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A key to the spring flora of Missoula County

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A KEY
TO THE SPRING FLORA OF MISSOULA COUNTY

by

Millard E. Peterson
B. S., Montana State College, 1923

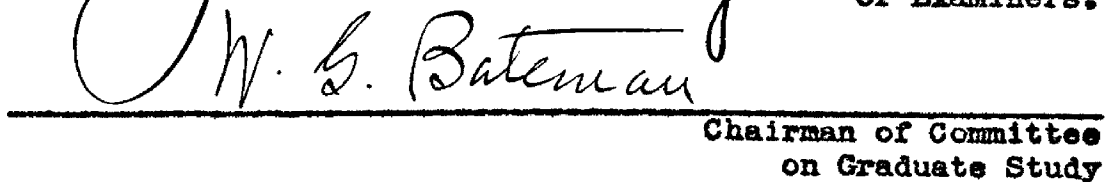
In Partial Fulfillment
of the Requirements of the Degree
Master of Arts

Montana State University

1939

Approved:


Chairman of Board
of Examiners.


Chairman of Committee
on Graduate Study

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Preface

The key here presented is not intended as a complete treatise on the flora of the region but rather as a "lesson manual" designed for the purpose of opening up an interesting field to younger students.

A great deal of emphasis is being placed, during these days of shorter working-days and shorter working-week, on training the individual for worthy leisure-time hobbies and interests. The present key was designed with this point in view.

It is hoped that a simplified manual will not only stimulate such interests but will bring home to the students, through an orderly arrangement, an overview of plant relationships.

The key contains only those plants that attract the most attention and purposely follows the plan used by Coulter and Nelson in their New Manual of Rocky Mountain Botany, with two purposes in view. First, students becoming interested may branch out into that manual without too much difficulty. Secondly, if in keying some plant not in this key they can turn to the other without too much discouragement.

The key contains only those plants which the author has found blooming within the confines of Missoula County up to June 10th.

The current manuals for this region are F. A. Rydberg's Flora of the Rocky Mountains and Adjacent Plains, published by that author in 1922. The other is the one already mentioned: John M. Coulter and A. Nelson's New Manual of Botany of the Rocky Mountains, published 1909 by the American Book Company.

Historical Sketch.

Interest in the plants of this region dates back to the days of the early explorers. Possibly the earliest collections were those of the French, Spanish, and English adventurers who carried them back to Europe.

The first known collections made in the vicinity of Missoula were the meager numbers taken by Meriwether Lewis of the Lewis and Clark Expedition on its return journey to the East in 1806. These were published in Pursh's Flora and the collection placed in the herbarium of the Philadelphia Academy of Natural Sciences.

Nathaniel J. Wyeth, a Boston fur-trader who made collections during his travels passed through the Missoula vicinity in 1826 and may have picked up some of his plants here. His collections were worked over by Nuttall and turned over to the same herbarium in Philadelphia.

Other men who passed through this area making collections along the way were:

Charles A. Coyer, a German botanist, 1844.

John Pearsall, with the Kullian Expedition, 1858-62.

Sereno Watson of the Gray Herbarium, 1880.

David Griffiths, Division of Agrostology, Washington, D.C. and

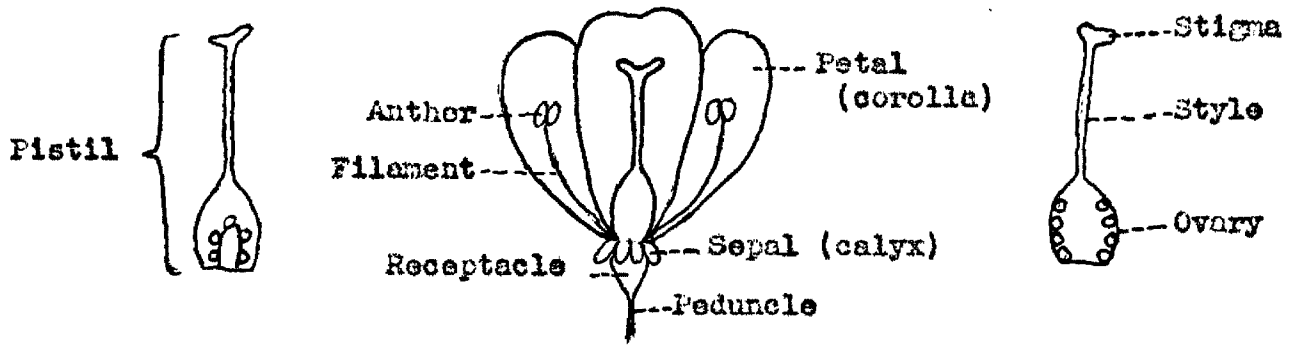
T. A. Williams, Professor of Botany at the Agricultural College of South Dakota, 1898.

J. W. Blankinship, Professor of Botany, Montana Agricultural College, Bozeman, 1898-1904.

Dr. M. J. Elrod, Professor of Biology at the University of Montana, whose local interest extended the collections for nearly forty years, started the University herbarium. More extensive collections have been made by other members

of the botany faculty; particularly by Dr. J. E. Kirkwood, Dr. J. W. Severy, Dr. C. L. Hitchcock, and Dr. Fred A. Barkley. Thus it is that the herbarium has been built up until now there are more than 31,000 specimens. While connected with the University Dr. C. L. Hitchcock published his Key to the Grasses of Montana, to which interested students are referred. Dr. Hitchcock also worked on a key for the spring flora of the Missoula region for his botany classes. This was started in mimeograph form but was never published as other interests were greater.

The Parts of the Flower



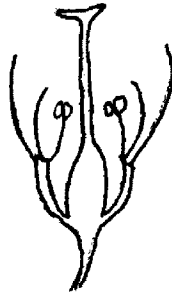
Central or basal placentia

Parietal placentia

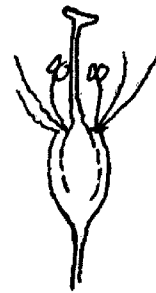
1. The petals and corolla together are known as the perianth, especially so when we cannot distinguish the one from the other as in the tulip.
2. If one part of the perianth is absent we say it is the petals that are wanting.



Hypogynous
(ovary superior)
as in buttercup



Perigynous
as in cherry



Epigynous
(ovary inferior)
as in apple



Regular Flower
(corresponding parts alike.)

Parietal Placentia



Irregular Flower
(corresponding parts unlike.)

Axial Placentia



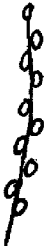
Types of Inflorescence



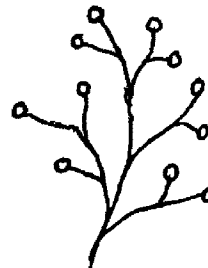
Solitary
(tulip)



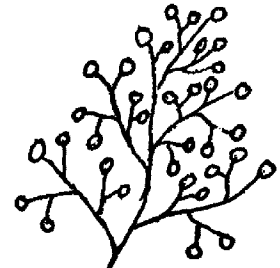
Raceme
(lily of
the valley)



Spike
(hollyhock)



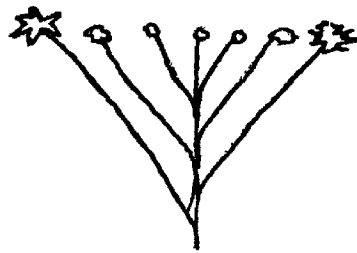
Panicle
(meadow-rue)



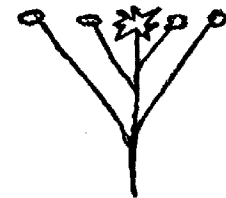
Thyrses
(lilac)



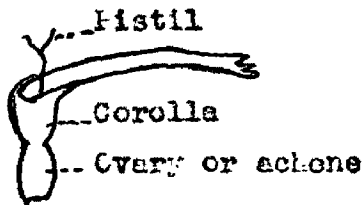
Umbel
(dill)



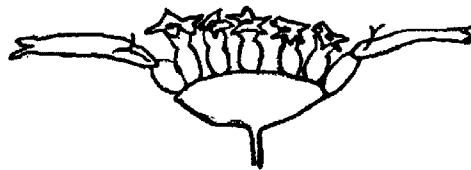
Corymb
(outer flowers bloom first)



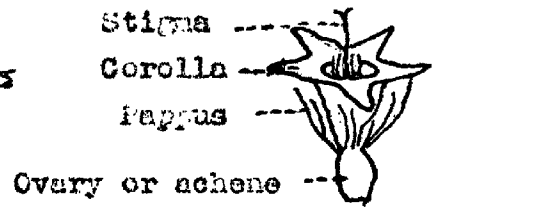
Cyme
(inner, first.)



Strap Flower



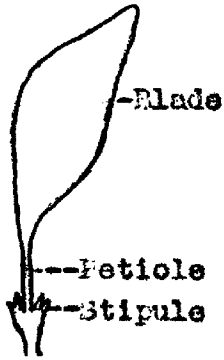
Head
(daisy)



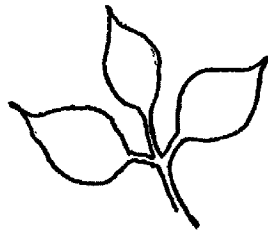
Tubular or Disc Flower

Note: After tracing the plant to its species read its description carefully. If the description does not fit you have made some mistake in "keying" the plant. Check back carefully. If you cannot trace your flower or if the description does not fit, possibly you have a plant not recorded in this key. In such case refer to some other key such as Coulter and Nelson's Rocky Mountain Flora.

Leaves



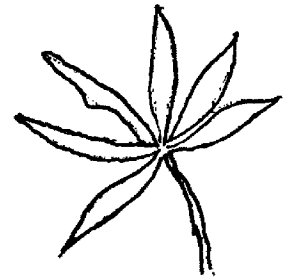
Simple leaf



Ternately compound



Pinnately compound



Palmately compound



Oblong



Lanceolate



Ovate



Obovate



Linear



Cordate



Digitate

Leaf Shapes



Mucronate



Acuminate



Acute



Obtuse or blunt



Emarginate or cleft

Leaf Tips



Cuneate



Sagittate



Hastate

Leaf Bases



Serrate



Dentate



Entire



Crenate



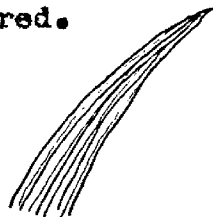
Undulate

Leaf Margins

Floral parts usually in 3's or 6's;
Veins of leaves usually parallel;
Vascular bundles of the stem (in cross-
section) usually scattered.

MONOCOTYLEDONS

vii



Floral parts usually in 4's or 5's;
Veins of the leaves usually netted;
Vascular bundles of the stem (in cross-
section) usually arranged around a cylinder.

DICOTYLEDONS

viii



KEY TO THE SPRING FAMILIES OF MONOCOTYLEDONAE

A. Perianth (petals and sepals) none.

Pistils and stamens enclosed in a scale or glume

Stems hollow, round or flattened

POACEAE

(Refer to C.L. Hitchcock's "Key to

the Grasses of Montana" or to A.S.

Hitchcock's "Manual of Grasses of the

U.S.")

Stems solid, usually more or less triangu-
lar. The sedges

CYPERACEAE

(Refer to Coulter & Nelson's "New Manual
of Rocky Mountain Botany")

Cyperaceae

AA. Perianth (petals and sepals) present

(if one part of the perianth is lacking the
missing part is the petals)

Pistils one and compound as shown by the
lobes of the stigma, the number
of cells or placentae in the ovary.

Ovary superior (above the point where
the other parts are attached.)

LILIACEAE

1.




Ovary inferior (petals etc. attached
above it.)

Flowers irregular

ORCHIDACEAE




3.

PETALS WANTING

Flowers perfect (having both stamens and pistils)			
Pistils many			
Stamens attached below the ovary		<u>RANUNCULACEAE</u>	6.
Pistil one			
Ovary 2 celled			
Stamens 6		<u>CRUCIFERAE</u>	9.
Stamens 2		Synthyris	30.
Ovary 1 celled			
Ovary superior		<u>POLYGONACEAE</u>	4.
Ovary partly inferior			
Flowers on a leafless stem		Heuchera	12.
Flowers on a leafy stem		<u>SANTALACEAE</u>	4.
Flowers imperfect (lacking either pistils or stamens)			
Leaves simple		<u>POLYGONACEAE</u>	4.
Leaves compound		<u>Thalictrum</u>	7.

