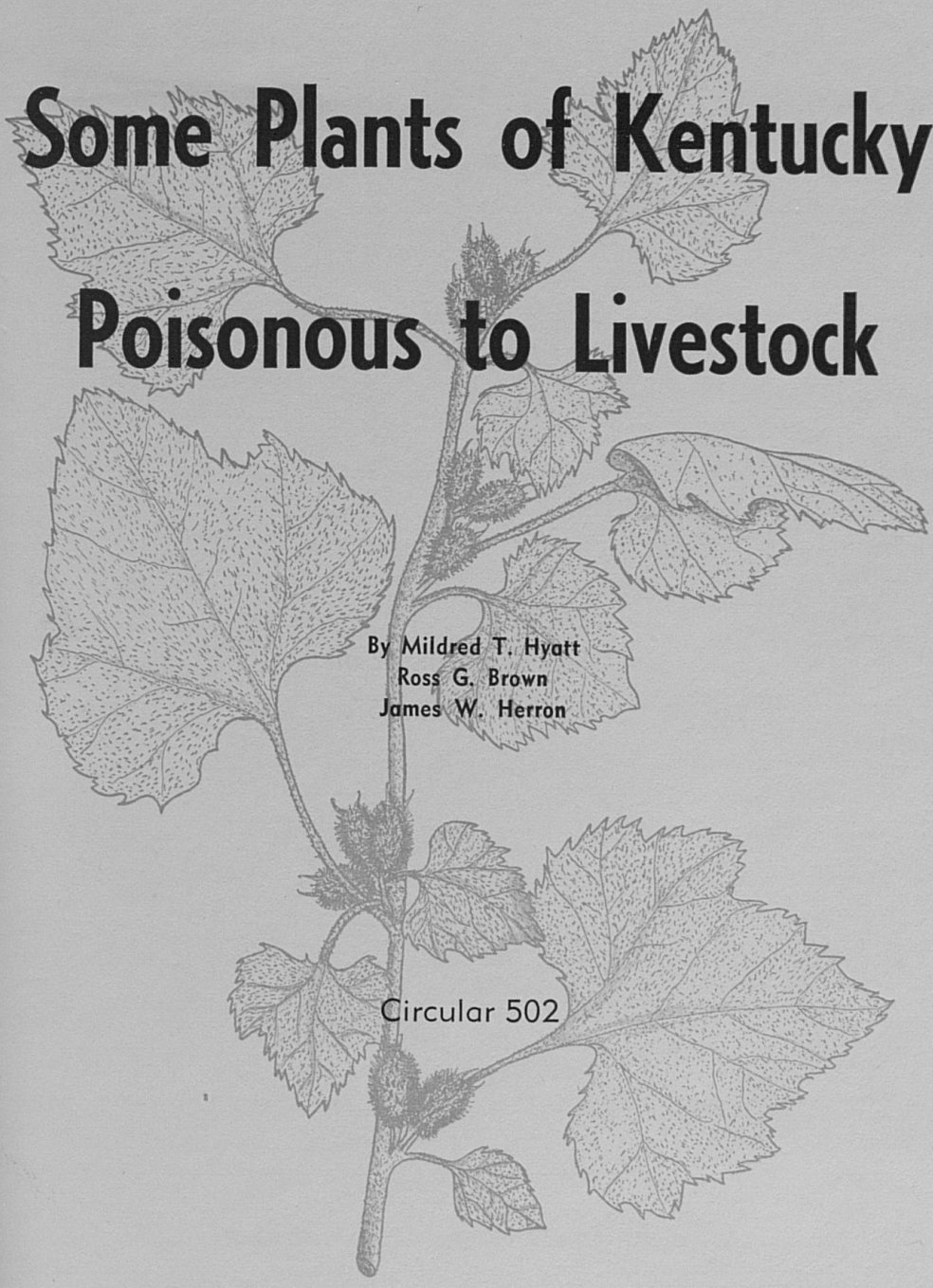
Some Plants of Kentucky Poisonous to Livestock



By Mildred T. Hyatt
Ross G. Brown
James W. Herron

Circular 502

Cooperative Extension Work in Agriculture and Home Economics
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See Plant Index on pages 56 and 57.

Some Plants of Kentucky Poisonous To Livestock

By Mildred T. Hyatt, Ross G. Brown, and James W. Herron[1]

Poisonous plants are responsible for considerable losses to farmers and stockmen in Kentucky. Many cases of plant poisoning are never diagnosed or even suspected. There are nearly 100 different species of plants growing in Kentucky that under certain conditions may be poisonous to livestock. Only one third of these are likely to cause serious trouble. The primary purpose of this circular is to enable the farmer to recognize, at sight, plants which are known to be dangerously poisonous, and to have some knowledge of those additional plants, which, under certain conditions may cause trouble.

RECOGNITION OF PLANT POISONING

Plant poisoning is often difficult to diagnose, as the symptoms vary with the plant eaten and the poisonous substances it contains. When plant poisoning is suspected first eliminate the possibility that the animal is suffering from some infectious disease, or chemical poisoning from paint, sprays or weed killers left around the farm. Plant poisoning may be suspected when there is a sudden onset of unexplained illness, acute disorders of the nervous system or the digestive tract, loss of weight, difficult breathing, weakness, coma and collapse. There is usually no fever except in cases of poisoning by dogbanes and bracken. If the animal dies, autopsy finding of identifiable parts of poisonous plants in the animal's digestive tract, may lead to a definite diagnosis.

CALL A VETERINARIAN

When plant poisoning in livestock is recognized or suspected the first thing to do is call a veterinarian, as making a diagnosis and treating a poisoned animal must be done early if the animal is to be saved.

Author's acknowledgements: Information in this publication is based largely on *Poisonous Plants of the United States* (revised ed.), by W. C. Muenscher, The Macmillan Company, 1951. The illustrations were made by Mardelle Jones, Gertrude Hanly, and Betty Burrus.

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First aid measures can sometimes be given before the veterinarian arrives. Place the affected animal where it is quiet and comfortable and where diagnosis can be made and treatment given. The treatment will be determined by observing the series of symptoms, and finding what poisonous plant was eaten. Other livestock should not be allowed in the pasture where the poisoning occurred nor fed questionable silage or hay until the cause of the poisoning has been determined.

HOW TO PREVENT PLANT POISONING

Learn to recognize poisonous plants. Study the illustrations and descriptions in this circular until you are familiar with them. Make a thorough survey of your property, wherever stock is turned out to graze. Poisonous plants sometimes occur in the open pasture, but more frequently along fence rows, banks of streams and ponds, and in woodlands. Learn to recognize these plants in their early stages of growth. Cockleburs and some others are poisonous only as seedlings. Send to the Experiment Station for identification any plant that you cannot positively identify, but suspect to be poisonous.

Eradicate poisonous plants. Frequent mowing and clipping of pastures will keep down the growth of undesirable weeds. A scythe or hoe can be used in woods and swampy areas. Some of the new chemical herbicides such as 2,4-D are effective in eradication of many of the poisonous species. Swampy places may be drained and reseeded to pasture crops. Poisonous trees, shrubs and garden plants should be fenced in so that animals cannot reach them. When complete eradication is impractical keep animals away from infested areas, particularly during early spring and fall when other forage is scarce.

Don't harvest poisonous plants in hay. Before hay is cut, the field should be carefully examined.

Avoid overgrazing. Most cases of plant poisoning are closely connected with a lack of suitable forage. When plenty of grass or hay is available animals will usually avoid poisonous plants which are often tough and unpalatable. Larkspur, dutchman's breeches, water hemlock and poison hemlock are particularly dangerous in the early spring. Likewise in the fall, when pastures are dry, animals will often eat anything that is available, even unpalatable trees and shrubs.

SUGGESTIONS FOR SENDING PLANT SPECIMENS FOR IDENTIFICATION

Plants suspected of being poisonous may be sent for identification to the Department of Entomology and Botany, Agricultural Experiment Station, Lexington, Kentucky.

When possible, send the entire plant, including leaves, flowers, roots, fruits, and seeds.

State the general structure or size of the plant, whether herb, shrub, tree or vine, color of flowers, and locality and county where the plant was collected.

If two or more kinds of plants are sent at the same time, each plant should have a numbered tag attached to it.

Fresh specimens should be wrapped in damp paper before mailing.

If plants cannot be sent in fresh condition, they should be pressed out flat and packed between pieces of cardboard before sending.

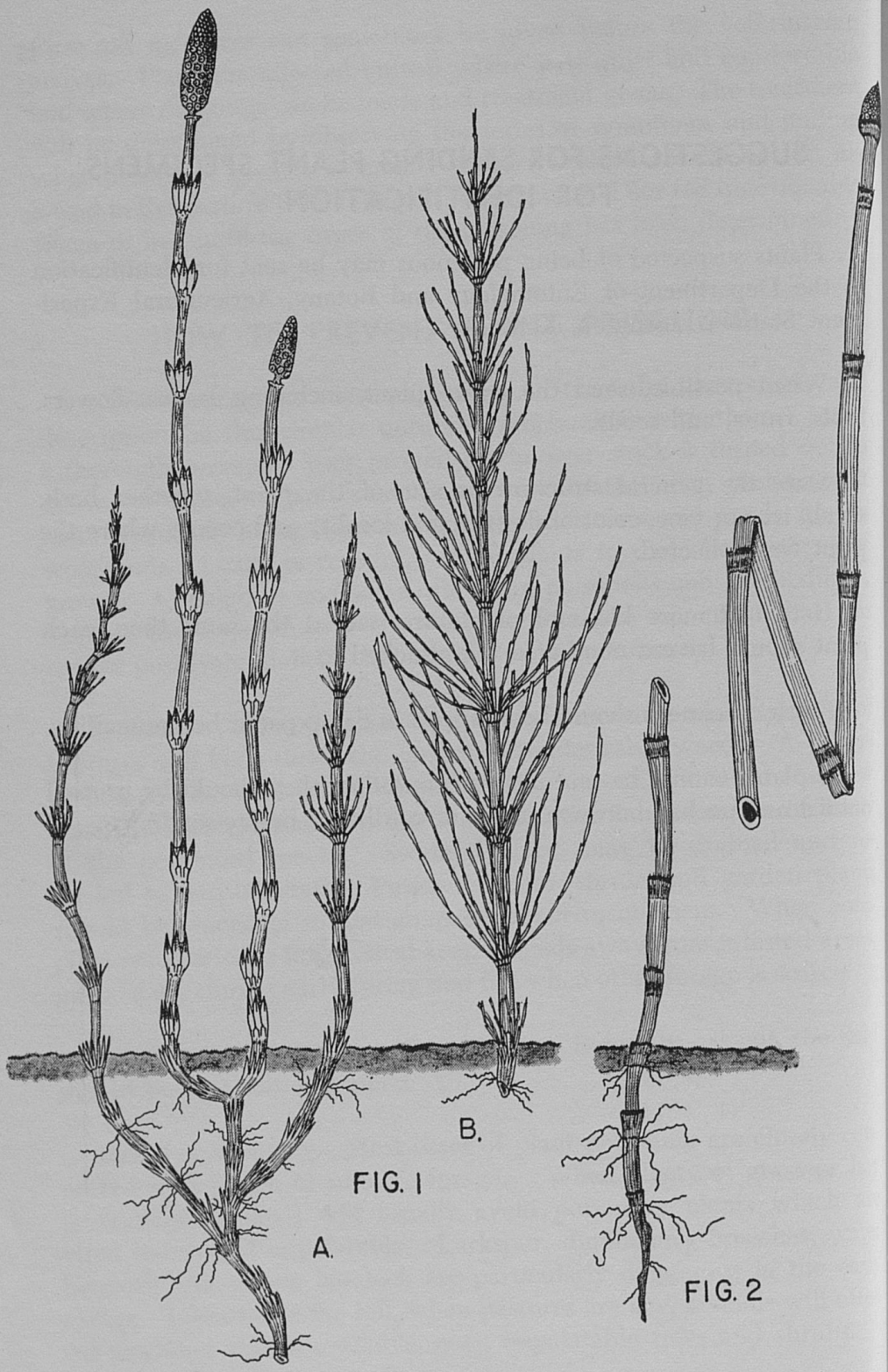

PLATE 1.— Fig. 1. Horsetail. *Equisetum arvense*. A. fertile shoots with terminal cones, B. sterile shoot. Fig. 2. Scouring rush. *Equisetum hyemale*. Evergreen shoot, bearing cone.

HORSETAIL FAMILY *(Equisetaceae)*

Horsetail. *Equisetum arvense* L. Plate 1. Fig. 1.

DESCRIPTION.— Shoots round, hollow, jointed, of two types arising from a perennial, creeping, underground rootstock. One type of shoot, tan in color, appears in early spring, and bears the reproductive spores in a terminal, cone-like structure. The other is sterile and appears later, bearing whorls of pine-needle-like branches. Leaves reduced to "teeth" and arranged in whorls around the stem at the joints.

Common on sandy, moist soil, in meadows, along roadside ditches, stream banks and railroad embankments.

Scouring rush. *Equisetum hyemale* L. Plate 1. Fig. 2.

DESCRIPTION.— Shoots similar, forming long, tapering, cane-like stalks, 1 to 6 feet high. Stems stiff, evergreen, with terminal spore-bearing cones. Leaves reduced to "teeth" and arranged in whorls around the stem at the joints.

Common in wet localities, thickets, along streams, roadside ditches and borders of swamps, and in mountain sections of the state.

CONDITIONS OF POISONING.— These plants contain both aconitic acid and the alkaloid equisetin, a nerve poison. Sheep and cattle are susceptible to poisoning by eating the green plants, but horses are more readily affected by eating the dried plants in hay. Horses often develop a depraved appetite or craving for the plant once they have eaten it.

SYMPTOMS.— Symptoms appear suddenly after the plant is eaten, especially in a dried condition. The first symptoms are weakness, loss of appetite and loss of flesh. In a few weeks a lack of muscle control will be noticed, and the animal will become easily excited and fall down often. In advanced cases the symptoms are difficult breathing, pale mucous membranes, rapid and weak pulse, diarrhea, convulsion, coma, and then death. In horses this condition may be confused with azoturia but the bowel movements are normal and the urine is not red.

TREATMENT.— In early stages purgatives and stimulants should be given along with nux vomica. Keep the animal in a quiet warm place, feed grain but stop feeding the infected hay.

