

FERNS TO KNOW

in Oregon



FEDERAL COOPERATIVE EXTENSION SERVICE ✓ OREGON STATE COLLEGE ✓ CORVALLIS

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FERN TERMS

Evergreen. Said of plants whose leaves remain green at least until new ones are formed, and of leaves that remain green more than a year.

Fertile leaf. A leaf that bears fruit dots or spore cases.

Fronde. The leaf of a fern.

Fruit band. A line of spore cases, instead of fruit dots, appearing on the margin or under surface of fertile leaves of some ferns.

Fruit dots. Small groups of spore cases appearing on the underside of fertile leaves.

Habitat. The typical situation under which a plant grows.

Indusium. The shield-like cover of a sorus.

Leaflet. One of the divisions of a compound leaf.

Midvein. The central and most prominent vein of a pinna or pinnule.

Nonfertile leaf. Sterile leaf, one without fruit dots.

Pinna. A primary division of a fern leaf. (The plural of pinna is pinnae.)

Pinnule. A secondary division of a fern leaf.

Rhizoid. Simple hair-like structures of a prothallium, functioning as roots.

Rhizome. A somewhat horizontal and usually elongated creeping subterranean stem.

Rootstock. Rhizome. Stem.

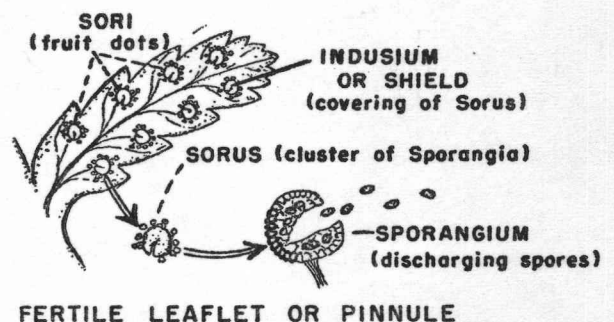
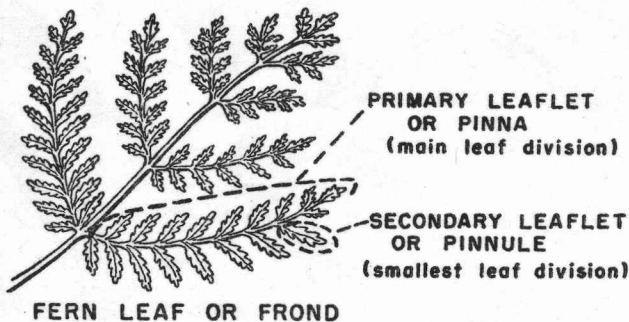
Sorus. A cluster of sporangia. (Plural of sorus is sori.)

Sporangia. (Spore cases.) The vessels where spores are formed.

Spore. The small nonsexual fruit of the fern. A cell that functions as a seed.

Stipe. Leafstalk.

Vegetative leaf. A leaf that has the chief function of forming food as distinguished from one that produces spores.



Acknowledgments

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The author acknowledges considerable advice and assistance from the late Dr. A. N. Steward, curator of the OSC Herbarium, who made valuable suggestions and checked accuracy of plant descriptions and drawings.

Dr. Helen M. Gilkey, former curator of the Herbarium, also gave assistance. Drawings are by Mrs. Cathrine Davis Young.

For further information on Northwest ferns, the author highly recommends the book, "Ferns of the Northwest," by T. C. Frye, published in 1934 by Binfords and Mort, Portland, Oregon. It was the principal reference in preparing this leaflet.

INTRODUCTION

Along most streams in the Northwest in moist, shady woods you can find at least seven ferns, usually within a short time. These ferns are bracken, sword, maidenhair, lady, deer, spreading wood, and licorice.

This bulletin describes and illustrates the following species:

- Bracken (*Pteridium aquilinum*)
- Sword (*Polystichum munitum*)
- Maidenhair (*Adiantum pedatum*)
- Lady (*Athyrium filix-femina*)
- Oak (*Dryopteris linnaeana*)
- Spreading Wood (*Dryopteris dilatata*)
- Deer (*Struthiopteris spicant*)
- Licorice (*Polypodium vulgare*)
- Giant Chain (*Woodwardia radicans*)
- Parsley (*Cryptogramma acrostichoides*)
- Bladder (*Cystopteris fragilis*)
- Lace (*Cheilanthes gracillima*)
- Sierra Water (*Dryopteris oregana*)
- Maidenhair Spleenwort (*Asplenium trichomanes*)
- Sierra Cliff Brake (*Pellaea brachyptera*)
- Oregon Woodsia (*Woodsia oregana*)
- Gold (*Pityrogramma triangularis*)

Others briefly described or mentioned are these species:

- Holly (*Polystichum lonchitis*)
- Male (*Dryopteris filix-mas*)
- Coastal Wood (*Dryopteris arguta*)
- Leathery Polypod (*Polypodium scoleri*)
- Slender Rock Brake (*Cryptogramma stelleri*)
- Oregon Cliff Brake (*Cheilanthes densa*)
- Slender Lip (*Cheilanthes feei*)
- Coastal Lip (*Cheilanthes covillei*)
- Coffee (*Pellaea andromedaefolia*)
- Brewer's Cliff Brake (*Pellaea breweri*)
- Bridges' Cliff Brake (*Pallaea bridgesii*)
- Rocky Mountain Woodsia (*Woodsia scopulina*)

Information on the ranges of these ferns is confined generally to Oregon and Washington and may not indicate their occurrence or abundance elsewhere.

Explanation of field characters. Under this heading are noted distinctive characteristics of the species that will help you recognize it in the field. You need a pocket magnifying glass to see some of the features.

Many species. The Pacific Northwest has well over 50 species of ferns but many are varieties found closely resembling ferns described in this circular. For example, the genus *Dryopteris* is known to have seven species in the region, three described in detail and two others briefly mentioned. Species omitted are not seen often.

Variation. Ferns are most abundant in wet regions, but some are found in extremely dry areas that have wet periods. Some grow submerged, some float, some grow in trees (mainly *Polypodium* in our region). Foliages vary from a single, untoothed blade to numerous intricate leaves each composed of many leaflets (lady fern); from thin blades (maidenhair fern) to tough leathery ones (deer fern); from annual leaves (brake) to evergreen ones (sword). Ferns of temperate regions have scarcely any evident stems, the visible parts being almost entirely leaf structures; some have short carrot-like stems covered by leaf bases; some have subterranean creeping stems (licorice), and some in the tropics have tall erect trunks (tree ferns).

Structure and reproduction. A fern has these parts: leaf or frond; leafstalk or stipe; an underground or undersurface stem or rootstock (rhizome); and fine, fiber-like roots. The leaf and leafstalk of Northwest ferns are above ground.

In the structure of their roots, stems, and leaves, and in their manner of vegetative reproduction, ferns resemble the seed plants with which they often are combined under the heading "Higher Plants." However, in their reproduction by spores, ferns resemble fungi, lichens, and mosses with which they are sometimes included as "Lower Plants."

The spores of ferns are very small single-celled bodies, growing in small cases (called sporangia), crowded in fruit dots, bands, lines, or areas (called sori) on the lower surfaces of fern leaves (frequently spoken of as fronds). These leaves often are divided into leaflets (called pinnae).

A leaf that bears sori is called "fertile;" a leaf without sori is called "sterile." On backs of fertile leaves, at certain seasons, fruit dots may be found. A single fruit dot (sorus) seen through a magnifying glass will appear as a cluster of small sacs (sporangia) containing spores. The spore is the very small fruit of a fern, and while it does serve to reproduce the plant, it is not a seed for it has no embryo. From the spore grows a delicate, green, leaflike form known as prothallium. It may be a quarter of an inch across. It develops hair-like rhizoids and also two sets of organs, egg cases and sperm cases, that correspond in function to the stamens and pistils of flowers. Union of the sperm with the egg starts a new fern. For a fern to grow from a spore to mature size takes several years.

The form and arrangement of the spore-bearing structures are of great importance in the classification of ferns, as are the form and structure of flowers and fruits in the classification of seed plants.



