

FERNS of the Blue Ridge

by Arnold and Connie Krochmal



*Southeastern Forest Experiment Station
Asheville, North Carolina*

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The forests and open fields of the Blue Ridge provide ideal growing conditions for a number of ferns. Since some of these are evergreen, ferns can be seen in the area during every month of the year.

Ferns are old members of the plant kingdom, and fossil ancestors are common in slate, shale, and coal. All ferns belong to the Pteridophytes, a group that also includes mosses, horsetails, and quillworts. These plants do not produce flowers or seeds; they reproduce by means of spores.

Fern spores are produced in structures called sporangia, which are borne in small clusters on the leaves or *fronds*. A cluster of sporangia is called a *sorus* (plural *sori*). Sori appear as brown spots along the veins, at the ends of veins, and at the margins of fertile fronds, or *sporophylls*. The details of the structure of these bodies can be seen with a simple hand lens. Some ferns have two types of fronds (fertile and sterile) that often differ widely in appearance. The arrangement, location, and number of sori are often used to identify species of ferns.

When the sporangia reach maturity, they dry and eventually split open with enough force to release reproductive spores. These spores may be carried long distances by wind currents. If the place where it lands is suitable, the spore germinates and a new cycle of fern development begins, eventually resulting in a new fern plant. Fern sporangia may produce from 32 to over 500 spores each.

When fern fronds begin to grow in early spring, some of them have a rolled-up appearance. The structure as it then appears is known as a fiddle-head because of a resemblance to the head of a violin or fiddle.

These structures are considered delicacies; they are cooked and served as a vegetable, and sometimes are canned commercially.

Fern fronds are borne on stalks or petioles called *stipes*. The central shaft of the frond is called the *rachis*. The fronds bear leaflets, called *pinnae* (singular *pinna*), at right angles to the stipe or rachis. When the pinna is the smallest division, a frond is described as pinnately compound. In some ferns there is a further breakdown of the pinnae into units called *pinnules*. Then the structure is described as a double compound frond.

The three most common fern families in the Blue Ridge are the Polypodiaceae known as true or common ferns, the Osmundaceae or royal ferns, and the Ophioglossaceae or adders-tongue ferns.

The flowering fern members have wings at the bases of the stipes, and produce clusters of fronds from a husky rhizome. The fertile fronds are usually smaller than the sterile fronds, and produce clusters of sporangia that seemingly resemble clusters of tiny flowers. Hence, the common family name which is descriptive if inaccurate. Flowering ferns are usually large plants.

Fronds on members of the true fern family vary greatly in shape and size, but most are smaller than on flowering ferns. They always bear their spores on the underside of fertile fronds. In the spring they form typical middle-heads as they emerge from the ground.

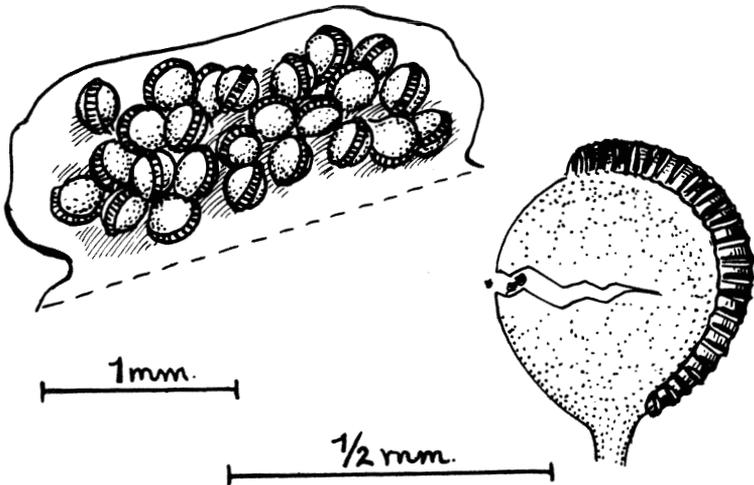
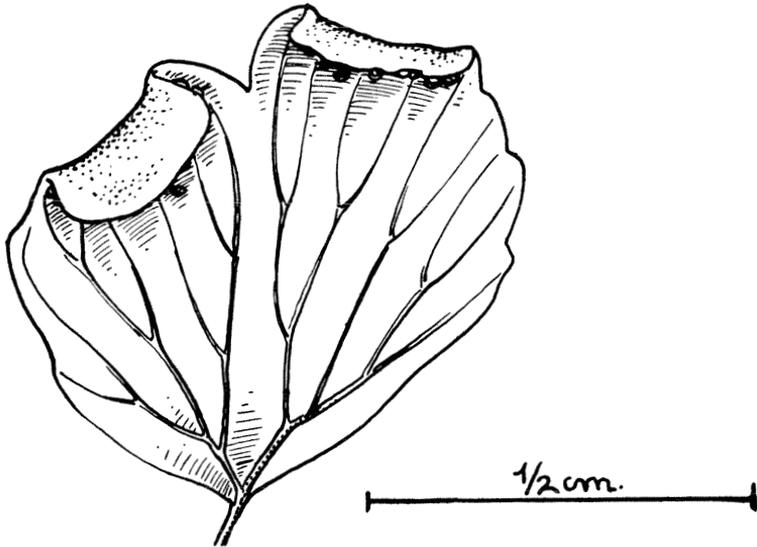
The adders-tongue ferns are small and have one to three much-compounded fronds. The sporangia are produced on a long-stalked part of the fertile frond. Sterile fronds are triangular.

