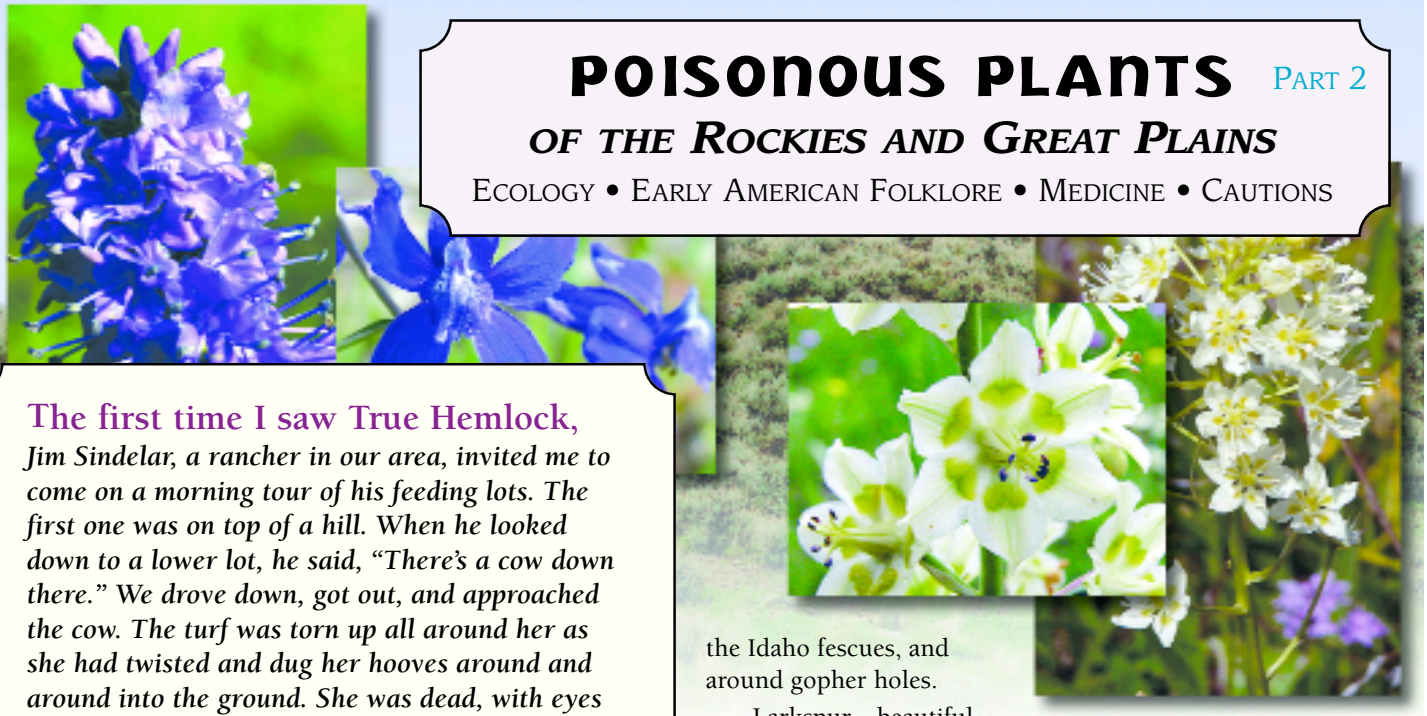


POISONOUS PLANTS Part 2

OF THE ROCKIES AND GREAT PLAINS

ECOLOGY • EARLY AMERICAN FOLKLORE • MEDICINE • CAUTIONS

The first time I saw True Hemlock,

Jim Sindelar, a rancher in our area, invited me to come on a morning tour of his feeding lots. The first one was on top of a hill. When he looked down to a lower lot, he said, "There's a cow down there." We drove down, got out, and approached the cow. The turf was torn up all around her as she had twisted and dug her hooves around and around into the ground. She was dead, with eyes open, tongue hanging out, and spittle all around her face. Jim knew, and said, "She's been poisoned." But we knew not from what. My grandson Bennet worked for Jim. When Bennet arrived, he and Jim went to look for the source of the poison. At the edge of the hillside where water had run down was a dense growth of Conium maculatum, this poisonous plant. Jim and Bennet got shovels and dug it up to the last tiny roots.

