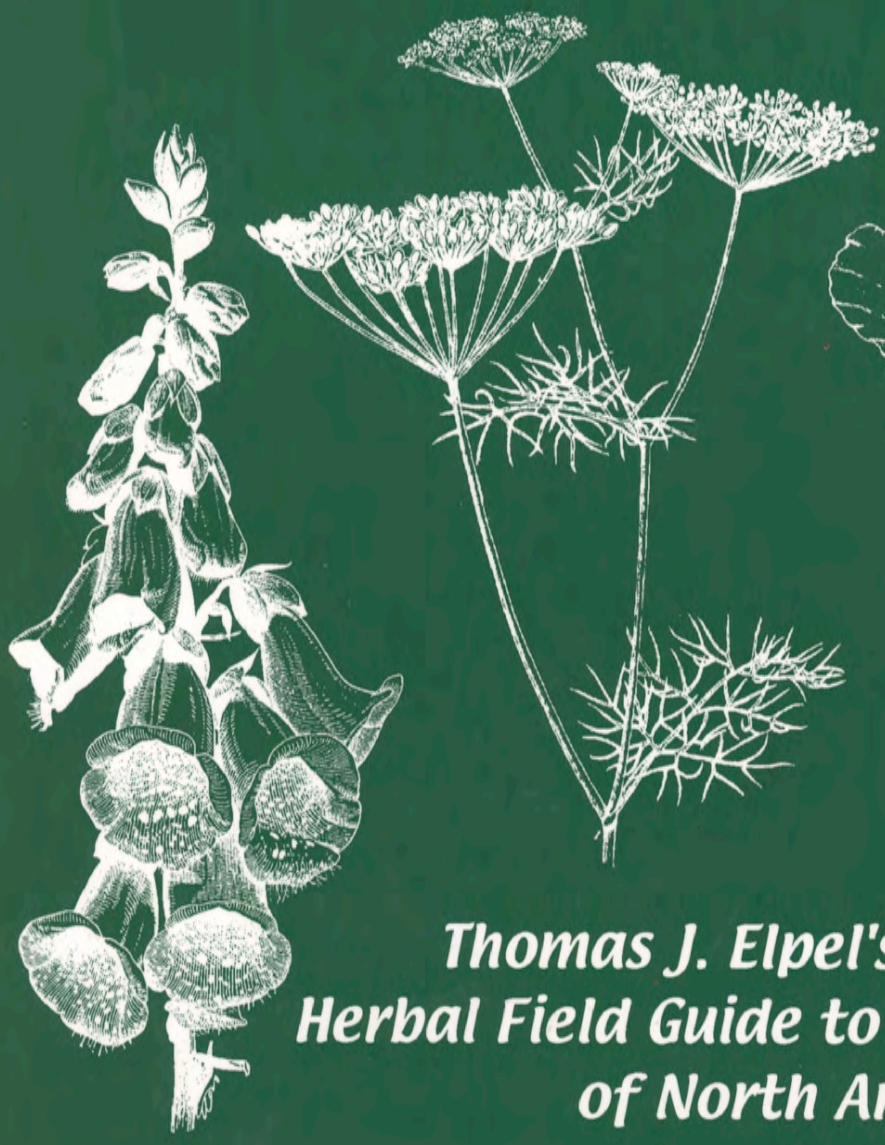
Botany in a Day

The Patterns Method of Plant Identification



Thomas J. Elpel's
Herbal Field Guide to Plant Families
of North America

Botany in a Day:
The Patterns Method of Plant Identification
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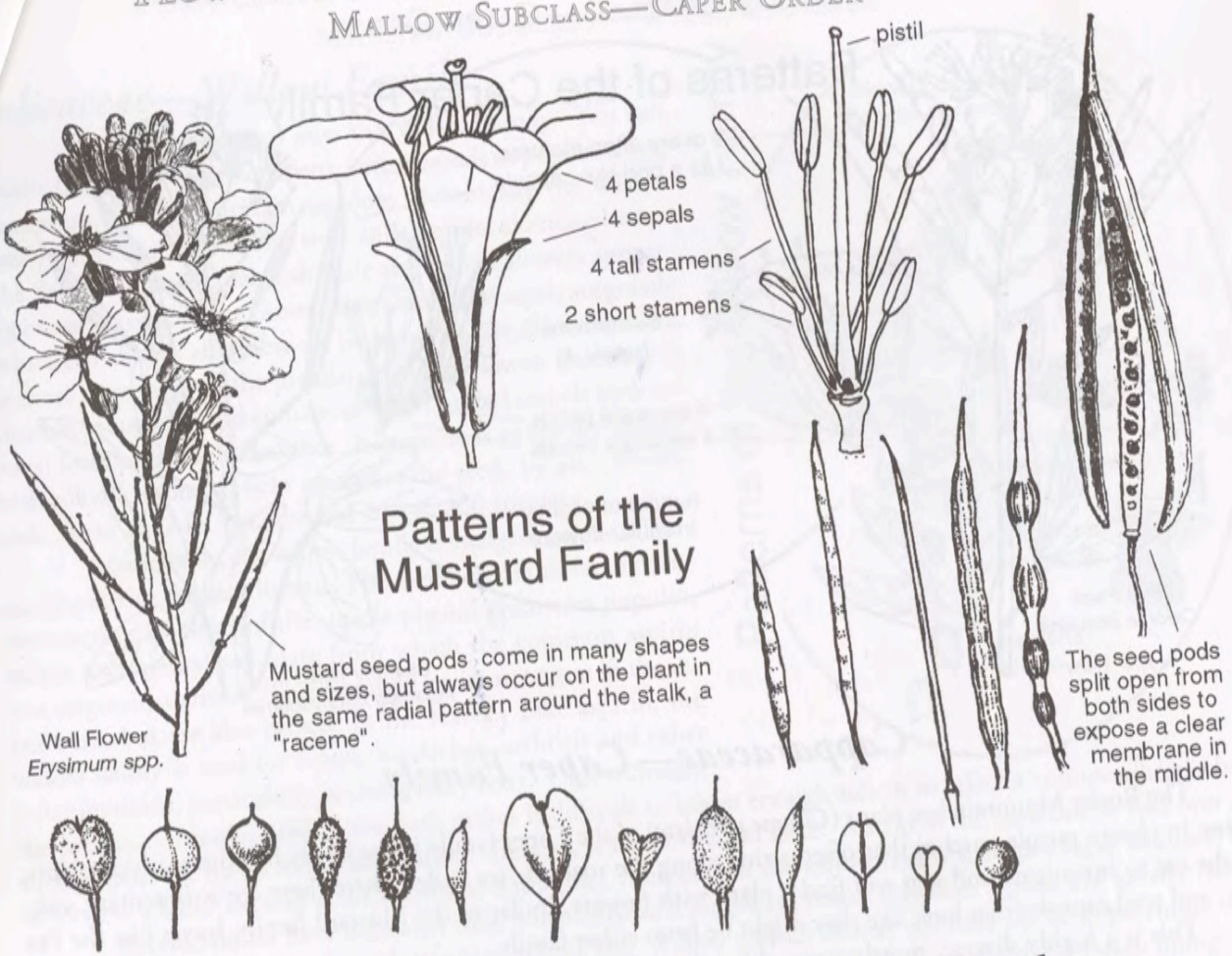


Brassicaceae (Cruciferae)—Mustard Family

Mustards are easy to recognize. There are typically 4 petals arranged like either the letters X or H. The petals may be deeply split, making them appear as eight petals. Mustard seed pods come in many shapes and sizes, but they always form a raceme on the flower stalk, which looks something like a spiral staircase for the little people (see illustrations). The crushed leaves usually smell something like mustard. Another pattern of the mustards is that they are typically weedy annuals that inhabit disturbed, barren soils. Mustards have 4 sepals, 4 petals and 6 stamens (2 short, 4 long). The ovary is positioned superior and consists of 2 united carpels (bicarpellate) forming a single chamber. It matures as a silicle or silique, meaning a pod where the outside walls fall away leaving the translucent interior partition intact. Look for it on dried specimens. Worldwide, there are 375 genera and 3,200 species. About 55 genera are found in North America.

Domesticated mustards include horseradish (*Armoracia*), watercress (*Nasturtium*), radish (*Raphanus*), turnip and mustard (*Brassica*). Commercial mustards are usually made from the seeds of the black mustard (*B. nigra*) mixed with vinegar. Interestingly, six of our common vegetables—cabbage, cauliflower, kohlrabi, Brussels sprouts, broccoli, and kale—were all bred from a single species, *Brassica oleracea*. Plant breeders developed the starch-storage abilities of different parts of the plant to come up with each unique vegetable. Also, canola oil comes from the seed of a species of *Brassica*. The horseradish has been humanly propagated with pieces of the root for so long that it no longer produces viable seed. Many wild members of this family are edible in moderate quantities. The seeds are often used as a mustard-like spice.

Medicinally, the plants of the mustard family contain varying concentrations of sulfur glycosides, strongest in *Brassica*, *Raphanus*, and *Amoracia*. In small amounts mustards are somewhat bitter and stimulating to digestion. In larger amounts they tend to be acrid and irritating. Several of them are acrid enough to blister the skin with prolonged contact. This acrid quality is often used for irritating poultices to stimulate healing. A "mustard plaster", for instance, can be placed on the chest to penetrate the skin and irritate the lungs; this stimulates coughing of phlegm from the lungs. Read more about sulfur glycosides in the *Medicinal Properties* section of this book.


Pepper Grass
Lepidium campestre
Tumble Mustard
Sisymbrium altissimum
Pennycress
Thlaspi arvense
Black Mustard
Brassica nigra
Wall Flower
Erysimum grandiflorum
Wild Radish
Raphanus raphanistrum
False Flax
Camelina sativa
Shepherd's Purse
Capsella bursa-pastoris
Watercress
Nasturtium officinale

Key Words for the Mustard Family: 4 petals and 6 stamens—4 tall and 2 short

Edible and Medicinal Properties of Mustard Family plants

Alyssum—Alyssum (100/4/2) • Alyssum is a common garden flower. It is edible.

Arabis—Rock Cress (120/70/15) • The flowers and basal leaves are edible. The stem leaves may be too bitter (Angier).

Barbarea—Wintercress (12/3/1) The leaves can be used as a salad green or pot herb (Hall).

Brassica—Mustard (50/10/5) • The leaves can be used as a salad green or pot herb. The seeds can be used for seasoning. Medicinally, the seeds can be ground into a powder and mixed with flour and water to make a mustard plaster (Hall). The mustard poultice is an irritant, stimulating activity underneath the skin. Prolonged contact can cause serious inflammation (Lust). Members of this genus contain sulfur glycosides (Geller).

Camelina—False Flax (-/-/2) The plant is sometimes grown for the fibers of the stalk and for the oil in the seeds (Sturtevant).

Capsella—Shepherd's Purse (5/-/1) • The seeds are used for seasoning (Hall) or cooked and ground into meal (Olsen). The root is a substitute for ginger (Harrington). The seeds dumped in still water will kill mosquito larvae (Willard).

Medicinally, *Capsella* is astringent and diuretic; it is especially known as a potent vasoconstrictor and coagulant. The tea can be used internally or externally to stop bleeding; it is commonly used for women's mid-cycle bleeding. It may also equalize blood pressure (Willard), but it can have inconsistent effects, causing either vasodilation or hypertension. As an astringent and diuretic, *Capsella* is good for the urinary tract and bladder, and it stimulates phosphate recycling in the kidneys. It is given during birth to stimulate uterine contractions (Moore). It is a remedy for diarrhea (Kloss).

Cardamine—Bittercress (160/45/5) The whole plant is edible as a salad green or pot herb. The root is hot like horseradish.

Chorispora (1/1/1) Introduced from Asia. The plant is edible (Sturtevant).

Descurainia—Tansy Mustard (46/-/3) • The plant can be used as a pot herb, boil in two or three changes of water. The seeds can be used as meal (Harrington).

Eruca—Rocket Salad (1/1/1) *E. sativa* is an import from Europe. The plant is edible as a salad green (Sturtevant).

Erysimum—Wall Flower (80/25/4) • The plant, mashed with water, was applied to prevent sunburn (Weiner).

Isatis—Dyer's Woad (30/-/1) *I. tinctoria* was introduced from Europe and cultivated as a source of blue dye. It is considered an invasive weed across much of the West.

Lepidium—Pepperweed (130/-/1) Pepperweed is edible in a salad or as a pot herb (Duke). The freshly bruised plant has been used as a treatment for poison ivy (Vogel).

Nasturtium—Watercress (50/-/1) • Watercress came from Europe. It is now widespread and one of our few greens of winter. It can be found growing in the water near springs. Rice cooked with watercress is one of my favorite meals on camping trips. Watercress is rich in vitamin C, iron and iodine (Lust).

Medicinally, watercress is a mild diuretic and stimulant. Prolonged use may lead to kidney problems, and consumption is not advised during pregnancy (Lust). Note that the common garden nasturtium is *Tropaeolum majus* of the family *Tropaeolaceae*.

Physaria—Twin Pod (-/14/3) Native Americans used the plant as a cure for sore throat (A. Brown, Murphey).

Rorippa—Yellowcress (-/20/7) • The plants are edible.

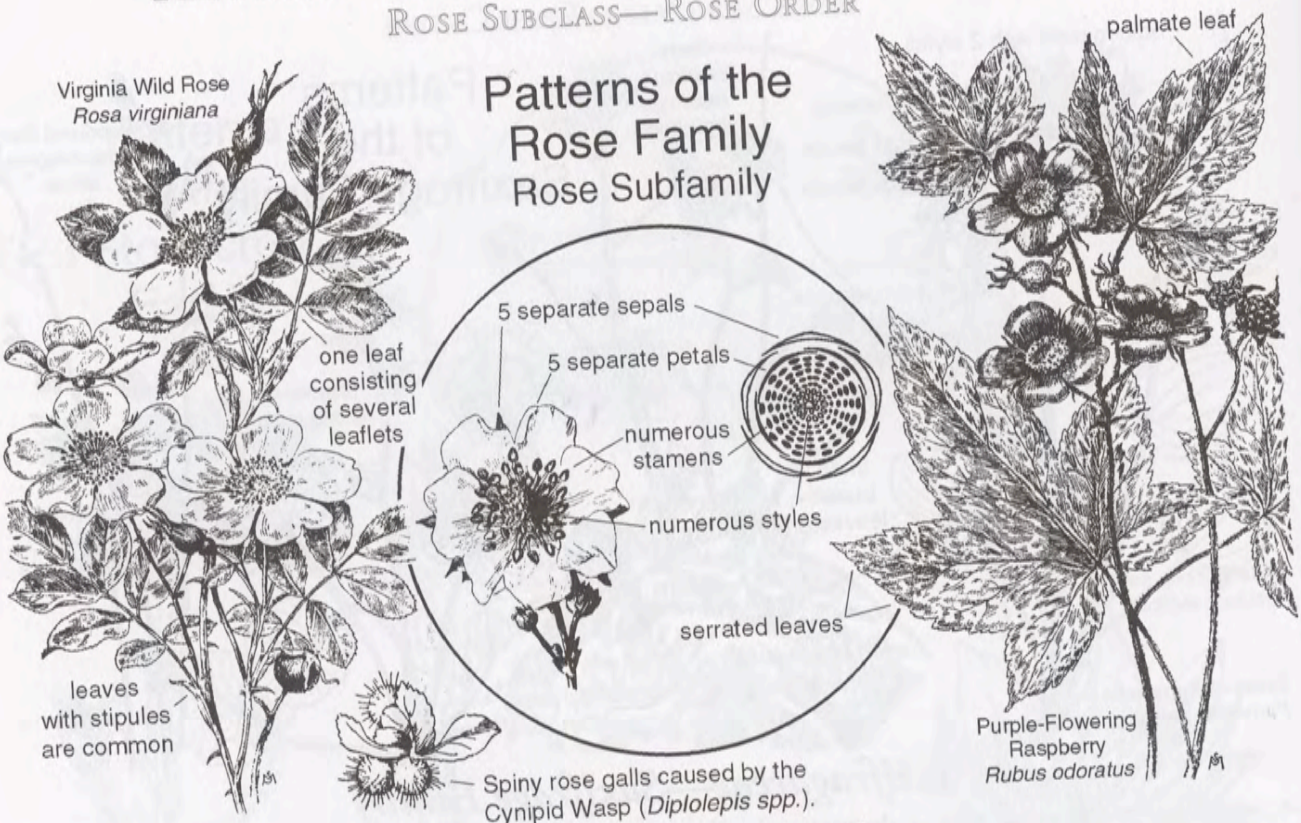
Sisymbrium—Tumble Mustard (80/-/4) • The plant can be used as a pot herb. The seeds can be gathered and used for meal or seasoning (Harrington). Medicinally, tumble mustards are used similarly to the *Brassicas* (Lust).

Stanleya—Prince's Plume (6/6/2) • The fresh plant has an emetic effect, but is reportedly safe to eat after boiling in several changes of water (Murphey). The plant requires selenium in the soil for proper growth and is used as an indicator of this mineral.

Thlaspi—Pennycress (60/6/2) • The plant can be used as a salad green or pot herb in moderate amounts.

Other selected genera of the Mustard family:

Arabidopsis—Mouse-Ear Cress (-/2/1); *Berteroa*—False Alyssum (-/-/1); *Cardaria*—Whitetop (-/-/2) • ; *Conringia*—Hare's Ear Mustard (-/-/1); *Draba*—Whitlow Grass (270/90/18); *Erucastrum*— (-/-/1); *Halimolobos*— (-/-/1) ; *Hesperis*—Rocket (24/1/1) • ; *Lesquerella*—Bladderpod (-/54/3) • ; *Smelowskia*— (-/5/1); *Subularia*—Awlwort (-/-/1); *Thelypodium*—(-/21/2)



Rosaceae—Rose Family

Key Words: 5 sepals and 5 petals with usually numerous stamens. Oval, serrated leaves.

If you have ever stuck your nose into an apple, rose, strawberry or cherry blossom, then you know the Rose family. Like many families of plants, the Rose family has regular flowers with 5 sepals and 5 petals, yet there is also something distinct about flowers in the Rose family. One thing that helps these flowers stand out is the numerous stamens: the flowers have a minimum of 5 stamens, but often many more, usually in multiples of five. In most cases you can recognize the Rose family based solely on the sepals, petals and stamens. Domestic roses have additional petals that were bred from the stamens. Many flowers of the Rose family have several to numerous simple pistils (apocarpous), or they may be united at the base, with the styles still separate, to make a single compound pistil (syncarpous) with numerous styles. Members of the Plum subfamily have a single simple pistil (unicarpellate).

Note that the juicy "fruit" of the strawberry is really the swollen receptacle beneath the pistils. Botanically speaking, the "fruit" is only the dry seed—the remains of the pistil or ovary—on the strawberry's surface. The raspberry is different, where the ovary of each simple pistil has swollen to create an aggregate fruit covering the domed receptacle. The fleshy rose hip looks like a fruit from the Apple subfamily, but the rose hip is formed from the swollen receptacle where the flower parts are attached, while the fruits of the Apple subfamily are the swollen ovaries. Other fruit types include dry seeds, capsules or follicles (a unicarpellate dry fruit that splits open).

The only challenge to identifying the Rose family is that a few species of the Rose subfamily greatly resemble Buttercups with their numerous stamens and numerous simple pistils attached to a cone-like receptacle. But it is easy to tell the difference between the two. There are usually stipules on the leaves of the Rose subfamily, but never in the Buttercups (see illustration). Another useful pattern of the Rose family is that many (not all) of the plants have oval, serrated leaves or leaflets. Worldwide, there are about 100 genera and 3,000 species. About 50 genera are found in North America. Be sure to familiarize yourself with each of the subfamilies to better understand the range of possibilities within the family. When you have a specimen in hand then you can read again through each of the subfamilies to narrow down the choices for identfication.

Fruits of the Rose family are edible but somewhat laxative, while the vegetation is usually astringent, due to tannic acid. A few species have mildly mucilaginous properties, which helps balance the drying effect of the astringents when used to stop diarrhea. Cyanide compounds are found in the leaves and fruits of the Plum subfamily, but may appear in the seeds or wilted leaves of other species too. It is easily destroyed by heat and/or oxygen.

Rose Family/Rose Subfamily


Red Raspberry
Rubus strigosus


Wild Strawberry
Frageria virginiana


Silverweed
Potentilla anserina

Rose Subfamily

Most flowers of the Rose subfamily have a slightly domed receptacle in the center where numerous simple pistils are attached. Some genera, especially *Geum* and *Potentilla,* may be confused with the Buttercups. See the opposite page for notes on the strawberry, raspberry and rose fruits. Other genera produce dry seeds (achenes).

