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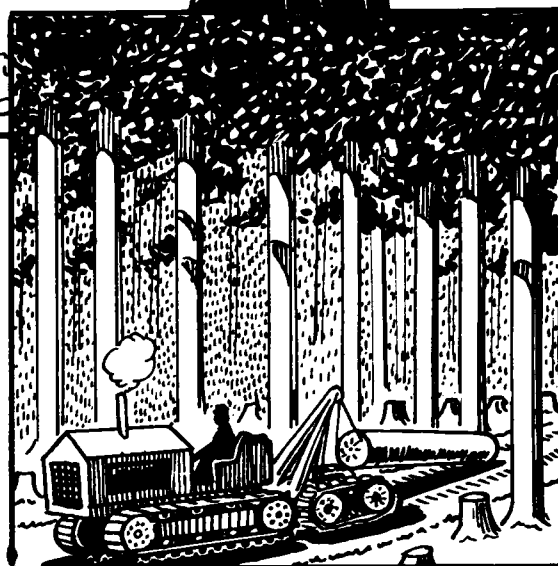
The 4-H Forester

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First Year Forestry
Oregon 4-H Club Work
Club Series I-1



ASCARD



Federal Cooperative Extension Service
Oregon State College
Corvallis

Building for a Happier Life

"One cannot appreciate and enjoy to the full extent of Nature, books, novels, histories, poems, pictures, or even musical compositions, who has not in his youth enjoyed the blessed contact with the world of nature."

Henry Turner Bailey

Table of Contents

	<u>Page</u>
Oregon 4-H Forestry Projects	4
Why Be a 4-H Forester?	5
Who May Be a 4-H Forester?	6
What Does a 4-H Forester Do?	7
How to Be a Good 4-H Forester?	8
The 4-H Forester's Code of Good Forest Manners	9
Forest Hikes	10
Trees	11
Wildlife	14
Soil and Water	18
Logging	20
Fire Control	22
Insect Life in the Forest	23
Extras	24
What Options Will You Choose?	26
Let's Show How It's Done	28
Let's Go Collecting	30
Make a Plant Press	32
4-H Forestry Exhibits	33
How to Collect and Press Specimens	34
How to Mount Your Specimens	35
You May Exhibit Your Mounts	36
Paul Bunyan	37
Acknowledgments	39

Oregon 4-H Forestry Projects

The 4-H FORESTER (Forest appreciation). In this project you take hikes, collect leaves, and learn a lot about the woods.

The 4-H WOODSMAN (Woodsmanship). You learn to be at home in the woods, how to use wildlife materials, and to practice safety in the forest.

The 4-H RANGER (Forest management). You do a bit of planting, cruising, pruning, and harvesting. You learn how forests are improved by forest management.

The 4-H TREE FARMER (Managing a forest yourself). You undertake a regular tree farming job on the home place or in a "borrowed" woods. This project is for boys 14 years and older.

HOW THEY WORK

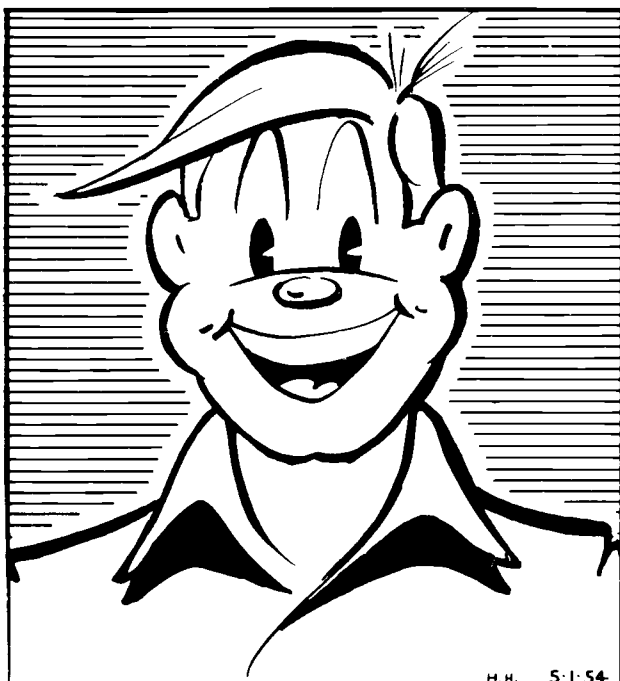
- * You can take 4-H forestry whether you live on a farm or in a town or city.
- * Each project has enough activities to continue two or three years, if you like, without repeating what you've already done.
- * It is suggested a club start with the 4-H Forester, but this is not required. If you skip the 4-H Forester, take tree and shrub collecting as one of your options.
- * Projects can be taken without being in a Forestry Club. Organize a local club if you possibly can, because it is more fun and you learn more.