PETALS PRESENT

Petals not united

Stamens many, more than 10			
Stamens on the edge of a disc or cup, and leaves alternate, with stipules. Stipules sometimes early deciduous so look for them on young leaves.)			
Pistils 2 to many, distinct or united as shown by the lobes of the stigma.			
Pistils 1		<u>ROSACEAE</u>	14.
Stamens attached below the pistil or pistils and leaves without stipules.		<u>DRUPACEAE</u>	16.
Corolla pink.		<u>PORTULACACEAE</u>	5.
Corolla not pink.		<u>RANUNCULACEAE</u>	6.

Petals present, not united (cont.)

Stamens few: not more than 10

Stamens as many as, and opposite, the petals

Ovary 1-celled

Sepals 5

RYTHMIDACEAE

8.

Sepals 2

PORTULACACEAE

5.

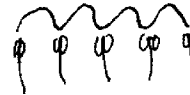
Ovary 2-4-celled

ELAEAGACEAE

20.

Stamens not the same number as the petals or
if of the same number, alternate

Ovary wholly superior

Ovary simple, 1 parietal placenta
fruit a legumeLEGUMINOSAE

17.

Ovary compound as shown by the number
of the placenta, cells or stig-
mas

Ovary 3-5 celled

GERANIACEAE

19.

Ovary 1 or 2-celled

Corolla irregular

VIOLACEAE

21.

Corolla regular

Ovules on central placenta;

Stamens 5-10

CARYOPHYLLACEAE

5.

Ovules on parietal placenta;

Stamens 6 (4-2)

CRUCIFERAE

9.

Ovary at least half inferior

Ovules or seeds only 1 to each cell

Stamens 5 or 10

Herbs

UMBELLIFERAE

23.

Trees or shrubs

URTAEGUS

14.

Stamens 4 or 8

CONIACAE

24.

Ovules or seeds more than 1 to each cell

Ovary 1 celled with two parietal
placentaCROSSULARIACEAE

13.

Ovary 2 to many celled

Stamens fastened to a flat
disc which covers the
ovary; stamens 4.CHELIDACEAE

20.

Stamens fastened on the calyx;

Stamens 5 or 10; styles 2-3.

SAXIFRAGACEAE








12.

Stamens 4 or 8; styles 1.

ONAGRACEAE

22.

Petals United

Stamens more numerous than the corolla lobes			
Ovary 3 to many celled, stamens free from the corolla		<u>ERICACEAE</u>	24.
Ovary 1 celled with 1 parietal placenta		<u>LOGANIACEAE</u>	17.
With 2 parietal placenta		Corydalis	8.
Stamens as numerous as the corolla lobes or fewer			
Stamens opposite the corolla lobes 		<u>FRINGILLACEAE</u>	24.
Stamens alternate the corolla lobes or fewer			
Ovary superior			
Corolla more or less irregular 			
Fertile stamens 4 or 2			
Ovules only 1 in a cell			
Ovary 4 lobed		<u>LABIATAE</u>	28.
Ovules 2 or more, usually numerous			
Ovary 2 celled		<u>SCROFULARIACEAE</u>	29.
Corolla regular			
Stamens as many as the corolla lobes			
Ovary deeply 4 lobed		<u>BORAGINACEAE</u>	27.
Ovary not deeply 4 lobed			
Ovary 1 celled		<u>HYDROPHYLLOIDACEAE</u>	26.
Ovary 2 or more celled			
Stamens on the corolla tube			
Stamens 4; corolla scarious 		<u>PLANTAGINACEAE</u>	31.
Stamens 5; corolla petaloid			
Ovary 3-celled; dry		<u>POLEMONIACEAE</u>	25.
Ovary 2-celled; often fleshy.		<u>SOLOMACEAE</u>	28.
Ovary inferior			
Anthers united into a ring 		<u>COMPOSITAE</u>	33.
Anthers not united			
Stamens on the ovary		<u>CAMPANULACEAE</u>	32.
Stamens on the corolla			
Stamens 1-3		<u>VALERIANACEAE</u>	32.
Stamens 4 or 5			
Ovary 2 to 5 celled			
Leaves whorled 		<u>RUBIACEAE</u>	31.
Leaves opposite 		<u>CARYOPHYLLACEAE</u>	31.

Family - LILIACEAE

Perennial plants; leaves parallel-veined; flowers with 3 sepals and 3 petals; (sepals and petals often alike) ovary 3 celled; stamens 6.

Stems with leaves

Leaves 1, 2 or 3, narrow alternate

Outer perianth segments narrower

Leaves few in a whorl on upper parts of stem

Leaves broad 2 cm. or more broad

Flowers white to purple

Leaves narrow 1 cm. or less broad

Flowers yellow

Leaves many, alternate

Leaves linear, less than 1 cm. broad

Flowers greenish white

Leaves not linear, more than 1 cm. broad

Flowers one or two at ends of branches

Flowers drooping

Flowers in racemes or panicles at

ends of stems

Simple racemes

Compound racemes

Stems with no leaves

Flowers solitary or in twos or threes

Blossoms erect

Blossoms nodding

Flowers more than three in a cluster

Flowers in racemes

Flowers blue

Flowers in umbels

CALOCHORTUS

C. Gunnisonii

TRILLIUM

T. ovatum

FRITILLARIA

F. pudica

ZYGADENUS

Z. venenosus

DISLIRIUM

D. trachycarum

VACINIA

V. stellata

V. amplexicaulis

CLINTONIA

C. uniflora

ERYTHRONIUM

E. parviflorum

CAMASSIA

C. esculenta

PROSTISMA

P. Douglasii

Brodiaea Douglasii Wats.

Flowers blue in a dense umbel; perianth tubular-campanulate, 2-3 cm. long, the tube longer than the lobes; stamens in two rows; stem tall; leaves 2-4, narrow, shorter than the stem.

Calochortus Gunnisonii Wats.

Flowers white or lilac, showy; petals hairy inside, with a dark spot near the base. Outer perianth segments more narrow than the inner. Leaves few, linear, those on the stem clasping. Petals yellowish-green below the middle, banded and lined with purple. Anthers acute. Mariposa Lily.

Zygadenus venenosus Wats.

Flowers yellowish in a many flowered raceme. Bracts below each flower awl-shaped, stamens free from the perianth. Herbs perennial, glabrous; leaves long-linear, on the stem. Bulbs coated, poisonous. Death Camas.

Cerastia esculenta Lindl.

Flowers blue, showy in terminal racemes. Perianth of 6 distinct segments. Stamens 6 on the base of the perianth. Stem arising from a bulb, stem about 1 foot high. Leaves narrow from the base.

ERYTHRONIUM

Flowers yellow, nodding, quite large, terminal, usually one though often 2-3. Stamens 6, shorter than the perianth; ovary sessile, 3 celled. Stem simple; leaves 2, shiny, from the base. Dogtooth Violet or Glacier Lily.

Anthers purple

E. grandiflorum Pursh.

Anthers white or yellow

Perianth white

E. grandiflorum candidum Piper

Perianth yellow

E. paviflorum (S. Wats.) Goodding

Fritillaria pudica (Pursh) Spreng.

Flowers yellow, nodding, solitary or several. Perianth mostly campanulate of 6 separate and nearly equal oblong segments, each with a nectar-pit or spot at the base; stamens 6 on the ovary. Ovary 3 celled; ovules numerous in each cell. Stem simple, leafy. Yellow-bell

Trillium ovatum Pursh.

Clabrous erect unbranched herbs, with short rootstocks; leaves 3 in a whorl at the top of the stem just under the flower. Flower solitary. The 3 outer perianth segments green, narrow; the 3 inner broader, white, pink, or purple; stamens 6 on the ovary. Ovary 3-6 angled or lobed. Petals to pink or red in age. Anthers yellow. Flowers peduncled. Trillium or Wake-robin.

Discorum trachycarpum S. Wats.

Stems more or less hairy; slender rootstocks; stems branching, scaly below, leafy above; leaves alternate, sessile or clasping; flowers terminal, drooping, whitish or greenish-yellow, solitary or few in simple umbels; perianth segments 6 narrow, equal, separate; stamens 6 on the ovary. In woods. Fairybells.

VACUINA False Solomon's-seal

Herbs with slender or short and thick rootstocks; stem simple, scaly below, leafy above; leaves alternate, short petioled or sessile, ovate or oblong; flowers in a terminal raceme or panicle; flowers white or greenish, small; perianth of 6 separate spreading equal segments; stamens 6 on the base of the segments; ovary 3 celled, sessile; ovules 2 in each cavity.

Flowers small, numerous, in a dense panicle V. anglicaulis (Nutt.)

Greene

Flowers larger, few, in a raceme

V. stellata (L.) Monong.

Clintonia uniflora (Schult.) Kunth

Flower stems pubescent, bearing a single white flower or rarely two. Leaves 2-5, oblong, acuminate, pubescent beneath, 10-30 cm. long. Calyx pubescent on the outside. Usually found in rich woods. Quenep

Family - ORCHIDACEAE

Perennial herbs; leaves entire, sheathing, sometimes reduced to scales; flowers perfect, irregular, bracted. Perianth of 6 segments, the outer 3 alike or nearly so, 2 of the inner (petals) on the side alike, the third inner (the lip) very unlike the others, usually larger and often spurred. Anthers 1 or 2. Ovary inferior, 3-angled, 1-celled, ovules numerous.

Plants without green coloring

Lip 3-lobed

CORALLORHIZA

C. multiflora

Plants with green leaves

Flowers reddish or rose color

CALYPSO

C. bulbosa

Flowers yellow

CYPRIPEDIUM

C. parviflora

Corallorhiza multiflora Nutt.

Stem 2-5 dm. high, many flowered; flowers brownish-purple. Lip almost white and purple-spotted. Found in the woods. Coral Root.

Calypso bulbosa (L.) Oakes.

Flower drooping; sepals and petals light rose-color, lip usually longer, brownish-pink mottled with purple, the edge margined at the apex. A low herb, in wet or boggy woods, with showy flowers, a scaly-sheathed stem and a single broad thin leaf. Lady's Slipper.

Cypripedium parviflora Salisb.

Stem 20-60 cm. high, leaves several, many nerved, 5-12 cm. long, elliptic to lanceolate; flowers 1-3, yellow, more or less marked with purple, sepals linear, twisted and brownish or purple-brown. A handsome plant. Yellow Lady's Slipper.

Family - SANTALACEAE

Herbs or shrubs, with angled or striate branches; entire leaves, alternate, without stipule, sessile. Flowers perfect, usually purplish or greenish white. Perianth 3-5 cleft, and adherent to the 1 celled ovary. Petals wanting. Stamens as many as the perianth lobes and opposite them. Ovary 2-4 celled, becoming a 1-seeded nut-like fruit.

Leaves glaucous. Frequent in dry sandy places.

Stems 1-2 dm. high. Leaves oblong to nearly linear
cymes several-flowered.

Commandra pallida A.D.C.

Family - POLYGONACEAE

Herbs with alternate or sometimes opposite leaves. Leaves entire, and stipules in the form of sheaths above the swollen joints of the stem, or none. Flowers rather small, mostly perfect, with more or less persistent calyx consisting of 3-6 segments, the inner ones often petal-like. Petals wanting. Stamens 4-9. Ovary 1-celled, bearing 2 or 3 styles.

Flowers subtended by involucre

Flowers bright sulphur-yellow

Flowers pale yellow or whitish

Bracts large and leaf-like

Bracts not leaf-like

Flowers not subtended by involucre

Sepals 6, stigmas 3, tufted.

Plants 1-3 dm. high

Sepals 4-6, usually 5; stigmas capitate

Flowers yellowish or whitish

ERIOGONUM

E. Piperi

E. subalpinum

E. ovalifolium

RUMEX

R. Acetosella

POLYGONUM

P. bistortoides

Eriogonum Piperi Greene.

A showy plant usually growing in clumps. Stems 2-4 dm. high from a mat of closely crowded basal leaves. Involucres of large leaf-like bracts. Sulphur Plant.

Eriogonum subalpinum Greene.

Shrubby at the base, quite matted. Peduncles 3-4 dm. high, leaves mostly glabrate above, rarely also below. Flowers pale yellow tinged with red when drying. Involucres leaf-like. Umbrella Plant.

Eriogonum ovalifolium Nutt.

Low plants, densely tomentose, with a short closely branched caudex. No petals, 6 sepals, stamens 9; leaves silvery and without stipules. Silver Plant.

Rumex Acetosella L.

Flowers dioecious. Reddish, no petals, 6 sepals. Leaves narrowed with ear-like lobes at the base of the blade. Plants 1-3 dm. high. Sorrel.

Polygonum bistortoides Pursh

Flowers white or yellowish in terminal spikes, with scarious bracts. No petals. Filaments filiform. Perennial. Bistort.

Family - PORTULACACEAE

Juicy herbs, with simple and entire leaves and regular and perfect flowers. Petals 2-5 or more. Stamens numerous.