—Elnora Old Coyote

- **LARKSPUR**
- **DEATH CAMAS**
- **WESTERN WATERHEMLOCK**
- **TRUE HEMLOCK**
- **WESTERN POISON IVY**

Elnora A. Old Coyote

~ ~ ~ LARKSPUR ~ ~ ~

Larkspurs grow from rangeland to mountains in the Northern Rocky Mountain States of Idaho, Wyoming and Montana, blooming in the spring, often peeking up out of snowbanks. They grow in well-drained, loamy soil in mountain meadows, in grasslands, in dry, sagebrush areas, and in areas shaded by trees, such as clumps of aspens, and wherever ponderosa (yellow) pine grows.

Frequently, as early spring bloomers, larkspurs occur among lupine, death camas, arnica, balsam root, and among the junipers and grasses, such as bluebunch wheatgrass, bluegrasses. It grows in the mid-grasses of the rangeland hills and coulees, or in mountain meadows, in the Idaho fescues, and around gopher holes.

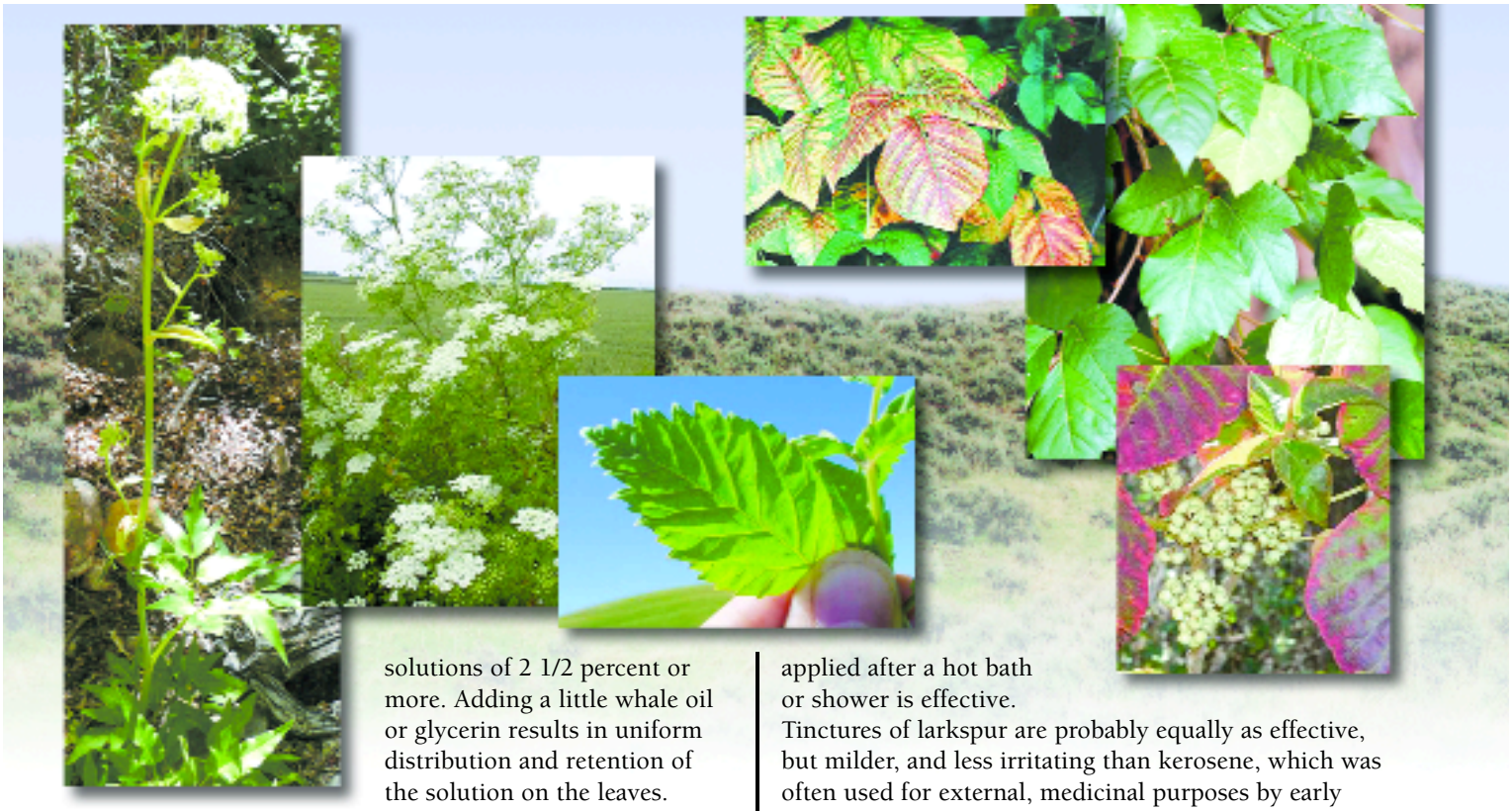
Larkspur—beautiful name for a beautiful flower—and yet in this beauty lurks great danger, for many of the larkspurs are known to be poisonous to cattle, especially more so during spring and early summer, because on higher ranges soon after snowmelt larkspurs produce forage before other plants even begin their growth. Larkspurs are also poisonous for horses and sheep, but less often.