Agrimonia—Agrimony (-/8/1) Agrimony is astringent and diuretic, containing malic and tannic acid (Moore, Lust).

Alchemilla—Lady's Mantle (-/-/1) The plant is astringent, useful internally and externally (Lust).

Cercocarpus—Mountain Mahogany (10/-/2) • Mountain mahogany is apparently astringent, yet laxative (Moore). It contains some hydrocyanic acid (Phillips).

Dryas—Dryad (-/3/3) The alpine species of this plant is one of the few species outside the pea family that are capable of fixing nitrogen in the soil (Craighead). The astringent leaves are used in tea (Sturtevant).

Frageria—Strawberry (20+/8/2) • Most wild strawberries are packed with flavor, although some East Coast varieties are nearly flavorless. Strawberry patches in my area yield only about a cup of berries per hour of harvesting, but one year I found a patch that yielded several times that, although I did not do a timed study. I just stuffed them in my mouth as quickly as I could! When I am camping I like to use the strawberries to make ashcake pies. (*See Participating in Nature.*) Strawberry leaves are mildly astringent and mucilaginous.

Geum—Avens (56/18/6) • The root of *G. rivale* can be boiled and sugar added for a "chocolate substitute" (Hall). *Geum* contains tannic acid and bitters, and releases volatile oils with hydrolysis (Schauenberg).

Horkelia—Pink Root (-/20/1) The root of at least one species has a pink sap. A tea of the root is taken as a "tonic" (Murphey).

Ivesia—(-/20/1)

Kelseya—(-/-/1)

Luetkea—Partridge Foot (-/1/1) *L. pectinata* is found from Alaska south to California and east to the Rockies.

Potentilla—Cinquefoil, Silverweed (300/120/26) • All potentillas are astringent; the roots of some contain up to 20% tannin. Some bitter principles are also present (Densmore, Schauenberg).

Purshia—Bitterbrush (2/2/1) • The seeds are collected and stored in quantity by mice (Craighead).

Rosa—Rose (100/-/5) • The nicest thing about rose hips is that they stay on the bushes for most of the winter. In a timed study I picked three quarts in one hour. I grew up eating the fruits and drinking the tea. I thought maybe I could mash them into a cereal, but none of my concoctions were palatable; the best way to eat them seems to be one at a time, as you find them. They are very seedy, but the seeds are nutritious too and should be eaten. The vegetation is astringent, diuretic (Willard), and mildly mucilaginous (Geller).

Rubus—Raspberry, Blackberry, Salmon Berry, Thimbleberry (700/-/6) • Wild raspberries contain citric and malic acids (Densmore). I can pick approximately one quart of berries per hour. Thimbleberries, however, are so sporadic that you are lucky to find ten ripe ones in fifty feet. Either are delicious as is, or dried and stored. The vegetation is mildly astringent and diuretic, generally recommended during pregnancies (Willard). It is also mildly mucilaginous (Geller). It is used for diarrhea (Lust). The wilted vegetation may produce cyanide (Tilford).

Sanguisorba—Burnet (30/8/1) • A tea of the root is highly astringent, used for diarrhea, hemorrhaging and varicose veins (Lust). (4 petal-like sepals. 0 petals. 2 to 12 stamens. 1 to 3 pistils.)

Sibbaldia—(-/1/1) *S. procumbens* is an arctic plant, also found in higher elevations in the states.

Spiraea Subfamily

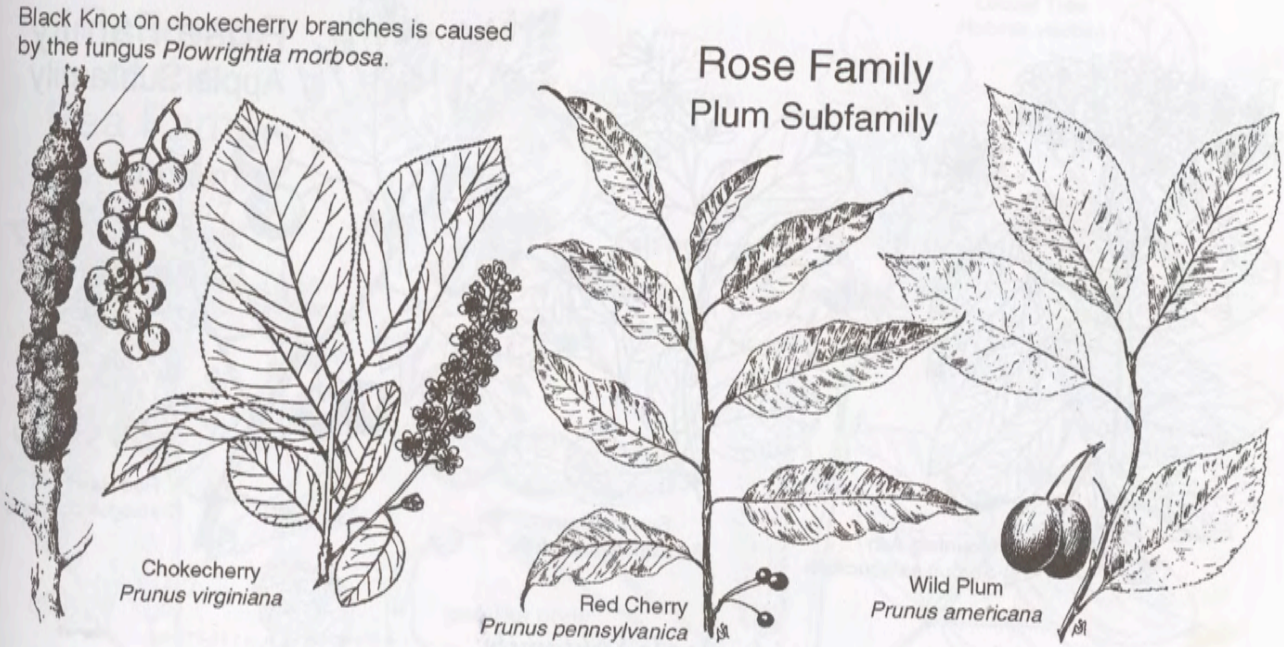
If you find a member of the Rose family with dense, "foamy" clusters of small, white or pink flowers then it is probably a member of the Spiraea subfamily. These are mostly shrubs (some herbs) with woody stems. Unlike the Rose subfamily, these plants do not have stipules on the leaves. Stipules are small, leaf-like growths at the base of the leaf stems.

The ovary is positioned superior with 2 to 5 (rarely 1 to 12) simple pistils, which may be partially fused at the base. Fruits of this group include capsules, follicles (unicarpellate dry fruits that split along a seam) or sometimes achenes (dry seeds).

Aruncus—Goat's Beard (3/2/0)
Chamaebatiaria—Desert Sweet (-/-/0)
Chamaerhodes— (-/-/1)
Gillenia—Indian Physic (2/2/0)
Holodiscus—Ocean Spray (8/-/1) • The small, dry fruits were reportedly eaten by Native Americans (Craighead). Medicinally, it is astringent and diuretic (Willard).
Lyonothamnus—Catalina Ironwood (1/1/0) Ironwood is only found on California's Catalina Islands.
Petrophyton—Rock Mat (-/3/1)
Physocarpus—Ninebark (10/-/2) • The palmate leaves look similar to the Gooseberry family.
Spiraea—Meadowsweet (100/-/3) • Meadowsweet is astringent, diuretic, and it contains methyl salicylate (similar to aspirin or willow), used especially for arthritis, rheumatism and urinary tract infections (Schauenberg). Meadowsweet is becoming a popular herb because the salicylate content is much more reliable from plant to plant than willows or poplars. It also tastes better!
Vauquelinia—Arizona Rosewood (-/-/0)

Bridewort Spiraea
Spiraea salicifolia

Rose Family
Spiraea Subfamily



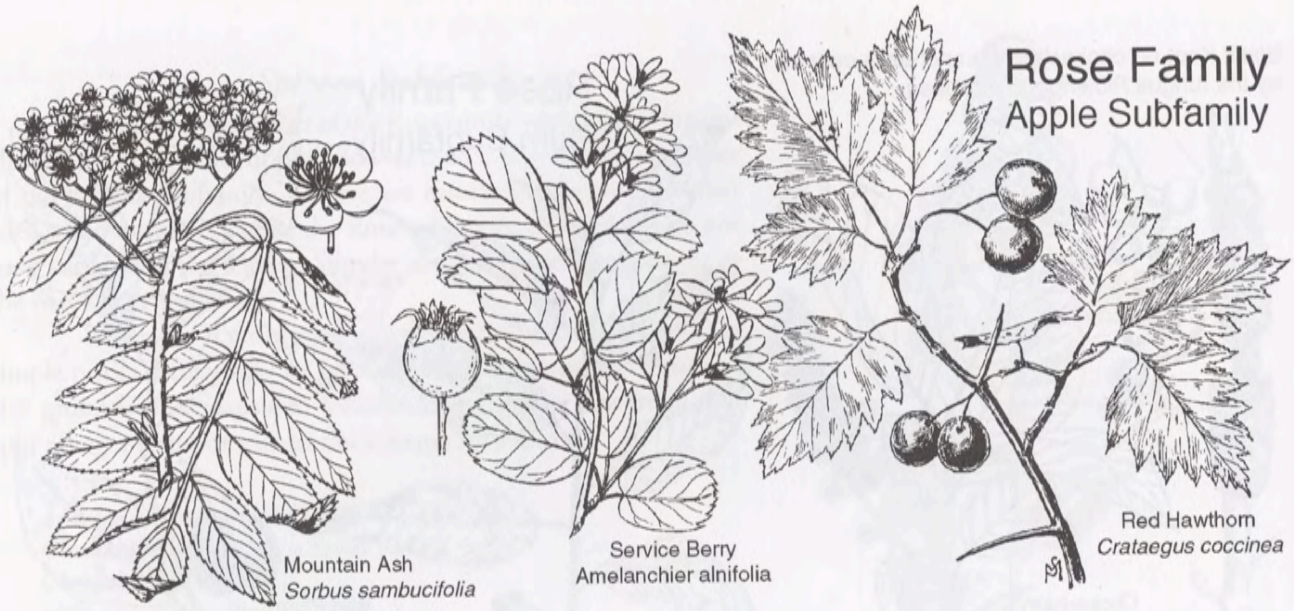
Plum Subfamily

Plums, cherries, apricots, peaches, nectarines and almonds are all included in the *Prunus* genus. (Sometimes they are split into separate subgenera.) The ovary is positioned mostly or wholly superior and usually consists of a single carpel (unicarpellate) (2 to 5 carpels in *Osmaronia*) forming a single chamber that matures as a drupe (a fleshy fruit with a stoney pit). Next time you see one of these fleshy fruits, notice the "seam" down one side, and the almond-like pit in the middle; those are the obvious marks of the Plum subfamily.

Osmaronia (*Oemleria*)—Osoberry, Indian Plum (1/1/0) *O. cerasiformis* grows along the Pacific Coast.

Prunus—Cherries, Plums (200/30/4) • Wild plums grow naturally in eastern Montana and are often planted domestically in western Montana. I wish they grew wild here because they are so big and easy to gather, compared to other wild fruits. They are already very sweet, but mashing and drying sweetens them even more; the natural sugars visibly crystallize in the flesh.

Chokecherries are the main wild crop we get from this genus in Montana. I always thought they were nearly useless, because the only processing method I knew was to boil out the juice and throw the pulp away. As a "survivalist", I like real food, and the juice was never quite good enough. Then a Crow Indian woman showed me the native way of processing them. You put the fresh berries on a metate stone and mash them up, pits and all, and dry them. The nut inside the pit has an almond-like aroma. This is no coincidence, since the almond is in this genus. Anyway, the combination cherry-almond odor is richly intoxicating to work with when mashing them on a rock. Like most of the other members of this genus, chokecherry pits contain a form of cyanide, but cyanide is easily destroyed by heat, sunlight and oxygen. Mashing and drying the chokecherries renders them safe to eat. The pit shells are crunchy, but not nearly as obtrusive as you might think. I cook up the fresh mash and use it as a filling in "chokecherry ashcake turnovers", and the dried mash I just use as trail mix. I can hand-pick one gallon of cherries per hour, which take another forty minutes to mash with a rock.



Apple Subfamily

If you find a member of the Rose family with fleshy fruits and a five-pointed star on the bottom then it belongs to the Apple subfamily. The only other fleshy fruit of the Rose family with a five-pointed star is the rose itself (see the Rose subfamily). The ovary is positioned inferior in the Apple subfamily, leaving the remains of the flower attached to the tip of the fruit (See also the Blueberry subfamily of the Heath family.)

All fruits of the Apple subfamily are edible, though some, like the mountain ash (*Sorbus*), are highly sour-astringent. Other cultivated members of the Apple subfamily include the apple (*Malus*), pear (*Pyrus*), quince (*Cydonia*), loquat (*Eriobotrya*), Christmasberry (*Photinia*) and *Pyracantha*. The fruits of most of these plants are sweeter after a frost.

Aronia—Chokeberry (3/3/0) The fruits are edible, but usually require a frost to sweeten them (Fern).

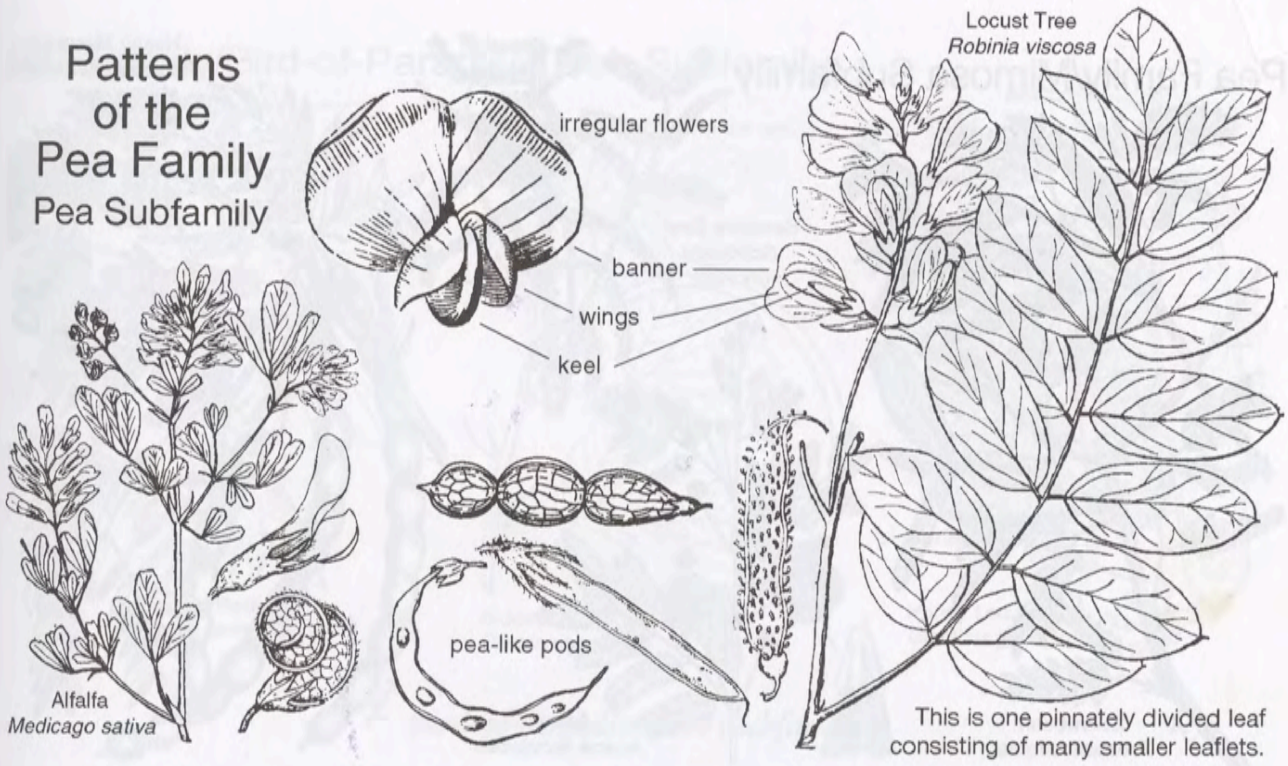
Amelanchier—Service Berry (20/-/2) • Many wild berries are all juice, but service berries are both juicy and fleshy. They are some of my favorite berries, and I can easily eat a quart of them on site when I find a good thicket. Unfortunately, there are not too many of them immediately in my area—I have to travel sixty miles to get to the nearest worthwhile patch. However, in a good patch I can easily pick two to four quarts of berries per hour. Medicinally, the berries may be laxative; otherwise the leaves and bark are astringent (Willard).

Cotoneaster—(95/D/D) • Cotoneaster has small, purplish edible berries. It is an import from Russia, commonly planted as an ornamental in towns.

Crataegus—Hawthorn (200/-/4) • Hawthorns produce an abundance of fruit well worth harvesting. All hawthorn berries are edible: black, blue, red or yellow. The blue-black ones tend to be pulpy and delicious, whereas the red ones are more seedy and astringent.

Medicinally, the leaves, flowers and fruit are rich in flavonoids, especially beneficial to the heart. Hawthorn is used to normalize arrhythmia, high or low blood pressure, and to reduce blood clots. It makes the blood vessels more flexible, reducing vascular resistance so the heart doesn't have to pump so hard (Klein).

Sorbus—Mountain Ash (100/-/2) • Mountain ash is uncommon in the wild in Montana. It is mostly planted as an ornamental in towns. The berries are mealy and initially sour; they require a good frost to sweeten them. They are easy to gather in abundance. The vegetation is astringent, diuretic and contains cyanide (Willard). One of the sugars found in the berries is given intravenously for cases of glaucoma to reduce pressure on the eyeball (Lust).



Fabaceae (Leguminosae, Papilionaceae)—Pea Family

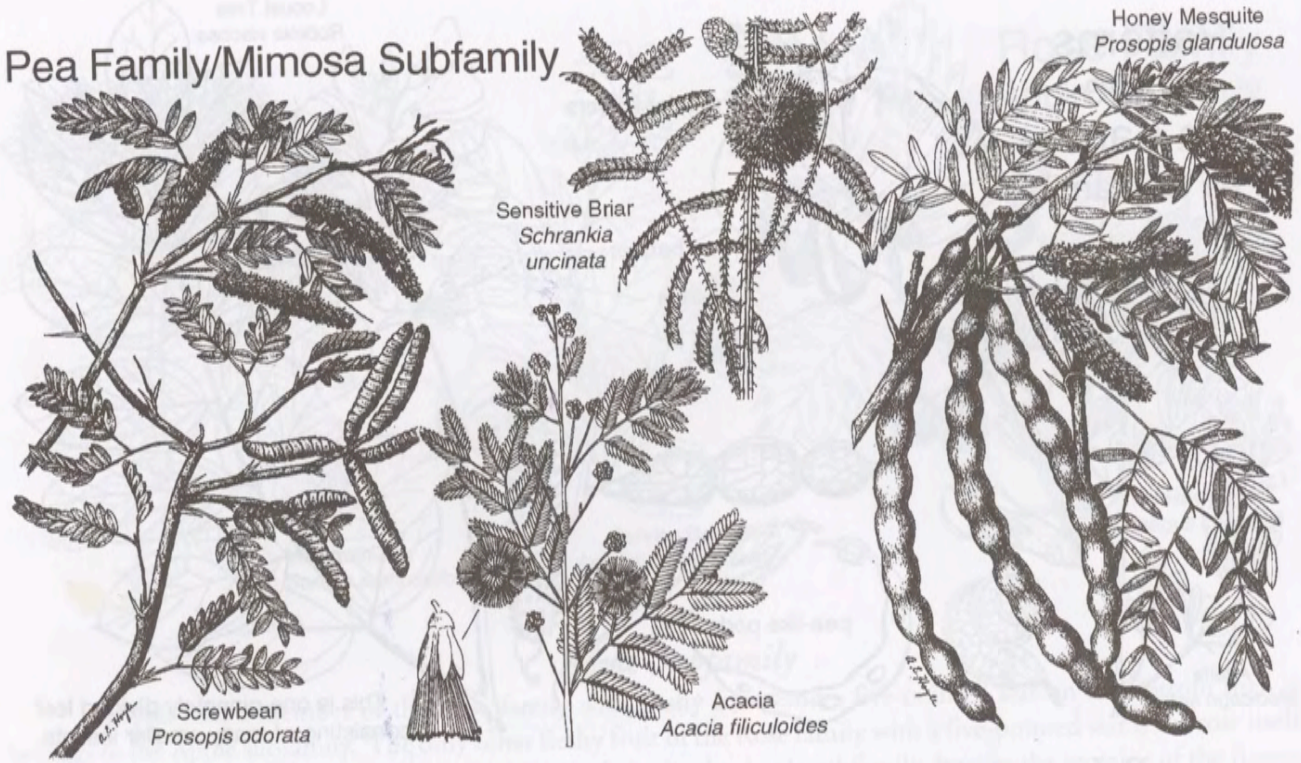
Key Words: Banner, wings and keel. Pea-like pods and often pinnate leaves.