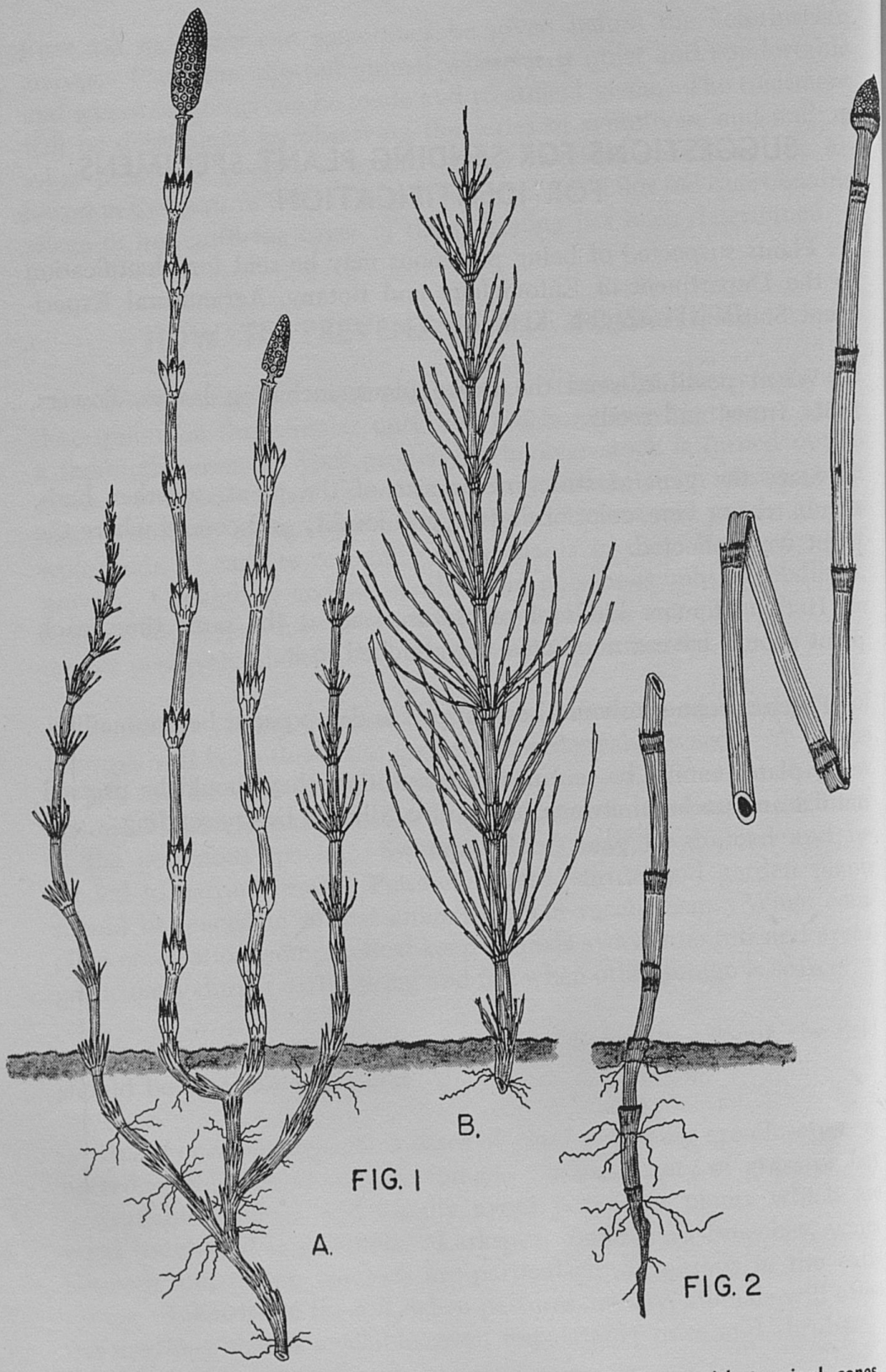

PLATE 1.— Fig. 1. Horsetail. *Equisetum arvense*. A. fertile shoots with terminal cones, B. sterile shoot. Fig. 2. Scouring rush. *Equisetum hyemale*. Evergreen shoot, bearing cone.

PLATE 2.— Bracken. *Pteridium latiusculum*. A. "leaf" attached to rootstock. B-C. detail showing spore case along margin on underside of "leaf".

FERN FAMILY *(Polypodiaceae)*

Brake fern or Bracken. *Pteridium latiusculum* Maxon. (*Pteris aquilina* L.) Plate 2.

DESCRIPTION.— Coarse-growing perennial fern, with stout black horizontal rootstock. Frond or leaf broad, triangular in shape and divided into three main parts, each of which is twice subdivided. Reproduction by spores borne in late summer on the lower edges of the mature fronds.

Common in open acid woodlands and high pastures of the state.

CONDITIONS OF POISONING.— Not ordinarily eaten by stock, except during a dry season or in late summer when there is a scarcity of green herbage. Poisonous both fresh and dried in hay but hogs eat the rootstocks without harm. The chemical action causing the poison is cumulative and symptoms often do not appear immediately. The toxic material is unknown.

SYMPTOMS.— Cattle affected usually have a high temperature, stand with head down and drool at the mouth. There is a rapid loss of flesh along with difficult breathing and excess salivation. Blood appears in the feces, either in bright red clots or as black feces. There is generally a trickle of blood from the nostrils. The mucous membranes will be congested, hemorrhagic or a yellow color. These symptoms may be confused with anthrax.

In horses the first symptom noticed is an unsteady gait. They become drowsy, push the head against solid objects and have difficulty in swallowing. From 7 to 20 days after the symptoms are first noticed the animal will "go down." Death usually follows in several days.

TREATMENT.— If the condition is diagnosed early enough some animals will respond to treatment. Saline purgatives, raw linseed oil, mineral oil or melted lard should be given. Thiamine hydrochloride injected intravenously is useful. The animal should be kept in a quiet place and given laxative feeds.

PLATE 3.— Johnson grass. *Sorghum halepense*. A. part of plant showing creeping rootstocks. B. flowering portion of plant.

GRASS FAMILY *(Gramineae)*

Johnson grass. *Sorghum halpense* L. Pers. Plate 3.

DESCRIPTION.— Large perennial, 3-6 feet high, with scaly creeping rootstalks. Flowers in long open terminal panicle.

Sorghum. *Sorghum vulgare* L.

DESCRIPTION.— Very sturdy annual. Tall, coarse grass with flowers similar to Johnson grass.

Sudan grass. *Sorghum vulgare* var. *sudanense* (Piper) Hitch.

DESCRIPTION.— Annual, similar to sorghum, but of more slender growth.

Neither sorghum nor sudan grass has scaly, creeping rootstalks.

All three are cultivated as forage crops, but Johnson grass is a weed of considerable importance in Kentucky as it spreads rapidly into cultivated fields. Once established it is hard to eradicate because of its underground rootstocks.

CONDITIONS OF POISONING.— Normally these grasses furnish excellent forage and their use should not be discouraged. Since under certain conditions they may be dangerously poisonous, they should never be fed in a wilted or stunted condition to livestock. Cut hay and silage should be cured for at least six weeks before they are used. These grasses should never be pastured until they are at least a foot tall; second growth is also very dangerous.

The toxic principle is hydrocyanic acid. Animals are more likely to be poisoned if they drink soon after eating plants of these species. Cattle are more susceptible than horses and sheep.

SYMPTOMS.— Lethal amounts of hydrocyanic acid cause death to appear suddenly with respiratory paralysis and spasms. These animals are usually found dead before symptoms are noticed.

Smaller doses cause excitement and convulsions; later, depression sets in. Respirations are deep and accelerated at first but become weak and irregular. Pupils of the eyes are dilated and appear glassy. Nostrils and mouth are usually filled with foam. The animal may become bloated and urinate and defecate often. The breath will have an almond odor.

TREATMENT.— If treatment is to be beneficial it should be started before respiratory paralysis begins to occur.

The best antidotes are either sodium nitrite, sodium thiosulphate or methlylene blue, given intravenously. Calcium gluconate or molasses is also helpful.

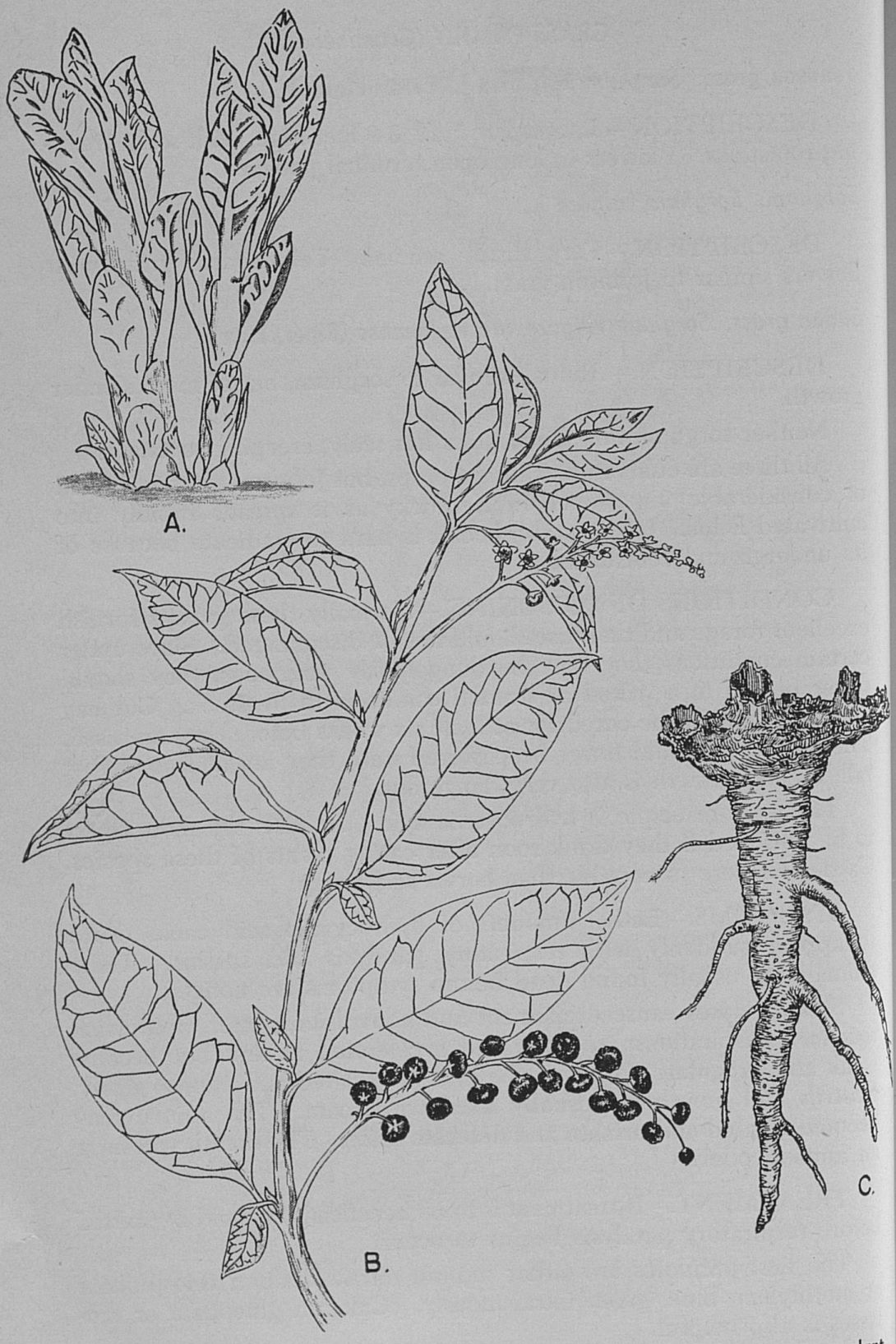

PLATE 4.— Pokeweed. *Phytolacca americana*. A. young shoots, B. part of mature plant with flowers and fruits. C. tap root.

POKEWEED FAMILY *(Phytolaccaceae)*

Pokeweed, pokeberry, poke. *Phytolacca americana* L. Plate 4.

DESCRIPTION.— Tall, smooth, perennial herb with a large taproot. Stems succulent, purplish, 3 to 10 feet high. Leaves alternate, pointed, narrowly oblong, with smooth margins. Flowers small, white, borne in long, drooping clusters. Fruits flattened, spherical, dark purple berries, usually with ten seeds.

Common on recently cleared land, in open woods, pastures, and along fence rows.

CONDITIONS OF POISONING.— A saponin-like substance, in addition to the alkaloid, phytolaccine, is present in all parts of the plant, especially the roots and seeds. Cooking destroys the poison and young shoots are sometimes used as cooked greens. Although animals usually avoid pokeweed due to the unpleasant taste, early in the spring they sometimes feed on the young shoots.

SYMPTOMS.— In most cases when small amounts are eaten the only symptoms are retching and vomiting, usually noticed several hours after the plant has been eaten. If larger amounts are eaten, spasms, diarrhea and convulsions will be the main symptoms. The cause of death is respiratory paralysis.

TREATMENT.— Tannic acid, mineral oil and stimulants will help in most cases if the condition is diagnosed early enough.

PLATE 5.— Corn cockle. *Agrostemma Githago.* A. entire plant showing flowers and opposite leaves. B. enlarged seed.

PINK FAMILY *(Caryophyllaceae)*

Corn cockle, purple cockle, corn-rose. *Agrostemma Githago* L. Plate 5.

DESCRIPTION.— An erect, branched, annual with silky-haired stems and leaves. Leaves opposite, narrow and pointed. Flowers purplish-pink, 1 to 1½ inches wide, borne singly on long slender stalks, and appear in May and June. Fruit a capsule containing many dark brown or black wart-covered seeds ⅛ inch in diameter.

Occurs commonly as a weed in grain fields and along roadsides in Kentucky. Seeds are often found as contaminants in cereal crops, especially in vetch.

CONDITIONS OF POISONING.— The poisonous substances, githagin, a saponin, and agrostemmic acid are for the most part concentrated in the seeds, although there are small amounts in all parts of the plant. Most cases of poisoning occur from eating cockle-infested grain or screenings. Flour ground from wheat contaminated with cockle is dangerous for human consumption. Although poultry and pigs are most likely to be poisoned other animals are susceptible.

SYMPTOMS.— Two types of poisoning may occur from eating corn cockle. The chronic type develops from eating small amounts of the seed over an extended period of time. The acute forms occur when large quantities of seed are eaten. The symptoms are colic, staggering, falling down, rapid breathing, coma, then death.

Pigs will vomit, have colic and a foul diarrhea. Spasms will occur before death.

In cattle the first symptoms are nervousness, slobbering and grinding of the teeth, followed by excitement, colic and coughing, lasting from 5 to 8 hours. After this the animal will have a very foul diarrhea, fast respirations, fast and weak pulse, temperature below normal and then death.

In horses the symptoms are slobbering, yawning, colic, fast and weak pulse, coma and death. There are no convulsions.

TREATMENT.— Digitalis, if given soon enough, is of value. Oils, such as mineral oil, are very useful along with the digitalis.