All parts of the plant contain a glycoside, delphinidin, and the terpenoid alkaloids: aconitine, atisine, ajacine and lyctonine. Death is caused by clogging or paralysis of the respiratory system. The heart may continue to beat for a short time after breathing stops.

Similar to the effects of death camas, early symptoms of larkspur poisoning include nausea, excessive salivation, hence swallowing. Bloating may occur. Stiffening in the animal's muscles occurs, gait becomes unsteady, then front legs give way, the animal falls with quivering, jerking muscles, and kicks violently as death approaches.

If larkspur poisoning is diagnosed, the animal's head should be kept higher than the body and movement should be restrained. A lethal amount of toxicity is 5 to 30 pounds of the plant for a 1,000-pound animal. Using a hypodermic syringe, an injection can be made into the shoulder of the animal of a solution of 1 grain of physostigmin salicylate, 2 grains of pilocarpin hydrochloride, and 1/2 grain of strychnine sulphate, dissolved in 1 tablespoon of water. This dosage is for an animal weighing between 500 and 600 pounds and should be increased appropriate to weight.

Methods of trying to get rid of larkspur are grubbing (digging it up, root and all) and chemical spraying during the active growing period of the plant with sodium chlorate or calcium chlorate in neutral, alkaline or acid



solutions of 2 1/2 percent or more. Adding a little whale oil or glycerin results in uniform distribution and retention of the solution on the leaves.

The poisoning qualities vary in different species of larkspur and with the seasons. Low larkspur (Delphinium bicolor) is more dangerous in early spring and the new growth is most dangerous. Poisoning from tall larkspurs (Delphinium occidentale) is more prevalent during its flowering stage later in summer. Not all species are equally poisonous, but it's best to consider all as being dangerous.

EARLY AMERICAN FOLKLORE & MEDICINE

Larkspur species have been used as a folk remedy to kill lice. A tincture made from any part of the plant (seeds, flowers, stems, leaves or roots), mixed with soap and used as shampoo can be used for head lice, and for pets. Seeds or flowers can be ground, steeped in five times as much rubbing alcohol (or vinegar) for a week, then strained and applied to areas where lice exist, especially pubic lice. For scabies, a tincture with rubbing alcohol, applied after a hot bath or shower is effective. Tinctures of larkspur are probably equally as effective, but milder, and less irritating than kerosene, which was often used for external, medicinal purposes by early pioneers. (Tinctures should not be used on open wounds or if irritation occurs.)