Bracken Fern

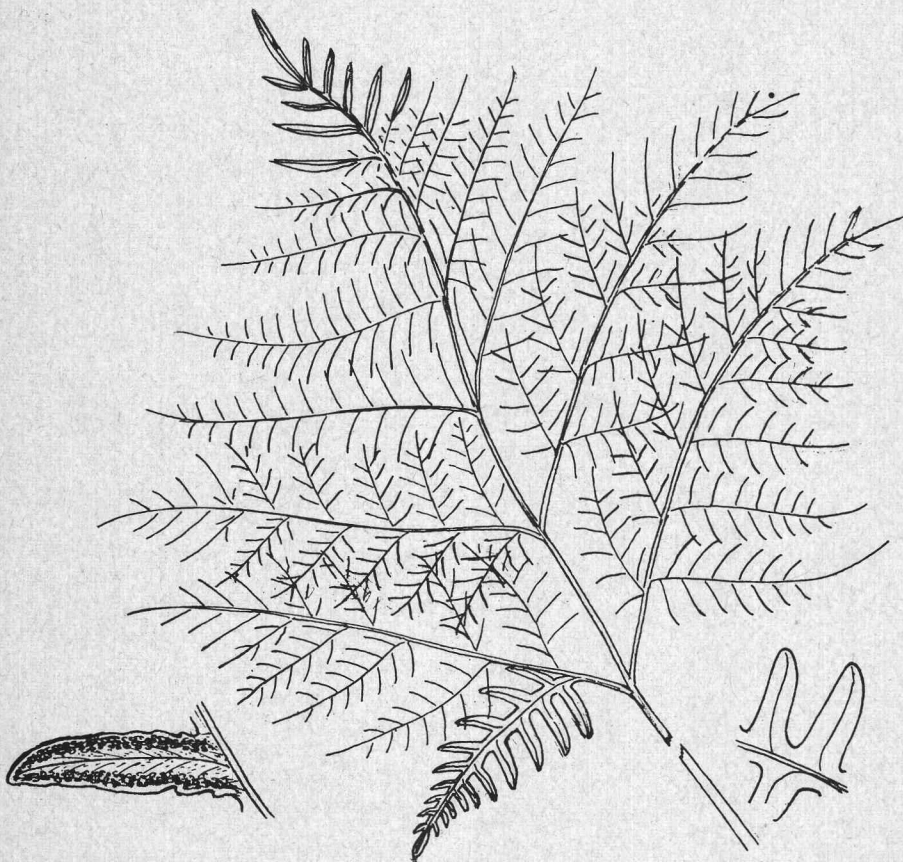
(*Pteridium aquilinum*)

Everybody knows it. The coarse appearance of bracken fern and its tendency to form a dense cover make it easily known. The usual height is 2 to 6 feet, but it can grow tall enough to conceal a man on horseback. Bracken invades fields like a conquering host, becoming a troublesome weed. It loves a damp climate but is remarkably resistant to drought. Where grasses and field crops turn yellow, the brake will hold its own.

Grows in other lands. Bracken fern is widespread in the northern hemisphere. It has only one species, of which that in the Northwest is a variety. Although seen everywhere, it is most abundant and largest in the Cascades and westward, attaining a luxuriant growth in the coast mountains. The name "brake" or bracken, which traces back into a number of European languages, may have come from the broken appearance of the fern cover after the first heavy frost. The leaves lie collapsed like a miniature forest hit by a tornado.

Underground stems store food. Because numerous fern rootstocks (rhizomes) lie deep in the ground, store much nourishment, and continue to send up new leaves, it is difficult to eradicate fern. Indians dug up the underground rootstocks, roasted them, and extracted a starchy food. The young shoots have served as food in several countries. Grazing of brake may poison cattle. The fern often is used by hunters and campers to make a soft bed.

Field characters: Fruit line under recurved margin of leaflet.



Sword Fern

(*Polystichum munitum*)

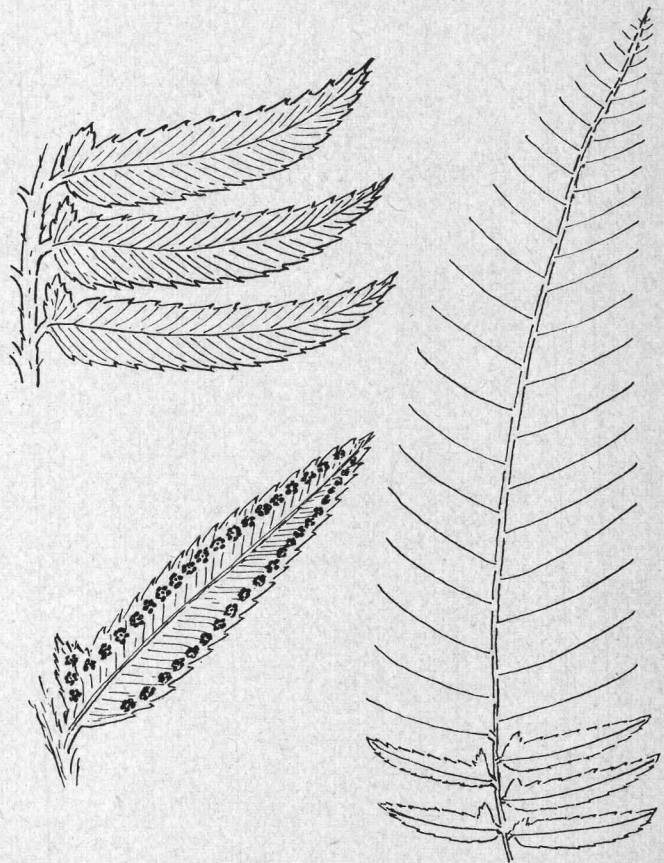
Carries sword. The smallest division of the sword fern leaf resembles a short, broad sword. The name is derived from this characteristic. The slim, curving leaves rise from large, circular clusters, so distinctive you can spot them from afar. The leaves are evergreen and may reach a height of 4 feet or more, but are commonly 1 to 3 feet.

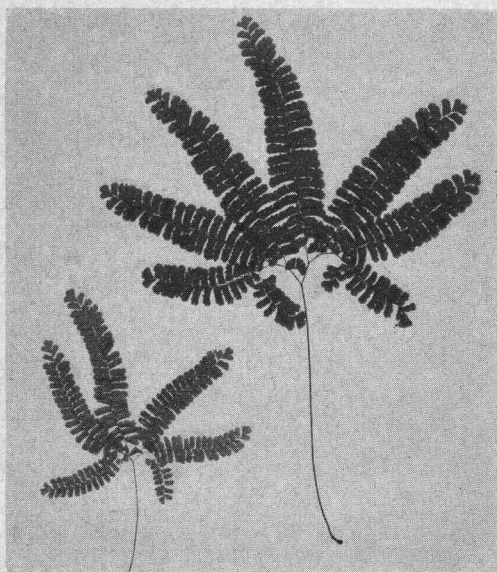
Fern of the deep forest. This tough, coarse fern is found throughout the Northwest, especially where the forest makes good shade. Best growth occurs under dense fir, hemlock, and spruce forests west of the coast range. The genus *Polystichum* is represented by at least two other species in Oregon and five in Washington. One is the small but pleasing holly fern described below. However, only sword fern is common.

Big business. Sword fern is used for making sprays and wreaths, and carloads are shipped under refrigeration to florists throughout the nation. Although the fern is found on thousands of acres of Northwest timberland, hardly 1% of the area is covered by fern pickers. Even so, the output from Oregon and Washington supports a multimillion dollar business. The newest leaves of the best ferns are collected to be sold. Bright tips about 25 inches long are selected from each rootstock. Pickers can remove as many as 25% of the leaves in a cluster without damaging the crop.

Field characters: Evergreen; sori, shield-covered, in a row near margin of leaflet, give the underside of the leaves an orange-brown color.

Holly fern (*P. lonchitis*). Resembling sword fern, this is one of the small species of the genus. It is rigidly upright, evergreen, and bright green in color. Look for a fern from a few inches to 1½ feet in height and then examine the leaflets. They are of harsh texture and have sharply toothed margins a little suggestive of holly leaves. Leaflets are "stubby," one-half as wide as long, the lower ones becoming shorter and shorter until they are about as wide as they are long. Holly fern is found in crevices of shaded cliffs and rocky slopes in the mountains.





Maidenhair Fern

(*Adiantum pedatum*)

Our most delicate fern. Maidenhair fern is easily recognized because of its pleasing and delicate appearance, unlike that of any other fern. The erect, black, shiny "wire" leafstalks may have suggested the name. Or the name may refer to the fine, black, fibrous roots. Each tiny leaf division is fringed along the upper edge. The leaf blades are soft and thin. Banks of maidenhair fern form circular masses. Here nature runs to a pattern of characteristic concentric circles (evident in the picture).