If you have seen a pea or bean blossom in the garden, then you will be able to recognize members of the Pea Family. There are 5 united sepals. The 5 petals form a distinctive "banner, wings and keel", as shown in the illustration. The banner is a single petal with two lobes, although it looks like two that are fused together. Two more petals form the wings. The remaining 2 petals make up the keel and are usually fused together. There are usually 10 (sometimes 5) stamens. The parts are positioned perigynous to the unicarpellate (single-chambered) ovary. It matures as a pea-like pod with several seeds.

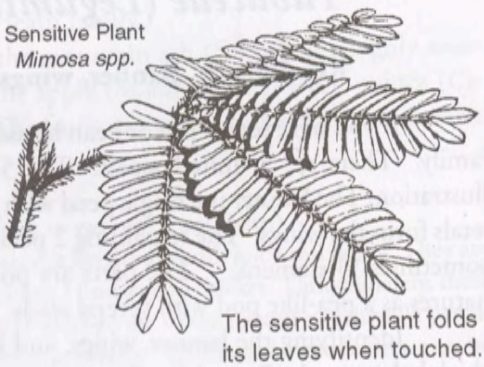
Identifying the banner, wings, and keel is sufficient to recognize all the Peas across the northern latitudes, which belong to the **Pea subfamily**. As you move south you will encounter Peas from two additional subfamilies, the **Mimosa subfamily** and the **Bird-of-Paradise Tree subfamily**. Both of these subfamilies include mostly trees and shrubs, but also a few herbs. Their flowers are significantly different from the flowers of the Pea subfamily. However, most of these trees have pinnate leave and distinctive pea-like pods that open along two seams. Once you recognize a plant as a member of the Pea family by these characteristics, then read more about each of the subfamilies to narrow down the identity. Remember, if the flowers have a distinctive banner, wings and keel, then the plant is a member of the Pea subfamily, and you can read about the different tribes of the Pea subfamily to look for the best match.

Worldwide, there are 600 genera and 13,000 species in the Pea family, including peas, beans and peanuts. This is the third largest family of plants after the Orchid and Aster families. Most Pea family plants form a symbiotic relationship with bacteria in the soil. The bacteria absorb nitrogen from the atmosphere and feed it to the plants. Look for little bumps, often pink, on the roots. The nitrogen is "fixed" in the soil when the vegetation decomposes.

Overall, the plants of the Pea family range from edible to somewhat poisonous. Some species do contain toxic alkaloids, especially in the seed coats. Many people are familiar with the story of Christopher McCandless, who trekked into the Alaska wilderness in 1992 and was found dead four months later. He had been eating the roots of *Hedysarum alpinum* and assumed the seeds were edible too, so he gathered and ate a large quantity of them over a two-week period. The seeds, however, contained the same toxic alkaloid found in locoweed (*Astragalus*), which inhibits an enzyme necessary for metabolism in mammals. It is now believed that McCandless was still eating, but starved to death because his body was unable to utilize the food (Krakauer). Even the common garden pea can lead to depression and nervous disorders with excess consumption.



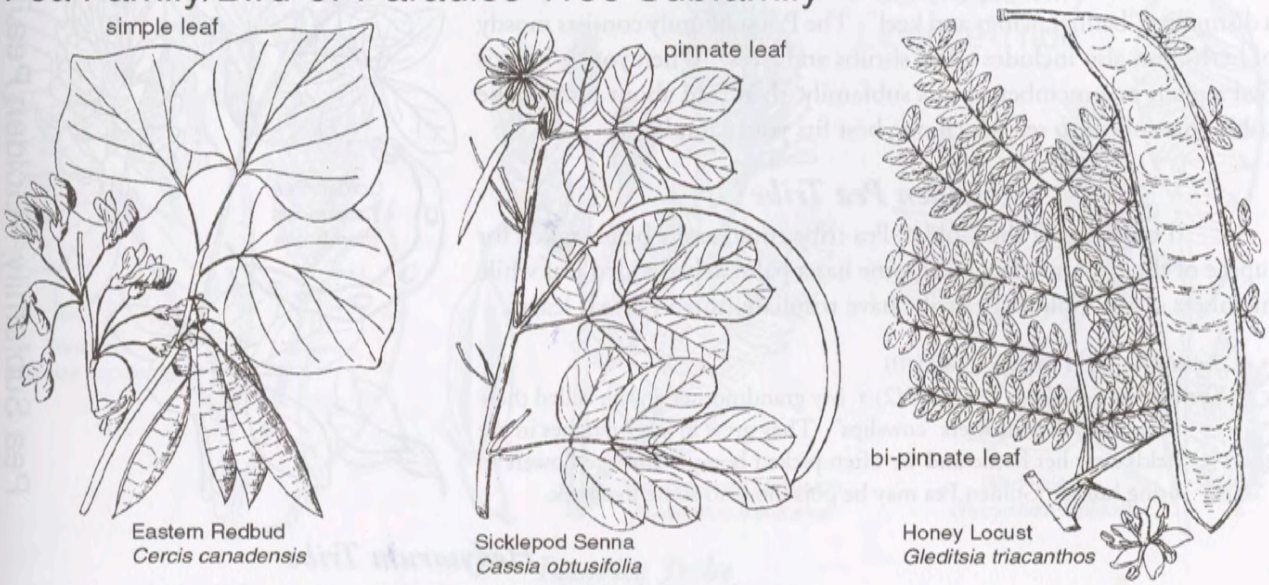
Mimosa Subfamily



The Mimosa subfamily consists of mostly trees and shrubs, plus a few herbs. The leaves are alternate and usually distinctively bi-pinnate (see the leaf terms illustrated below). There are 5 small, united sepals, 5 separate petals, and often 10 or more stamens (sometimes only 4). These are usually small flowers in dense clusters with long stamens radiating out. The filaments (the stamen stems) are often brightly colored. The ovary is positioned superior, consisting of a single carpel (unicarpellate) and therefore a single chamber, which matures as a typical pea pod. Worldwide, there are about 40 genera and 2,000 species, in mostly tropical regions. Some North American genera include:

Acacia—Acacia (700+/5/0) The *Acacias* produce gum arabic, used in many sore throat, cough and diarrhea formulas. The seeds of many species have been used as food (Sturtevant).
Albizzia—Silk Tree, Woman's Tongue Tree (100+/-/0)
Calliandra—Fairy Duster (-/-/0) •
Desmanthus—Prairie Mimosa (40/-/0)
Leucaena—Lead Tree (-/-/0)
Lysiloma—(-/2/0)Native to parts of Florida and Arizona.
Mimosa—Sensitive Plant (450+/-/0)
Pithecolobium—Cat Claws (150+/-/0) Native to Florida.
Prosopis—Mesquite, Screw Bean (35/-/0) • The pods and seeds were pounded, cooked and eaten. The flowers are also edible (Harrington).
Schrankia—Sensitive Briar (30/-/0)

Pea Family/Bird-of-Paradise Tree Subfamily



Bird-of-Paradise Tree Subfamily

The Bird-of-Paradise Tree subfamily includes mostly trees and shrubs (rarely herbs) with showy, slightly irregular flowers. The leaves may be simple, pinnate, or bi-pinnate (*see illustration above*). There are 5 separate sepals, and 5 petals, with one petal enclosed inside the others. There are usually 10 (sometimes fewer) stamens. The ovary is positioned superior, consisting of a single carpel (unicarpellate) and therefore a single chamber, which matures as a typical pea pod. Note that these plants are not remotely related to the Bird-of-Paradise Flower (*Strelitzia reginae*) of the Banana family (*Musaceae*), which is not covered in this text. Worldwide, there are 150 genera and 2,200 species, mostly in the Old World tropics. Some North American genera include:

Caesalpinia—Bird-of-Paradise Tree (125/-/0) Introduced from India as an ornamental, it now grows from Arizona to Florida.
Cassia—Senna (500/-/0) Many species of senna are found across the southern and eastern states. All are strongly laxative.
Cercidium—Palo Verde (10/10/0)
Cercis—Redbud, Judas Tree (7/-/0) The flowers and pods have been used in salads (Sturtevant).
Gleditsia—Honey Locust (15/-/D) Sugar has been extracted from the sweet, pulpy seed pods (Sturtevant).
Guilandina—Wait-a-Bit Vine (-/-/0)
Gymnocladus—Kentucky Coffee Bean Tree (2/-/0) The pods are edible. Seeds are used as a coffee substitute (Sturtevant).
Parkinsonia—Palo Verde (2/2/0)
Tamarindus—Tamarind (-/-/0)

Pea Subfamily

The Pea subfamily includes all members of the Pea family with a distinctive "banner, wings and keel". The Pea subfamily consists mostly of herbs, but also includes a few shrubs and trees. When you've identified a plant as a member of this subfamily, then read about each of the tribes that follow to see which one best fits your sample.

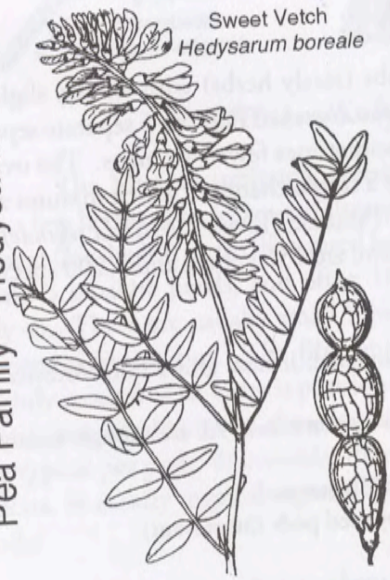
Pea Subfamily—Golden Pea Tribe

Golden Pea Tribe

The plants of the Golden Pea tribe could easily be mistaken for lupine of the Broom tribe, but lupine has a palmately divided leaf while members of the Golden Pea tribe have trifoliate (three-parted) leaves.

Baptisia—Wild Indigo (30/25/0)
Thermopsis—Golden Pea (20/9/2) • My grandmother always called these beautiful yellow flowers "cowslips". They grew in large patches in the fields near her home and we often picked bouquets of the flowers to bring home. Golden Pea may be poisonous to some livestock.

Pea Family—Hedysarum Tribe



Hedysarum Tribe

Members of the Hedysarum tribe have either trifoliate (three-parted) or pinnate leaves, but no tendrils. The distinctive feature of these plants is that the pods on most species are deeply constricted between the seeds (*see illustration*). A few are not constricted, but the pods still tend to break apart transversely (cross-wise instead of lengthwise). The peanut (*Arachis*) belongs to this group. It blooms above ground, then buries the developing seed pods (the peanuts) in the soil.

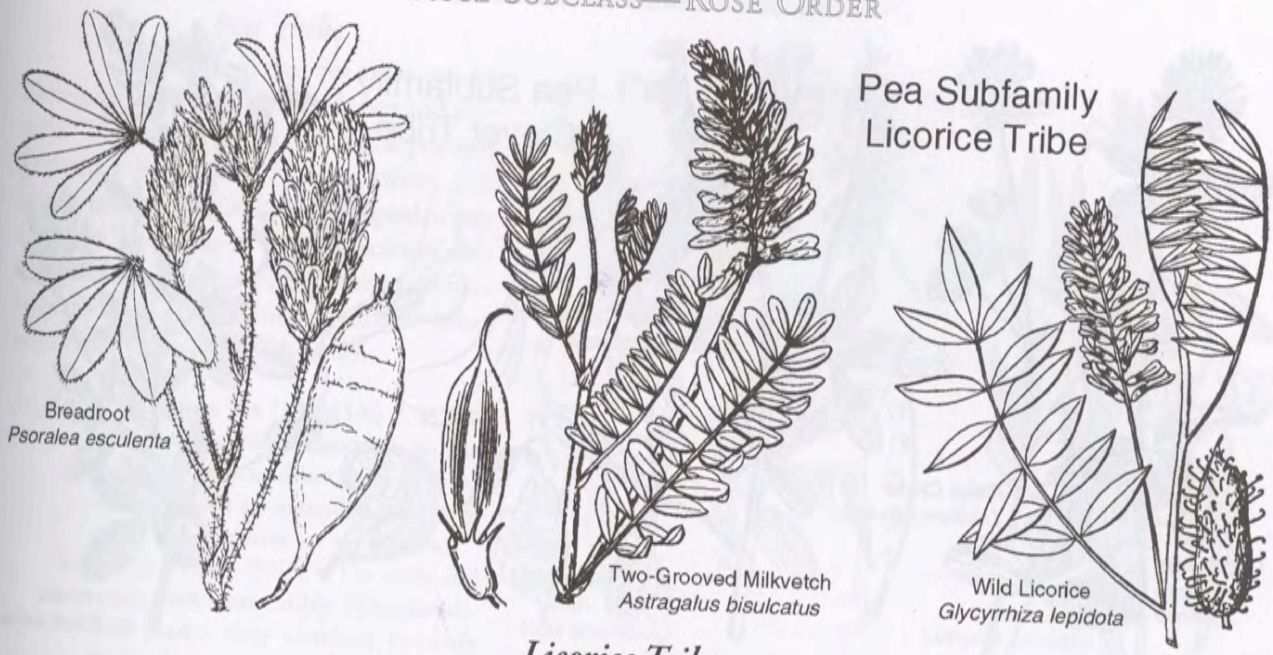
Coronilla—Crown Vetch (25/1/1) *C. varia* is introduced from Eurasia. The plant may contain cardiac glycosides. A British species is considered highly toxic, so all species should be suspect (Fern).
Desmodium—Tick Trefoil (200/-/0)
Hedysarum—Sweet Vetch (-/8/4) The roots of some species are known to be edible (Willard), but others are believed to be poisonous. The seeds contain the same alkaloid as *Astragalus* (Krakauer).
Lespedeza—Bush Clover (100/20/0)

Broom Tribe

The Broom tribe includes mostly shrubs, some with spines. The leaves may simple, trifoliate, or palmately divided (*Lupinus*), but not pinnately divided. (*See the Guide to Leaf Terms inside the back cover of the book.*)

Crotalaria—Rattle Box (500/13/0)
Cytisus—Scotch Broom (60/-/0) Scotch broom was introduced from Europe. It is now found along the Atlantic and Pacific Coasts . *C. scoparius* contains the alkaloid sparteine, which slows the heart and stimulates uterine contrations (Tyler).
Genista—Broom (90/-/0)
Lupinus—Lupine (200/150/10) • The root and seeds of some species may be edible after cooking, but some are known to contain poisonous alkaloids (Harrington). More research needs to be done in this area.
Spartium—Spanish Broom (1/1/0)
Ulex—Gorse (15/-/0)

Pea Subfamily—Broom Tribe



Licorice Tribe

Except for *Psoralea* shown above, most species of the Licorice tribe have pinnately divided leaves. None of the plants have tendrils like the Pea tribe, or deeply constricted pods like the Hedysarum tribe. Note that the Licorice tribe includes the locust or black locust tree (*Robinia*), as well as the popular *Wisteria*. The honey locust (*Gleditsia*) belongs to the Bird-of-Paradise Tree subfamily.

Amorpha—False Indigo, Lead Plant (20/20/1)

Astragalus—Locoweed, Milk Vetch, Ground Plum (1600/375/43) • The pods of *A. succulentus* are swollen and plum-like, easy to distinguish from other members of this genus. The whole pods are edible when young, and the "peas" are still good, even when the pod becomes tough. Members of this genus are known accumulators of selenium from the soil, and some contain poisonous alkaloids. All except for the above should be avoided by amateurs. Medicinally, *A. americanus* may be chemically similar to a popular Chinese herb of this genus (Willard). Several species of *Astragalus* produce a gum called tragacanth, used to stabilize medicinal preparations by keeping them from separating into the solid and liquid parts (Klein).

Caragana—Caragana (-/-/D) • The flowers, seeds and young pods are edible, but should probably be cooked. Some species have fibrous bark or flexible twigs that may be used for cordage (Fern)

Dalea—Prairie Clover, Indigo Bush (25030/4) • The root is edible raw and sweet. The fresh plant is emetic, but a beverage tea can be made from the dried leaves (Fern).

Glycyrrhiza—Wild Licorice (15/1/1) • A European species, *G. glabra*, was the original source of licorice flavor. Chop and boil the root in hot water to extract the flavor. Our native species can be used similarly, but they don't taste like licorice. Also, the root can be roasted, pounded to remove the fibers, then eaten. Licorice usually has small, woody roots, but I have seen a few large ones sticking out of the soil along river banks. Most licorice candies are artificially flavored.

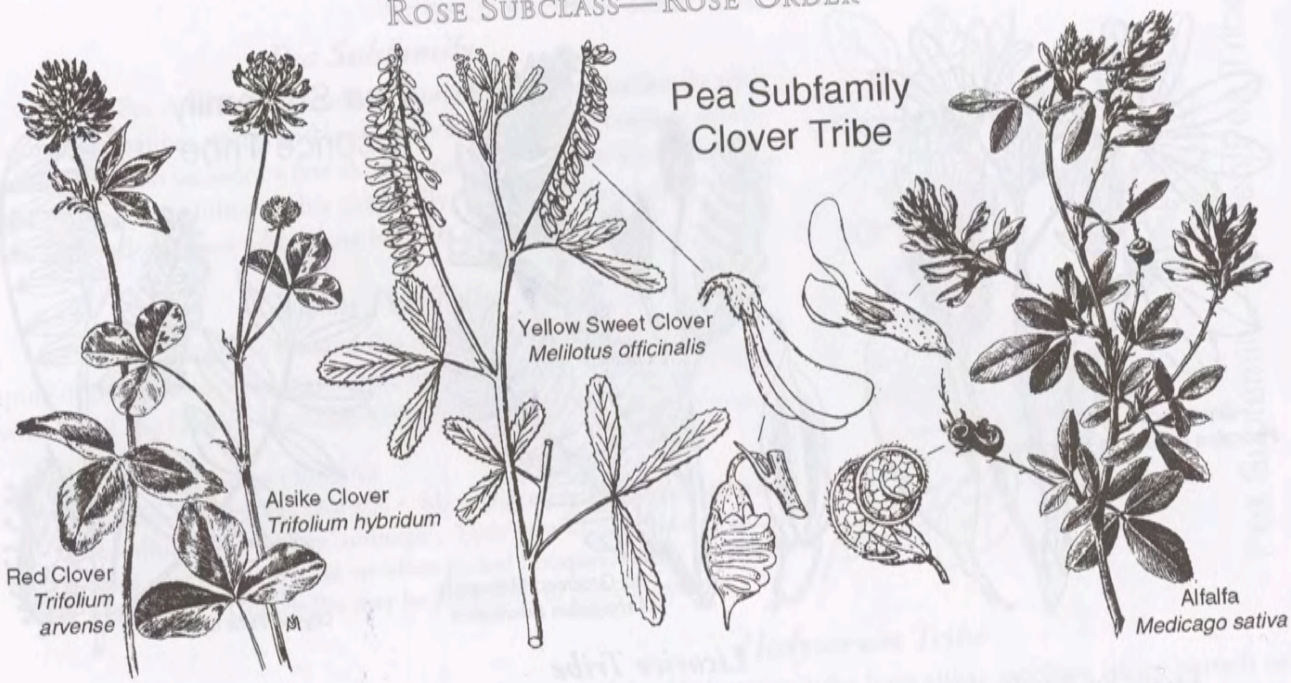
Medicinally, licorice root contains chemicals similar to the human adrenal hormone; it is used to regulate women's hormones for PMS and menstrual cramps (Willard). It can stimulate higher levels of adrenocorticosteriods and estrogen (Moore). Licorice root has an anti-inflammatory effect that mimics cortisone in the body, but without the side effects of steroid drugs. In studies of cough suppression medicines, licorice root was as effective as codeine, a narcotic drug often added to commercial cough remedies (Tilford). When taken over an extended period, licorice can cause the body to excrete more potassium and retain sodium (Hobbs), leading to water retention and elevated blood pressure. People have been hospitalized after consuming too much licorice (Tyler).

