.; while plants with leaves smooth on both surfaces are var. *Reeksii* Fern. Neither seems to be a good variety; in fact the classification of *Euphrasia* seems to depend largely upon variable vegetative characteristics.

Lab. and Nfld. to Me.

2. *E. canadensis* Townsend Map 463. EYEBRIGHT, EUPHRASIA

Open barren fields and roadsides, usually near the coast and rather rare; Yarmouth and Shelburne Co.; Is. Madame and St. Paul I. in C.B., probably widely distributed in its habitat near the coast in all the cooler areas of the Province.

Probably introduced; Que., the Maritime Provinces and northern New Eng.; Nfld.

3. *E. rigidula* Jord.

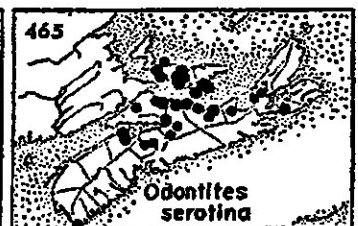
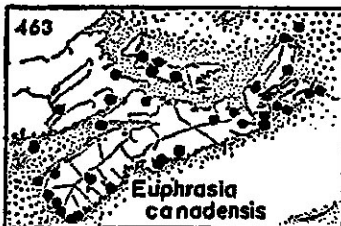
Scattered and in some respects combining the characters of the preceding and the next species. This species, and possibly our other two flowered *Euphrasias*, are introduced and becoming more common in the proper habitats.

Nfld. to Que. south to N.S., New Eng. and N.Y.

4. *E. americana* Wettst. Fig. 121, f. Map 464. COMMON EYEBRIGHT

This species is common throughout in sterile fields, along roadsides and in pastures near the coast, often found more inland in lawns and pastures. It is by far the most common species of the genus and it is found in a wide variety of habitats and is probably still spreading as a weed. Late July-Sept.

Nfld., the Maritimes and Que. south to Me.



16. ODONTITES Ludwig

1. *O. serotina* (Lam.) Dum. Fig. 121, d. Map 465. RED BARTSIA

Scattered in southern C.B.; common along the North Shore and becoming rarer to Hants and Kings Co.; in fields and waste places, in moist soil, usually near the coast. This plant seems to be becoming more common and occasionally it is found as a common weed in damp, old fields or in low pastures. (*O. rubra* of earlier authors). July-Sept.

Introduced from Eu.; N.S. to Que. south to Me. and northern N.Y.; Man. and Alta.

17. RHINANTHUS L. YELLOW-RATTLE

Erect, wiry annuals with small, 2-lipped flowers in the axils of the upper reduced leaves. The calyx becomes much inflated in fruit. The common weedy plants are introduced from Europe; more northern forms may be native. The plants are variable and a number of species have been described which are doubtfully present in our area.

- a. Bracts subtending the flowers with at least the lower teeth attenuate and ending in slender bristle-tips. 1. *R. Crista-galli*
- a. Bracts with the teeth broad and blunt, scabrous and shorter than the mature calyx. 2. *R. borealis*

1. *R. Crista-galli* L. Fig. 121, c. YELLOW-RATTLE

Two varieties occur. Anthocyanin pigments are absent from the species so that the stems lack any black lines and the upper lip of the corolla is without any violet coloring. This is scattered or local; old hay field near North Light, Brier I., Digby Co.; common in pasture at shore, Cape St. Lawrence in Inverness Co.; abundant in field at Northwest Cove, and abundant on exposed areas behind the beach, Eastern Harbour, both on Scatari I., C.B. Co. (Smith and Erskine, 1954). This plant may possibly be native; and the teeth of the floral bracts are not nearly so acute nor bristle-form as in our common weedy plants. Nfld. to B.C. south to the coast of southern Me. and to northern New Eng.

Var. *fallax* (Wimm. & Grab.) Druce has the stems and branches marked with prominent black lines and there are bluish to violet markings on the corolla. This is one of the common weeds of N.S., found throughout in neglected fields, along roadsides and in waste places, where it may be more abundant in places than the grass. Any records of *R. stenophyllus* and *R. Kyrollae* are included within this species. June 15-July.

Nfld. to Que. south to southern New Eng.