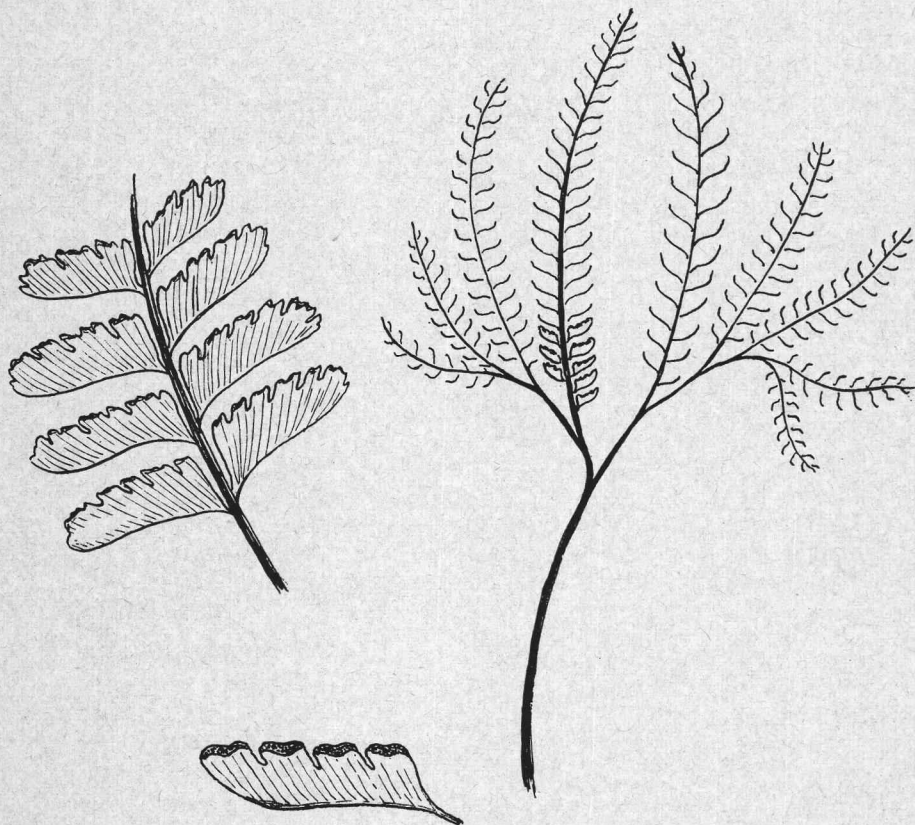
The fern is found in rich, moist forests everywhere in the Northwest, and prefers the dripping banks of a stream. It commonly grows 1 foot high and usually is not over 2 feet. New leaves are produced all summer.

Adiantum. The scientific name is from the Greek language meaning "not to moisten." The leaves resist water, or are so smooth that it always runs from them. The Roman naturalist and writer Pliny says, "In vain you plunge it in water, you cannot wet it." Air bubbles formed on the immersed leaf surface give back a bright and silvery reflection.

Featured for gardens. Despite its apparent fragility the maidenhair is not difficult to cultivate if provided with sufficient shade and moisture. Feathery lightness and beauty put it in a class by itself.

Helped Indians dry berries. Frye relates how the Northwest Indians used the thin leaves of maidenhair fern in drying berries. Over a fire they placed a lattice of cedar strips. Leaves of fern were strewn on the strips and then berries were spread on the fern. The dried fern leaves were winnowed out of the dried berries.

Field characters: Stipes are dark brown, purple to nearly black; fruit bands arranged along margins of leaflets, covered by recurved portions of the margin.



Lady Fern

(*Athyrium filix-femina*)

Large and graceful. Lady fern is a large, graceful fern that grows abundantly throughout the Northwest along streams and in damp, shady woods. It grows almost head high in rich, wet spots but is commonly 2 to 5 feet high. It has an attractive appearance, especially in the spring. The plants are not evergreen. By autumn they often look injured and the leaves lose their clear green color.

This fern is easy to identify by its leaves, as they are widest near the middle and taper evenly toward top and bottom. One author described the edges of the leaves as having long, sweeping curves like giant parentheses.

Poetic lines of Sir Walter Scott refer to lady fern:

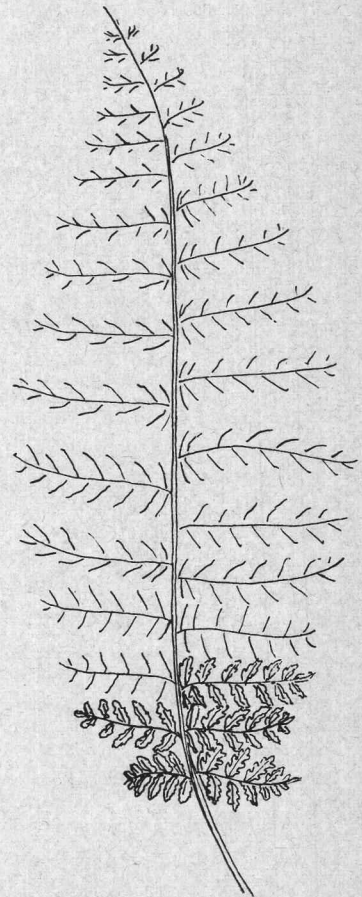
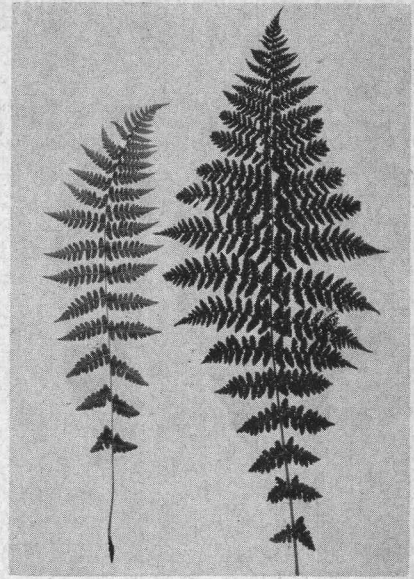
“Where the copse wood is the greenest,
Where the fountain glistens sheenest,
Where the morning dew lies longest,
There the Lady Fern grows strongest.”

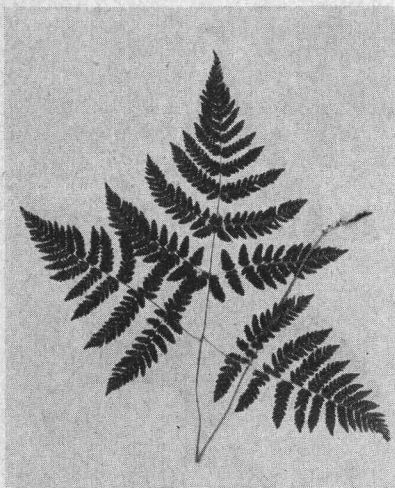
Lady fern is sometimes called swamp fern because it grows only in wet places. The rootstock is reported to have been used medicinally.

Field characters: Lowest leaflets very short; lower segments of leaflets crowded against main axis; sori, when young, covered by an oblong shield.

Thoreau on Knowing Ferns and Nature

Thoreau wrote, “It is only when we forget all our learning that we begin to know. . . . If you would make acquaintance with the ferns, you must forget your botany. Not a single scientific term or distinction is the least to the purpose. . . . In what book is this world and its beauty described? Who has plotted the steps toward the discovery of beauty? Your greatest success will be simply to perceive that such things are, and you will have no communication to make to the Royal Society. If it were required to know the position of the fruit-dots or the character of the indusium, nothing could be easier than to ascertain it; but if it is required that you be affected by ferns, that they amount to anything, signify anything to you . . . this end is not so easily accomplished.”