Blackfeet Indians called the delphinium, "blue leaves." The leaves were brewed for kidney troubles and used as a wash for eyes. Other tribes have not mentioned larkspur.

~ ~ DEATH CAMAS ~ ~

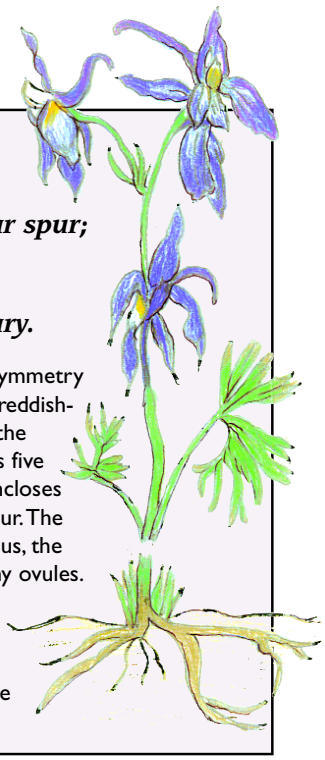
Death camas grows all over the Great Plains and the foothills of the Rockies, even into the upper-level forests. It is found in the company of

LARKSPUR

Delphinium spp.

Ranunculaceae (Buttercup or Crowfoot Family)

If you savor beauty, beware the larkskpur,
darker member of the buttercups.
Sweetness for the bumblebee fills the nectar spur;
Yet, among the many kinds, woe!
a poisonous alkaloid lurks
within the comeliness, luring the unwary.



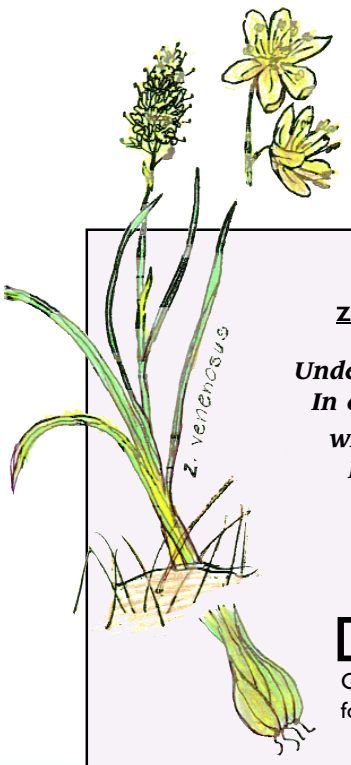
You shall know the larkspur by its straight nectar spur, by the beautiful bilateral symmetry of its flowers ranging from dark purple to blue, and in some species, even from reddish-pink to pure white. Larkspurs of the ranges and grasslands were named because of the resemblance of the spur on the flower to the foot of the prairie lark. The flower has five ovate sepals and four shorter petals. The upper, posterior sepal forms a tube that encloses the top two petals, linearly lined with purple guides to the nectar in the tube-like spur. The two lower petals are shorter, smaller and cleft at the apex. The stamens are numerous, the stigma faces inward, the pistils number from 1 to 5, usually 3, and the ovary has many ovules.

Larkspurs are erect, perennial herbs with showy flowers and alternate leaves, deeply and palmately divided. Larkspurs can be roughly separated into short-stemmed plants, 6 to 24 inches tall, with few flowers, and taller forms, 3 to 7 feet tall, with many flowers densely bunched together on the upper stem. There are more than one species of larkspur and they vary in their poisonous effects.

sagebrush and short grasses, wheatgrasses, bromes, and blue grama in drier areas. Blue grama is replaced by Idaho fescue on moister foothills, where the dominant wheatgrass is bluebunch.

Other flowering plants in its company include the well-known spring flowers, lupine, larkspurs and other lilies, edible wild onions (Alliums pp.), and other edible camases (Camassia spp). And even when it blooms, death camas resembles the edible camas. Often before the blossoms appear, death camas is easily mistaken for wild onion and this can be tragic, for death camas has been one of our most poisonous plants when eaten by animal, trapper or Indian.