2. *R. borealis* (Sterneck) Chabert

Collected but once: by Perry and Roscoe near the ruins of an old house, Trinity Cove, St. Paul I. (*R. oblongifolius* Fern.; *R. groenlandicus* Chabert).

Arctic Amer. south to Nfld., C.B., and alpine areas of New Eng. and N.Y.

18. PEDICULARIS L. LOUSEWORT

1. *P. palustris* L. SWAMP-LOUSEWORT

Rare or local; a collection made by A. H. MacKay is simply labelled western N. S., June 1908; another collection was made by A. G. Huntsman, C.B., July 1917; and Miss M. S. Brown collected it in flower in a marsh, Bay St. Lawrence. It is now known to be common in meadows about the Bay St. Lawrence; and specimens have been seen from Guysborough Co. July.

Marshes and meadows, se. Nfld., the Magdalen I., e. Que. and N.S.

105. OROBANCHACEAE BROOM-RAPE FAMILY

This is a small cosmopolitan family of herbaceous plants without green color. Our representatives are small, yellowish to brownish plants with irregular flowers and the leaves reduced to scales.

- a. Flowers numerous in racemes or spikes; plants nearly glabrous.
- b. Plants dry and slender, branched, with loose racemes of flowers; parasitic on beech roots.
 - 1. *Epifagus*
- b. Plants thick and fleshy, consisting mostly of large thick roots and unbranched, dense, cone-like spikes of flowers.
 - 2. *Conopholis*
- a. Flowers solitary, a terminal one for each stem; plants in clusters but unbranched except at the base, glandular-pubescent.
 - 3. *Orobanche*

1. EPIFAGUS Nutt.

1. *E. virginiana* (L.) Bart. Fig. 123, a. Map 466. BEECH-DROPS

Frequent and to be expected wherever beech occurs, found scattered under the beech trees with the dry stems persisting over winter; especially common from Annapolis to northern C.B.

N.S. to Ont. and Wisc. south to Fla. and La.

2. CONOPHOLIS Wallr.

1. *C. americana* (L.) Wallr. Map 467. CANCER-ROOT

Reported by Fernald (1922) from "dry pine and oak woods on steep slopes along the LaHave R., Bridgewater; locally abundant, many stems springing from deep-seated bases attached to oak roots." Kings Co.:

oak woods, Belcher St., near Kentville, collected by R. M. Lewis, 1946; Queens Co.: in clumps under oaks, back of the fish pond, Lake Kedgema-kooqe, collected by S. Bleakney, 1950 (Smith and Schofield, 1952).

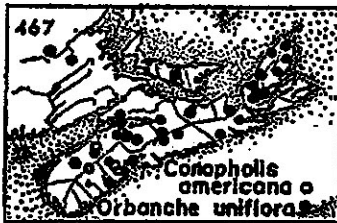
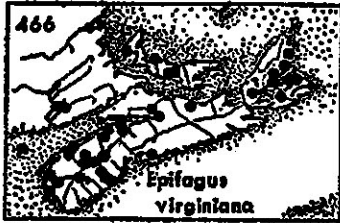
N.S. and southern Me. to Man. south to Fla. and Ala.

3. OROBANCHE L.

1. *O. uniflora* L. Fig. 123, b. Map 467. BROOM-RAPE

Under alder shrubs near Wedgeport, Yarmouth Co. (Klawe, 1956); scattered from Kings Co. to Pictou and beyond in various habitats. In the Annapolis Valley it has been found on the sandy plains; but in Colchester and Pictou Co. it is usually found along the river intervales or on grassy slopes, growing in large clumps. It is parasitic on various plants. June-July.

N.S. to Mont. and B.C. south to Fla. and Tex.



106. LENTIBULARIACEAE BLADDERWORT FAMILY

Plants of aquatic habitats or on wet mud, partly carnivorous; flowers very irregular, solitary or few on erect peduncles; stamens 2; fruit a capsule.