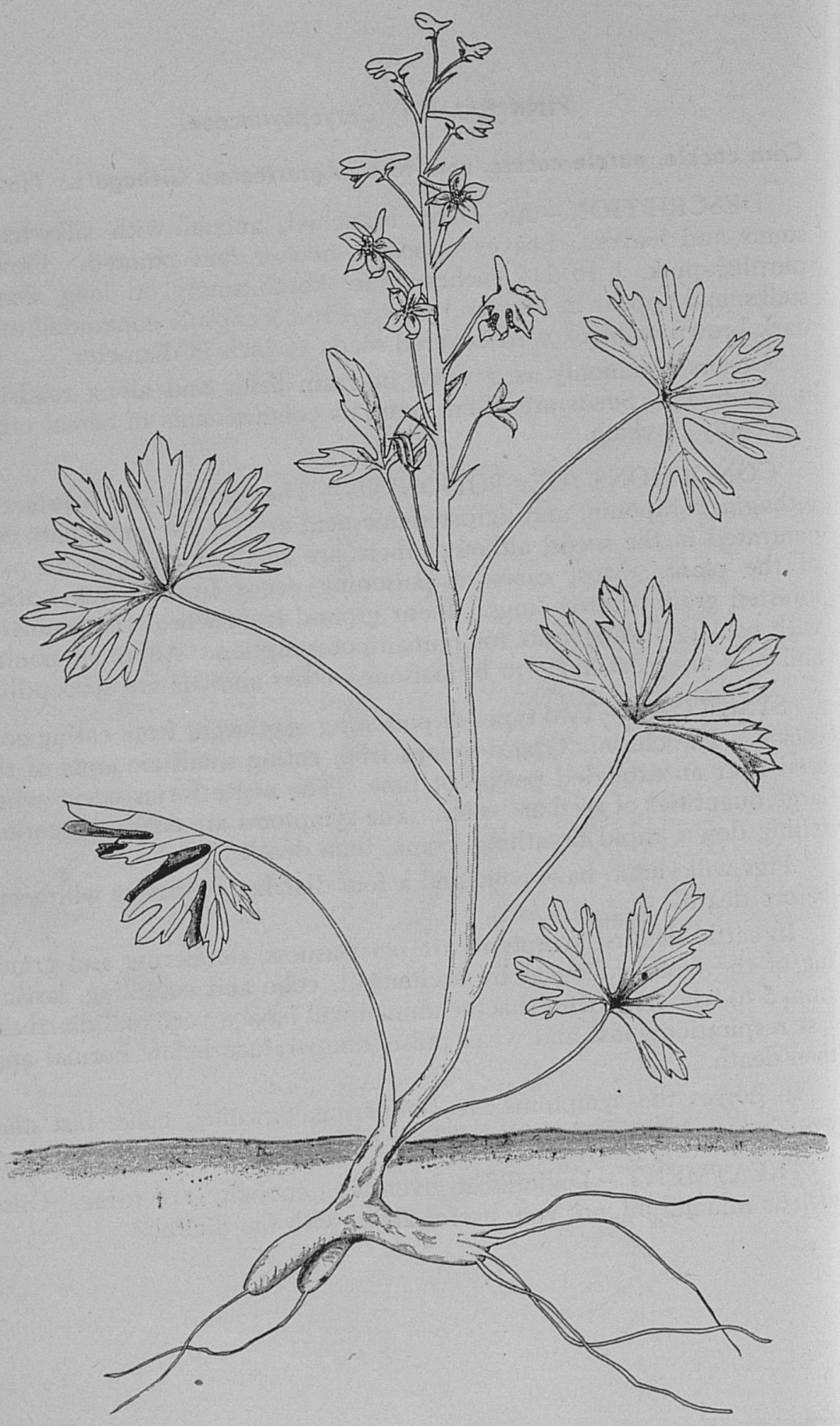

PLATE 6.— Dwarf larkspur. *Delphinium tricorne*. Entire plant, showing flowers, lobed leaves, and tuberous roots.

CROWFOOT FAMILY *(Ranunculaceae)*

Dwarf larkspur, staggerweed. *Delphinium tricorne* Michx. Plate 6.

DESCRIPTION.— Stout perennial, 4-35 inches high. Leaves alternate and very deeply lobed. Flowers spurred, blue or occasionally white, arranged in terminal clusters, appear in spring. Root a tuberous cluster.

Commonly found in rich open woods and along streams.

The annual larkspur (*Delphinium Ajacis* L.) which often escapes from gardens and establishes itself as a weed in fields and roadsides is also poisonous.

CONDITIONS OF POISONING.— Larkspur contains several very poisonous alkaloids, including delphinine. They are most poisonous in the early stages of growth, during April and May. Most cases occur when stock graze in woodland pastures, before other green herbage is available. Cattle are the most susceptible, but horses and sheep can be poisoned by eating large quantities.

SYMPTOMS.— The symptoms of larkspur poisoning differ according to the amount eaten and the animal's tolerance. Small amounts may cause loss of appetite, excitability, staggering and constipation. Severe symptoms that develop when an animal eats large quantities are slobbering, vomiting, colic, bloating and convulsions. Death is due to respiratory paralysis.

TREATMENT.— Protect animals from excitement by keeping them in a quiet place and give them such drugs as chloral hydrate or one of the barbiturates. Epsom salts may be given to help the constipation. Other drugs should be given to relieve the animal. It may be necessary to treat the animal for bloat.

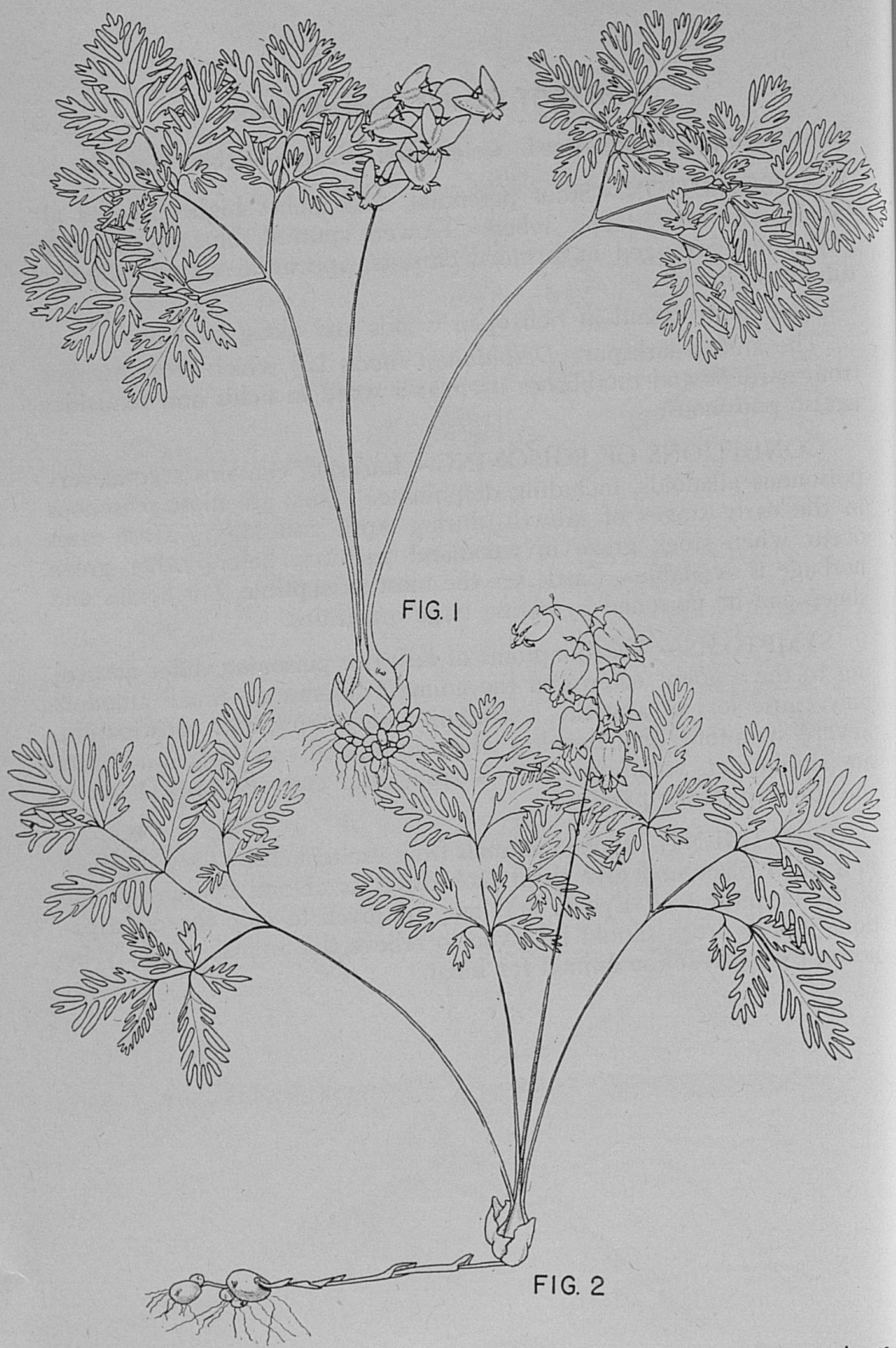

PLATE 7.— Fig. 1. Dutchmans-breeches. *Dicentra Cucullaria*. Entire plant showing leaves, flowers and tuberous roots at base of stem. Fig. 2. Squirrel corn. *Dicentra canadensis*. Entire plant showing leaves, flowers and pea-like tubers scattered along underground steam.

FUMITORY FAMILY *(Fumariaceae)*

Squirrel corn, staggerweed, wild bleeding heart. *Dicentra canadensis.* (Goldie) Walp. Plate 7. Fig. 2.

DESCRIPTION.— Delicate perennial with finely cut fern-like leaves. Small yellow pea-like tubers arranged along the underground stem. Flowers 1 to 10, creamy white with 2 short rounded projections, and arranged on slender stalks.

Dutchman's breeches, staggerweed, wild bleeding heart. *Dicentra Cucullaria* L. Bernh. Plate 7. Fig. 1.

DESCRIPTION.—Closely resembles squirrel corn but small grain-like tubers are clustered at the base of the stem. Flowers with 2 spur-like projections.

Both species are among the earliest of spring plants, blossoming in April or May. Common in rich open woods, often in company with dwarf larkspur.

CONDITIONS OF POISONING.— The entire plant of both species contain a number of poisonous alkaloids. Dutchman's breeches is more poisonous than squirrel corn. These plants are unpalatable and are not frequently eaten in harmful quantities when other forage is available. Most cases of poisoning occur in early spring (April or May) when animals are grazing in wooded areas. Cows are more frequently poisoned than horses; sheep are not affected.

SYMPTOMS.— A staggering gait and a loss of milk production. Later symptoms are sudden trembling which increases in severity, frothing of the mouth, labored breathing, diarrhea and convulsions. Most animals will recover, if the dosage is not too heavy, and if they are kept away from the plants after the first symptoms appear.

TREATMENT.— Animals showing "staggers" in the spring should be moved to clean pastures at once. If poisoning symptoms are severe, purgatives, mineral oil and stimulants may be given.

PLATE 8.— Wild black cherry. *Prunus serotina*. A. flower and cluster. B. branch showing leaves and fruit. C. leaf showing hairs along midrib of lower surface.

ROSE FAMILY *(Rosaceae)*

Wild black cheery. *Prunus serotina* Ehrh. Plate 8.

DESCRIPTION.— Tree or shrub with slender horizontal branches. Bark of young branches and twigs reddish-brown with prominent white lenticels (pores). Leaves alternate, simple, elliptical, pointed, margins finely toothed, leathery in texture, and usually have a row of hairs on the lower surface along both sides of the midrib. Flowers small, white, in drooping clusters, and produce dark-red to black cherry fruits.

Common along fence rows, roadside thickets, and in rich open woods. Choke-cherry (*Prunus virginiana* L.), also poisonous, is of limited distribution in Kentucky.

CONDITIONS OF POISONING.— Wild cherries contain the glucoside amygdalin, which by a series of chemical changes is converted to hydrocyanic acid. This acid is formed very rapidly in wilted or bruised leaves, particularly those on young tender shoots. Most cases of poisoning occur when animals have access to wilted leaves on branches blown down during wind or hail storms, or branches that have been clipped or pruned.

SYMPTOMS.— Symptoms may develop very rapidly after an animal has eaten wilted wild cherry leaves. The poisoned animal becomes uneasy, staggers and has convulsions. Breathing will be very difficult and the mucous membranes become blue. Death may come so quickly that the animal will be found near the wilted leaves or tree.

TREATMENT.— If the condition is diagnosed in time intravenous injection of sodium thiosulfate and sodium nitrite will save the animal. Molasses and calcium dextrose are very helpful. In most cases the animal will be dead before a veterinarian can be called.

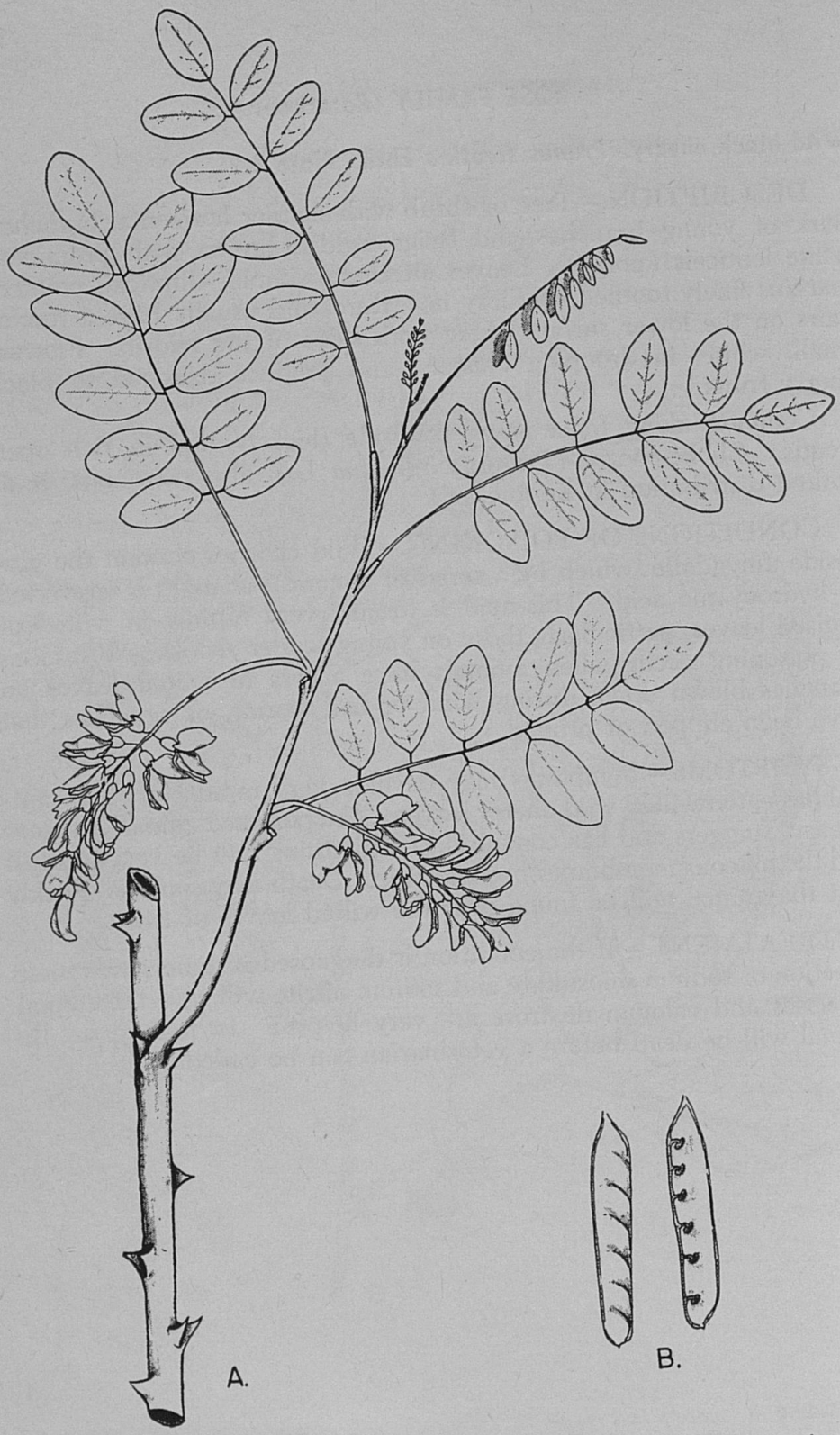

PLATE 9.— Black locust. *Robinia Pseudo-Acacia.* A. branch showing leaves, clusters of flowers and thorny stems. B. pod.

PULSE OR PEA FAMILY *(Leguminosae)*

Black locust, false acacia. *Robinia Pseudo-Acacia* L. Plate 9.

DESCRIPTION.— Moderate-sized tree, often with 2 short spines at base of leafstalk; bark rough. Leaves alternate, pinnately compound; the individual leaflets oval-shaped, without teeth. Flowers creamy white, fragrant, sweet-pea like, arranged in long drooping clusters. Fruit a flat, brown pod, ½ inch wide, 2 to 4 inches long, and containing 4-8 small kidney-shaped beans.