Oak Fern

(*Dryopteris linnaeana*)

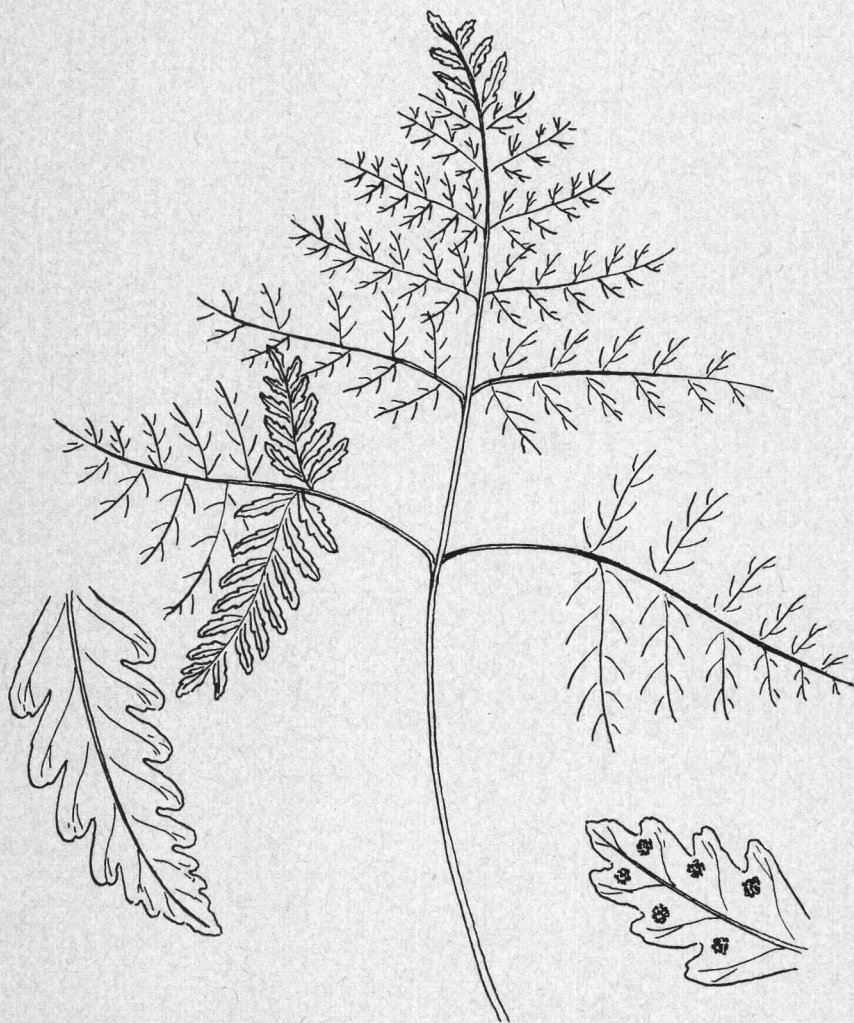
Dryopteris, the shield fern. The name shield fern often is given to ferns of the genus *Dryopteris*. The indusium, or cover protecting the spore cases, suggests a shield. Frye says, "Many of the ferns grouped under the genus *Dryopteris* are by some botanists put under the genus *Thelypteris* or *Aspidium*. Aspidion is the Greek word for a "small shield." The Pacific Northwest has several species of *Dryopteris*. The most abundant ones are described in this publication and some of the less common ones are mentioned.

Oak fern is twice triangular. The triangle-shaped leaf of this species divides into three triangular leaflets. When the young leaves unfold in spring they resemble three little balls on wires. Later the leaf suggests a small bracken. Oak fern grows up to 2 feet high and there is no mistaking the three big leaflets delicately upraised on the long, cord-like leafstalk.

Common in the mountains. Oak fern is seen at lower elevations but is reported more abundant at middle and upper altitudes of Western Oregon and Washington. The name may come from oak forests of Europe where it is found.

Field characters: Leaf outline 3-lobed, broadly triangular; lower leaflets long; sori, when young, covered by a circular shield; sori nearer the margin than the midvein.

Other *Dryopteris* ferns. At least two other species have been found in mountainous areas. Sierra water fern (*D. oregana*) is described on page 14. The uncommon male fern (*D. filix-mas*) of moist rocky woods may grow 3 feet high. It resembles the lady fern but has a stout scaly leaf unlike the lady's fragile one.



Spreading (Triangular) Wood Fern

(*Dryopteris dilatata*)

Loves moist humus of deep woods. Spreading wood fern is found in moist shady woods of western Oregon and Washington, especially at lower elevations. Often it is seen where there is abundant mold and humus from rotting wood. Occasionally it is found in very damp regions on the bases of trees but almost always within 2 feet of the ground. Some spreading wood ferns are only a few inches high, others are 2 feet or more.

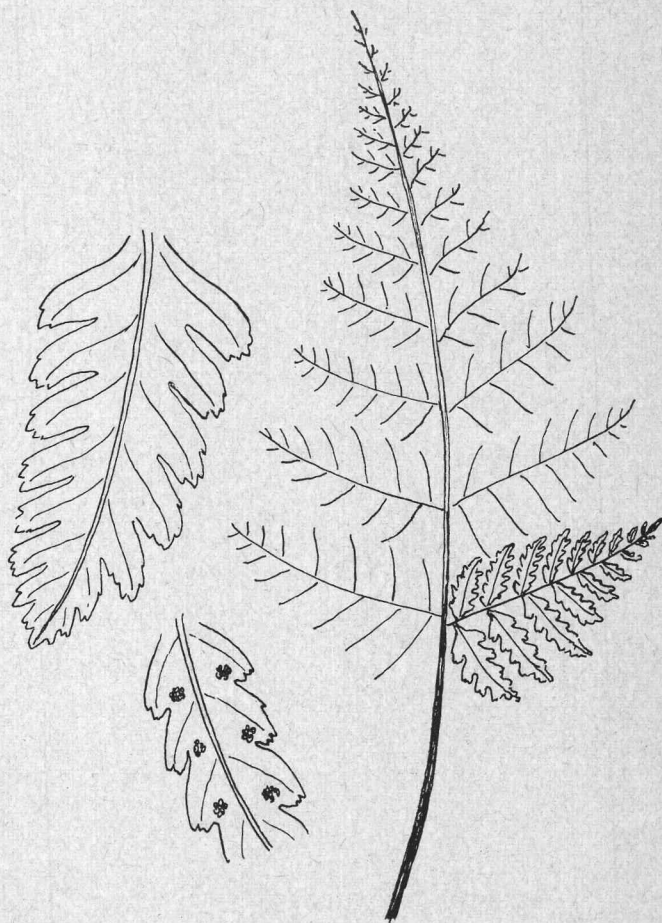
Easy to know. Spreading wood fern has a finely cut, lacy look. The lowest pair of leaflets is the largest, giving the whole leaf the shape of a triangle. These big lower leaflets are turned at a different angle than the higher leaflets, a feature you see immediately.

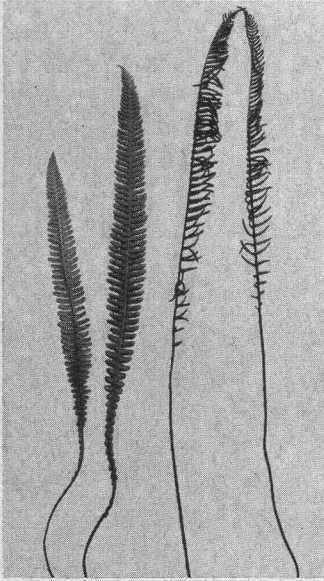
This bright colored fern is rated one of the loveliest, and you will find it easy to identify. Botanists point to this distinguishing mark: the lower secondary leaflets (pinnules) of the bottom pair of primary leaflets (pinnae) are two to three times as long as the upper.

Dryopteris dilatata. The Latin word "dilatus" means expanded, and refers to the wide base of the blade. Note in the picture that the bare leafstalk is folded under and is almost as long as the leaf blade.

Field characters: Leaf triangular, not 3-lobed; lower leaflets longer than those above; sori, when young, covered by a circular shield.

A second coastal species. Coastal wood fern (*Dryopteris arguta*) is also an ever-green species found within 100 miles of the coast. It grows densely tufted and the leaves are very chaffy (scaly) at the base. From 1 to 3 feet high, this fern has a leaf-stalk only one-third to one-half as long as the blade.





Deer Fern

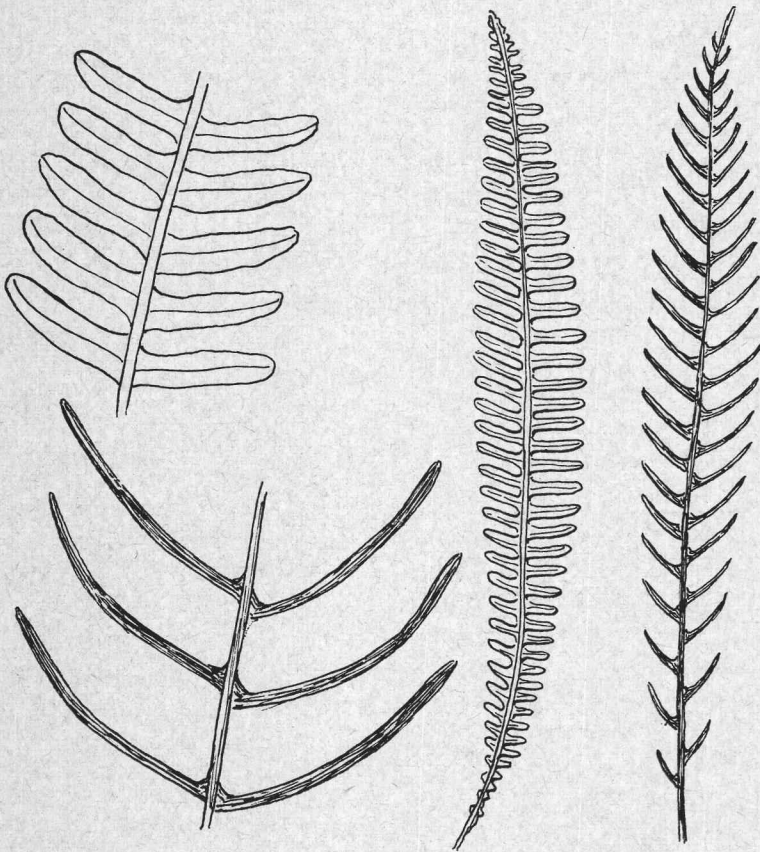
(*Struthiopteris spicant*)

Deer fern is found plentifully along the coast and elsewhere in the deep forests of western Oregon and Washington. It commonly grows 1 to 2 feet high, is found in deep shade, and associates with sword fern. It likes a wet soil.

