

Laboratory 16: Asteridae – Part 1

The Asteridae is the final large group that we will examine in the Eudicots. This monophyletic group is well supported by molecular data and has many distinct morphological characters as well. Today we will look at two of the basal orders, Cornales (Cornaceae) and Ericales (Ericaceae, Theaceae, Primulaceae, Polemoniaceae), of the Asteridae.

Cornaceae – Dogwood Family, 13 genera, 130 spp.

Primarily **trees and shrubs**; leaves usually opposite, less often alternate, simple, veins often appearing \pm parallel; stipules lacking; flowers small and regular, either bisexual or unisexual; **inflorescences sometimes subtended by large showy bracts**; sepals 4-5, fused to form a tubular calyx; petals 4-5, distinct; stamens equal in number to the petals; ovary inferior, composed of (generally) 2 fused carpels, a single style is present; stigma lobed; fruit a drupe or a berry.

Cornus

Ericaceae – Heath Family, 130 genera, 2700 spp.

Primarily **shrubs**; leaves simple, generally alternate; stipules absent; flowers typically bisexual and regular (sometimes slightly bilateral), **often urn shaped**; sepals 4-5, fused at the base; petals 4-5 and fused to varying degrees; stamens typically twice as many as petals and often attached to the receptacle, **poricidal anther dehiscence**; anthers often with appendages; ovary generally superior, composed of 4-5 fused carpels, a single style is present; fruit: a capsule.

Arctostaphylos

Vaccinium

Rhododendron

Leucothoe

Pieris

Theaceae – Tea Family, 20 genera, 300 spp.

Shrubs or trees; leaves usually alternate and spiral, simple, toothed, teeth ending in a conical deciduous gland, leaves often aromatic; stipules lacking; flowers solitary, axillary, bisexual and radial; sepals 5 slightly fused to distinct, often with subtending bracts that appear similar to sepals; petals 5, generally distinct, often with a crenulate or wrinkled margin; stamens many, distinct or fused into rings, developing from the center of the flower outwards; nectaries common at base of stamens; carpels 3-5, fused; styles 1-5; fruit a capsule.

Camellia

Primulaceae – Primrose Family, 20 genera, 1000 spp.

Herbs; leaves various, often in a basal rosette; stipules lacking; inflorescence indeterminate or flowers solitary; flowers radial and bisexual; sepals 5 fused; petals 5 fused; **stamens 5, epipetalous and often connate as well, opposite petals**; anthers sometimes with poricidal dehiscence; carpels 5 fused, typically superior, placentation free-central; fruit a capsule.

Primula

Dodecatheon

Anagallis

Polemoniaceae – Phlox Family, 26 genera, 380 spp.

Herbs, occasionally shrubs; leaves various; stipules absent; flowers bisexual; sepals 5, generally fused or with \pm transparent connective membranous tissue; **petals 5, fused, distinctly twisted in bud**; stamens 5, epipetalous; ovary superior, **carpels 3, stigmas 3**; fruit a capsule.

Phlox

Gilia

Linanthus

CORNACEAE. DOGWOOD FAMILY

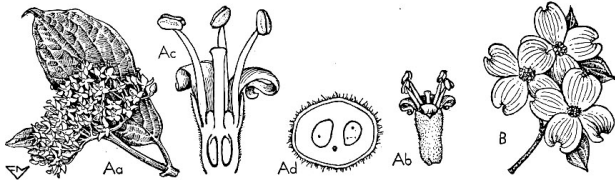


Fig. 247. CORNACEAE. *Cornus stolonifera*: Aa, inflorescence, $\times \frac{1}{2}$; Ab, flower, $\times 2$; Ac, flower, vertical section, $\times 4$; Ad, ovary, cross-section, $\times 8$. B, *C. florida*: inflorescence with bracts, $\times \frac{1}{4}$. (From L. H. Bailey, *Manual of cultivated plants*, The Macmillan Company, 1949. Copyright 1924 and 1949 by Liberty H. Bailey.)