Common in woods and thickets. Often planted as an ornamental and for erosion control, but has spread widely as a "weed" tree along highways and in waste places.

CONDITIONS OF POISONING.— The poisonous substance is a phytotoxin, robin. Animals are affected by eating the young shoots, leaves, pods, seeds, and by gnawing on the bark, or drinking water in which the pods have been soaked. All farm animals are susceptible.

SYMPTOMS.— Animals will become stupid, not notice their surroundings, and stand with the legs apart. Heart action is irregular and the breathing is feeble, mucous membranes are yellow, and the pupil of the eye dilated. Colic pains may be present and soon followed by diarrhea. Cattle are quite often dizzy and very nervous.

TREATMENT.—Death follows the onset of symptoms unless treatment is started soon. An injection of digitalis to help the heart action is useful. Other treatments used are just to help decrease the symptoms and give ease to the animal.

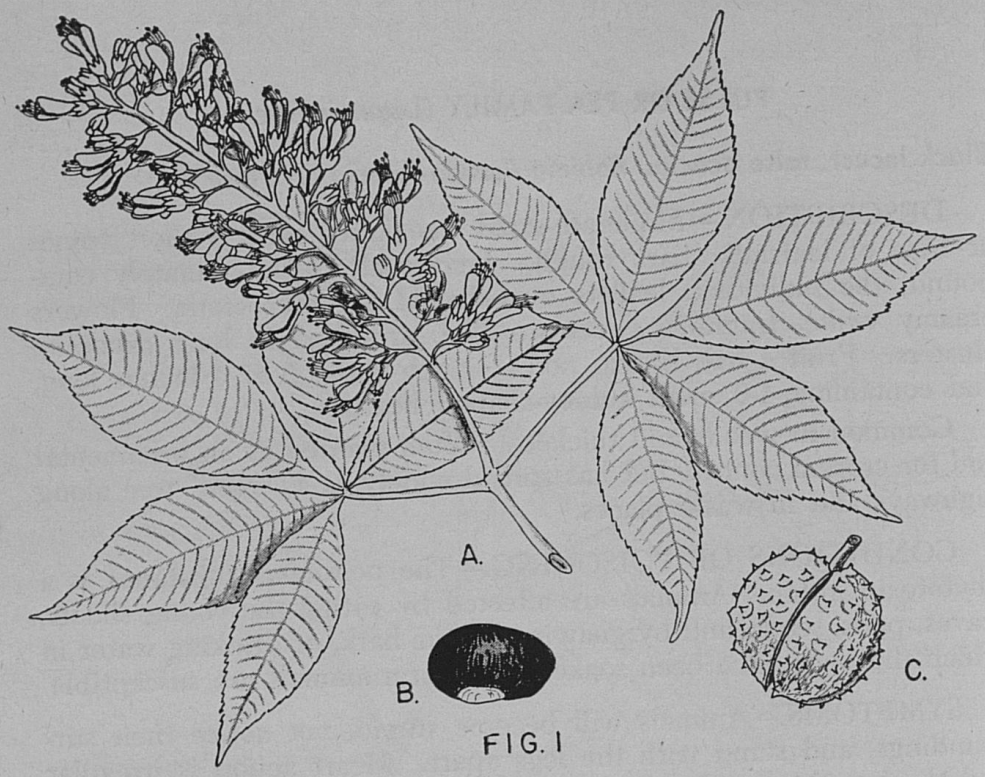

FIG. 1

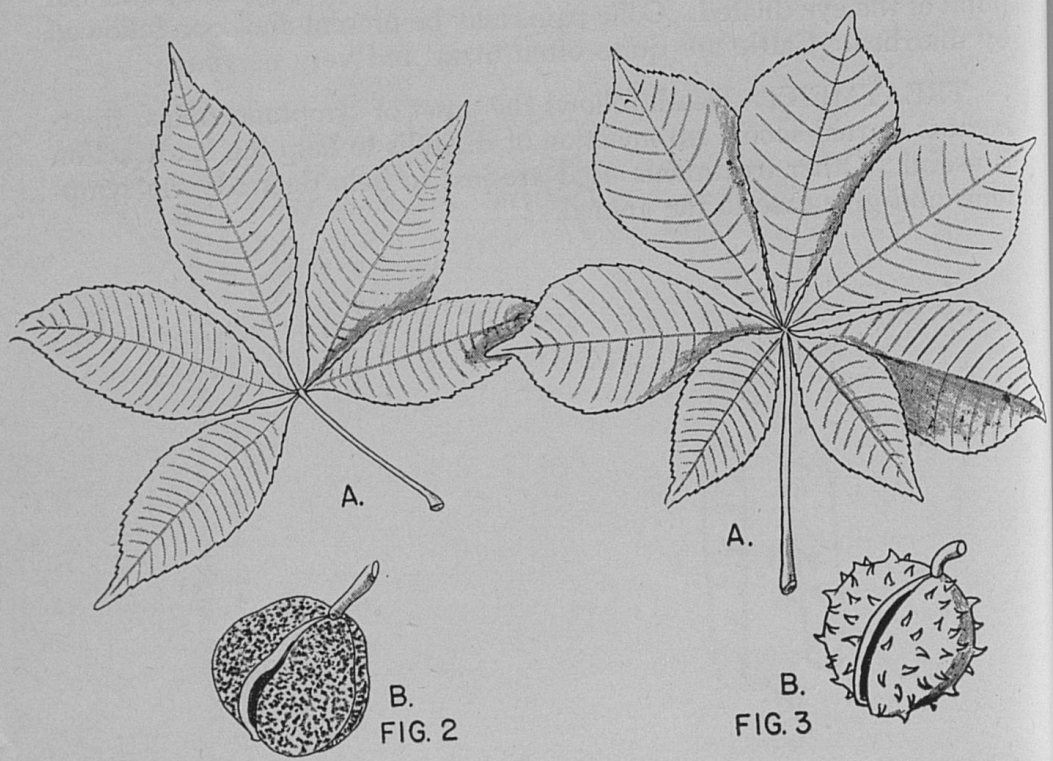

FIG. 2 FIG. 3

PLATE 10.— Fig. 1. Ohio buckeye. *Aesculus glabra*. A. branch showing leaves and flower cluster. B. seed. C. spiny fruit. Fig. 2. Sweet buckeye. *Aesculus octandra*. A. compound leaf. B. smooth fruit. Fig. 3. Horsechestnut. *Aesculus Hippocastanum*. A. compound leaf. B. spiny fruit.

BUCKEYE FAMILY *(Hippocastanaceae)*

Ohio buckeye. *Aesculus glabra* Willd. Plate 10. Fig. 1.

DESCRIPTION.— Tree or shrub. Leaves opposite, palmately compound (leaflets arranged like the fingers of a hand). Leaflets usually five. Flowers yellowish, in large clusters at ends of branches. Fruit a prickly capsule (at least when young), leathery, 1 to 3 seeded—each seed glossy brown with a pale scar—hence the common name buckeye. Bark with a strong offensive odor.

Common in rich moist woods, and along river banks.

Horsechestnut. *Aesculus Hippocastanum* L. Plate 10. Fig. 3.

DESCRIPTION.— Similar to Ohio buckeye but leaflets usually seven and flowers white.

A cultivated species introduced from Europe and widely planted as an ornamental shade tree.

Sweet buckeye. *Aesculus octandra* Marsh. Plate 10. Fig. 2.

DESCRIPTION.— Similar to Ohio buckeye, but bark with a slight odor, and fruits not prickly.

Common in rich moist woods and along river banks.

CONDITIONS OF POISONING.— These plants contain poisonous alkaloids and glucosides, especially in the young shoots, nuts and sprouts. Poisoning is most likely to occur in early spring in woodland pastures where there are sprouts and seedlings.

SYMPTOMS.— Buckeye poisoning affects the central nervous system causing an uneasy, staggering gait. The animal will be weak, have severe trembling and may vomit. Mucous membranes will be congested and the pupils of the eye will be dilated. The animal then will go into a coma before death.

TREATMENT.— Quite often the animal is found dead before any treatment can be given. If cases are found soon enough, stimulants and purgatives are indicated.

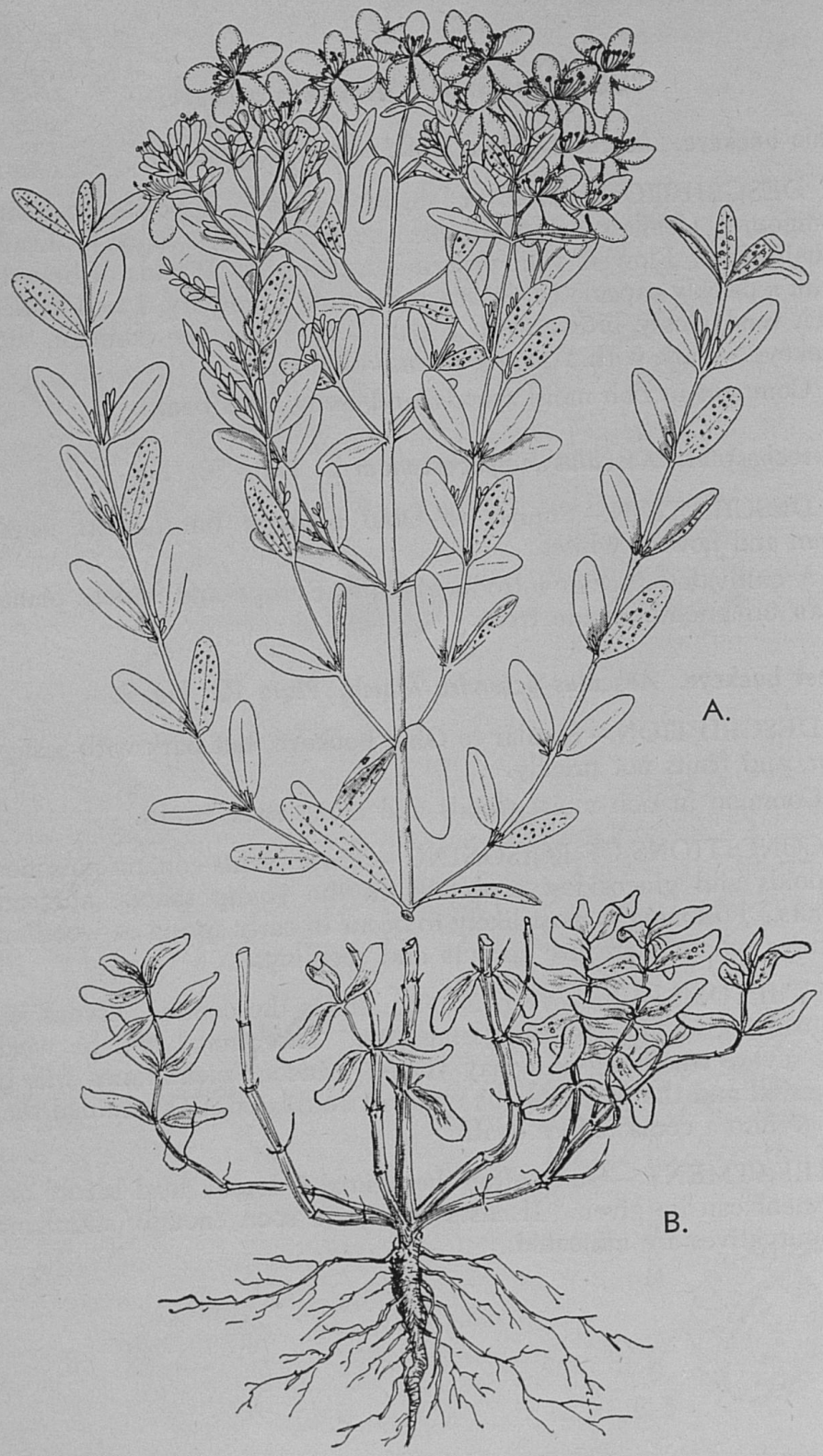

PLATE 11.— St. Johnswort. *Hypericum perforatum*. A. flowering shoot. B. lower part of plant showing shoots and runners.

ST. JOHNSWORT FAMILY *(Guttiferae)*

St. Johnswort, Klamath weed, rosin-rose. *Hypericum perforatum* L. Plate 11.

DESCRIPTION.— Erect, freely branching perennial, 1 to 3 feet tall. Leaves opposite, less than ½ inch wide, oblong or linear in shape, with smooth margins, and covered with transparent dots. Many yellow flowers in somewhat flattened clusters at the top of the stem. Petals with black glandular dots on the margins. Fruit a three-parted capsule containing many small dark-brown seeds.

Abundant in old meadows, pastures, wastelands, and along the roadside.

CONDITIONS OF POISONING.— The poisonous action of this plant is probably due to two fluorescent substances, hypericin and hypericum red. When white-skinned animals feed on large quantities of St. Johnswort in the flowering stage, their skin may become extremely sensitive to sunlight, a condition called photosensitization. Dark-skinned animals have enough pigment to screen out the undesirable light rays.

Other plants that may cause similar symptoms are alsike clover and buckwheat.

SYMPTOMS.— White-skinned animals, animals with white spots or belts, or sheep that have been sheared, quite often develop a dermatitis, the result of light sensitization. The most typical symptoms are skin blisters, falling hair and scabs. The skin may become dry and crack open. Poisoning is rarely fatal. In some cases in sheep, paralysis has been noted.

TREATMENT.— Remove animals from the pasture as soon as possible and put them in a cool, dark barn. Apply oil to the affected areas. Supply plenty of fresh water and feed.

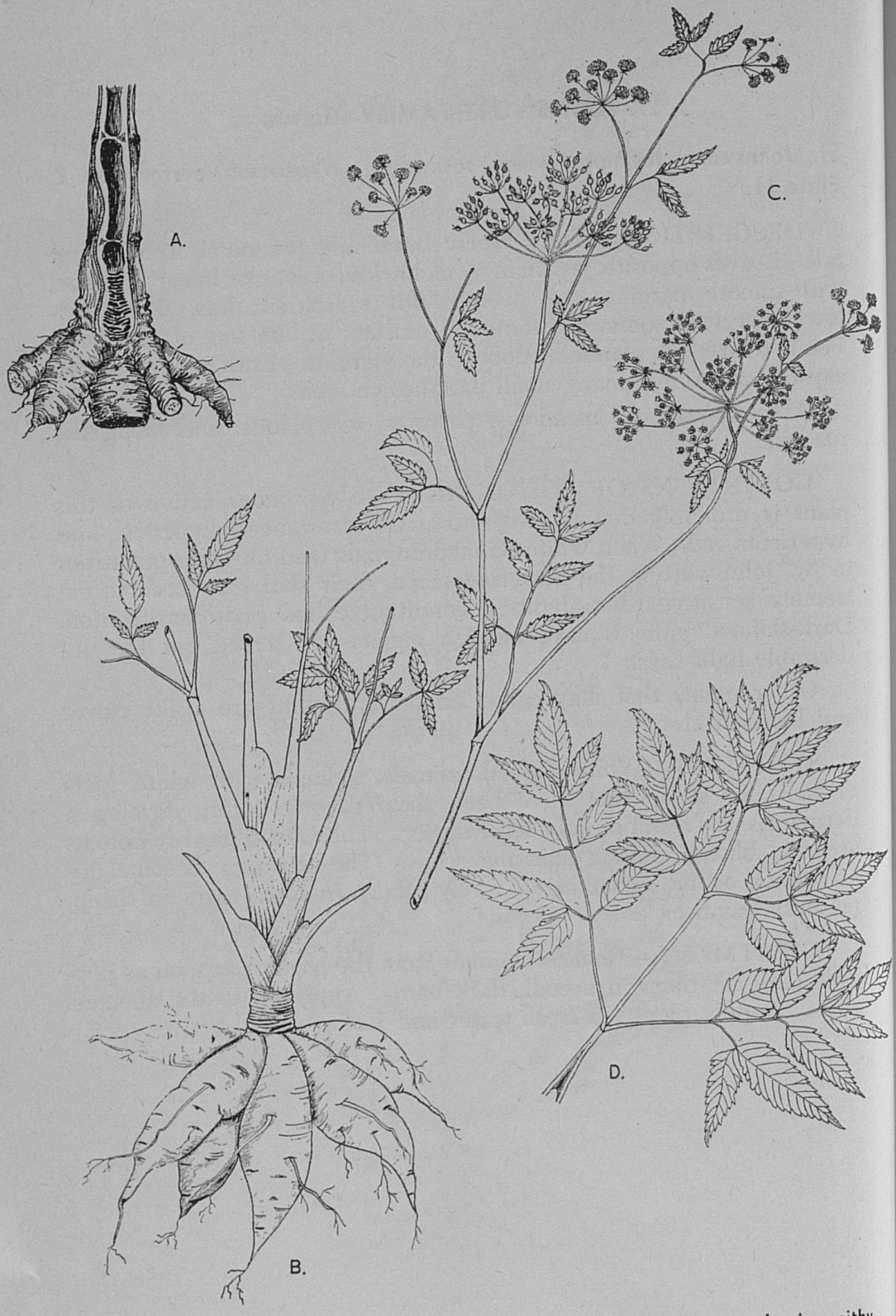

PLATE 12.— Water hemlock. *Cicuta maculata*. A. section through stem showing pithy partitions. B. cluster of tuberous roots and leaf bases. C. upper part of plant showing leaves, and flowers and fruit in umbels. D. leaf showing wide leafstalk base that partially surrounds the stem.