Plants with fleshy leaves

Sepals large, 6-8

Plants without fleshy leaves

Leaves cordate

Stem leaves 2, not united

Leaves linear

Annuals

LEWISIA

L. rediviva.

CLAYTONIA

C. asarifolia

MONTIA

M. linearis

Lewisia rediviva Furch.

Leaves densely clustered, linear-oblong, fleshy, smooth. Scapes jointed at the middle and with 5-7 scarious bracts. Petals rose-colored or white. Bitterroot.

Claytonia asarifolia Bong.

Low glabrous perennial herbs with a pair of opposite stem leaves and usually 1 or more basal leaves. Flowers white or pink in loose terminal simple racemes. Sepals 2, style 3-cleft. Found in damp shady places. Spring Beauty.

Montia linearis (Dougl.) Greene

Stems simple or branching 8-12 cm. high. All leaves linear, 2-3 cm. long. Petals white, unequal, scarcely longer than the 2 sepals. Stamens 3. Found in wet habitat.

Family - CARYOPHYLLACEAE

Stems often swollen at the nodes; leaves opposite, entire; flowers regular, perfect; sepals 4-5, separate or united into a calyx-tube; petals of the same number as sepals or none; stamens not more than twice as many as the sepals; styles 2-5, ovary 1 celled, rarely 3-5 celled; ovules several to many, basal or attached to a central column.

Sepals united; petals long-clawed.

Styles always 5

Plants tall; leaves linear

Styles 3, rarely 2, 4 or 5

Flowers in a paniculate leafy cyme

Sepals free to the base or nearly so

Petals deeply emarginate or bifid

Styles mostly 5

Perennials

Petals entire or barely emarginate

Styles 3

Seeds not appendaged

Leaves linear, rigid

Seed with light colored appendage at the hilum

Low slender plants

LYCOPHIS

L. alba

SILENE

S. Menziesii

CEPASTIUM

C. arvense

ANEMARIA

A. congesta

MOENHINGIA

M. lateriflora

Lychnis alba Mill.

Plants stout, branched, viscid; leaves ovate to lance-oblong; petals white; calyx somewhat inflated. Large, rather showy plants, some flowers staminate, some pistillate. Called White Champion.

Silene Menziesii Hook.

Flowers white or pink, petals deeply notched. Plants glandular-puberulent; stems dichotomously branched, leafy 1-3 dm. high. Peduncles lateral or in the forks of branches, 1 flowered, equaling the leaves. Catch fly.

Cerastium arvense L.

Perennial, downy with reflexed hairs, leaves linear, clasping; cyme few-flowered; pedicels erect or nodding; petals nearly twice longer than the sepals. Flowers white. Mouse ear Chickweed.

Arenaria congesta Nutt.

Glabrous or obscurely glandular. Stems slender, simple; 1-3 dm. high, more or less tufted. Leaves grass-like. Flowers white; bracts under flower paper-like. Sandwort.

Moehringia lateriflora (L.) Fenzl.

Low slender plants. Petals white, peduncles usually 2-flowered, soon becoming lateral. Stems erect, sparingly branched.

Family - RANUNCULACEAE

PISTILS many (more than 10), 1 ovuled; fruit an achene

Plant climbing

Leaflets 3

Plant not climbing

With a whorl of leaves below the flower

Flowers not blue

Heads globose

Flowers blue

Without the whorl of leaves below the flower

No petals present

Achenes flattened

Petals present

Low plants, common

Tall plants, in marshes

PISTILS 1-10; 2-many seeds, fruit not an achene

Flowers large irregular, blue

Leaves basal and cauline

Flowers small regular, white

Leaflets thin

CLEMATIS

C. columbiana

ANEMONE

A. globosa

FULSANTILLA

F. hirsutissima

THALICTRUM

T. occidentale

RANUNCULUS

R. glebeerrimus

R. Bolanderii

DELLINIUM

D. bicolor

ACTAEA

A. eruta

Clematis Columbiana (Nutt.) T. & G.

Leaves opposite; sepals 4, rarely 3, or more than 4, petal-like; petals none or minute; stamens numerous; pistils numerous, 1 ovuled; styles feathery or naked in fruit. Half-woody climbers; flowers large, blue; leaves ternate, petioled. Outer stamens with filaments more or less dilated and petal-like, the anthers wanting; achenes with long plumose tails. In moist woods. Virgin's Bower.

Thalictrum occidentale Gray.

Erect perennial herbs; leaves 2-3 ternately compound, stem leaves alternate; flowers perfect or not perfect, generally small, greenish-white in corymbs, panicles or racemes; sepals 4 or 5, petal-like or greenish, dull colored. Petals none; stamens numerous; pistils 4-15. Meadow Rue.

Anemone globosa Nutt.

Erect perennial herbs. Basal leaves divided, those of the stem forming a whorl below the flowers. Sepals 4-6. Petals wanting. Stamens numerous, shorter than the sepals. Pistils numerous, becoming compressed achenes, which are not long tailed. Achenes densely wooly, flowers white. Fruiting bodies globose, Wind Flower.

Pulsatilla hirsutissima (Pursh.) Brit.

Characters the same as Anemone except that the styles are always persistent and become greatly elongated in fruit. Flowers bluish or whitish. Pasque flower.

RANUNCULUS Buttercup

Perennial herbs with leaves entire or partly dissected. Flowers solitary or several, yellow. Sepals usually 5. Petals 3-15, with a nectar cup at the base inside.

Low plants common

R. glaberrimus Hook.

Tall marsh plants

R. Bolanderii Greene.

Delphinium bicolor Nutt.

Herbs with palmately-lobed leaves and racemose flowers which are blue or purple. Sepals 5, petal-like. Petals 3 or 4, irregular. The upper sepal spurred. Pistils few. Roots thickened, plants low (1-5 dm. high) Stems pubescent to the base; basal leaves few. Larkspur.

Actaea arguta Nutt.

Perennial herbs, leaves twice or thrice ternately compound. Flowers white, numerous in a raceme. Sepals small 4-6, petal-like. Petals small 4-10. Stigma sessile, 2 lobed. Pistil 1, becoming a red or white berry (poisonous). Leaflets thin, sharply toothed. Moist woods. Baneberry.

Family - BERBERIDACEAE

Shrubs with alternate simple or compound leaves and no stipules. The flower parts are distinct and free, and are opposite to each other instead of alternate.

Shrub with yellow wood

BERBERIS
B. aquifolium

Berberis aquifolium Pursh.

Yellow wood, compound and often spiny leaves, and yellow racemose flowers. Sepals 6, yellow, with 3 or 6 closely appressed bracts. Petals 6 imbricated in 2 series, each with 2 basal glands. Stamens 6. Pinnate leaves, shiny on the upper parts. Oregon Grape.

Family - PAPAVERACEAE

Flowers perfect, regular or irregular. Sepals early deciduous, 2 or rarely 3-4. Petals imbricated, 4 or more, these also early deciduous. Stamens distinct, hypogenous, with filiform filaments. Ovary usually 1-celled, with many ovules, becoming a dehiscent 1-celled capsule.

Flowers irregular, one of the sepals spurred
Flowers golden-yellow, capsule spreading

CORYDALIS
C. aurea

Corydalis aureum Wild.

Flowers yellow in compact racemes, plants much branched at the base, 15-30 cm. high. Leaves dissected, leaflets small, stems spreading. Sepals 2, small, corolla irregular; petals 4, one of the outer pair spurred at the base. Stamens 6, in 2 sets.

Family - CRUCIFERAE

Flowers usually in the form of a Maltese cross; Petals 4, rarely wanting; sepals 4, deciduous. Stamens 6; 4 opposite the petals and longer than the remaining 2 which are opposite sepals. Plants with sap tasting like mustard or turnip. Leaves alternate; stipules none. Pistil one, usually 2-celled by a wall from a parietal placenta to the other. Fruit a pod.

Pods short



Pods inflated

Pods notched at the top

Pods equally constricted whole length

Pods not notched at the top

Glabrous above, pubescent below

Pods flattened

Cells 1-2 seeded

Upper stem leaves linear

Upper stem leaves broader, perfoliate

Cells 2-several seeded

Pods deeply notched and winged

Pods scarcely notched or winged

PHYSARIAP. didymocarpaCAMELINAC. microcarpaLEPIDOPTERISL. densiflorumL. perfoliatumTHLASPIT. arvenseT. alpestri

Pods long

Flowers purple, or white

Flowers purple

Stem leaves more or less pubescent

Stem leaves glabrous

Flowers white, sometimes tinged with purple

Pods definitely reflexed

Plants glabrous

Plants pubescent

Pods erect

Flowers yellow

Leaves narrow and entire

Petals 15-25 mm. long

Petals 10 mm. or less

Leaves pinnately compound or dissected

Leaves pinnately dissected into narrow lobes

Pubescence of simple hairs or wanting

Pubescence of forked hairs

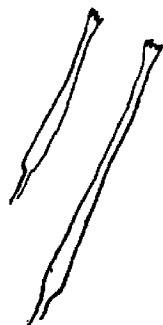
Green; seeds in 1 row

Canescent; seeds in 2 rows

Leaves dissected into broad lobes

Pod beaked with stigma

Pods not beaked with stigma

ARABISA. oblongolataA. DrummondiiA. retrofractaA. MacDouglisiiA. NuttalliiERYSIMUME. asperumE. inenspicuumSISIMIRIUMS. altissimumS. incisumS. canescensBRASSICAB. arvensisBARBARICAB. americana

Physaria Didymocarpa (Hook.) n. Gray.

Plants densely stellate-canescens, 10-20 cm. high. Flowers with showy pale yellow petals. Basal leaves ovate to broadly spatulate, stem leaves more narrow. Pod deeply and equally notched above and below, the slender style, 5-6 mm. long, persistent on the pod. Pods much inflated. Pods deeply notched.

Camelina microcarpa Andrz.

Flowers pale yellow. Pods beaked with the persistent style. Pods inflated and not notched. Stems erect 30-90 cm. high, hirsute below, glabrous above. Leaves sagittate at the base, half clasping.

Lepidium densiflorum Schrad.

Annual, 20-50 cm. high, branched above, finely hairy; basal leaves lobed the upper stem leaves narrow, toothed. Petals minute or wanting, pods flat, rounded, 3mm. long notched at the top. Pods very numerous and densely arranged.

Lepidium perfoliatum L.

Annual or biennial; stems suberect, 2-4 dm. high; lower leaves bipinnatifid, upper leaves entire, cordate or reniform, clasping, glabrous. Petals yellow, about 1 mm. long. The stem does, or appears to perforate, the upper leaves.

Thlaspi arvense L.

Annuals with white flowers. Plants erect, glabrous, 15-40 cm. high. Lower leaves oblanceolate, petioled, the upper stem leaves without petioles, sagittate and clasping. Pods deeply notched 8-13. mm.

Thlaspi alpestri Folsom.

Perennials with showy white flowers. Plants glabrous, stems usually branched from the base, 10-20 cm. high. Basal leaves ovate or elliptic, petioled, entire or toothed; stem leaves oblong, entire, sessile and somewhat eared and clasping. Pods not notched, style persistent. Very much like cultivated candytuft.

Arabis oblanceolata Rydb.

Flowers reddish-purple, plants about 3 dm. high; stem leaves sessile, lower ones eared; basal leaves with stems and about 5 or more cm. long. Several stems from the base; flowers loosely clustered. Pods about 5 cm. long.

Arabis Drummondii Gray.

Petals reddish-purple or whitish; plants 3-8 dm. high. Stems glabrous or sparingly pubescent below. Pods 5-8 cm. long. Stem leaves eared, sessile, basal leaves short petioled.

Arabis retrofracta Graham.

Flowers drooping and nearly all on one side of the stem. Stem 20-40 cm. high, with branched hairs; stem leaves clasping. Petals white or pinkish. Base of stem leaves eared.

Arabis MacDouglia Rydb.

Flowers drooping in one-sided racemes, white or lavender. Much like the above except that the stem leaves are simple and not eared; the stem and leaves more pubescent.

Arabis Nuttallii Robinson

With showy white flowers in loose clusters. Perennial, with several stems arising from the base. With more or less stiff hairs on lower parts of plant. Stem leaves sessile but not oared, basal leaves with short petioles.

Erysimum asperum (Nutt.) DC.

Plants with conspicuous yellow flowers which sometimes turn to orange or reddish brown. Greenish canescent, stems usually single and simple about 2-5 dm. high. Leaves linear or lanceolate, usually entire and crowded at the base. Flowers showy and quite cross-shaped. Wall Flower.

Erysimum inconspicuum (Wats.) MacG.