Fig. 251. ERICACEAE. A, *Rhododendron vaseyi*: Aa, inflorescence, $\times \frac{1}{2}$; Ab, flower, less perianth, $\times 1$; Ac, anther, $\times 5$; Ad, ovary, cross-section, $\times 5$; Ae, capsule, $\times 1$. B, *Erica mediterranea*: Ba, flowering branch, $\times \frac{1}{2}$; Bb, flower, $\times 2$; Bc, same, vertical section, $\times 1$. C, *Kalmia latifolia*: Ca, flowering branch, $\times \frac{1}{2}$; Cb, flower, $\times 1$; Cc, same, vertical section, $\times 1$; Cd, anther, $\times 5$; Ce, ovary, cross-section, $\times 6$; Cf, capsule, side view, $\times 1$; Cg, same, face view, $\times 1$. D, *Vaccinium vacillans*: Da, flowering branch, $\times \frac{1}{2}$; Db, flower, $\times 2$; Dc, same, vertical section, $\times 2$; Dd, anther, $\times 5$. (From L. H. Bailey, *Manual of cultivated plants*, The Macmillan Company, 1949. Copyright 1924 and 1949 by Liberty H. Bailey.)

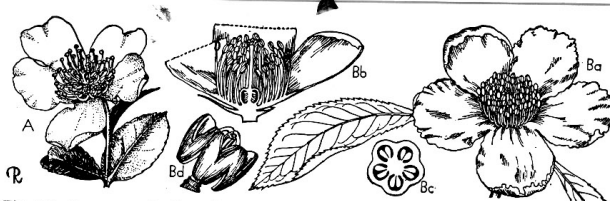


Fig. 211. THEACEAE. A, *Camellia sasanqua*: flower, $\times \frac{3}{4}$. B, *Franklinia alatamaha*: Ba, flowering branch, $\times \frac{1}{2}$; Bb, flower, vertical section (petals excised), $\times \frac{1}{2}$; Bc, ovary, cross-section, $\times 1$; Bd, capsule, $\times \frac{1}{2}$. (Ba-Bc redrawn from Sargent.) (From L. H. Bailey, *Manual of cultivated plants*, The Macmillan Company, 1949. Copyright 1924 and 1949 by Liberty H. Bailey.)

from Lawrence 1951.
Taxonomy of Vascular Plants

POLEMONIACEAE. PHLOX FAMILY

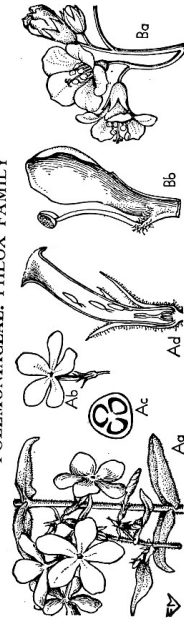


Fig. 267. POLEMONIACEAE. A, *Phlox divaricata*: Aa, inflorescence, $\times \frac{1}{2}$; Ab, flower, $\times \frac{1}{2}$; Ac, ovary, cross-section, $\times 10$; Ad, flower, vertical section, corolla partially excised, $\times 2$. B, *Polemonium reptans*: Ba, flowers, $\times 1$; Bb, segment of corolla with stamen, $\times 3$. (From L. H. Bailey, *Manual of cultivated plants*, The Macmillan Company, 1949. Copyright 1924 and 1949 by Liberty H. Bailey.)