Since the leaves of death camas grow early in spring, before many of the other forage plants grow, animals can be drawn to graze on death camas. The poison affects sheep most frequently, especially when the animals are feeding early.



The edible small camas (C. quamash) blooms very early and very blue, hence it is more identifiable. But even without blossoms, the leaves are distinguishable. If, upon cutting a leaf blade crosswise, the midrib is definitely hollow, forming a tube from base to tip, the plant is water hyacinth. The leaves on death camas fold up length-wise in a definite "v". In edible camas, the leaves remain flat.

Mature capsules of death camas are small, closely set on the stem, and split along the partition dividing the three cells. Camas capsules split down the midrib on the back of each of the three cells. Sego lily leaves are basal and only one or two in number, while death camas leaves grow alternately up along the stems.

INDIAN MEDICINAL USES

Next to hemlock, death camas is the most poisonous plant in the West. When eaten, the mixed alkaloids in the death camus bulbs are reported to hasten the heartbeat and make it irregular. They slow down respiration, cause convulsions, and have powerful purgative, emetic, and diuretic actions. The zygadenine alkaloid is reported to act as a heart depressant.

Yet, Indian people found some useful, medicinal purposes for death camas. Blackfeet people called it "e-cramps." Both they and the Shoshones mashed the raw roots to apply as a poultice to swollen knees. Paiutes were reported as using a wet poultice of its mashed roots on burns, for rheumatic pains, on swelling and on rattlesnake bites. Others used death camas as an emetic (to induce vomiting) and to treat venereal disease. Some species were used as a cathartic and narcotic. Its medicinal use was usually limited to a medicine person, and with strict care especially if administered internally.

Most early people learned to recognize and avoid death camas. There are other species of death camas, including Zygadenus elegans Pursh., which grows in the alpine regions.

DEATH CAMAS

Zygadenus venenosus Wats. *Liliaceae* (Lily Family)

Under this pile of stones lies a mountain man.
In early spring, he mistook a lily-like plant
with thin leaves and a bulb root for an onion.
He cut it up with his watercress and
relished the green, fresh herb salad.
They found him, his face twisted in painful
surprise, his body curled and still.

Death camas is a lily-like plant with a dark-coated underground bulb. Roots are fibrous, growing from the bottom of the bulb. Grass-like leaves are long and slender and creased into a v-shaped fold, a discerning characteristic.

The greenish-yellow flowers are in a terminal cluster (raceme) on an erect, leafless stem. All together, they have 6 sepals and petals, each separate, none united. The upper flowers are perfect (pistillate) with papery, brownish bracts under the flower of 3 petals, 3 sepals, and 6 stamens, with one-celled pollen sacs (anthers) that are flattened in a kidney shape. The three-part ovary is superior to the petals and sepals, and becomes a three-segmented seedpod, each segment tipped by a thread-like style, ending in a short, glandular claw. Stamens are 6, attached below the ovary on triangular bases, extending upward and beyond the petal-sepals. Each stamen has a blob-like anther on the tip.

Flowers lower on the stem are often male (staminate) only, with fleshy anthers, but no pistil, ovary or seeds. Leaves are mostly basal and grass-like, with prominent, parallel veins. Lower leaves have papery sheaths, while upper leaves are without apparent sheaths. The seedpod is a 3-celled capsule that splits when ripe. Each segment is tipped with a persistent, long and thread-like style, with an enlarged tip. Seeds are many in each pod segment.

~ WESTERN WATERHEMLOCK ~

Western waterhemlocks are the most virulently poisonous flowering plants in North America. It is a tall plant when full grown and has flower clusters in an umbrella-shaped umbel. Many species of hemlock are very poisonous. This is one plant to learn to identify.