- a. Leaves small and linear, or large and divided into capillary lobes; bladders usually present; calyx 2-lobed. 1. *Utricularia*
- a. Leaves elliptical to ovate, in a basal rosette, 2-5 cm long; bladders absent; flowers solitary, calyx 5-lobed. 2. *Pinguicula*

1. UTRICULARIA L. BLADDERWORT

This genus has about 300 species and is almost cosmopolitan. The plant body is much divided and it is possible that what are here called leaves may be divided branches. Tiny bladders, designed to trap small aquatic animals, are common on the submersed species. Three types of plants occur here. The first 5 species are usually submersed, aquatic species with visible and often conspicuous leaves with bladders. They are all perennial by means of special winter buds consisting of crowded small leaves. The next 3 are likewise perennial but have flattened leaf-divisions growing on wet mud. The last 3 are annuals growing on wet mud with only the flowering scapes visible. Consult Rossbach (1939).

- a. Stems floating in the water, or creeping over the wet mud; branched leaf-like stems or divided leaves conspicuous; bladders well-developed and common (Fig. 122, b-g).
- b. Division of the leaves progressively smaller and capillary, without a midrib and gradually tapering to the tip; plants various and usually floating submersed.
- c. Plants large and stout, 3-10 dm long, free-floating in the water; scape 10 cm or more high, with 2-20 flowers; leaves finely divided.
- d. Leaves, at least the upper ones, in whorls of 4 or more; submersed leaves 4-6 times divided with capillary segments.
- e. All leaves whorled and capillary; flowers purple (Fig. 122, f).
1. *U. purpurea*
- c. Submersed leaves alternate and very finely divided with no definite rachis, the flowering scape with a whorl of inflated leaf-like branches half-way to the top which act as floats; flowers yellow.
2. *U. radiata*
- d. Leaves scattered, none in whorls, the submersed ones less divided so as to form a zig-zag axis with 3 orders of divisions; flowers yellow, the scape without a whorl of inflated branches.
- f. Leaves without spines except at the tips of the divisions, the outline circular or nearly so; basal leaf-divisions about 0.25 mm wide; scapes without scales, 2-5-flowered, the bracts below the flowers without basal lobes; small cleistogamous flowers often present.
3. *U. geminiscapa*
- f. Leaves with a bristly margin when seen under magnification, the outline elliptical; basal leaf-divisions 0.5-0.75 mm wide; scape 6-12-flowered, with 1-5 scales, the bracts with basal lobes (Fig. 122, d).
4. *U. vulgaris*
- c. Plants small and slender, with short branches creeping over wet mud or in shallow water; scape less than 10 cm high, with 1-2 flowers; leaves with 2-5 rather long, capillary, not overlapping divisions.
5. *U. gibba*
- b. Divisions of the leaves flattened, with a midrib and parallel sides with the branches about as wide as the main axis; plants small, generally less than 15 mm wide, the leaves with 4-10 short often overlapping lobes; bracts of scape with basal lobes.
- g. Margins of the leaf-divisions entire except sometimes at the tip; bladders on most of the leaves, not on special leafless branches; spur very short; pedicels curved downwards in fruit.
6. *U. minor*
- g. Margins of the terminal divisions of the leaf minutely and sharply serrulate; spur about as long as the lower lip of the flower and close to it; pedicels ascending in fruit.
- h. Bladders borne on separate leafless branches; apices of the terminal divisions rounded, except for delicate plants in deep water, and mucronate (Fig. 122, b).
7. *U. intermedia*
- h. Bladders borne on both leafless branches and on the leaves; terminal divisions of the leaves acuminate; leaves and their teeth larger.
8. *U. ochroleuca*
- a. Stems erect, from a base definitely anchored in the sand, mud or bog; leaves minute and linear or none; bladders absent or poorly-developed (Fig. 122, a).
- i. Flowers yellow, several at the top of the scape; bracts on the scape just below the flowers not in pairs, stems solitary; leaves very small and narrow, seldom seen.
- j. Stems stout, the inflorescence with a straight rachis; pedicels very short so that the flowers appear sessile.
9. *U. cornuta*
- j. Stems very slender, the inflorescence zig-zag; pedicels of the flowers filiform, 1-2 cm long.
11. *U. subulata*
- i. Flowers purple, solitary, facing upwards; bracts just below the flower in pairs and united to form a tube; leaves small and with few lobes.
10. *U. resupinata*