Very similar to the above but with much smaller flowers.

Sisymbrium altissimum L.

Tall plant 60-100 cm. high erect with pale yellow flowers. Plant sparsely hirsute with simple hairs or glabrous. Basal leaves petioled, pinnatifid into linear or lanceolate lobes. Leaves of the upper stem reduced, lobes linear. Tumble Mustard

Sisymbrium incisum Encelm.

Flowers bright yellow, pods usually curved, ascending on slender pedicels of about the same length. Stems slender, erect, sparingly branched, usually minutely stellate-pubescent. Leaves pinnatifid.

Sisymbrium canescens Nutt.

Similar to the above but canescent and seeds in two rows.

Brassica arvensis (L.) B.S.P. Frel.

Stout annual with stiff scattered hairs, showy pale yellow flowers. Lower leaves pinnately parted into a large upper segment and smaller lower segments, dentate. Uppermost leaves sessile, nonclasping.

Barbarea americana Rydb.

Green glabrous plant with showy bright yellow flowers. Stem somewhat angled; lyrate pinnatifid leaves. Erect 2-4 dm. high. Basal leaves broadly elliptic, wavy, simple, or with 1 or 2 pairs of small lobes on the petiole; lower stem leaves similar but clasping at base; Upper leaves strongly waved or toothed.

Family - SAXIFRAGACEAE

Perennial herbs; leaves usually alternate, often all born at the base of the stem. Sepals 5, petals 5 or none, small; stamens as many as or twice as many as the sepals.

Ovary 2-celled

Stems leafless

Stems more or less leafy

SAXIFRAGA

S. rhomboidea

S. bronchialis

Ovary 1-celled

Petals pinnatifid or cleft

Petals 3 parted into thread-like divisions

Flowers all on one side

Petals 3-7 parted, not thread-like

Calyx bell-shaped, plant obscurely pubescent

Calyx cone-shaped, plant rough hirsute

Petals none (sepals petal-like)

Flowers yellow or yellowish

MITELLA

M. stauropetala

TELLINA

T. tenella

T. parviflora

HEUCHERA

H. ovalifolia

Saxifraga rhomboidea Greene.

Flowers small, white, in densely clustered groups on single stout stems 1-3 dm. high; leaves basal in a tuft; oval or ovate, 3-6 cm. long, entire, crenate-dentate, glabrous.

Saxifraga bronchialis L.

Plants 5-15 cm. high, forming dense mats; leaves lanceolate, 5-12 mm. long, spine-tipped, hairy on the margins, crowded and overlapping; petals about 5 mm. long, white with red dots. In dry places the leaves are often purplish; they are disagreeably prickly.

Mitella stauropetala Piper.

Stems 30-50 cm. high bearing flowers on one side. Leaves all basal, indistinctly 5 lobed, slightly crenate and kidney shaped. Raceme one sided 6-12 cm. long, 10-25 flowered; flowers white, nearly sessile, petals 3 parted.

Tellina tenella (Nutt.) Walp.

Flowers white or pinkish in a terminal raceme; stem simple or branched; leaves few, round-cordate, toothed or palmately divided, chiefly alternate. Pubescent, minutely glandular; pedicels spreading.

Tellina parviflora Hook.

Flowers white or pink in terminal raceme. Much like the above but somewhat larger. Rough pubescent. Leaves palmately lobed. Few leaves on stem.

Heuchera ovalifolia Nutt.

Flowers in yellow or greenish racemes on a long stem. Petals wanting. Densely and minutely glandular--pubescent; leaves all basal, broadly oval, slightly cordate, somewhat 5 lobed, crenate-dentate; 10-30 cm. high, flowers dense. Alumroot.

Family - GROSSULARIACEAE

Petals 5 or rarely 4, erect; petals might not at first be discovered because they are so much smaller than the sepals. Shrubs with alternate, palmately-lobed leaves. Calyx-tube adnate to the globose ovary.

Currants and Gooseberries

RIBES

Stems usually armed with prickles

Flowers greenish or purplish

Flowers white tinged with violet

R. lacustre

R. saximontanum

Stems not armed

Ovary or berry glandular-bristly

R. viscosissimum

Ovary or berry smooth

Flowers erect or ascending

R. Hudsonianum

Flowers drooping

Flowers greenish-white

R. cereum

Flowers yellow, tinged with red

R. aureum

Ribes lacustre (Pers.) Poir.

Spiny Currant. Shrub .6 to 1.5 m. high, very spiny and prickly; leaves glabrous, with obtuse lobes, often shining, flowers greenish or purplish.

Ribes saximontanum E. Nels.

The spreading stems 3-8 dm. long, more or less bristly; spines triple, stout, 8-12 mm. long. Leaves suborbicular, finely pubescent or glabrate, 6-20 mm. broad, deeply 3-lobed; flowers 1-3 about 1 cm. long, white tinged with violet; calyx-tube cylindrical, villous within; style villous, divided half way to the base.

Ribes viscosissimum Pursh.

Sticky Currant. Shrub a meter or less high; leaves rounded, kidney-shaped, shallowly lobed; flowers few, greenish, about 14 mm. long. Ovary or fruit covered with short gland-tipped hairs. The leaves are sticky and sometimes unpleasant to handle.

Ribes Hudsonianum Richards.

Stems erect; leaves rounded-cordate in outline, smooth above, resinous-dotted beneath, 3-5 lobed. Racemes erect, 5-10 cm. long, many-flowered, bracts much shorter than the pedicels. Calyx campanulate, deeply 5-lobed. Petals oblong, minute.

Ribes cereum Dougl.

Flowers pink or greenish-white; racemes short; Shrub 1-2 m. high, quite rigid and much branched. Petioles more or less glandular-pubescent; leaves reniform-orbicular, cordate at the base. Calyx dilated at the base; petals minute, stamens short.

Ribes aureum Pursh.

A smooth shrub with golden-yellow flowers. Older leaves glabrate and shining, often broader than long, thick, 3-lobed or sometimes 5-lobed. Racemes leafy-bracted, few flowered. Calyx-tube cylindrical, glabrous, 3 or 4 times as long as the spreading lobes. The Missouri or Golden Currant.

Family - ROSACEAE

Shrubs or tree-like

Flowers white

Flowers single or 2 or 3

Leaves 3-5 lobed

Flowers in larger clusters

Flowers in racemes

Leaves simple

Flowers in compound corymb

Flowers white

Flowers in simple corymbs

Plants with thorns

Thorns 1-3 cm. long

Plants without thorns

Old bark shreddy

Flowers pink or red

Herbs

Corolla white, leaflets 3, plants with runners

Corolla yellow or cream, leaflets 3-5 or more, no runners

Styles jointed

Styles not jointed

Calyx rose colored

Calyx green

Styles inserted near base of ovary

Styles terminal

BOSSERIA

B. parviflora

ANGLANCHIER

A. anifolia

SPIRAEA

S. lucida

CRATAEGUS

C. Douglasii

CULASTER

C. palvaceus

ROSA

FRAGARIA

GEU

SIEVERSIA

DIOECALIS

ROSEVILLA

Bossekia parviflora (Nutt.) Greene.

Shrubs sometimes 2 m. high. Leaves palmately and nearly equally 5-lobed, cordate at the base, unequally serrate, 10-25 cm. broad, glabrous or somewhat tomentose, the veins beneath and the petioles usually with gland-tipped hairs. Flowers white, 3-5 cm. broad, calyx densely tomentose. Petals 5, white. Salmon Berry or Thimble Berry.

Anelanchier anifolia Nutt.

Shrubs with alternate, simple, toothed leaves and white flowers in racemes. Calyx-tube adnate to the ovary, its 5 lobes persistent and reflexed. Petals 5, inserted with the numerous stamens on the throat of the calyx. Styles 2-5. Cells of the ovary as many as the styles. Young leaves slightly woolly underneath. Service-berry.

Spiraea lucida Dougl.

Glabrous, the stems usually simple and erect, 4-8 dm. high. Leaves small below, larger above, simple, serrate around the summit, pale and glaucescent beneath. Inflorescence in a compound corymb, the flowers white. Meadowsweet.

Crataegus Douglasii Lindl.

Shrubs with thorny branches, simple leaves which are alternate, toothed or lobed. White flowers in corymbs. Calyx-tube urn-shaped, 5 parted. Petals 5, spreading. Stamens 5-20. Ovary 2-3 celled. Spines more than 2 cm. long; teeth of leaves, gland tipped, leaves shiny above but with scattered hairs; anthers rose-color. Hawthorn.

Opulaster malvaceus (Greene) Kuntze.

Shrubs with simple toothed or lobed alternate leaves, membranous deciduous stipules and rather large showy flowers in corymbs. Calyx 5-cloft, persistent. Petals 5, rounded, sessile; stamens numerous on the rim of the cup-shaped receptacle. Carpels 1-5 distinct, often stipitate. Carpels somewhat inflated. Leaves glabrous. Pedicels very bracteate; bark shreds off. Hinebark.

ROSA

Shrubby, more or less prickly plants, with pinnate leaves and large flowers. Stipules adnate to the petiole. Calyx without bractlets. Stamens numerous on the thick margin of the disk which nearly closes the throats of the calyx. Carpels many, hairy; fruit fleshy.

Calyx tube and fruit prickly.

R. MacDougalii Holz.

Calyx tube not prickly

Prickles of the stem usually straight

Sepals persistent after flowering

R. Nutkana Presl.

Sepals deciduous after flowering

R. cynocarpa Nutt.

Prickles of the stem usually curved

R. graciphila Rydb.

Cean strictum Soland.

Sepals reflexed, upper part of the style deciduous, Perennial herbs, leaves pinnate with stipules, basal leaves clustered, stem leaves smaller. Calyx 5-lobed with alternate bractlets; petals 5, usually longer than the calyx lobes. Stamens many on the throat of the calyx. Styles terminal, jointed, the upper part deciduous; achenes 2-3, pubescent. Receptacle downy. Avens.

Sieversia ciliata (Pursh.) G. Don

Low perennial herbs with simple stems, mostly basal leaves which are pinnate. Purplish sepals which are longer than the yellow petals. Flowers in cymes. Sepals, bractlets, and petals-5. Style not jointed, very long and strongly plumose in fruit. Plant hairy. Old Man's Beard.

Potentilla flabelliformis Lehm.

Herbs with alternate stipulate, digitately or pinnately compound leaves and yellow or whitish flowers, in cymes or solitary. Calyx persistent, with 5 sepals and 5 alternating bractlets, petals 5. Stamens 10-20 with small anthers. Carpels usually numerous, mostly in three series, inserted on a dry, usually hairy receptacle. Styles terminal, deciduous. Cinquefoil.

FRAGARIA Strawberry

Stemless plants with runners; leaves trifoliate and tufted at the base and having membranous stipules. White cymose or solitary flowers. Leaflets coarsely toothed. Calyx deeply 5 lobed and 5 bracteolate. Petals 5. Stamens numerous. Carpels numerous; fruit large, red, fleshy. Styles lateral.

Hairs spreading at right angles to the stems.

Leaflets mostly without petioles.

Flowers above the leaves

F. bracteata Heller.

Flowers not as tall as the leaves

F. platypetala Rydb.

Dryocallis pseudorupestris Rydb.

Perennial, usually glandular-viscid herbs with pinnate leaves. Cymose flowers yellow or yellowish white. Sepals 5, with 5 alternating bractlets. Style inserted near the base of the ovary. 2-4 dm. high.

Family - DRUPACEAE

Trees or shrubs, with alternate, petioled, serrate leaves and small early-deciduous stipules. Flowers perfect and regular. Calyx 5-lobed, free from the ovary, deciduous. Petals 5, inserted on the calyx as are also the numerous stamens. Stigma small, capitate; ovule 1 celled. Leaves folded lengthwise in the bud.

Flowers in racemes, white. Chokecherry. Prunus melanocarpa (A.Nels.) Rydb.

Family - LEGUMINOSAE

Flowers irregular, perfect. Calyx 4-5 toothed or cleft; lobes equal or unequal, sometimes 2-lipped. Petals more or less united or separate, usually with the upper or odd petal larger than the others and usually turned backward or spreading; the two lateral petals oblique and outside the two lower; the last pair commonly more or less coherent by their edges, forming a keel which usually encloses the pistils and stamens. Stamens 10, united into one cluster or two clusters. Pistil 1, 1-celled. Fruit a legume. Plants with sweet-pea like blossoms and pea-pods.