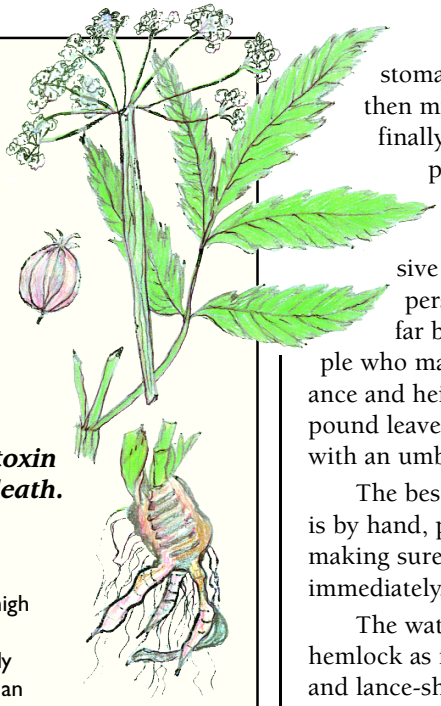
Western waterhemlock usually grows in marshes, swamps and wet meadows, along streams, at the edge of ponds or lakes, and along irrigation canals in the Great Plains, the

WESTERN WATERHEMLOCK

(Cowbain, Poison Hemlock, Poison Parsnip)

***Cicuta occidentalis* Greene**

Umbelliferae (Parsnip Family) or *Ammiaceae* (Carrot Family)



Member of the infamous hemlocks, this is a most poisonous one!

A small piece of root, no bigger than a walnut, has enough resinous cicutoxin for a quick and violent death.

BEWARE... BEWARE!!

Waterhemlocks are stout, coarse, herbaceous plants that grow as high as 10 feet, with smooth, simple or branched stems in leaflets that have fairly large, compound leaves, divided more than one time into uneven and sharply double-toothed leaves.

The flowers are small and white, in a compound umbrella-like cluster, called an umbel. Small, slender bractlets appear at the base of the flower stalks. Rowers have 5 broad white petals with tips curving inward, and 5 tooth-like sepals (calyx). Its 5 stamens are attached below the ovary. Anthers are attached halfway up the filaments. The fruits are oblong to round, ribbed, and slightly flattened. A single oil tube can be found between the ribs.

The rootstock is underground, short, stout, and upright, with many horizontal chambers within. Usually there is a cluster of tuberous extensions attached. The roots below the rootstock are few, shallow and fibrous. Both rootcrown and roots of the waterhemlock have a very disagreeable, musky odor. If broken or crushed, an acrid, yellow fluid runs out.

It is not always true that the presence of cross-partitions in the rootcrown, rootstocks, and root is a positive way to identify the waterhemlock because such cross-partitions are not clearly distinguishable in spring in young roots, and because they occur in other species of the same family, such as the angelicas (Angelica spp.).

foothills, and the Rockies up to 9,000 feet. The plants may be found scattered or in dense stands in favorable sites.

Poisonous waterhemlock has killed grazing animals, cattle, sheep and people. The stems and leaves may poison livestock more frequently in spring, as these plants also green up before other forage plants. People who mistake the roots for other, wild, celery-like plants have been poisoned.

The bitter resin, cicutoxin, is violently poisonous and found in the stems and leaves, but mainly in the roots. This toxic principle directly affects the central nervous system, then the heart and respiratory organs. Even a small piece of root contains enough cicutoxin to cause immediate death. The sequence of occurrences is nausea, dizziness, stomach pain, weakened pulse, arching of the back, then muscle contractions to violent convulsions, and finally death. Often the animal chews its tongue to pieces and will tear up the earth around itself with its hooves during the convulsions.

If ever one sees an animal dying in convulsive movements from eating poison hemlock, that person will never forget this plant. However, it is far better to acquaint ranchers, farmers, and people who may venture into hemlock sites with its appearance and height, with its coarse, double-toothed compound leaves and its umbel flower. Don't ever eat a plant with an umbel flower unless you know what it is.