Oxytropis—Pointloco, Vetch (200+/36/11) Several species contain toxic alkaloids.

Petalostemon—Prairie Clover (40/27/2)

Psoralea—Breadroot, Scurf Pea (150/40/5) • There are many species of *Psoralea* across the U.S., and all apparently have edible roots (Sturtevant). *P. esculenta* is abundant in eastern Montana. The starchy root is dug in the spring when the ground is moist. The bark is peeled off and the root is eaten raw or cooked. It is a first-class food plant where it is available. Caution is advised, however, as it is somewhat similar to *Lupinus* in appearance. The seed-coat contains the lactone glycoside coumarin.

Robinia—Locust Tree (20/-/1) Locust seeds are acidic and high in oil, but edible after thorough boiling (Sturtevant).



Clover Tribe

The distinctive characteristic of the Clover tribe is the trifoliate (three-part) leaves. Trifoliate leaves are common in many tribes of the Pea subfamily, but in this case the leaves really look like clover leaves. Also, the flowers of these specimens are smaller than most other blossoms in the family.

Medicago—Alfalfa, Black Medic (110/-/4) • Alfalfa is an introduced crop plant from the Middle East. The mature plant has deep roots (up to sixty feet) and accumulates many mineral nutrients. It contains calcium, chlorine, iron, magnesium, phosphorus, potassium, silica, sodium and trace minerals, plus significant quantities of the vitamins A, B1, B6, B12, C, E, K1, and P. Alfalfa also contains dozens of amino acids, making the plants high in protein. A tea of the plant or a few of the leaves in salad is used as a highly nutritional health tonic. Tonics like this are useful for helping the body deal with chronic ailments such as arthritis, rheumatism and ulcers. Alfalfa also contains coumarins, mildly useful for lowering cholesterol, except that coumarins are destructive to red blood cells and interfere with the utilization of vitamin E. This is believed to be one of the causes of bloating in farm animals. Please note that alfalfa *sprouts* contain a toxic substance called canvanine, which can lead to scarred lesions on the face and scalp with excessive use.

Melilotus—Sweet Clover (25/6/3) • Sweet clover is used externally as an astringent, and internally as a diuretic. A concentrated dose is sometimes administered as an anticoagulant to break up blood clots. Excessive use may lead to symptoms of poisoning (Lust). The "sweet" odor of these plants is due to the presence of coumarin. Coumarin can break down into toxins if it is allowed to spoil (as in moldy hay); the toxins reduce the prothrombin content of the blood and prevent the blood from clotting in a wound (Craighead).

Trifolium—Clover (300/95/20) • The whole plants are edible as a salad green or pot herb, but are minimally digestible and may cause bloating. Soaking them in salt water apparently counteracts this effect (Kirk). Red clover seems to be more edible than other species. Clover seeds are also edible (Olsen).

Medicinally, red clover is a diuretic and expectorant (Willard). A tea of the flowers is used to stimulate liver and gall bladder activity (Lust). Red clover contains some coumarins, saponins and flavonoids (Hobbs).

Trefoil Tribe

Members of the Trefoil tribe have trifoliate (three-parted) or pinnately divided leaves, sometimes with stipules at the base of the leaves.

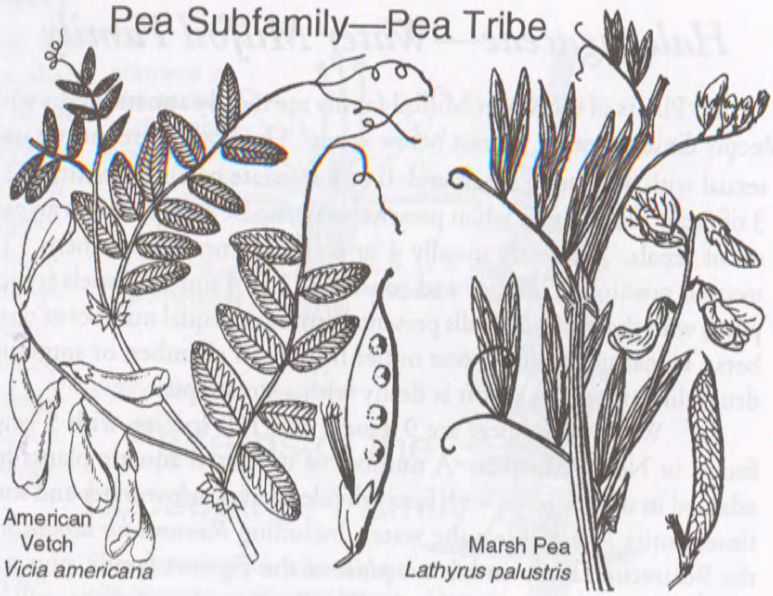
Lotus—Bird's Foot Trefoil (150/60/3) • The fresh plant can produce cyanide and may be toxic raw. The young seed pods may be cooked and eaten. The plant has carminative, antispasmodic and hypoglycemic properties. It is also used as a poultice for skin inflammations (Fern).

Pea Tribe

The plants of the Pea tribe can be distinguished by their pinnate leaves and tendrils. This tribe includes the chick pea and garbanzo bean (*Cicer*), the sweet pea (*Lathyrus*), lentils (*Lens*) and the garden pea (*Pisum*). The seeds of many species of this tribe, including the garden pea, can cause nervous disorders if consumed in excess. Most poisonings occur in hot climates.

Lathyrus—Sweet Pea (130/45/6) • A few species are edible in moderation, but may cause nervous disorders if eaten excessively over an extended period of time. Other species are toxic (Kirk).

Vicia—Vetch (150+/30/5) • The seeds and young stems are edible (Craighead). The plants may contain cyanide (Phillips).



Bean Tribe

Most species of the Bean tribe are twining plants that climb by growing their vine-like stems around poles or other objects. The leaves are usually three-parted. This tribe includes many common beans (*Phaseolus*), the soybean (*Glycine*), as well as cow peas and black-eyed peas (*Vigna*).

Amphicarpa—Hog Peanut (-/1/0) Hog Peanut is native to the southeastern U.S. The pods are edible (Sturtevant, Hall).

Apios—Ground Nut (8/2/0) Ground nut is a native of the eastern states. The starchy tubers form on the roots much like beads on a string. They are edible raw and reportedly taste "like Idaho potatoes" when cooked (Kallas).

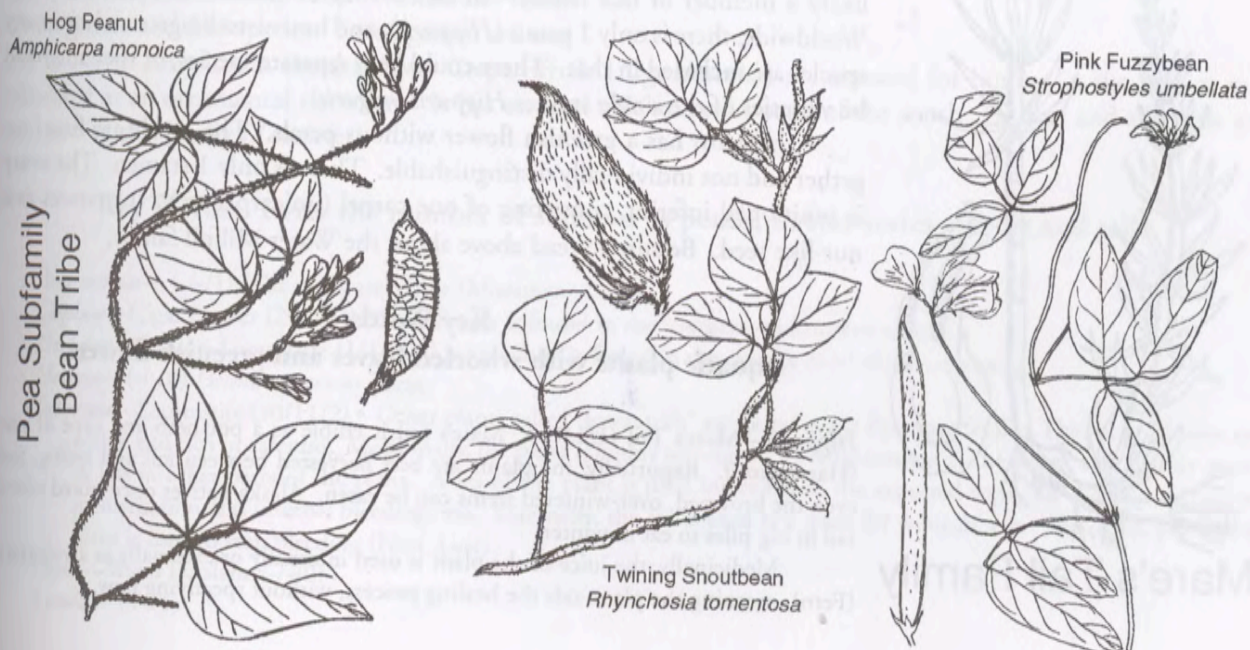
Erythrina—Coral Tree (104/1/0) *E. herbacea* can be found from Texas to North Carolina.

Galactea—Milk Pea (-/17/0)

Pueraria—Kudzu (15/1/0) The kudzu vine is an introduced weed from Asia. It is common across the southeastern states, where it can engulf trees and sometimes kill them by taking all the light. The tubers can be added to stews, or pounded into flour. The young leaves, shoots, and blossoms are all edible as potherbs. The roots are high in flavonoids (Duke)

Rhynchosia—Snoutbean (-/-/0)

Strophostyles—Fuzzybean (-/-/0)



Apiaceae (Umbelliferae)—Parsley Family

If you want to find plants from the Parsley family, just open your spice cabinet! Most members of the family contain rich, aromatic volatile oils and many of them are common culinary spices, including: anise (*Pimpinella*), celery (*Apium*), chervil (*Anthriscus*), coriander (*Coriandrum*), caraway (*Carum*), cumin (*Cuminum*), dill (*Anethum*), fennel (*Foeniculum*) and parsley (*Petroselinum*). There are also a number of edible roots in the family including the carrot and parsnip. The herb gotu cola (*Centella* or *Hydrocotyle*) is also a member of this family.

For identification, the most distinctive pattern of the Parsley family is the **compound umbels**. Notice that all the stems of the flower cluster radiate from a single point at the end of the stalk, like an umbrella. At the end of each of these flower stems there is another umbrella of even smaller stems, hence the "compound umbrella" or compound umbel. Looking closer, you will also find that the tiny flowers have 5 sepals (small and underneath), 5 petals and 5 stamens. The ovary is positioned inferior. It consists of 2 united carpels (bicarpellate) with the partitions present, forming an equal number of chambers. It matures as a schizocarp a dry fruit that splits into individual one-seeded carpels (mericarps) when dry. Worldwide, there are 300 genera and 3,000 species. About 75 genera are native to North America.

Although so many plants of this family are quite edible, the family also includes some of the most deadly plants in North America. People die every year, thinking they have discovered wild carrots or something like it. When you see the compound umbel, let it be your warning—you *must* get positive identification of these plants!

Medicinally, the volatile oils of the Parsley family are stimulating and warming, causing the body to open up and sweat; thus most of the plants are diaphoretic or sudorific. This property can help you break a fever. A fever is the body's way of "cooking" the microorganisms that cause infections. Using a diaphoretic herb can help raise a mild fever just high enough to kill a virus, thus "breaking" the fever. Note, however, that diaphoretics can be dangerous where there is already a high fever and other compounds, such as aspirin, should be used to reduce the fever. Diaphoretics tend to be most effective if used at the very onset of a cold. Volatile oils also have a decongestant effect, as you'll notice when your nose runs after a spicy meal. Intensely diaphoretic plants may even stop venereal diseases.

Plants with volatile oils are also used as carminatives to expel gas. They are often antiviral as well. Some members of this family stimulate menstruation (an emmenagogue) and relieve menstrual cramps. They are sometimes used in conjunction with childbirth, but may be dangerous during a pregnancy. Celery contains furanocoumarins. The juice on the skin can cause dermatitis when exposed to sunlight.

Key Words:
Compound umbels. Usually hollow flower stalks.

Poisonous Plants in the Parsley Family

Berula—Creeping Water Parsnip (1/1/1) *B. erecta* is reported to be poisonous (Pammel).

Cicuta—Water Hemlock (-/7/2) • Water hemlock is the deadliest plant in North America! The whole plant is toxic, with the highest concentrations in the roots and the base of the stalks (Harrington). It affects the central nervous system, causing convulsions and quick death. Some victims chew their tongues to shreds. Remarkably, it has been used medicinally as an emetic (with mixed results!), and as a poultice for snakebites (Hart). Numerous people have died from eating hemlock.

Conium—Poison Hemlock (2/1/1) • *Conium* is a little less poisonous than *Cicuta*, but not much. The most toxic parts are in the leaves and stems. *Conium* was used to execute Socrates (Lust). It causes paralysis rather than convulsions (Harrington).

Sanicula—Sanicle (40/17/1) It contains saponins, tannic acid, bitters and volatile oils (Schauenberg), used as an astringent, expectorant and nervine (Lust). Some are said to be poisonous (Cook).

Sium—Water Parsnip (-/-/1) The leaves and stems are reported to be deadly to livestock. The roots may be edible, but the plant looks so much like *Cicuta*, that it should be avoided.

Water Hemlock
Cicuta maculata


Patterns of the Parsley Family
Cow Parsnip
Heracleum lanatum
5 petals
5 stamens
2-chambered ovary with 2 styles
compound umbels
Sanicle
Sanicula marilandica
Creeping Water Parsnip
Berula erecta
Mountain Sweet Cicely
Osmorrhiza longistylis
Caraway
Carum carvi
Wild Carrot
Daucus carota
Poison Hemlock
Conium maculatum

Angelica—Angelica, Don Quai (50/21/4) • The peeled, boiled roots of *A. archangelica* are edible (Brown), but most other species of *Angelica* are strongly medicinal. The roots and seeds are diaphoretic, diuretic, antispasmodic and carminative. The boiled seeds are an aromatic bitter for indigestion. A tea of the root is a menstrual stimulant and antispasmodic for cramps (Moore). It may relieve severe headaches. Excess dosage may affect heart rate and blood pressure (Brown). Angelica increases the sugar level in the blood. The plants contain coumarins (Schauenberg). I sometimes chew on the raw root for its antiviral qualities, a substitute for *Linguisticum* (*see below*). Angelica is not recommended for people of "weak constitution" (Hobbs). Note that Don Quai is *A. polymorpha* from China.

Bupleurum—(-/3/1) Several species of *Bupleurum* are used in Chinese medicine. The root is bitter and slightly acrid. It is used to restore normal liver function, especially in patients with hepatitis (Hobbs).

Carum—Caraway (25/-/1) • Caraway is a domestic herb and spice that is often found growing wild. Medicinally, it is antispasmodic, carminative and stimulating to digestion, menstruation, lactose production and as an expectorant. The leaves and roots are edible. Some species have bigger roots than others (Sturtevant).

Cymopterus—Biscuit Root (-/31/5) The roots, leaves and flowers are edible (Sweet). The seeds are used as a digestive aid. The leaves are used to stimulate sluggish menstruation and to help urinary infections (Moore). I've never been able to determine the difference between *Cymopterus* and *Lomatium*.

Daucus—Carrot (60/2/1) • Wild carrots produce edible roots and seeds. The domestic carrot was bred from this wild plant (Harrington). Wild carrots are not very common in Montana. Carrot seeds are carminative, anthelmintic and stimulant. The potassium salts make carrot seeds and roots diuretic. The root is also high in carotene, used by the body to make vitamin A (Lust).

Heracleum—Cow Parsnip (60/2/1) • Cow parsnip contains a potent volatile oil (Densmore) and a furanocoumarin (Schauenberg). The young stalks are minimally edible. The root and seeds are antispasmodic, carminative and expectorant (Willard). A tea of the root is good for nausea, gas and indigestion. The fresh root is acrid and should be dried prior to using. A bath, poultice or tea of the fresh root is used to treat paralysis (Moore, Willard). The mature, green seeds have an analgesic effect on the teeth and gums (Tilford).

Ligusticum—Osha, Lovage (-/11/5) • The seeds and leaves are dried and used as spice. The root is chewed as a potent diaphoretic, anesthetic, bitter and expectorant. Osha is a popular and effective herb, particularly favored for viral infections (Moore). It is listed as an emmenagogue and diuretic (Lust) and is also taken for headaches (Willard).

Lomatium—Biscuit Root (-/78/11) • Some biscuit roots are strongly medicinal, while others are quite edible and easy to harvest. The individual species are all very different from each other and often similar in appearance to other parsleys, including some poisonous ones. These plants are not for amateurs. Be sure of what you have before you start working with these. A one-hour harvest of *L. cous-cous* in the Pryor Mountains of south-central Montana yielded a quart of delicious, starchy roots. I spent an additional two hours washing and peeling the roots, but this could probably be done significantly faster.

Medicinally, *L. dissectum* is valued for its antiviral properties, especially for respiratory infections like the flu or pneumonia, plus tonsillitis and pharyngitis (Klein). I use it as a good substitute for osha (*Ligusticum*).

Musineon—(-/-/2)

Orogenia—Indian Potato (-/2/1) • The roots are edible raw or cooked (Craighead, Harrington). Author Larry Olsen considers it one of the tastiest foods in the West.

Osmorhiza—Sweet Cicely (11/9/5) • Sweet cicely root has a powerful anise-like aroma, although the intensity varies by species. Most people like the smell, but some find it intensely repelling. I have used a tea of the root for flavoring cookies. Medicinally, the root has antiviral, expectorant and mildly laxative properties (Willard). It contains a volatile oil composed mostly of anethol (Densmore). It is listed as carminative, expectorant and a digestive stimulant (Lust). Sweet cicely may help to balance the blood sugar, while also inhibiting fungal infections of the digestive and reproductive systems (Tilford).

Pastinaca—Parsnip (14/1/1) • *P. sativa* was introduced from Europe. The roots are edible and delicious, either raw or cooked. The green plant contains furanocoumarins and may cause dermatitis on contact with sweaty skin (Pammel).

Perideridia—Yampa (-/13/1) • Yampa roots are one of my favorite wild edibles. They are okay raw, but absolutely delicious cooked. Using a simple digging stick I found I could dig one cup of roots per hour. This was in grainy soil that did not hold moisture very long. In better soils the roots can be three times as large; this suggests that you may be able to dig up to three cups per hour of work. Also, the seeds can be used as seasoning (Willard). Medicinally, eating the seeds is good for indigestion (Sweet).

Torilis—Japanese Parsnip (-/-/0) Japanese parsnip is pervasive in California (Cook).

Zizia—(-/3/2)

Solanaceae—Nightshade Family

Stop and study the next tomato, potato or pepper flower you come across and you will quickly learn the Nightshade family. These are herbs with alternate leaves and colorless juice. They have solitary, bisexual, regular flowers with 5 (rarely 3, 4 or 6) separate or united sepals and 5 united petals. There are 5 stamens inserted on the tube. The ovary is positioned superior. It consists of 2 united carpels (bicarpellate) with the partition walls often present, but more obvious in wild species than domestics. Cut across a maturing berry (like the tomato) or a capsule (like a *Petunia*) and you will usually see the two chambers inside.

Worldwide, there are 85 genera and 2,300 species, including many of our favorite foods. Thirteen genera are native to North America. The tomato is the genus *Lycopersicon*. Bell peppers, chili peppers, jalapeno peppers, paprika and tabasco all come from the *Capsicum* genus. *Physalis* is the tomatillo. *Solanum* includes the potato and eggplant. Belladonna is *Atropa*, while the petunia flower is from the genus *Petunia*. The genus *Nicotiana* gives us tobacco.

Chemically, the pattern of this family is alkaloids and lots of them. Many species of this family are narcotic. A narcotic is any alkaloid that depresses the central nervous system; they are toxic in excess. They are used especially for their analgesic properties. An analgesic numbs the body's sense of pain, like opium or morphine. For similar reasons, a few of these species are useful as sedatives. Some depressants can cause hallucinations, including *Atropa*, *Datura*, *Hyoscyamus* and *Mandragora*. Our European heritage of witches flying on broomsticks comes from these hallucinogenic plants. An ointment containing *Atropa* and *Hyosyamus* was rubbed on the broomstick then absorbed through the vaginal tissues by "riding" the broom (Emboden). The "witches" then experienced "flying". It should be noted that these plants are all extremely poisonous, with a toxicity that varies from plant to plant. Many individuals have died while attempting to hallucinate. Symptoms of poisoning include an unquenchable thirst, dilation of the pupils, delirium, hallucinations, convulsions and coma.