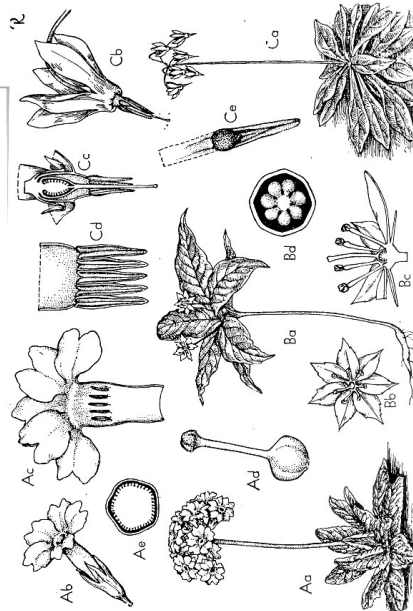
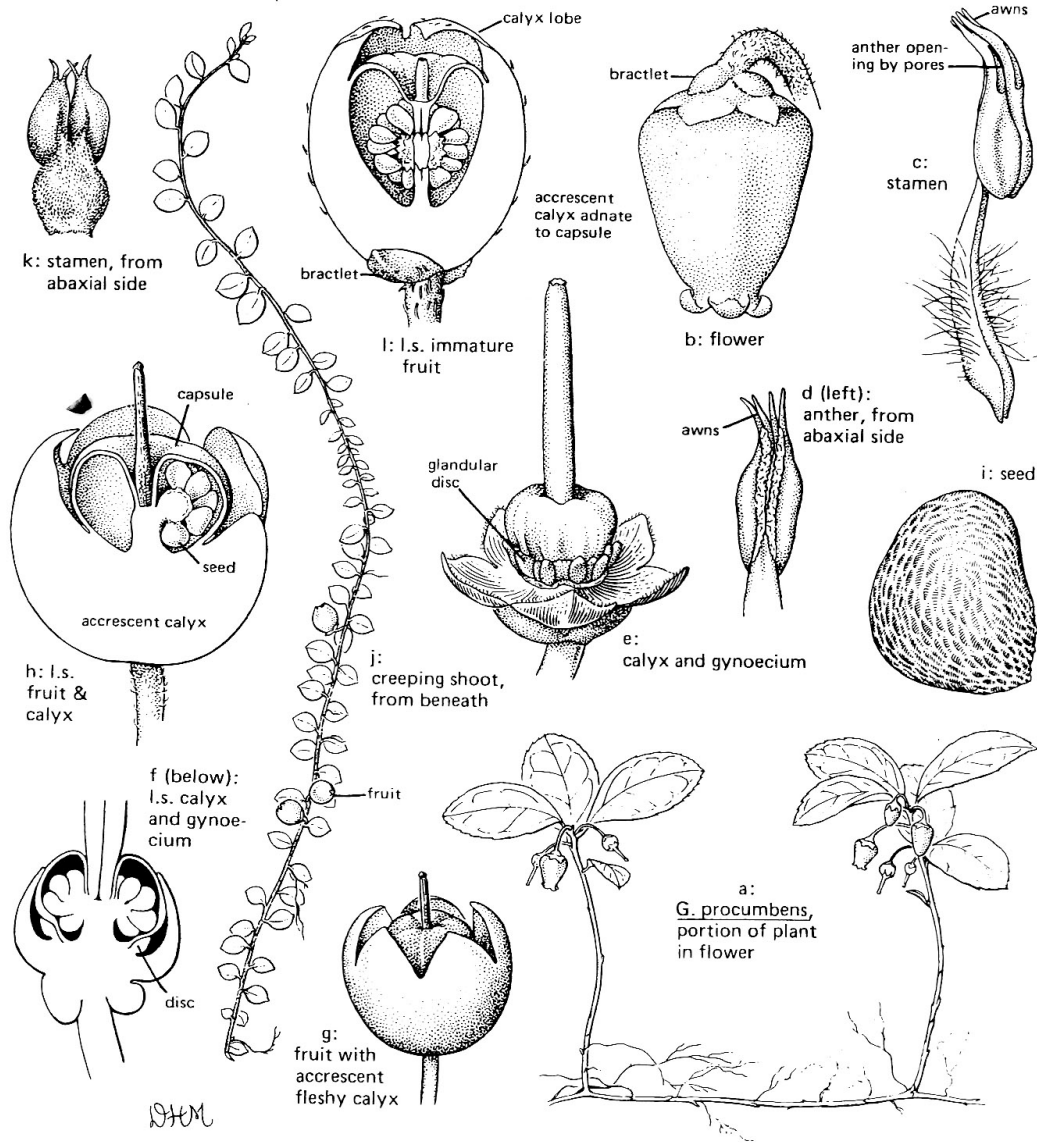