In the past, some ferns were used to treat diseases. *Asplenium*, the spleenwort, was used for worms in humans. Many Polypodiaceae or true ferns contain a thick mucilage which was used for a range of diseases. The rhizome has been eaten, and in Hawaii the fronds of one species are used to perfume coconut oil.

Indians used decoctions of spleenwort roots as an eyewash, for chest pains, and to induce milk flow in nursing mothers. The maidenhair fern root was used against diarrhea and for pediatric problems. *Polypodium* plants were used to treat dizziness and headache and something similar to diptheria in children. A decoction of the aboveground parts was used for venereal disease. Various species of *Dryopteris* were believed to combat shellfish poisoning and stomach aches.

Caution: Mention of former medicinal uses does not imply that the treatments are effective. Under no circumstances should these plants be used for self-medication.

REPRODUCTION OF FERNS



Upper: Sori borne on the end of a vein on a frond, and covered by the turned-over edge of the leaf.

Middle: Sori on a frond.

Lower: A mature sorus splitting open and ejecting spores.

POLYPODIACEAE Fern Family

Maidenhair fern. *Adiantum pedatum* L.

The fronds are forked and spreading, growing 6 to 24 inches in height. The stipe of the petiole has a purple tinge and is markedly shiny. This species grows in rich, calcareous, shaded, humid areas.

Ebony spleenwort. *Asplenium platyneuron* (L.) Oakes

This evergreen fern has fertile fronds, which grow to 15 inches in height, and are slightly tufted. Stipes are purple or brown, and shiny. Sterile fronds are shorter; sori are very numerous. This fern prefers shaded, moist woody areas.

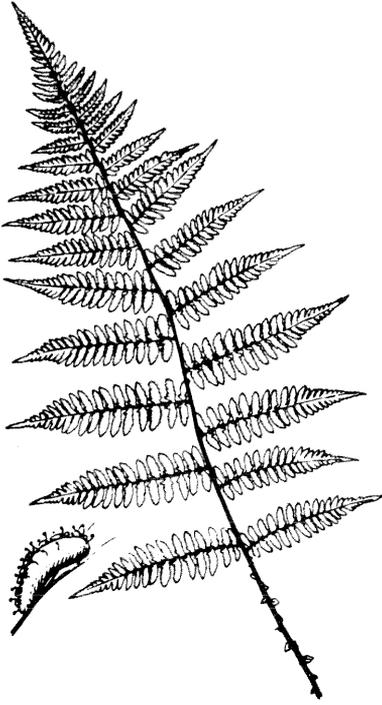
Southern lady fern. *Athyrium asplenioides* (Michx.) A. A. Eaton

The yellow-green fronds are 12 to 36 inches tall, with the sterile fronds shorter and broader than the fertile fronds. After June or July, the plants may have a brown-rust color. This species may occur under conditions ranging from dense woods to half-shaded fields.