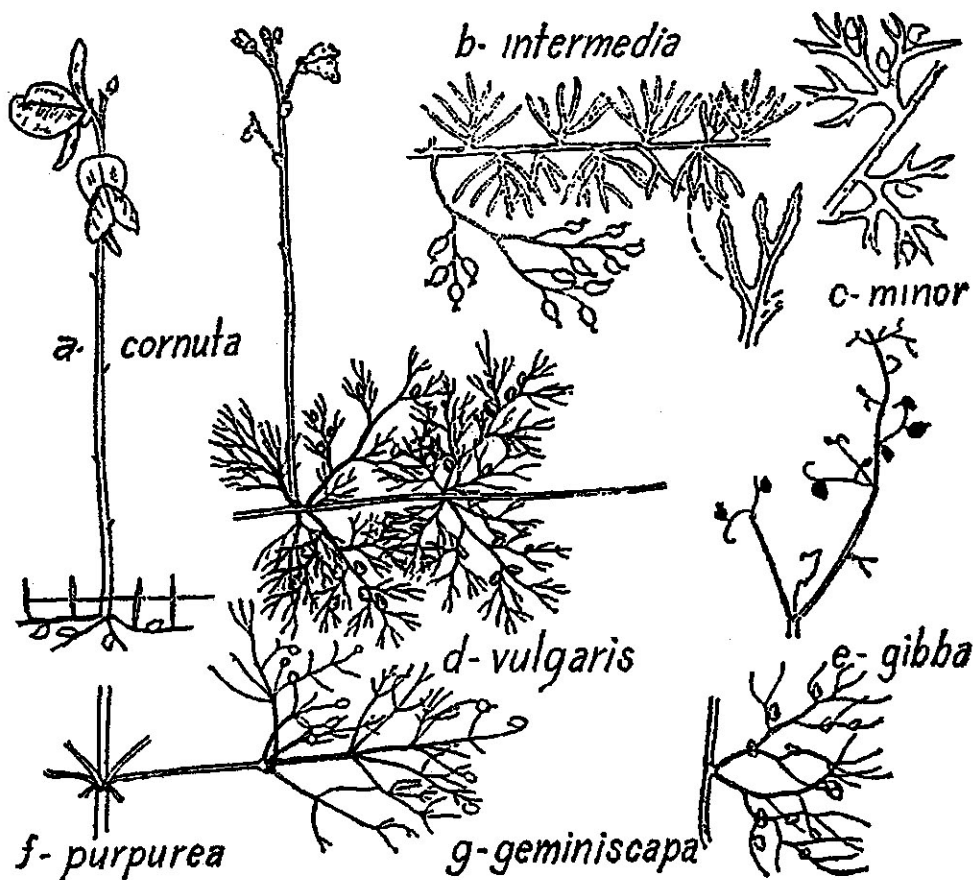


Fig. 122.—*Utricularia*: (a) *U. cornuta* $\times \frac{1}{2}$, (b) *U. intermedia* $\times 1$, (c) *U. minor* $\times 1\frac{1}{2}$, (d) *U. vulgaris* $\times \frac{1}{2}$, (e) *U. gibba* $\times 2$, (f) *U. purpurea* $\times 1$, (g) *U. geminiscapa* $\times 1$ (c, e, f and g after Rossbach).

1. *U. purpurea* Walt. Fig. 122, f. Map 468.

Frequent to common from Yarmouth through Digby and Lunenburg Co. to Hants and Halifax; eastern Guysborough Co.; deep water, quiet pools or pond-holes. This is one of our larger and most distinct species, conspicuous on account of its distinct whorls of leaves.

Fla. to La. north to N.S., N.B., e. Ont. and s. Que. and Wisc.; and the Avalon Pen. in Nfld.

2. *U. radiata* Small Map 469.

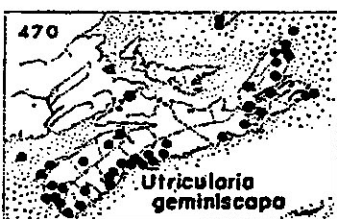
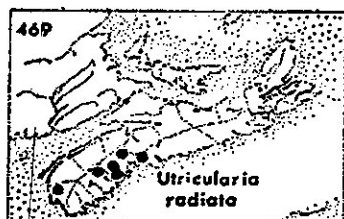
Discovered by Miss M. S. Brown (1940) in full flower, Aug. 31, 1939, in Lake Sawlor, near Hubbards, Halifax Co. She states that the water-level of the lake was exceptionally low at the time of collecting. The plant has since been collected at several other locations in western and south-central N.S. This species is closely related to *U. inflata* See Reinert and Godfrey (1962).