Anthers of two forms (round and oblong)

Plants glabrous or nearly so

Plants more or less pubescent



Calyx conspicuously inflated or swollen on one side

Calyx not conspicuously swollen

Anthers all alike

Leaflets 3

Flowers in heads

Flowers pink or red

Flowers white or pinkish

Flowers in slender racemes

Flowers yellow

Flowers white

Leaflets 5 or more along leaf stalk

Leaves with tendril at the end

15-40 flowered

5-10 flowered

Leaflets nearly glabrous, oval to oblong

Leaflets minutely pubescent, narrower

Leaves without tendril at the end

Leaflets glabrous, or minutely appressed-pubescent beneath

Leaflets not glabrous

Plant white-wooley

Plant not white wooley

1-3 dm. high, flowers

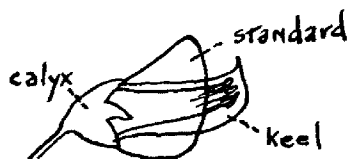
tinged with purple

3-5 dm. high, flowers

yellow



legume



calyx

standard

keel

LUPINUS

L. Burkei

L. pseudovarviflorus

L. sericeus

TRIFOLIUM

T. pratense

T. repens

MELOLOTUS

M. officinalis

M. alba

VICIA

V. cracca

V. americana

V. trifida

ASTRAGALUS

A. Macounii

A. inflexus

A. campestris

A. Drummondii

LUPINUS

Flowers showy, in terminal spikes or racemes. Calyx 2-lipped. Stamens united and enclosed in the keel. Leaflets 5-13 palmately arranged at the end of the leaf stem. Flowers in various blues.

Lupinus Burkei Wats.

Green and glabrous or nearly so. Stems erect, 60-100 cm. high; leaflets 6-11, glabrous above, sparsely appressed-pubescent beneath; petioles of the lower leaves very long, racemes dense, 10-30 cm. long, the pedicels short, 2-4 mm. long. Tall plants found in moist meadows.

Lupinus pseudoparviflorus Rydb.

Calyx appressed-pubescent, very gibbous at the base. Corolla blue, about 1 cm. long. Stems single or several, erect, 3-6 dm. high. Petioles slender, the lower about twice as long as the leaflets. The raceme loosely flowered, 7-14 cm. long. Leaflets, as they become older lose pubescence and become glabrate.

Lupinus sericeus Pursh.

Stems stout villous, 40-70 cm. high. Leaves canescent and somewhat villous but not silvery. Flowers 10-12 mm. long, bluish-purple in rather loose racemes.

MELILOTUS

Herbs; leaves 3-foliolate; flowers in racemes; calyx bell-shaped with short equal teeth; stamens in two groups, anthers alike, ovary sessile or stipitate.

Melilotus officinalis (L.) Lam.

Erect, 1-2 m. high, branching. Flowers yellow in slender racemes that originate in the axils, 5-10 cm. long, often one sided. Yellow Sweet Clover, Naturalized from Europe.

Melilotus alba Desv.

Very much the same as the above but with white flowers. White Sweet Clover. Naturalized from Europe.

VICIA

Climbing or trailing herbaceous vines; leaves pinnate, tendril bearing, with half-sagittate stipules (sometimes entire). Flowers in axillary racemes; stamens of two forms; style filiform, hairy at the tip only.

Vicia americana Muhl.

Perennial, stout or slender, 50-100 cm. high, nearly glabrous; leaflets 4-6 pairs, glabrous above, minutely pubescent beneath, about 2 cm. long; stipules deeply toothed. Flowers purple-violet, 15-20 mm. long, peduncles usually shorter than the leaves. Leaves ovate or elliptic.

Vicia cracca L.

Purplish blossoms, 15-40 flowered one sided crowded racemes.

Vicia trifida Dietr.

Purplish flowers, 3-16 blossoms to the raceme. Plants low, 1-3 dm. high. Leaflets narrow and finely covered with pubescence.

ASTRAGALUS

Perennial herbs with odd-pinnate leaves. Flowers in spikes or racemes. Calyx 5-toothed. Corolla usually long and narrow. Standard narrow, equaling or exceeding the wings of the blunt keel. Stamens in two clusters, anthers all alike.

Astragalus Macounii Rydb.

Plants glabrous or with very fine pubescence or bloom, especially on the under sides of the leaflets. Leaflets thin, 9-17, oblong or oval, 15-25 mm. long, peduncles surpassing the leaves. Flowers yellowish-white tinged with purple. Calyx black hairy.

Astragalus inflexus Dougl.

Plants densely white-villous through-out; stems prostrate or decumbent, 10-30 cm. long. Peduncles shorter than the leaves, racemes rather densely few flowered, the flowers short pedicelled. Corolla violet, rarely yellowish. Leaflets 20-25, ovate, acuminate, 1 cm. long.

Astragalus campestris (Nutt.) Gray.

Low plants, 1-2 dm. high, flowers yellowish tinged with purple. More or less pubescent, tufted, branched from the base. Peduncles few-flowered and rising above the leaves.

Astragalus Drummondii Dougl.

Flowers rather large, white or yellowish in long crowded racemes. Plants taller, 3-5 dm. high, loosely wooly-pubescent. Plants in clumps, stems sub-erect. Leaflets 17-30, 1-2 cm. long. Racemes longer than the leaves. Grows in gravelly spots.

Trifolium pratense L.

The common red clover. Stems ascending, somewhat hairy. Leaflets oval to obovate, often notched at the tip. Rose-purple flowers in dense ovate heads

Trifolium repens L.

The common white clover. Plants smooth, perennial, the stems creeping and spreading. Leaves heart-shaped or merely notched. Petioles and especially the peduncles very long. Heads small and loose.

Family - GERANIACEAE

Herbs with alternate or opposite lobed or dissected leaves and complete regular flowers. Sepals persistent. Petals deciduous. Stamens same number as petals or 2-3 times as many; filaments distinct. Pistil of 5 united carpels, the styles united into a column.

Stamens 10; leaves palmate

Perennials

Stamens 5; leaves pinnate

Carpel tails becomingly spiral twisted

GERANIUM

G. viscosissimum

ERODIUM

E. cicutarium

Geranium viscosissimum Fish and Key.

Perennial; glandular pubescent, leaves and flowers large and purple. Inside of petals more or less long villous. Plants single or somewhat tufted. Pubescence viscid-glandular. Wild Geranium.

Erodium cicutarium L'Her.

Petals bright rose color; annuals with pinnate leaves. Carpels with long tails which are bearded on one side and which become spirally twisted. Stork-bill.

Family - CELASTRACEAE

Shrubs with simple leaves, no stipules, and small, dull colored, perfect, regular flowers. Sepals and petals imbricated. Stamens as many as the petals, alternate with them and inserted on the margin of a broad disc which lines the calyx-tube.

Low evergreen shrubs

PACHYSTIMA
P. nyrainites

Pachystima nyrainites Raf.

Low evergreen shrubs, with smooth, opposite, short petioled, serrulate leaves. Flowers small, reddish-green, solitary or in a few flowered cymes. Calyx with a short tube and 4 rounded lobes. Petals 4. Ovary free, 2 celled; style very short. Commonly called Mountain Lover.

Family - RHAMNACEAE

Flowers in panicles
Leaves leathery, shining

CEANOETHUS
C. velutinus

Ceanothus velutinus Dougl.

A smooth shrub, 7-14 dm. high, growing in dense clumps. The upper sides of leaves look as though varnished; balsamic fragrant, lighter beneath, strongly 3-ribbed. Flowers white, in compound panicles. Mountain Balm.

Family - VIOLACEAE

Flowers more or less irregular with alternate stipulate leaves. Sepals 5. Petals 5, imbricated in the bud. Stamens 5, the filaments short and broad and bearing their anthers on their inner face. Style somewhat club-shaped and abruptly bent at the top.

Sepals with ear-like appendage at the base, lower petal spurred VIOLA

Flowers yellow

Leaves broad, heart or kidney shaped

Leaves longer than wide

V. biflora

V. Nuttallii

Flowers not yellow

Stems leafy, flowers axillary

Stipules entire, mostly scarious

Stipules toothed or frimbriate

Stemless plants with stolons

V. canadensis

V. adunca

V. palustris

Viola biflora L.

Petals yellow with dark purple-brown lines. Stems 2 or more, weak, ascending, about 2 leaved. 1 or 2 flowered at the summit. Leaves nearly glabrous, round, kidney shaped. Stipules green and entire. Flowers small.

Viola Nuttallii Pursh.

Petals yellow, 8-12 mm. long, glabrous or slightly bearded; stigma bearded. Stems several, short; leaves oblong to nearly linear, 3-6 cm. long, tapering to the petiole.

Viola canadensis L.

Petals pale violet to nearly white, purple veined, with yellowish base. Plants nearly glabrous, 1-3 dm. high; leaves thin cordate or broader. Peduncles shorter than the leaves, slender, axillary.

Viola adunca Smith.

Flowers violet or purple; spur as long as the sepals. Glabrous or nearly so, 1-3 dm. high, leaves ovate to more or less cordate at base. Peduncles usually surpassing the leaves.

Viola palustris L.

Flowers lilac to white, streaked with darker veins. Glabrous and stemless from the slender creeping rootstocks. Stolons present. Leaves ovate to kidney shaped, crenate. Flowers generally surpassing the leaves.

Family - ONAGRACEAE

Calyx adnate to the ovary; the calyx tube often lengthened into a long tube. Petals 4 or 5, commonly 4; free, alternate with the 4 sepals on the rim of the receptacle. Stamens 8.

Corolla pink or salmon
Plants pubescent
Corolla red or purple
Petals 3-lobed

Petals not 3-lobed

GAURA
G. coccinea

CLARKIA
C. pulchella
EPILOBIUM
E. angustifolium

Gaura coccinea Nutt.

Stems several, branched, pubescent and more or less hirsute, 1-5 dm. high; leaves numerous, sessile, oblong or lanceolate. Petals pink or white to scarlet. Flowers perfect in terminal racemes, panicles or spikes. Sepals 4, rarely 3. Petals clawed, unequal; stamens usually 8. Butterfly Weed.

Clarkia pulchella Pursh.

Annual, brittle herbs. Leaves alternate, narrow. Flowers showy. Petals purple with long slender claws and 3-cleft. Sepals 4, reflexed. Petals 4.

Epilobium Angustifolium L.

A plant, 0.5-1.5 meters high, with a showy raceme of purple flowers. Leaves glabrous or nearly so, sometimes bright green on the upper surface, paler beneath. Fireweed.

Family - UMBELLIFERAE

Herbs commonly with hollow stems. Leaves mainly alternate, the petiole expanded or sheathing the base. Flowers small, in umbels, umbels compounded. Calyx-tube adnate to the 2-celled. Petals 5, inserted on the margin of the calyx. Stamens 5, on the ovary. Ovary inferior; ovules 1 in each cavity.

Leaves at least 6 inches across	<u>HERACLEUM</u>
Flowers white	<u>H. lanatum</u>
Leaves small	
All leaves in a whorl near top of stem	<u>AULOSPHEMUM</u>
Leaves glaucous	<u>A. glaucum</u>
Leaves not in a whorl near top of stem	
Plants 1-3 dm. high	<u>COGSWELLIA</u>
Flowers white	<u>C. macrocarpa</u>
Flowers yellow	
Leaves ternately compound	<u>C. triternata</u>
Leaves pinnately compound	<u>C. montana</u>
Plants 4-10 dm. high	<u>LEPTOTAEINIA</u>
Foliage puberulent	<u>L. multifida</u>

Heracleum lanatum Michx.

Tall stout perennials with large, ternately compound leaves. Large umbels of white flowers. Fruit somewhat flattened and fuzzy. Plant 3-6 feet tall, hairy or woolly in the upper parts, petioles much dilated. Plants in wet soil. Called Cow Parsnip or Sacred Rhubarb.

Aulospermum glaucum (Nutt.) Coult & Rose.

Plant 2-4 dm. high. Usually found in quite dry situations. Flowers small, white. The most conspicuous feature of the plant is the lack of basal leaves and the whorl of pinnately compound leaves at the top of the main stem. Stem covered at the base by a scarious sheath.

Cogswellia macrocarpa (Nutt.) Jones.

Stemless or almost stemless, 1-6 dm. high, more or less fuzzy, much branched at the base. Leaves pinnately (or first division ternate) compound; segments pinnately incised. Involucels of conspicuous, leaf-like linear bractlets often united. Flowers white.

Cogswellia triternata (Pursh.) M.E. Jones.

Leaflets 5-10 cm. long linear, entire. Stems 30-50 cm. high, minutely puberulent, leaves 2 or 3 times divided, pale green, flowers yellow, fruit glabrous.

Cogswellia montana Jones.