Fertile and nonfertile leaves. The fern has two distinct forms of leaves, fertile and sterile. The fertile or sporebearing leaves stand erect from the cluster of shorter sterile or vegetative leaves, and resembles stalks of grain. The species name *spicant* is from the Latin "spica" meaning "head of grain." The gradual narrowing of the blade toward its base, with the leaflets getting shorter and shorter, makes this tough, evergreen fern easy to recognize. The leaves grow in a close tuft or rosette.

Food for deer and elk. Only one species is found in the Northwest. The name may come from the fact that the fern is a source of food for deer and elk during winter snows.

Field characters: Sterile leaves evergreen; fertile leaves with very narrow leaflets; fruit area densely covering under surface of fertile leaflets.



Ferns in Ancient Study

Ferns were studied by scholars of the ancient civilizations. One of them was Dioscorides, a Greek physician and man of science during the first century. His great work "De Materia Medica," describes remedies from the vegetable, animal, and mineral kingdoms. He names several of the ferns known to us in the Northwest, as witness below his statements concerning the licorice fern, *Polypodium vulgare*. (The only translation is an early English one.)

"It grows on rocks having moss, having ye heighth of a span, like to fern, somewhat rough, cut in, but not divided so thinly, but ye root lies under, being hairy having curled locks like a Polypus, ye thickness of a little finger, but being scraped, within green, sharp, & of somewhat a sweet taste, having a purging faculty. But to purge with it, it is given, being sodden together with an henne, or fish, or beets, or mallows, but being dry & powdered & sprinkled into Melicrate, it expels Phlegm & choler, & ye root beaten small being applied is good for luxations and for the chaps which are between ye fingers."

Licorice Fern

(*Polypodium vulgare*)

Likes moss on maples. Almost any fern growing out of thick moss on tree trunks or rocks will be of this genus. You have a good chance of finding licorice fern on any bigleaf maple whose lower trunk and limbs are padded with moss. It likes humid conditions. Licorice is a sparse fern; its leaves are few and scattered and commonly not over a foot long. The lobes of the leaf may join the midrib in a noticeable zig-zag pattern.

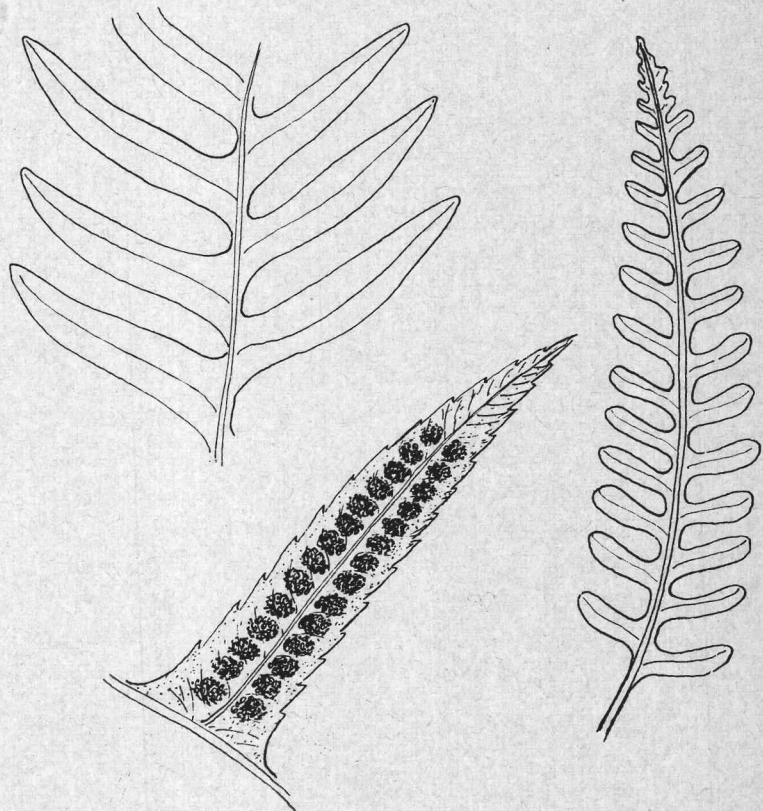
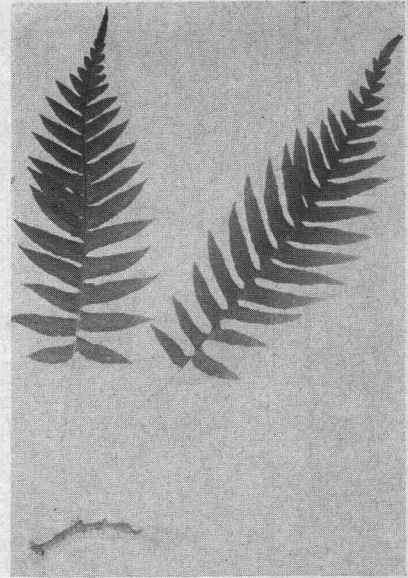
Licorice flavor. The thick rootstocks creep under heavy coverings of moss on deciduous trees and find moisture. In times of little or no rain, the leaves wither, but after the rainy season begins they reappear and the fern remains green all winter. The rootstocks have licorice flavor and children like to chew them. Early settlers used the rootstock to flavor tobacco and to make remedies for a variety of ailments. In fact, medical usages of this fern (and of others) have been prescribed for many centuries. An example from the ancient Greek writings is included on page 8.

Polypodium. The scientific name is from the Greek poly (many) pous (foot) and refers to the thickened underground or undermoss rootstocks that have the licorice flavor. This rootstock technically is the stem of a fern and it is usually underground, but since licorice grows in moss, its stem is more easily seen than if it were growing in soil.

Field characters: Evergreen; sori rather large, not covered, in rows parallel with midrib of the leaflet.

Sea-loving *Polypodium*

The leathery polypod (*P. scoleri*) is another species somewhat similar to the licorice fern. It loves salt air and is found in forks of old trees along the coast. The leaves are thick, leathery, and broad. The rootstocks do not have a licorice taste.





Giant Chain Fern

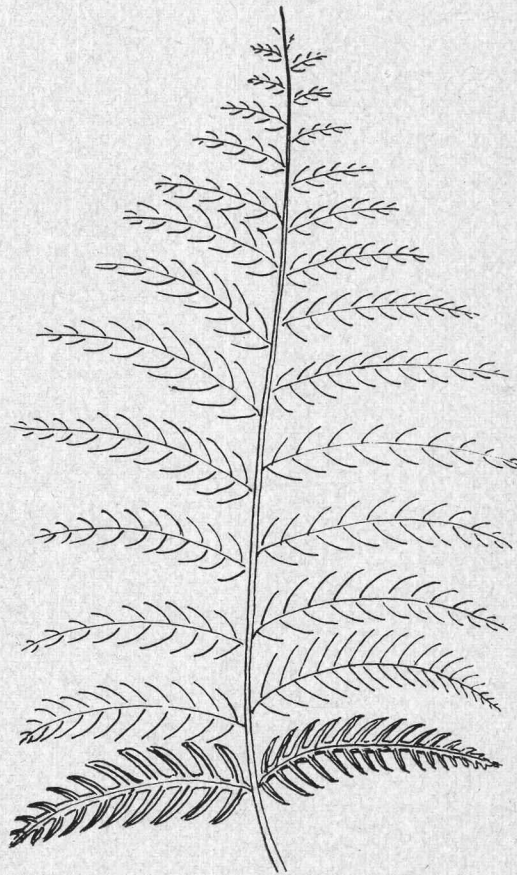
(*Woodwardia radicans*)

Magnificent. Giant chain fern is one of the most beautiful of the North American ferns. A fern of the redwood region appearing along forest streams on mountain slopes, it comes into Oregon's Coos and Josephine Counties and, then, surprisingly, shows up on islands of Puget Sound. Not enough information has been collected to show the exact distribution of this fern and of other less common ones.