Today the alkaloid scopolamine is used medicinally to treat seasickness or vertigo. Soldiers in the Persian Gulf War carried the alkaloid atropine with them as a treatment for nerve gas attacks (Duke). The juice of *Atropa* was used by Italian ladies as eye drops to dilate the pupils, hence the common name belladonna, meaning "fair-lady" (Klein). Plants with parts that are free of alkaloids are often our food plants.

Key Words: Alternate leaves. Flower parts in fives with united petals and a two-celled ovary.

Capsicum—Red Pepper, Bell Pepper, Chili, Jalapeno, Cayenne, Tabasco (35/-/D) Peppers are mostly native to Central and South America, but a few wild species are found as far north as our southern states. Any wild or domestic members of the genus with a pungent fruit should contain capsaicin and other active constituents. Capsaicin is applied topically as an analgesic. It works by depleting "substance P", the compound which mediates the transmission of pain impulses from the peripheral nerves to the spinal cord. Capsaicin doesn't stop the pain, but it prevents the signal from reaching the brain. It is especially helpful for people who still feel pain weeks or months after surgery. A commercial product is marketed as "Capsaicin P". It takes about three days to become effective. People who eat hot peppers develop higher and higher tolerances, apparently due to the numbing effect of the capsaisin ("Hot Stuff"). Cayenne pepper is good to have in the first aid kit. Internally it increases circulation, stimulates digestion and helps to treat shock. Externally the powder can be applied to stop bleeding, reduce pain and increase circulation (Sheff).

Peppers may be used as irritants to warm the skin without causing blisters, but caution is advised to avoid getting it in your eyes. Pepper oils are not easily soluble in water, so traces can remain on your hands even after you wash them. I learned this after making jalapeno salsa. On the way to the airport later that evening, my eyes suddenly felt like they were on fire. The more I rubbed my eyes the more it hurt! It took me a few minutes to make the connection. If you do get it in your eyes, or your mouth is on fire, just use a little olive oil or some other vegetable oil to wash it out. Don't use water, as that will repel the oil and drive it in even more.

Datura—Jimson Weed (18/7/1) • Narcotic. Contains scopolamine, hyoscyamine and atropine. *Datura* is a very dangerous plant, and many individuals have died from misusing it. Do not ingest any part of the plant, period. A small amount of smoke from the leaves can be used to numb and relax the bronchials for asthma and bronchitis; it also brings temporary sinus relief, probably by numbing the area. A poultice or bath of the fresh plant can be used for its analgesic properties (aching joints, etc.). An extended bath can result in absorption of alkaloids through the skin and lead to drowsiness (Moore). The poultice may have some effect on rattlesnake or tarantula bites (Hutchins).

Chamaesaracha—(-/4/0) The fruits of at least some species are edible when cooked.


Petunia
Petunia spp.
Hawk Moth
Indian Tobacco
Nicotiana rustica
Wild Husk Tomato
Physalis longiflora
Bittersweet Nightshade
Solanum dulcamara
Patterns of the Nightshade Family
5 united sepals
5 united petals
5 stamens
2-chambered ovary
5 stamens
5 united petals
5 united sepals
Jimson Weed
Datura tatula
Henbane
Hyoscyamus niger
Violet Nightshade
Solanum xanti

Boraginaceae—Borage Family

ou have ever pulled "beggar's ticks" (flat, tear-drop-shaped stickers) from your clothes, then you have met ber of the Borage family, also called "hound's tongue" (*Cynoglossum spp.*) The plants of this family are often rou[illegible]d hairy, usually with simple, alternate leaves. The flowers are bisexual and mostly regular. They have 5 separate sepals and 5 united petals. There are 5 stamens; these are attached to the corolla tube, alternate with the petals. The ovary is positioned superior. It consists of 2 united carpels (bicarpellate) and produces 4 separate nutlets or sometimes achenes (dry seeds). False partitions may make the ovary appear 4-chambered. Notice the variations in the nutlets among the examples. Some genera produce fewer than 4 nutlets due to abortion. You will usually be able to see the aborted nutlets around the developed ones. Worldwide, there are approximately 100 genera, representing about 2,000 species. About 22 genera are native to North America.

The flower spikes often curl like a scorpion tail with the flowers blooming on the upper surface, similar to members of the Waterleaf family. Most members of the Borage family are also very hairy.

Medicinally, these plants are primarily astringent, good internally as tea or externally as poultices for pretty much any wounds or excretions that need an astringent to tighten up the tissues. A few members of the family are also mucilaginous, useful for their emollient properties. Some contain volatile oils and may serve as an antidote to poisons by functioning as diaphoretics. Many members of this family have irritating hairs that may cause dermatitis on some individuals. Also, several plants contain minute amounts of poisonous alkaloids, making them toxic with sustained use.

Key Words: Hairy plants with flower parts in fives. Four nutlets.

Amsinckia—Tarweed, Fiddlenick (20/14/2) The seeds are reported to be edible when ground on a metate and used as flour (Olsen). The protective hairs may irritate the skin. The seeds may be poisonous to cattle (Kinucan).

Anchusa—Alkanet (-/3/3) The leaves of at least some species are edible as a salad green (Sturtevant). *A. officinale* contains alkaloids, tannin and mucilage, used internally as an expectorant, "blood purifier" and to stop diarrhea. (Schauenberg).

Borago—Borage (3/1/1) • *B. officinale* is a European herb often planted domestically in the U.S. The very young leaves can be used in salads or as pot herbs. The plants have mucilaginous, astringent, diuretic and diaphoretic properties. It is used to reduce fevers, stimulate milk production and calm nerves. As with other members of this family, long-term consumption is not recommended.

Cynoglossum—Hound's Tongue, Beggar's Ticks (68/6/1) • No doubt you have pulled the flat, tear-drop-shaped seeds of this plant from your socks or woolens. *C. officinale* is a European weed that is now widespread across this country. Medicinally, hound's tongue contains allantoin (Tilford). The plant or root is principally astringent and demulcent, useful externally as a poultice for burns, internally for sore throat or diarrhea (Hutchins). Hound's tongue is similar to comfrey (Moore) and includes similar, potentially carcinogenic alkaloids (Tilford). One alkaloid, cynoglossine, is toxic to cold-blood animals, but has little effect on mammals (Schauenberg); it may be useful as a fish poison.

Heliotropium—Heliotrope (220/23/1) A tea of the plant was reportedly taken as an emetic (Murphey). A European species contains a poisonous alkaloid (Pammel).

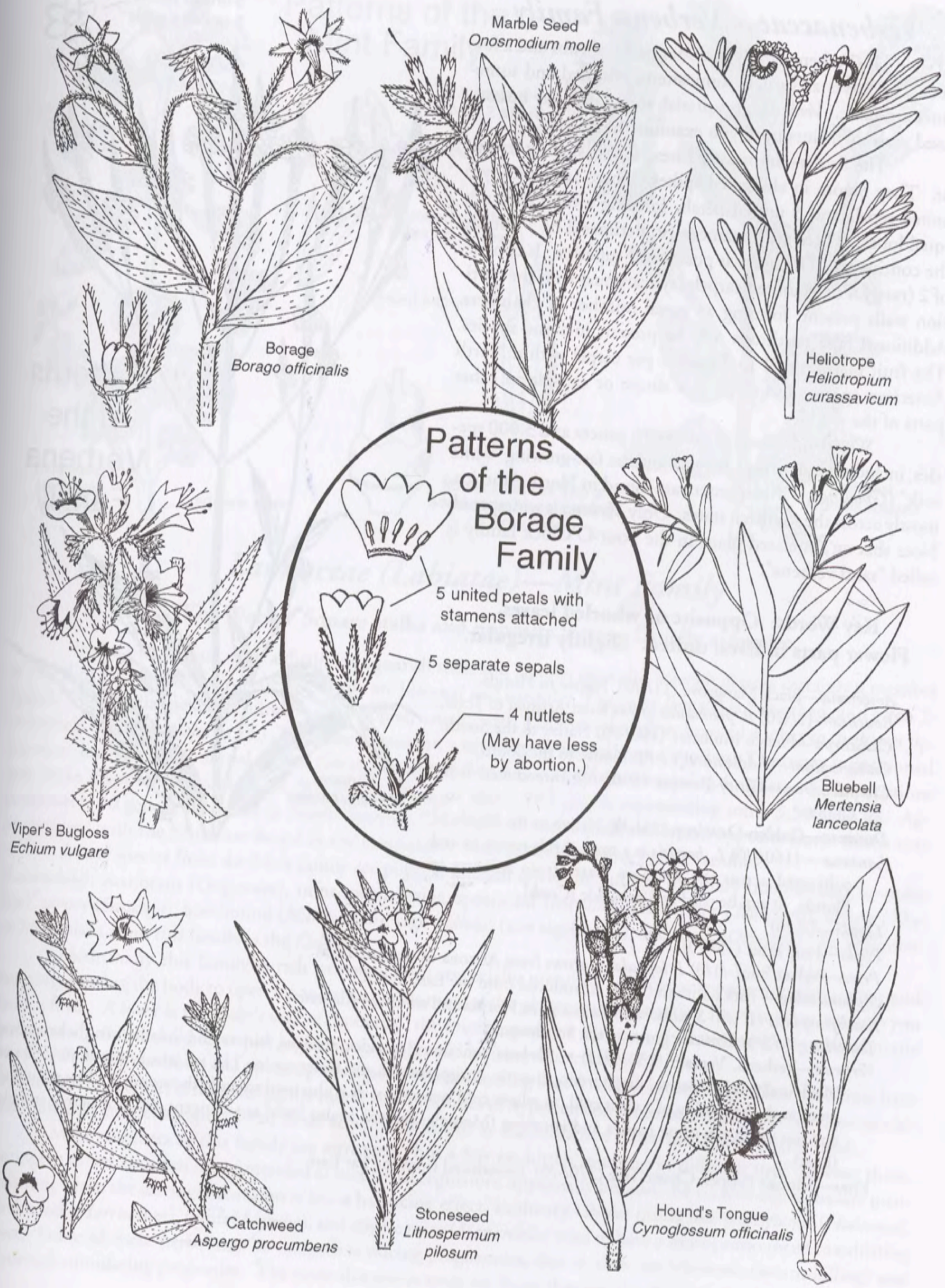
Lithospermum—Stoneseed, Gromwell (50/18/3) • Native Americans reportedly ate the root of *L. incisum* (Craighead), and *L. linearifolium* (A. Brown). However, some species of gromwell contain toxic alkaloids and estrogen-like compounds that interfere with hormonal balances in the female reproductive system (Tilford). Some species were used by Native American women as a female contraceptive. Extended use may cause sterility (Vogel).

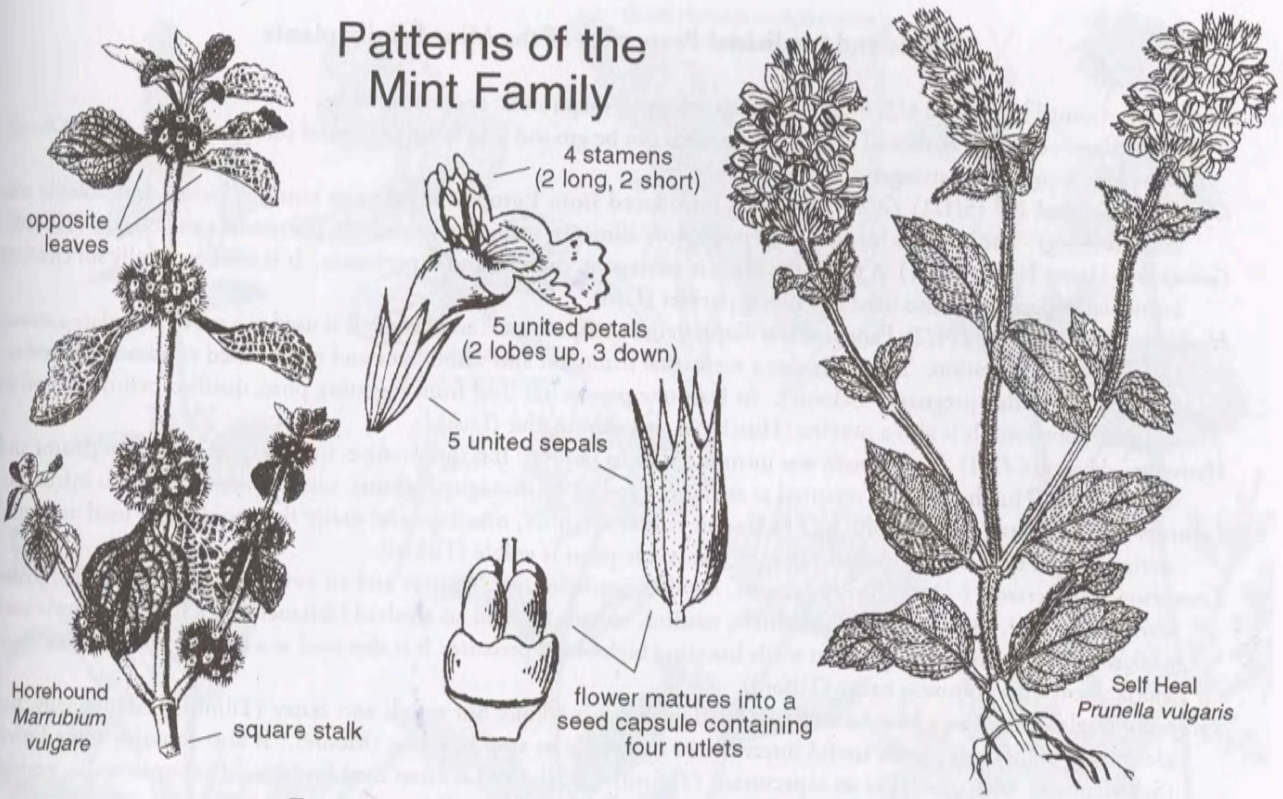
Mertensia—Bluebell (40/23/8) • On camping trips I often do my cooking in an old, tin miner's gold pan. Some species of bluebells have wide leaves that serve well as a lid on my pan for steaming foods. I eat bluebell leaves in limited quantities. They seem mildly astringent and mucilaginous.

Symphytum—Comfrey (17/4/1) • Comfrey is often planted domestically for its herbal properties. The root and leaves are astringent, mucilaginous and contain allantoin, useful externally on cuts and burns, and internally as an expectorant and demulcent. The astringency makes comfrey useful for stopping bleeding and healing ulcers, while the mucilage soothes the irritated tissues. Comfrey contains pyrrolizidine alkaloids which are toxic to the liver tissues. Toxicity is variable from species to species. People have died from chronic use of this herb (Tyler), but many herbalists consider it safe in moderation.

Other selected members of the Borage family:

Asperugo—Catchweed, Creeping Jenny (-/-/1) •; ***Cryptantha***—Miner's Candle (150/113/13) •; ***Echium***—Viper's Bugloss (50/2/1); ***Eritrichum***—Alpine Forget-Me-Not (-/6/2) • ; ***Hackelia***—Stickseed Forget-Me-Not (-/25/5) •; ***Lappula***—Stickseed (-/-/2); ***Myosotis***—Forget-Me-Not (80/10/3) • ; ***Onosmodium***—Marble seed (-/3/1); ***Plagiobothrys***—Popcorn flower (60/46/2)


Marble Seed
Onosmodium molle
Borage
Borago officinalis
Heliotrope
Heliotropium
curassavicum
Patterns of the Borage Family
5 united petals with stamens attached
5 separate sepals
4 nutlets
(May have less by abortion.)
Viper's Bugloss
Echium vulgare
Bluebell
Mertensia
lanceolata
Catchweed
Aspergo procumbens
Stoneseed
Lithospermum
pilosum
Hound's Tongue
Cynoglossum officinalis



Lamiaceae (Labiatae)—Mint Family

Key Words: Square stalks and opposite leaves. Usually aromatic.

If you pick a plant with a distinctly squarish stalk and simple, opposite leaves it almost certainly a member of the Mint family. The flowers of this family are bisexual and irregular. The calyx (sepals) is 5-toothed, and often 2-lipped. The corolla (petals) is tubular and 2-lipped, usually with 2 lobes to the upper lip, and 3 lobes to the lower lip. (*Mentha* is barely irregular at all.) There are 4 stamens, with one pair longer than the other. The ovary is positioned superior. It consists of 2 united carpels (bicarpellate) and matures as a capsule containing 4 nutlets. (False partitions may make it appear 4-chambered.) Worldwide there are about 180 genera representing some 3,500 species. Approximately 50 genera are found in North America. Other plants with square stems and opposite leaves which may be confused with the Mints are found in the Loosestrife, Verbena and Stinging Nettle families.

Many species from the Mint family are popular kitchen spices, including: rosemary (*Rosmarinus*), lavender (*Lavandula*), marjoram (*Origanum*), mint, peppermint, spearmint (*Mentha*), germander (*Teucrium*), thyme (*Thymus*), savory (*Satureja*), horehound (*Marrubium*), sage (*Salvia*) (not sagebrush!), and basil, (*Ocimum*). An ornamental houseplant from this family is the *Coleus*.

Medicinally this family is rich in volatile oils, especially menthol. These spicy oils are stimulating and warming, causing the body to open up and sweat; thus most of the plants are diaphoretic. This property can help you break a fever. A fever is the body's way of "cooking" the microorganisms that cause infections. Using a diaphoretic herb can help raise a mild fever just high enough to "cook" a virus, thus ending the fever.

Warming the body also opens up the blood vessels, allowing blood to flow more freely. Thus the Mints have a vasodilator effect, useful for relaxing the blood vessels in cases of hypertension, or for stimulating delayed menstruation, called an emmenagogue. Read more about volatile oils in the *Medicinal Properties* section of this book.

Most members of this family are astringent, but a few are bitter, resulting in different uses between them. Astringent mints are often recommended as menstrual regulators, apparently because the volatile oils stimulate menstruation, while the astringents suppress it—a balancing effect, in theory. Bitter mints like pennyroyal (*Hedeoma*), horehound (*Marrubium*), mints (*Mentha*), and coyote mint (*Monardella*) tend to have a more pronounced vasodilating effect. Some of these herbs may be dangerous during pregnancies, due to their anthelmintic (worm-killing) and menstrual-stimulating properties. The most dangerous ones are those that are also bitter (irritating).

Edible and Medicinal Properties of the Mint Family plants

Agastache—Giant Hyssop (-/14/2) • *Agastache* is astringent, diaphoretic and carminative.

Dracocephalum—False Dragonhead (-/4/1) • The seeds can be ground into flour, or cooked into mush, and eaten (Olsen). The plant is probably astringent.

Glecoma—Ground Ivy (5/1/1) *G. hederacea* was introduced from Europe. It contains tannins, bitters and volatile oils (Schauenberg). The herb has been used for respiratory ailmenst, including bronchitis, pneumonia and coughs (Tilford).

Galeopsis—Hemp Nettle (-/3/1) A tea of the plant is astringent, diuretic and expectorant. It is used especially for clearing bronchial congestion. Also used as a blood purifier (Lust).

Hedeoma—Pennyroyal (-/14/2) Pennyroyal is diaphoretic, antispasmodic and bitter. It is used as a tea to stimulate a sweat, or to stimulate digestion. The tea is also a menstrual stimulant and vasodilator and can be used to stimulate contractions in an overdue pregnancy (Moore). At least one person has died from ingesting pure, distilled pennyroyal oil to cause an abortion. It is also a nervine (Hutchins) and carminative (Lust).

Hyssopus—Hyssop (-/1/1) *H. officinalis* was introduced from Europe. It is carminative, tonic, expectorant, vasodilator and anthelmintic (Hutchins). Also reported as astringent and an emmenagogue (Lust); used for nose and throat infections.

Lamium—Dead Nettle, Henbit (40/5/2) • Henbit contains tannin, mucilage and many flavonoids; it is used as a mild astringent and expectorant (Schauenberg). The whole plant is edible (Tilford).

Leonurus—Motherwort (-/3/1) Antispasmodic, nervine, amthelmintic, laxative and an emmenagogue (Hutchins). Also astringent (Lust). The plant contains bitters, tannins, volatile oils and an alkaloid (Schauenberg). Motherwort is used to slow and strengthen the heartbeat while lowering high blood pressure. It is also used as a uterine tonic and antispasmodic, hence the common name (Tilford).