Flowers yellow; pedicels 2-4 mm. long; involucels of distinct more or less purplish bractlets. Plants 5-20 cm. high; stemless or very short stemmed. Stems smooth; without hairs. Leaves usually twice pinnate, the leaflets short-oblong, obtuse, much crowded.

Leptotaenia multifida Nutt.

Leaves finely dissected; umbels mostly without involucre. Flowers yellow or purple. A tall plant, glabrous, usually large pinnately deccompound leaves. Wild Dill.

Family - CORNACEAE

Trees or shrubs with simple, entire, mainly opposite leaves, no stipules, and flowers in cymes. Petals and stamens 4 upon the ovary. Calyx adherent to the 1-2 celled ovary.

Shrubs with red-purple stems
Low herb

CORNUS
C. stolonifera
C. canadensis

Cornus stolonifera Michx.

Shrub 1-2 m. high, branches bright red-purple, smooth. Flowers white, in open and flat spreading cymes. Leaves ovate, rounded at the base, abruptly short-pointed, roughish with straight hairs on both sides, whitish underneath, Western Dogwood.

Cornus canadensis L.

A low herb; stem simple, 1-2 dm. high. Leaves scarcely petioled, the upper crowded into a whorl of 6 or 4. Flowers greenish, in a close cluster which is surrounded by a large and showy 4-leaved, corolla-like, white or sometimes pinkish involucre. Bunchberry.

Family - ERICACEAE

Shrubs or shrubby plants. Leaves without stipules. Corolla united, 4 or 5 lobes. Stamens as many as or twice as many as the lobes, fastened below the ovary. Style single. Ovary 3-many celled.

A creeping or prostrate shrub
Flowers white or pink in clusters
An erect shrub
Leaves glabrous; about 1 m. high

ARCTOSTAPHYLOS
A. uva-ursi
VACCINIUM
V. membranaceum

Arctostaphylos uva-ursi (L.) Spreng.

Prostrate glabrous shrub; leaves ovate, very thick, nearly sessile, evergreen, entire; flowers white or pink, in small clusters; known as Kinnikinnick or Bearberry.

Vaccinium membranaceum Dougl.

Much branched shrub, usually about 60 cm. high; leaves thin, nearly sessile, finely toothed; flowers slender stalked; corolla 5-6 mm. long, white or pale pink, urn-shaped or bell-shaped, with 5 or 4 lobes, stamens 10 or 8, the anthers usually with two awns on the back. Tall Huckleberry or Huckleberry.

Family - PRIMULACEAE

Herbs; leaves simple, mostly entire; flowers regular, perfect, corolla of united petals, 4 or 8, usually cleft; stamens as many as and opposite the corolla lobes, inserted on the tube or base of the corolla, Ovary 1-celled with a free central placenta.

All leaves basal
Leaves finely pubescent

DODECSTHEON
D. cusickii

Dodecstheon cusickii Green.

Perennials; leaves in basal rosettes, entire or nearly so; flowers solitary or in 2 or 3, nodding. Corolla lobes purple with yellow base, reflexed. Stamens united by their anthers and standing above the reflexed corolla. Called Shooting Star.

Family - POLEMONIACEAE

Herbs; sepals 5, partly united; stamens 5, attached to the corolla tube; ovary 3-lobed, usually with a 3 lobed stigma.

Leaves simple and entire

Perennial

Leaves narrow, sessile, corolla, salverform

Corolla white or bluish

Leaves lanceolate, petioled, corolla funnel-form

Corolla violet

PHLOX

P. Douglasii

COLLOMIA

C. debilis

Annual

Leaves linear

C. linearis

Leaves pinnate or lobed

Flowers tubular

With striking scarlet or pink flowers

Plants with white flowers

GILIA

G. aggregata

G. congesta

Flowers rotate or saucer shaped

Plants tufted; flowers blue; white anthers;

plants about 1 foot tall

Plants 2 feet or taller, not tufted.

Flowers blue, anthers yellow

POLEMONIUM

P. pulcherrimum

P. occidentale

Phlox Douglasii Hook.

Low matted perennials; leaves narrow, entire; flowers white or bluish, with a slender tube, mostly solitary and sessile at the ends of branches. Common in dry sandy soil. Phlox.

Collomia debilis (Wats.) Greene.

Corolla violet, about 15 mm. funnelform, the lobes oblong, stamens exserted. Plants 5-15 cm. high, decumbent, viscid-pubescent. Leaves crowded, petioled, puberulent. Upper leaves crowded but like the lower except in being sessile. A showy plant sometimes growing in spread-out clumps in sandy and sunny situations.

Collomia linearis Nutt.

Corolla from lilac-purple to nearly white, very slender, tubular-funnelform, the tube minutely pubescent. Stems simple or branching, especially so as the plant ages. Plants 1-3 dm. high, flowers usually crowded in heads.

Gilia aggregata (Pursh.) Spong.

Corolla showy, scarlet. Biennial, loosely pubescent, 30-50 cm. high, simple or sparingly branched. Leaves pinnately parted; calyx glandular; stamens unequally inserted. Skyrocket.

Gilia congesta Hook.

Stems erect or spreading, 1-3 dm. high, from a tufted base, bearing single or few head-like cymes of flowers. Corollas white, salverform, lobes of the corolla nearly as long as the tube. Leaves with from 2-5 divisions or some of them entire, wooly or pubescent.

Polemonium pulcherrimum Hook.

Flowers blue in loose cymes, anthers white. Plants tufted, minutely puberulent and viscid-glandular; stems rather slender, sparingly branched, 1-3 dm. high; leaflets 9-21, pinnate.

Polemonium occidentale Greene.

Flowers blue with yellow anthers. Plants 8-10 dm. tall, not tufted; leaves pinnate, a little silvery on under side.

Family - HYDROPHYLLACEAE

Stamens near the base of the corolla, alternate with its lobes. Styles 2, distinct or more or less completely united even to the stigmas. Ovary one celled.

Leaves 1-2 inches broad, divided
 Flowers blue
 Leaves less than 1 inch broad
 Leaves entire
 Leaves pinnate
 Leaves pinnately cleft

HYDROPHYLLUM
H. capitatum
PHACELIA
P. heterophylla
P. Franklinii
P. linearis

Hydrophyllum capitatum Dougl.

Flowers crowded into ball-like head, below some of the upper leaves. Leaves and stems covered with minute white hairs. 1-2 dm. high. 1-several leaved. Leaves pinnately 5-7 parted or divided at the base. Corolla blue, only little longer than the calyx. Filament about twice as long as corolla. Style as long as stamens. Styles 2 lobed. Waterleaf.

Phacelia heterophylla Pursh.

3-5 dm. high. Pubescence of two kinds; a fine canescence and of more or less hirsute-hispid hairs. Leaves simple, or some of them with divergent lobes near the base; inflorescence hispid, spikes dense, corolla bluish, longer than the calyx lobes. Filaments much exerted, sparingly bearded. Scorpion Weed.

Phacelia Franklinii (R.Br.) Gray

Erect, 2-4 dm. high soft hirsute or pubescent. Lower leaves petioled and pinnately or somewhat bipinnately divided, the upper without petioles and less divided. Spikes crowded, more elongated in age; corolla pale blue or almost white. Ovules 40 or more. Seeds oval, minutely pitted in vertical lines.

Phacelia linearis (Pursh.) Holz.

Stems 1-3 dm. high, with soft or rough hairs. Leaves mostly without petioles, usually deeply cleft; corolla bright blue or sometimes white. Spikes or spike-like raceme with flowers usually on one side.

Family - BORAGINACEAE

Annual or perennial herbs, the smooth or hairy, often bristle-like plant; leaves entire; flowers regular; calyx of 5 partly united sepals; corolla 5-lobed; stamens 5, attached to the corolla-tube; ovary usually deeply 4-lobed.

Corolla blue and tubular	<u>MERTENSIA</u>
Corolla-tube more than twice as long as the calyx	<u>M. ciliata</u>
Corolla greenish-yellow	<u>LITHOSPERMUM</u>
Corolla-tube not longer than the calyx	<u>L. pilosum</u>
Corolla white	<u>OREOCARVA</u>
Plants low, flowers in a narrow raceme	<u>O. flavoculata</u>
Flowers white with yellow throat	<u>LAPPULA</u>
Plants taller, flowers in a panicle	<u>L. cinerea</u>
Plants with stiff hairs	

Mertensia ciliata (Torr.) Don.

The corolla tubular to funneliform. Plants smooth or with minutely fine soft hairs; alternate leaves; flowers crowded in paniculate racemes. Calyx lobes linear, usually somewhat enlarged in fruit. The corolla limb 5 lobed; stamens inserted on the corolla tube; anthers within the flower. Ovary 4 divided. Corolla tube more than twice the length of the calyx lobes.

Lithospermum pilosum Nutt.

Perennial, 25-30 cm. high, the stems forming dense clusters; hairy; leaves alternate, linear or lanceolate; 3-10 cm. long; flowers in leafy spikes. Corolla yellow, corolla tube not exceeding the calyx. Yellow Puccoon.

Oreocarya flavoculata A. Nels.

Perennial 15-30 cm. high, very hairy, stout, grayish. Leaves alternate, the basal somewhat spatulate; inflorescence long, narrow, leafy. Corolla with a yellow crown. Popcorn flower.

Lappula cinerea Piper.

Plants perennial, 10-30 cm. high, hairy; leaves linear or oblanceolate. Flowers white or yellowish. A graceful plant. Beggar-ticks

Family - LARLATAE

Annual or perennial herbs, often with a strong odor. Stems 4-angled; leaves opposite, toothed; corolla usually very irregular and two lipped; stamens 2 or 4.

Calyx teeth 5, unequal
Stems stout, erect

DRACOCEPHALUM
D. parviflorum

Dracocephalum parviflorum Nutt.

Coarse, stout herbs 2-7 dm. high. Small blue flowers, the corolla scarcely exceeding the calyx. Flowers in bracteate terminal clusters. Calyx tubular, 15 nerved. Corolla two-lipped, the upper erect. Flowers inconspicuous. Dragon Head.

Family - SOLOMACEAE

Flowers regular and perfect. Calyx 5-lobed. Corolla sympetalous, more or less 5-lobed. Stamens 5, inserted on the tube and alternate with the lobes. Style and stigma single; the ovary mostly 2-celled and many-ovuled on a central placenta.

Corolla rotate
Climbing shrub
Corolla funneliform
Petals purple-veined

SOLANUM
S. dulcamara
HYOSCYMUS
H. niger

Solanum dulcamara L.

Stem climbing or twining, 4-15 dm. long, leaf blades ovate, 3-10 cm. long, acute or acuminate. Calyx glabrous, its lobes triangular. Corolla blue or white. Bittersweet.

Hyoscyamus niger L.

Biennial. Stem viscid-villous, 3-10 dm. high. Leaves oblong to ovate, sinuately toothed or lobed, the upper clasping, viscid-villous. Calyx campanulate, strongly veined. Corolla campanulate, lurid-yellowish, purple-veined, 2 cm. long. Grows in waste places.

Family - SCROPHULARIACEAE

Flowers irregular; calyx of 5 or 4 more or less united sepals; corolla usually 2-lipped; stamens usually 4 or 2, a 5th sterile one without an anther often present, attached to the tube of the corolla.

Leaves alternate

Bracts at the base of the flowers tinged red, pink or yellow, more conspicuous than the flowers and usually as long. Indian Faint Brush.

Bracts whitish or yellowish

Bracts scarlet or crimson

Bracts green, less conspicuous and usually much shorter than the flowers

Corolla none

Plant smooth or sparingly pubescent

Plant quite densely pubescent

Corolla yellow-orange

CASTILLEJA

C. pallascens

C. hispida

SYMPHYRIS

S. rubra

S. wyomingensis

LEPARIA

L. vulgaris

Leaves opposite

Leaves entire or toothed, calyx 5 lobed. Stamens 5 with 1 either sterile or rudimentary.

Annuals, plants 2-3 inches high, delicate

Corolla 5-7 mm. long, tube longer than the limb

Perennials, plants taller and sturdy

Corolla almost cylindrical, 1 cm. long or less

Corolla blue

Corolla yellow

Corolla funnel shaped (mouth wider than the throat). 1.5 mm. long or longer.

Inflorescence densely villous

Inflorescence not villous

Leaves shiny green smooth, ovate, toothed

Leaves grayish, oblanceolate, entire

COLLIUSIA

C. tonella

PERISTEMON

P. procerus

P. confertus

P. erianthera

P. ovatus

P. virens

Castilleja pallascens (Gray.) Green.

Stems 1-2 dm. high, usually several from a woody perennial base. Leaves 3-parted into linear lobes, or the lower entire. Bracts similar to the leaves, the upper parts whitish or yellowish, lobed. Calyx deeply 2-cleft. Yellow Indian Faint Brush.

