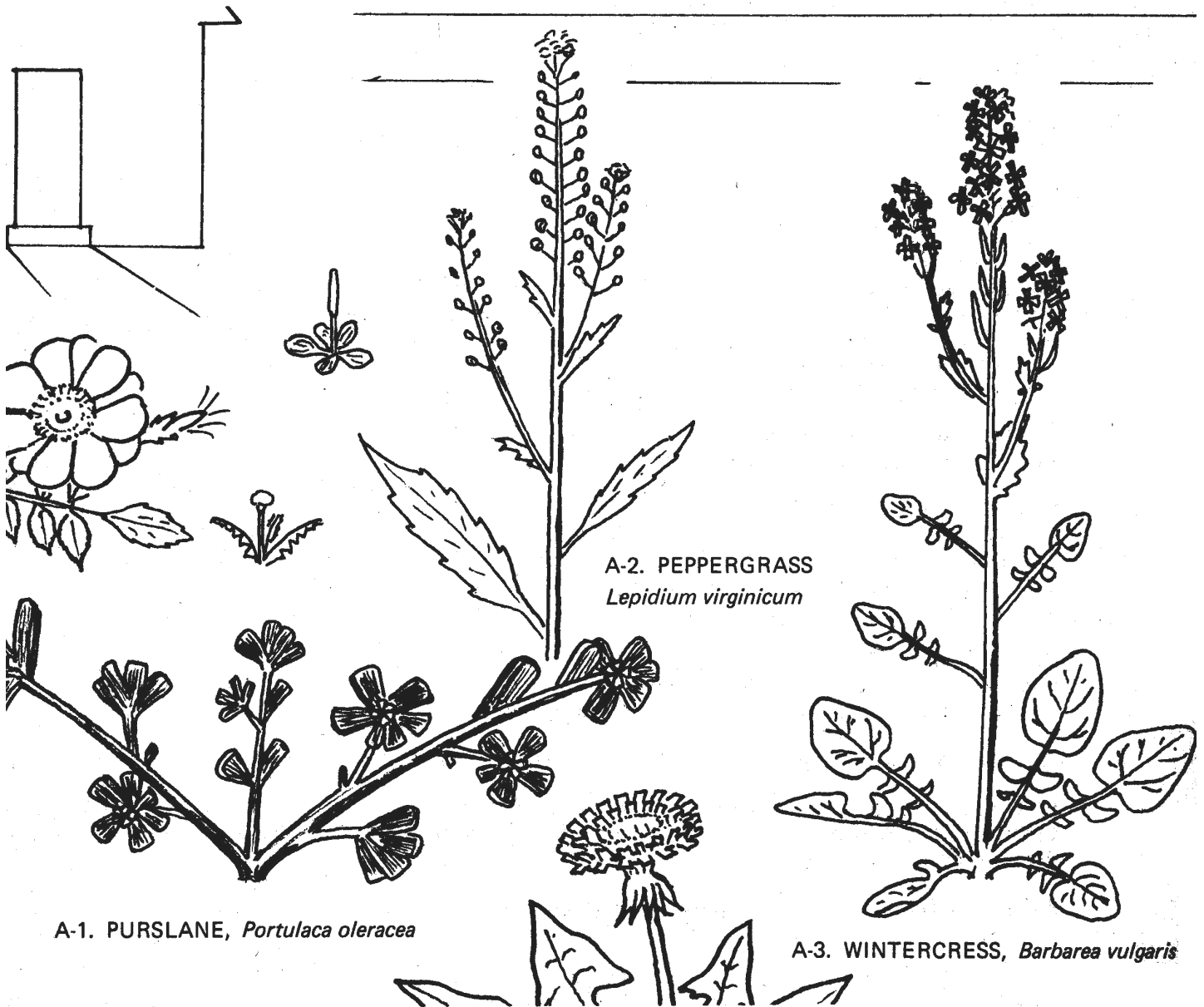


Part I

PLANTS IN YOUR YARD

Just outside the door are delicious edible plants waiting to be discovered. Growing in the grass you may see plantain, clover and perhaps dandelion, and possibly a mat of chickweed beside the building. Many yards contain some form of wild lettuce, and if there is a garden the weeds will include lamb's quarters, amaranth and dock. If there is a flower garden it may contain roses, and they can furnish delicate jam made from the petals, as well as vitamin C pills--the rose hips. Of course, wild roses grow farther out in the country, and they, too, have nutritious fruits eaten raw or cooked.

In addition to the above plants included in this section of the slide set **WILD PLANTS TO EAT**, we have added three more: purslane, peppergrass and winter cress. Purslane is a fat succulent weed of sandy or cultivated soils, and winter cress may grow in your lawn or a nearby field. It should be used in late winter while the leaves are tender and before the flower stalk appears. Try using the flower buds. They make a nice substitute for broccoli. Peppergrass grows in yards and fields and, like most other green plants, becomes bitter as it matures. The seeds are sharp like pepper. These plants can be eaten in salad or cooked as delicious potherbs for variety. Why don't you look in *your* yard?



FAMILY: ROSE, *Rosaceae*.

IDENTIFICATION: The familiar flower of either wild or cultivated roses shows five colorful petals, and in the center many stamens tipped with gold. The pointed sepals, thorny stems and compound leaves with serrated leaflets are characteristic.

Hawthorns, *Crataegus spp.*, are trees with blossoms like the rose, naked thorns (nonleafy), toothed simple leaves. Serviceberry, *Amelanchier*, is similar but without thorns.

HABITAT: Habitats of wild roses vary. For instance, sandy or rocky pastures and open woods for the *Rosa carolina* (pasture or Carolina rose).

SEASON: Spring to fall.

EDIBLE PARTS: Flower petals, fruit (hips), fragrant leaves of sweetbriar. The rose family contains many edible fruits such as the apple.

PREPARATION FOR FOOD: Petals are made into exotic jellies, jams and syrups. They also make a fine addition to cookies, breads, puddings, yogurt, soups, etc. The fruits, called rose hips, can be eaten either raw or cooked. They can be harvested in the winter but some are discolored and rendered unpalatable by freezing.

RECIPE

Rose Petal Jam
(Violet Blossom Jam)

1 cup rose petals (or violet blossoms) firmly packed	2½ cups sugar
¾ cup water	1 package powdered pectin
Juice of 1 lemon	¾ cup water

Put rose petals in blender. Add ¾ cup water and the juice of 1 lemon, and blend until smooth. Slowly add the sugar and blend until dissolved. Stir pectin into the remaining ¾ cup of water. Bring to a boil, and boil hard 1 minute. Pour the hot pectin mixture into the blender with other ingredients and blend 1 minute. Then quickly pour into jars and seal. This jam keeps in the refrigerator about 3 weeks, or may be frozen for future use. Violet blossoms may be substituted to make violet jam.

OTHER USES: The rose is used universally in bouquets and corsages, and for other decorative purposes. The aromatic oil is used in perfume.

NUTRITIONAL VALUE: One handful of rose hips provides the vitamin C of almost 60 oranges. *Rosa rugosa* contains from 2,275 to 6,977 mg ascorbic acid per 100 gms. This would equal 100 times the daily requirement in an amount like half an orange. They are richer in iron, calcium and phosphorus than oranges. Haws, the fruit of hawthorn, contain 87 calories per 100 grams, which is higher than berries.

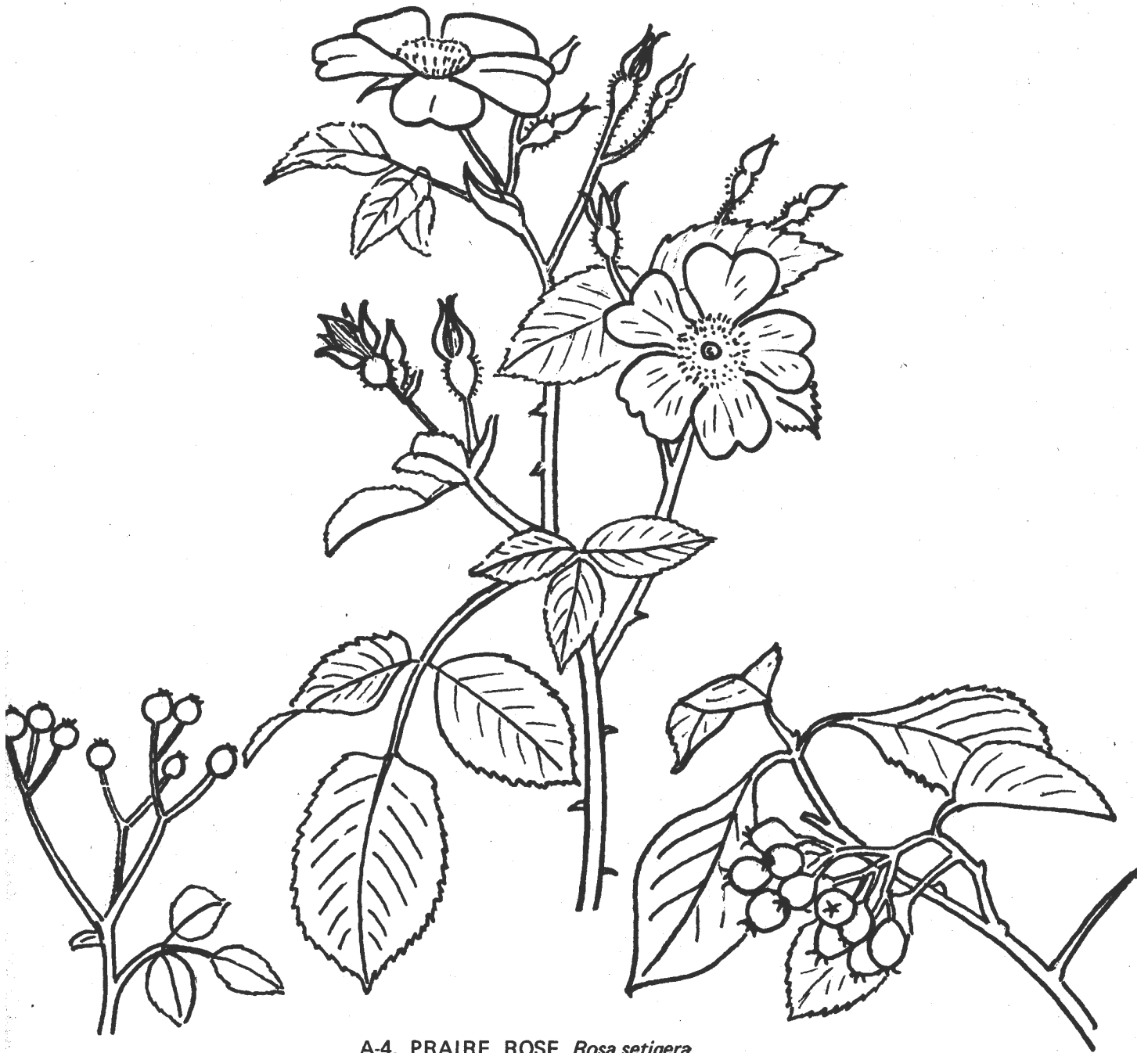
DISTRIBUTION: The family *Rosaceae* with 100 genera and 2000 species is cosmopolitan. The genus *Rosa*, with 250 species, north temperate and tropical mountains.

Hawthorn, *Crataegus*, 200 species, mainly N. temperate.

REVIEW: Why do you think many people used to give their children rose hip syrup every day in winter?

FOR FURTHER STUDY: Make a list of edible fruits in the rose family (*Rosaceae*). See the **FLOWER COOKBOOK** by Adrienne Crowhurst for recipes for rose petal jelly or salad, stuffed rose petals, crystallized rose petals, or rose butter.

PROJECT: Try making some rose petal jam or rose hip syrup.



A-4. PRAIRE ROSE, *Rosa setigera*

ROSE HIPS

A-5. COCK'S SPUR THORN, *Crataegus crus-galli*

FAMILY: DAISY, *Compositae*.

IDENTIFICATION: Under the bright yellow flowers notice the green calyx with downcurved outer bracts. Note the deeply cut, downward pointed, jagged-lobed leaves, hollow milky stem, fluffy round white seed balls.

HABITAT: Lawns, fields, roadsides.

SEASON: Spring to fall.

EDIBLE PARTS: Leaves, tender buds, blossoms (yellow rays), crown, roots, seeds.

PREPARATION FOR FOOD: The leaves should be gathered before the plant flowers as they become bitter later in the season. They may be chopped into salads or boiled as a potherb. Be sure to start the greens in boiling water to cut down on any bitter flavor. Discard the water and boil a second time if they are still bitter. The tiny flower buds may be boiled in salted water for three minutes and served as a vegetable, or they may be pickled. The yellow rays may be used in soups and casseroles. The roots can be roasted and ground and used as an excellent coffee substitute. In India the roots are also eaten raw as a salad or boiled as a vegetable.

RECIPE:

Dandelion Roast

- | | |
|--------------------------------------|--|
| 1 cup dandelion (or clover blossoms) | 1 heaping teaspoon chicken style seasoning |
| 1½ cup bread or cracker crumbs | 1 scant teaspoon sage |
| 2 eggs or egg replacer | salt to taste |
| 1 onion, chopped | 2 tablespoons oil |
| 1 stalk celery, chopped | 1 cup (undiluted) evaporated milk |

Pull apart dandelion flowers, discarding stems and as much green cap as possible. Saute onion and celery in oil. Beat eggs and add to dandelion rays, bread crumbs, onion, celery and seasonings. Moisten mixture with milk. Pour into greased casserole and bake at 350° for about 45 minutes.

OTHER USES: Every young person enjoys blowing the white parachutes off the white seed ball.

NUTRITIONAL VALUE: Said to be four times as nutritious as lettuce by weight. Contains 25 times as much vitamin A as tomato juice--14,000 per 100 gms, and .19 mg of thiamine, .26 mg of riboflavin plus 35 mg of ascorbic acid (vitamin C). Also contains good amounts of calcium, phosphorus, iron, sodium and potassium. The protein is good and availability of calcium and phosphorus superior to spinach and lettuce.

DISTRIBUTION: World-wide in temperate areas (not subtropical). *T. officinale*, temperate. 60 species of *Taraxacum* are mostly north temperate. 2 species temperate South America. Used in China, India (Himalayas from 1000 to 18,000'), Russia, Europe, Africa, America, etc.

- REVIEW:**
1. What is the choice edible part of the dandelion?
 2. How do you cook the yellow flowers?
 3. When should the green leaves be eaten raw?
 4. How do we use the root?

FOR FURTHER STUDY: List the other dandelions and similar plants in Peterson, (p. 170)*

PROJECT: Prepare at least one part of the dandelion as a special dish for a meal at your home.

*See Bibliography, page 82.



A-6. DANDELION, *Taraxacum officinale*

(IWP 4)

A-7,8

PLANTAIN *Plantago (major, etc.)*

FAMILY: PLANTAIN, *Plantaginaceae*.

IDENTIFICATION: The common plantain, *Plantago major*, has broad ovoid to round basal leaves, and a long slender flower head with the flowers tightly packed. Other plantains have narrow leaves with linear veins and looser flower heads.

HABITAT: Yards, roadsides, waste places. Where man has been in the wilderness.

SEASON: Spring to fall.

EDIBLE PARTS: Leaves (spring), seeds.

PREPARATION FOR FOOD: Gather the leaves when young and tender as they become tough and stringy with age. Chop and use in salads and soups or cook as a potherb. The seeds are used by the Chinese in Malay for making cooling jellies. They may also be eaten as a nibble or sprinkled on cereal.

RECIPE:

Cream of Plantain Soup

½ pound tender plantain leaves	1 cup evaporated milk
6 green onions, wild leeks, or equivalent	2 bouillon cubes or chicken style seasoning
2 tablespoons oil	salt to taste
1 tablespoon flour	

Boil plantain leaves in salted water for about 30 minutes. Slice onions thinly and saute in oil until golden. Sprinkle flour over the onions and add 1 cup of broth from the greens and the bouillon cubes. Boil, stirring until smooth. Pour back into the soup pot and boil for 10 minutes more. Blend the mixture. Return the pureed soup to low heat and add 1 cup evaporated milk. Heat but do not boil. (Other greens, such as dandelion, nettle, sheep sorrel, watercress, etc. may be used. If chopped fine, they need not be blended.)

OTHER USES: Fibers from the leaves for cord.

NUTRITIONAL VALUE: The spikes of seeds when ripe are as rich in vitamin B₁ as rice polishings. The fresh plant is 87.4% water, 2.7% protein, 0.4% fat, 2.2% ash, rich in potassium, making the plant somewhat diuretic. The leaves contain aucubin, an astringent, and some vitamin C. (Reed)*

DISTRIBUTION: The 265 species of *Plantaginaceae* are cosmopolitan. Many species are used as food, e.g.: *coronopus*, Europe, N. Africa, Asia, Australia, New Zealand; *deciplens*, N. E. America; *lanceolata*, Europe, temp. Asia, N. America; *major*, Europe, temp Asia, America; *maritima*, coasts of Europe and Russia.

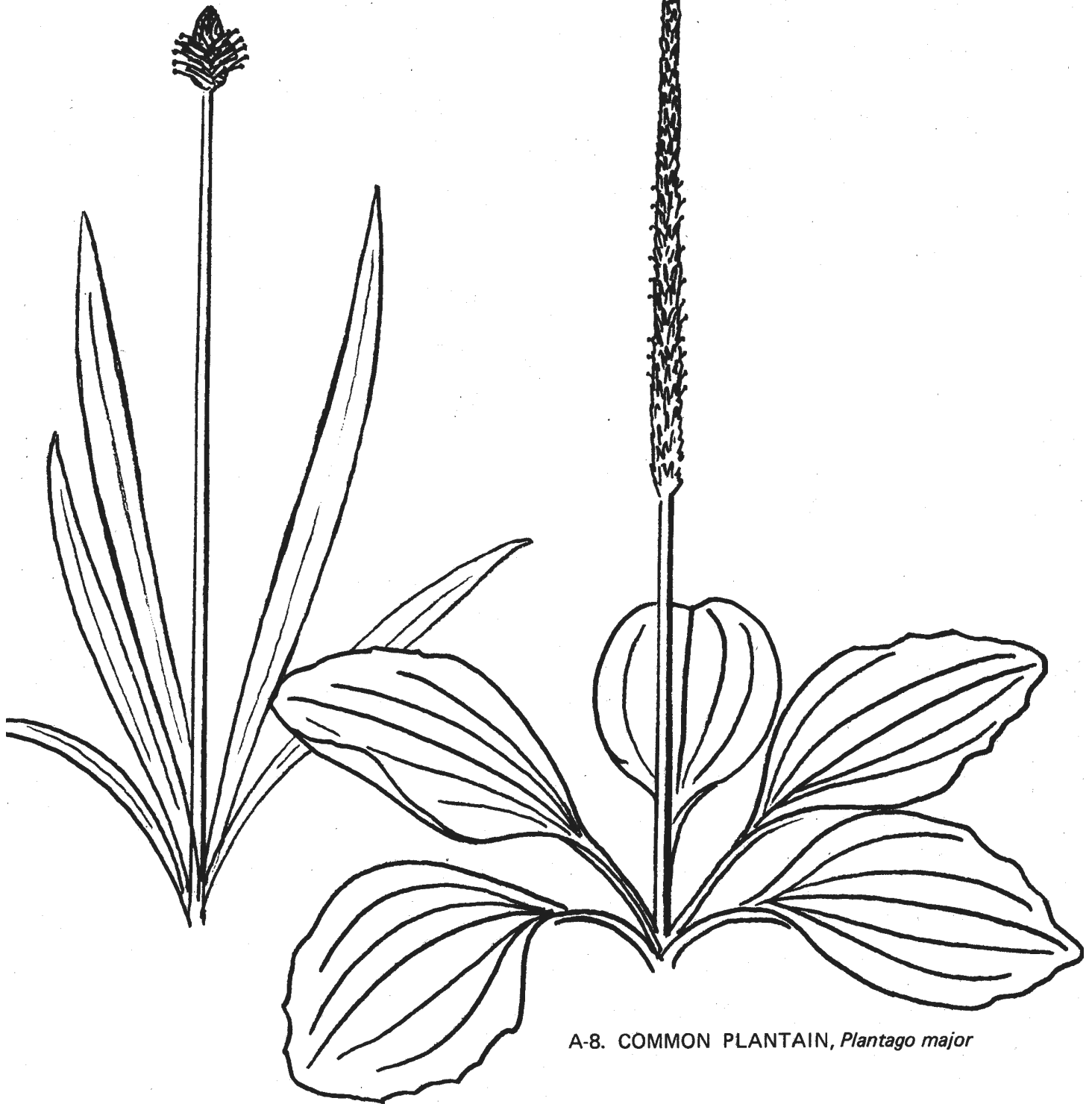
REVIEW: 1. When are plantain leaves best?

2. Of what value are the seeds?

FOR FURTHER STUDY: Why was it said by American Indians that this plant is the white man's track? (See Gibbons.)*

PROJECT: Husk the seeds from a dry flower stalk of plantain, count them and place them under low power in the microscope, and draw or describe them. How many would make a pint of cereal?

*See Bibliography, page 82



A-7. ENGLISH PLANTAIN, *Plantago lanceolata*

A-8. COMMON PLANTAIN, *Plantago major*

FAMILY: PEA, *Leguminosae*.

IDENTIFICATION: The familiar red clover with three leaflets often showing pale chevrons is illustrated here. The purple-red round flower head is characteristic. Crimson clover has a slender head, alsike clover a flattened head, rabbit's foot clover slender leaflets, etc. There are several clovers in the genus *Lespedeza*, also.

HABITAT: Roadsides, fields.

SEASON: Late spring through summer.

EDIBLE PARTS: All parts of the clover are edible: blossoms, leaves, stems, roots. Use when crisp and succulent.

PREPARATION FOR FOOD: The clover leaves and flowers may be chopped into salads or used in soups, casseroles and other cooked dishes. They may also be dried and steeped for use as a nourishing tea. A flour can be made from the dried blossoms and substituted for regular flour in a bread or cracker recipe. Fresh clover blossoms are good made into fritters. Take equal portions of pancake batter and clover blossoms. Add some chicken style seasoning and fry.

RECIPE:

Clover Soup

2 cups clover flowers and leaves
1 medium onion
2 tablespoons oil
4 cups water

3 medium potatoes
1 tablespoon chicken style seasoning
salt to taste
parsley

Chop the clover leaves and flowers in small pieces. Mince the onion. Saute in oil until soft. Add water, seasoning, salt and finely diced potatoes. Cook until done. Garnish with chopped parsley. Dandelion flowers may also be used in this recipe.

CAUTION: Eat clover along with other plants to prevent bloating.

NUTRITIONAL VALUE: Very high in protein. Also high in fat.

DISTRIBUTION: The 300 species of *Trifolium* grow in all temperate and subtropical areas except Southeast Asia and Australia. Many species are used for forage and several are local foods, e.g., *T. amabile* (Aztec clover) in Peru. Leaves are mixed with maize to make a food called chucan.

REVIEW: 1. How can the flower heads of clover be used?

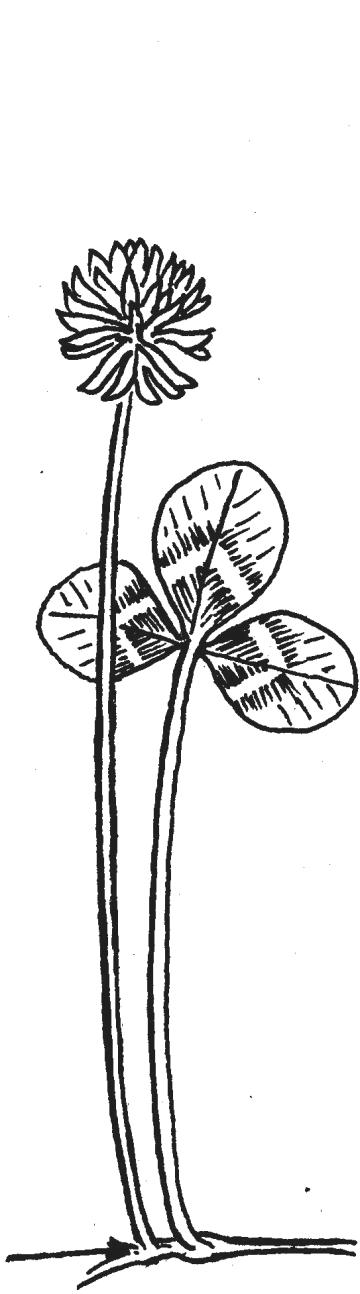
2. How would you prepare leafy stems?

3. Why eat clover in moderation?

FOR FURTHER STUDY: List the different species of clover in the genera *Trifolium* and *Lespedeza* which may be found in your area. (See Peterson.)*

PROJECT: Dry clover plants in a food dryer, attic, or in the sun. Steep for tea, and serve to your group.

*See Bibliography, page 82.



A-9. WHITE CLOVER, *Trifolium repens*



A-10. RED CLOVER, *Trifolium pratense*

FAMILY: GRASS, *Gramineae*.

IDENTIFICATION: The familiar jointed, round stem, slender clasping leaves (often edged with "glass") and flower arrangement in panicles, spikes, or racemes are characteristic.

HABITAT: Rocky mountains, low swampy land, dry meadows, woodlands, and arctic wastes all have grasses suitable for such conditions.

SEASON: All.

EDIBLE PARTS: Most grasses are edible entire, that is, the grain, leaves, stalk and root. However, the grain and white portions are most suitable for humans.