Often growing head high, the fern cluster forms a large showy mass and is considered the best large native decorative fern for a garden in the Northwest coastal region. The leaflet divisions are spear pointed.

Woodwardia. The fern was named after Thomas J. Woodward, an English botanist. The common name comes from the fern's large size and from the fact that the sori are in chain-like divisions on the back of the leaflets.

Field characters: Evergreen; leaves leathery, very large, 3 to 9 feet long; sori narrowly oblong in two rows bordering the midrib.



Fern Rootstocks Reach Far

Farmers and foresters know some ferns are among the most persistent plants in the Northwest. Bracken, for instance, resists fire, grazing, extreme drought, and cultivation unless it is thorough and continued. A report from England, obviously the result of much hard labor and excavation, shows this fern to have a very extensive rootstock system. One main rootstock was 89 feet long, and another 67 feet long, a single branch of the latter showing a length of 200 feet (including long laterals but excluding short ones). These extraordinary figures show that a "colony" of bracken could very well be but one single plant.

Parsley Fern or Rock Brake

(*Cryptogramma acrostichoides*)

Rocky habitat. Parsley fern can be found in all sections of Oregon and Washington from Wizard Island in Crater Lake National Park to Mt. Baker, to the Olympic mountains. It is seen in lava beds, in clefts of rock, and while much more common at high elevations, it also is found at elevations of 3,000 or less.

Two distinct types of leaves. The height of this densely tufted little fern is usually under 8 inches. It has two kinds of leaves, a tall long-stalked fertile one with its margins rolled under to enclose the spores, and short-spreading lower sterile ones that have some resemblance to parsley leaves. The leafstalks are straw-colored.

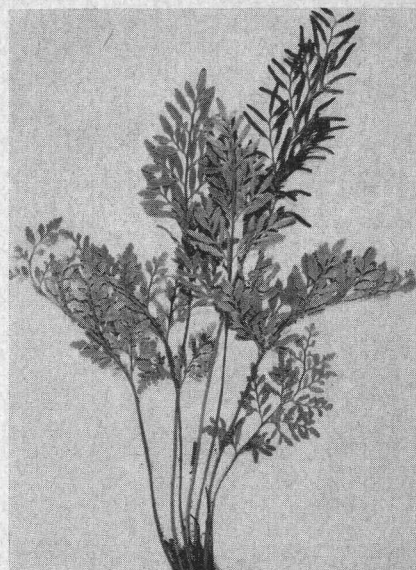
One species common in this region. Only parsley fern (*Cryptogramma acrostichoides*) is common in Oregon and Washington; however, a second species, slender rock brake (*C. stelleri*), has been found in the Whitman National Forest in Northeast Oregon and in the Wenatchee Mountains in Washington. This second species grows best on limestone.

Field characters: Leaf segments separate; sterile leaves thin; fertile leaves taller, segments narrow, brown at maturity, fruiting area densely covering the lower surfaces.

U. S. Soldiers Ate Fern in North Korea

An American soldier who was a prisoner in North Korea said that throughout the spring members of his group were issued as part of their food a sort of tasteless fern known as kosar. They could not get away from it, and finally the sight of it became revolting. They gave it away to the villagers, trading for almost anything they could get.

Later in this country, the American sought the identity of this kosar. The answer came from a Korean graduate student at the University of Wisconsin. The plant is the bracken fern, which the Korean said is boiled and flavored with sugar, pepper, salt, garlic, catsup, sesame, or other spices. Only the tender new shoots or "fiddleheads" are eaten.





Bladder Fern

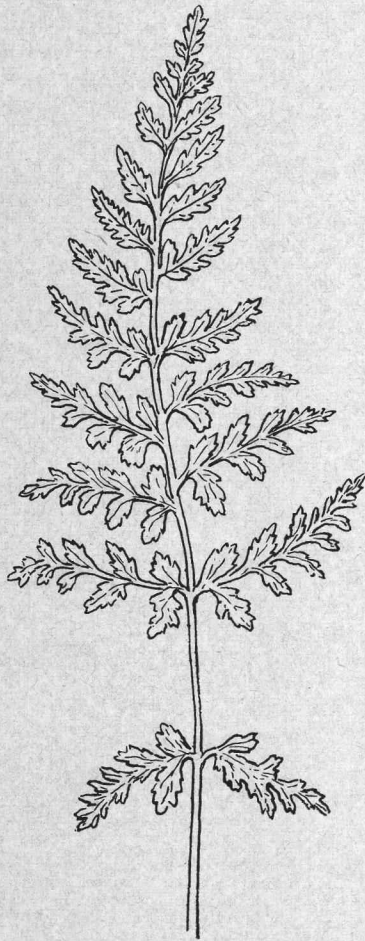
(*Cystopteris fragilis*)

It gets around. Bladder fern is widely distributed through the Northwest at middle and lower elevations. Among the places where it has been located are these: in Oregon at Multnomah Falls, Estacada, Oregon City, and Crater Lake Park; in Washington at Mt. Rainier, upper Natches River, Olympic Mountains, Colfax, Clallam County, Stampede Pass, Mt. Stuart, Grand Ronde River.

Growing on rocks or soil, the species pictured is small and commonly under a foot high. The leaves are bunched and the leafstalks are fragile. The plants are not evergreen.

Two names. It is believed the fern got its name because the indusium suggests a bladder. One author gives the species *Cystopteris fragilis* the common name of brittle fern, probably because of the brittleness of the leafstalks. This fern is reported to flourish throughout the world, even in the tropics, where it appears at high elevations in the mountains.

Field characters: Basal leaflets shorter than those above; leaves 4 to 10 inches long; sori roundish, when young, covered by a thin sac-like shield.



Sources of Additional Information on Ferns

Some people are interested in ferns as a sideline activity or hobby. They may develop small fern gardens, and many enjoy exploring the outdoors to learn more about ferns. Certain enthusiasts like to grow ferns from spores, a project that requires no more space than a few square feet or a windowsill, but does require knowledge of the particular methods of how to do it.

College botany departments and technical libraries always are sources of information. Botanists at the colleges may know of individuals or groups having a special interest in ferns.

The "American Fern Journal," published quarterly by the American Fern Society, is a most readable publication of long standing. It reflects the various interests, both professional and avocational, that people have in ferns. Copies may be seen in libraries or other places, or may be obtained through a library. Perhaps you have run across a fern that is not easily identified. The OSC Herbarium will assist in identifying a specimen if adequate material is submitted. In addition to the leaf, basal parts are necessary and fertile material (having spores) is desirable. Be sure to report the geographic location and the type of habitat.

Lace Fern

(*Cheilanthes gracillima*)

Lace fern grows in the high mountains and dry regions. It prefers a rocky habitat, is often seen in lava, and is a good plant for a rock garden. It is small and slender.

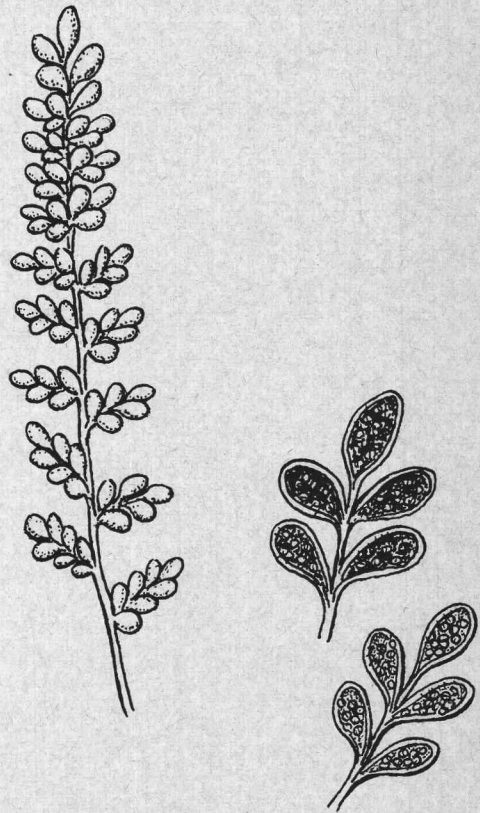
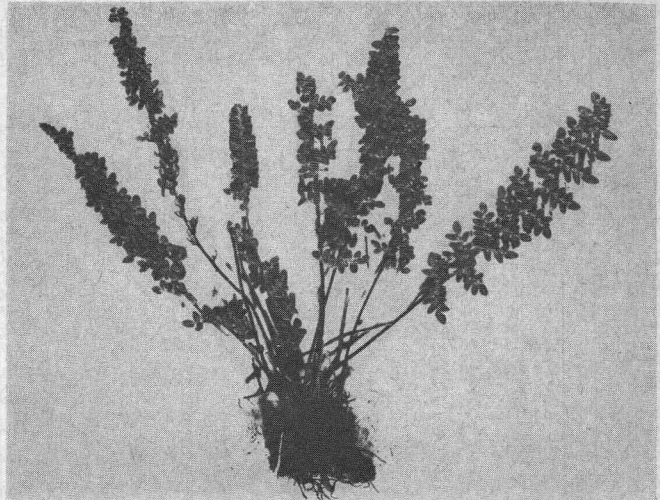
Lip fern (*Cheilanthes*). This genus is known as lip fern because of the shape of the indusium. It seeks dry regions and its members have been found in numerous areas in the Northwest. Three species other than lace fern have been noted. Oregon cliff brake (*C. densa*) appears in Oregon and Washington in scattered locations. It is finely cut and has numerous small blades. The leaf is broad and tends to be 5-pointed, with the lowest pair of leaflets the largest. Slender lip fern (*C. feei*) has not been noted in Oregon; coastal lip fern (*C. covillei*) has not been noted in Washington. The coastal variety is a California fern that has been found in the high mountains of Jackson County, Oregon.