Castilleja hispida. Benth.

Stems 3-5 dm. high, hirsute-villous and puberulent. Very similar to the above except that the upper bracts are red. Red Indian Faint Brush.

Synthyris rubra A. Nels.

Perennial herb with unbranched stems and mainly basal leaves. Flowers in a spike or raceme, no corolla. Plant reddish in appearance, smooth or sparingly pubescent. Kittentails

Synthyris wyomingensis (A. Nels.) Heller.

Stems puberulent or softly pubescent. 1-3 dm. high radical leaves petioled, broadly ovate to oblong, crenate-dentate, rounded or subcordate at the base. Stem leaves sessile. Corolla wanting; stamens conspicuous.

Linaria vulgaris Mill.

Perennial, erect, 2-5 dm. high. Leaves alternate, very numerous, pale, linear or nearly so. Flowers in a terminal raceme, yellow, 2-3 cm. long. Butter and Eggs.

Collinsia tenella (Pursh) Fiper.

Small plant 7-15 cm. high. Leaves oblong to lanceolate, 1-2 cm. long, the lower opposite and petioled, the upper sessile; the floral often whorled. Flowers pediceled, solitary or 2-5 in the upper parts, corolla 5-7 mm. long, blue or blue and white. Baby's Blue Eyes

Pentstemon procerus Dougl.

Glabrous throughout, stems slender, 1-4 dm. high, leaves lanceolate, the lower ones petioled. The largest leaves at the middle of the stem, all usually entire. Flowers in 2-5 clusters; corollas 10-12 mm. long, bright blue or violet.

Pentstemon confertus Dougl.

Corolla yellow or nearly white and otherwise very similar to the above.

Pentstemon erianthera Pursh.

Corolla bright blue, sometimes white. Plants puberulent below, glandular, villous and viscid above. Stem leafy 1-3 dm. high. Flowers almost sessile. Corolla about 2.5 cm. long. Sterile stamen densely yellow woolly.

Pentstemon ovatus Dougl.

Stem 5-10 dm. high, more or less viscid above; basal leaves petioled; blades ovate 4-8 cm. long, dentate. Inflorescence a loose thyrsus; calyx somewhat viscid, 2-4 mm. long. Corolla nearly 2 cm. long, lower lip bearded in the throat; sterile stamen yellow-bearded above. Corolla blue.

Pentstemon virens Tennell.

Stems 1-3 dm. high, glabrous up to the inflorescence; leaves glabrous, glaucescent, the lower petioled, blades 2-4 cm. long; the upper stemless, lanceolate or oblong. Corolla deep blue, 15 mm. long, funneliform; the lower lip slightly bearded. Sterile stamen yellow-bearded. The pentstemons go by the common name of Beardtongue.

Family - PLANTAGINACEAE

Stamens 4; flowers perfect. Leaves 5-9 nerved.

PLANTAGO

Plantago nitrochila A. Nels.

Smooth and sometimes pubescent. Leaves strongly ribbed, broad, abruptly narrowed into channeled petiole. Spike dense, sepals round-ovate; corolla glabrous; style exerted from unopened corolla. Lod ovoid, opened by a circular cut near the base. Common around waste ground.

Family - RUBIACEAE

Herbs with opposite leaves connected with interposed stipules, or whorled and without stipules. Calyx adnate to the 2-4 celled ovary. Stamens as many as the lobes of the corolla and inserted on its tube. Ovary 1-10 celled; style simple or lobed.

Leaves whorled, without stipules

Leaves 3 nerved

GALIUM

G. borealeGalium boreale L.

Erect, 3-6 dm. high, mostly smooth and glabrous, very leafy. Leaves in fours, 3 nerved, linear to broadly lanceolate. Flowers very numerous and collected in a terminal and full panicle. The uppermost leaves reduced to pairs of small oblong or oval bracts. Called Baby's Breath or Redstraw.

Family - CAPRIFOLIACEAE

Shrubs with opposite leaves; petals united, the corolla 5 lobed and in some 2 lipped; stamens 5 or sometimes 4, inserted on the corolla and alternate with its lobes.

Leaves pinnately compound, flowers rotate

Flowers in pyramidal cymes

Leaves simple, corolla tubular

Erect shrubs

Vine

SAMBUCUS

S. melanocarpaLoniceraL. utahensisL. glaucescensSambucus melanocarpa A. Gray..

Shrub, 1-2 meters high, often forming large clumps, glabrous or nearly so; leaflets ovate to lanceolate, toothed; flowers sweet-scented, in dense cymes 2-6 cm. broad; corolla creamy white, flat. Elderberry.

Lonicera utahensis S. Wats.

Shrub 1-2 meters high, glabrous. Flowers 2 together; corolla pale yellow, funnel-shaped, often 2 lipped. Leaves entire, broadly oval or rounded. Called Red Twinberry.

Lonicera glaucescens Rydb.

Leaves glabrous above, pubescent at least on the veins, the upper pair into one leaf with flower-stem coming thru its center. Flowers quite bunched, corolla yellow, changing to reddish; pubescent or puberulent without, pubescent within, 2.5 cm. long or less, 2 lipped. Style and stamens exerted.

Family - CAMPAULACTAE

Petals united. Stamens as many or fewer than the calyx lobes, on the ovary, anthers not united. Stamens alternate. Ovary inferior.

Flowers bell-shaped

CAMPAULA

Campanula rotundifolia L.

Perennial, 10-40 cm. high, very slender, nearly glabrous, basal leaves ovate or heart-shaped, 1-3 cm. long, toothed, slender-petioled; stem leaves linear; flowers few, drooping, corolla bell-shaped, bluish purple. Called Harebell.

Family - VALERIANACEAE

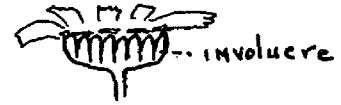
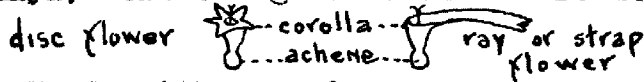
Herbs with opposite leaves and no stipules, and usually small perfect or polygamous flowers in corymbed or capitata cymes. Calyx-tube adnate to the ovary. Corolla tubular or funnelform, mostly 5-lobed. Stamens 1-4, inserted on the corolla tube. Ovary inferior, 1-3 celled, one of the cells containing a single suspended ovule, the others empty.

Valeriana acutiloba Rydb.

Green and glabrous, 3-5 dm. high. Basal leaves entire, the short petiole wing-margined. Stem leaves 2 or 3 pairs, pinnately divided. Cyme dense and contracted. Corolla white or rose colored, funnelform with very short tube. Found in moist wooded hillsides. Calyx inrolled and cannot be seen except when the flower is dissected. Wild Heliotrope or Valerian.

Family - COMPOSITAE

Herbs or rarely shrubs; leaves alternate or opposite, simple or compound; flowers in heads, clustered on a receptacle, the head surrounded by an involucre of bracts; the inner flowers of the head (disk) with small tubular 5 lobed corolla; the outer flowers often with a narrow strap-shaped corolla (ray); fruit an achene, usually bearing at the summit a pappus (modified calyx) consisting of hairs and scales or awns.



A. Heads with ray flowers

All the flowers of the head strap-shaped

Leaves not all basal

Involucral bracts exceeding ray flowers

Flowers yellow

Involucral bracts not exceeding ray flowers

Leaves green, somewhat glaucous

Leaves tomentose

Leaves all basal

Terminal lobe of leaves large

Only the outer flowers strap-shaped

Pappus none

Flowers yellow

Leaves entire or somewhat toothed

Flowers white or cream-white

Scented perennial herbs

Pappus present

Pappus of hairs

Ray flowers yellow

Heads solitary or in corymbs

Leaves opposite

Heart or arrowshaped leaves

No heart shaped leaves

Plants pubescent

Plants sparingly hirsute

Leaves alternate

Involucre of equal bracts

Plants 1-3 dm. high

Plants 3-7 dm. high

Involucre of unequal bracts

Plants soft hirsute

Ray flowers not yellow

Petals narrow and numerous

Leaves compound

Leaves simple

Pappus of scales

Involucre united into a cup

Plants quite woolly

Involucre not united to form a cup

Disc flowers often brown

TRAGOPAGON

T. pratensis

CREPIS

C. glauca

C. occidentalis

TRITAKASME

T. officinale

BALSAMORRHIZA

B. capitata

ACHILLEA

A. millefolium

ARNICA

A. cordifolia

A. rupestris

A. montana

SENECIO

S. canus

S. glaucescens

CHRYSOSIS

C. villosa

ERIGERON

E. compositus

E. canadensis

ERIGONELLA

E. lanatum

GAILLARDIA

G. aristata

AA. Heads without rays (next page)

AA. Heads without ray flowers

Flowers of the heads all alike and perfect

Plants sticky

With flesh colored flowers

Plants not sticky

Plants aromatic

Flowers inconspicuous

Plants not aromatic

Leaves fan-shaped in outline

Flowers not all perfect and alike

Plants usually with clusters of leaves at the
base, often with runnersPlants without clusters of basal leaves or
runners

Broader leaves indistinctly 3-nerved

CHAMAECTISC. DouglasiiMATRICARIAM. matricarioidesERIGERONE. compositusANTENNARIAANAPHALISA. subalpinaTrigonon pratensis L.

Perennial herbs with alternate or all radical leaves. Leaves long linear; stems with milky juice. Flowers lemon yellow, large; Common in open dry fields. Oyster plant, or Salsify.

Crepis clauca T. & G.

Perennials with tall, graceful stems; flowers yellow, few or numerous; achenes with short or no beak; pappus of soft white bristles. Basal leaves long, narrow, sometimes dentate or pinnatifid. Stem leaves 1 or 2, Plants 2-6 dm. high.

Crepis occidentalis Nutt.

Stem stout, usually several from a strong perennial root, branching above, the whole plant 1-3 dm. high; herbage tomentose and often glandular above. Leaves thickish, toothed or deeply pinnatifid. Rays yellow; the pubescence of the involucre with black hairs gland-tipped. Found in dry open ground.

Taraxacum officinale Weber.

Root thick and long, bitter. Leaves irregularly dentate to pinnatifid up to 3 dm. long. The common dandelion which has been brought from Europe.

Balsamorhiza sagittata (Pursh) Nutt.

An abundant and showy plant on dry open hillsides. Perennial, 30-60 cm. high, densely covered with fine matted hairs; root very thick and resinous; leaves arrow shaped or heart shaped, erect 10-30 cm. long, long stalked, entire or nearly so; flower stalk leafless bearing a few showy heads; involucre 2.5 cm. broad, yellow rays 2-3 cm. long. Balsamroot.

Achillea millefolium L.

Perennial; 15-30 cm. high, with a strong odor; silky-hairy. Leaves alternate, also in basal tufts, 3-10 cm. long, feathery-pinnate, divided 2 or 3 times into numerous fine lobes. Heads 4-5 mm. high, in flat-topped clusters, the bracts with brown borders; rays white, pappus none. Yarrow.

Arnica Rydbergii Greene.

Generally 2-4 dm. high, sparingly hirsute, usually with 3 or 4 pairs of stem leaves, and 3 heads; basal leaves ovate-lanceolate with winged petioles. Stem leaves similar, sessile, with a broad clasping, sometimes slightly dilated base. Plants usually growing in clumps on dry mountain sides.

Arnica-fulgens Furch.

Pubescent, hirsute, or at the summit villous; stems 2-4 dm. high, not branched; with but one head to the stem. Leaves thickish, narrowly oblong to lanceolate, the uppermost linear, entire or denticulate, 3-nerved. Heads conspicuously radiate, solitary or few; long petioled.

Arnica cordifolia Hook

Stem low, generally 1-2 dm. high, more or less hirsute, the upper portion somewhat woolly and glandular. Leaves ovate to heart-shaped, the basal stemmed, stem leaves 1-2 pairs, very short petioled or sessile. Heads about 2 cm. high.

Senecio canus Hook.

Perennial, densely white-tomentose to the inflorescence; stems slender, usually tufted, 1-3 dm. high; basal leaves spatulate to oval, entire; heads several to numerous, yellow, 10-14 broad. Rays 8-12. Woolly Ragweed

Senecio glaucescens Rhydb.

Plants 2-7 dm. high, most of the leaves basal, plant somewhat densely woolly; lower leaves with a distinct wing, rather thick and often somewhat glaucous; upper stem leaves reduced, lanceolate, and sessile; cyme corymbiform; heads about 1 cm. high; bracts with conspicuous black tips; rays about 8 mm. long.

Chrysopsis villosa Nutt.