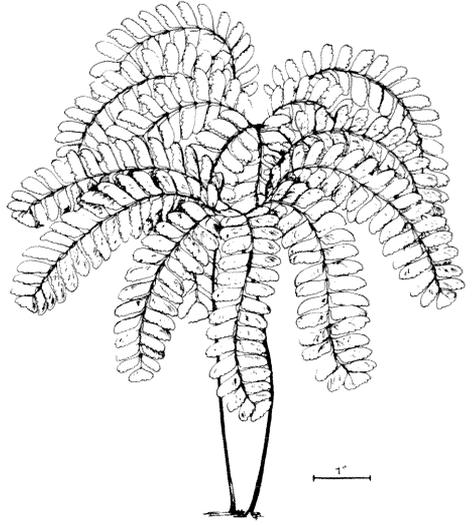
Hay-scented fern. *Dennstaedtia punctilobula* (Michx.) Moore

The fronds when crushed produce a sweet, haylike odor. The fronds, delicate and slightly downy on the underside, range in size from 12 to 36 inches. Unlike the other ferns in the area, this one prefers open sunny areas.

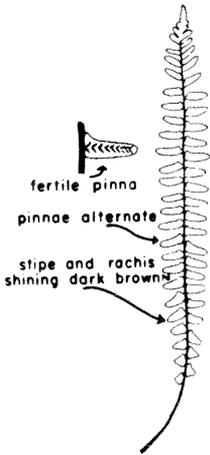
FERN FAMILY



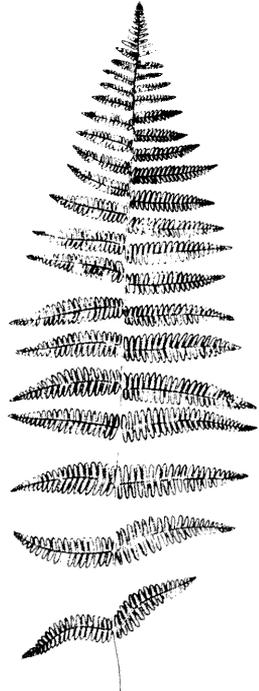
Southern Lady fern



Maidenhair fern



Spleenwort



Hay-Scented fern

Mountain wood fern. *Dryopteris campyloptera* Clarkson

This fern is doubly pinnate, with triangular pinnae below. The fronds may grow to 2 feet in length and vary from evergreen to partially evergreen. It is found in Julian Price Park in North Carolina.

Broad beech fern. *D. hexagonoptera* (Michx.) Christens.

The fronds are 12 to 15 inches long, triangular in shape, and usually broader than long. The lower frond surface is downy. Basal segments of pinnae form a wing along the rachis. It prefers shaded, moist woods but grows in a range of situations.

Marginal shield fern. *D. marginalis* (L.) Gray

An evergreen, or almost evergreen, with dark-green leathery fronds, 5 to 8 inches across, up to 18 inches in height. The sori are borne along the margins. Fronds occur in dense clusters. This species is found on rocky wooded slopes, usually in full shade.

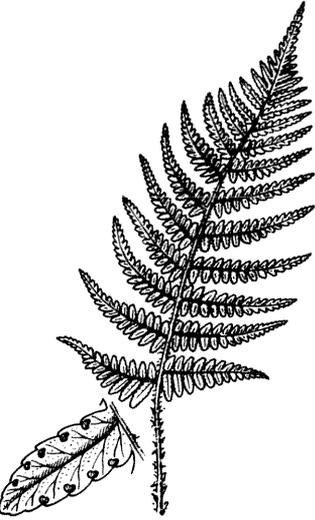
New York fern. *D. noveboracensis* (L.) Gray

The fruiting bodies are found near the frond margins. The fronds vary from 12 to 24 inches in length, and taper markedly at the basal and terminal ends. The lowest pinnae often are shorter than the middle ones. This species is found most often in moist forest areas.

Spinulose (spiny) shield fern. *D. spinulosa* (O. F. Muell.) Watt

The fronds often seem to be growing in a row, are about 18 inches long or 6 inches wide, and are almost evergreen. They often are found growing near rotting stumps of trees. The species prefers damp places such as swamps and bogs.