Lycopus—Bugleweed, Water Horehound (-/-/3) Bugleweed is edible, but tough and bitter (Tilford). Medicinally, bugleweed is mildly astringent, useful internally or externally to stop bleeding (Moore). It also contains some bitters (Schauenberg) and is useful as an expectorant (Tilford). Bugleweed is often used for its mild antispasmodic, nervine and sedative properties, much like the hops vines of the Hemp family (Moore).

Marrubium—Horehound (30/1/1) • *M. vulgare* is a native of Europe, now widespread on this continent. The plant is aromatic and extremely bitter and therefore useful as a digestive aid or as a cough suppressant and expectorant. The herb is often added to cough syrups. Horehound candy is much easier to consume than the bitter herb or tea. Excessive use may lead to hypertension (Moore). Horehound also contains tannic acid (Schauenberg).

Mentha—Mint, Spearmint, Peppermint (15/11/2) • As a child I loved finding and picking peppermint on outings with my grandmother. Today I still nibble on the leaves to freshen my breath as I walk. I often eat peppermint when drinking from streams to help kill microbes in the water. Mints are the main source of menthol, a volatile oil used for its penetrating vapors to relieve congestion or as a carminative to aid digestion. These are the original "after dinner mints".

Moldavica—Dragonhead (-/1) •

Monarda—Horsemint, Bee Balm, Bergamot (-/15/1) • *Monarda* is diaphoretic, refrigerant, carminative, anthelmintic, mildly sedative and diuretic. A poultice can be use for headaches (Willard). The cool tea is used as an emmenagogue (Moore). At least some species contain tymol, an antiseptic compound used in commercial mouthwashes. Native Americans used it as a tea for mouth and throat infections (Tilford). Oil of bergamot is reported to have a calming effect on birds if it is rubbed on the bill, near the nostrils (Verrill).

Monardella—Coyote Mint, False Horsemint (20/22/0) The plant is used identically to *Hedeoma* (*see above*) (Moore).

Nepeta—Catnip (150/2/1) • The young leaves and buds may be added to a salad (Tilford). Medicinally, catnip contains volatile oils (Densmore) with mild antispasmodic, nervine and sedative properties (Moore). It makes a wonderful and mildly relaxing tea. Catnip is also carminative, useful to expel gas or aid indigestion (Tilford). It is an effective emmenagogue (Hutchins). The reason cats like the smell of catnip is because it is chemically similar to the secretions from the anal glands of cats (Klein)! Lions, tigers, leopards and jaguars are affected by lavender instead (Verrill).

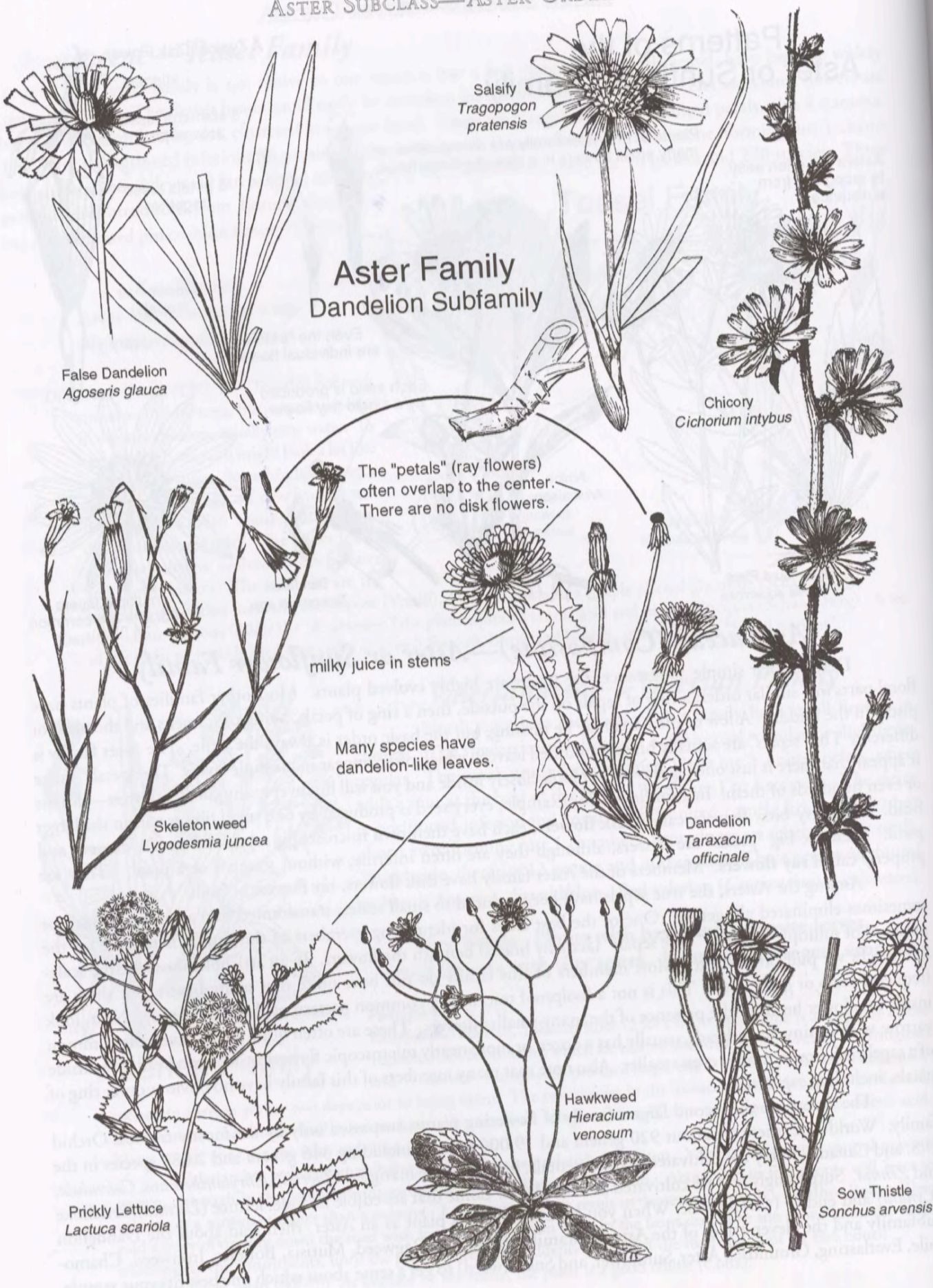
Prunella—Self Heal (5/-/1) • Heal-all is edible as a salad green or pot herb (Tilford). Medicinally it is carminative, anthelmintic, diuretic, antispasmodic, astringent and mildly bitter. (Willard, Klein).

Salvia—Culinary Sage, Chia (500/56/2) • *S. columbarae* is chia; the seeds are edible, high in protein and mucilaginous (Bigfoot). Many species of *Salvia* are richly aromatic and can be used as spices or anti-microbials. Ornamental varieties often lack aromatics. Sagebrush (*Artemisia*) belongs to the Aster family, and tastes nothing like culinary sage.

Scutellaria—Skullcap (200/42/3) Skullcap contains a flavonoid called scutellarin, with antispasmodic, nervine and sedative properties, used especially in cases of acute or chronic nervous tension or anxiety (Tilford). It also acts as a vasodilator to reduce high blood pressure (Hutchins) and to increase menstruation (Lust).

Stachys—Hedge Nettle, Betony (200/30/1) The roots of some species are starchy and edible (Sturtevant). The seeds are edible parched or roasted and ground into meal (Olsen). *Stachys* contains up to 15% tannic acid (Schauenberg), useful for diarrhea and irritations of the mucous membranes (Tyler).


Giant Hyssop— Agastache scrophulariaefolia
Peppermint
Mentha piperita
Field Mint
Mentha arvensis
Chia
Salvia columbariae
Coyote Mint
Monardella villosa
Catnip
Nepeta cataria
Ground Ivy
Glecoma hederacea
Dead Nettle
Lamium purpureum
Wild Bergamot
Monarda fistulosa


Aster Family
Dandelion Subfamily
False Dandelion
Agoseris glauca
Salsify
Tragopogon
pratensis
Chicory
Cichorium intybus
The "petals" (ray flowers)
often overlap to the center.
There are no disk flowers.
milky juice in stems
Many species have
dandelion-like leaves.
Skeleton weed
Lygodesmia juncea
Dandelion
Taraxacum
officinale
Prickly Lettuce
Lactuca scariola
Hawkweed
Hieracium
venosum
Sow Thistle
Sonchus arvensis

Dandelion Subfamily

The Dandelion subfamily is the most distinct sub-grouping of the Aster family. The distinguishing feature is the strap-shaped petals—the ray flowers have mostly parallel edges like a strap, instead of tapered edges like the petals of other flowers. Also, these ray flowers often overlap all the way to the center of the flower, like a dandelion. There are no disk flowers like you would find in a sunflower. Another pattern of the subfamily is the milky juice in the stems. Most, if not all, members of the Dandelion subfamily are edible, but bitter due to the milky juice. The bitterness makes these plants valuable as digestive aids. Dandelion leaves especially are known as a "spring tonic", used to cleanse the liver after a long winter of eating hard-to-digest foods. Please note that many unrelated plants have milky juice and some are poisonous, so check the flower to make sure it is a member of the Dandelion subfamily before you eat it!

Agoseris—False Dandelion (-/8/4) • The leaves are edible. The hardene, milky juice can be chewed as gum (Olsen).

Cichorium—Chicory (8/1/1) • *C. intybus* was imported from Europe. The leaves are edible as a salad green or pot herb, especially after blanching to reduce bitterness. The bitterness is useful as a digestive aid and liver stimulant. The young roots are edible raw or cooked (Willard). They contain up to 58% inulin polysaccharides, favorable for diabetics (Hobbs). Chicory is similar, but more mild than dandelion (*see Taraxacum below*) (Moore). The roots can be gently roasted and ground for a coffee substitute (Harrington). Caffix is a commercially available coffee substitute made with chicory roots. Roasting converts the inulin into oxymethylfurfurol, the compound with the coffee-like aroma (Tyler).

Crepis—Hawksbeard (200/22/9) The young leaves are edible as a pot herb. (Olsen).

Hieracium—Hawkweed, Mouse Ear (800/56/6) A tea of the plant is astringent and diuretic, used in the usual ways (Lust).

Lactuca—Lettuce, Prickly Lettuce (100/-/5) • Domestic leaf lettuce belongs to this genus. Note that prickly lettuce has a row of prickles down the midrib underneath the leaf. Sow thistle (*Sonchus*) does not. Prickly lettuce is edible as a salad green or pot herb. The leaves are extremely bitter at times.

Prickly lettuce is sometimes called "lettuce opium", because the sap is reminiscent of the milky white latex from the opium poppy. The sap does have a very mild analgesic effect, safe enough even for children (Moore). It includes two bitter principles, lactucin and lactucopicrin, which were shown to have a depressant effect on the nervous systems of small animals. However, the bitter principles are very unstable, so any commercial preparations are functionally useless (Tyler).

Lapsan—(-/-/1) The plant is reported to be minimally edible as a salad green or pot herb (Sturtevant).

Lygodesmia—Skeletonweed (-/7/2) • A tea of the plant is used to increase lactose production (Willard), suggesting the presence of stimulating resins.

Malacothrix—(-/14/1)

Microseris—(-/17/4) The roots are edible (Sturtevant).

Prenanthes—Rattlesnake Root (-/12/1) A tea of the root is both astringent and bitter, used for diarrhea (Lust).

Sonchus—Sow Thistle (70/-/4) • *Sonchus* is edible as a salad green or pot herb. The stem has a milky, latex type sap (Harrington).

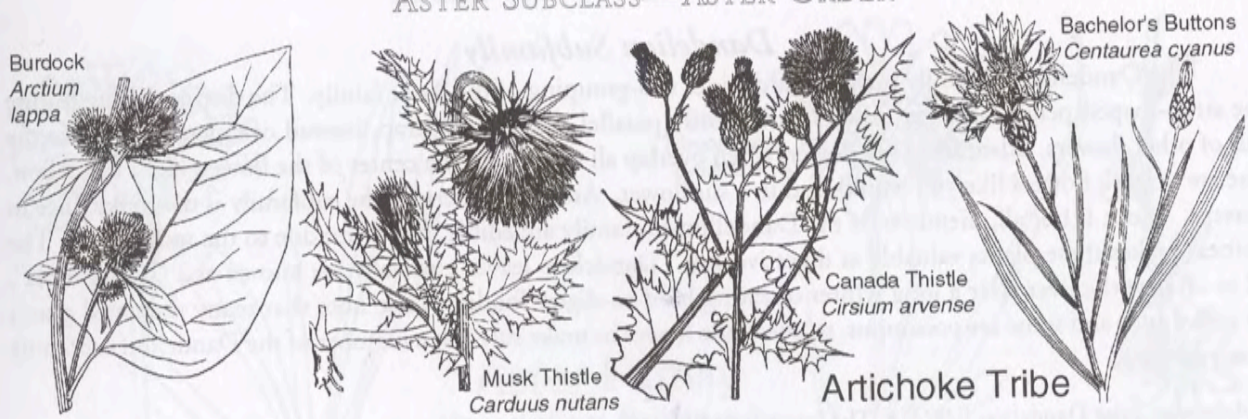
Stephanomeria—Wire Lettuce (-/13/2)

Taraxacum—Dandelion (70/-/5) • Dandelions are one of the most nutritious plants on earth, yet every year people senselessly spend millions of dollars on chemicals trying to kill them, then buy lifeless, nutritionless lettuce for the table.

Dandelion leaves and roots are rich in vitamins A, B, C and E and the minerals iron, phosphorus, potassium and calcium (Hutchins). Dandelions are bitter, useful as a digestive aid. Most people think the greens are too bitter to eat at first, but just try a small amount mixed in with other greens. You can develop a taste for them until they hardly seem bitter at all. I keep a simple digging tool in a handy spot and harvest the dandelions, root and all. Most of the time I put the greens on an egg sandwich for breakfast. The roots I clean and dry. When I save up enough roots, I roast them and grind them for a delicious coffee substitute. I also pay my kids five cents for each dandelion root they dig up, cut and wash for me. Roasting dandelion roots sweetens them by breaking the inulin polysaccharides down into fructose (Hobbs). The roasted, powdered roots make a delicious coffee substitute, much like chicory roots (*see above*).

Medicinally, dandelion roots and leaves are most bitter in the spring, useful as a diuretic and stimulating to the liver, spleen and kidneys. The plant is safe for long-term use, making it ideal for dissolving calcium stones (Moore). Dandelions, especially the roots, are high in sodium, which is recommended for breaking down acid in the blood. Dandelions may lower blood sugar, an aid for diabetics. The latex sap from the stems is used on warts (Willard).

Tragopogon—Salsify, Goat's Beard, Oyster Plant (45/5/3) • Salsify produces edible, slightly bitter foliage and large edible roots. It is sometimes planted as a garden vegetable. It is a biennial, producing an edible root the first year which turns woody the second year. The purple flowered species are best. The yellow flowered species are more fibrous and bitter (Tilford). I once dug up a field mouse "cellar" with nearly two gallons of salsify and grass roots! Medicinally, salsify is used as a diuretic and digestive stimulant (Lust).



Artichoke Tribe

If you find an Aster with its head protected inside a tight wrapping of bracts like an artichoke, then it belongs to the Artichoke tribe of the Aster subfamily. Most of these plants have at least some prickly parts, especially those bracts around the flower heads. Except for their spines, coarse texture and fibrous nature, these plants are edible and bitter. The plants are often used in bitters formulas to stimulate digestion. The artichoke belongs to the *Cynara* genus. Teasel, of the related family *Dipsacaceae,* could be mistaken for a thistle.

Arctium—Burdock (6/-/2) • Burdock is a biennial with an edible taproot. The first year it produces basal leaves and stores starch in the root. The second year it uses the starch to send up a flower stalk, set seed and die. The roots are edible during the first year, especially in June and July, but later become woody. It has been cultivated in Europe and Japan (Harrington). In a one hour study I dug up about a quart of roots with a digging stick. I cannot eat too many roots by themselves, but they are good cooked as a side dish to a meal. The big leaves are ideal for covering a steam pit to keep dirt out of the food. The burrs can be used as "Velcro". The roots contain 45% inulin polysaccharides (Schauenberg). Burdock root is a very popular medicinal plant, especially for facilitating liver function. It is bitter and diuretic in effect (Hobbs, Tilford). Overall, burdock is considered a very gentle and cleansing herb.

Carduus—Thistle (100/5/2) The musk thistle (*C. nutans*) is a favorite wild snack. There is a technique to peeling the stalk while avoiding the stickers. Thistles are only good when the stalks are still fleshy; as summer progresses they become woody and inedible. Carefully grasp the tip of a budding flower and bend the stalk over to see how much of the plant is still succulent and where it has become too woody. With a quick slice of a knife, cut through the stalk, taking only the top succulent part. Do not cut all the way through the stalk, but rather, leave the "rind" intact on one side and let the thistle top hang down from that rind. Carefully grab the thistle top and pull it gently away from the parent stalk. This action peels the rind off the side of the stem that is still attached to the main stalk. The peeled side of the stem provides a safe, stickerless place for your fingers. The rest of the process is like peeling a banana. Enjoy!

Medicinally, musk thistle leaves and seeds are useful as a bitter tonic to stimulate liver function (Lust).

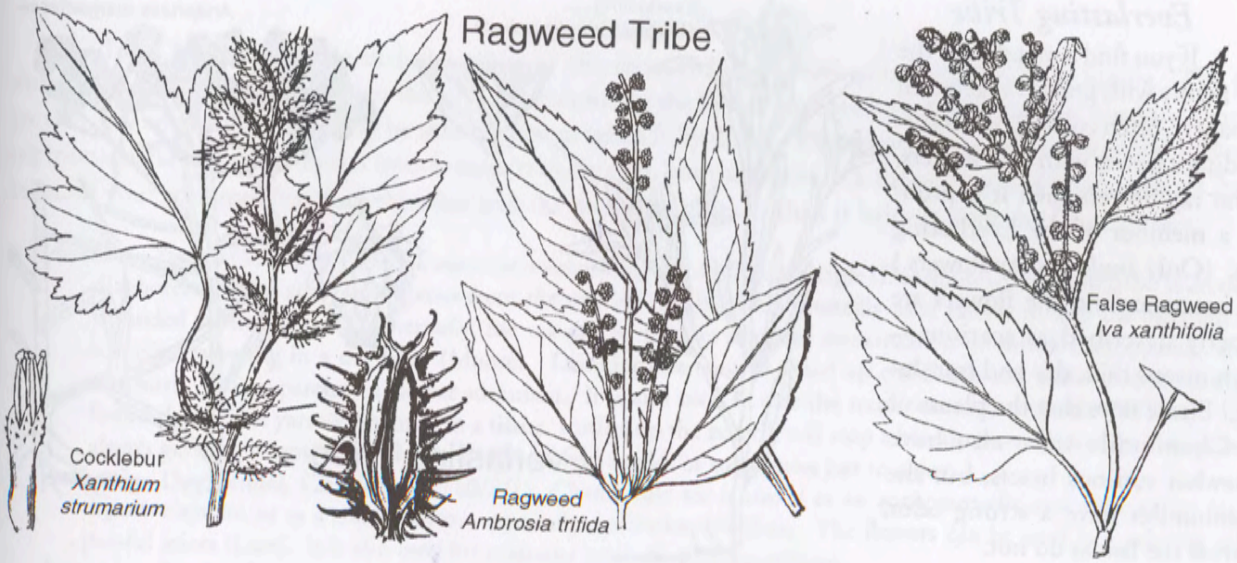
Centaurea—Knapweed, Star Thistle, Cornflower, Bachelor's Buttons (500/27/8) • *C. cyanus* is the cornflower or bachelor's buttons. It is native to Europe, but commonly cultivated in the U.S. as an ornamental flower. The knapweeds include several species of noxious weeds introduced from Eurasia. Spotted knapweed (*C. maculosa*) covers more than 5 million acres just in Montana, often to the exclusion of all other plants. The leaves and roots of many species of *Centaurea* are edible (Sturtevant). Medicinally, knapweed is both bitter and astringent (Klein).

Cirsium—Thistle (250/92/9) • Thistles are biennial, tender and edible the first year, turning woody and fibrous the second year when the flower stalk forms. The bull thistle (*C. vulgare*) is especially delicious. The roots are crunchy but good when raw, and even better cooked. The young leaves can be cooked as greens, effectively wilting the spines (Kallas). Thistle roots and foliage contain mineral electrolytes and have an energizing effect when you are exercising (Bigfoot). The stalk of the elk thistle (*C. scariosum*) is edible and delicious (*see Carduus above*). Medicinally, the plants are mildly bitter; some species are used in bitter formulas (Hobbs).