PARSLEY FAMILY *(Umbelliferae)*

Water hemlock, cowbane, poison-parsnip. *Cicuta maculata* L. Plate 12.

DESCRIPTION.— Branching perennial herb, 3 to 6 feet high, often with a purple streaked stem. Leaves alternate, pinnately compound, with the base of the leafstalk partially surrounding the stem. Veins of the leaflets end in the notches, not in the tips of the teeth. Flowers small, white, borne in umbels at the tops of the stem and branches. Roots clustered, tuberous. Bases of the hollow stem and rootstock have partitions of pithy tissue, visible when cut lengthwise.

A native species, occuring in wet places, marshy pastures, low woods, and along streams.

CONDITIONS OF POISONING.— The most poisonous plant of Kentucky. A small piece of the root will kill a cow in a short time. Although all parts of the plant contain a resinous substance, cicutoxin, it is chiefly concentrated in the rootstocks. Most cases of poisoning occur from eating shoots and roots in early spring before suitable pasture is available. All animals may be affected.

SYMPTOMS.— Symptoms develop rapidly, one to twelve hours after eating the plant. Muscle twitching is followed by tremors which become convulsive. The pupils are dilated and there may be excessive salivation and frothing at the mouth. The convulsive spasms become extremely violent until the animal dies in an exhausted condition.

TREATMENT.— No antidote for hemlock poisoning is known. Sedatives such as morphine and chloral hydrate will ease the pain. Purgatives to empty the digestive system and emetics to empty the stomach are useful.

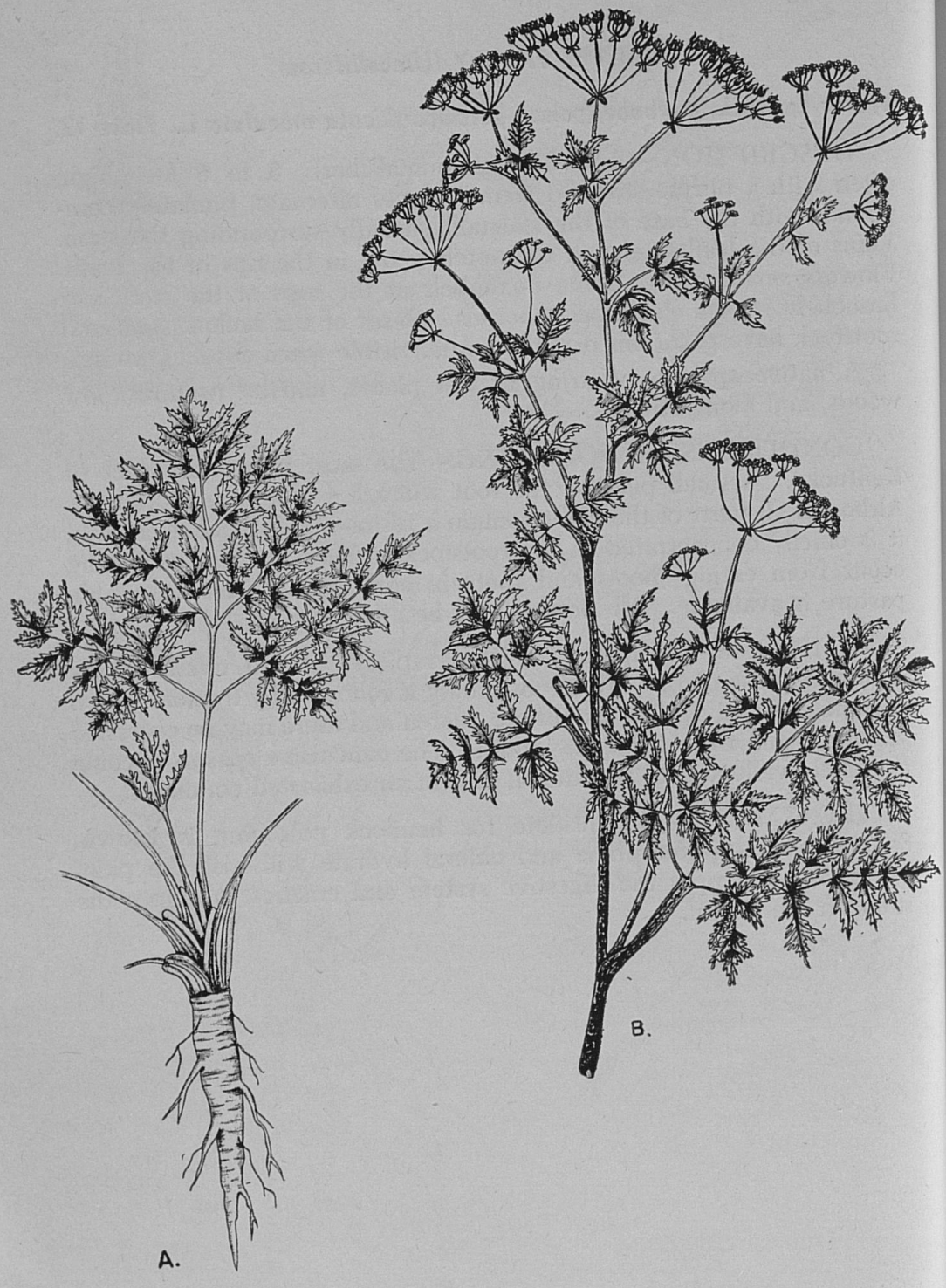

PLATE 13.— Poison hemlock. *Conium maculatum*. A. tap-root and young leaves. B. upper portion of plant with finely divided leaves and umbels of flowers and fruits.

PARSLEY FAMILY *(Umbelliferae)*

Poison hemlock, spotted hemlock, deadly hemlock. *Conium maculatum* L. Plate 13.

DESCRIPTION.— Smooth biennial herb, 3 to 8 feet high, with purple-spotted stem and finely divided compound leaves. Flowers small, white, in umbels, blossom in early summer. Leaves have a rank disagreeable odor. Poison hemlock can be distinguished from water hemlock by more finely divided leaves and long parsnip-like root.

Extremely common along roadsides, banks of streams, ditches, in fields, and around farm buildings.

CONDITIONS OF POISONING.— Poisoning is most likely to occur in early spring when leaves are green and other pasturage is not available. The entire plant is poisonous. Cases of human poisoning have occured from mistakenly eating the seeds, leaves, and roots for anise, parsley or parsnips. The toxic principle is the volatile alkaloid coniine. Although drying reduces the coniine content, hay containing the dried plants is not entirely safe.

SYMPTOMS.— Poisoning generally appears suddenly and the owner finds the animal "down." Some of the symptoms that may be noticed are: excessive salivation (slobbering), loss of appetite, muscular weakness or twitching of the muscles, incoordination, rapid pulse and great pain. There are no convulsions such as you find with water hemlock.

TREATMENT.— If animals are found and diagnosed early enough, purgatives may be given to empty the digestive tract as soon as possible. Intestinal astringents such as tannic acid are useful. Nerve and heart stimulants may be given.

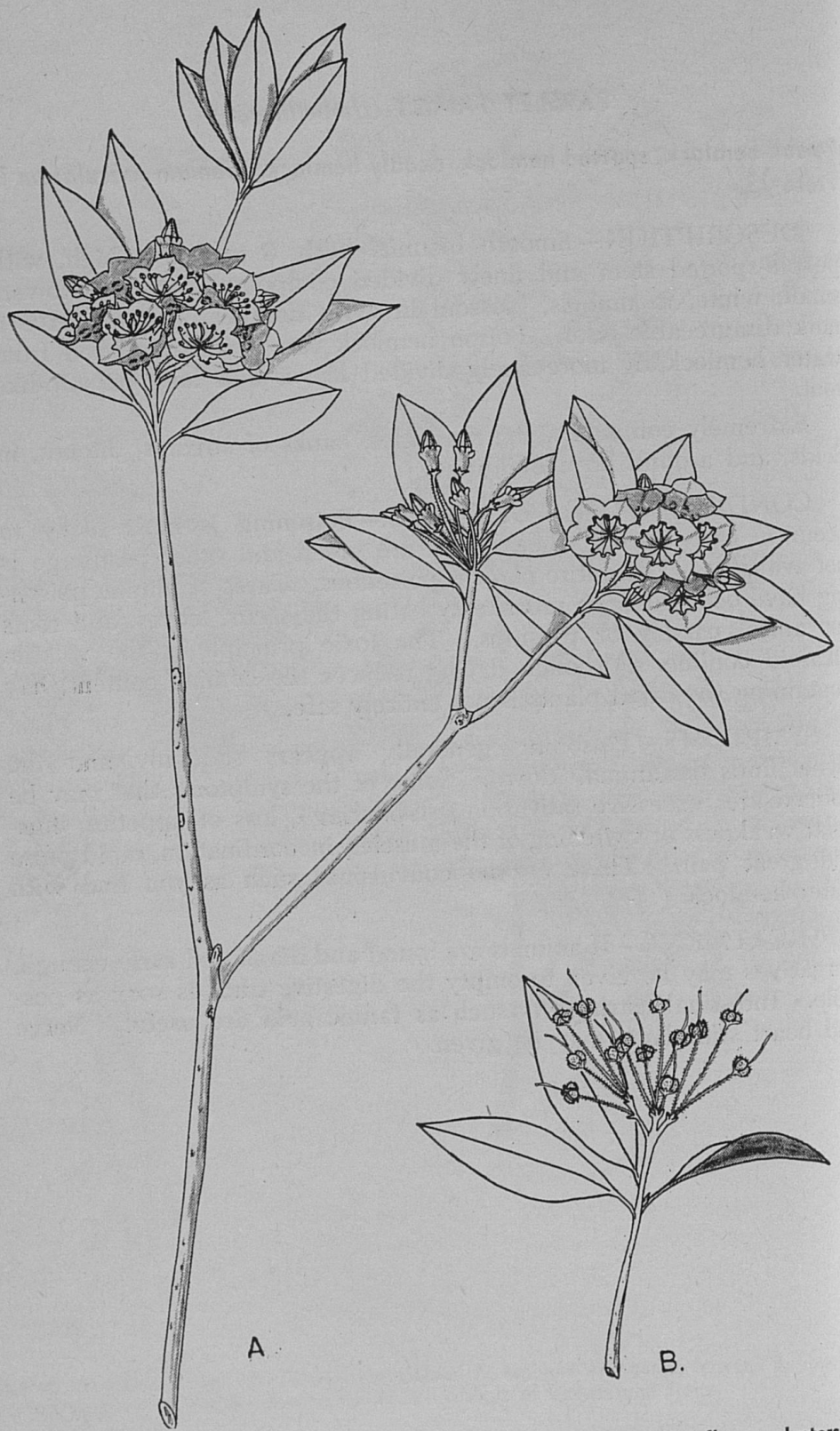

PLATE 14.— Mountain laurel. *Kalmia latifolia*. A. branch showing flower clusters and thick leathery leaves. B. cluster of capsular fruits.

HEATH FAMILY *(Ericaceae)*

Mountain laurel, calico-bush, poison laurel. *Kalmia latifolia* L. Plate 14.

DESCRIPTION.— Evergreen shrub, 3-9 feet high. Leaves to five inches long, alternate or irregular, leathery, shiny, light green on lower surface. Flowers pink or white, cup-shaped, borne in spring.

Common in upland woods, hilly pastures, and on acid soil.

Rhododendron. *Rhododendron maximum* L.

DESCRIPTION.— Evergreen shrub or small tree. Leaves alternate, leathery, whitish or rusty on lower surfaces. Flowers bell-shaped, rose-pink to white.

Common in damp woods, swamps, and upland areas.

CONDITIONS OF POISONING.— Mountain laurel and rhododendron contain a resinous substance, andromedotoxin. Sheep are more frequently poisoned than other livestock, since they are often pastured in areas that are better adapted for the growth of these plants.

SYMPTOMS.— In certain sections of the state quite a few animals are lost each year from eating laurel and rhododendron. If an animal eats 0.2% of its body weight, symptoms may develop. The first symptom is irregular breathing. Later, slobbering at the mouth, grating of the teeth, vomiting, staggering, blindness, stupor, and then death. The meat from these animals should not be eaten. If the animal recovers, several days should elapse before it is used for human consumption.

TREATMENT.— If the animals are found early enough, oil drenches such as mineral oil, raw linseed oil, lard, etc. should be given.