Perennial herbs with alternate sessile leaves. Flowers yellow, corymbose or solitary at the ends of branches. Stems stoutish, usually freely branched, 2-5 dm. high. Plants pubescent and with some long villous hairs. Rays golden-yellow about 10-12 mm. long. Golden Aster.

Gaillardia aristata Furch.

Perennial, 30-50 cm. high, hairy; leaves oblanceolate, entire or more commonly toothed or lobed; heads long stalked, the involucre 2-3 cm. broad, the rays 2-3 cm. broad, 3-lobed yellow, often with purple at the base.

Erigeron concinnus (H. & A). T. & G.

Heads with a great many, fine blue or whitish rays. Plants with long spreading white hairs; stems several from the same root, 1-2 dm. high; slender, leafy, branching above, the branches terminating in solitary heads. Leaves narrowly linear, elongated, entire, attenuate at the base, the lowermost tapering into a slender petiole. Fleabane.

Erigeron compositus Furch.

Plants hirsute to glabrate and more or less viscid; stem short, densely leafy; leaves fan-shaped in outline the 2-3 ternately divided into narrow lobes. Rays white, sometimes purplish and sometimes absent.

Eriophyllum lanatum (Fursh.) Forbes.

A showy plant usually growing in clumps on dry hillsides. Plants 2-4 dm. high, leaves pinnately lobed and quite woolly on the under side. Leaves alternate. Involucre of one series of bracts which are partly united to form a cup. Yellow Woolly Daisy.

Chaenactis Douglasii H. & A.

Herbs with alternate mostly pinnately dissected leaves. Heads solitary or cymose and flesh colored flowers. Plants somewhat canescent or woolly and at least the heads somewhat sticky. Plants growing in dry poor soil. Morning Bride.

Matricaria matricarioides (Less) Porter.

Common inconspicuous plants growing in waste ground. Abundant about town. Annual, somewhat aromatic, glabrous, 1-2 dm. high, very leafy. Leaves 2-3 pinnately dissected. Bracts of the involucre broad, white-scarious. Receptacle cone-shaped. Corollas tubular.

ANTEHARIA

Perennials, usually densely woolly, often with long or short runners. Leaves alternate, usually forming rosettes. Heads without ray flowers, in corymbs or racemes, the pistillate and staminate flowers in separate plants. Achenes with copious pappus of fine white bristles. Fussy-toes.

Leaves long, 30 mm. or longer

A. oblanceolata Rydb.

Leaves small, 5-25 mm. long

Tips of involucral bracts rose-colored

Heads small, 4-8 mm. long

A. rosea (Lat.) Greene.

Tips of the involucre brown

A. umbrinella Rydb.

Anaphalis subalpina (Gray.) Rydb.

Perennial; 20-30 cm. high; leaves alternate, linear to oblong, 3-8 cm. long, entire, white woolly, sometimes becoming green on the upper surface. Heads 6-7 mm. high in a close or dense cluster. Flowers yellowish; pappus of slender bristles. Heads with usually perfect and imperfect flowers. Fearly Everlasting.

GLOSSARY

A. (a prefix, meaning without)

Acaulescent. Apparently stemless; the stem proper being very short or underground.

Achene. A small, hard, dry, 1-seeded fruit, indehiscent.

Accuminate. Narrowed to a point.

Acute. Sharp-pointed.

Adnate. United in growth.

Adherent. Having parts united.

Alternate. (Leaves branches etc.) Occurring singly at the nodes.

Angiosperm. A great group of plants with ovules and seeds inclosed in an ovary.

Anther. The part of the stamen that contains the pollen.

Apetalous. A flower without petals.

Appressed. Lying close and flat.

Appendaged. An external organ or part.

Awl. A bristle-like appendage.

Axil. The upper angle between the leaf and the stem.

Axillary. Occurring in an axil.

Barbed. Finished with rigid points or short bristles.

Beaked. Ending in a prolonged narrow tip.

Bearded. With long or stiff hairs of any sort.

Berry. A fruit pulpy or juicy thruout.

Bi. Two or twice, in compounds.

Biennial. Of two years duration.

Bifid. Two-clefted to about the middle.

Bract. In general, the leaves of an inflorescence, more or less different from ordinary leaves; especially, the small leaf or scale in the axil of which a flower or its pedicel stands.

Bulb. A leaf-bud with fleshy scales, usually underground.

Calyx. The outer set of the floral envelopes.

Campanulate. Bell-shaped.

Canescent. Grayish-white; hoary, usually because the surface is covered with fine white hairs.

Capillary. Hair-like in form, as fine as hair.

Capitate. Shaped like a head; collected into a head.

Capsule. A pod; any dry dehiscent seed vessel.

Carpel. The unit of structure of the pistil, which may consist of a single carpel or of several carpels.

Catkin. A scaly deciduous spike of flowers.

Caudate. Tailed or tail-pointed.

Caudex. The persistent base of an otherwise annual herbaceous stem.

Caulocent. Having an obvious stem.

Cauline. Of or belonging to the stem.

Chaff. The small membranous scales or bracts on the receptace of the Composite; the glumes of grasses etc.

Ciliate, margin of hairs.

Cinereous. The color of ashes.

Claw. The narrow or stalk-like base of some petals.

Compound. Made up of many parts.

- Compressed.** Flattened on two opposite sides.
Confluent. Blended into one or running together.
Cordate. Heart-shaped.
Corm. A solid bulb, like that of the Crocus.
Corolla. All the petals taken together.
Corymb. A flat or convex flower cluster, with branches arising at different levels. Central flowers blooming last.
Copious. Abundant.
Crenate. With rounded teeth.
Cuneate. Cuneiform. Wedge-shaped.
Cyme. Like a corymb, but with the central flowers blooming first.
Cynose. Like a cyme.
Deciduous. Falling off.
Dehiscent. The natural opening of a closed vessel (pod or anther etc.)
Dentate. Toothed.
Diadelphous. United by filaments into two sets.
Diandrous. Having two anthers.
Dichotomous. Two forked.
Digitate. Finger-like. Where all the leaflets of a compound leaf are all borne on the apex of the petiole.
Dimorphous. Of two forms.
Diocious. With stamens and pistils in separate flowers on different plants.
Disk. The face of any flat body. The central region of a head of flowers as opposed to the ray or margin flowers.
Dissected. Cut deeply into many lobes or divisions.
Drupe. A stone-fruit.
Eared. Ear-like appendages.
Emarginate. Notched at the summit.
Entire. The margin not at all toothed, notched or divided.
Epigynous. Upon the ovary.
Exserted. Protruding out of, as the stamens out of the corolla.
Fertile. Fruit-bearing, or capable of producing fruit; also applied to the anthers when they bear pollen.
Filament. The stalk of the stamen; also any thread-shaped appendage.
Filiform. Thread-shaped.
Foliateous. In the nature of a leaf.
Free. Not united with other parts.
Fruit. The seed-bearing structure.
Galea. The hooded or helmet-shaped portion of a perianth, as the upper sepal of Acontium, and the upper lip of some corollas.
Gamopetalous. With united petals.
Gamosepalous. With united sepals.
Gibbous. More swollen on one side than the other.
Glabrate. Smooth, not having any hairs.
Gland. A secreting surface or structure.
Glaucous. Covered with a fine white powder that rubs off.
Gymnosperm. The group of plants with seeds or ovules not inclosed.
Habitat. The situation in which a plant grows in the wild state.
Herb. A plant with no persistent woody stem above ground.

- Herbaceous. With the texture of a common herb.
- Hermaphrodite. Having both stamens and pistils.
- Hirsute. Hairy with stiffish hairs.
- Hispid. " " " "
- Hypogynous. Inserted under the pistil.
- Imbricate. Overlapping like the shingles of a house.
- Imperfect flowers. Having only one sex organ.
- Incised. Cut rather deeply.
- Indehiscent. Not splitting open.
- Inflorescence. The arrangement of flowers on the stem; the cluster as a whole.
- Internode. The part on the stem between the two nodes.
- Involucre. A whorl or set of bracts around the flower, umbel or head.
- In volucrel. An involucre of the second order.
- Inserted. Attached to or growing out of.
- Irregular. The corresponding floral parts not all alike.
- Interposed. Placed between.
- Labiate. Two-lipped.
- Lanate. Woolly, clothed with long and soft entangled hairs.
- Lanceolate. Tapering to a point and often rounding at the bottom.
- Legume. A simple pod that opens into two pieces as a pea or bean.
- Lateral. Side.
- Limb. The blade of a leaf, petal, etc.
- Linear. Narrow and flat, the sides parallel.
- Lip. The principal lobes of a two parted corolla or calyx.
- Lobes. Any projection or division, especially a rounded one, on a leaf etc.
- Lyrate. The end lobe of the leaf large.
- Membranous. Thin and more or less translucent.
- Midrib. The middle or main rib or vein of a leaf.
- Monodelphous. Stamens united by their filaments into one set.
- Monocleous. With stamens and pistils in separate flowers on the same plant.
- Node. The joints on a stem.
- Oblanceolate. Lance-shaped with the tapering point downwards.
- Oblong. Two or three times as long as broad.
- Obovate. The broad end upward.
- Obtuse. Blunt or rounded at the end.
- Opposite. Applied to leaves and branches when an opposing pair occurs.
at the node; to stamens when directly in front of the petals
- Ovate. Shaped like an egg with the broader side downward.
- Ovule. The egg.
- Palmate. Applied to a leaf, the parts of which spread out like a hand from a common point at the apex.
- Panicle. An open inflorescence like a raceme but more or less compound.
- Parietal. Borne on the inner surface of an ovary.
- Pappus. The modified calyx of the compositae.
- Pedicel. The stalk of each particular flower of a cluster.
- Peduncle. The flower stalk.
- Perennial. Lasting from year to year.
- Perfect flower. Having both stamens and pistils.
- Perfoliate. A leaf thru which the stem appears to pass.
- Perianth. The floral envelopes especially when the calyx and corolla cannot be distinguished. Where one part of the perianth is missing, we agree that the missing parts are the petals.

- Perigynous.** On a rim or cup surrounding the pistil or pistils.
Persistent. Remaining longer than common with such parts.
Petiole. The leaf-stalk.
Pinnate. Many leaflets branching off from the midrib.
Pistil. The seed bearing organ.
Placenta. The surface of the ovary to which the eggs are attached.
Plumose. Feathery.
Polygamous. Having some perfect, some staminate, some pistillate flowers on the same or on different individuals.
Puberulent. Covered with fine short, almost unseen down.
Pubescent. Fine soft hairs.
Punctate. Dotted.
Pungent. Very hard and sharp pointed. Spicy or aromatic.
Raceme, racemous. A flower cluster with one-flowered pedicels along the stem.
Radical. Belonging to the root.
Ray. The marginal flower in a head.
Receptacle. The top of the peduncle that bears the flower.
Reflexed. Bent outwards or backwards.
Regular. When all the parts in each set of the flower are similar.
Reniform. Kidney-shaped.
Rhizome. A rootstock.
Rootstocks. A rootlike stem.
Rudimentary. Imperfectly developed.
Runner. A slender and prostrate branch rooting at the end or joints
Sac. Any enclosed membrane or a deep purse-shaped cavity.
Sagittate. Arrow-shaped.
Scale. A reduced leaf-like body which is not green.
Scape. A naked peduncle rising from the ground.
Serrate. With margin cut into teeth pointing forwards.
Sessile. Without a stalk.
Scarious. Thin, not green.
Sheath. The lower part of the leaf that may wrap around the stem.
Simple. Of one piece.
Spike. Like a raceme but with flowers sessile.
Stamen. The pollen bearing organ.
Sterile. Imperfect or will not produce.
Stigma. The upper part of the pistil that receives the pollen.
Stipules. The appendages on each side of the base of certain leaves.
Striate. Marked with slender longitudinal grooves or channels.
Stolons. Runners.
Style. The elongation of the ovary that bears the stigma.
Stipe. The stalk-like support of the pistil.
Subtended. Below the parts.
Superior. When the ovary is above the attachment of the other parts.
Sympetalous. With united petals.
Taproot. A stout verticle root.
Tawney. Dull yellowish, tinged with brown.
Tendrils. A thread shaped structure used for climbing.
Terminal. At the end.
Ternate. In three's, as in leaf divisions.
Throat. The opening of a gamopetalous flower.
Thyrse. A compact and pyramidal panicle.

Tomentose. Clothed with matted and wooly hairs.
Umbel. The umbrella like form of inflorescence.
Valve. One of the pieces into which a pod splits.
Venation. The arrangement of the veins in a leaf.
Villous. Shaggy with long soft hairs.
Viscid. Sticky.
Whorled. Circular arrangement about some part.