The best way to rid an area of poison waterhemlock is by hand, pulling up the plants and grubbing them out, making sure to get the very tips of the roots. Burn it immediately.

The waterhemlock may be distinguished from the true hemlock as follows: 1) The pinnae of the leaves are larger and lance-shaped; 2) the umbel of the flowers is denser and more compact; 3) the stem is not spotted like the true hemlock; and 4) the odor of the waterhemlock resembles that of parsley. Both plants are poisonous; but while the root of the waterhemlock is acrid and powerfully poisonous in its fresh state, though it loses its virulent qualities when dried, the root of the true hemlock possesses less active power.

~ ~ TRUE HEMLOCK ~ ~

True hemlock is a tall and imposing perennial plant that appears to be increasingly common as part of the flora of our western range country. It may grow in dense stands in waste places, and along roadsides in areas much drier than the very poisonous waterhemlock.

The true hemlock's umbel may be 3 to 6 feet tall. The lower leaves are petioled. The upper leaves are many and sessile (resting directly upon the main stem or branch), and alternate from the bottom to the top of the stems. The leaflets are pinnate (feather-like) and dissected many times.

Its umbel flowers have white petals and no sepals (calyx). The fruit is broadly ovate, smooth, and flattened

TRUE HEMLOCK

(Poison Hemlock)

Conium maculatum L.

Umbelliferae (Umbel Family)

In April of 1857, two farmer's sons were found ***lying paralyzed and speechless close to a ditch where they had been working. Assistance was soon rendered, but they shortly expired. A quantity of the Water Hemlock grew in the ditch, where they had been employed. A piece of the root was subsequently found with the marks of teeth in it near to where the men lay, and another piece of the same root was discovered in the pocket of one of them.***

—Mrs. M. Grieve, A Modern Herbal, Botanical.com

laterally, with strong wavy lines. The seed faces are flat.

Its toxicity is the result of the alkaloid, coniine, and other chemicals, which can be found in all parts of true hemlock, including the seeds and roots. Mammalian herbivores won't touch the foliage because of its rank odor and extreme toxicity. Just a small portion of the ingested plant can be fatal to animals and humans.

The ancient Athenians used the juices of this plant to execute their prisoners, including Socrates during 399 BC. Death is caused by respiratory arrest and heart failure.

~ ~ WESTERN POISON IVY ~ ~

ECOLOGY & FOLKLORE

Western poison ivy grows in open woods. It may be found in open spots among willows, cottonwood, and other shrubs along rivers. It is often at the foot of ponderosa pines in the Rocky Mountains. Though negligible and poor in food content, it is sometimes nibbled by livestock.

Western poison ivy is poisonous to the touch and causes the skin to break out in a rash or lumpy pustules, accompanied by swelling and feverish conditions. The poisoning effect is due to the sap on all parts of the plant—the leaves and berries, the woody xylem, the cork cells, the cambium, the epidermis, and even the minute hairs. Only the anthers and pollen seem not to be poisonous.

Some people have dramatic reactions to poison ivy, while others seem not to be affected at all. In this author's experience, even people who do not react one day, may react on another, so apparent immunity may be gone at any moment.

There are some soothing lotions and potions that ease the irritation. The toxic element has been identified as urushiol ($C_{21}H_{32}O_2$), a highly volatile oil. It is known that the hydroxyl groups in urushiol are the cause of its blistering effects.

Poisoning usually results from touching or handling the plant. However, in some cases, people only had to go near poison ivy without even touching it, particularly on a warm, sunny day, to get poisoned. Smoke from burning plants can carry the oil and terribly blistered skin may result.

If accidentally taken internally, the poison is a violent irritant. Children, especially, have been poisoned by eating even a berry or two. Livestock and game animals do not seem to be affected, even if they eat the leaves. However, if livestock rub against the plants and people rub against the livestock, poisoning can occur.

Cures for poisoning have been tried often but none seem to be sure things. The effects of the rash and blisters are limited and usually subside and heal within a few days. This, of course, depends upon the severity of the contact and the sensitivity of the person involved. It is best to consult a physician, or a good pharmacist who lives in the country, and knows about poison ivy.