Field characters: Pinnules quite small, one-sixteenth to one-eighth of an inch long, leathery, brown-hairy beneath; leaves 1 to 3 inches long, on slender dark stalks 1 to 4 inches long.

Ferns of Oregon Caves National Monument

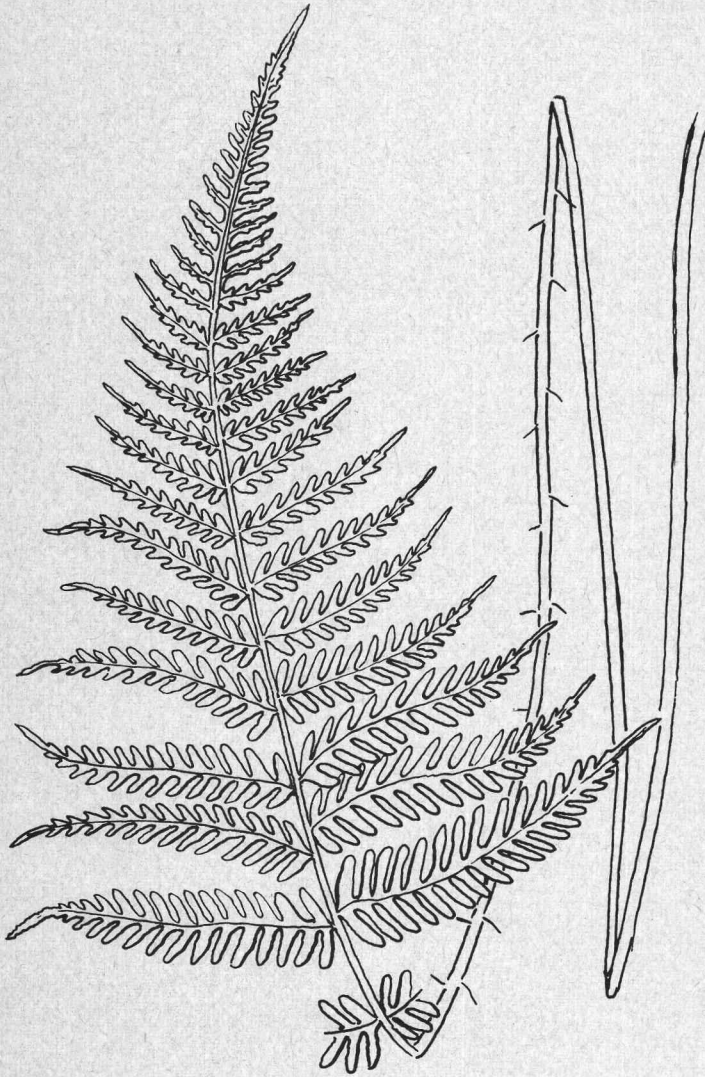
The Oregon Caves National Monument and vicinity in the Siskiyou Mountains offer interesting variety in vegetation zones and in geologic conditions. Numbers of plant collectors visit the area. Botanists W. H. Baker and G. C. Ruhle reported in the 1957 "American Fern Journal" the ferns that they encountered in the region.

- Sword, bracken, and lady fern were seen often.
- Western maidenhair was common along stream margins.
- Holly fern was abundant on certain rock ledges.
- Bladder fern was fairly common at certain rock slides and open woods.
- Lace fern, Oregon cliff brake, and parsley fern were found at certain upper ridges and summits.
- Spreading wood fern was seen occasionally.



Sierra Water Fern

(*Dryopteris oregana*)



Sierra water fern, also known as Sierra wood fern, is found along streams from Mt. Rainier, Washington, to northern California, mostly on the western slopes of the Cascade Mountains. It may reach a height of 3 feet or more. The leaf blades are thin and delicate and are widest near the middle. They are not triangular like *Dryopteris linnaeana* and *D. dilatata*.

Sori are small and nearer to the margin than to the midvein. They are abundant on fruiting leaflets. Many leaves are sterile.

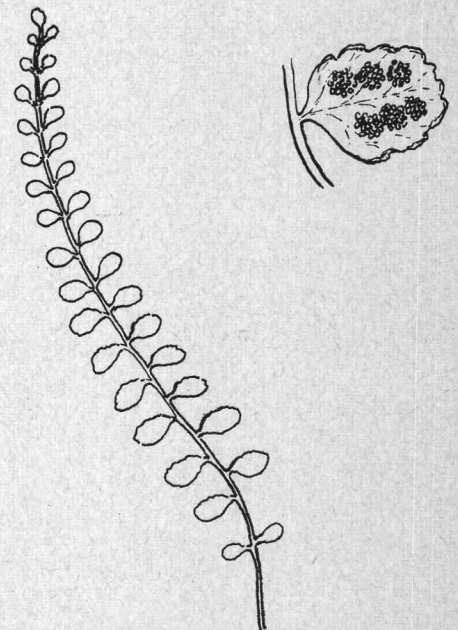
Maidenhair Spleenwort

(*Asplenium trichomanes*)

Maidenhair spleenwort is not the only species of this fern. However, it is the one most likely to be seen in Oregon and Washington.

Small, less than a foot high, and growing in tufts, the fern is found on moist rocks and shaded cliffs at medium and high altitudes. The leafstalks are dark brown and shiny. Because some of the leaflets drop early in the season, leaving bare leafstalks, a cluster often will show both bare and living leafstalks.

Sori are oblong and the indusia are delicate.



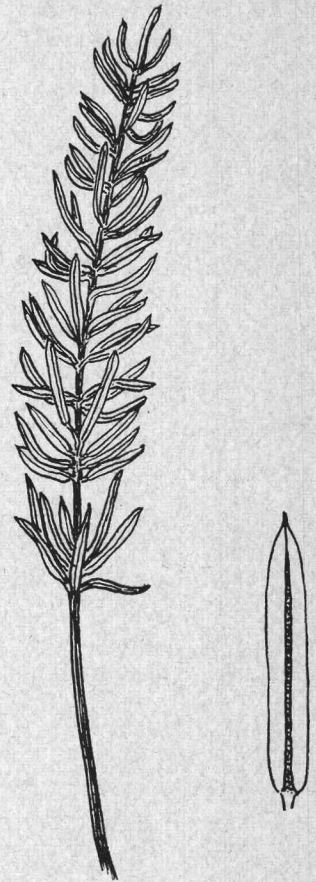
Sierra Cliff Brake

(*Pellaea brachyptera*)

Ferns of the genus *Pellaea* are comparatively small and the leaves are bunched. They grow in crevices of rock and under boulders, and thus have been given the common name of cliff brake.