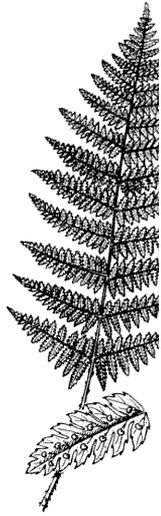
FERN FAMILY



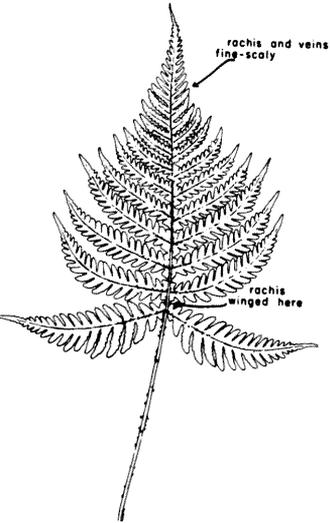
Marginal Shield fern



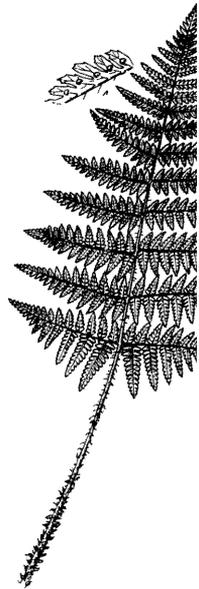
New York fern



Spiny Sh fern



Broad Beech fern



Wood fern

Sensitive fern. *Onoclea sensibilis* L.

This fern is usually partially evergreen. The erect fertile fronds, 2½ feet tall, usually growing in the middle of the plant, survive all winter, and the sterile, triangular fronds die in the fall. The fertile fronds have a beadlike appearance as the pinnules roll up, covering the sori. The pinnules of sterile fronds are opposite, and the rachis is winged. A folk tale tells that when the fern is picked, the fronds close. This species prefers high moisture and at least partial shade.

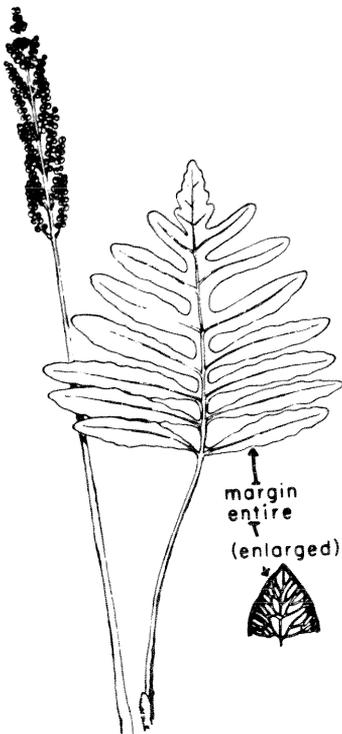
Resurrection fern. *Polypodium polypodioides* (L.) Watt

Fronds are yellowish green with a leathery texture. They are about 6 inches tall and 1 to 2 inches wide. The lower surface may appear to be gray. During prolonged dry periods, the fronds may roll up or even die back, but they quickly revive when rain falls. This fern is common on rocks, on the upper sides of limbs, and on trunks of trees.

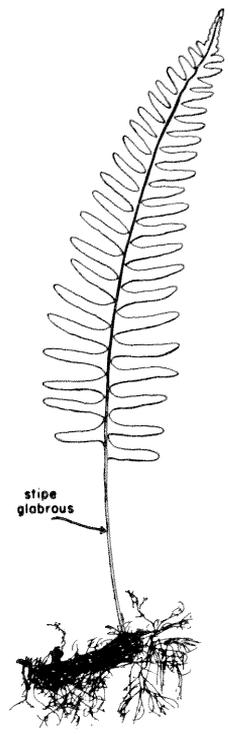
Common polypody. *P. virginianum* L.

Fronds are evergreen, erect, up to 12 inches in height and 2 inches wide. Shading is quite variable. The sori are produced between the frond border and the midrib. This stipe is glabrous. This fern grows on rocks and logs.

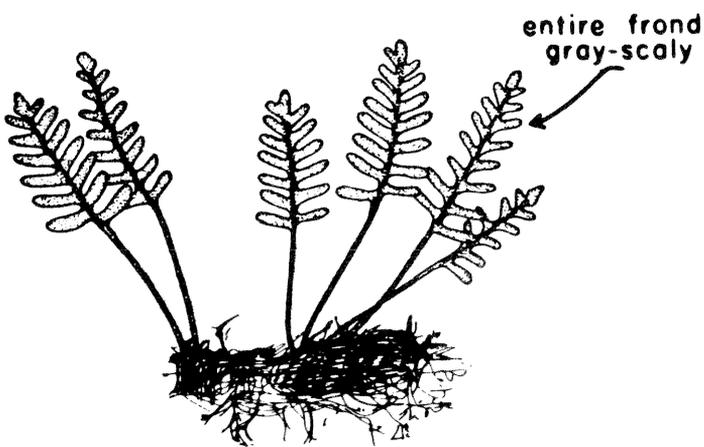
FERN FAMILY



Sensitive fern



Common polypody



Resurrection fern

Christmas fern. *Polystichum acrostichoides* (Michx.) Schott

This fern is found in a range of forms. The brown fruiting bodies on the underside of the fronds are arranged in several patterns, but fertile pinnae are always at the tip of the frond. The fronds vary in size from 6 to 20 inches. The upper or spore-bearing pinnae are smoother than the lower or sterile fronds. The species prefers shaded, moist areas.