Fla. to Texas north to N.S., s. Me., Penn. and Ind.

3. *U. geminiscapa* Benj. Fig. 122, g. Map 470.

Common in bog-pools and peaty quagmires in barrens, and in pools and brook-ponds from Yarmouth Co. in sw. N.S. and scattered east to Kings Co. and to northern C.B. Very similar to *U. vulgaris* but much smaller. (*U. clandestina* Nutt).

Nfld. to Del. and Va. west to s. Que. and Wisc.



4. *U. vulgaris* L. Fig. 122, d. Map 471.

Common throughout; pools, lake shores, oxbow ponds, in sink-holes and slow streams, our largest and most frequent species. Our plants are var. *americana* Gray.

Lab. to Minn. and Alaska south to Va. and Texas; circumboreal.

5. *U. gibba* L. Fig. 122, e. Map 472.

Rather rare in sw. N.S.; shallow margins of lakes, small pools, and in small ponds in quagmires or peaty situations (Fernald, 1921, 1922); central N.S. and St. Paul I.

Fla. to Tex. n. to N.S. and the Great Lakes; Calif; W.I.

6. *U. minor* L. Fig. 122, c. Map 473.

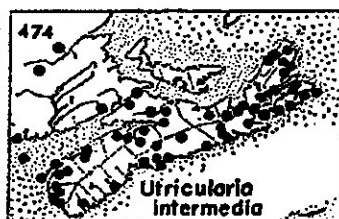
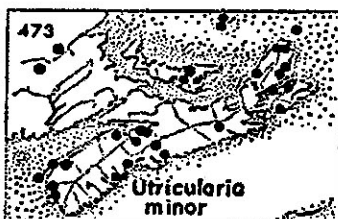
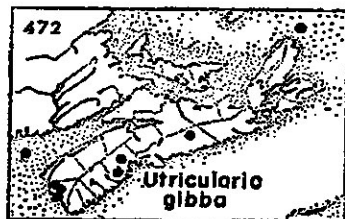
Scattered throughout; pond edges, bog pools, mud in bog pool, edges of meadow ponds, along the boggy margins of lakes and on the muck of lakes, sometimes well under water; St. Paul's I. When the plant creeps out upon the mud the leaves tend to be somewhat larger and more flattened than in the typical form, and the bladders are larger (Perry, 1931).

Greenland to B.C. south to N.J. and Calif.

7. *U. intermedia* Hayne Fig. 122, b. Map 474.

Common throughout; characteristic of the bottoms of marshes, lake shores and often in wet hollows in peat bogs, creeping over the wet substratum of muck or peat and rarely flowering.

Greenland and Nfld. to Alaska south to Penn. and Calif.; Eurasia.



8. *X U. ochroleuca* R. Hartman Map 475.

This rare plant was collected by Perry and Roscoe from St. Paul I., northern C.B. The plants were sterile (Perry, 1931); and this entity is now considered to be a hybrid.

Common in northern Eu.; reported from two localities in Greenland.

9. *U. cornuta* Michx. Fig. 122, a. Map 476.

Common throughout; exposed sand around lake margins, in peat, mucky areas or in boggy depressions and peat bogs from Yarmouth to northern C.B. In some places the brilliant yellow flowers will form carpets over considerable areas. Fernald (1922) mentions a colony at Rhodenizer L., Lunenburg Co., with stems forking into 2 or 3 long branches.

Nfld. to Man. south to Fla. and Texas.

10. *U. resupinata* B.D. Greene

Digby Co.; reported by Fernald in 1921 as locally abundant on the muddy margin of Midway L., Centerville on Digby Neck, and also collected in the same place by Schofield in 1955. This plant has also been found at Barren Lake in Richmond Co., growing in one foot of water.

N.S. to Wisc. south to Penn.; pine barrens S.C. to Fla.

11. *U. subulata* L. Map 475.