PREPARATION FOR FOOD: A Chinese medical doctor who reportedly fed his family on grass alone during a three-year famine prepared the grass in every imaginable way. The green leaves were chopped and dried to be used for tea or in soup. The white portion of the stem and roots were eaten raw or cooked.

Grains offer a wide variety of preparation by roasting, grinding to flour and baking as bread or serving as cooked cereal, gruel or cake. Corn is parched, popped, cracked or ground. It is prepared 17 different ways in Africa.

RECIPE: Sprouting Wild Seeds

Seeds from wild grains and other seeds such as dock, sorrel, amaranth and many others can be sprouted like alfalfa seeds. Using the jar method, proceed as follows:

Soak seeds overnight using plenty of water (about 3 tablespoons of seeds to a quart jar). In the morning drain water from the jar through a screen, stocking or netting. Rinse the seeds well. Turn the jar upside down in a bowl and put in a dark warm place. Rinse seeds through screen 2 or 3 times a day. Keep jar inverted. Gently shake seeds evenly to distribute around wall of jar. After 2 days put in sunny place to develop the bright green color (vitamin A and chlorophyll).

OTHER USES: Roof thatching, cord, rope, clothing, mats, etc.

CAUTION: One of the species of dandelion, *Lolium temulentum*, has been considered toxic because of its intoxicating quality. Velvet grass, *Holcus lanatus*, contains hydrocyanic acid. Stink grass, *Eragrostis megastachya*, is toxic to browsing animals. If constipated, one might try *Bromus catharticus* or *Bromus purgans*.

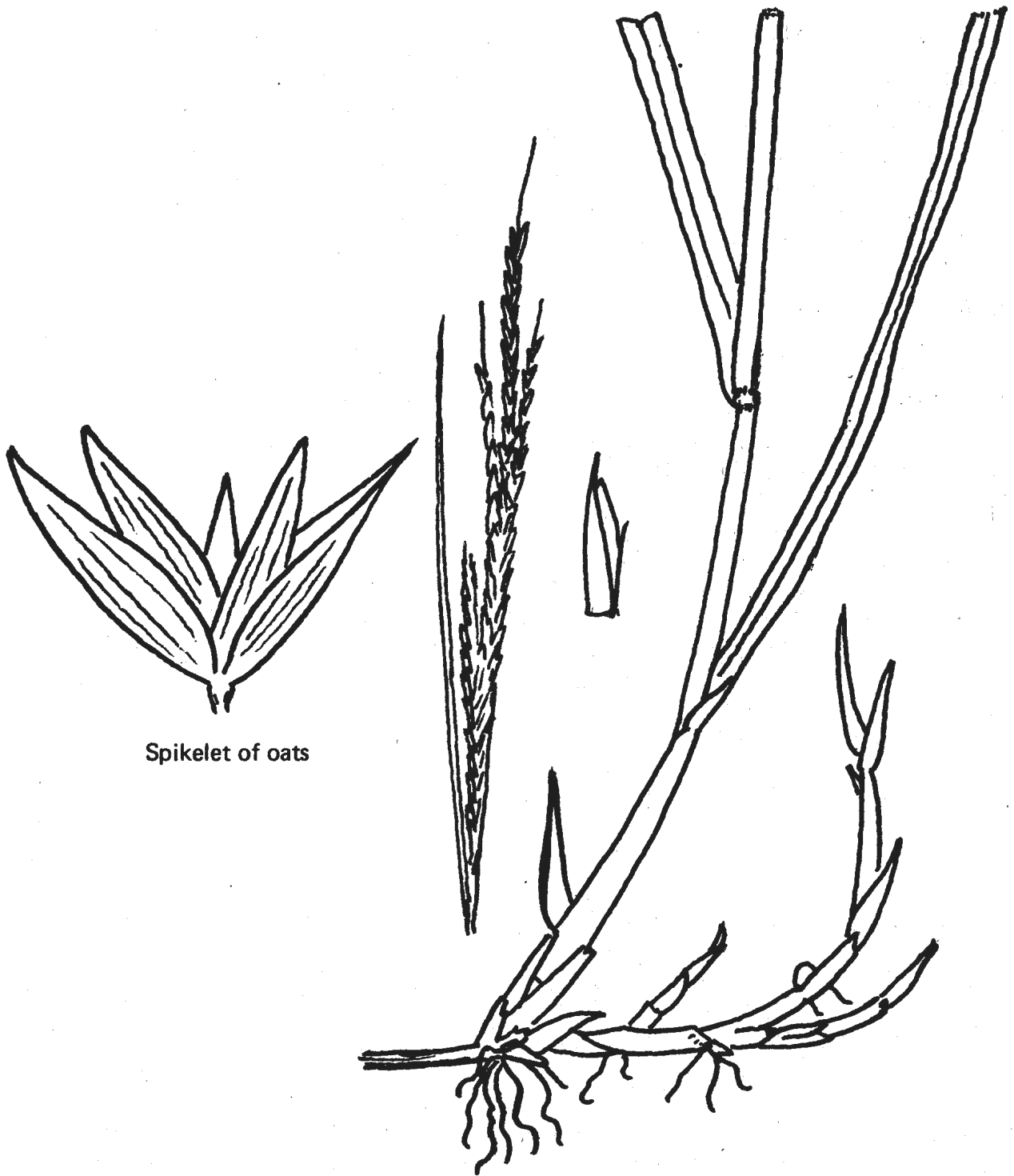
NUTRITIONAL VALUE: A high content of vitamins A and C, five factors of vitamin B complex, K and G. In the Dagestan Republic of Russia alpine residents living to 116 years of age were found to include 14 kinds of wild grasses in their diet—raw in summer and dried in winter. The advanced ages appear to be in proportion to the amount of wild grass in the diet.

DISTRIBUTION: Worldwide. Within the area of the distribution of the wild forms of wheat and barley in the Near East, agriculture was first established by the cultivation of einkorn and emmer wheat and two forms of barley. (See Renfrew, p. 197, 199). The earliest wild grains and first crop husbandry occurred in the area from southwest Iran to central Anatolia (Turkey), before 6000 B. C. (in radiocarbon years). This is near the reported landing place of the ark of Noah after the Biblical flood (Mount Ararat in eastern Turkey).

REVIEW: 1. What parts of grass are edible raw? 2. How may the green blades be used?

FOR FURTHER STUDY: Read the story of the discoveries of early wild grass, grains and cultivated cereals in Jane Renfrew's book (see bibliography - page 82).

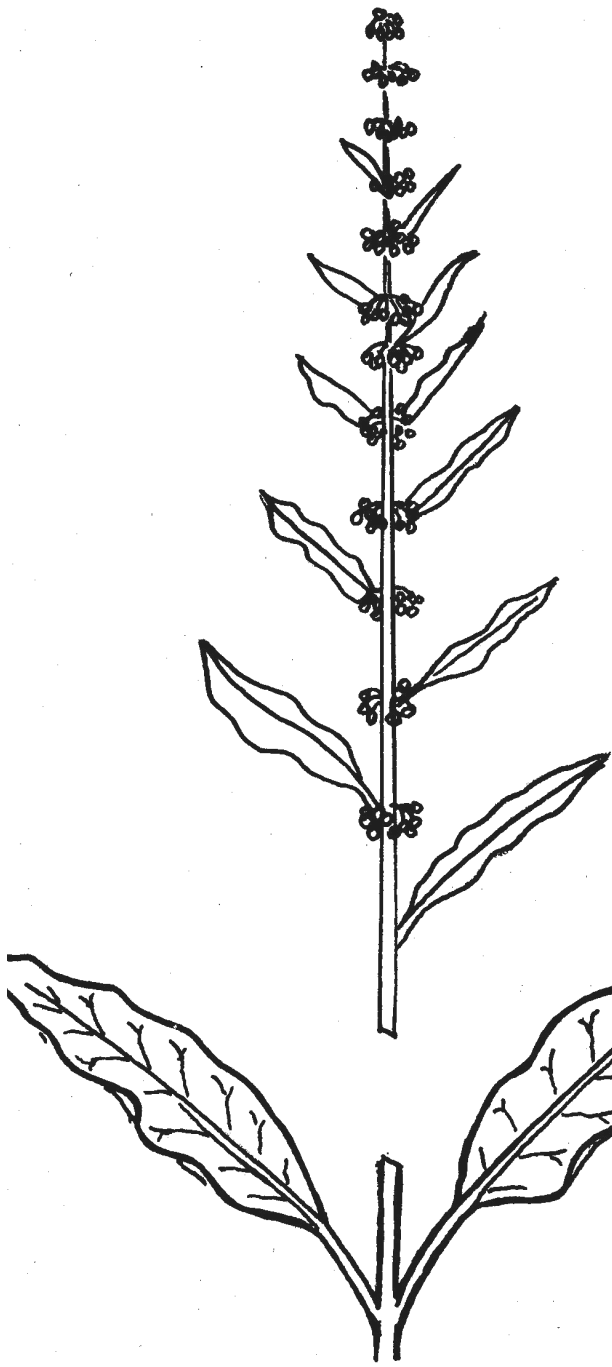
PROJECT: Pull up several kinds of grass in your area, wash the white stems and roots carefully and taste them. Chop the best ones into a creamed soup, or try collecting seed from wild grasses and taste.



Spikelet of oats

Base showing rhizomes; inflorescence; spikelet enlarged.

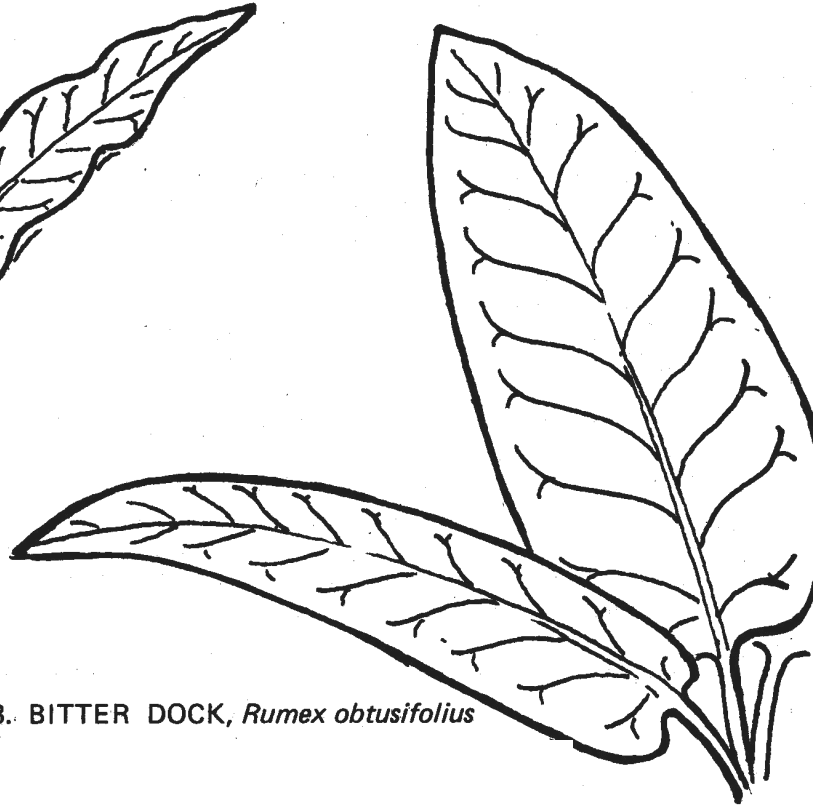
A-11. SMOOTH CORDGRASS, *Spartina alterniflora*



A-12. CURLLED DOCK, *Rumex crispus*



A-14. SHEEP SORREL, *Rumex acetosella*



A-13. BITTER DOCK, *Rumex obtusifolius*

(IWP 9) A-15, 16 GOOSEFOOT or LAMB'S QUARTERS *Chenopodium (album, etc.)*

FAMILY: GOOSEFOOT, *Chenopodiaceae*.

IDENTIFICATION: *Chenopodium album*: a many-branched weed with stems often red-streaked and mealy. Leaves somewhat diamond-shaped, toothed, powdery white beneath. Flowers small, greenish, sometimes turn reddish, 1-3 feet high. Other *Chenopodia* are variable. Orache, *Atriplex (patula, etc.)*: small, weedy, mealy, often reddish, leaves triangular, flowers in interrupted spikes in leaf axils.

HABITAT: *Chenopodium*: Gardens, roadsides, fields, wasteground. *Atriplex*: Saline or alkaline soil, waste ground.

SEASON: *Chenopodium*: Summer, early autumn. *Atriplex*: Summer to late autumn.

EDIBLE PARTS: Shoots, leaves, seeds.

PREPARATION FOR FOOD: While the leaves may be used in salads, they are best prepared as a pot-herb. Cook in salted water 5-8 minutes. The seeds may be used in breads or cereals or you may substitute half of the flour in your favorite cake recipe with flour made from the mature seeds and covering of lamb's quarters. Gather in the fall. Sift the husks out, grind in seed mill or between two stones, and store in a dry place. Fernald considers *Atriplex* superior to lamb's quarters or pigweed, especially that which grows along seashores, which is jucier and salty.

RECIPE:

Escalloped Lamb's Quarters

2 eggs or egg replacer equivalent	3 cups cooked lamb's quarters
3 cups milk	2 tablespoons oil
3 cups rolled crackers or toasted bread crumbs	salt, onion and garlic powder to taste

Beat eggs and add milk, 2 cups of cracker crumbs and the lamb's quarters. Stir in oil and seasonings. Pour mixture into baking dish and sprinkle remaining cup of crumbs on the top. Bake in moderate oven until done. Other greens such as milkweed shoots, amaranth, poke, nettles, dandelion, mustard, purslane, dock, etc. may be used.

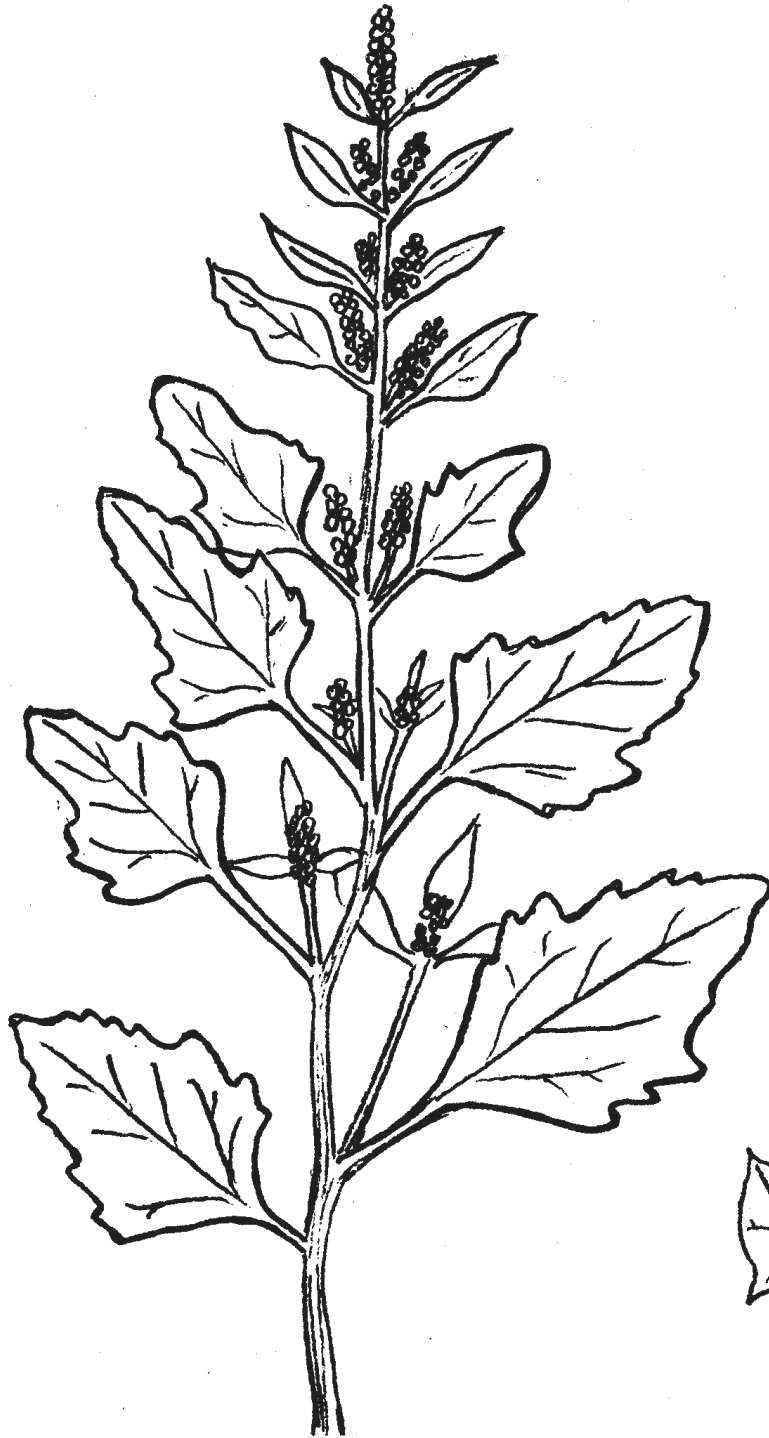
NUTRITIONAL VALUE: Contains a good quality protein similar to egg. Very high in vitamin A (11,600 I.U.) and vitamin C (80), iron (1.2), potassium and calcium, and good in thiamin, riboflavin and niacin.

DISTRIBUTION: Temperate. Of 100-150 species of *Chenopodium*, many are recorded as eaten locally, e.g., *C. album* was found in the early lake villages in Switzerland, and is occasionally still cultivated. Some others now eaten are: *C. amaranticolor*, *ambrosioides*; Mexico; *auricomum*, Australia, (cattle feed), *bonus-henricus*, *canihua*, Peru, Bolivia; *capitum*, Europe; *chilense*, Chile; *foliosum*, Europe and East, *fremontii*, W. N. A.; *leptophyllum*, N. Am; *murale*, temperate; *nuttalliae*, Mexico; *pallidicaule*, S. Am, esp. Bolivia and Peru, seeds important food, *quinoa*, Chile and Peru, seeds important; *rhadinostachyum*, Australia, and *rubrum*, temperate.

REVIEW: 1. What is unique about the protein content of *Chenopodium album*?
2. How do you prepare lamb's quarters for food?
3. What are some interesting facts about the seeds?

FOR FURTHER STUDY: Look in Renfrew to discover the oldest quantity of *Chenopodium album* seeds yet discovered by paleoethnobotanists.

PROJECT: Make a small cake from the seeds of *Chenopodium album*.



A-15. LAMB'S QUARTERS, *Cheopodium album*



A-16. ORACHE, *Atriplex patula*

(IWP 10) A-17 AMARANTH *Amaranthus (retroflexus, hybridus, etc.)*

FAMILY: AMARANTH, *Amaranthaceae*.

IDENTIFICATION: Coarse; downy, grey-green (*A. retroflexus*), strong stalk, pointed oval leaves, dense spikes of chaffy greenish flowers among long bristle-like bracts, red root, to 2' tall. Some are taller, smoother, darker with more slender bending flower spikes (*A. hybridus*) either green or red, to 6' tall.

HABITAT: Gardens, waste ground, roadsides.

SEASON: Spring, summer, autumn.

EDIBLE PARTS: Shoots, leaves, tender stems, seeds.

PREPARATION FOR FOOD: Tender shoots, tender stems and leaves are eaten as a green vegetable. In parts of India the leaves of amaranth are boiled and mixed with salt and chile peppers. It is cultivated as a potherb and sold in bazaars year-round. *Amaranthus leucocarpus*, *cruentus*, and *caudatus* are cultivated up to 10,000' in the Himalayas for their minute nutritious seeds (grain) affording wholesome food for a large number of people. The seeds are ground with water into a paste which is diluted and cooked with sugar into a thin pudding. Dried seeds are ground into flour which may be baked, often with wheat flour, into cakes. Seeds may also be parched and made into *laddoos* with a syrup binder.

RECIPE:

Cream of Amaranth Soup

½ cup cooked amaranth	2 tablespoons flour
3 cups milk	1 teaspoon salt
2 tablespoons oil	

Put cooked amaranth in blender or press through a colander. Make a white sauce of the remaining ingredients, add the amaranth and reheat. Other wild greens such as lamb's quarters, nettles, etc. may be used.

NUTRITIONAL VALUE: Amaranth is high in protein, calcium, phosphorus, iron, potassium, vitamin A and vitamin C, with an average amount of thiamin, riboflavin and niacin.

DISTRIBUTION: Temperate and tropical. Of 60 species of *Amaranthus*, several are cultivated as a grain crop, others for leaves or both. Seven species are used in India and several in China. For seeds and leaves: *A. blitoides*, W. N. America; *caudatus*, America, tropical Africa, E. India, especially S. America; *hybridus*, temperate; *retroflexus*, temperate; are cultivated. For grain crops: *leucocarpus*, C. America; *paniculatus*, tropical Asia. For shoots or leaves: *gangeticus*, old world tropics; *mangostanus*, India, Japan; *spinousus*, tropics; *thunbergii*, tropical Africa; *viridis*, tropics. *A. grandiflorus*, seeds are eaten by Australian aborigines.

REVIEW: 1. When would you pick amaranth or pigweed for cooked greens?

2. How would you use the seeds?

3. Would you find this plant in other countries?

FOR FURTHER STUDY: How did the Indians of the southwestern United States use amaranth seeds?

PROJECT: Find out how many species of amaranth and *Chenopodium* grow around the world and can be used as food. (Contact Outdoor Eduquip for research materials).



A-17. AMARANTH, *Amaranthus retroflexus*

(IWP 12) A-18, 19 WILD LETTUCE *Lactuca (canadensis, etc.), Sonchus oleraceus*

FAMILY: DAISY, *Compositae*.

IDENTIFICATION: *Lactuca canadensis*: tall, branched, smooth with deeply lobed to lance-shaped leaves. Many pale, small dandelion-like flowers in long narrow clusters, 12-20 florets. Prickly lettuce, *Lactuca scariola*: with prickly leaves and lower stem. Flowers yellow to bluish. *L. hirsuta*: similar but red or purplish stems and flower bracts. *Sonchus oleraceus*: smooth bracts and stalks and sharp pointed lobes where the leaves surround the stem.

HABITAT: Yards, thickets, roadsides, clearings in woods.

SEASON: Spring and summer.

EDIBLE PARTS: Tender leaves.

PREPARATION FOR FOOD: Collect leaves when very young. They can be used in salads, but are best cooked as a potherb. Be sure to start the leaves cooking in boiling water as the leaves are somewhat bitter. Cook 10-15 minutes. Change water if necessary.

RECIPE:	Wilted Wild Lettuce
1 medium onion	lemon juice
2 tablespoons oil	salt to taste
1 pound wild lettuce leaves, chopped	

Saute onion in oil until clear. Then add chopped wild lettuce leaves. Cover pan and shake until lettuce leaves are coated with oil. Cook only until they are heated through. Add lemon juice and salt and serve hot.

NUTRITIONAL VALUE: *Lactuca sativa* contains a good percentage of calcium (62 mg) and fair amounts of phosphorus, vitamins A, C, and other vitamins.

DISTRIBUTION: *Lactuca*, 100 species, chiefly of temperate Eurasia. *L. sativa*, a cultigen, cultivated universally in several common varieties since B. C. is probably derived from *L. scariola* of Asia Minor (prickly lettuce). *Sonchus*, 50 species in Eurasia, Mediterranean, tropical Africa, Atlantic islands, N. America, Australia.

REVIEW: 1. How do you differentiate wild lettuce (*Lactuca sp.*) from sow thistle (*Sonchus oleraceus*)?
2. When would these plants be good to eat raw?
3. How could they be used when mature?

FOR FURTHER STUDY: Look up the various dandelion-like plants and describe their differences (*Sonchus*, *Tussilago*, *Krigia*, *Taraxacum*, *Tragopogon*, *Crepis*, *Lapsana*, *Hieracium*, etc.). (See Peterson, etc.)

PROJECT: Make drawings of the leaves of various kinds of wild lettuce.



A-18. WILD LETTUCE, *Lactuca canadensis*



A-19. SOW-THISTLE, *Sonchus oleraceus*

FAMILY: PINK, *Caryophyllaceae*.

IDENTIFICATION: Flower petals are so deeply cleft that flowers often appear to have 10 petals. Common chickweed (*Stellaria media*): short ovate leaves on long stalks (petioles). Petals shorter than sepals. Star chickweed (*Stellaria pubera*): leaves fairly broad, most not stalked, elliptic to 3 inches. Petals cleft $\frac{1}{2}$ or more. Field chickweed (*Cerastium arvense*): broad petals notched less than half length and short sepals.

HABITAT: Common: yards, waste places, roadsides. Star: woodlands. Field: grassy or rocky places.

SEASON: Year round

EDIBLE PARTS: Leaves and stems.

PREPARATION FOR FOOD: Leaves are very good in salads. This is a mild flavored plant and makes a fine potherb. Cook quickly (about 3 minutes) in a little salted water.

RECIPE:

Chickweed Bread

2 cups chopped chickweed leaves and stems	1 teaspoon salt
$\frac{1}{4}$ cup minced onion	3 cups flour ($\frac{1}{2}$ whole wheat may be used)
2 tablespoons oil	$\frac{3}{4}$ cup warm water
2 tablespoons honey	1 package yeast

Saute onion and chickweed in oil until tender, not brown. Dissolve yeast, honey and salt in water. Mix with chickweed and slowly add to flour, working until it no longer sticks to fingers. Form into a ball. Let stand until double in bulk. Shape into loaves. Let rise. Bake at 375° 40-45 minutes.

OTHER USES: Some people use a tea from the steeped herb to control diarrhea.