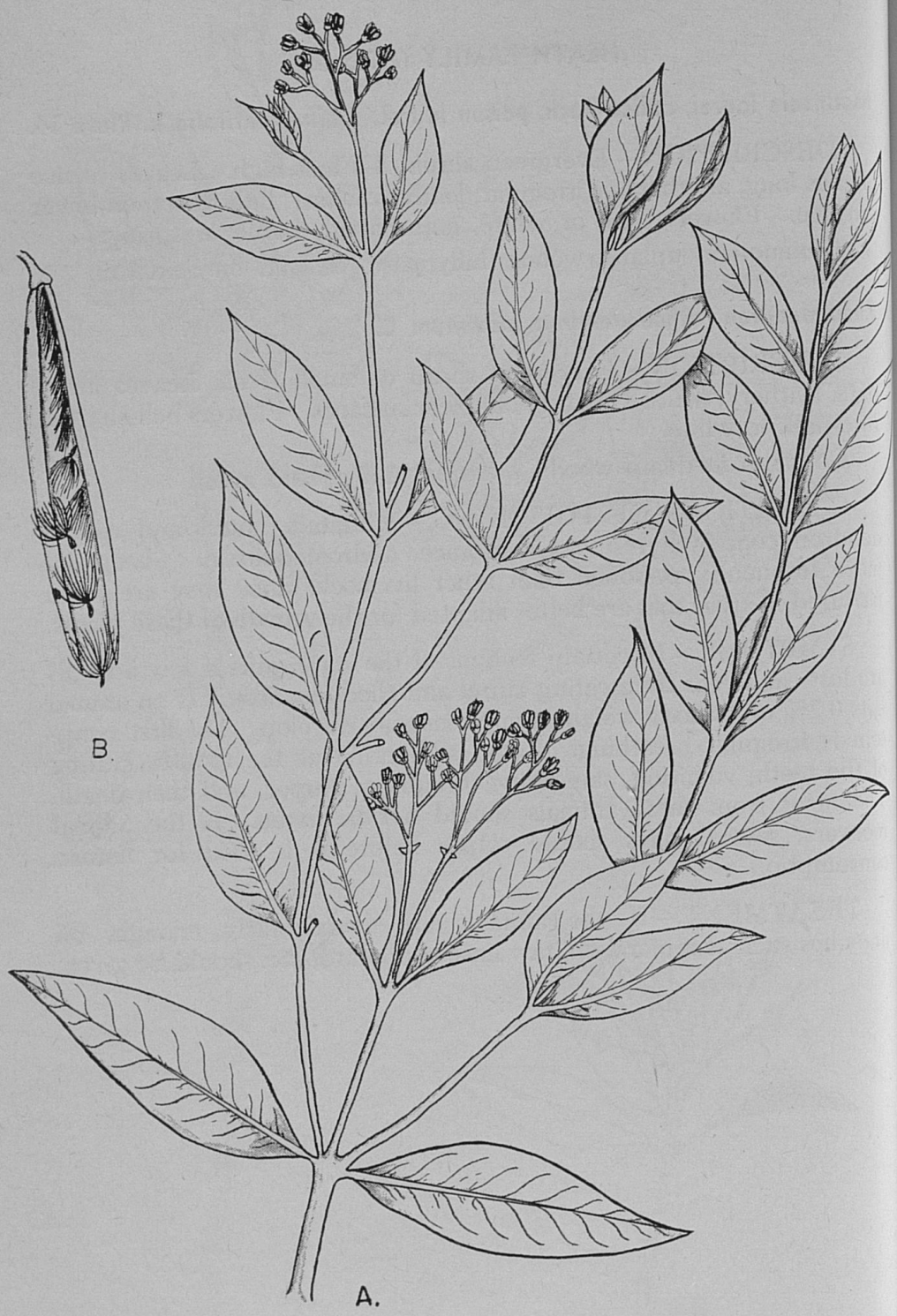

PLATE 15.— Dogbane. *Apocynum cannabinum*. A. part of plant showing opposite leaves with smooth margins, and flowers clustered at end of stems. B. pod with seeds.

DOGBANE FAMILY *(Apocynaceae)*

Indian hemp, dogbane. *Apocynum cannabinum* L. Plate 15.

DESCRIPTION.— Branching perennial, 1½ to 5 feet high. Stem contains a milky juice or latex and arises from a vertical underground rootstock. Leaves opposite, oblong in shape, with smooth margins. Flowers greenish-white, borne in clusters at the ends of the stems and branches. Fruit a long slender pod containing many seeds that bear tufts of "floss".

Common in gravelly soil, along roadsides, in fields, meadows and wastelands, often in large colonies.

CONDITIONS OF POISONING.— Indian hemp contains the glucoside cymarin, poisonous resins and possibly other toxic substances. All parts of the plant are poisonous, either fresh or dried in hay. As little as ½ to 1 ounce of the fresh green leaves can cause death to a cow.

SYMPTOMS.— A rise in body temperature, sweating, strong pulse, ears and legs become cold, pupils of the eyes usually dilated, and the inside of the mouth becomes red and sore. Bowel action is frequent. In advanced cases death will usually occur.

TREATMENT.— If cases are diagnosed early enough the stomach should be emptied and gallic or tannic acid given as an antidote. Heart stimulants are sometimes helpful. Keep the animal in a quiet place and give it good feed and water.

FIG. 1

FIG. 2

FIG. 3

FIG. 4

PLATE 16.— Fig. 1. Common milkweed. *Asclepias syriaca*. A. opposite leaves and flower clusters. B. detail of tufted seed. C. opening seed-pod. Fig. 2. Butterfly weed. *Asclepias tuberosa*. A. alternate leaves and flower clusters. B. seed-pod. Fig. 3. Whorled milkweed. *Asclepias verticillata*. A. whorled leaves and flower clusters. B. seed-pod. Fig. 4. Swamp milkweed. *Asclepias incarnata*. A. opposite leaves and flower clusters. B. seed-pod.

MILKWEED FAMILY *(Asclepiadaceae)*

Swamp milkweed. *Asclepias incarnata* L. Plate 16. Fig. 4.

DESCRIPTION.— Stems solitary or clustered, 1-5 feet high. Leaves opposite. Flowers pink to rose-purple, arranged in umbels. Fruit a pod containing seeds tufted with "floss".

Common milkweed. *Asclepias syriaca* L. Plate 16. Fig. 1.

DESCRIPTION.— Erect perennial, 2-4 feet high, stem with broad opposite or whorled leaves and milky sap. Flowers dull pink, arranged in simple umbels. Fruit a pod containing seeds tufted with "floss".

Butterfly weed. *Asclepias tuberosa* L. Plate 16. Fig. 2.

DESCRIPTION.— Erect perennial 1-3 feet high, stems with alternate leaves and no milky sap. Flowers bright orange, arranged in simple umbels. Fruit a pod containing seeds tufted with "floss".

Whorled milkweed. *Asclepias verticillata* L. Plate 16. Fig. 3.

DESCRIPTION.— Slender perennial, 1-3 feet high. Leaves arranged in whorls, very narrow with curled margins. Flowers greenish-white, in small umbels. Fruit a pod containing seeds tufted with "floss".

Common milkweed, butterfly weed, and whorled milkweed grow in dry fields, pastures, roadsides, and waste places. Swamp milkweed is usually found in wet localities.

CONDITIONS OF POISONING.— A resinous substance is located in the stems and leaves. The plants are poisonous both fresh and dried. Green plants are rarely eaten because of their bitter acrid taste. Whorled milkweed is more poisonous than the broad-leaved species. Milkweeds of the western plains of the United States are among the most deadly of the poisonous plants.

SYMPTOMS.— The first symptoms are loss of appetite and diarrhea. Later, the animal will stagger, fall and develop paralysis of the rear limbs. Breathing will be labored and spasms violent. Death is due to respiratory failure. Autopsies show congestion of liver, kidneys, heart, lungs and nervous system.

TREATMENT.— Sedatives, such as chloral hydrate and the barbiturates are helpful in easing the pain. Mineral oil will be helpful in early stages.

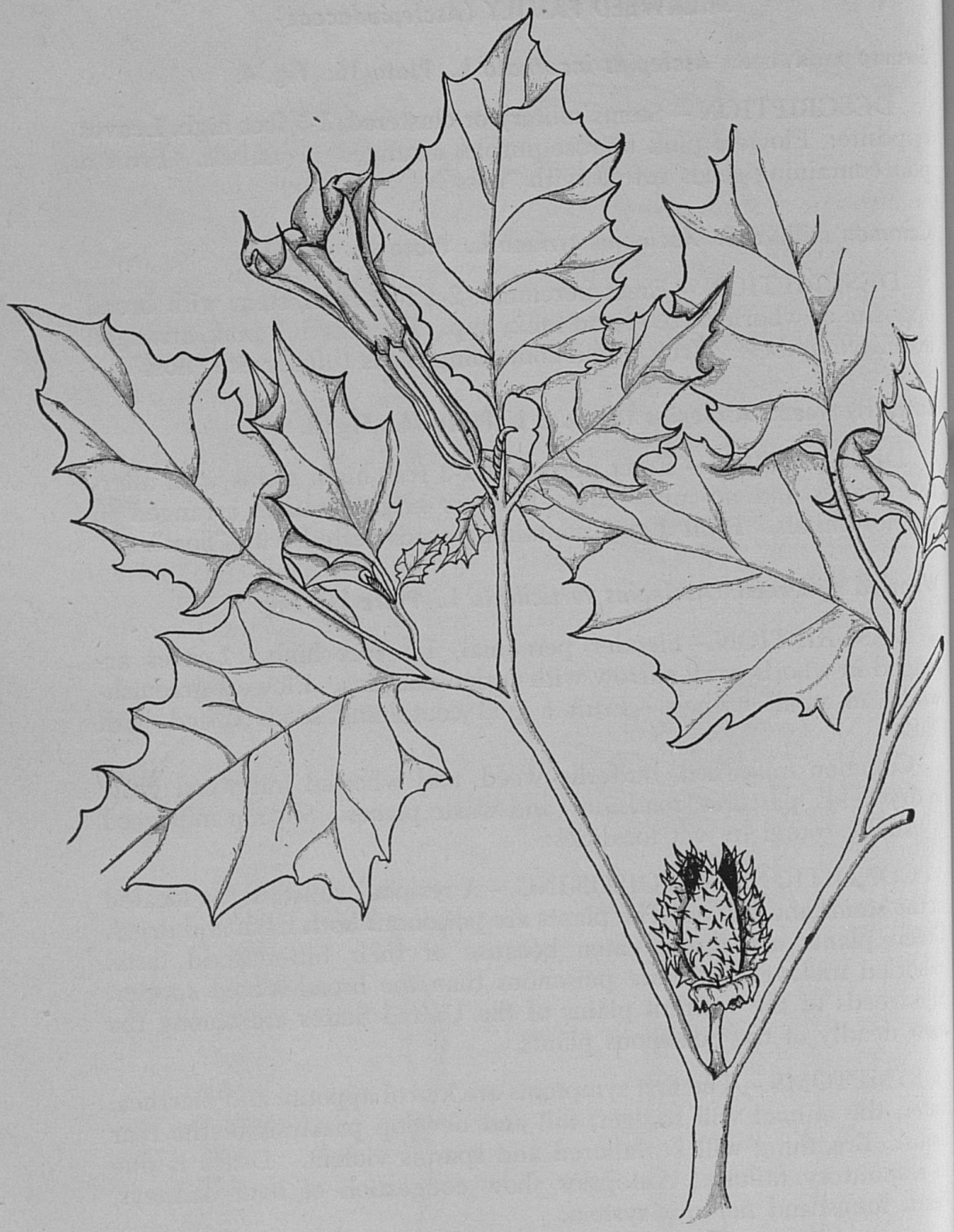

PLATE 17.— Jimson weed. *Datura stramonium*. Branch showing coarsely-toothed leaves, trumpet-like flower and capsular fruit.

NIGHTSHADE FAMILY *(Solanaceae)*

Jimson weed, thorn-apple, devil's trumpet. *Datura stramonium* L. Plate 17.

DESCRIPTION.— A stout, coarse annual, 2 to 5 feet tall, with spreading branches. Leaves alternate, coarsely toothed, green or purplish and strongly scented. Flowers trumpet shaped, large, white or purplish. Fruit a hard, spiny capsule that splits into 4 valves at maturity.

Common in cultivated fields and waste places, often abundant in barnyards and abandoned pastures.

CONDITIONS OF POISONING.— Jimson weed contains the poisonous alkaloids, hyoscyamine and hyoscine. The entire plant is poisonous, both green and dried. Because of its strong odor and bitter taste the green plant is rarely eaten. Humans may be poisoned by eating the fruits.

SYMPTOMS.— Common symptoms in cattle are rapid pulse and respiration, dry mouth and possibly a complete retention of urine, or frequent urination. Diarrhea, dilation of the pupils of the eyes and stiffness may occur. Close to death the respirations become slow, irregular and weak. Death is caused by asphyxia. Quite often this weed grows in the hog lot and may be the cause of some deaths. The main symptom in hogs is convulsive twitching of the entire body.

TREATMENT.— If animals are found early enough mineral oil is helpful, as it acts as a purge and coats the walls of the intestines. Tannic acid is used to precipitate the alkaloids. Stimulants and molasses are helpful.

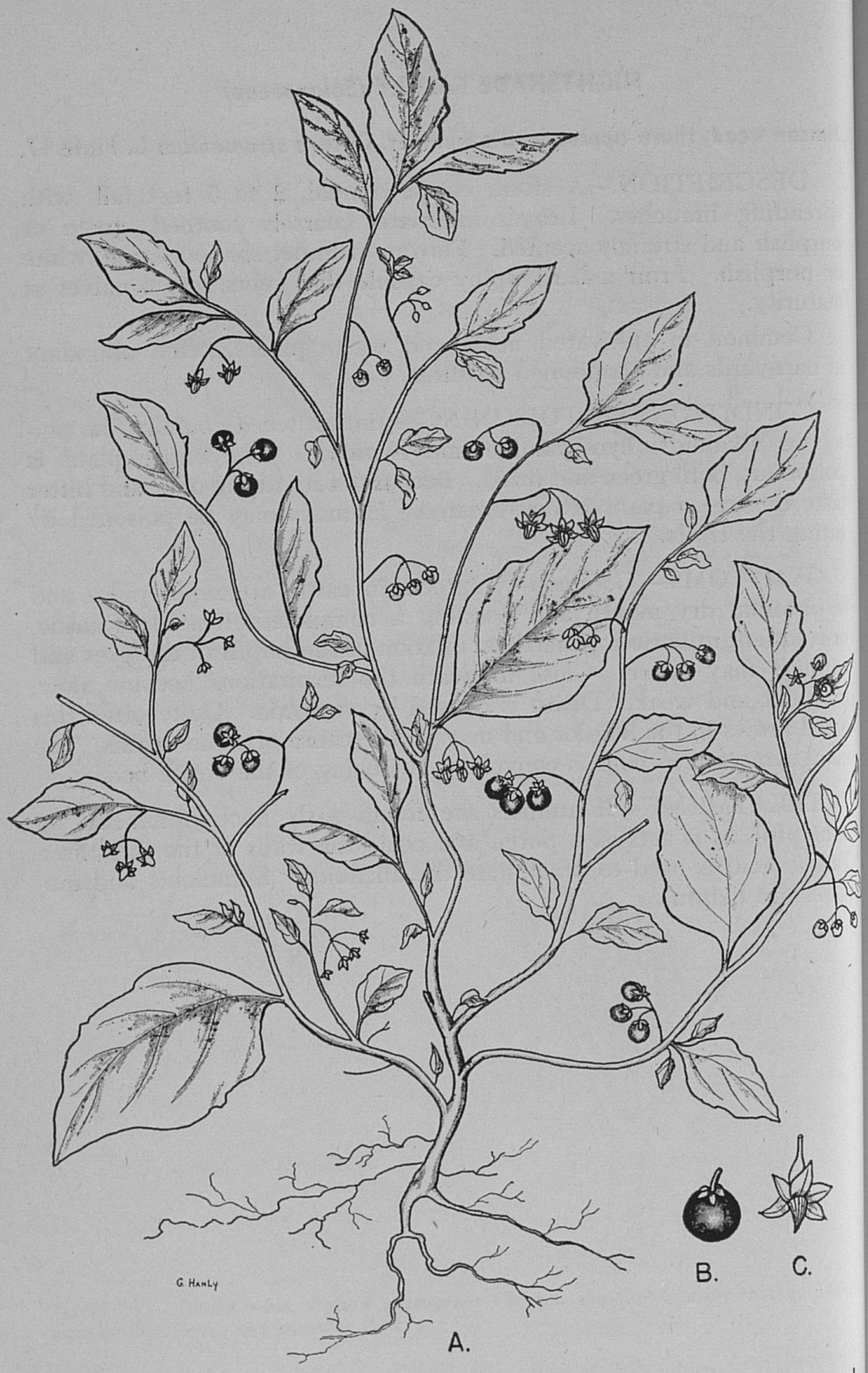

PLATE 18.— Black nightshade. *Solonum nigrum*. A. entire plant showing leaves, sprawling stems, flower and fruit clusters. B. fruit. C. flower.