Characteristic of wet, sandy and peaty lake-margins of Yarmouth and southern Digby Co., always growing with and clearly passing into forma *cleistogama* (Gray) Fern. (Fernald, 1921). All gradations between the smallest extreme with cleistogamous flowers with tiny creamy or milk-white, spurless corollas sometimes not larger than a pinhead, and the typical *U. subulata* can be found at most of the stations in the Province (Fernald, 1921).

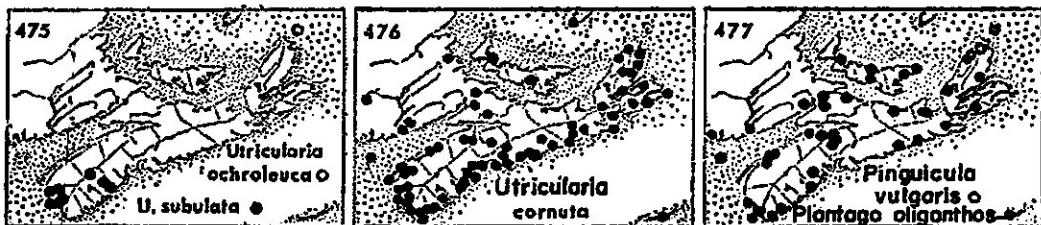
Fla. to Texas north to se. Mass. and N.S.

2. PINGUICULA L.

1. *P. vulgaris* L. Map 477. BUTTERWORT

This small plant with solitary, irregular flowers is one of our rarest species. It was first discovered by Perry and Roscoe on banks of a streamlet on St. Paul I., northern C.B. It was later found to be rare on moist ledges in *Sphagnum* on a cliff near the mouth of the Cheticamp R.; and 2 plants were found in small crevices at the water's edge along Big Southwest Brook, Inverness Co. The leaves are greasy in appearance and small insects are caught and digested on the slimy surfaces.

Wet rocks and shores: Lab. to Alaska south to N.S., northern N.Y. and Mich.



107. PLANTAGINACEAE PLANTAIN FAMILY

A small cosmopolitan family consisting of 3 genera. *Plantago* has over 200 species; *Littorella* has one species in the northern hemisphere and one in South America; while the third genus consists of one species in the high Andes. Our representatives are low herbs with small greenish flowers solitary or in spikes, the corolla membranous and minutely 4-lobed.

- a. Flowers numerous in spikes or elongated heads; fruit a circumscissile capsule with 2 or more seeds. 1. *Plantago*
- a. Flowers solitary; fruit indehiscent, 1-seeded; plant only a few cm high. 2. *Littorella*

1. PLANTAGO L. PLANTAIN

Several other species may possibly occasionally occur as waifs. Consult Fernald (1925) and Pilger (1937).

- a. Leaves all basal; flowers on naked stalks arising from the rosette at the base.
- b. Leaves broadly elliptic to ovate; spikes long and slender; seeds plump and angular, to 2 mm long.
- c. Sepals and bracts broad and blunt at the end; capsule ovate and circumscissile near the middle; base of the petiole rarely reddish; seeds about 1 mm long. 1. *P. major*
- c. Sepals and bracts narrow and pointed; capsule opening much below the middle, elliptic-oblong; base of the petiole purplish; seeds about 2 mm long. 2. *P. Rugelii*
- b. Leaves lanceolate to linear.
- d. Leaves lanceolate, thin and strongly ribbed; spikes at the beginning of flowering ovoid and tapering to the tip, dense; seeds 2-3 mm long, deeply concave on the inner face. 5. *P. lanceolata*
- d. Leaves narrowly lanceolate to linear, fleshy with the nerves obscure; spikes narrow and usually elongate; seeds plump, not concave; near the coast only.
- e. Bracts and calyx-segments mostly hairy and minutely ciliolate; spikes usually dense to the base; seeds oblong to narrowly oval, 1.2-2.3 mm long; leaves mostly shorter than the spikes. 3. *P. juncoides*
- c. Bracts and calyx-segments smooth or nearly so; spikes often remotely flowered at the base; seeds oblong-linear, 2-3 mm long; leaves very fleshy, often exceeding the scapes. 4. *P. oliganthos*
- a. Leaves scattered on the stem, linear and opposite; heads axillary on long peduncles, 1-1.5 cm long. 6. *P. indica*