NUTRITIONAL VALUE: Chickweed was an important antiscorbutic because it could be obtained in the winter in temperate areas. Chickweed is very high in Vit. C. and is an excellent herb for curing cancer.

DISTRIBUTION: *Stellaria*: cosmopolitan, 120 species. *S. media*: temperate regions of the world.

REVIEW: 1. How is chickweed used for food?

2. Can it be found in winter in your area?

3. Is it ever used medicinally?

4. How many plants have we found in the yard for food?

FOR FURTHER STUDY: Look up the other chickweeds and sandworts to compare their appearance with common chickweed.

PROJECT: Make a tossed salad of chickweed and the other plants of the yard studied in Part I. Chop them fine and add your favorite dressing.



A-20. COMMON CHICKWEED, *Stellaria media*

Part II

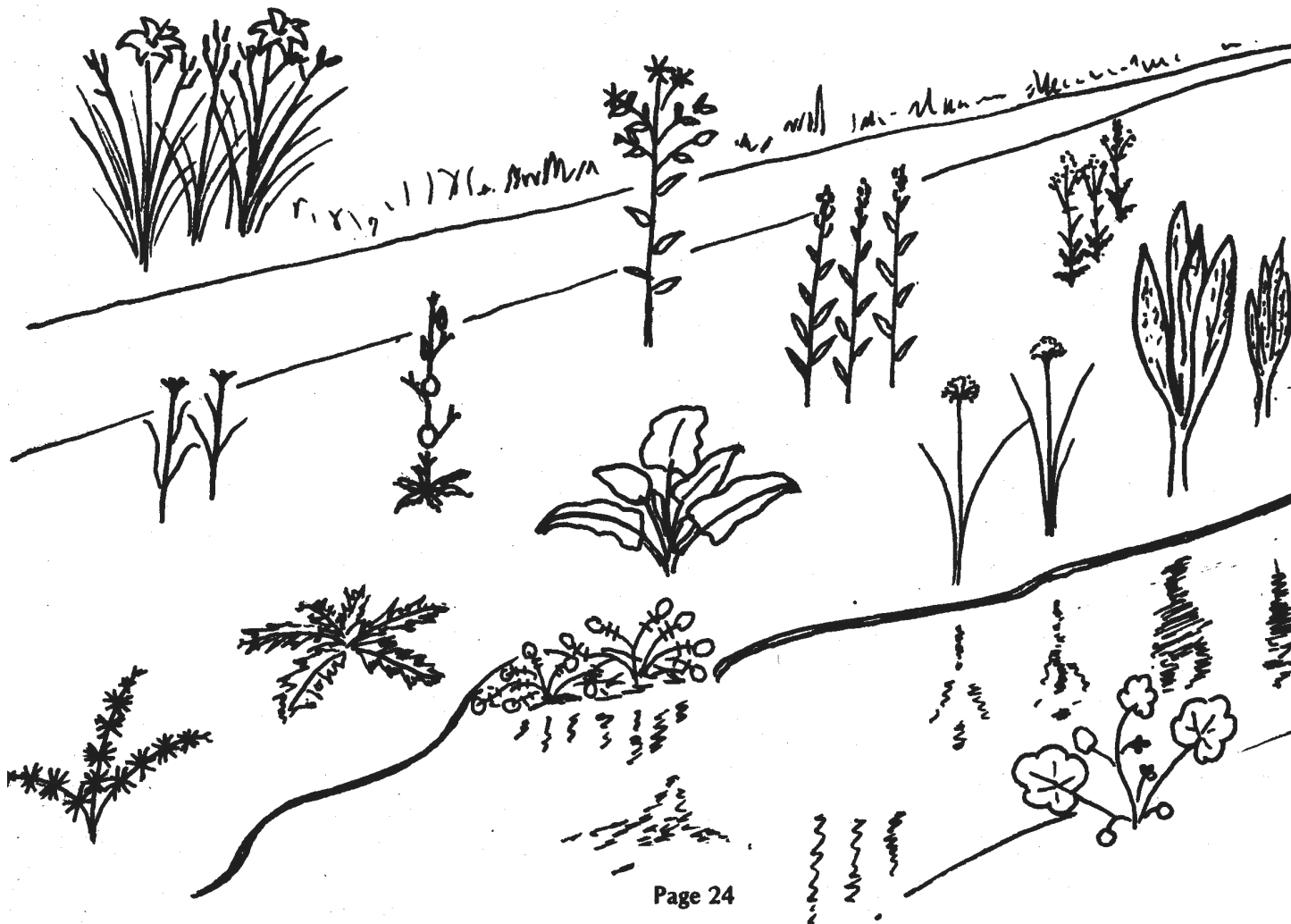
PLANTS OF WAYSIDES AND MEADOWS

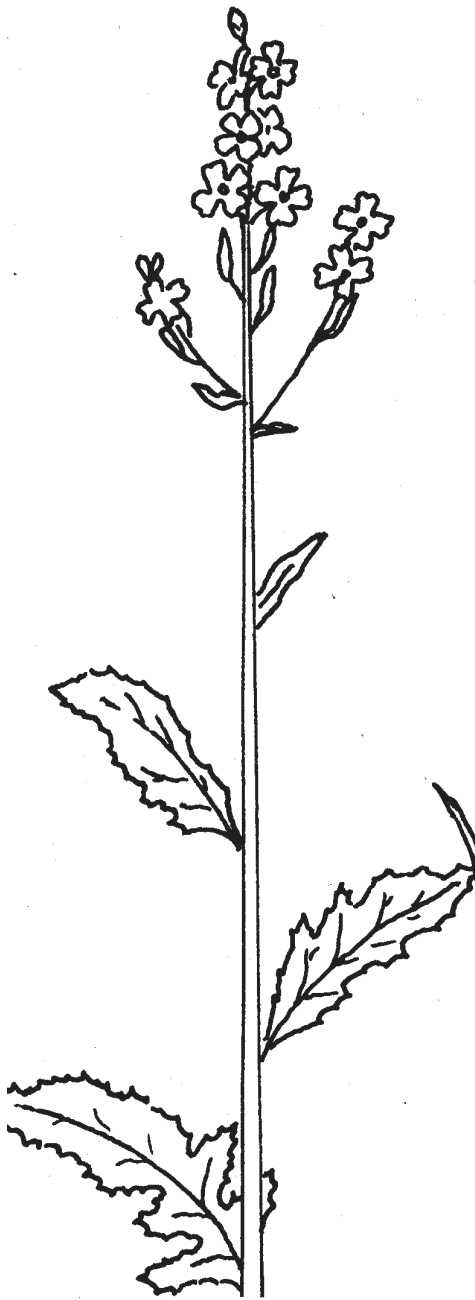
As we hike farther out along the streams and country roads we find more than a dozen good plants to eat. Bedstraw or cleavers and stinging nettles are easily identified, even in the dark! But these clinging and stinging plants melt down like any other greens when cooked and are very good. Nettles are very rich in protein and really are very delicious. Of these plants described in detail in the following pages a number have edible underground parts, so have your knife handy.

The new plants added to this section, wild mustard, wild salsify, pokeweed, mallow, and cornsalad, all carry special surprises. Wild mustard not only provides a good potherb, but the seeds, used often as a condiment, are 23% protein and 39% fat. Wild salsify, often called oyster plant, has a globular seed-head like a giant dandelion and a good edible root similar to cultivated salsify.

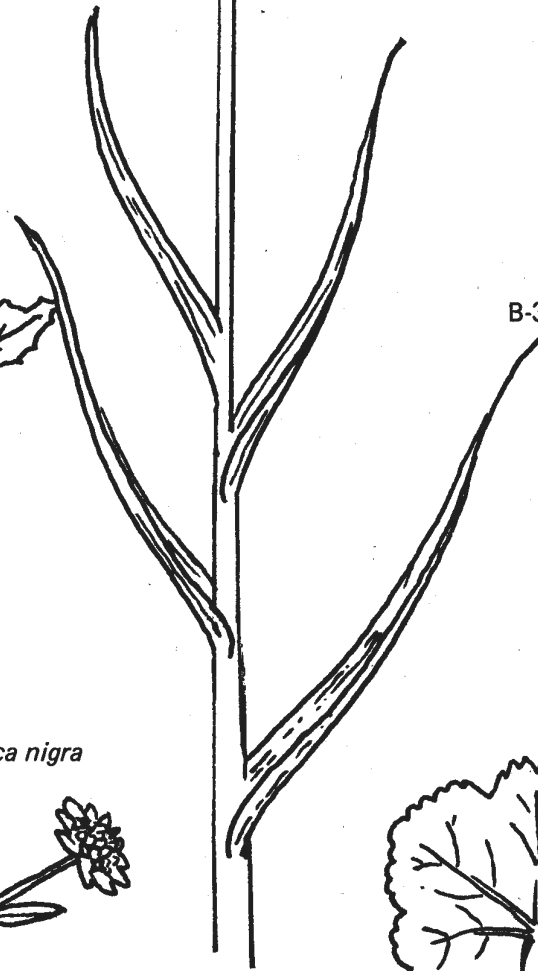
Pokeweed must never be eaten raw. It becomes more toxic as it matures. Eat only the young plants after parboiling. The roots become extremely toxic, but the fruits are eaten by some people, while others they make sick.

The little common mallow has a miniature "cheese" in each mature fruit, and these have provided an interesting nibble for children in years gone by. Children today should be reacquainted with such natural tidbits.





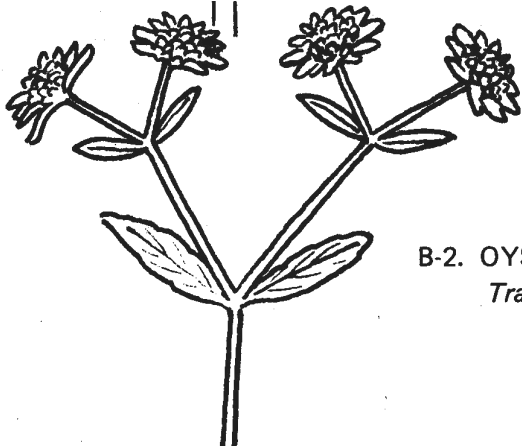
B-1. BLACK MUSTARD, *Brassica nigra*



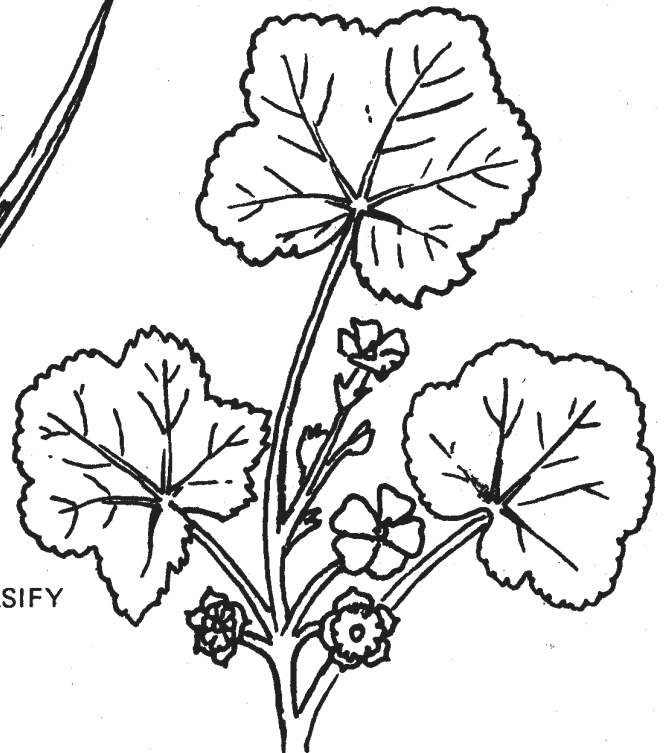
B-2. OYSTER-PLANT, SALSIFY
Tragopogon porrifolius



B-3. POKEWEED, *Phytolacca americana*



B-5. CORN-SALAD, *Valerianella olitoria*



B-4. COMMON MALLOW, *Malva neglecta*

(IWP 14)

B-6

BEDSTRAW, CLEAVERS *Galium* (*aparine*, etc.)

FAMILY: BEDSTRAW, *Rubiaceae*.

IDENTIFICATION: Leaves in whorls (of 8). Flowers in clusters, weak reclining square stems. Tiny flowers usually have 4 lobes. Scratchy recurved prickles on stems. Flowers on stalks rising from leaf axils. Fragrant bedstraw has leaves in whorls of 6 and is smooth stemmed, (*G. triflorum*).

HABITAT: Reclines on plants in thickets, fields, waste places, etc.

SEASON: Summer.

EDIBLE PARTS: Stems, leaves, seeds.

PREPARATION FOR FOOD: It has been said that cleavers is the reducing herb! Use the leaves and stems raw in salad or boil 3 minutes in salted water. Seeds may be roasted and crushed and used as a coffee substitute.

RECIPE: Steamed Cleavers (Bedstraw)

Gather the whole herb when very young. Wash and place in colander or steamer over boiling water and steam for about 5 minutes. Season and use as a potherb or chill and use in a salad. Cleavers may be substituted for chickweed in the chickweed salad recipe.

OTHER USES: Fragrant bedstraw was thought to have been used in the manger at Bethlehem and therefore used as mattress ticking. Leaves and stems make an improvised strainer.

NUTRITIONAL VALUE: A good source of calcium.

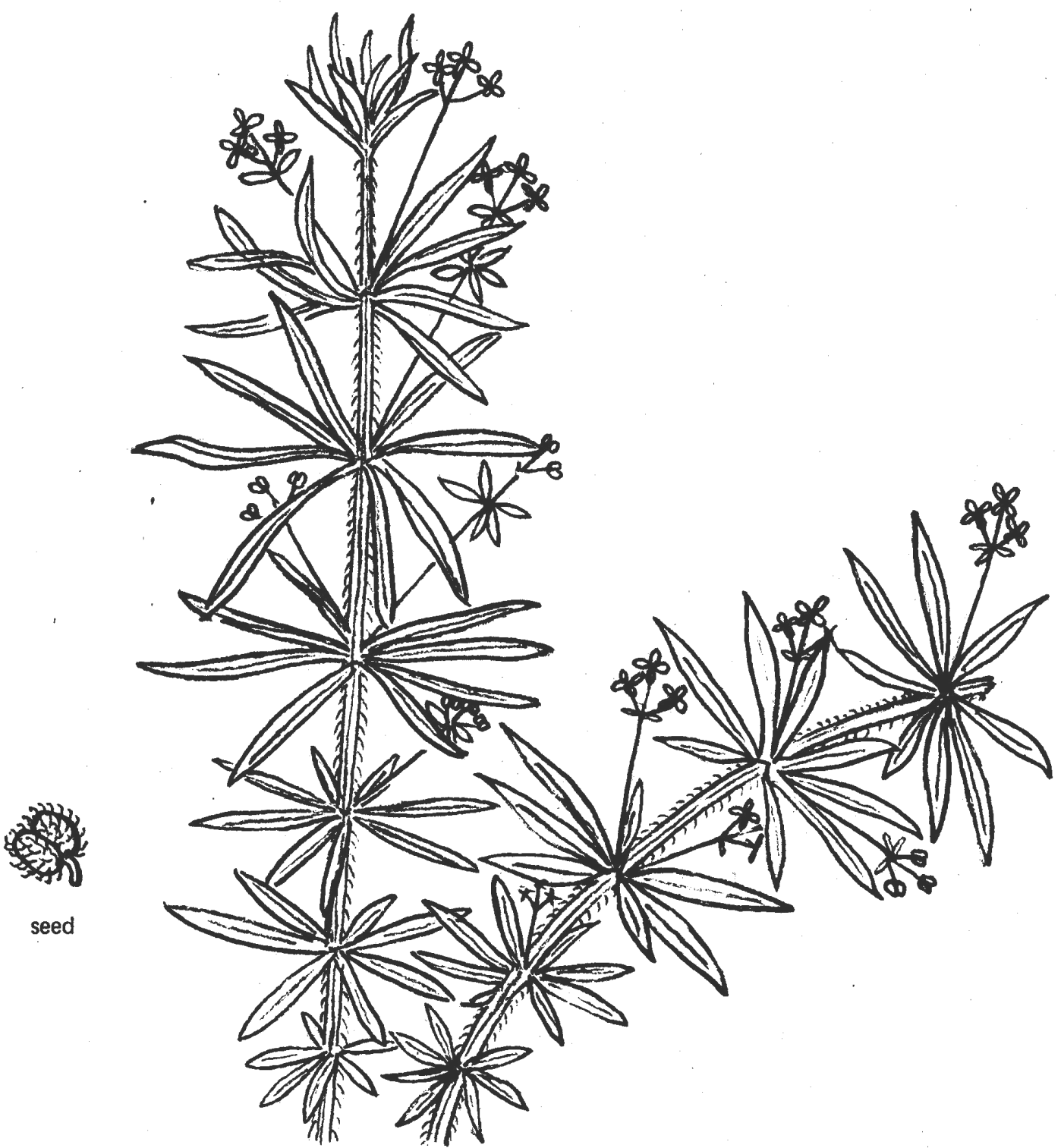
DISTRIBUTION: The 400 species of *Galium* are cosmopolitan. Some are medicinal. *G. aparine*: Europe to Siberia, N. and S. America, S. Africa. Dried fruits sometimes used in Sweden and Ireland as a coffee substitute. *G. odorata*: Europe to Siberia, N. Africa. Contains coumarin. *G. verum*: Europe, Asia Minor to Caucasus, E. N. America. Used for mattress ticking, red dye, juice to curdle milk.

REVIEW: 1. Is it possible to eat prickly cleavers in a raw salad?

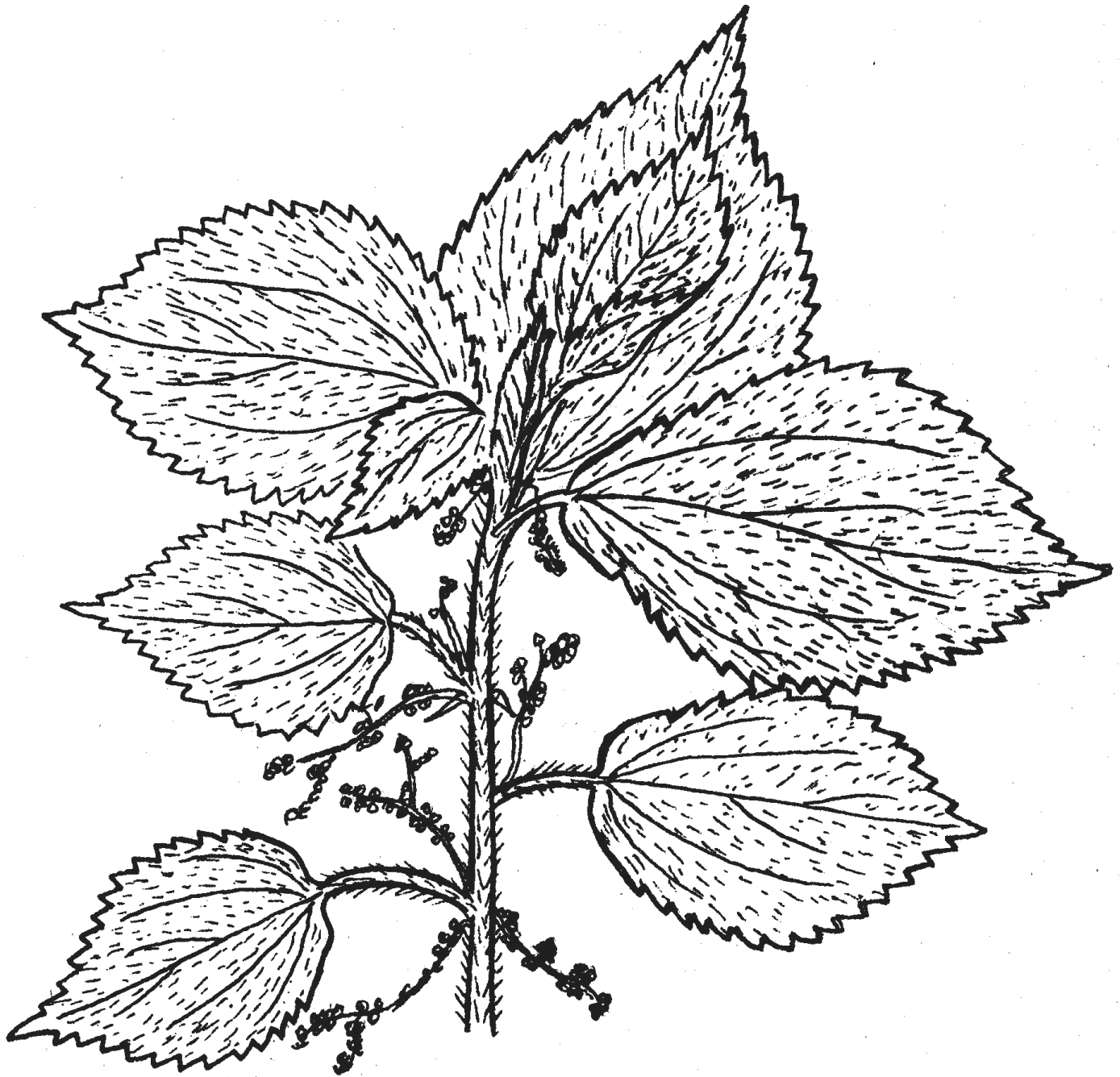
2. What other use was made of fragrant bedstraw?

FOR FURTHER STUDY: Look up information on all bedstraws in your area and list the dozens of species found worldwide.

PROJECT: Add to the opposite page drawings of other bedstraws. (Start with Peterson, page 41.)



B-6. CLEAVERS (BEDSTRAW), *Galium aparine*



B-7. STINGING NETTLE, *Urtica dioica*



B-8. WATERCRESS
Nasturtium officinale

FAMILY: DAISY, *Compositae*.

IDENTIFICATION: Straight rigid stem with blue stalkless flowers. Petals (rays) blue, sometimes white or pink, square-tipped, fringed, closed by noon. Note dandelion-like basal leaves.

HABITAT: Roadsides and fields.

SEASON: Summer.

EDIBLE PARTS: Basal leaves, root.

PREPARATION FOR FOOD: Gather leaves when very young. Boil in salted water 8-10 minutes. The white underground parts of the leaves can be used in a green salad. The roots can be used as a coffee substitute.

RECIPE: Chicory Brew

Dig the roots in the autumn, winter, or spring. Clean and roast before a slow fire or in a low oven until they are brown and quite brittle. Break into small pieces and grind as you would coffee beans. Brew like coffee. This "coffee" contains no caffeine, but is somewhat strong and bitter.

WINTER GARDEN: Such roots as chicory, dandelion, nettle, poke, dock, and sorrel can be grown in your cellar during the winter months for fresh greens. Dig the roots and put them in a box filled with good soil. Leave the boxes outside until after a hard freeze. Barely cover the root crowns, put in a warm, dark part of your cellar and keep watered. In a few weeks you will have a nice crop of salad greens and potherbs.

NUTRITIONAL VALUE: Strong in potassium and vitamins A and C, chicory also contains fair amounts of other nutrients.

DISTRIBUTION: *Cichorium intybus*, Europe and the Orient. Cultivated since the 16th century. Spread to North America, etc. *Cichorium endivia* (endive) of similar distribution is also cultivated as a salad plant.

- REVIEW:**
1. What is the common use of chicory root?
 2. What part may be cooked as greens?
 3. Describe the variation in flower color.

FOR FURTHER STUDY: What relatives of chicory are edible?

PROJECT: Make some chicory coffee and serve to group.



B-9. CHICORY, *Cichorium intybus*

FAMILY: EVENING PRIMROSE, *Onagraceae*.

IDENTIFICATION: Tall plant with pink flowers with 4 roundish petals, drooping flower buds, and reddish slender seed pods angling upward. Leaves alternate on 3-7' stalk. Other *Epilobiums* similar, but variable.

HABITAT: Clearings, burned-over areas.

SEASON: Spring or late autumn.

EDIBLE PARTS: Young stems and leaves, pith in stems.

PREPARATION FOR FOOD: Collect the young stems and leaves while they are in the shoot stage. Cook like asparagus for 15 minutes. May be added to soups and stews. The pith in the stem can be used to thicken soups.

RECIPE:

Baked Fireweed Shoots on Toast

2 cups fireweed shoots
1 teaspoon salt
6 slices buttered toast
1 hard cooked egg

1 tablespoon minced parsley
1 cup medium white sauce
3 tablespoons bread crumbs

Boil fireweed shoots in salted water for 15 minutes or until tender. Place toast slices in greased baking dish. Drain shoots and spread on toast. Chop the hard cooked egg and add that and the parsley to the white sauce. Pour over the shoots. Sprinkle bread crumbs over the sauce and bake 10 minutes in a moderate oven to brown the crumbs.

DISTRIBUTION: Subarctic to temperate, Europe, Asia, N. America. *Epilobium*, 215 species, is N. and S. Temperate, Arctic.

REVIEW: 1. What parts of the fireweed are edible?