Bracken. *Pteridium aquilinum* (L.) Kuhn

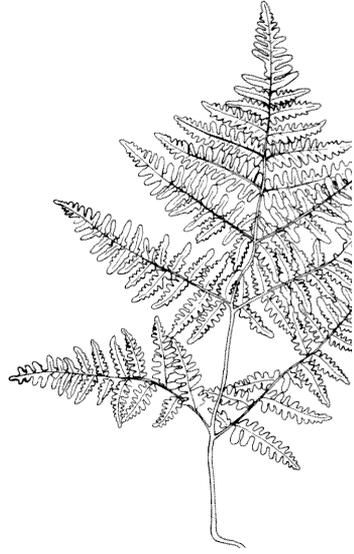
One of the largest ferns, this species may have fronds ranging up to 6 feet tall. It is not easily confused with others in the Blue Ridge. The fronds are somewhat lance shaped. Sori occur in a continuous band around the outer margin of the pinnae. This fern grows in fields and thick woods.

Chain fern. *Woodwardia aerolata* (L.) Moore

The sterile fronds vary from 8 inches to 2 feet in height, and have green petioles, and look much like sensitive ferns. Pinnae in this species, however, are alternate and have serrated margins. The fertile fronds are taller and have dark-colored petioles. The sori are produced on each side of the midvein of the fertile fronds, and resemble two rows of chain links. Midveins of sterile fronds also have two rows of chain links. The species prefers filtered, partial light and damp areas.

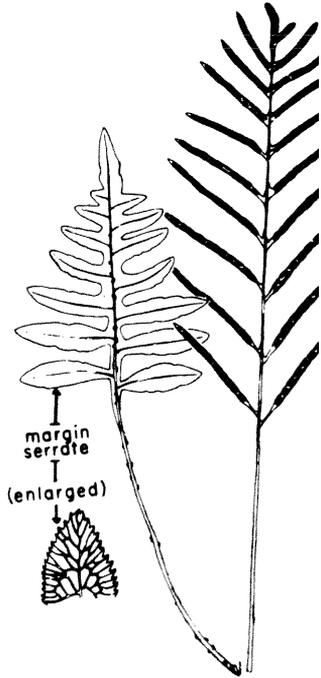
FERN FAMILY

Bracken
fern



Christmas fern

Chain fern



OSMUNDACEAE Osmunda Family

Three species in this family are found in the Blue Ridge. All three prefer damp woods. All have stipes winged at the base. All are large and coarse with erect or somewhat spreading fronds. The species differ primarily in the appearance of sori and spores.

Cinnamon fern. *O. cinnamomea* L.

The name of this fern comes from the brown cinnamon appearance of the young fronds and stalks. The sterile fronds range from 2 to 5 feet in height and are much taller than the fertile fronds, which are fuzzy at first, and soon dry. The sori are a bright cinnamon brown. Plants are often blue green. This species prefers wet areas.

Royal fern. *O. regalis* L.

The sori are borne at the top of a fertile frond. The long-stalked fronds range from 1 to 5 feet long, but sometimes are over 5 feet. The arrangements of pinnae resemble locust leaves, and another common name is locust fern. The fertile fronds have few pinnae, widely separated and tipped by the sporangia. The sterile fronds have more pinnae. The spores are light brown to tan. In early spring the fronds are pink hued. This fern prefers wet areas such as swamps, marshes, and damp woods.

Interrupted fern. *O. claytoniana* L.

This fern differs from the other two in that it bears sporangia in the middle or near the base of a fertile frond. Fertile fronds have several pairs of small blackish pinnae, which give the plant a unique appearance. The upright fronds, which taper at the base and at the apex, grow to 5 feet in height. This fern prefers dry, open glades.