Onopordum—Cotton Thistle, Scotch Thistle (-/5/1) • The roots are reasonably edible, just fibrous.

Silybyum—Milk Thistle (2/1/0) *Silybyum* was introduced from Europe. It is now found in the Atlantic and Pacific Coast states. The young leaves are edible as a salad green or pot herb. The young stalks are edible after peeling, soaking to remove the bitterness and cooking. The root is also edible (Sturtevant).

Medicinally, milk thistle is used as a bitter to stimulate liver function. It also contains the flavonoid silymarin, which has been shown to protect the liver from toxins. It has been given to patients who ingested toxic amanita mushrooms. The silymarin molecules attach to the liver where the amanita toxins would normally attach, so the toxins pass through the body harmlessly (Klein).



Ragweed Tribe

The flowers of the Ragweed tribe of the Aster subfamily do not look at all like a typical sunflower, but they are indeed part of the same family, just a different tribe. Ragweed flowers are usually unisexual, with male and female flowers appearing separately on one plant, an oddity within the Aster family. Another distinguishing feature of the ragweeds is that the anthers (the tips of the stamens) are mostly separated from one another, whereas in other members of the family, the anthers are fused together. It would be easy to confuse *Ambrosia* and *Iva* with the "green globby flowers" of the Goosefoot family. The cocklebur is the most noticeable member of the Ragweed tribe. Its sharp cockleburs, a "composite" of two female flowers, are often underfoot along lakes and streams across the West. Note the cross-section of the bur above, showing the two mature seeds inside.

Ambrosia—Ragweed (50/-/3) A tea of the plant was used by the Cheyenne as an antispasmodic and astringent for bowel cramps and bloody stools (Vogel). It is also used for menstrual cramps, but excess consumption can lead to nausea (Bigfoot). The root can be crushed and used as a poultice to remove warts. A tea of the leaves is bitter, useful especially for relief from allergies (Bigfoot).

Iva—False Ragweed, Giant Pigweed (15/-/2) •

Xanthium—Cocklebur (5/-/2) • The leaves are diuretic. The seeds are a more potent diuretic and astringent, with analgesic and antispasmodic effects. A boiled tea of the seed pods is used for persistent diarrhea and for arthritis. Excessive consumption can be toxic to the intestines and liver (Moore).

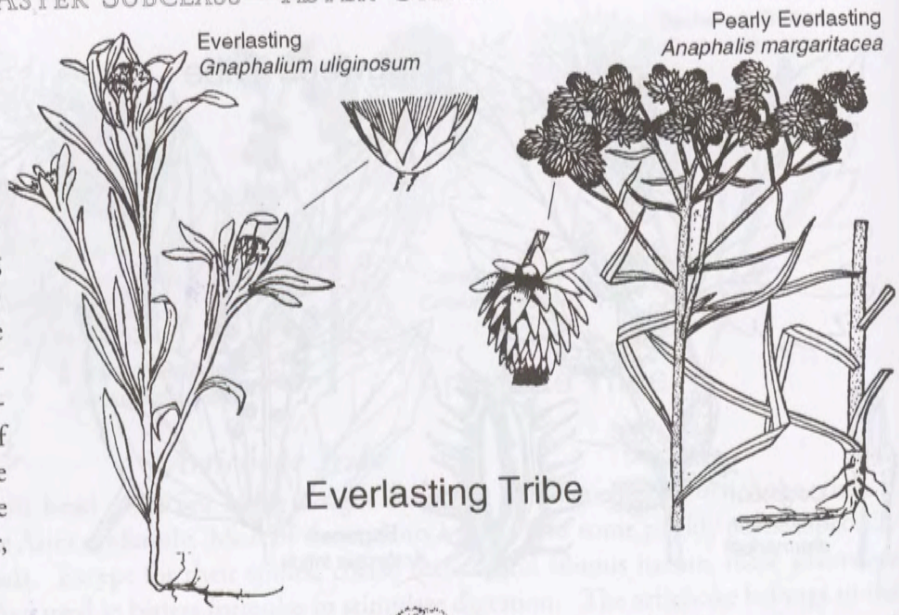
Mutisia Tribe

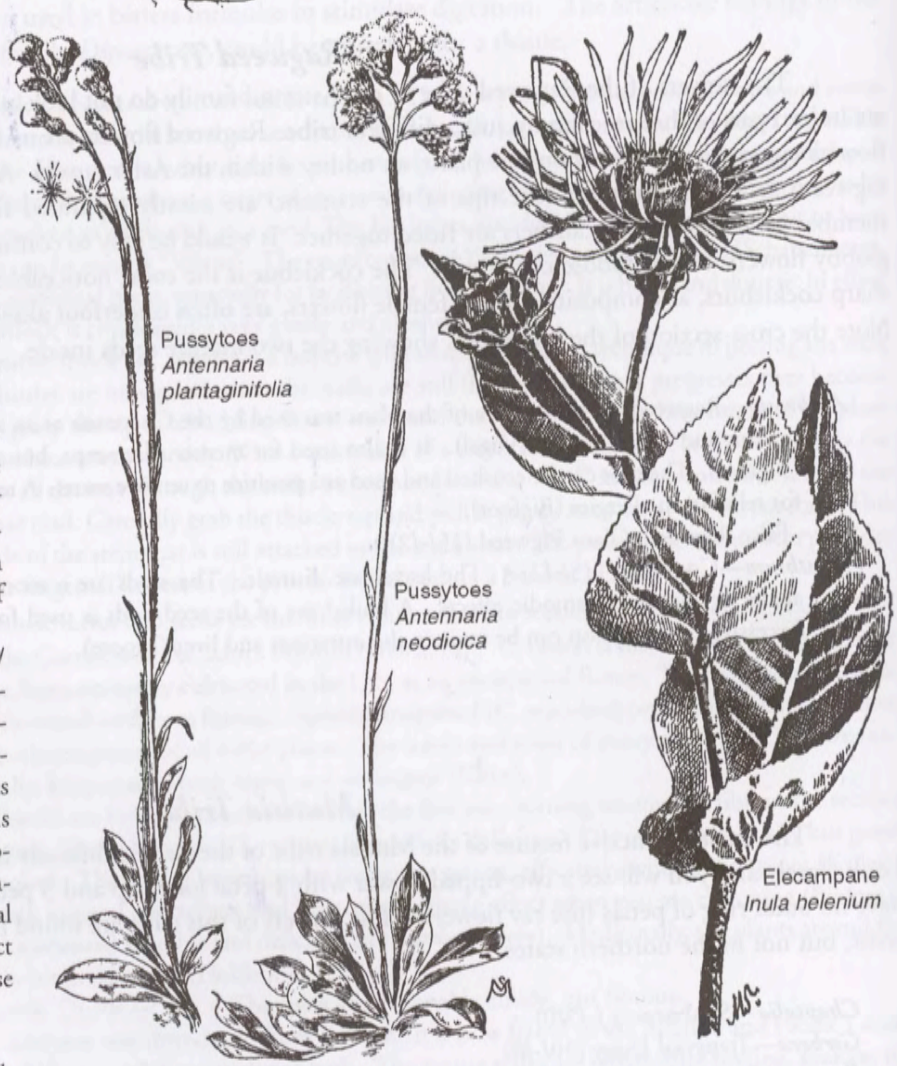
The most distinctive feature of the Mutisia tribe of the Aster subfamily is that the disk flowers are irregular. Look closely and you will see a two-lipped flower with 2 petal lobes up and 3 petal lobes down. Also, the blossoms have no outer ring of petals (the ray flowers). The flowers of this tribe are found in the southern states from coast to coast, but not in the northern states.

Chaptalia—Sunbonnets (-/5/0)
Gerbera—Transvaal Daisy (50/-/0)
Perezia—Brownfoot, Desert Holly (-/5/0)
Trixis—(-/2/0)

Everlasting Tribe

If you find a member of the Aster family with grayish vegetation and papery, often colored bracts surrounding a flower with disk flowers, but no ray flowers then it is probably a member of the Everlasting tribe. (Only *Inula* has ray flowers.) The bracts around the flowers are properly described as scarious—which means thin, dry and translucent. Please note that the plants of the Chamomile tribe also have somewhat scarious bracts, but the Chamomiles have a strong odor, whereas the Inulas do not.





Adenocaulon—Trail Plant (-/1/1) • *A. bicolor* grows from the Great Lakes west to British Columbia and south to California.

Anaphalis—Pearly Everlasting (50/1/1) • *A. margaritacea*. A tea of the plant is principally astringent and diaphoretic, also with expectorant properties. It is used in the expected ways: for colds, fevers, sore throats and to expel worms. The smoke is inhaled to relieve headaches (Willard). Pearly everlasting has a mildly antihistamine effect. It has been used in the treatment of asthma (Tilford).

Antennaria—Pussytoes (85/85/12) • *Antennaria* contains tannin, volatile oils, resin and bitters (Schauenberg). It is astringent and diuretic; the tea is used for liver inflammations and for irritations of the upper intestines. As an astringent, it is useful as a vaginal douche (Moore). It may act as a vasoconstrictor and raise blood pressure (Lust).

Filago—Fluffweed (-/11/2)

Gnaphalium—Everlasting, Cudweed (150/29/6) *Gnaphalium* is astringent, diuretic and diaphoretic, used especially as a gargle for sore throat; it is also smoked for headaches or used to expel worms (Lust).

Inula—Elecampane (-/1/0) *I. helenium* was introduced from Eurasia.

Chamomile Tribe

The Chamomile tribe includes some of the most richly *aromatic* plants of the Aster family. The other distinguishing characteristic is that the bracts surrounding the flower base are somewhat scarious, meaning that they are thin, dry and translucent (may be more apparent when fully dried). Please note that the members of the Everlasting tribe also have scarious bracts (much more translucent), but the plants lack the odor characteristic of the Chamomiles. If your specimen has *both* the odor and the translucent bracts then it belongs with the Chamomiles.

Achillea—Yarrow (100/5/2) • Yarrow contains a volatile oil and a bitter principle (Densmore). It is astringent, diuretic and diaphoretic. The Latin name comes from the warrior Achilles who reputedly used yarrow to stop the bleeding from wounded soldiers (Hart). Internally, the tea can be used to decrease menstruation or shrink hemorrhoids, also to stimulate sweating in a dry fever (Moore). Drinking the tea will speed up childbirth and will aid in expelling the afterbirth. It is apparently a lactose stimulant. It is also used to ease the transition of menopause (Willard). I have found that a little yarrow tincture on a tissue, stuffed up the nostril, will stop a bloody nose in seconds. My grandma always gave me yarrow tea with honey when I had a cold, or sometimes just to enjoy.

Anthemis—Dog Fennel, Chamomile (110/8/1) Chamomile tea is useful as an antispasmodic and carminative for the digestive system or as a mild sedative, especially for restless children. The flowers can be used in a rubbing oil on painful joints (Lust). It is also used for migraine headaches (Schauenberg).

Artemisia—Sagebrush, Wormwood, Tarragon (250/100/19) • *Artemisia* is prolific all over the West. We have six different species growing just on our five-acre "homestead" in southwestern Montana. Some species are commonly used as a smudge for purification before entering sweat lodges and other ceremonial events. Please note that the *Artemisia* species are not related to culinary sage, which belongs to the Mint family.

The *Artemisias* contain potent volatile oils, some tannins and a bitter substance. Medicinally, the bitter tea acts as a digestive aid, but the volatile oils in some species can lead to permanent nervous disorders with prolonged use (Schauenberg). The *Artemisias* are useful as a menstrual stimulant and as a vermifuge. Some species of *Artemisia* will decrease the effects of rancid fats (called lipid peroxides, such as in old donuts, etc.) on the liver (Moore). *A. drancunculoides* and *A. dracunculus* are the culinary spice called tarragon, used in tartar sauce, hollandaise and bé arnaise.

Chrysanthemum—Oxeye Daisy (200/18/2) • Imported from Europe. The leaves are edible. A tea of the herb is diuretic and astringent, useful in predictable ways for stomach ulcers and bloody piles or urine. It is also used as a vaginal douche for cervical ulceration (Willard). The daisy is aromatic, used as an antispasmodic for colic and digestive upset.

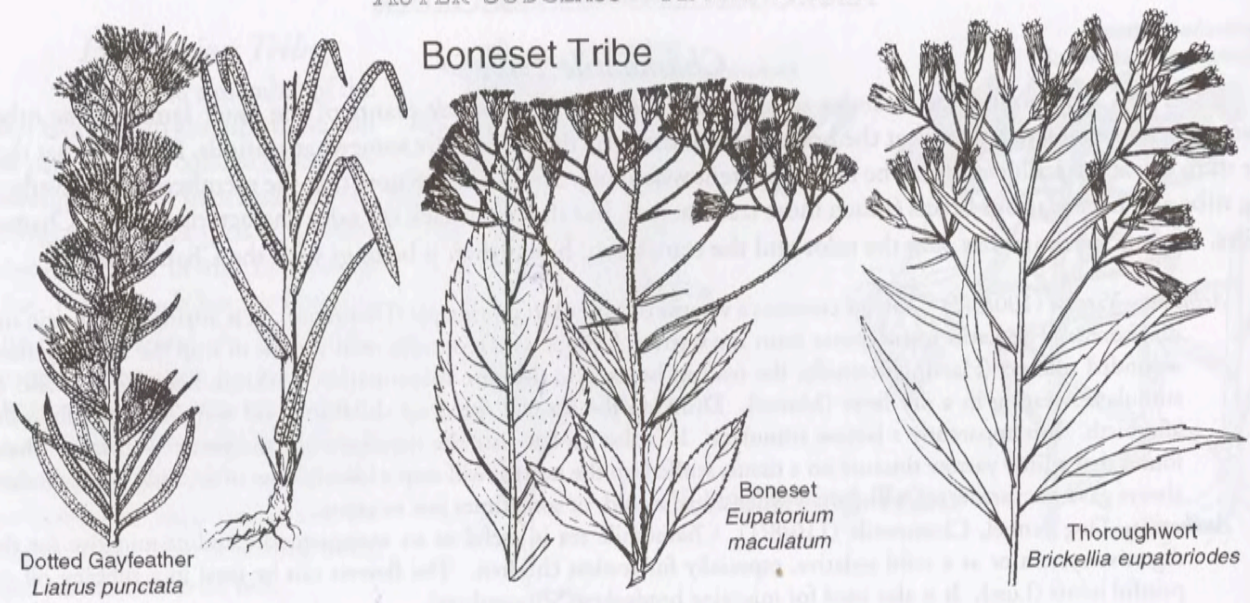
Matricaria—Pineapple Weed (50/5/2) • Pineapple weed is a sweet-smelling herb often found in lawns and driveways. The fresh plant is edible. It is an excellent tea, similar to, but milder than chamomile. It is listed as diaphoretic, antispasmodic, stimulant and sedative. It is a mild remedy, safe for children, used for stomach pains, colds, fevers and as a menstrual stimulant (Hutchins). It is also a lactose stimulant (Willard). The tea is said to aid in delivering the placenta (Hart). The aromatic constituents act as a mild anesthetic and antispasmodic to the mouth and stomach (Moore). Also carminative and anti-inflammatory (Lust). Some species are not aromatic.

Tanecetum—Tansy (-/-3) • Tansy was introduced as a medicinal herb. It is now a noxious weed in many parts of the country. It contains a bitter principle (Densmore), plus resins, volatile oils, tannic and gallic acids, gums, lime and lead oxide, among other things. In small doses, the tea is used as a diaphoretic and emmenagogue. In large doses it can cause convulsions, vomiting, reduced heart function and coma (Hutchins). It should not be used at all without much additional research, and should never be used during pregnancies. Some individuals have died using oil of tansy to cause abortions.


Yarrow
Achillea millefolium


Sagebrush
Artemisia tridentata

Chamomile Tribe



Boneset Tribe

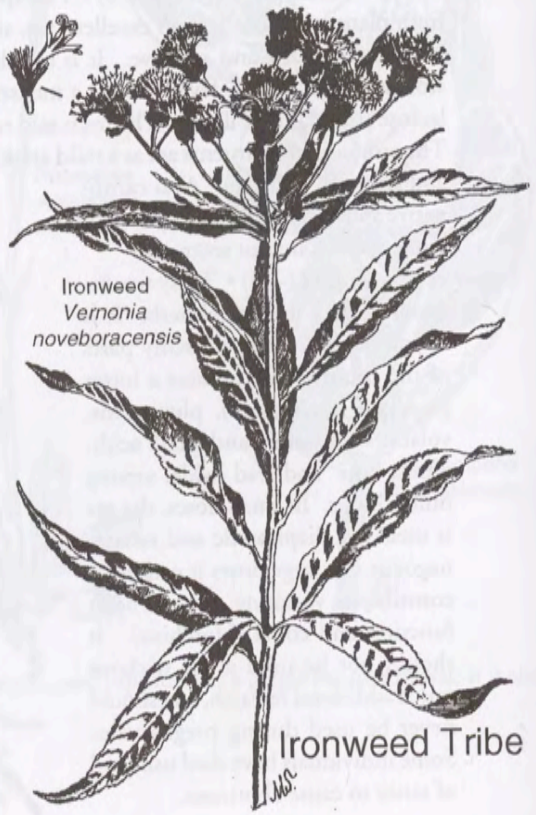
Members of the Boneset Tribe are distinguished from other composites by the shape of their stigmas, which are thickened at the ends like a baseball bat. It is a pretty nit-picky distinction, but then, it *is* botany! Otherwise, the flowers lack an outer ring of petals (the ray flowers) and none of the blossoms are pure yellow. These plants are most easily confused with the Ironweed tribe.

Brickellia—Thoroughwort (-/12/3) • A tea of the leaves is reported to be useful for insulin-resistant diabetes (Bigfoot).

Eupatorium—Joe Pye Weed, Boneset (600/50/2) Boneset contains tannins and bitters (Schauenberg). The hot tea has been used for centuries as a diaphoretic to treat fevers, including dengue, also known as "breakbone fever", from which the plant gets its common name. This common name as led to some confusion, so that some herbalists have recommend boneset to aid in knitting broken bones. There is neither the history nor a scientific basis to support that use. Boneset may act as a cathartic or emetic (Lust).

Gutierrizia—Snakeweed (-/-/1) A tea of the plant is used in a bath to reduce inflammation from arthritis and rheumatism. It is safe for repeated, long-term use. The tea is also used to decrease menstruation (Moore).

Liatris—Gay Feather (34/34/2) • In August, our place is covered with the blossoms of *Liatris*, one of my favorite flowers. Medicinally, it is astringent and diuretic. The roots are burned and the smoke inhaled for headache, nosebleed, sore throat and tonsil inflammation. A tea of the root is similarly used for sore throat and laryngitis (Moore).



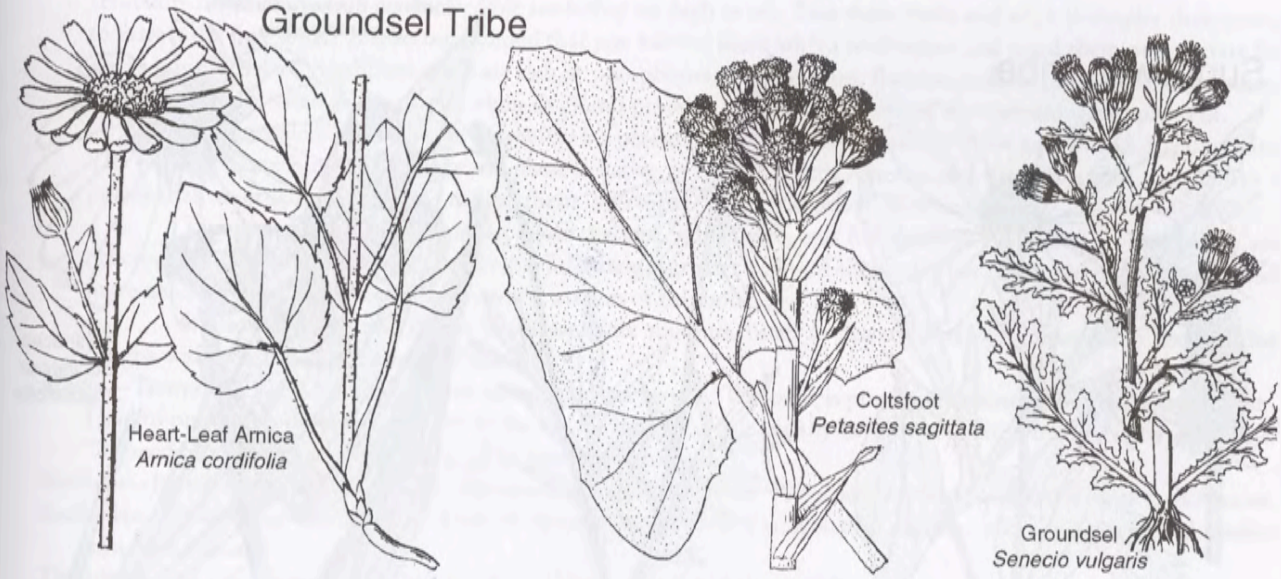
Ironweed Tribe

Members of the Ironweed tribe can be distinguished from the Bonesets and other composites by the shape of their stigmas, which are long, thread-like and hairy. Similar to the Bonesets, there are no ray flowers and virtually none of the blossoms are pure yellow. The Ironweeds are found in the southern and eastern states, not in the Northwest nor the Rocky Mountains.