2. Where will it be found?

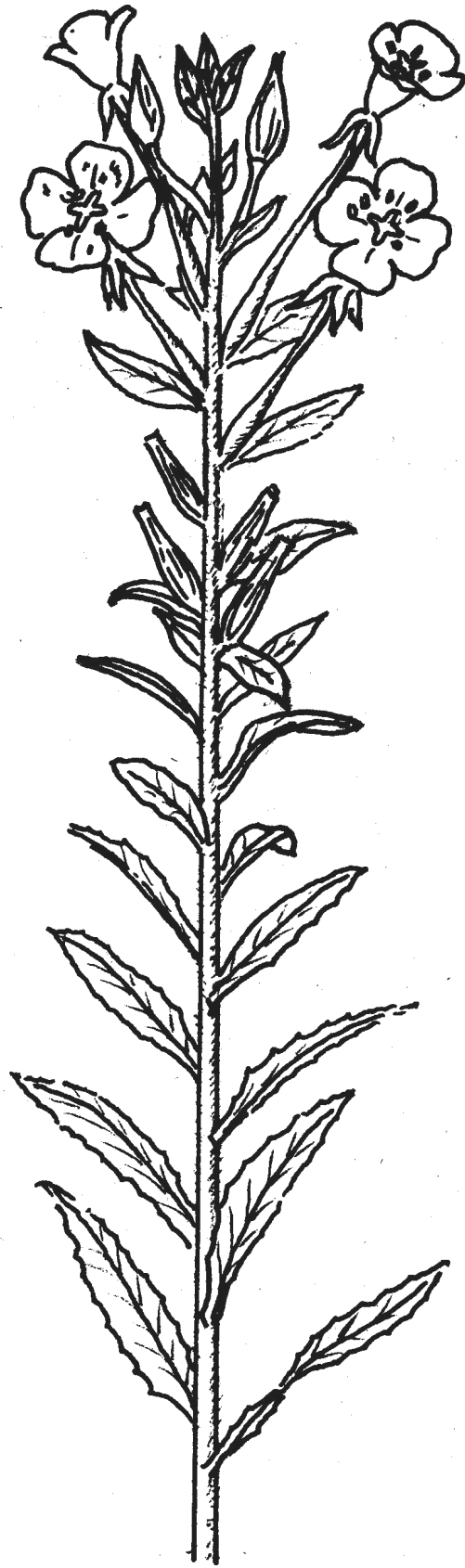
3. How far north does it grow?

FOR FURTHER STUDY: What other *Epilobiums* grow in your country? Are they edible?

PROJECT: Find out why fireweed grows in fire desolated areas, making them appear to flame again.



B-10. FIREWEED, *Epilobium angustifolium*



B-11. EVENING-PRIMROSE, *Oenothera biennis*

(IWP) B-12, 13 THISTLE *Cirsium (vulgare, etc.) Carduus spp., Onopordum sp.*

FAMILY: DAISY, *Compositae*.

IDENTIFICATION; Spiny leaves and showy brush-like flowers, some with spiny stems.

HABITAT: Fields, waste places, varying with species.

SEASON: Spring, summer.

EDIBLE PARTS: Young rosettes, stems, roots, and meat in flower base.

PREPARATION FOR FOOD: The tender young leaves can be used as a potherb or in salads if the spines are removed. The denuded stalk can be used as a celery substitute in soups, casseroles, or raw in salads. The "meat" at the base of the flowerhead makes a delicious nibble. The roots can be eaten raw or boiled like carrots. The flavor is a bit flat but they are quite nutritious.

RECIPE:

Thistle Casserole

4 cups thistle stems	1½ tsp. chicken style seasoning
3 tablespoons margarine	½ cup wild nuts, chopped fine
3 tablespoons flour	1 cup cracker or bread crumbs
2 cups milk or cream	salt to taste

Peel outer layer of thistle stem, and cut in diagonal slices. Put in pan and cover with boiling water. Boil for a few minutes or until tender. Drain. Make cream sauce by melting margarine, blending in the flour, and gradually adding the milk. Add seasoning, chopped nuts, and 2/3 cup cracker crumbs to the cream sauce and pour over the cooked thistle which has been placed in a casserole. Sprinkle the remaining crumbs on top. Bake 20 minutes in a 375° oven or until brown.

OTHER USES: Tough fibers of stems can be twisted into a good twine.

NUTRITIONAL VALUE: Roots contain starch.

DISTRIBUTION: *Cirsium*, 150 species, north temperate. *C. arvense*, Europe, N. America; *C. drummondii*, W. N. America-roots; *C. edule*, W. N. America-peeled stems; *C. japonicum*, China, Japan, Vietnam-stem, leaves; *C. ochrocentrum*, Nebraska to Texas-roots, stems; *C. oleraceum*, Europe-Siberia-young plant; *C. pallidum*, S. W. USA-fruits; *C. tuberosum*, Europe-roots; *C. undulatum*, N. America-roots.

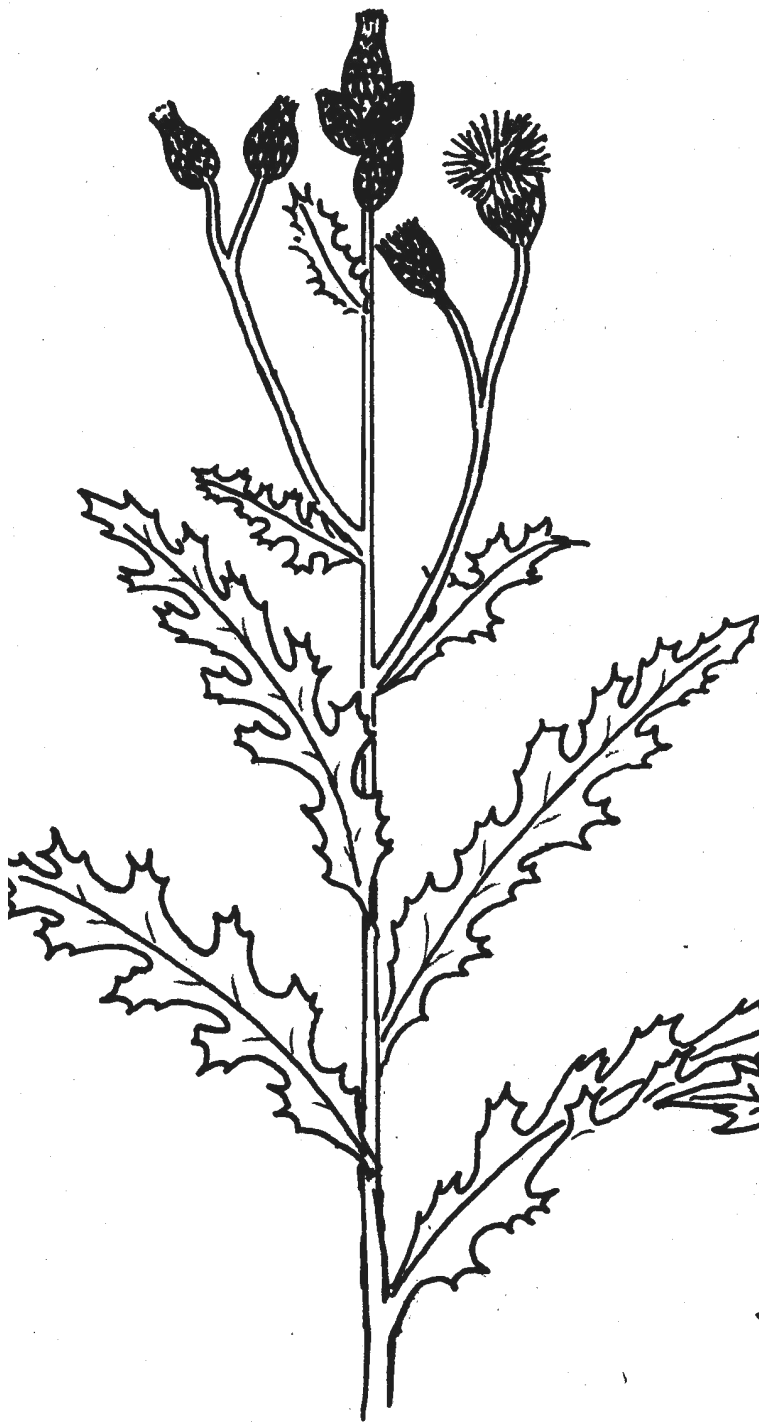
REVIEW: 1. How would you prepare thistle stems and leaves for food?

2. Is the root edible raw? Cooked? Is the flower edible?

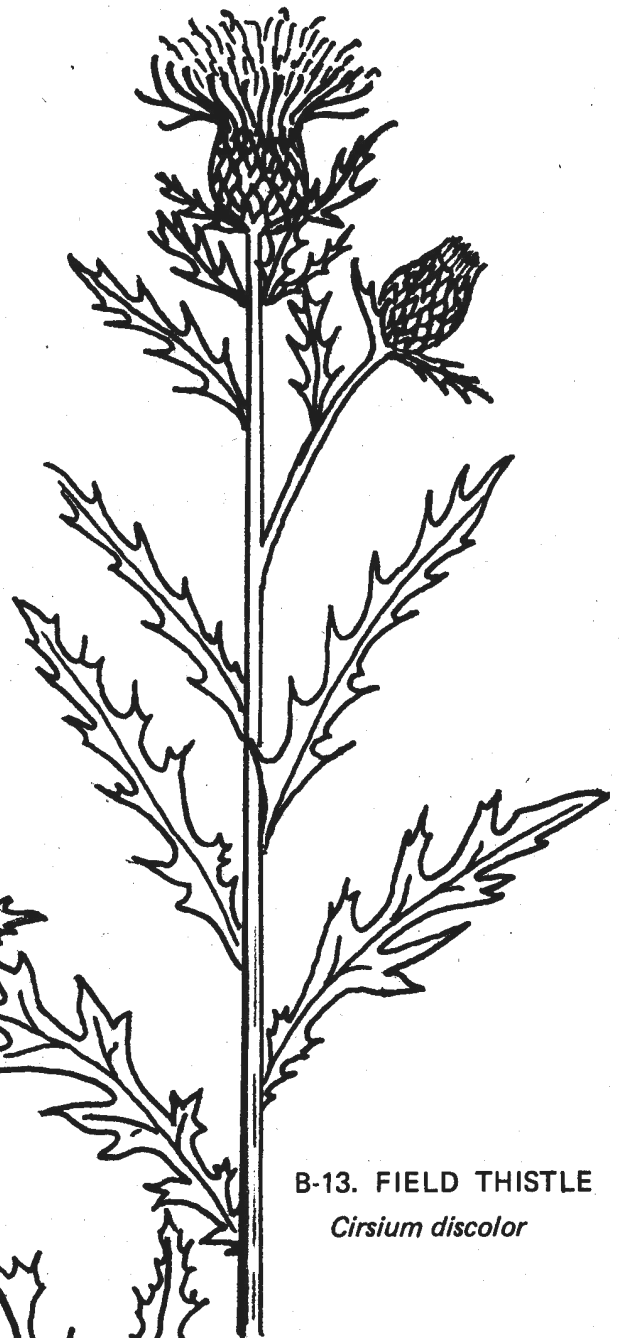
3. Do all thistles have spiny stems?

FOR FURTHER STUDY: According to the Bible, were there thistles in the Garden of Eden? (See Genesis 3:17-19.)

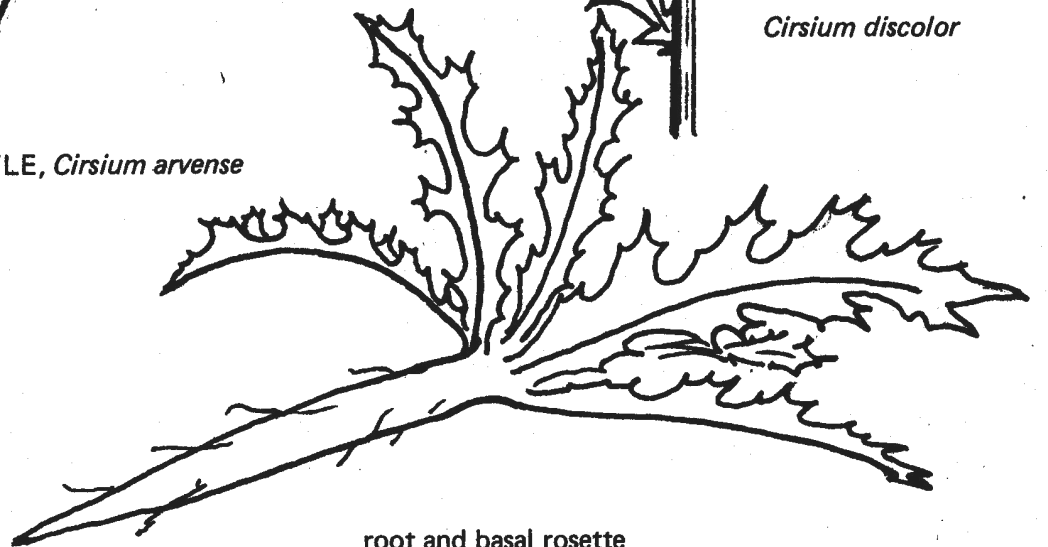
PROJECT: Dig up several kinds of thistle and wash and dice the roots and see which kind you prefer raw or cooked. (Use lush plants only).



B-12. CANADA THISTLE, *Cirsium arvense*



B-13. FIELD THISTLE
Cirsium discolor



root and basal rosette

(IWP 21) B-14, 15, 16 WILD ONION *Allium* spp.

FAMILY: ONION, *Alliaceae*.

IDENTIFICATION: Wild onion, *Allium stellatum*: grass-like leaves, showy umbel of 6-point lavender flowers, strong smelling bulb. To two feet high. Wild garlic, *Allium canadense*: topped with bulblets mixed with few pink or white flowers or none. Spathe at base of umbel three-parted. Wild leek: *Allium tricoccum*: broad flat leaves in twos and threes, die before white umbel of flowers appear. Bulbs consist of large cloves with onion-garlic aroma.

HABITAT: Wild onion, *Allium stellatum*: rocky soils and prairies and shores. Wild garlic, *Allium canadense*: meadows, openings. Wild leek, *Allium tricoccum*: rich woods and thickets. Field garlic, *Allium vineale*, central temperate lawns and fields.

SEASON: Spring, summer.

EDIBLE PARTS: Bulb, leaves.

PREPARATION FOR FOOD: The bulbs and leaves can be used raw in salads or cooked in soups and used as a seasoning. They have a strong flavor and odor, so do not overdo.

RECIPE: Glazed Wild Onions

2 cups wild onions	½ stick margarine
1 cup bouillon broth	2 tablespoons sugar

Simmer onions in bouillon broth in covered pan until nearly tender. Drain off all but 3 tablespoons of liquid. Add margarine and sugar. Simmer, uncovered, for about 20 minutes, basting and stirring gently occasionally.

OTHER USES: Both domestic and wild onions were once used as a relief for colds and sore throat as well as a tonic and worm cure. Garlic has been recommended for people with high blood pressure.

CAUTION: Toxic false hellebore shoots have been mistaken for wild leeks and eaten with fatal results. Death camas with cream-colored blossoms has bulb-shaped corms which could be confused with *Allium*.

NUTRITIONAL VALUE: *Allium canadense* is fairly rich in phosphorus, has a fair amount of calcium and 45 calories per 100 grams--similar to dandelion.

DISTRIBUTION: *Allium* boasts 450 species in north and south temperate regions. *Alliaceae*, with 30 genera and 600 species are cosmopolitan (except Australasia). These comprise bulbous and rhizomatous herbs in three major groups. *Allium cepa*, onion, probably originated in Persia and has produced several cultivated popular varieties.

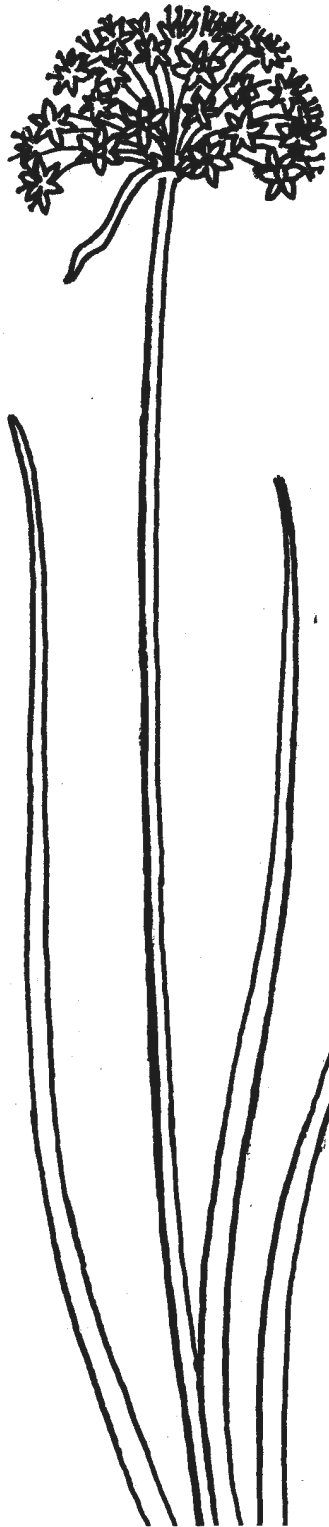
REVIEW: 1. What is the difference in appearance between wild onion and wild leek?

2. What two toxic plants could be mistaken for wild onion or leek?

3. What *Allium* is common in lawns and pastures?

FOR FURTHER STUDY: What wild onions, leeks and garlic grow in your area?

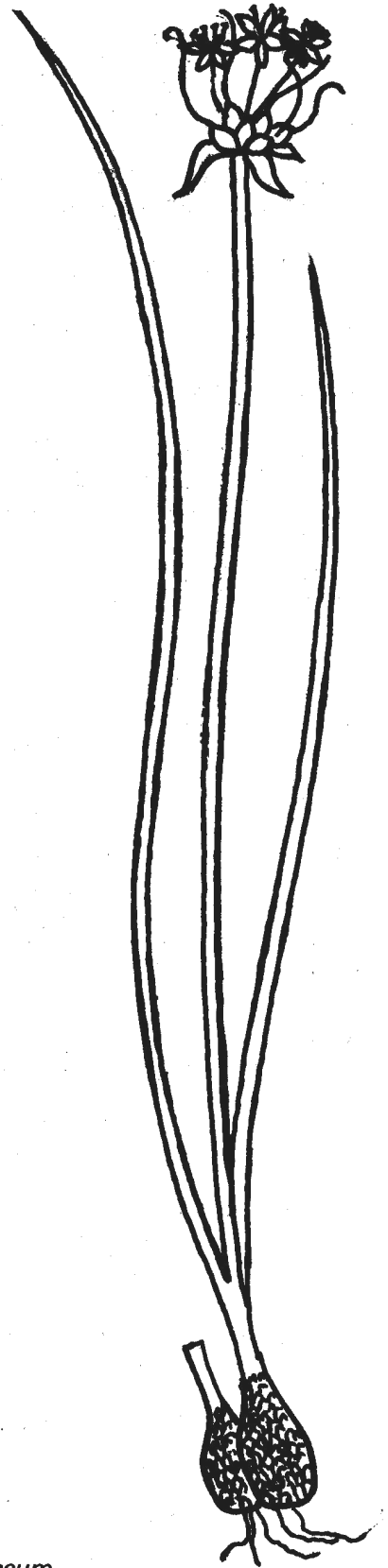
PROJECT: Make a report on the remedial properties attributed to onions and garlic in Indian herbal medicine and folk lore.



B-14. WILD ONION, *Allium stellatum*



B-15. WILD LEEK, *Allium tricoccum*



B-16. WILD GARLIC, *Allium canadense*



B-17. COMMON BURDOCK, *Arctium minus*



flowers, burs

FAMILY: MILKWEED, *Asclepiadaceae*

IDENTIFICATION: Broken stems exude thick milky juice. Rounded clusters of unique flowers, long pointed seed pods. *Asclepias syriaca* is stout, downy, with globular flower clusters mostly in the leaf axils. Seed pods are warty.

HABITAT: Roadsides, fields, dry areas.

SEASON: Summer.

EDIBLE PARTS: Shoots, flower buds (broccoli), stalks, flowers, green pods.

PREPARATION FOR FOOD: Use the young shoots and tender tops before the plants start forming flower buds. These tender tips can be picked a number of times throughout the summer if the plant is not allowed to bloom. Cover shoots with boiling water as they tend to be bitter. Change water if necessary. The flower buds can be cooked and served like broccoli. The stalks are very delicate. Dice and cook like peas or steam in lengths like asparagus. Gather pods while young and green. Cook in boiling salted water 15-20 minutes, changing water if bitter. The flower cluster can be dipped in a batter and fried or a syrup can be made from the blossoms.

RECIPE: Milkweed Stalks (or Pods) and Onions in Sour Cream

1 pound peeled milkweed stalks (or pods)	1 cup sour cream
8 wild onions or 1 medium onion	1 teaspoon lemon juice
4 tablespoons oil	1 teaspoon salt

Simmer onion in oil until golden brown. Stir in the milkweed stalks (or pods) which have been finely chopped. Cook over medium heat for 10 minutes or until tender. Add the sour cream, lemon juice and salt. Cook (do not boil) until sour cream is heated through. Garnish with chopped parsley.

OTHER USES: A number of species of *Asclepius* have latex used as chewing gum by local Indians, e.g., *A. decumbens*, *eriocarpa*, *involucrata*, *speciosa*, and *syriaca*. Roots or latex of some is used medicinally, e.g., *A. curassavica*, *incarnata*, *linaria*, etc. The latex has been used to cure warts and ringworm infection. The tough fibers of mature stalks were used by the Indians to make string and rope and for coarse weaving. The fluff from the seed pods can be used for insulation.

CAUTION: Beware of dogbane with reddish stems, individual flowers, and slender pods. The juice of *A. linaria* is a violent purgative. Other species may also be toxic.

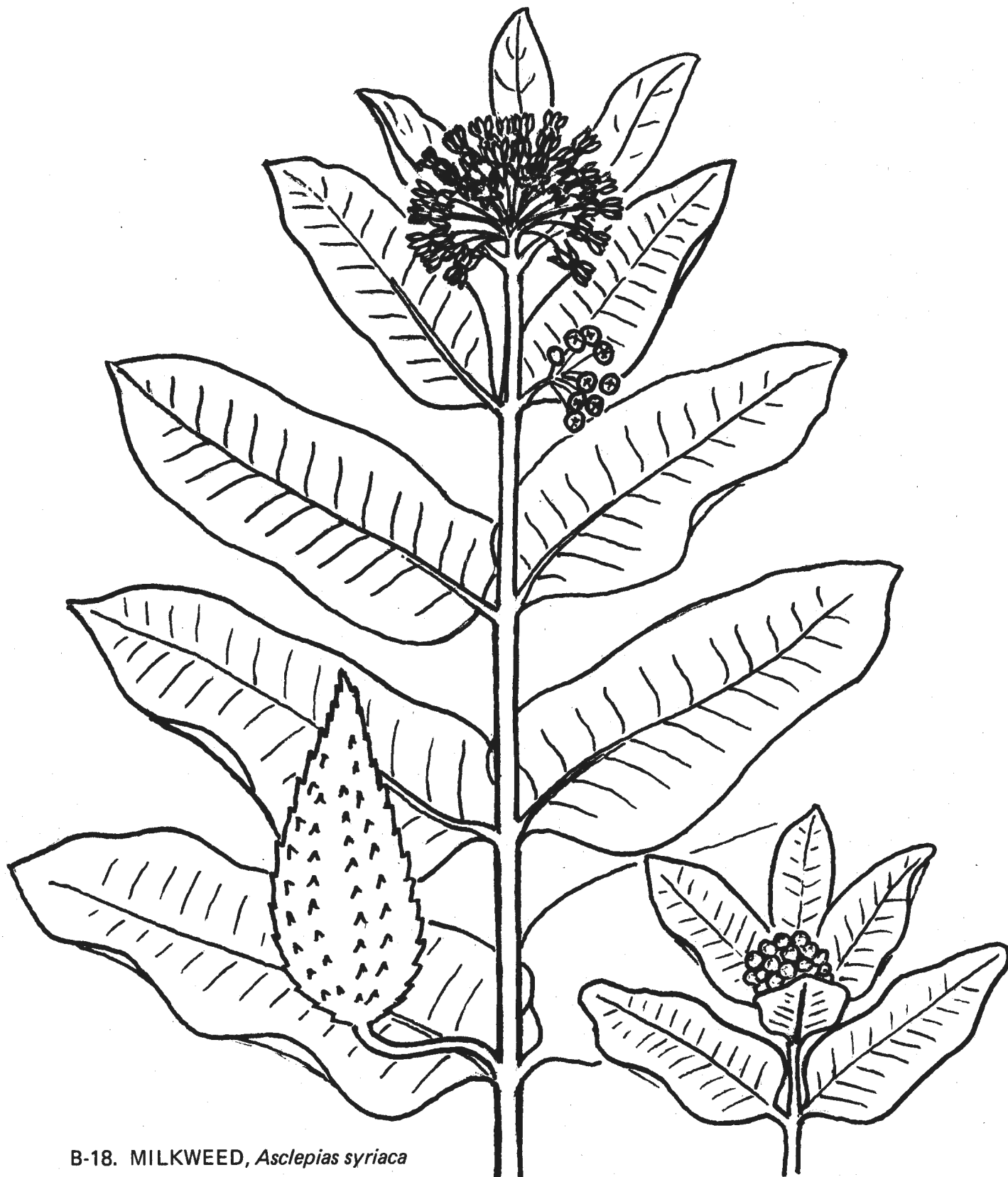
NUTRITIONAL VALUE: *Asclepias syriaca* seeds are reported to contain 20% edible oil.

DISTRIBUTION: *Asclepias*, 120 species chiefly North America, pantropic, Africa. *A. speciosa* (showy milkweed), *A. syriaca* (common milkweed), *A. tuberosa*, (butterfly weed), and *A. incarnata* (swamp milkweed) are used locally by Indians as vegetables.

- REVIEW:**
1. Name the five edible parts of common milkweed.
 2. When are the pods good? How do you prepare them?
 3. What other use can be made of the stalk?