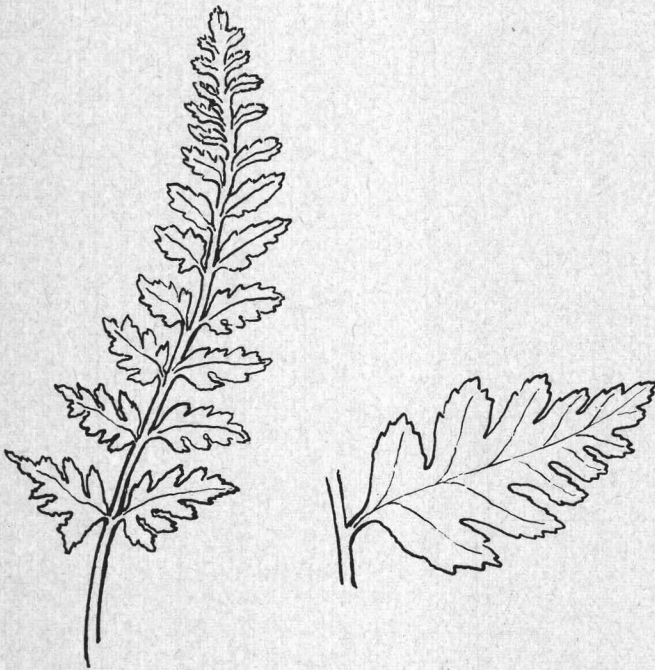
Sierra cliff brake (*Pellaea brachyptera*) and coffee fern (*P. andromedaefolia*) are found principally in southwestern Oregon. Brewer's cliff brake (*P. breweri*) and Bridges' cliff brake (*P. bridgesii*) are found principally in northeastern Oregon.

Coffee fern also is known as sheep fern because the wiry leafstalks sometimes cause death in sheep.



Oregon Woodsia

(*Woodsia oregana*)



This genus was named after Woods, an English botanist. Oregon and Washington have two species that are difficult to distinguish from each other, Rocky Mountain woodsia (*W. scopulina*) and Oregon woodsia (*W. oregana*). They are small, delicate plants growing 4 to 12 inches high in rocky places at middle and high elevations. The rootstocks are densely tufted and the leaves are tufted.

The fern is found in dry regions throughout the Northwest. OSC Herbarium has samples from such places as Orcas Island, Steens Mountains (7,500 feet), Cascade Mountains, and the dry bluffs at Rooster Rock.

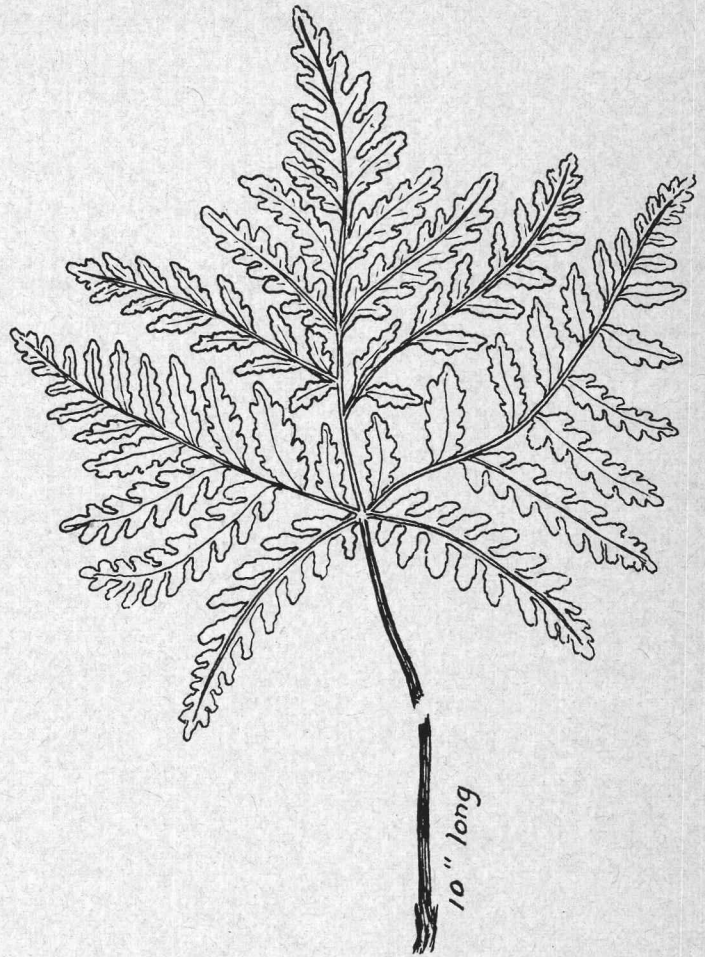
Gold Fern

(*Pityrogramma triangularis*)

Small gold fern grows in many locations throughout western Oregon and Washington, but it is common only in certain conditions. Rocky, shielded hillsides, rock crevices, wet rocks—these are the habitats mentioned by botanists who have spotted it in the Willamette, Umpqua, and Rogue River Valleys of Oregon and in the Puget Sound region, Olympic Mountains, and Mt. Rainier Park in Washington. It also has been found in Whitman County south of Spokane. In "John of the Mountains," John Muir wrote, "I do not know of any fern that has so wide a vertical range as this hardy and contented gold-powdered fellow."

Gold fern is usually less than a foot high, and most of the height is in the long, wiry stalk. The lower leaflets are more subdivided than the upper ones. The leaf has a characteristic shape that aids identification. It is triangular, or 5-pointed.

Gold-backed at maturity. The fern attracts attention at maturity when the under surfaces of the leaves have a golden, powdery appearance. The name golden-back fern often is used. It is the only species of the genus in the Northwest.



Field characters: Persistent; leaves leathery; stalks dark brown or purple; pinnales more or less united at the base, under surface often silvery at first, becoming golden at maturity, fruiting area extending at maturity to cover most of the leaf surface.

The Fern Group

The polypod family, Polypodiaceae, includes almost all plants that the amateur would consider to be ferns. All of the ferns described in this booklet are members of the family Polypodiaceae. The fern group is more extensive, however, taking in members from other families. Technically speaking, the fern group includes plants that do

not look like ferns but are recognized as such by botanists. Some of these are the club mosses, the quillworts, and the horsetails. The name "Fern Allies" is used in referring to these close kin.

According to T. C. Frye, the polypod family contains 108 genera. Fifteen of the genera are found in the Pacific Northwest.

FERN FACTS

If the Pacific Northwest is a land of fir and pine, it is hardly less a land of fern. For every tree there are 100 ferns. Anyone who knows Northwest woods and fields knows bracken, sword, and maidenhair ferns. With the information that could be given in a 3-minute TV program, and without extending his travels, anyone could also know lady, deer, licorice, and spreading wood ferns. All these abundantly inhabit the region from the Cascades to the Pacific Ocean, and many can be found east of the Cascades. Other interesting species also can be located, especially if the seeker knows their preferred habitats.

Fern friends. Whether along paths or country roads, whether through forest or field or on the mountain or along the stream, ferns await and their presence suggests beauty and peace. As John Muir wrote, "Only spread a fern frond over a man's head and worldly cares are cast out, and freedom and beauty and peace come in." Writing of his first summer in the Sierra, he said it would seem impossible that anyone "however encrusted with care" could escape the influence of the sacred fern forests.

Fern finery. The Port-Orford-cedar is considered one of the handsomest trees of the Northwest and until a root rot menaced it was the most popular of our native evergreens for ornamental planting. Why? Because its foliage appears feathery, almost lacy, and because its flat sprays form graceful curves with softly drooping tips. The leaves of many ferns have these same characteristics. Says Herbert Durand, author of the "Field Book of Common Ferns" (Putnam), "There is nothing that grows or lives that approaches the feathery grace, the symmetry of form, or the lacy elegance of pattern of the ferns." Thus, ferns are favorites for decorative uses, both in the garden and in the florist's art. Not all ferns are suitable for decorative use, but a number

of ferns of the Northwest are. For use in floral pieces, the fern must not only have a handsome appearance but must also have keeping qualities. The Northwest sword fern has both and, consequently, is known to florists everywhere.

Fern fallacies. Ferns have their legends and stories. In the middle ages superstitious beliefs were connected with them because the learned men couldn't understand where ferns came from. No seed could be found, but, since all plants were supposed to grow from seeds, some thought the "seed" must be invisible. It was even thought that the person finding the "seed" might gain magical powers, such as enabling himself to become invisible.

Fern food. Finding food in the wild is much more difficult in winter than in summer. The rootstocks of ferns store starch and in the Northwest bracken was used as a food by Indians. The black rootstocks sometimes reach an inch in diameter. Indians roasted these parts, then laid them on a stone and beat them with a tough stick to separate the woody material from the starch portion. The starchy residue was eaten, sometimes after it had been pounded into a flour that could be mixed with other ingredients.

Bracken rootstock has an abundance of starch the year round and therefore is a possible source of food for a person lost in the woods. Information is lacking on how a modern stomach would fare on this diet.

Fern fuel. Ferns were once mighty plants, large as trees, and thick as the deep forest. That was 40 million years ago when the climate of the Northwest was hot and moist, and when great dinosaurs were making tracks in the mud—tracks that are found today in Eastern Oregon. Geological changes pressed down the tree ferns and they became coal and oil. Today's machine age is powered by fuel produced by ancient ferns.