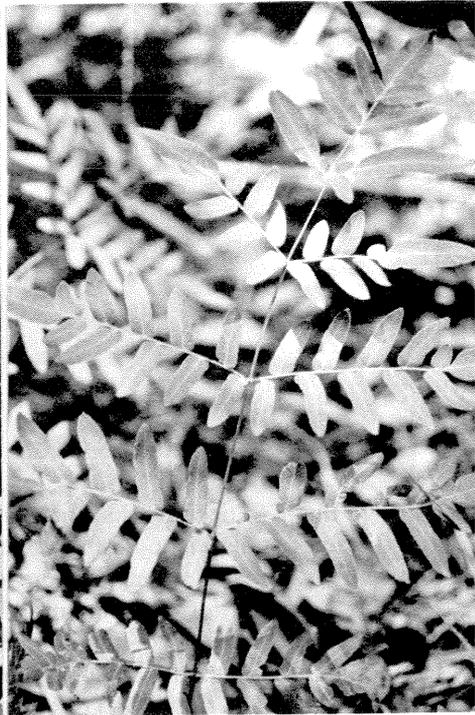
OSMUNDA FAMILY



Interrupted fern

Cinnamon fern

Royal fern



OPHIOGLOSSACEAE Adders-tongue Ferns

Rattlesnake fern. *Botrychium virginianum* (L.) Sw.

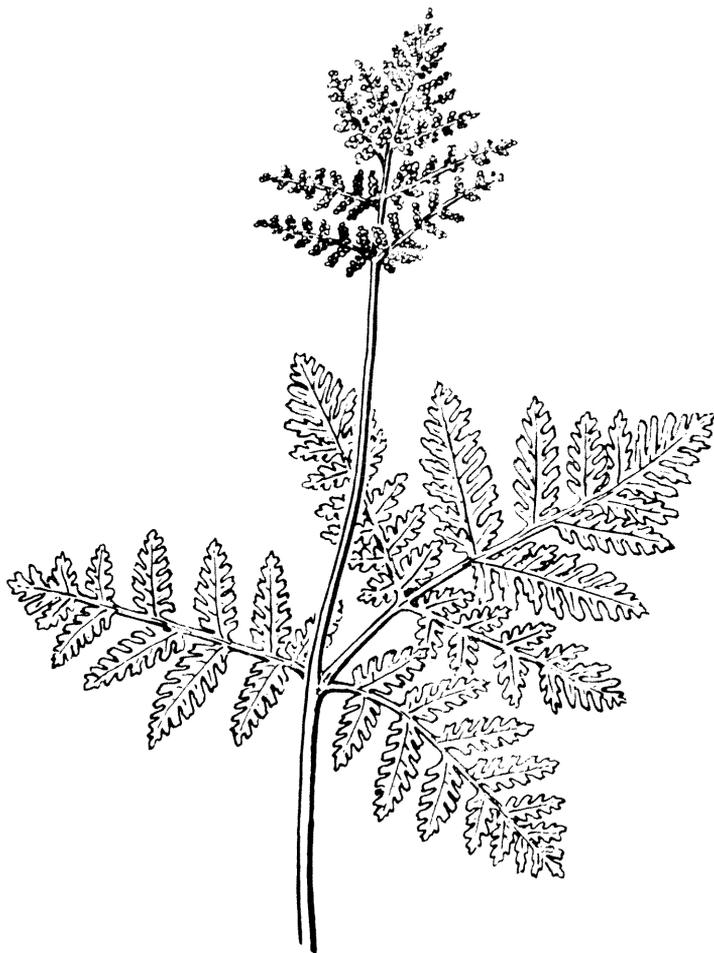
This fern seldom exceeds 2 feet in height. It usually produces a single evergreen frond, although it may have two or three. The fertile portion is produced on a long stem on which the tightly clustered pinnae slightly resemble a snake rattle. The fern was once believed to be a sure indicator of the presence of ginseng. It grows in heavy woods, in well-drained soils.

SOURCES OF ILLUSTRATIONS

We thank Seneca Books, Inc., publisher of "Flora of West Virginia," and the authors of that book, P. D. Strausbaugh and Earl L. Core, for use of their illustrations of ebony spleenwort, southern lady fern, rattlesnake fern, hay-scented fern, mountain wood fern, marginal shield fern, spiny shield fern, sensitive fern, interrupted fern, broad beech fern, resurrection fern, common polypody, and chain fern.

We also thank the New York Botanical Garden Library for its illustration of *Dryopteris noveboracensis*.

ADDERS-TONGUE FAMILY



Rattlesnake fern