FOR FURTHER STUDY: How many species of *Asclepias* grow in your country?

PROJECT: Find milkweed plants and use whatever part is ready for food or fiber at this time.



B-18. MILKWEED, *Asclepias syriaca*



tubers

B-19. JERUSALEM ARTICHOKE, *Helianthus tuberosus*

(IWP 29-31) B-20 DAY LILY *Hemerocallis (fulva, flava, etc.)*

FAMILY: LILY, *Liliaceae*.

IDENTIFICATION: Showy, orange to yellow six-petaled, unspotted flowers facing upward, open for one day only. Leafless stem, long sword-like leaves.

HABITAT: Roadsides, banks.

SEASON: Summer (tubers year-round).

EDIBLE PART: Buds, flowers, white stems, tubers.

PREPARATION FOR FOOD: The tender buds may be boiled in salted water 3-5 minutes, and served like string beans. The mature blossoms may be dipped in a batter and fried like squash blossoms. The day lily flower and buds are popular ingredients in Oriental dishes. Add them the last few minutes to soups and stews. They add a delightful gelatinous quality and delectable flavor. These may be dried and stored in an airtight container and used as the fresh flowers and buds. Rehydrate with just enough water to insure complete soaking. The flowers may also be frozen. The hearts (white section at the base of the stalk) may be used as a celery substitute, either raw or cooked in soups, stews, etc. The tubers can be gathered year around and prepared much like small potatoes: boiled, roasted, fried, etc.

RECIPE: Cream of Day Lily Soup

1 cup day lily hearts, diced	1 can evaporated milk
2 tablespoons oil	1 teaspoon chicken style seasoning
1 tablespoon flour	salt to taste
	parsley

Simmer the day lily hearts in oil 7-10 minutes. Sprinkle the flour, salt, and seasoning over the hearts and stir until hearts are covered. Add the milk a little at a time. Bring to a boil, and simmer for a few minutes. Add chopped parsley when ready to serve. Cattail, sedge or grass hearts may also be used.

NUTRITIONAL VALUE: The dried roots contain 9.3% protein, 25% fat, and 60% carbohydrates rich in sugar. The blossoms contain 11% protein and 10% carbohydrate, are rich in vitamin A and contain some vitamin B₁.

DISTRIBUTION: Twenty species of *Hemerocallis* grow in temperate Eurasia, especially Japan, also North and South America. *H. fulva*, Europe, Asia, and North America. *H. minor*, China, Japan.

REVIEW: 1. Which plants have we found in waysides and meadows?

2. How do you distinguish the day lily from the tiger lily (*Lilium tigrinum*)?

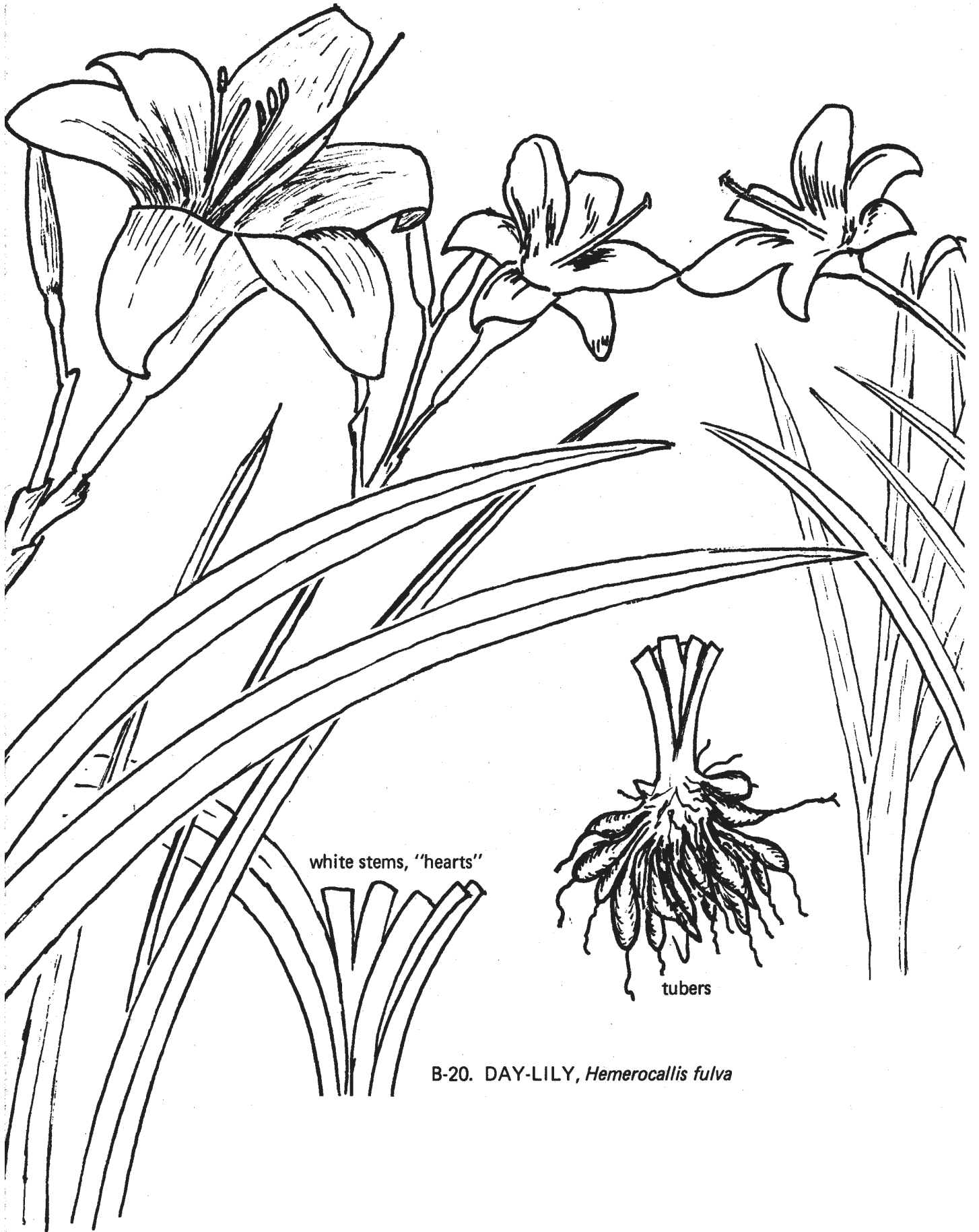
3. Name the four edible parts.

4. In what ways may the stems and tubers be used?

5. In how many seasons would the day lily furnish food?

FOR FURTHER STUDY: Why is the day lily not considered a true lily?

PROJECT: Dig up tubers of day lily and prepare them in four different ways to decide which you like best.



white stems, "hearts"

tubers

B-20. DAY-LILY, *Hemerocallis fulva*

PLANTS OF THE OPEN WOODLAND

As we enter the open forest we find the common violet growing near the shade. Many kinds of violets grow in varying habitats, and they are all valuable plants for food and medicine. Nearby may be the Oxalis or sour grass, sometimes called shamrock, a tasty sour nibble to add to your wild salad.

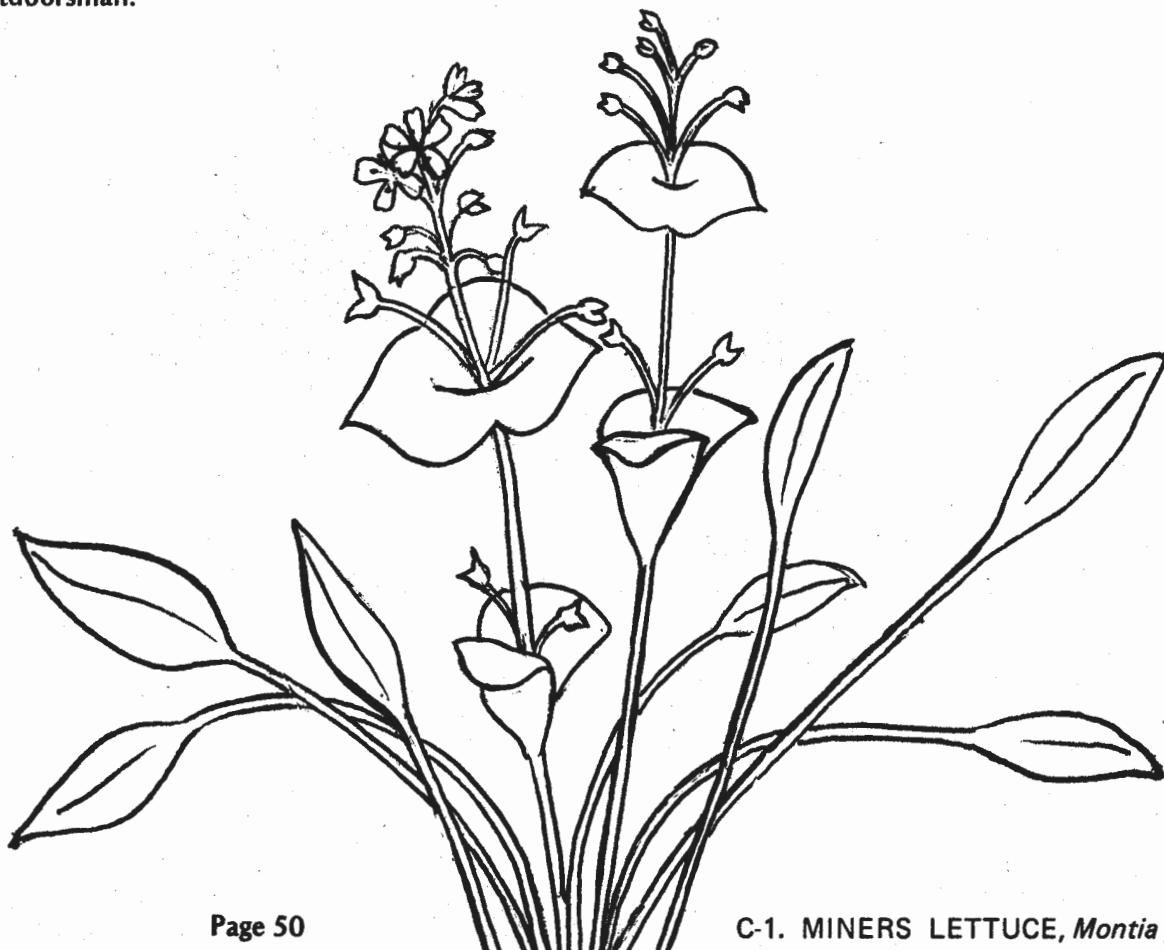
The two favorite edible ferns of the United States and many other countries are the bracken and the ostrich fern--eaten only in the fiddlehead--before the coiled frond matures. It is best not to eat the bracken raw and beware of mature fronds on any fern.

If you eat many roots of *false* Solomon's seal without leaching them, you may have an upset stomach. If so, try some mint tea made by steeping spearmint leaves.

Many of the plants in this section grow only in open places, such as the sumac and elderberry, which are large woody shrubs. The nut trees may be part of the forest.

Also in the woodland openings are four additional plants: miner's lettuce, Indian cucumber, hog peanut, and greenbriar. Miner's lettuce makes a delicious raw salad; Indian cucumber tubers provide a nice addition to the salad; hog peanuts just under the leaves at the base of the vine look and taste like speckled lima beans; and the greenbriar shoots can be added to the salad or cooked like asparagus. The blackish fruits of the greenbriars are edible in fall and winter, and the root has been used by those who can chew wood!

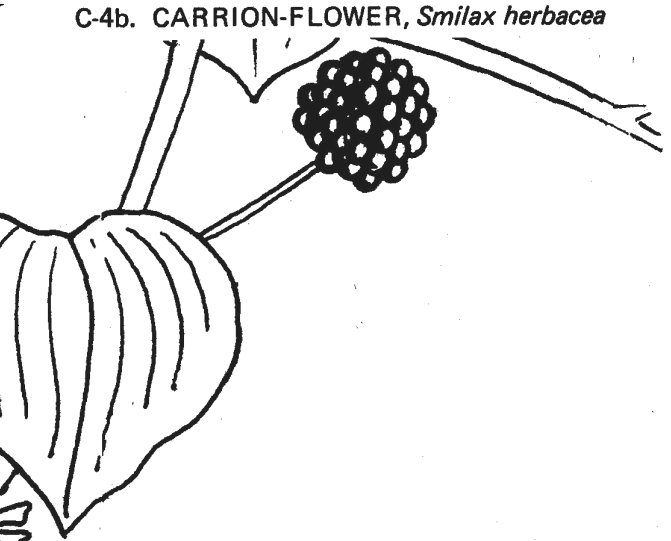
Our twenty plants of the open woodland studied here provide variety and fun for the hungry outdoorsman.



C-4a. GREENBRIAR, *Smilax rotundifolia*



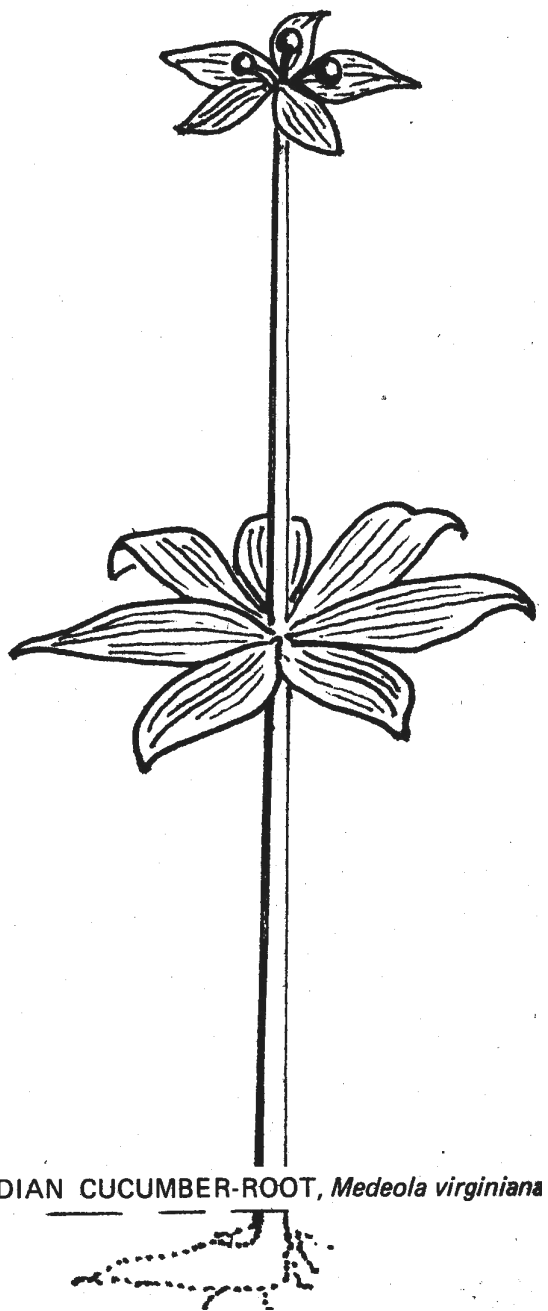
C-4b. CARRION-FLOWER, *Smilax herbacea*



C-3. HOG-PEANUT, *Amphicarpa bracteata*



C-2. INDIAN CUCUMBER-ROOT, *Medeola virginiana*



FAMILY: VIOLET, *Violaceae*.

IDENTIFICATION: Blossom consists of five petals the lowest heavily veined, extending back into a spur. Leaves are heart-shaped in most species. Some lobed or deeply segmented. Low plants resembling small pansies. Stem curved right behind the blossom.

HABITAT: Damp woods, meadows, stream banks or dry soil, varying with species..

SEASON: Spring to summer.

EDIBLE PARTS: Leaves and blossoms.

PREPARATION FOR FOOD: The leaves can be chopped raw in salads or cooked as a potherb. The leaves are commonly used to thicken soups and have been called "wild okra". The blossoms can be used in salads or candied and used as a decoration. An exotic jam, jelly or syrup can also be made from the blossoms.

RECIPE:

**Violet Syrup
(Rose Syrup)**

Fill a jar (any size) with violet flowers (rose petals may also be used). Cover with boiling water. Cover and set aside for 24 hours. Strain and discard the violets. For each cup of violet extract add the juice of ½ lemon and ½-1 cup of sugar, according to taste. Bring to a boil and pour into sterilized jars and seal. May also be frozen.

This syrup can be used on pancakes or poured over hot broiled grapefruit. An interesting beverage can be made by adding 2 tablespoons of the syrup to a glass of water. Violet sherbert can be made by stirring the syrup into a bowl of newly fallen snow until the color and consistency are pleasing.

OTHER USES: *Viola tricolor* (pansy violet) is used in Europe and temperate Asia as an expectorant (decoction of leaves) and the leaves are used to treat skin diseases. A decoction of leaves of *V. odorata* is used to treat coughs.

CAUTION: Some species, such as the yellow violet, should not be used in large quantities for food as they are quite cathartic. Roots are sometimes emetic.

NUTRITIONAL VALUE: The leaves are said to be the richest source of vitamin C among green vegetables, also rich in vitamin A and minerals.

DISTRIBUTION: Cosmopolitan, especially north temperate and many species in the Andes. There are 500 species. *V. cucullata* leaves and flowers have been used in western North America to make soup as an emergency food.

REVIEW: 1. What parts of the violet are edible?

2. What parts would you boil?

3. What is the nutritional content of the violet?

FOR FURTHER STUDY: List every species of violet found in your country, with a brief description if different from the common violet.

PROJECT: Dry some violet leaves in an open oven or food dehydrator and eat crisp with oil and salt, or prepare violet blossom jam. (Use the recipe found with the rose.)



C-5. BLUE VIOLET, *Viola papilionacea*

FAMILY: WOOD SORREL, *Oxalidaceae*.

IDENTIFICATION: Leaves: clover-like arrangement of three inversely heart-shaped leaflets, often folding along the center vein. Acid flavor. Flower: five flaring petals. *Oxalis montana*: white or pink strongly veined with pink. *O. violacea*: rose purple or purplish violet. *O. stricta*: yellow. Some plants are large.

HABITAT: Open soil, moist woods, banks.

SEASON: Spring to summer.

EDIBLE PARTS: Leaves, blossoms, tubers of certain species.

PREPARATION FOR FOOD: The sour leaves make a good addition to raw salads. Raw stems and leaves are a good thirst quencher. An excellent substitute for lemonade is made by boiling the leaves in water for 15 minutes. Cool and strain. Add sweetening. The bulbous roots of some species may be eaten raw or boiled.

RECIPE:

Wood Sorrel Sauce

2 tablespoons oil
 ¼ cup wild onions, finely chopped
 ½ cup flour
 1½ cups beef style bouillon broth

1 tablespoon lemon juice (optional)
 ½ cup wood sorrel leaves (and tubers if available)
 finely chopped
 ½ cup undiluted evaporated milk or cream
 salt to taste

Saute onions in oil until tender. Add flour and cook, stirring constantly, until lightly browned. Add broth and lemon juice and bring to a boil. Simmer until sauce is smooth and creamy. Add wood sorrel leaves and tubers. Stir in the cream and simmer until hot.

CAUTION: Do not use wood sorrel in a large quantity as the plant contains oxalic acid.

NUTRITIONAL VALUE: Rich in vitamin C.

DISTRIBUTION: The 800 species of *Oxalis* are cosmopolitan, especially Central and South America and South Africa. *O. acetosella*, Europe, N. America, and *O. stricta*, N. America to Mexico, leaves are eaten as a vegetable. Tubers are eaten from *O. cernua*, S. Africa; *O. crenata*, Peru; and *O. deppei*, Mexico.

REVIEW: 1. What is the taste of raw leaves of *Oxalis*?

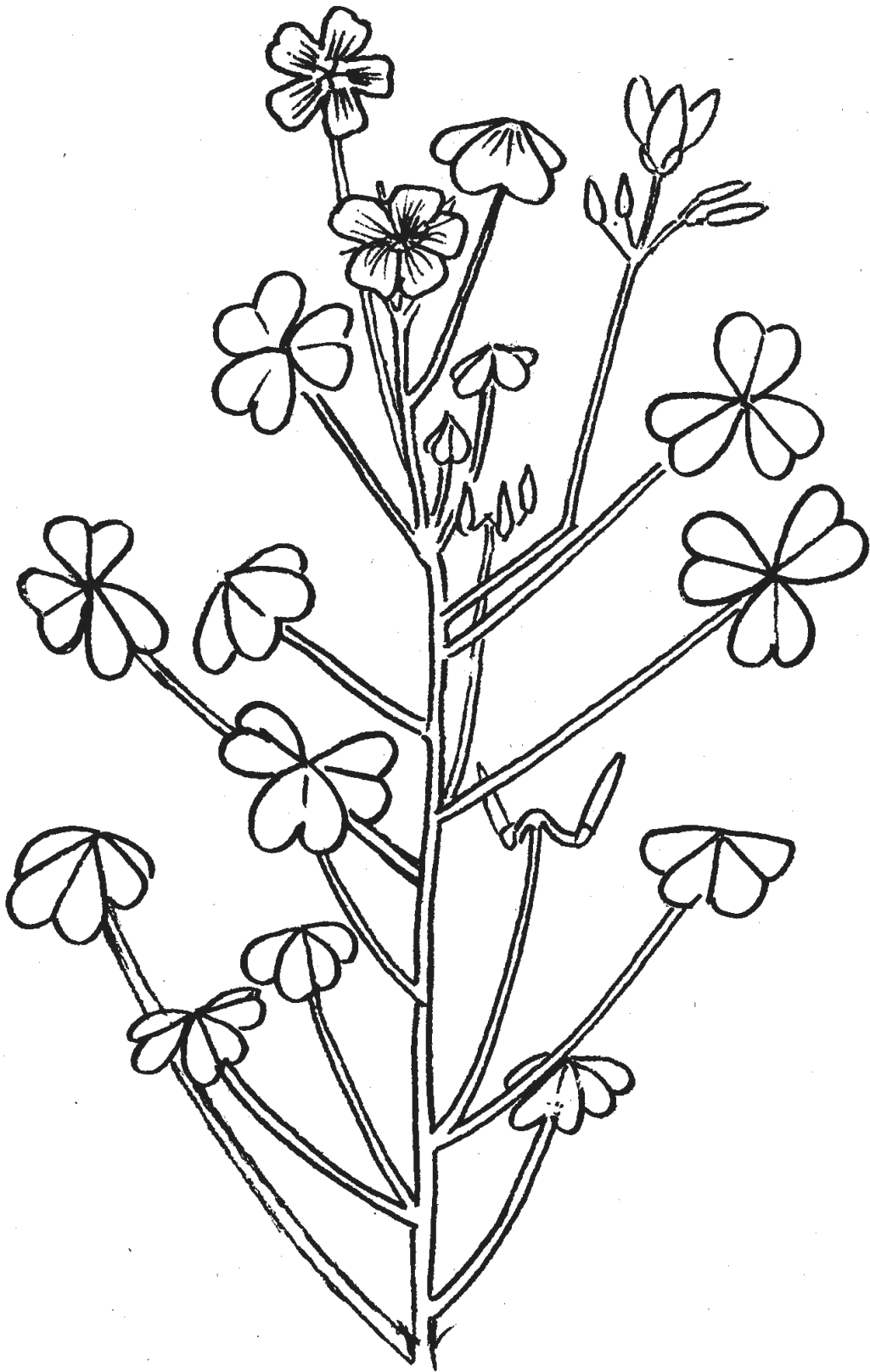
2. How may it be used as food?

3. Where is this plant found?

4. How is it different from clover?

FOR FURTHER STUDY: How much oxalic acid would be considered toxic in plant food?

PROJECT: Make a tossed salad of all the salad plants that you can find that we have studied thus far. (Chop finely and add dressing).



C-6. WOOD-SORREL, *Oxalis montana*

(IWP 34) C-7, 8 FERN FIDDLEHEADS *Pteridium*, *Matteuccia*, etc.

FAMILY: FERN, *Dennstaedtiaceae* (*Pteridium*); *Pteridaceae* (*Pteris*); *Aspidiaceae* (*Matteucia*, 3 sp.)

IDENTIFICATION: Long stalked spore case which breaks at about "4 o'clock". Bracken; *Pteridium aquilinum*: Young shoots (fiddleheads) with three sections uncoiling like a claw, covered with silvery grey hair. Mature fronds in three nearly equal parts, clumps. Ostrich, *Matteuccia struthiopteris*: Fiddleheads in single coil, feather-like as they unroll.

HABITAT: Bracken is the most common fern and is found in dry open woods, burned over areas, and many types of places. Ostrich is found along streams, riverbeds, and swamps and is often associated with false hellebore.

SEASON: Bracken fiddleheads may be found all through the summer in higher elevations. Spring to early summer in lower elevations. Ostrich fiddleheads are found in the spring.

EDIBLE PARTS: Coiled shoot (fiddlehead), root. Root of tropical polypody is large, crisp and sweet.

PREPARATION FOR FOOD: Collect fiddleheads while young and tender and in the coiled stage. After gathering, rub off the wool from the fiddlehead and stem as this contains a bitter substance. Although fiddleheads can be eaten raw sparingly, this is not recommended. Cook fiddleheads as you would asparagus. Change the water if bitter. Add a little lemon juice and margarine when ready to serve. Serve in cream sauce over toast, use in soups and casseroles or serve cold with mayonnaise. A usable starch can be derived from the root of certain ferns. In Japan this starch is prepared as follows: When the fern is withered and no young shoot is to be seen, the root is collected, cut up into pieces, pounded, washed, decanted, and the settled starch is collected and dried. It is then mixed with wheat flour or rice meal and made into cakes.