NIGHTSHADE FAMILY *(Solanaceae)*

Black nightshade, deadly nightshade, garden nightshade, poison berry. *Solonum nigrum* L. Plate 18.

DESCRIPTION.— Low, branched annual 1 to 2 feet high, with angular stems. Leaves alternate, oval, thin textured, wavy margined. Flowers white, in drooping clusters on lateral stalks between the leaves, somewhat resembling tomato flowers. Fruit a berry, green when immature, turning purplish-black at maturity.

A common weed in open woods, fields, waste places, and around farm buildings.

CONDITIONS OF POISONING.— The alkaloidal glucoside, solanine, is present in the leaves, stems and green berries. The plants are less toxic when dried. Most cases of poisoning occur among sheep, goats, calves, pigs and poultry, as mature horses and cows rarely eat enough to be seriously affected.

SYMPTOMS.— The first symptoms are weakness, stupor, staggering gait and constipation, followed by dilated pupils, loss of muscular coordination and sense of feeling. In more advanced cases cramps and convulsions are typical. The animal will soon die of respiratory paralysis. The progress of the symptoms is often rapid.

TREATMENT.— There is no treatment for nightshade poisoning. Sedatives will help stop the convulsions.

PLATE 19.— Fig. 1. Indian tobacco. *Lobelia inflata*. Entire plant showing alternate leaves, flowers, inflated fruits, and fiberous roots. Fig. 2. Great lobelia. *Lobelia siphilitica*. Upper portion of plant showing leaves and flowers.

BLUEBELL FAMILY *(Campanulaceae)*

Indian tobacco. *Lobelia inflata* L. Plate 19. Fig. 1.

DESCRIPTION.— Hairy annual with leafy branched stem, 1 to 2 feet high. Leaves thin, oval or oblong, with toothed margins. Flowers two-lipped, pale-blue, inconspicuous, borne in the axils of the upper leaves. Fruit a capsule covered by the swollen inflated calyx.

Common in meadows, pastures and cultivated fields.

Great lobelia. *Lobelia siphilitica* L. Plate 19. Fig. 2.

DESCRIPTION.— Perennial herb to a height of 3 feet. Stem leafy, rather stout, and usually unbranched. Flowers about ¾ inch long, deep blue, in a dense terminal spike.

Commonly found in roadside ditches, swampy areas, wet pastures, and along the edge of streams and ponds.

CONDITIONS OF POISONING.— Poisonous alkaloids and volatile oils are present in the leaves, stems and fruits. In heavily infested pastures or during dry seasons, when other green forage is scarce, animals occasionally eat the plants in sufficient quantities to be seriously poisoned.

SYMPTOMS.— Nausea, vomiting and dilated pupils. The animal will stagger, get down, have convulsions, go into a coma and then die.

TREATMENT.— Gallic or tannic acid is the best treatment along with stimulants. Mineral oil is helpful in lining the digestive system.

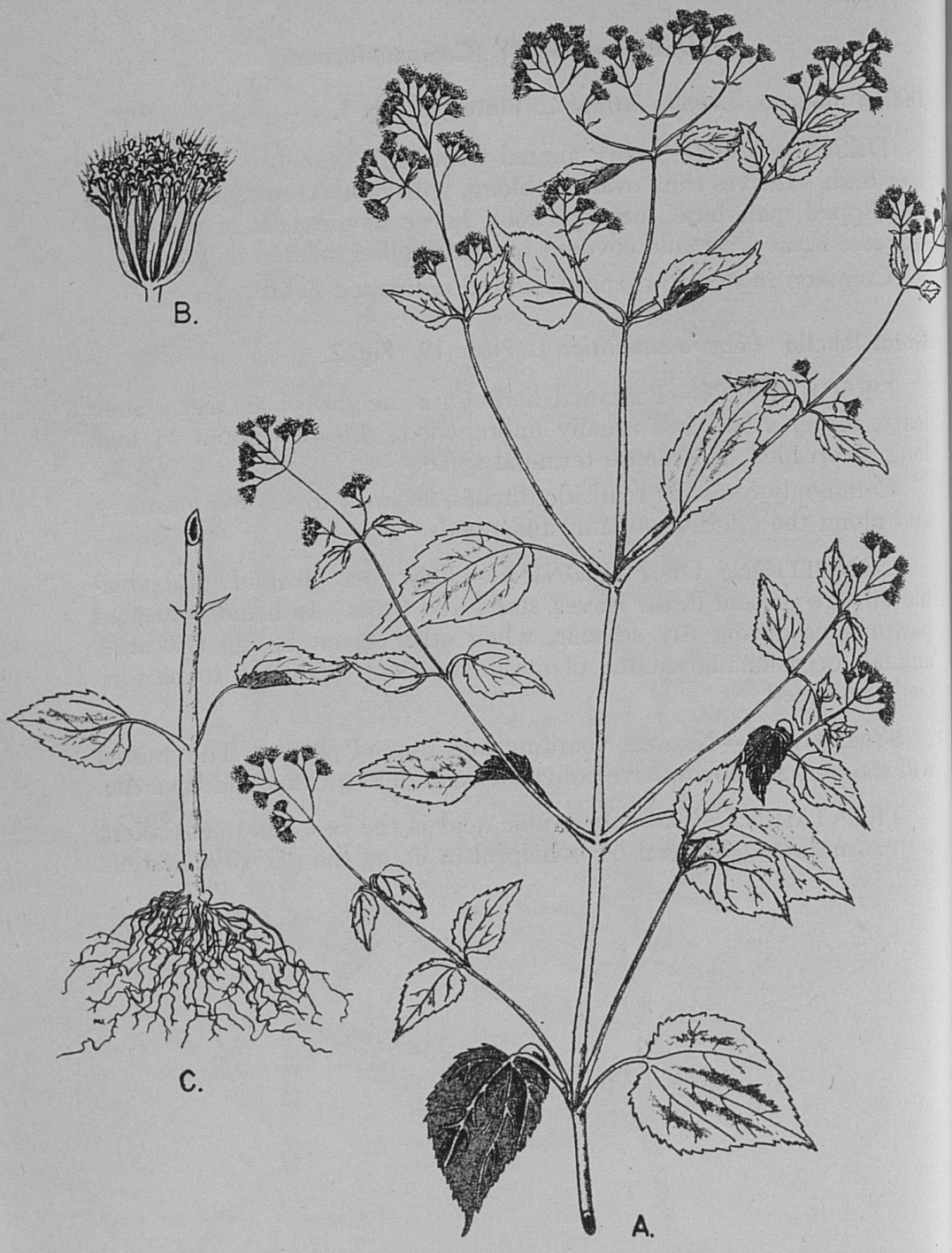

PLATE 20.— White snakeroot. *Eupatorium rugosum*. A. top of plant showing flower clusters and opposite leaves with three prominent veins. B. detail of simple flower cluster or head. C. fiberous roots.

COMPOSITE FAMILY *(Compositae)*

White snakeroot, white sanicle, boneset. *Eupatorium rugosum Houtt.* Plate 20.

DESCRIPTION.— A smooth, erect, perennial herb 1 to 5 feet high. Leaves opposite, oval, with pointed tips and sharply toothed edges, strongly resembling the leaves of nettles. The upper surface of the leaf dull, and the lower shiny. Each leaf has 3 prominent main veins on the underside. In late summer the small white flowers appear in compound clusters.

Found in woods; damp, shady pastures; and occasionally thickets and clearings.

CONDITIONS OF POISONING.— Tremetol, a poisonous alcohol, is present in the leaves and stems. This toxic principle may be transmitted through the milk of poisoned cows to humans, causing the disease known as "milk sickness" or "trembles." Animals are usually poisoned during the late summer when forage is scarce. The effect is cumulative, animals may die from eating a large amount of the plant at one time, or small amounts over a long period of time.

SYMPTOMS.— Cows appear listless, have severe constipation, violent trembling, and the breath will become foul with a peculiar acetone odor. Joints become stiff, the animal falls and refuses to rise or otherwise exert itself, grinds its teeth, has rapid, labored breathing, and may die.

In horses the first stage is general sluggishness, marked depression and slight incoordination of the muscles, especially of the hind parts. The trembling stage, so characteristic of poisoned cattle is sometimes absent. Inability to swallow, due to paralysis of the throat muscles, accompanied by nasal discharge, will be shown as the disease progresses.

Human symptoms include severe constipation, vomiting, foul breath, subnormal temperature, weakness, delirium and collapse.

TREATMENT.— Since poisoning usually occurs in late summer, cattle should be removed about the first of July from areas infested with this weed.

When the animal reaches the trembling stage there is little you can do. Strong purgatives will help eliminate the drug from the digestive tract. Stimulants and calcium gluconate are helpful. Keep the cow milked out to eliminate the poison, but do not use the milk for human consumption.

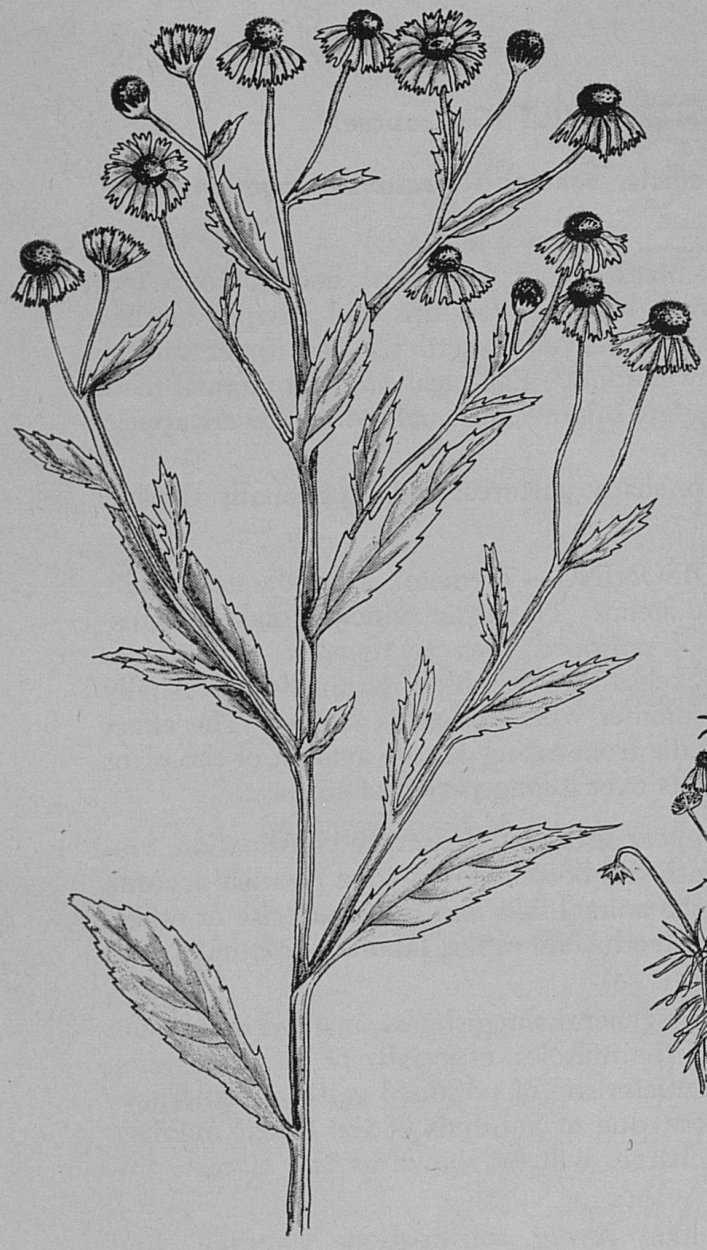

FIG. 1

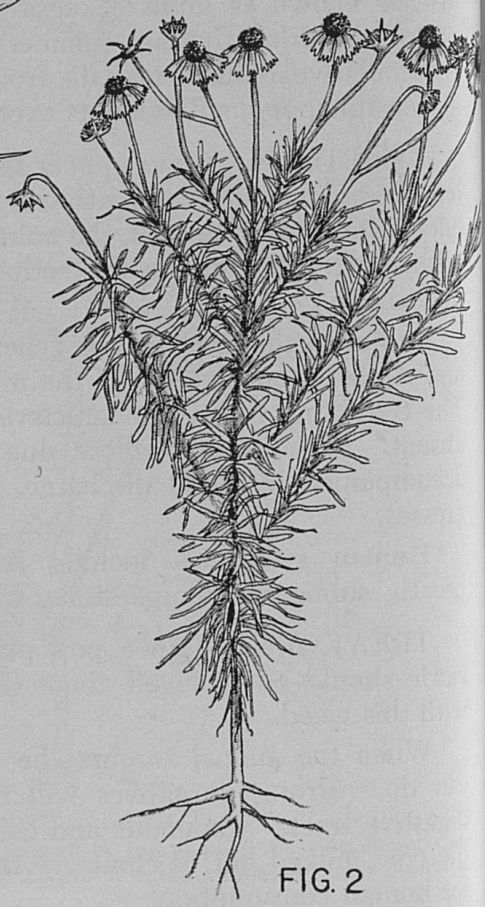

FIG. 2

PLATE 21.— Fig. 1. Sneezeweed. *Helenium autumnale*. Top of plant showing alternate leaves, heads of flowers and winged stems. Fig. 2. Bitterweed. *Helenium tenuifolium*. Entire plant showing leaves and flowers.

COMPOSITE FAMILY *(Compositae)*

Sneezeweed, staggerwort, swamp sunflower. *Helenium autumnale* L. Plate 21. Fig. 1.

DESCRIPTION.— Erect-growing coarse perennial, 2 to 6 feet tall, with narrowly winged stem. Leaves alternate, lance-shaped and coarsely toothed. Flowers yellow, resembling small sunflowers, toothed ray flowers are characteristically turned downwards. Another species, the purple-headed sneezeweed (*Helenium nudiflorum* Nutt.) is less common in the state.

Commonly found around water holes, streams and ditches, and in swampy pastures and meadows.

Bitterweed, narrow-leaved sneezeweed, yellow dog-fennel. *Helenium tenuifolium* Nutt. Plate 21. Fig. 2.

DESCRIPTION.— Annual, 1-2 feet high, with fine narrow leaves. Flowers similar to sneezeweed.

Usually found in fields, pastures, cultivated areas, and around farm buildings. Extremely common in western Kentucky.

CONDITIONS OF POISONING.— Most cases of serious poisoning occur in the late summer and early fall when the plants come into bloom. Sheep, cattle and horses are susceptible. Most livestock avoid them, but individual animals may eat sufficient quantities to cause death. The plants are poisonous either fresh or cured in hay. Cows grazing on these plants may produce milk with a bitter flavor.

SYMPTOMS.— Rapid pulse, restlessness, difficult breathing, and loss of muscular control followed by plunging and staggering blindly. At this time the animals are extremely sensitive to the touch. After eating large quantities of the blossoms the animals may die suddenly with spasms and convulsions.

TREATMENT.— If the milk is bitter or the animal is showing symptoms of poisoning, remove all the stock to clean weed-free pastures. Melted lard or mineral oil is helpful if given early enough.