Standard external remedies include ferric chloride ($FeCl_3$) and a solution of baking soda or Epsom salts. The Zuni Indians used the resin extract from Grindelia (Grindelia squarrosa) for relief from the rash , from which a lotion has been developed. Sugar of lead has been used too, but the danger of lead poisoning

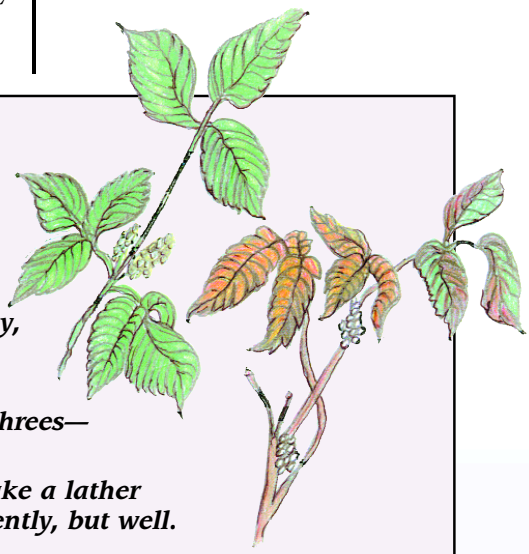
WESTERN POISON IVY

Toxicodendron rydbergii **(Small) Greene**

Anacardiaceae (Sumach Family)

NORTHERN CHEYENNE NAME:

"HO TOM MOTSE"



If you go out in the woods today, go with open eyes.

There's a low-growing plant with shiny, green leaflets in threes—POISON IVY!

If you touch it, go home, make a lather of yellow soap and wash gently, but well.

Western poison ivy is a low, woody-stemmed shrub, less than 3 feet fall, with long, petioled leaves, 3 to 8 inches long (the petioles are 1 to 3 inches long) divided into three, shiny, green, veiny and rather large coarse-toothed leaflets. In autumn, the leaves turn a brilliant red and fall off the plants. Clusters of white, shiny, berry-like fruits (1/4" in diameter) often remain attached to the plants throughout the winter.

Flowers are in small, conical, axillary panicles, petals are ovate and 1/4" long, yellowish and streaked with green. Sepals and petals, each the same number, are usually 5. Petals are overlapping in the bud. Stamens may be as many as the petals or twice as many, inserted at the base of the disk. The free ovary is 1-celled and 1-seeded. The style of the female pistil is single and unbranched.

makes its use cautionary.

We have long known that prevention is the best way. Recognizing and staying away from the plant is foremost. We teach children, "if there are three, let it be," referring to the obvious, three shiny leaves. We also caution not to eat any white berries, unless we know what they are for sure, because many white berries have poisoning effects.

If you went into places where there might be poison ivy, or were not sure if you had been exposed, the advice has been to wash it with yellow soap. This was in the days of homemade, yellow soap. Any soap will help—only be careful just to work up and rinse off a good lather. Don't rub harshly, for it you cause the skin to break, the poison will cause more trouble. ■

Editor's Note: Part One of this series entitled, *Wild Peas of the Rockies: Early American Folklore for Poisonous Plants of the Rockies and Great Plains,* was published in last year's May-June issue. A copy (PDF) may be downloaded from the Free Archives at www.NaturalLifeNews.com. Part One covered: *Lupine, White and Purple Locoweed, Milk Vetch, and Rabbitsfoot Crazyweed.*

DR. ELNORA (STENERSEN) OLD COYOTE, age 86, grew up in Eastern Montana and married John M. Old Coyote, a full-blooded Crow Indian. With the help of many tribal people, she has been researching and teaching the use of native plants for many years. She has studied and written about over 300 Montana plants. Included here are her notes on ecology and folklore, and her original sketches and poems. Elnora lives in Huntley, Montana, and can be reached at (406) 348-2474.

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Continued from page 17

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