RECIPE:

A Toast Brake

1 pound bracken or ostrich fern fiddleheads	1 teaspoon salt
1 cup evaporated milk	1 teaspoon lemon juice
2 tablespoons flour	1 tablespoon margarine

Wash fiddleheads and rub off the wooly hairs. Steam until tender. Add salt and lemon juice. Make cream sauce from the milk, flour, and margarine. Pour steamed fiddleheads into the cream sauce and serve on buttered toast.

OTHER USES: *Pteris multifida* rhizome decoction was used in China to treat intestinal worms and to cure diarrhea.

CAUTION: Do not use the mature fronds as they are toxic. Do not eat bitter fiddleheads. Bracken contains the enzyme thiaminase which destroys thiamin (vitamin B₁). Studies show a carcinogenic agent in the plant (*Pteridium aquilinum*). It may be unsafe to use bracken in any stage of development.

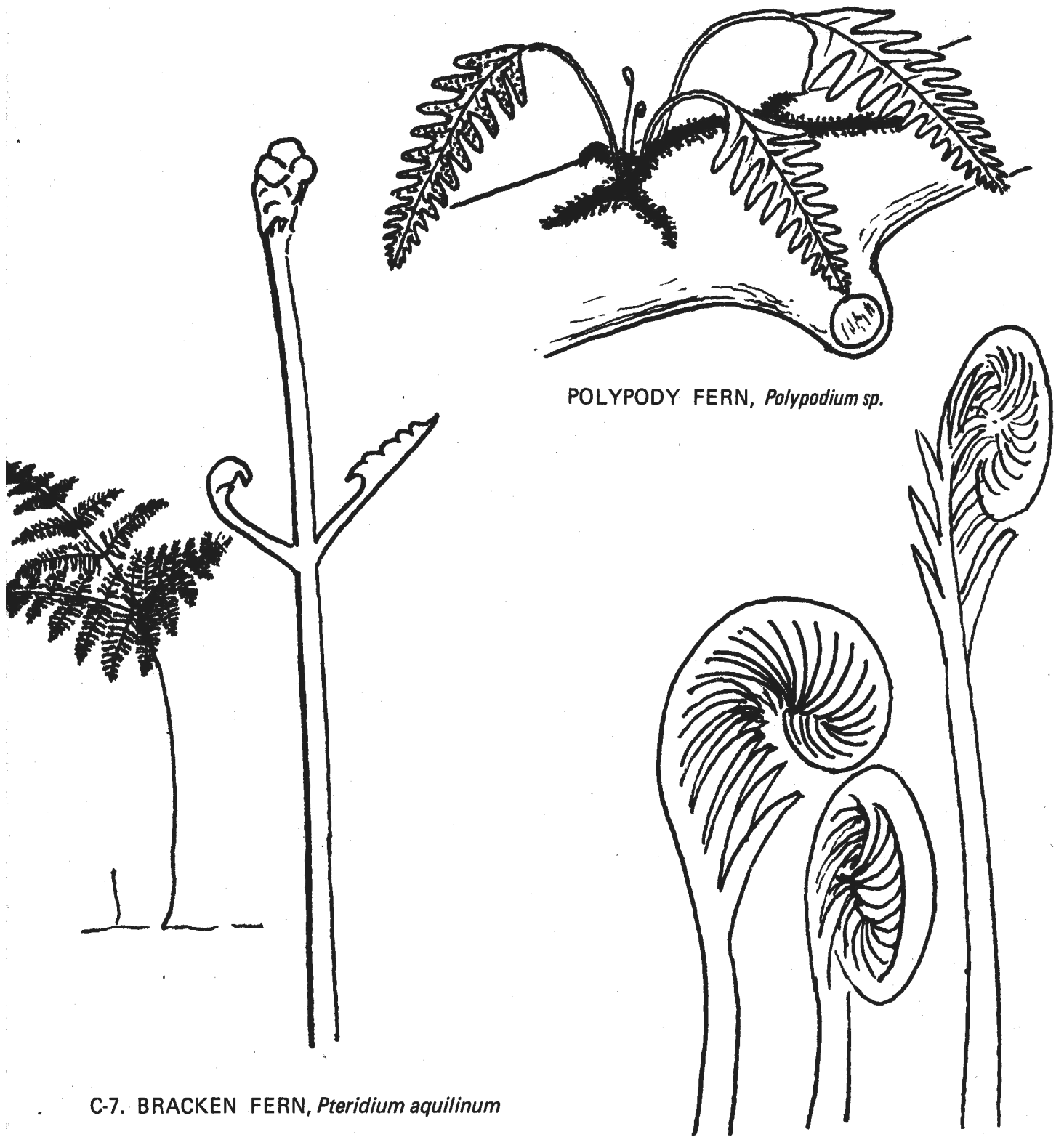
NUTRITIONAL VALUE: Roots are starchy.

DISTRIBUTION: *Pteridium* (1 species, *aquilinum*, bracken) is cosmopolitan. *P. aquilinum aquilinum*, northern hemisphere and Africa; *aquilinum caudatum*, southern hemisphere, overlapping in W. Indies and Malaysia. Ostrich, *Matteucia*, with 3 species, is north temperate.

REVIEW: 1. Describe the appearance of the bracken fiddlehead.
2. How may fiddleheads be eaten? What roots are good?
3. Where would you find ostrich fiddleheads?

FOR FURTHER STUDY: Look up the names of four families of true ferns and the number of *Polypodiaceae* in your country.

PROJECT: Prepare and serve creamed fiddleheads.



POLYPODY FERN, *Polypodium sp.*

C-7. BRACKEN FERN, *Pteridium aquilinum*

C-8. OSTRICH FERN, *Matteuccia, sp.*

(IWP 35) C-9 SOLOMON'S SEAL *Polygonatum (biflorum, etc.)*

FAMILY: LILY, *Liliaceae*.

IDENTIFICATION: Straight bending stalk, paired yellow-green flowers hang like bells from axils of alternate sessile leaves (*Polygonatum biflorum*). Great Solomon's seal: *P. canaliculatum*, is taller, coarser, with flowers often in large clusters (2-10) and leaves with several strong veins beside the midrib. Jointed stolons show a round spot on each annual joint, hence the name.

HABITAT: Woods, thickets, river banks.

SEASON: Spring, summer.

EDIBLE PARTS: Young shoots, roots, and possibly black fruits.

PREPARATION FOR FOOD: Gather the shoots while young and tender. Boil in salted water 10 minutes. Serve with margarine or an oil and lemon dressing. Shoots can be added to soups and stews. The roots can be added to soups or served like potatoes.

RECIPE: Shepherd's Solomon's Seal Roots

2 cups diced Solomon's seal roots	undiluted evaporated milk
2 medium-sized diced onions	salt
oil	

Brown onions and Solomon's seal roots in oil. When brown, cover with the rich milk and cook slowly. Salt to taste.

OTHER USES: Rootstocks of *P. multiflorum* are used in the treatment of lung complaints, including bleeding and as a poultice for bruises, hemorrhoids, and poison ivy.

CAUTION: The false Solomon's seal has terminal flowers (at the end of stalk). The roots are not good for food unless leached. The berries are edible but often cathartic.

NUTRITIONAL VALUE: Roots contain some starch.

DISTRIBUTION: The 50 species of *Polygonatum* are North Temperate. *P. biflorum* (small Solomon's seal), E. USA to Florida and Texas. *P. giganteum*, temperate Asia, W. N. America. *P. multiflorum*, Europe, temperate Asia, Japan, N. America.

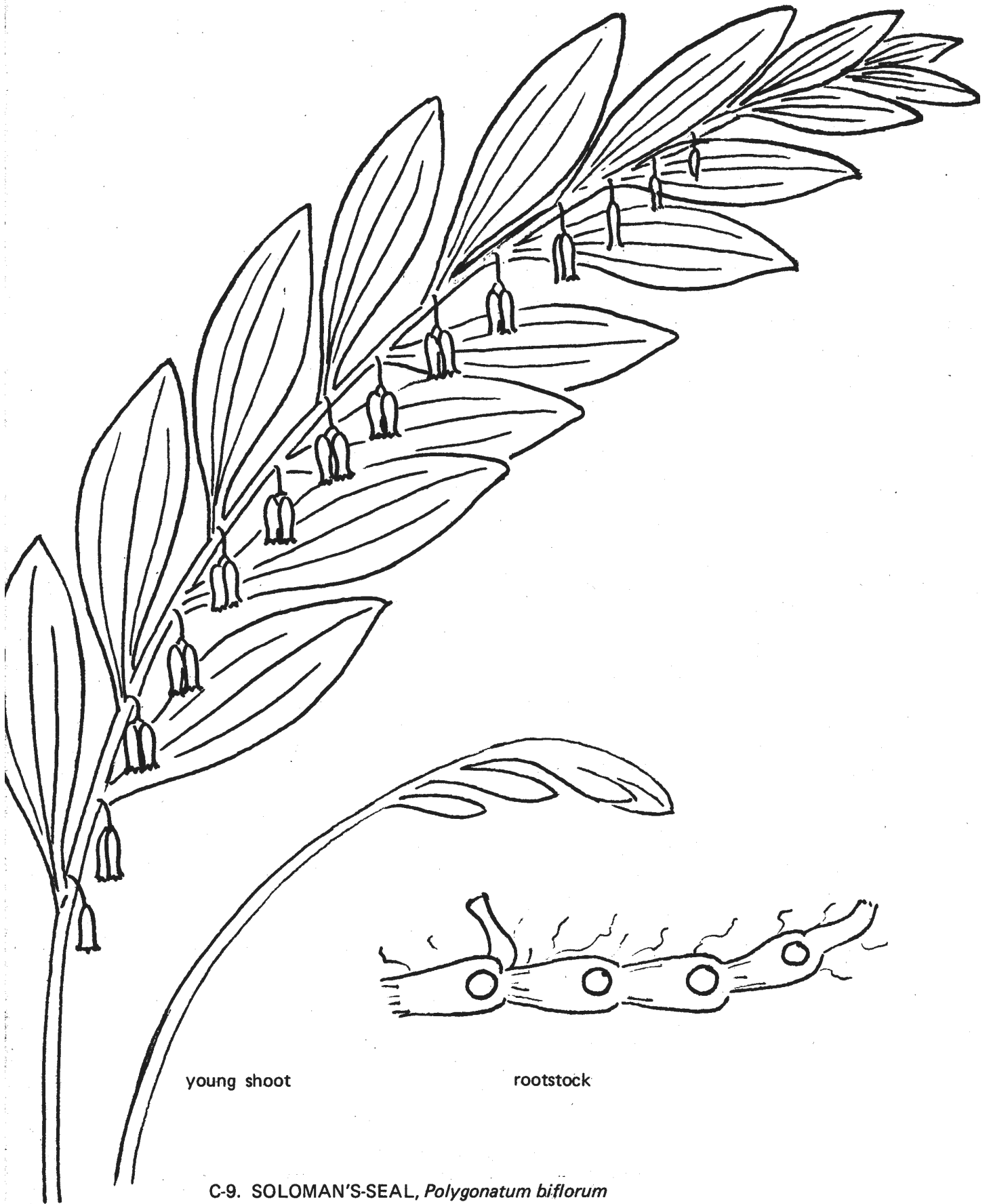
REVIEW: 1. Where is the "seal" in Solomon's seal?

2. How would you prepare the roots?

3. What is the difference between true Solomon's seal and false Solomon's seal?

FOR FURTHER STUDY: List the species of false Solomon's seal, twisted stalk, yellow mandarin, liver berry, and similar plants in your area.

PROJECT: Find out who Solomon was and for what transactions he may have used a seal. Was he a naturalist?



young shoot

rootstock

C-9. SOLOMAN'S-SEAL, *Polygonatum biflorum*

(IWP 36) C-10, 11 MINT *Mentha spp.*, *Hedeoma spp.*, *Glechoma spp.*, etc.

FAMILY: MINT, *Labiatae*.

IDENTIFICATION: Square stems, paired leaves, flowers in upper leaf axils or in terminal clusters or both.

HABITAT: Wet places, dry open woods, or dry fields, varying with species.

SEASON: Summer.

EDIBLE PARTS: Leaves.

PREPARATION FOR FOOD: Mints make a delightful and nourishing tea. Use either the fresh or dried leaves. Pour a cup of boiling water over a tablespoon of leaves (the dried are more potent). Cover and let stand at least 5 minutes. Strain. Sweeten. Mints can also be used in jelly or as an aromatic seasoning.

RECIPES:

Mint Sauce

½ lemon	1 tablespoon sugar
½ cup water	1 cup mint

Put the above ingredients in the blender and blend until smooth. Chill before serving.

Mint Salad Dressing

½ cup oil	½ cup fresh mint, finely chopped
¼ cup lemon juice	1½ teaspoon salt

Blend together the above ingredients. Let stand for about an hour. Pour over tossed salad.

OTHER USES: Hyssop was used as a brush in ancient times to apply sacrificial blood. An oil used in medicine is distilled from *Mentha piperata* (peppermint). *Mentha longifolia* leaves (decoction) used to treat stomach complaints. This is probably the mint of the Bible. Menthol is extracted from mint oils. *Glechoma hederaceum* tea (from the leaves) was used in home remedies for kidney disease, indigestion, and to prevent lead poisoning.

NUTRITIONAL VALUE: High in calcium, phosphorus, vitamins A and C and 50 calories per 100 gm.

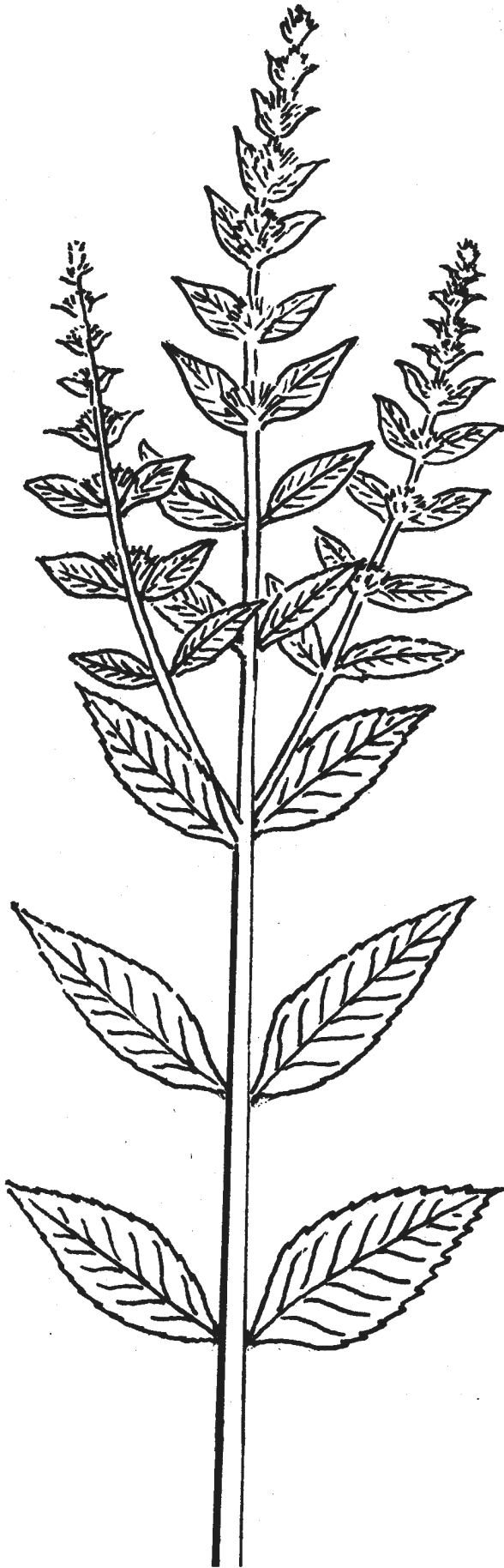
DISTRIBUTION: The *Labiatae*, comprising 180 genera and 3500 species are cosmopolitan, although some small sections are localized. *Mentha* (25 spp.), north temperate, South Africa, Australia. *Hedeoma* (30 spp.) America. *Glechoma* (10-12 spp.), temperate Eurasia.

REVIEW: 1. What is the principal use of mints?

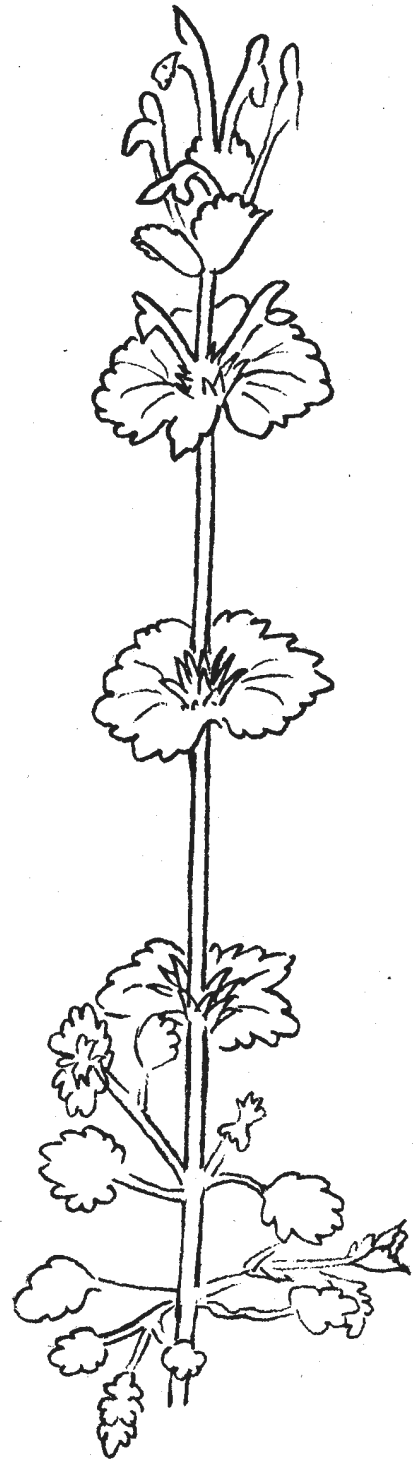
2. How do you prepare mint tea?

FOR FURTHER STUDY: How would pennyroyal be used? Catnip? Self-heal (*Prunella*)? How would you preserve mint for winter use?

PROJECT: Find as many mints of your area as possible in plant guides. Find them in the field, mounting them in a scrapbook, labeling with common name, genus, species, location, date, habitat and use.



C-10. SPEARMINT, *Mentha spicata*



C-11. HENBIT, *Lamium amplexicaule*

(IWP 37) C-12 SUMAC *Rhus (typhina, glabra, copallina, etc.)*

FAMILY: SUMAC, *Anacardiaceae*.

IDENTIFICATION: Tree-like with feather-compound leaves with 7-31 leaflets (paired), sap often milky. Bare winter branches resemble staghorns in *Rhus typhina*. Erect thick bunches of red fruits more or less hairy. Staghorn sumac is dense-hairy, winged sumac has winged leaf midrib. Smooth sumac has flat sided smooth midrib.

HABITAT: Fields and openings.

SEASON: Late summer, autumn.

EDIBLE PARTS: Bunches of red berries (fruits).

PREPARATION FOR FOOD: The clusters of red fruits are used to make a delicious "lemonade."

RECIPE: Pink Sumacade

Gather the red sumac heads before the hard rains wash out the acid. The hard fruit is covered with tiny acid red hairs which contain malic acid that is readily soluble in water. Cover the heads with water. Let stand at least 10 minutes. Then rub or pound the berries to loosen the hairs. Strain and sweeten to taste. This procedure may be repeated with the same berries a number of times until the malic acid is used.

If you are out of lemons, try making "lemon juice" from the berries. Use equal portions of berries and water. Soak and pound the berries to release the acid. Strain and use as lemon juice. May be stored in the freezer for future use. The berries may also be dried and stored for winter use.

OTHER USES: Boiled sumac berries are sometimes used as a remedy for sore throats. Local Indians (E. N. America) used the roots of *R. copallina* to treat dysentery. *R. ovata* (S. W. USA, Mexico) was eaten as a vegetable by local Indians. Several species of *Rhus* contain tannin for tanning leather or dye for cloth.

CAUTION: Poison sumac, *Rhus vernix*, has sparse bunches of white fruits and grows in partly wooded swamps. Poison ivy and poison oak also belong to the genus *Rhus*.

DISTRIBUTION: *Anacardiaceae*--60 genera, 600 species, chiefly tropical, but also Mediterranean, E. Asia, America. *Rhus*--250 spp., subtropics, warm temperate. *Rhus typhina*, *R. glabra*, and *R. copallina*, E. N. America; *R. integrifolia*, S. Calif., Mexico; *R. aromatica*, E. N. America to Texas.

REVIEW: 1. How do you distinguish edible sumac fruits from poison sumac?

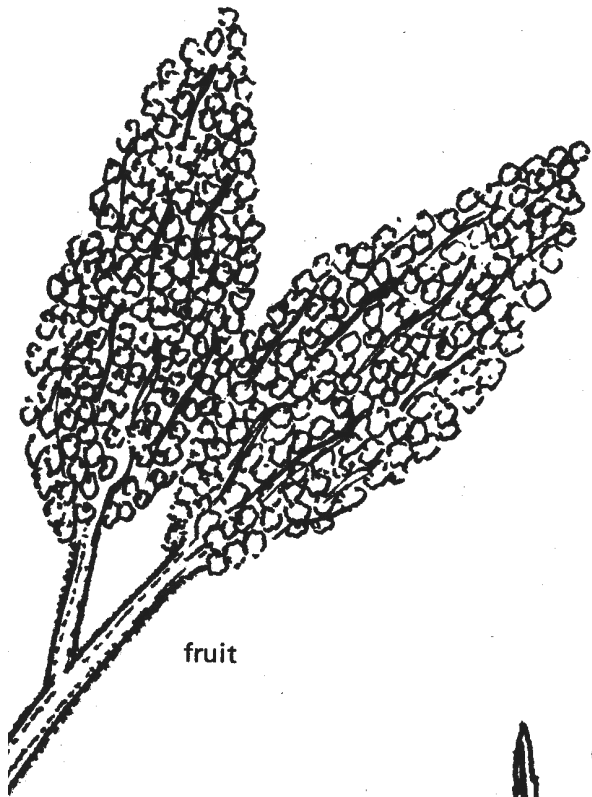
2. Describe the process of making pink "lemonade".

3. Why is *Rhus typhina* called "staghorn"?

4. What toxic plants belong in the genus *Rhus*?

FOR FURTHER STUDY: What other toxic plants are in the family *Anacardiaceae*?

PROJECT: Gather the red fruits and make pink "lemonade."



fruit



C-12. STAGHORN SUMAC, *Rhus typhina*

(IWP 38, 39) C-13, 14 NUTS *Juglans spp.*, *Carya spp.*, *Corylus spp.*, etc.

FAMILY: WALNUT, *Juglandaceae*--*Juglans*, *Carya*
HAZELNUT, *Corylaceae*--*Corylus*

IDENTIFICATION: Trees: Black walnut, *Juglans nigra*, and butternut, *Juglans cinerea*, have feather-compound leaves with seven to many toothed leaflets parallel, solid husks on nuts. Pecan, *Carya illinoensis*, feather-compound leaves with overlapping leaflets. Hickory, *Carya spp.*, with compound leaves and widely-spaced leaflets, husks four parted. Trees and shrubs: hazelnut, *Corylus spp.*, has simple double-toothed leaves, pointed husk.

HABITAT: Walnut, hickory—rich woods. Hazelnut—thickets, fields, clearings, borders of woods.

SEASON: Autumn.

EDIBLE PARTS: Nut kernels.

PREPARATION FOR FOOD: The kernels are eaten as nibbles or used in breads, cakes, pies, cookies, casseroles, etc. The butternut and walnut are very rich in oil. To make a butter in the woods, boil the nutmeats slowly in water. The oil and nutmeats will float to the top. Skim and use the oil like butter. Dry the nut kernels for future use or mash to make a rich butter paste. The trees may also be tapped in the spring (like sugar maple), and the juice boiled down to a syrup.

RECIPE:

Hazelnut Soup

1 cup vegetable stock or bouillon broth	2 tablespoons oil
1 cup milk	seasonings such as garlic, thyme, tarragon
1 cup ground hazelnuts	salt to taste
1 finely chopped onion	parsley

Saute the onions in oil. Add to the remaining ingredients. Simmer for 15 minutes. Add chopped parsley when ready to serve.

OTHER USES: Husks of black walnut furnish a brown dye.