Vernonia—Ironweed (600/22/0)

Elephantopus—Elephant's Foot (-/4/0)

Groundsel Tribe



Groundsel Tribe

Many members of the Aster family grow a pappus or tuft of white hair around each of the little flowers inside the larger head. The Groundsels are distinguished from other Asters by the soft, silky quality of the pappus hair. The hair is usually pure white and very abundant.

Arnica—Arnica (-/32/13) • Arnica has been used externally for centuries to treat bruises, arthritis and other inflammations. It may be used fresh as a poultice or otherwise as a tea, tincture, oil or salve (Moore). The active constituents are believed to be sesquiterpenoid lactones (Tyler). Arnica stimulates and dilates the blood vessels near the surface, improving circulation to the injured area. In rare cases it causes severe dermatitis (Moore). Arnica may be used as a mouth rinse to treat a sore throat, or taken in small doses to treat bruises and inflammations from the inside—but only if you are physically strong and do not have any diseases of the kidney, liver or blood vessels (Moore). Note that arnica is toxic to the heart and can significantly raise blood pressure (Tyler). It has put children in comas (Kinucan).

Petasites—Butterbur, Coltsfoot (including *Tussilago*) (20/-/1) *Petasites* are our native genera of coltsfoot. *Tussilago* was introduced to the northeastern states from Europe and may or may not be a separate genera (Moore). Coltsfoot leaves and stems are edible as pot herbs. The plant has a salty flavor and may be used as a salt substitute (Tilford).

Young coltsfoot leaves contain traces of pyrrolizidine alkaloids, but virtually none at maturity. Other constituents of the leaves include a sesquiterpene ester, saponins and mucilage. A tea of the leaves is especially useful as a cough suppressant and expectorant. The leaves may be smoked for chronic coughing.

The roots contain volatile oils and resins. A poultice of the crushed root is useful to lessen the pain and inflammation of an injury. It sedates the nerves and depresses the rate of nerve firing, at least when applied to a part of the body with many sensory nerves (Moore).

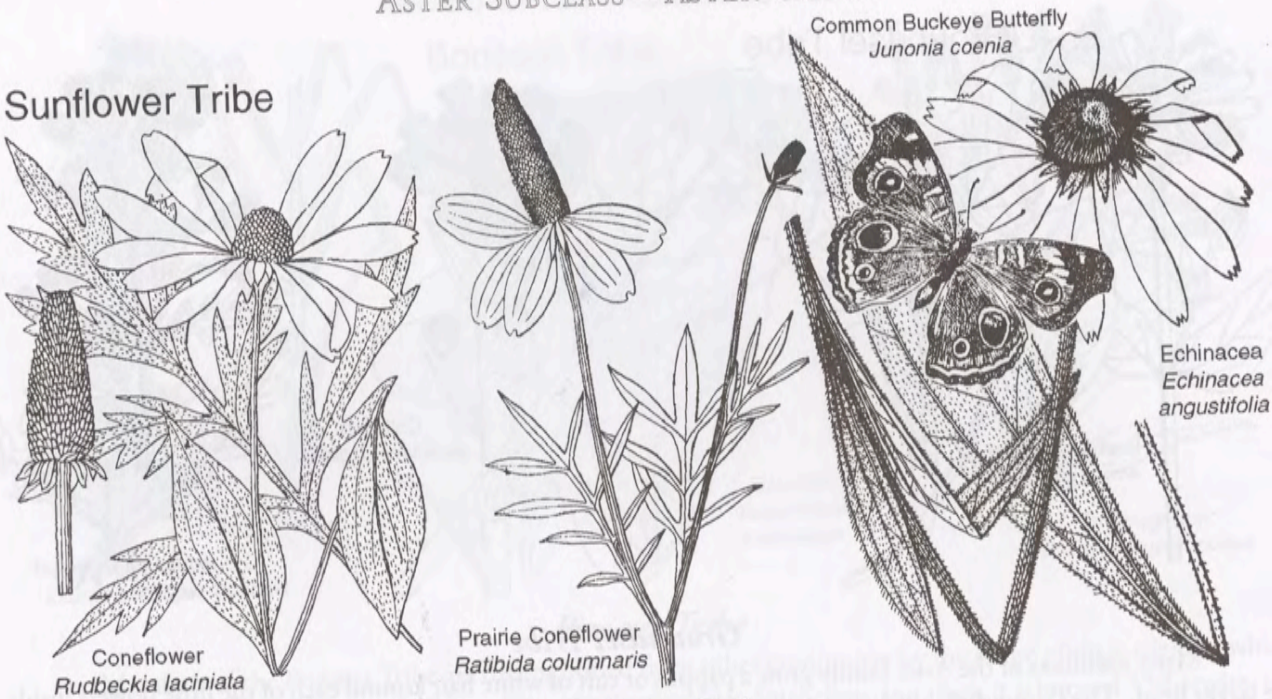
Senecio—Groundsel (1500/120/24) • Groundsels are diuretic, astringent and diaphoretic (Hutchins). In larger quantities the plants may be emetic or purgative (strongly laxative) (Willard). The plants contain pyrrolizidine alkaloids, which can damage the liver.

The Sunflower, Aster, and Sneezeweed Tribes

If you have a composite flower that does not belong to the Dandelion subfamily or to any of the previous tribes of the Aster subfamily, then chances are it belongs the Sunflower, Aster or Sneezeweed tribes. These tribes include many showy "sunflowerlike" flowers, and they can be tricky to distinguish from one another.

First, to distinguish the Sunflower tribe, pull apart the flower head and look for the presence of a small bract attached at the base of each disk flower. The Sunflowers have them; the other tribes do not. Members of the Sunflower tribe usually also have opposite leaves *at the base* of the plant; upper leaves can be alternate or opposite.

Once you have ruled out the Sunflower tribe then you can distinguish the Asters from the Sneezeweeds by comparing the layers of bracts surrounding the flower head. Members of the Aster tribe usually have multiple layers of bracts of unequal length, while most of the Sneezeweeds have only one row of bracts, and none have more than three rows. Also, the Sneezeweeds often have glands or dots of resin on the leaves.



Sunflower Tribe

Most members of the Sunflower tribe are noticeably resinous. Just taste or smell any part of a sunflower head and you will notice the pitchy quality. Resins are especially useful as expectorants to help clear out mucous after a cold. Be sure to read more about resins in the Medicinal Properties section of this book. *Echinacea* has become a prominent member of the tribe in recent years, due to its immunostimulating qualities. The plant is now endangered and should not be picked in the wild. Other members of the tribe may have similar properties.

Balsamorhiza—Arrowleaf Balsamroot (12/11/3) • The young leaves and shoots are said to be good as a salad green or pot herb. The root, according to author Terry Willard, is good raw, boiled or prepared in any other way. According to author Jeff Hart it was cooked for three or more days in a steam pit. I cooked the root for four hours in the microwave without phasing it. (It was too fibrous.) I will have to try again. The seeds are edible (Willard).

The medicinal part of arrowleaf balsamroot is the thick, resinous bark of the root. A tea of the root bark coats the throat with the sticky resins, soothing a sore throat and acting as an expectorant. Balsamroot also contains volatile oils, useful as a diaphoretic. Balsamroot has immunostimulating properties similar to *Echinacea*, but not quite as potent (Tilford).

Bidens—Beggerstick (-/30/3) A tea or tincture of certain species is used for irritation, inflammation, pain and bleeding of the urinary tract mucosa (Moore).

Coreopsis—Tickseed (-/40/2)

Echinacea—Purple Coneflower (7/7/1) • *Echinacea* was the fad herb of the 1990s. The plant and root have been shown to stimulate the immune system, useful for both preventing and curing viral infections The effectiveness of *Echinacea* is well-documented, but the reasons why it works are the subject of continued debate. It is most useful for "surface" conditions like the common cold, while other herbs are more appropriate for deep immune system deficiencies (Hobbs). Even I have been hooked on the wonders of *Echinacea*—after trading copies of this book for the tincture. In addition to other measures (reduced dairy and sugar intake), the *Echinacea* helped me get through an entire winter without succumbing to the flu. I start taking the tincture at the earliest symptoms of a cold.

Echinacea is considered highly effective for candidis and vaginal yeast infections (Hobbs). Also, the smoke is inhaled for headaches and the juice is used on burns. *Echinacea* is used for inflammations, mumps, measles (Willard) and just about anything else that ails you. Unfortunately, the herb has been seriously overharvested in the wild. Please only purchase formulas made with cultivated *Echinacea*.

Franseria—Bursage (-/-/2) The plant may be poisonous (Bigfoot).

Galinsoga—Quickweed (-/-/2)

Haplopappus—Goldenweed (-/-/15) The plant is resinous and aromatic. A tea is used externally for skin fungus (Bigfoot).

Helianthus—Sunflower, Jerusalem Artichoke, Sun Tubers (100/50/5) • *H. annus* is an annual, weedy sunflower, often producing fifty or more sunflower heads per plant. Early botanists brought this sunflower back to Europe and then to Russia, where it was bred to develop one big head with big seeds, rather than dozens of little heads with little seeds

(Hutchins). All sunflowers produce edible seeds that are high in oil. I eat them shells and all; it is simpler than trying to extract the tiny seeds. It is recommended that you harvest them with a seed beater and grind them on a metate for use as mush (Olsen). Sunflower seeds are rich in phosphorus, calcium, iron, fluorine, iodine, potassium, magnesium, sodium, thiamin (vitamin B), niacin, vitamin D and protein (Hutchins), beneficial as a nutritional supplement.

The Jerusalem artichoke *(H. tuberosus)* is a perennial sunflower often cultivated for its enlarged, starchy roots. The popular name is quizzical, since the plant is native to eastern North America and the edible part is more like a potato than an artichoke. I started calling them "sun tubers", which is much more descriptive.

Their roots are high in inulin polysaccharides, which are good for diabetics (Gibbons). Sun tubers are delicious simply boiled, and even better the following day after more of the inulin has converted to fructose. Read more about inulin in the *Medicinal Properties* section of this book.

Sunflower plants and flower heads are quite resinous, listed as diuretic and expectorant, they are used for coughs, kidneys, and rheumatism (Willard).

Madia—Tarweed (-/17/3) • I always smell tarweed before I see it. The odor is powerfully resinous, but also almost sweet. I like to put a stem on the dashboard of the car for fragrance, but usually have to keep the windows open to breathe! The seeds are extremely rich in oil, used in cooking (Sturtevant).

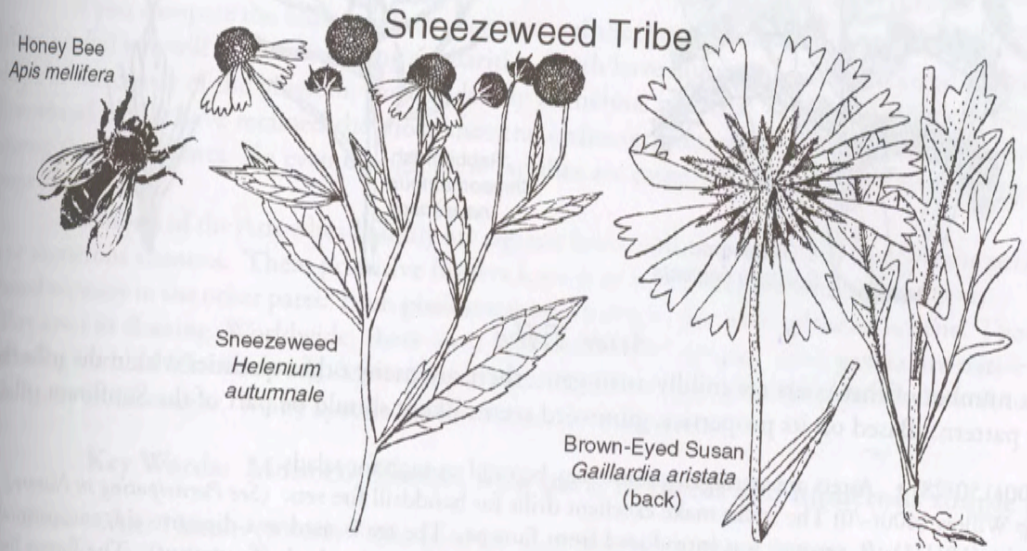
Ratibida—Prairie Coneflower (6/4/1) • The roots are mildly diuretic. The plant may have qualities similar to *Echinacea.*

Rudbeckia—Coneflower (30/24/2) • A tea of the root or leaves is a stimulating diuretic, also acting as a mild cardiac stimulant (Moore).

Thelasperma—Cota, Greenthread, Navajo Tea (-/13/1) *Thelasperma* is mildly diuretic. It is a popular tea where it is abundant in the Southwest (Moore).

Viguiera—Golden-Eye (-/11/1)

Wyethia—Mule's Ears (-/14/2) • The seeds are edible. The root of *W. helianthoides* is edible after extensive cooking (Olsen). The poultice is used for rheumatism (Murphey).



Sneezeweed Tribe

Little information is available on the properties or uses of the wild members of the Sneezeweed tribe. Marigold (*Tagetes*) can be included in this tribe or separated into its own.

Bahia—(-/11/1)

Chaenactis—Dusty Maiden (-/22/2) • The flower has three rows of unequal bracts. A tea of the plant is reportedly used as a fever medicine for children, but it may act as a sedative on the heart (Murphey).

Dyssodia—Dogweed (-/15/1)

Eriophyllum—(-/11/1)

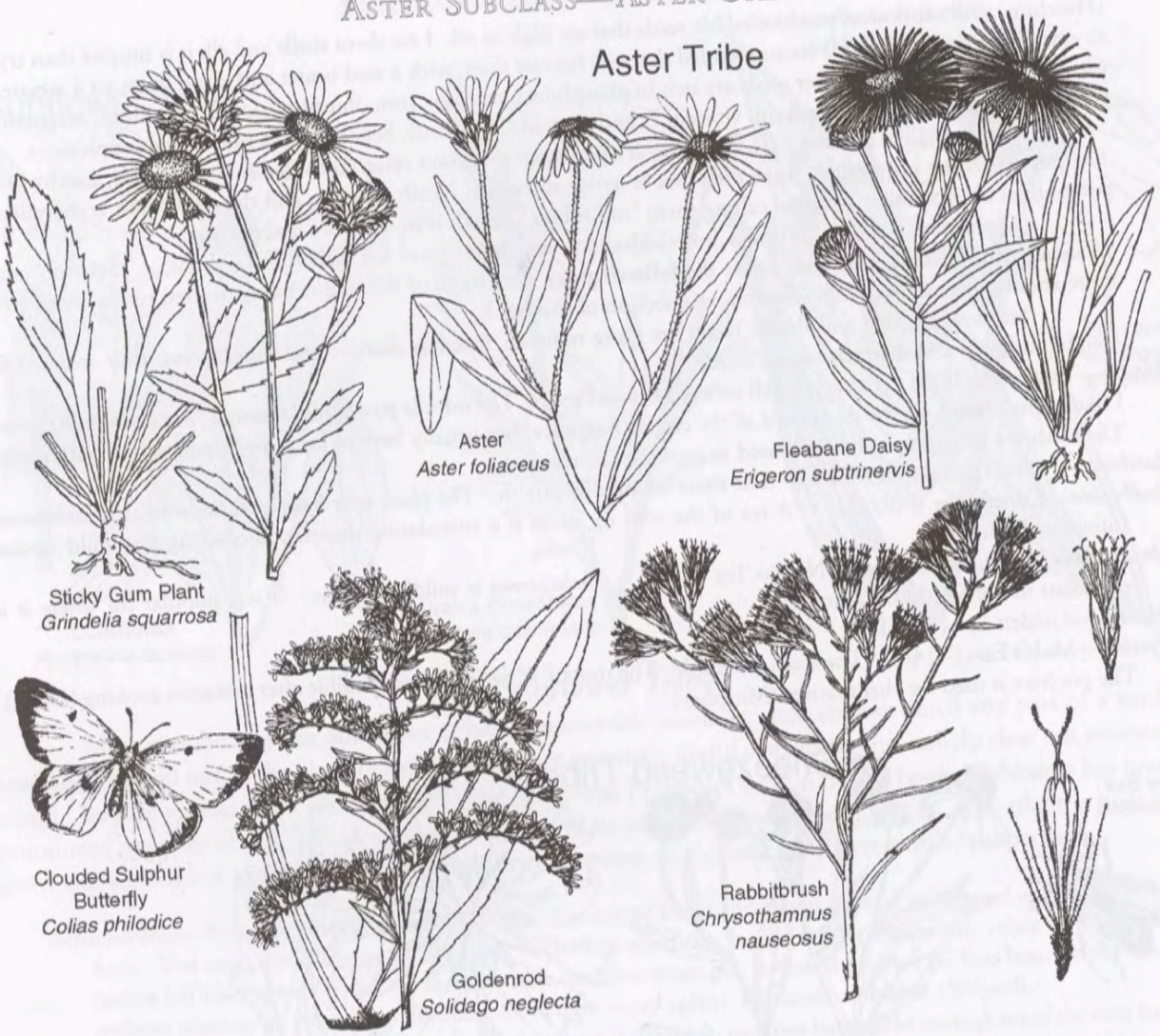
Gaillardia—Brown-Eyed Susan, Blanket Flower (-/14/1) • *Gaillardia* is apparently astringent (Willard).

Helenium—Sneezeweed (40/20/1) The crushed blossoms are used as an inhalant for hay fever (Murphey).

Hulsea—(-/8/1)

Hymenopappus—(-/12/1)

Hymenoxis—Bitterweed (-/22/4) The root contains a latex that may be used as chewing gum. It is a potential source for commercial rubber (Fern).



Aster Tribe

Although a number of the Asters are mildly astringent, there are many other qualities within the tribe that do not offer a clear pattern. Based on its properties, gumweed seems like it should be part of the Sunflower tribe.

Aster—Aster (500/150/28) • Asters are astringent; some may be mild enough for salads.

Baccharis—Seep Willow (400/-/0) The stalks make excellent drills for handdrill fire sets. (*See Participating in Nature.*)

Bellis—Wild Daisy (10/1/1) *B. perennis* was introduced from Europe. The tea is used as a digestive aid, antispasmodic, laxative, expectorant and demulcent (Lust). The leaves can be used as a pot herb (Sturtevant). The flower heads contain saponins (Schauenberg).

Chrysopsis—Golden Aster (-/39/1) •

Chrysothamnus—Rabbitbrush (12/-/2) • The young shoots are edible. The latex can be chewed as gum (Olsen).

Erigeron—Fleabane Daisy (250/140/30) • The fleabanes are astringent and diuretic, useful in every conventional way (Willard). *E. canadensis* is known to contain a volatile oil (Densmore).

Grindelia—Gumweed (50/33/2) • *Grindelia* is rich in amorphous resins, tannic acid, volatile oils and contains the alkaloid grindeline (Hart). A tea of the plant or flowers has expectorant properties, probably due to the resins. It is principally used for lung ailments such ascoughing, asthma, bronchitis and such. A poultice of the plant can be used as a stimulant to bring healing to rheumatism, sores and rashes (Willard). It is also used as a diuretic (Hutchins). Gumweed may absorb selenium from the soil (Lust).

Solidago—Goldenrod (100/90/11) • Goldenrod seeds are edible as mush or as a stew thickener (Olsen). The young greens are edible as a po therb. The dried flowers make a pleasant tea. Goldenrod contains saponins, tannins, bitters, flavonoids and a volatile oil (Schauenberg). Goldenrod is a source of pollen allergies, but it may also be useful in building resistance to such allergies. The dried, powdered plant was once used to stop bleeding on battlefields (Tilford).

Townsendia—(-/22/6)