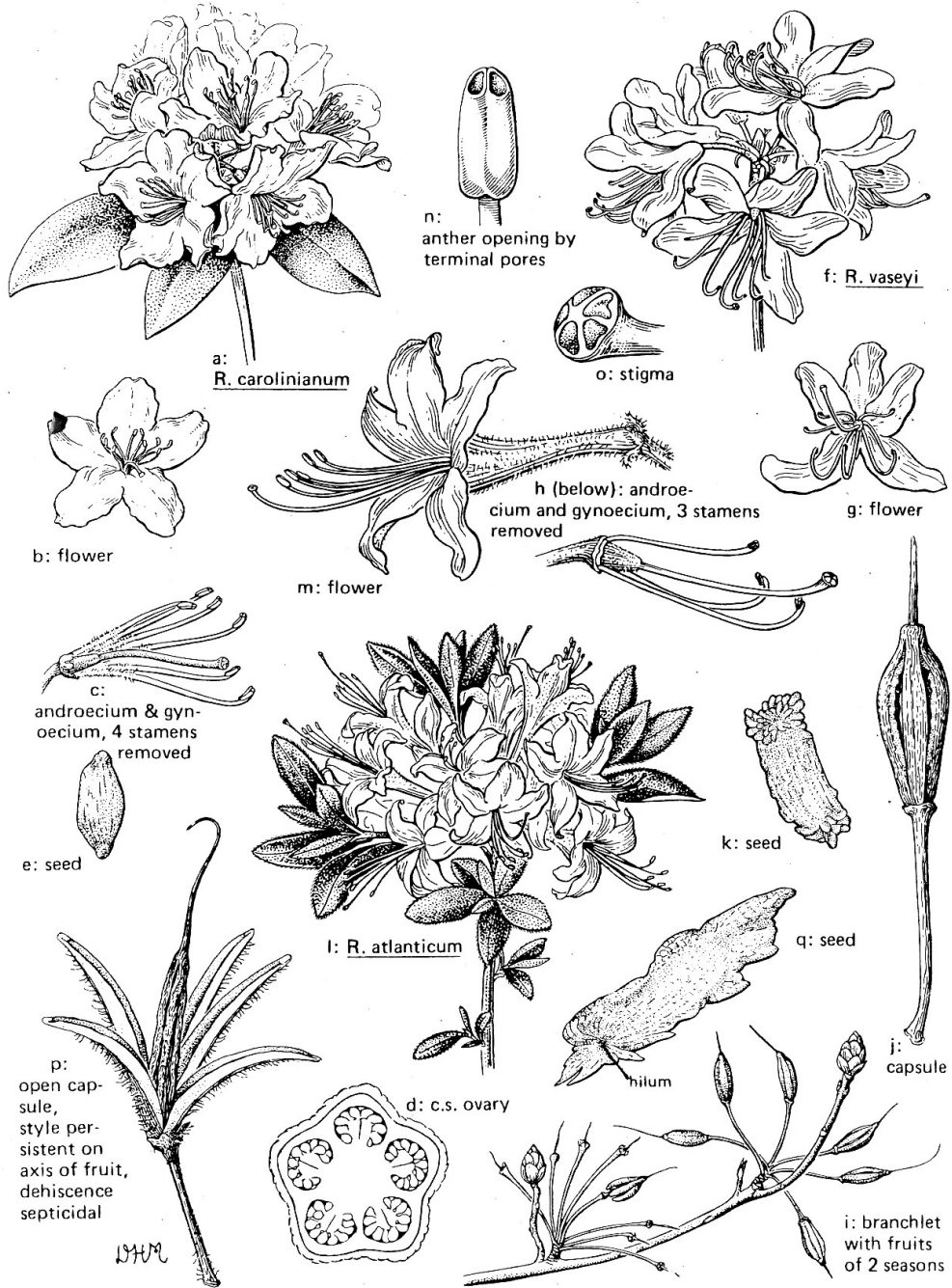
Fig. 265. PRIMULACEAE. A, *Primula dentiflora*: Aa, plant in flower, $\times \frac{1}{4}$; Ab, flower habit, $\times 1$; Ac, perianth, expanded, $\times 1\frac{1}{2}$; Ad, plant in flower, $\times \frac{1}{2}$; Ae, ovary, cross-section, $\times 5$; B, *Trientalis borealis*: Ba, plant in flower, $\times \frac{1}{2}$; Bb, flower habit, $\times 1$; Bc, vertical section (perianth partially excised), $\times 2$; Bd, ovary, cross-section, $\times 12$; C, *Dodecatheon Meadia*: Ca, plant in flower, $\times \frac{3}{4}$; Cb, flower habit, $\times \frac{3}{4}$; Cc, same.

ERICACEAE: Gaultheria. a-i, *G. procumbens*; j-l, *G. hispidula*



from C.Wood (1974) *A Student's Atlas of Flowering Plants*

ERICACEAE: Rhododendron. a-e, *R. carolinianum*; f-k, *R. vaseyi*; l-q, *R. atlanticum*



from C. Wood (1974) A Student's Atlas of Flowering Plants