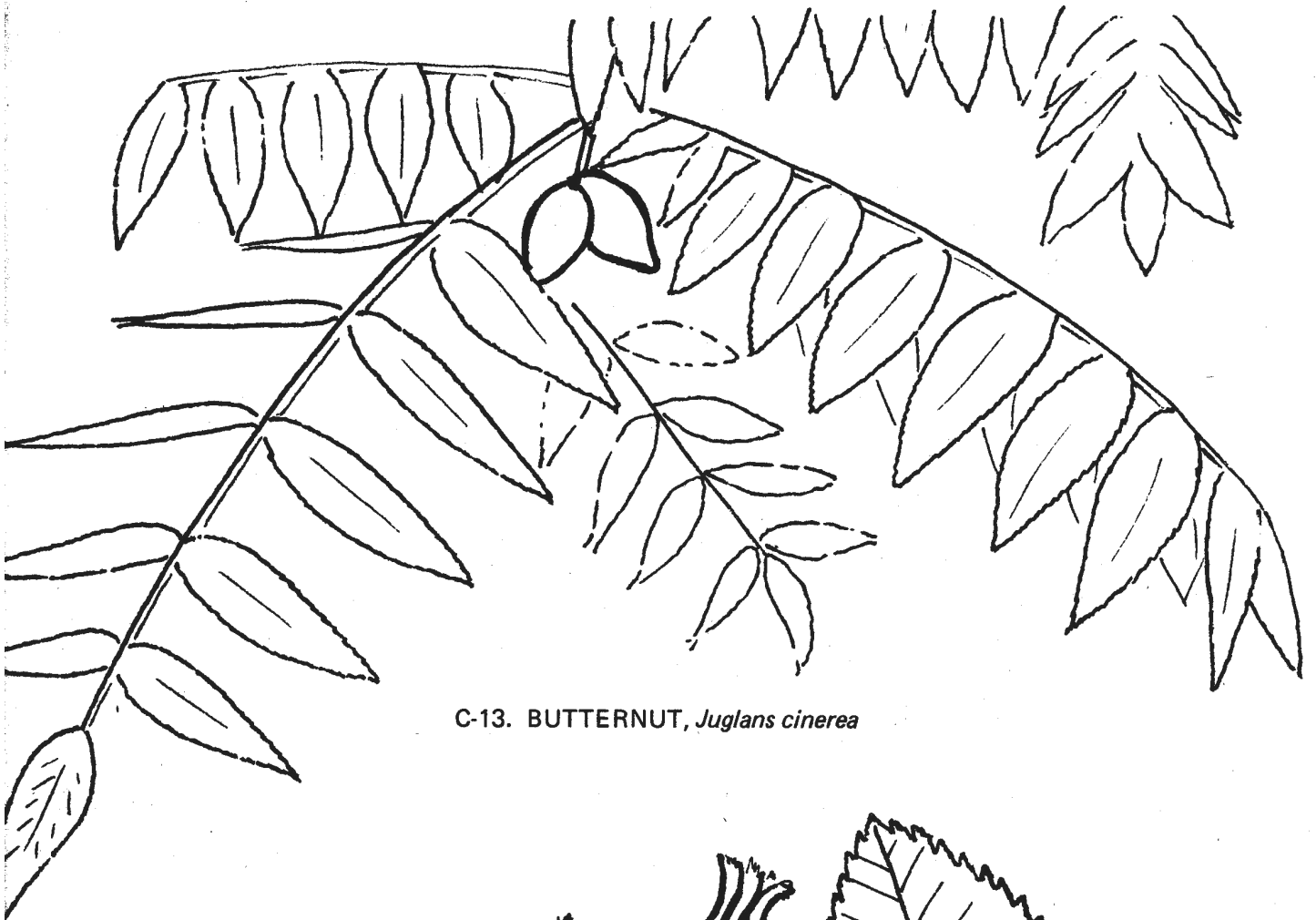
NUTRITIONAL VALUE: *Juglans cinerea* is very rich in fat (64.4%), protein (15%), carbohydrate (15%), phosphorous, calcium, and furnishes 654 calories per 100 gms (3½ oz). It also contains iron, vitamin A, thiamine, riboflavin, niacin and vitamin C.

DISTRIBUTION: *Juglandaceae*, 7 genera with 50 species, north temperate and subtropic south to India, Indo-China and South America (Andes). *Corylaceae*, 15 species, north temperate.

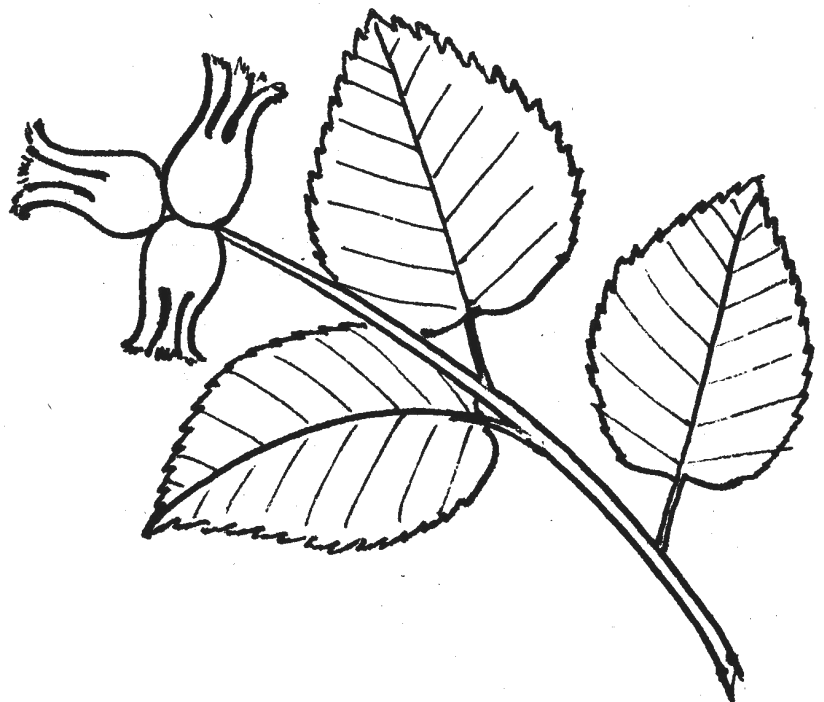
- REVIEW: 1. What nutrients are found in nuts?
2. Which nuts may be pressed for oil?
3. Most nut trees have what kind of leaves?

FOR FURTHER STUDY: List the edible nuts that grow around the world.

PROJECT: Prepare a candy or fruit cake of wild nuts and fruits.



C-13. BUTTERNUT, *Juglans cinerea*



C-14. HAZELNUT, *Corylus americana*

(IWP 40) C-15,16,17 ACORN *Quercus spp.*, BEECHNUTS, *Fagus spp.*, CHESTNUTS *Castanea spp.*, etc.

FAMILY: BEECH, *Fagaceae*.

IDENTIFICATION: Acorns of the white oak group contain tannic acid (but less than black oak). The simple leaves have rounded lobes or none as opposed to bristle-tipped leaves of black (and red) oaks. White oak, *Quercus alba*; bur oak, *Quercus macrocarpa*; post oak, *Quercus stellata*, etc.

Chestnuts, *Castanea* have very spiny burs over shiny rounded nuts. Beechnuts, *Fagus*, have ovate leaves, small heartshaped nuts.

HABITAT: Wet or dry woods.

SEASON: Late summer, autumn.

EDIBLE PARTS: Inside flesh or kernel of nut.

PREPARATION FOR FOOD: Acorn: The kernels must first be leached to remove the tannic acid. When possible use acorns from the white oak group. They may be leached by boiling, soaking in a lye or wood ash solution, or the meal put in a bag and placed in a creek or spring for several days. When the boiling method is used, first slit the acorn and remove the shells. Then boil the acorns for a couple of hours, changing the water each time it becomes light brown in color. The process is speeded up by adding boiling water each time the water is changed. Dry the kernels in the sun or a slow oven, and grind into flour. This flour then can be used in pancakes, breads, crackers, cookies, and mush. It is best blended with either cornmeal or wheat flour.

Beechnuts: Nuts may be eaten raw or used in cooking. Some roast and grind them for a coffee substitute. The young leaves can be cooked as a potherb in the spring. The inner bark can be dried and pulverized for flour as an emergency food.

Chestnuts: Nuts can be roasted, boiled or used in a stuffing.

RECIPE:

Acorn Crackers

¾ cup acorn flour
¾ cup white flour
1¼ teaspoon salt

¾ cup cold milk
¼ cup oil

Process acorn flour according to above directions. Mix together with other ingredients. Roll out thin on waxed paper. Put on cookie sheet and cut into squares. Bake 15-20 minutes at 325°.

OTHER USES: Acorns have been fed successfully to livestock. The tannic acid extracted from black oak bark is used in tanning leather.

CAUTION: Be sure to leach most acorns to remove tannin. Beware of the horsechestnut, *Aesculus hippocastanum*, as the buds are toxic unless thoroughly leached. Buckeyes have palmately compound leaves.

NUTRITIONAL VALUE: Reed says that acorns are highly nutritious, with over 350 calories per 100 grams of shelled kernels. The leached flour contains 20% fat, 4.5% protein, and 62% carbohydrate. The kernels also contain calcium, magnesium, and phosphorus.

DISTRIBUTION: *Fagaceae*, 8 genera, 900 species, are cosmopolitan except tropical South America and tropical and South Africa. *Fagus*, *Castanea*, north extra-tropical; *Quercus*, north extra-tropical, Malaysia and Central America; *Trigonobalanus*, Siam, west Malaysia; *Lithocarpus* and *Castanopsis*, tropical Asia; *Chrysolepis*, California; *Nothofagus*, New Guinea, Australia, New Caledonia, New Zealand, and South America. (Willis)

REVIEW: 1. List the steps in the preparation of acorn meal.

2. Might acorns be important in a survival situation? Why?

FOR FURTHER STUDY: List the species of white oaks growing in your area.

PROJECT: Collect, mount and label oak leaves from all species in your area.



C-15. WHITE OAK, *Quercus alba*



C-16. BEECHNUT, *Fagus grandifolia*



C-17. CHESTNUT, *Castanea dentata*



nut

(IWP 41) C-18 ELDERBERRY *Sambucus (canadensis, nigra, etc.)*

FAMILY: ELDERBERRY, *Sambucaceae*.

IDENTIFICATION: A shrub with large compound leaves with 5-7 coarse-toothed elliptic leaflets and purple-black fruits. Small white flowers in flat topped clusters. European elderberry, *S. nigra*, may grow to tree size (36 feet).

HABITAT: Openings, meadows.

SEASON: Flowers early summer. Fruits late summer to autumn.

EDIBLE PARTS: White flowers, black fruits.

PREPARATION FOR FOOD: The fresh flowers can be dipped in a batter and fried or used in breads, muffins and pancakes. The berries are best used cooked in pies, sauces, jellies, fruit soups, etc. If possible, dry the berries first as they have more flavor than the insipid fresh berries. When making jelly add lemon juice or sumac extract to give a better flavor.

RECIPE: Elder Blow Fritters

3-4 cups elder flowers	½ cup evaporated milk
1 cup flour	½ teaspoon salt
2 eggs	

Gather the elderberry umbels at the height of their bloom and remove stems. Dip the flowers in the batter and fry until golden brown. For an extra delicacy, deep fry in small clusters, place on paper towel, squeeze a little orange juice over the clusters, and roll in powdered sugar. (A pancake mix may be substituted for the above batter.)

OTHER USES: *S. canadensis* flowers have been used as a decoction to treat stomach upsets, as diuretic and stimulant, in eye lotions, and as a salve for bruises. A purgative syrup is made from fruits of *S. nigra*.

CAUTION: Roots, stems and leaves contain hydrocyanic acid and are dangerously poisonous. Uncooked berries have been known to cause vomiting and diarrhea. Children making blowguns or whistles out of the dried stems have been poisoned. Red elderberry, with cone-shaped flower and fruit clusters, should not be used (for fruit).

NUTRITIONAL VALUE: Elderberries are very high in potassium and vitamin A, high in phosphorus, calcium and ascorbic acid, with 20 calories per 100 grams.

DISTRIBUTION: *Sambucus*, the lone genus in *Sambucaceae*, with 40 species, is cosmopolitan, except Amazonia, Africa (one species in E. Africa mts.), Arabia, West Australia, Pacific, Peninsular India.

REVIEW: 1. How may elderberries be eaten?

2. How are the flower heads used?

3. Is the plant toxic?

FOR FURTHER STUDY: Look up information on elder trees with similar black fruits.

PROJECT: Use one of the above recipes to prepare a tasty dish.



C-18. ELDERBERRY, *Sambucus canadensis*

(IWP 43) C-19,20,21,22 BERRIES *Rubus spp.*, *Fragaria spp.*, etc.

(C-11 ROSE, See A-1)

FAMILY: ROSE, *Rosaceae*.
HEATH, *Ericaceae*.

IDENTIFICATION: The brambles (blackberries, raspberries, etc., *Rubus spp.*) are mostly woody, prickly or bristly shrubs with 3-7 toothed leaflets, flowers with 5 petals, numerous stamens. Strawberry (*Fragaria spp.*) is a small plant, hairy, with 3 coarsely toothed leaflets on a slender stalk.

HABITAT: Thickets.

SEASON: Summer.

EDIBLE PARTS: Fruits, tender shoots.

PREPARATION FOR FOOD: Fruits eaten raw or made into jams, jellies, pies, sauces, puddings, etc. Young shoots can be chopped into salads. A tea made from red raspberry leaves is said to be an aid to digestion.

Remember the edibility rule for berries: Blue and black berries, generally edible; red berries, sometimes edible; white berries, never edible.

RECIPE: Blackberry Pie

4 cups berries	1 teaspoon lemon juice
1 tablespoon margarine	4 tablespoons flour
2/3 cup sugar	1 cup milk or light cream
1/2 teaspoon salt	1 9 inch pastry shell

Fill pastry shell with berries. Dot with margarine. Mix the remaining ingredients together and pour over berries. Bake at 400° 35-40 minutes.

OTHER USES: Blackberry and raspberry (*Rubus*) leaves are used as a tea substitute in China (*R. arcticus*), Europe (*R. caesius and fruticosus*), and Europe and Asia (*R. idaeus*).

NUTRITIONAL VALUE: Strawberry leaves (as well as fruits) are high in vitamin C. Blackberries contain 62 calories per 100 grams, good potassium content and fair amounts of calcium, phosphorus, vitamins A and C. Raspberry, *Rubus strigosus* is extremely rich in vitamin C.

DISTRIBUTION: *Rubus*, with 250 species, is cosmopolitan, especially north temperate. *Fragaria*, 15 species, North America, Chile, Eurasia to South India. Blueberries, *Vaccinium*, 400 species, belong to the *Ericaceae* family, north temperate, tropical mts. (except Africa), Andes, South Africa, Madagascar.

- REVIEW: 1. State the edibility rule for berries.
2. What red berries are edible?
 3. How do you recognize these members of the rose family?

FOR FURTHER STUDY: How many wild brambles with edible fruits grow in your area? Strawberries? Blueberries?

PROJECT: Find the distinguishing difference between a blueberry and huckleberry leaf.



C-19. FLOWERING RASPBERRY, *Rubus odoratus*



C-22. Highbush BLUEBERRY, *Vaccinium corymbosum*



20. BLACKBERRY, etc., *Rubus*, sp.



C-21. STRAWBERRY
Fragaria virginiana

Part IV

PLANTS OF WET PLACES

Streams, lakes and swamps are good news for a hungry survivor, not only for water, but also for nourishing food. The cattail root provides the needed calories for a survival diet, and good crackers and bread can be made from cattail flour plus acorn meal. Cattail has several other edible parts, also.

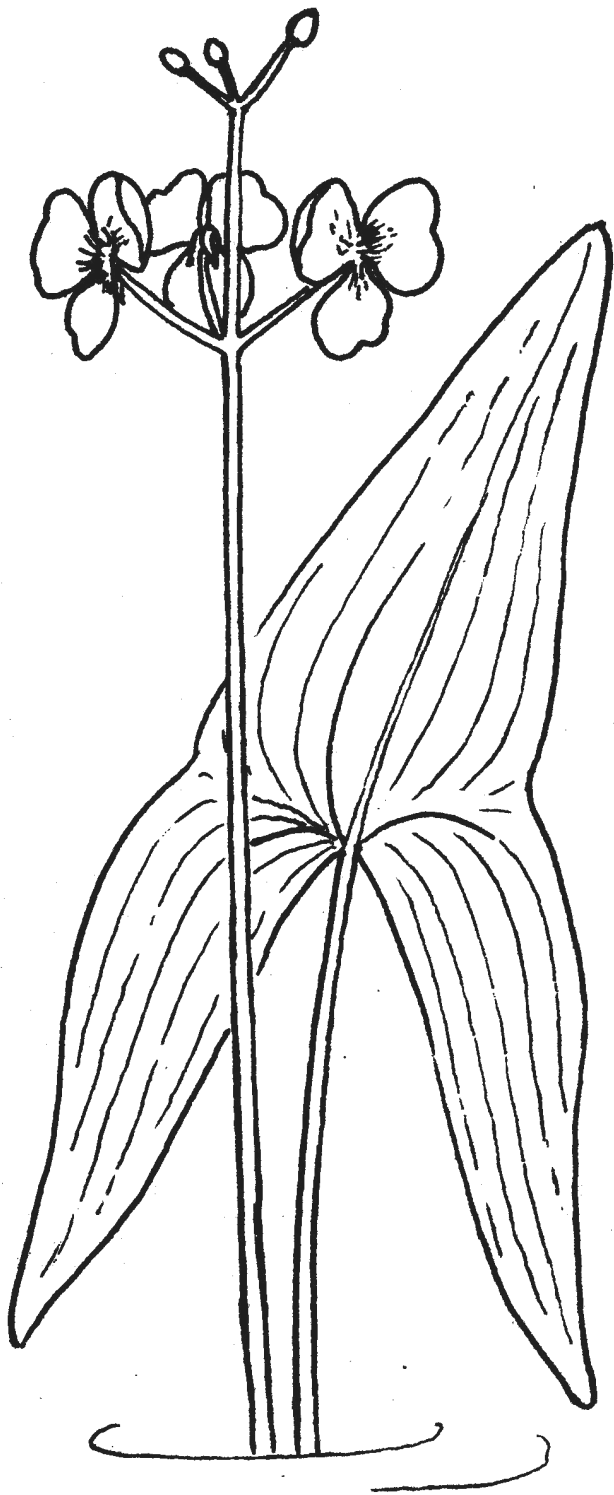
Arrowhead tubers are also a fine potato substitute and can be gathered easily if you are willing to get muddy and reach down deep in the water and mud to find them. One sedge, the chufa, grows nourishing underground tubers, and the waterlily furnishes seeds rich in nutrients--as rich as grains. These plants also furnish green (or white) parts for raw or cooked vegetables.

Bulrush seeds as well as roots can be eaten. The seeds of the water chinquapin can be popped like popcorn--almost like it anyway. Cattail pollen can be added to flour made of these seeds and roots in survival bread or cereal for extra nourishment.

It is easy to see that a swampy area or lakeside could provide good food for a number of people for a long time. If you are ever lost or stranded in the wilderness you will be looking for such an area to forage for your dinner.

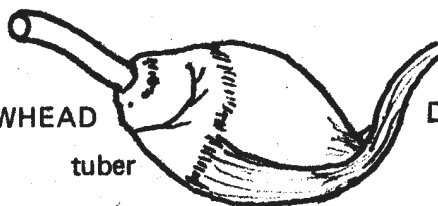
We have now learned that food is very abundant right around our homes--you can live off the lawn! There are new and different plants in the waysides and meadows, and still a different group in woodland openings. We could live very well near a swamp or lake on the plants typical of that habitat. As you travel, notice these habitats and learn to recognize the typical plant life. You may be glad you did someday.



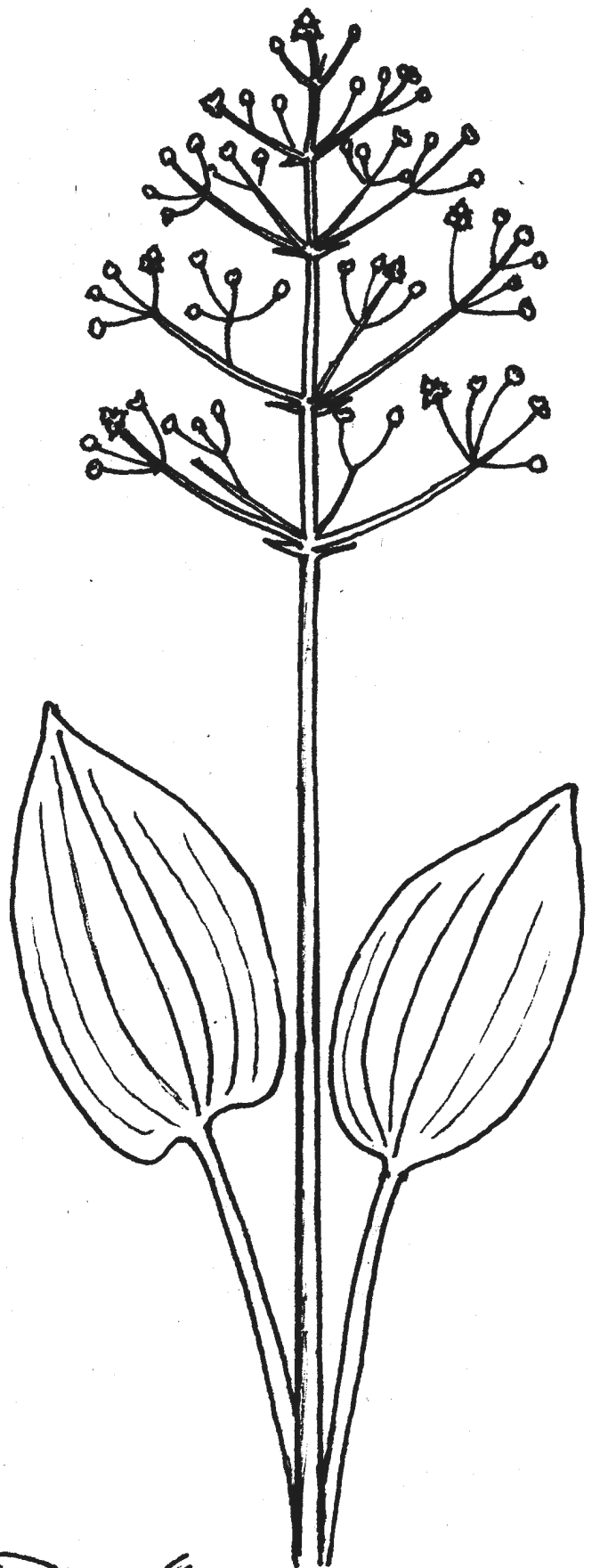


D-1. BROAD-LEAVED ARROWHEAD

Sagittaria latifolia



tuber



D-2. WATER-PLANTAIN

Alisma triviale

(IWP 44) D-3,4,5 WATER LILIES *Nymphaea* spp., *Nuphar* spp., *Nelumbo* spp.

FAMILY: WATER LILY, *Nymphaeaceae*.

IDENTIFICATION: Water chinquapin, *Nelumbo lutea*: large circular or chevron leaves with depressed center, usually raised above water surface, flower pale yellow 4-10", fruit pod top shaped, seeds in top holes. *Nymphaea* has large, circular, entire leaves that float upon the water. The flower also floats on the surface. *Nuphar* is much like *Nymphaea*, the flower projects a little above the water and has a buttery or alcoholic odor.

HABITAT: Ponds and lake margins (temperate and tropical).

SEASON: *Nelumbo* tuberous rootstock, spring and autumn. Seeds, summer and autumn.

EDIBLE PARTS: *Nelumbo*: tubers, seeds (as vegetable), seeds (as breadstuff), young leaves and stalks (as potherb); *Nymphaea odorata*: flower buds (cooked); *Nymphaea tuberosa*: tubers and seeds; *Nuphar*: rootstocks, seeds.

PREPARATION FOR FOOD: The rootstocks and tubers are cooked as a starchy vegetable. The seeds are dried and ground for bread, cooked in soups or popped like corn. The flower buds of the fragrant water lily are cooked. Young leafstalks and unrolled leaves of *Nelumbo* cooked as potherb. Rootstocks of spatterdock (*Nuphar advena*) should be gathered in the fall or early spring when they are rich in starch. Scrub well and cut in pieces to add to soups, stews and roasts. Boil or roast ½ hour, serve with butter. Dry seeds in oven for 15 minutes, remove kernels, serve like corn, either creamed or served with butter. Grind seeds and add to bread flour or cereal.

RECIPE: Water Chinquapin Popcorn

Water Chinquapin seeds
salt to taste

margarine or cream

The seeds are extracted from the pods after they have dried. The seeds are then parched for 10 minutes to loosen the kernel contained within. Pound lightly and winnow to get rid of the hard shell. They may be "popped" in a little oil. Add salt and margarine and serve like pop corn. While the kernels do not burst like popcorn, they swell considerably and make a fine substitute. You might prefer to parch or boil the seeds and serve with cream.

OTHER USES: *Nymphaea lotus* roots are used in Africa and Asia to treat stomach complaints and dysentery. The powdered seeds are used in the Sudan to treat skin diseases.

NUTRITIONAL VALUE: *Nelumbo nucifera* root is 1.7% protein, 9.7% carbohydrate, contains some vitamin B₁ and a little vitamin C. The dried seed is 16% protein, 70% carbohydrate, similar to grain in nutrients.

DISTRIBUTION: *Nymphaeaceae* with 3 genera and 75 species are cosmopolitan. *Nymphaea*, 50 species, are tropical and temperate; *Nuphar*, 25 species, north temperate and cold. Two species of *Nelumbo* comprise the *Nelumbonaceae* of warm Asia, Australia, and America.

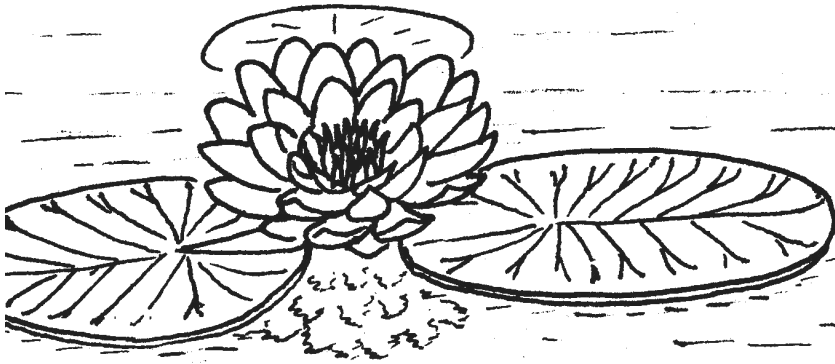
REVIEW: 1. Which water lilies have seeds to pop like corn?