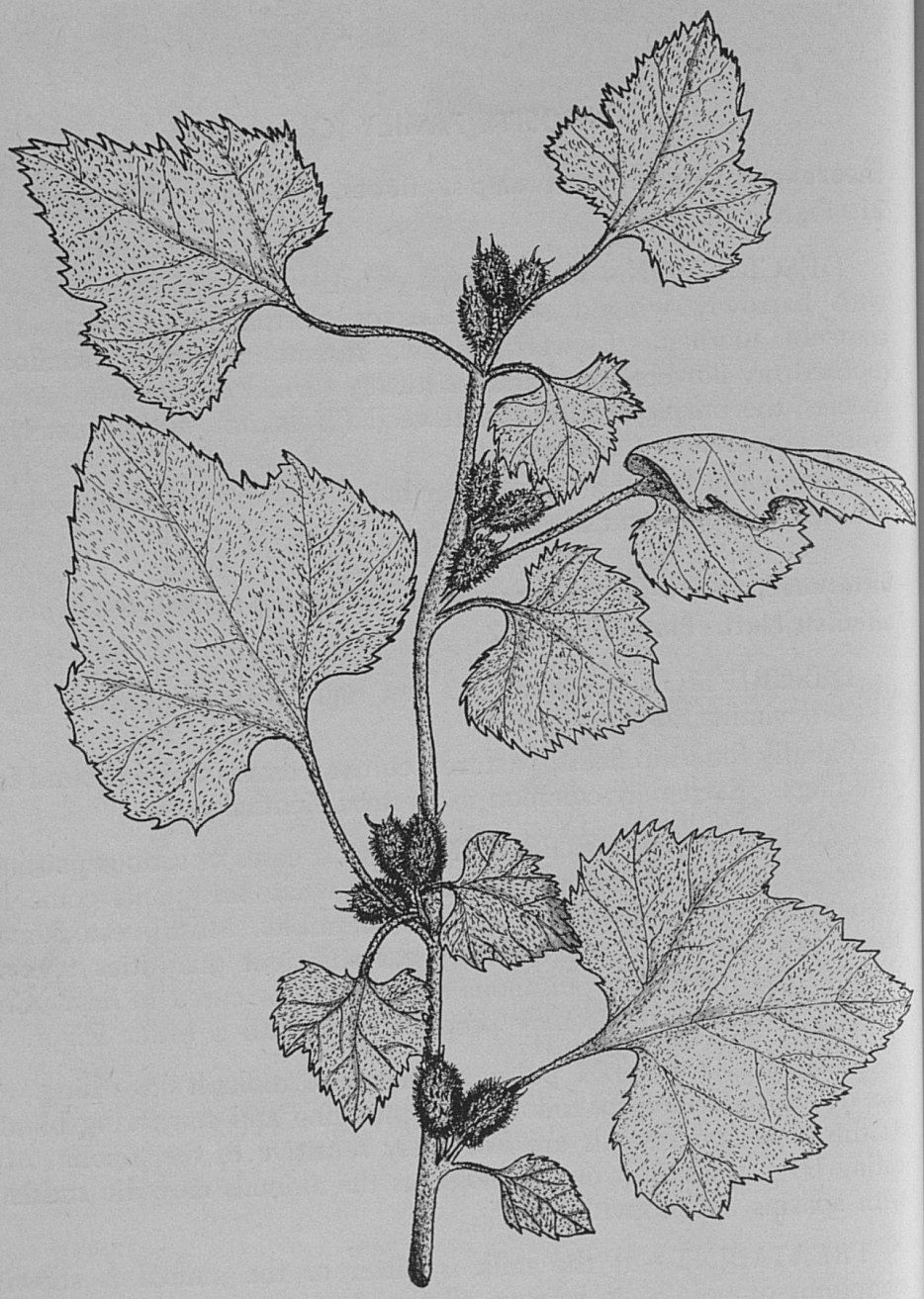

PLATE 22.— Cocklebur. *Xanthium orientale*. Mature plant showing the prickly burs.

COMPOSITE FAMILY *(Compositae)*

Cocklebur, clotbur, sheep-bur. *Xanthium orientale* L. (*X. commune* Britt.) Plate 22.

DESCRIPTION.— Branching annual, 1 to 3 feet high. Stems angled, sometimes red-spotted. Leaves alternate, hairy, rough in texture, somewhat heart-shaped, and variously toothed and lobed. Flowers inconspicuous, of two kinds—those in terminal spikes produce only pollen, while those in clusters in the axils of the leaves produce the seed. Fruit a hard, oval, prickly bur, about ¾ inch long, containing two seeds. The seedlings have small strap-shaped leaves, ¼ inch wide and 1¼ inches long, and later produce characteristically shaped leaves. They sprout from the buried burs. Several species of cocklebur are common in Kentucky. They differ in the shape and hairiness of the bur, but all are poisonous in the seedling stage.

Common in waste places, cultivated fields, along roadsides, beds of dry ponds, and on overflowed lands along streams.

CONDITIONS OF POISONING.— The poisonous substance is a glucoside, xanthostrumarin, found in germinating seeds and young seedlings. Since the toxicity decreases as the plants develop, the mature plant is probably non-poisonous. Hogs are most frequently poisoned, but cattle and sheep are also susceptible. Mature plants are seldom eaten, but the ripe spiny burs may result in purely mechanical injury.

SYMPTOMS.— Depression, often accompanied by nausea and occasionally vomiting. The affected animal becomes gaunt, weak and unable to stand, has labored respiration and a rapid weak pulse. It may lie on its side and move the legs in a running fashion until completely exhausted. Within 24 hours after eating 0.75% of an animals weight of young seedling plants, it may die or show signs of poisoning. If death does not occur several weeks will pass before the animal is back to normal.

TREATMENT.— Give emergency treatment of fatty substances, such as mineral oil, cream or even whole milk by mouth or through a stomach tube. Keep the animal quiet and warm. The veterinarian will give antidotes for glucoside poisoning and other symptomatic treatment.

SUPPLEMENTARY LIST OF POISONOUS PLANTS

Many of the species considered below are of limited abundance and distribution in Kentucky. Others are so distasteful that they are rarely eaten, while still others contain so little toxic substance that very large amounts are necessary to cause serious poisoning. A few cultivated species are included. Although generally less troublesome than the plants previously discussed, the species listed here should not be overlooked when confusing cases of poisoning are encountered.

Ergot *(Claviceps purpurea (Fr.) Tul.)*

Ergot is a fungus or mold that grows in the flower heads of various grasses, perhaps most frequently on rye and redtop. It produces a hard black kernel in the place of the seed. Animals may be poisoned by eating ergot-infected grain or by grazing on infected grass. The poisoning may be acute if large quantities of ergot are eaten at one time, or the results may be slow and cumulative if small amounts are eaten regularly. Symptoms include abortion in pregnant animals, gangrenous conditions, muscular trembling and incoordination, dullness and depression. The ergot *(Claviceps paspali S. and H.)* that occurs on Dallis grass and other native species of *Paspalum* is also poisonous, causing characteristic nervousness and trembling.

Japenese yew *(Taxus cuspidata S. & Z.)*

English yew *(Taxus baccata L.)*

These yews are extensively planted as ornamental shrubs. All parts of the plant are poisonous. Animals should not be allowed to pasture where they could browse on these shrubs, nor should clippings be thrown where animals have access to them.

Junipers *(Juniperus spp.)*

Animals usually avoid these evergreens, but large quantities of the leaves, if eaten, may cause poisoning. They should not be used as bedding material.

Jack-in-the-pulpit, Indian turnip ***(Arisaema atrorubens (Ait.) Blume)***

Plants of this species are more common in the mountain and wooded sections of the state. Poisoning may occur from eating large amounts of the fresh leaves and corms. Animals usually avoid them because of their bitter, acrid taste. Symptoms are those of intestinal inflammation and colic. Burning sensations in the mouth and throat will cause the animals to drink constantly.

Star-of-Bethlehem ***(Ornithogalum umbellatum L.)***

This cultivated plant frequently persists as a weed. The entire plant may be poisonous when eaten by animals.

Oaks ***(Quercus spp.)***

Animals that have consumed large concentrated amounts of the young leaves may become seriously ill.

Hemp, marijuana ***(Cannabis sativa L.)***

A weed around fields where it was formerly cultivated as a crop. Hemp is not ordinarily eaten by animals, but may be consumed in sufficient quantity to cause narcotic poisoning.

Buckwheat ***(Fagopyrum sagittatum Gilib.)***

Animals with unpigmented skin may be affected if exposed to direct sunlight after eating buckwheat. They show the typical symptoms of photosensitization. See page 27 for a description of this disease.

Buttercup ***(Ranunculus spp.)***

All animals may be poisoned by eating the fresh plants.

Moonseed ***(Menisperum canadense L.)***

A climbing vine, with small clusters of grape-like fruits that are poisonous to humans.

White sweet clover ***(Melilotus alba Desr.)***

Yellow sweet clover ***(Melilotus officinalis (L.) Lam.)***

Sweet clovers are valuable forage crops and can be used freely as pasture, but poisoning may occur when livestock are fed exclusively

on spoiled sweet clover hay or silage. Poisoned animals show symptoms of hemorrhage with marked swellings on various parts of the body, and may bleed to death at calving time or from such minor operations as castration or dehorning. Treatment consists of transfusions of normal blood to restore the blood clotting powers.

Alsike clover *(Trifolium hybridum L.)*

Animals should not be grazed on this clover when it is wet or dew-covered. Under certain conditions alsike clover may affect white-skinned animals by making them light sensitive. See page 27 for a discussion of photosensitization.

Kentucky coffee tree *(Gymnocladus dioica (L.) K. Koch.)*

A large tree with rough bark and coarse branches. Leaf large, twice pinnately compound. Fruit a flat leathery pod, containing dark-brown, bean-like seeds. Pods often remain on the tree until late winter. Poisoning is apt to occur in the early spring when other forage is scarce, and animals eat quantities of the pods and seeds lying on the ground, or nibble on young shoots. Cases of poisoning from Kentucky coffee tree are not common, but they may be fatal. Poisoned animals show great pain and profuse diarrhea with considerable straining. Stimulants and tannic acid may be helpful.

Flax, linseed *(Linum usitatissimum L.)*

Cases of poisoning have been reported in cattle and pigs from eating linseed cake or feed containing flax screenings. Poisoning is due to the hydrocyanic acid.

Spurges *(Euphorbia spp.)*

Livestock may exhibit symptoms of digestive irritations and weakness if fed for an extended period of time on hay containing spurges. Severe blistering of the skin may result from contact with the milky sap.

Castor bean, castor oil plant *(Ricinus communis L.)*

Commonly grown as an ornamental but often persists as a weed in fields and along roadsides. All parts of the plant are poisonous. Symptoms are nausea, vomiting, thirst, dullness of vision and convulsions. Severe cases of poisoning resulting from eating large quantities, may cause death.

Hogwort, wooly croton *(Croton capitatus Michx.)*

Animals are sometimes affected from eating hogwort with hay. Symptoms are diarrhea, colic and general nervousness.

Boxwood *(Buxus sempervirens L.)*

Although grown extensively as an ornamental hedge, clippings and branches if eaten, may produce fatal results.

Climbing bittersweet *(Celastrus scandens L.)*

A woody vine with attractive clusters of red and orange berries. Leaves and fruits are poisonous. Bittersweet acts both as a heart poison and purgative, producing nausea and prostration.

Ground ivy, Gill-over-the-ground, Creeping Charlie *(Glechoma hederacea L.)*

Common in lawns, neglected fields and fence rows. Mildly poisonous if large quantities are eaten fresh or dried in hay.

Blue nightshade, European nightshade *(Solanum dulcamara L.)*

Resembles black nightshade, previously discussed, except that the leaves are lobed at the base and the berry is red instead of black when mature. The leaves and fruits are toxic.

Horse nettle, bull nettle *(Solanum carolinense L.)*

Prickly coarse-stemmed perennial, 8 inches to 2 feet high. Common in pastures and cultivated fields. Animals ordinarily do not eat these weeds unless harvested in hay. Chronic poisoning with symptoms of general unthriftiness may result from prolonged eating of small quantities. If a considerable quantity is eaten within a few hours, digestive disturbances, sleepiness and paralysis may occur.

Tobacco *(Nicotiana Tabacum L.)*

Although usually not eaten by livestock, a few cases of poisoning have been reported.

Matrimony vine *(Lycium halimifolium Mill.)*

Frequently escapes from cultivation. Leaves and young shoots may be poisonous.

Buttonbush ***(Cephalanthus occidentalis L.)***

A shrub, found in moist, swampy areas. The fruits resemble the buttonballs of the sycamore tree. Most poisoning occurs when animals have eaten the leaves.

Elderberry, black elder ***(Sambucus canadensis L.)***

Common shrub in fields, along fence rows and at the edge of woods. Leaves opposite, pinnately compound. Numerous small white flowers in large clusters develop into purple-black berries. Most cases of poisoning occur when animals eat the new growth in the spring. Symptoms and treatment are similar to those for wild black cherry. (See page 21.)

Ragwort, groundsel ***(Senecio spp.)***

Small herbaceous plants, in wet swampy meadows and pastures, producing yellow daisy-like flowers in early spring. Plants consumed in large quantities, either fresh or in hay, may affect livestock.

PLANTS CAUSING MECHANICAL INJURY

Numerous plants, common in Kentucky though not poisonous, possess sharp awns, burs or spines which may cause mechanical injury such as tearing the flesh around the eyes and mouth, crippling animals by getting into hooves, or produce ulcerous conditions or hair balls in the digestive tract. A few of the most common plants in this category are: barley and wild barley (*Hordeum spp.*), burdock (*Arctium minus*), downy brome-grass (*Bromus tectorum*), foxtails (*Setaria spp.*), Russian thistle (*Salsola Kali* L. *var. tenuifolia* Meyer), sandbur (*Cenchrus pauciflorus*), spring amaranth (*Amaranthus spinosus*) and thistle (*Cirsium vulgare*).

GLOSSARY

Alkaloid. Plant substance, often poisonous, containing a basic nitrogen grouping in its formula.

Alternate. Of leaves: placed singly at each joint, contrasting with opposite and whorled arrangement.

Annual. Of plants: completing its growth in a single year or season.

Asphyxia. Death due to deficiency of oxygen.

Astringent. Agent which causes the constriction of the tissues by direct action.

Calyx. The outer, usually green and leaf-like part of a flower.

Capsule. A dry fruit that splits at maturity into 2 or more valves.

Compound leaf. One which is divided into separate leaflets.

Dilated. Of eye: pupil widened or enlarged.

Frond. The "leaf" of a fern.

Glucoside. A plant substance, often poisonous, which by chemical reaction with water yields a sugar.

Head. Type of dense flower cluster found in the composite family.

Herbaceous plant. One which develops no woody stem and is more or less soft and green throughout.

Leaflet. One of the divisions of a compound leaf.

Opposite. Of leaves: two leaves at each stem joint.

Palmate. Of a compound leaf: having the leaflets radiating from a common point.

Perennial. Of plants: continuing to live longer than two years.

Pinnate. Of a compound leaf: having the leaflets arranged on each side of a common axis.

Saponin. A substance found in plants, often poisonous, which is characterized by its property of producing a soapy lather.

Spore. The reproductive body in such plants as ferns and horsetails.

Sterile. Not producing seeds or spores.

Symptomatic. Of treatment: according to the symptoms of the disease.

Terminal. Growing at the end of a branch or stem.

Toxic principle. The poisonous substance in a plant.

Umbel. Type of flower cluster in which the flowerstalks arise from the same point like the ribs of an umbrella.

Whorl. Of leaves: having more than two leaves at each stem joint.

PLANT INDEX

(Illustrations listed in bold-face type)

PLANT INDEX—Continued

Lexington, Kentucky
April, 1953

15M—4-53