2. In what other ways may the seeds be used?

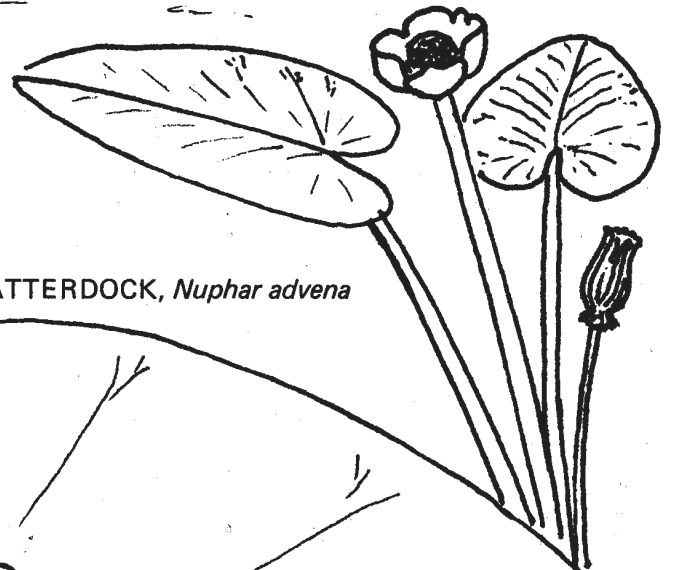
3. Name other edible parts and their use.

FOR FURTHER STUDY: Do the same types used in China and Africa grow in your country?

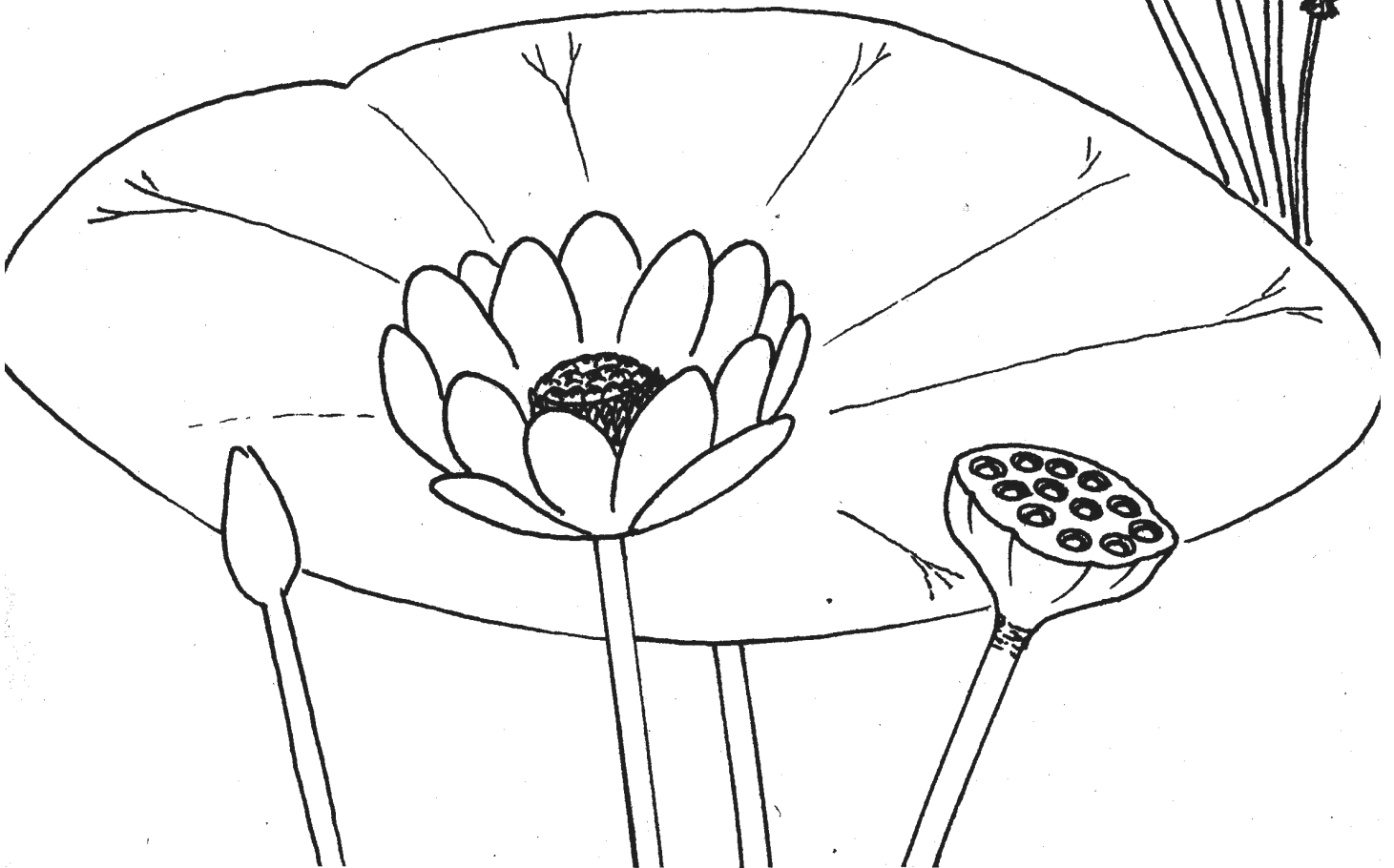
PROJECT: Gather some parts of water lilies and prepare for food and taste.



D-3. FRAGRANT WATER-LILY, *Nymphaea odorata*



D-4. SPATTERDOCK, *Nuphar advena*



D-5. LOTUS, WATER CHINQUAPIN, *Nelumbo lutea*

(IWP 45) D-6,7,8 SEDGES, BULRUSH, CALAMUS *Cyperus spp.*, etc.

FAMILY: SEDGE, *Cyperaceae*; ARUM, *Araceae*.

IDENTIFICATION: SEDGE: Chufa, *Cyperus esculentus*: triangular stems, pale green leaves rising from sheathed base. Spidery top of spikes of scaly and flattened yellow-brown flowers. Thin runners (roots) end in small nut-like tubers. Great bulrush, *Scirpus lacustris*: tall, stout, spongy stems end in a branched cluster of tiny red-brown flowers, leaves rush-like. ARUM: Calamus, *Acorus calamus*: sword-like leaves, spadix juts at an angle from the two-ridged stem. Sweetish odor.

HABITAT: Damp fields and gardens. Edges of ponds. Marshes.

SEASON: Chufa: late summer; bulrush: summer; calamus: summer.

EDIBLE PARTS: Chufa: tubers; bulrush: roots, base of young stems; calamus: young leaves, roots.

PREPARATION FOR FOOD: Collect chufa tubers in early spring or fall digging carefully. They may be eaten fresh or boiled as a vegetable. Remove outer layer of tubers, roast for 20 minutes in a little oil, or boil for 15 minutes and serve with an oil dressing. Can be dried, roasted and ground into flour. The tender white heart of sedges may be used as a nibble or chopped in salads.

Bulrush: Cut base of young stems in early spring, include in salads for a sweetish taste. Dry roots and grind into fine flour. Seeds may be used as a cereal, and pollen as a flour.

Calamus: In early spring collect tightly curled leaves in the center of the stem. Chop and add to green salad (or potato salad). Add a *little* as spice to roasts. Roots may be candied.

RECIPES: Calamus Candy

Collect roots of calamus in the fall. Wash, peel, and cut into thin short strips. Boil for a day or more changing water frequently. Drain and let sit for a day. Cover with sugar and a little water and boil until a heavy syrup coats the strips. Seal in plastic bags.

OTHER USES: Calamus plants were strewn on floors in olden times as a deodorant. The Chinese eat the raw diced roots out of hand like candy. Rushes may be used in weaving baskets, etc. *Cyperus papyrus* stems were split into thin strips which were pressed together while still wet to make papyrus (paper). Stems of many are used for basket making.

CAUTION: Do not mix calamus roots with cattail roots when cooking the latter. (They often grow together). The flavor is terrible.

NUTRITIONAL VALUE: Bulrush rhizomes are about 12% carbohydrate, 1% protein. Chufas contain starch and some protein.

DISTRIBUTION: Sedges, *Cyperaceae* are worldwide with 90 genera and 4000 species. *Scirpus* (300 spp.) has many edible species around the world. *Acorus* (*Araceae*) north temperate and sub tropics.

- REVIEW: 1. In what family are chufa and bulrush? Calamus?
2. How do you identify chufa? What parts are edible?
 3. What are the edible parts of bulrush?
 4. How may calamus be used?

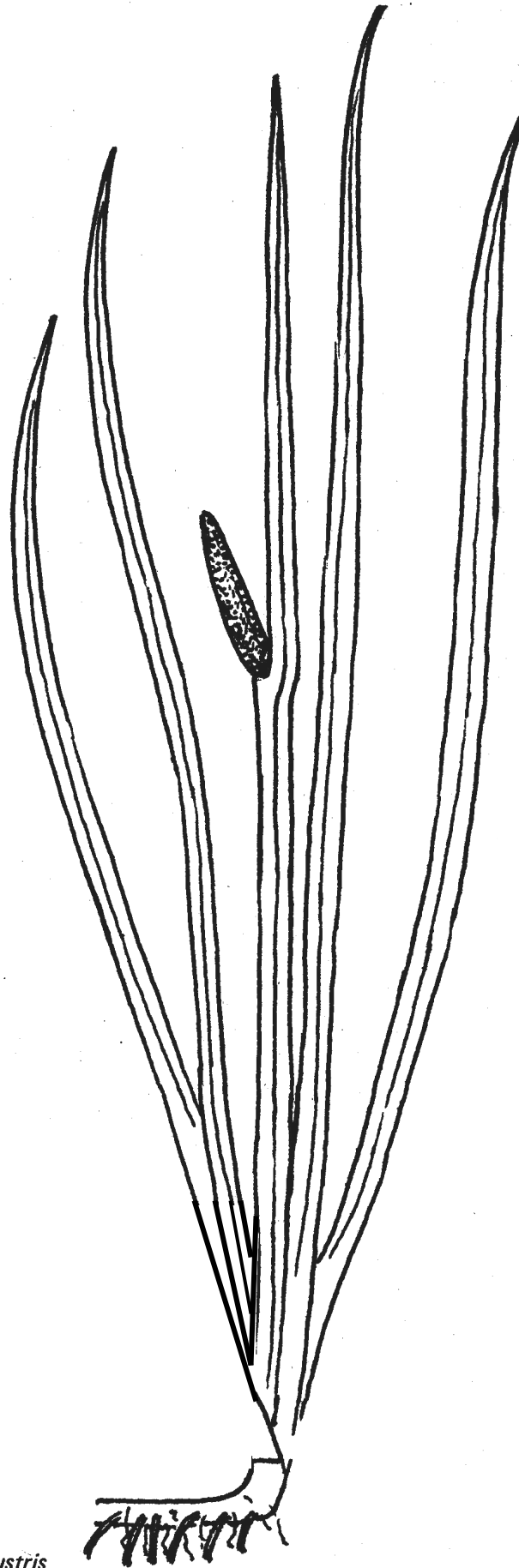
FOR FURTHER STUDY: Are there any other members of the sedge family that are edible?

PROJECT: Go to a pond or swamp and collect these plants, preparing at least one part for food.



D-7. GREAT BULRUSH, *Scirpus lacustris*

SEDGE (CHUFA), *Cyperus esculentus*



D-8. SWEETFLAG, *Acorus calamus*

FAMILY: CATTAIL, *Typhaceae*.

IDENTIFICATION: Tall marsh plants with sword-like leaves growing in dense clumps. Stiff stems with sausage-like brown head, tightly packed flowers or seeds. Above this a slender plume of paler staminate flowers bears pollen in the spring, disappears.

HABITAT: Fresh marshes.

SEASON: Summer, green parts. Autumn and winter, roots are better.

EDIBLE PARTS: Green spike, pollen, white stem, shoots, roots.

PREPARATION FOR FOOD: The young shoots can be chopped in green salads or served as a hot vegetable. The white lower portion makes a good celery substitute used either raw or in soups and stews. The flowerhead or green kitten is cooked in salted water, slathered with butter, and eaten like corn on the cob. The golden pollen is very nutritious and makes a fine addition to pancakes, breads, cereals, or may be used to flavor and thicken soups. The roots may be boiled or roasted after they have been scraped, cleaned and sliced. They may be prepared whole and the root pulled between the teeth to extract the starch. A nutritious flour can also be made from the roots. One way to prepare the flour is to wash and dry the peeled roots, grind, and sift out the fibers. Whiter, sweeter flour may be made in the following manner: Wash the root, and fill a container with water. Tear the root apart and dig out the starch with a knife or your fingernail, strain out the fibers, and let the starch settle in the water. The first water will be slimy and ropy and should be poured off carefully. Fill the container with fresh water, and stir up the starch and allow it to settle again. Pour off the water again, and you should have a fine white product. This can be dried and stored, but most likely you will go ahead and use it in the wet state. Use with about one half white flour in your favorite recipe. It can be mixed 50-50 with bleached acorn meal to make crackers.

RECIPE:

Kitten Casserole

1½ cups of cattail flowerheads (kittens—green, pencil thick)	
1 cup bread crumbs	1 medium onion, chopped fine
2 beaten eggs	1 scant teaspoon sage and/or chicken style seasoning
½ cup milk	salt

Scrape the green bud material from the cores of the kitten. Mix with bread crumbs, eggs and milk. Add salt and seasoning and bake in a moderate oven about 45 minutes.

OTHER USES: Leaves may be woven for mats or baskets, brown spikes used for insulation and stems used for arrows. Used in home decoration. Root fibers may be twisted for cord.

CAUTION: Do not confuse calamus root with cattail root. (See preceding page). Wash all raw parts in disinfectant solution before eating.

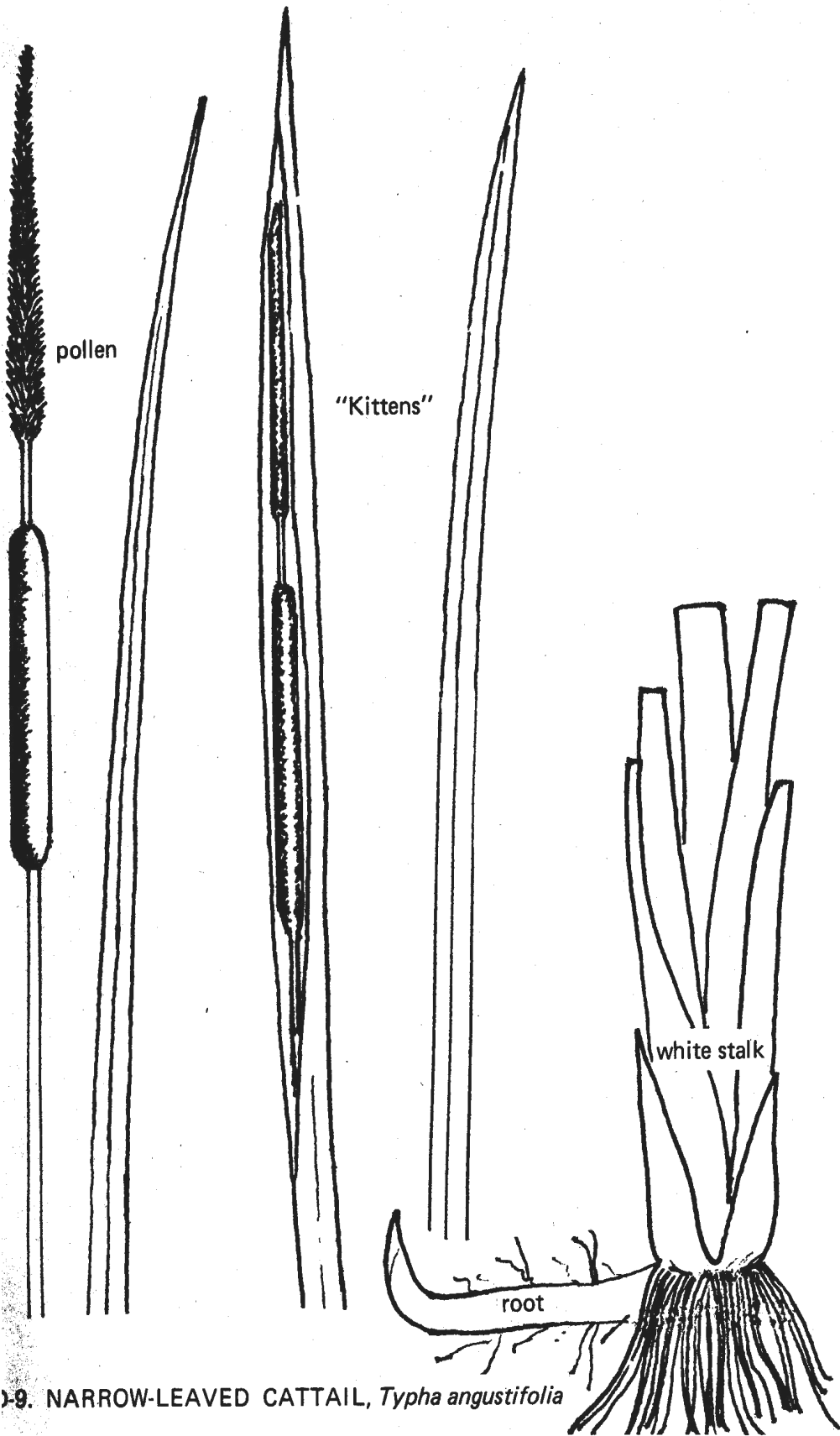
NUTRITIONAL VALUE: Estimates vary on the value of cattail root. 98 calories in 100 grams of root, which produces 22 grams of flour containing 57% carbohydrate or around 300 calories per 100 grams flour—similar to grains. The pollen contains 18% sugar, 25% protein (pollenin).

DISTRIBUTION: *Typhaceae* is a family with only one genus, *Typhus*, 10 to 20 species, temperate and tropical. *T. angustifolia* (the narrowleaf cattail) grows throughout the range.

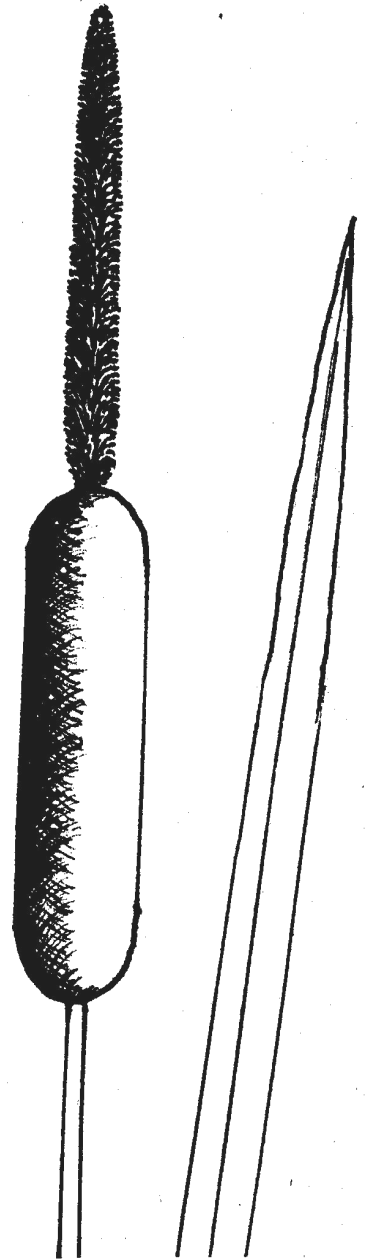
- REVIEW:**
1. Name the edible parts of the cattail (5).
 2. What is the nutritional value of pollen? Cattail roots?
 3. How is cattail flour or dough obtained?
 4. What other uses are made of the plant?

FOR FURTHER STUDY: Make a chart or map showing the world-wide distribution of the cattail plant.

PROJECT: Collect edible parts of the cattail and follow a recipe for a special treat for your group.



D-9. NARROW-LEAVED CATTAIL, *Typha angustifolia*



D-10. BROAD-LEAVED CATTAIL. *Typha latifolia*

NUTRITIONAL VALUE OF WILD PLANTS OF THE TEMPERATE WORLD

SOURCE	FOOD	Water	Cal.	Prot.	Fat	Carbohydrate			Phos.	Iron	Sod.	Pot.	Vit. A	Thiam.	Ribofl.	Niacin	Vit. C
						Total	Fiber	Ash									
Read, Morr.	Acorn	50	350	2.7	3.0	6.4	9.3	1.3									
SA	Alfalfa tender shoots, <i>M. sativa</i>	82	52	6.0	.4	6.4	3.1		5.4			3,410	.13	.14	0.5	162	
W & M	Amaranth, raw	86.9	36	3.5	.5	6.5	1.3	2.6	3.3		411	6,000	.08	.16	1.4	80	
SA	Amaranthus - Africa	80.6	57	4.5	.6	8.5	1.6		18.0			23,650	.01	.24	1.1	81	
SA	Amaranthus spinosus	85.0	43	3.0	0.3	7.0	1.1		22.9			5,940	0	.01	0.2	33	
SA	Amaranth seeds	10.0	324	16.3	2.1	60.1	8.9		11.3			0	.14	.54	0.5	1	2
FE	Arrowweed tuber, <i>S. sagittifolia</i>	69.5	106	5.0	.2	23.7	.8	1.6	1.4								
FE	Arrowroot, <i>M. arundinacea</i>	13.6	355	.7	0.2	85.2		1.3	1.5								
W & M	Asparagus	91.7	26	2.5	.2	5.0	0.7	.6	1.0	2	278	900	.18	.20	1.5	33	
SA	Bamboo shoots	88.8	43	3.9	0.5	5.7			0.1	91		0	.08	.19	0.2	5	
W & M	Beechnuts	6.6	568	19.4	50.0	20.3	3.7	3.7									
W & M	Blackberries	85.4	58	1.2	.9	12.9	4.1	.5	0.9	1	170	200	.03	.04	.4	21	
W & M	Blueberries	83.2	62	.7	.5	15.3	1.5	.3	1.0	1	81	100	.03	.06	.5	14	
FE	Burdock, <i>Arctium lappa</i> root	73.7	94	3.1	.1	22.0	2.2	1.1	.77	1.4			.03	.05		5	
W & M	Butternuts	3.8	629	23.7	61.2	8.4		2.9	6.8								
Jenks	Cattail root flour					^{81.0} 8.4											
W & M	Chestnuts, fresh	52.5	194	2.9	1.5	42.1	1.1	1.0	1.7	6	454		.22	.22	.6		
W & M	Chicory greens, raw	92.8	20	1.8	.3	3.8	.8	1.3	.9		420	4,000	.06	.10	.5	22	
O.G.	Cholla cactus buds, dried - one oz.			4					2	400							
Morrison	Clover - hay, red leafy			13.5	2.9	23.4					1.36						
W & M	Corn salad, raw	92.8	21	2.0	.4	3.6	.8	1.2									
W & M	Crabapples, raw	81.1	68	.4	.3	17.8	.6	.4	.3	(1)	(110)	(40)	(.03)	(.02)	(4)	8	
W & M	Currants, black	84.2	54	1.7	.1	13.1	2.4	.9	1.1	3	372	230	.05	.05	.3	200	
W & M	Dandelion greens, raw	85.6	45	2.7	.7	9.2	1.6	1.8	3.1	76	397	14,000	.19	.26		35	
Reed	Daylily roots			9.3	25.	60.00	0.9										
N.Y. B.G.	Daylily blossom			11.42	2.71	10.44	8.42	5.35									
W & M	Dock, raw	90.9	28	2.1	.3	5.6	.8	1.1	1.6	5	338	rich	12,900	.09	.22	.5	119
W & M	Elderberries, raw	79.8	72	2.6	(.5)	16.4	7.0	.7	1.6		300	600	.07	.06	.5	36	
FE	Garlic	71.0	95	4.5	.2	23.1	1.4	1.2	1.0			Trace	.22	.08	.4	15	
W & M	Ginger root, raw	87	49	1.4	1.0	9.5	1.1	1.1	2.1	6	264	10	102	.04	.7	4	
W & M	Grapes	81	69	1.3	1.0	15.7	.6	.4	.4	3	158	100	(.05)	(.03)	(3)	4	
Morrison	Grass - hay, mixed (dry)			7.0	2.5	30.9	5.5	.48	.21		1.20						
W & M	Gooseberries	88.9	39	.8	.2	9.7	1.9	.4	.5	1	155	290				33	
W & M	Groundcherries	85.4	53	1.9	.7	11.2	2.8	.3	1.0			720	.11	.04	2.8	11	
W & M	Hazelnuts (filberts)	5.8	634	12.6	62.4	16.7	3.0	2.5	3.4	2	704		.46		.9	Trace	
W & M	Haws, Scarlet	75.8	87	2.0	.7	20.8	2.7	.8									
W & M	Hickorynuts	3.3	673	13.2	68.7	12.8	1.9	2.0	2.4								
W & M	Horseradish, raw	74.6	87	3.2	.3	19.7	2.4	2.2	1.4	8	564						
Yanovsky	Jerusalem artichokes	70.2				22.8	2.3										
W & M	Jujube, raw	70.2	105	1.2	.2	27.6	1.4	.8	.7	3	269	40	.02	.04	.06	69	
W & M	Lembs' quarters	84.3	43	4.2	.8	7.3	2.1	3.4	1.2			11,600	.16	.44	1.2	80	
W & M	Millet	11.8	327	8.9	2.9	72.9	3.2	2.5	6.8		430	(0)	.73	.38	2.3	(0)	

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