OPPORTUNITIES

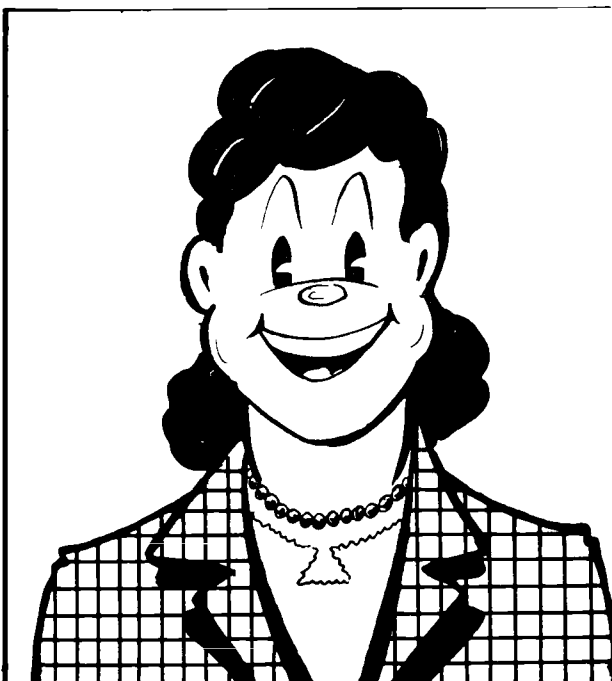
- * Fun. Enjoy hiking and camping in the woods with friends.
- * Improve yourself as a person. Gain confidence by taking responsibilities and working successfully with others.
- * Make friends with trees and other forest plants. Learn to know them by leaves, fruit, or flowers. They will be good friends all your life.
- * Know the importance of forests. Forests are all about us in Oregon, a wonderful source of recreation, scenic beauty, pure water, home for wildlife, and wood for our industries.
- * Plant trees and learn how they grow. You'll be glad you did.
- * Learn forest management practices. Try your hand at reforestation, pruning, thinning, cruising, fire protection, and other forest practices.
- * Become a skilled woodsman. Men like Lewis and Clark, Daniel Boone, and David Douglas were builders of the nation. You can learn some of the "know how" of the Northwest woodsmen and be more at home in the woods.
- * Manage a forest of your own. If you have a woods at home, or can "borrow" one, you can undertake a regular tree farming job in it.

Hi! Boys and Girls

I'm JOE JOHNSON. My family lives in town. Dad is foreman at the lumber mill. I'm pretty busy during school months, because I play ball and substitute on a paper route.



I'm LINDA BROWN. I live on a farm. Riding the bus to school takes some of my play time. There is work for girls on a farm, too. I feed the chickens and calves. I like farm animals.



We live in Oregon just like you. Have you heard about the 4-H Forestry Clubs? Any boy or girl can join. Let's learn more about them. Turn the pages and come with us.

Why Be a 4-H Forester?

This project (The 4-H Forester) provides opportunities for You:

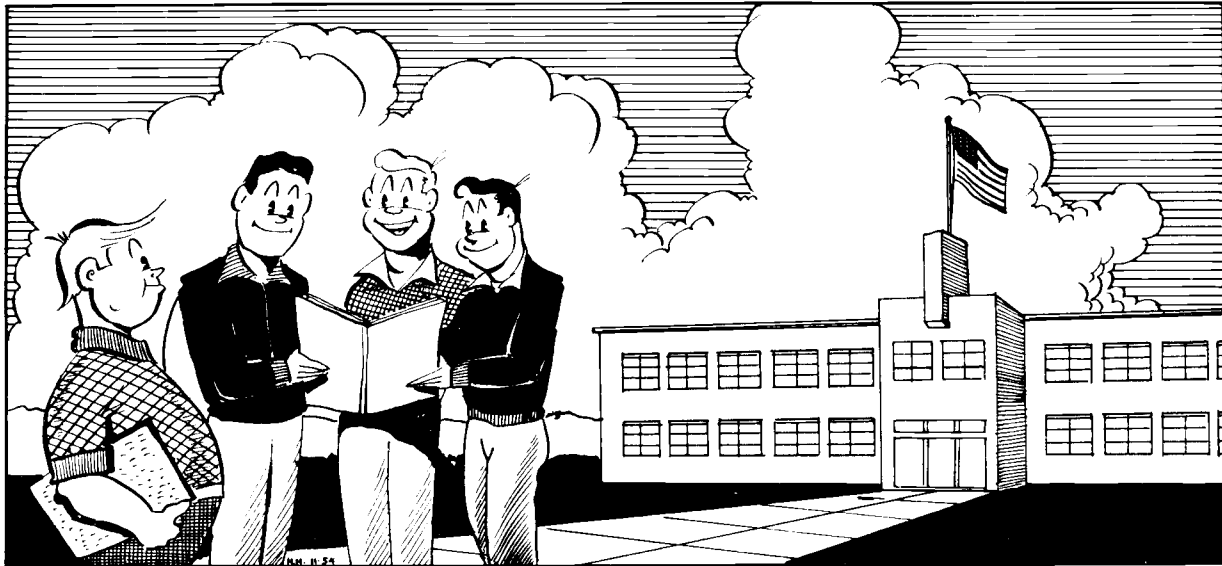
1. To belong to a 4-H Club with other boys and girls.
2. To take hikes into the woods.
3. To learn the names of trees and other forest plants.
4. To learn about the animals and birds that live in the woods.
5. To learn how trees grow.
6. To learn the importance of Oregon's forests.
7. To enjoy healthful outdoor recreation.
8. To exhibit at 4-H fairs and enter 4-H contests.

Who May Be a 4-H Forester?

1. Any boy or girl who is:
 - a. Nine years old before January 1.
 - b. Interested, and likes the woods and outdoors.
 - c. Willing to do the requirements listed under "What Does a 4-H Forester Do?"
2. This project is for town and country, boys and girls.
3. No equipment is needed that you cannot easily make or obtain.
4. This project can be continued for two or three years, or your club can take up one of the other forestry projects. If you continue this project, you can collect more plant specimens, do more options, hike in other woods, and have other new activities.



Joe wrote a letter to the County Extension Agent to ask about 4-H Forestry. One day 4-H Agent Jack Davis stopped by his house. Joe quickly called several of his friends. Mr. Davis answered their questions. The whole thing sounded interesting.



Joe is going to be a 4-H Forester! Mr. Davis, the 4-H agent, gave him the project book (the one you're looking at) and said, "You fellows get your friends and parents together and I'll help you organize a club. You will need an adult leader." Don has a problem -- what about his music? He hopes the club can meet when he can attend.

What Does a 4-H Forester Do?

There are five things you must do.

1. Take at least 3 hikes into the woods to study trees, other forest plants, and wildlife.
2. Do 5 or more options from those listed on pages 26 and 27. Take 1 each from A and D, and the others from any group.
3. Show and tell how to do or make something related to this project. Refer to page 28.
4. Collect, press, and mount foliage and seed or flowers of 10 forest plants including 5 or more trees. If you are continuing this project, collect 10 or more additional plants.
5. Complete this project book and the 4-H Forester Report page that you got with it. Give the report to your club leader, or send it to your County 4-H Extension Agent at the end of the club year.



Linda asks her sewing club leader, Mrs. Allen, if a girl or boy can take the 4-H Forestry project without belonging to a forestry club? Mrs. Allen says, "Yes, Linda, a capable girl like you can take forestry alone if you can't form a club or join one. It's much better to be in a club but you can carry an individual 4-H forestry project."

How to Be a Good 4-H Forester

1. Join or organize a 4-H forestry club. (If a club cannot be organized, you can take this project by yourself. Visit or write your County or City Extension Office to get your project book, mounting cards, and other materials.)
2. Attend club meetings regularly. Be on time.
3. Do things when they should be done. Be neat, too.
4. Use a pencil to fill out this project book.
5. Study your forestry manuals. They will tell you many things.
6. Discuss this project with your father and mother. Ask them to help you.
7. Always do your share and a little more.

A CROP THAT MUST NOT FAIL!

Wherever you see them, except in parks, forest trees are somebody's paycheck -- a logger's, a mill worker's, trucker's, or a landowner's. Forest products provide Oregonians about half of their living.



The 4-H Forester's Code of Good Forest Manners



- * You are careful of fire, and you leave a clean camp. These are the two marks of a true woodsman and camper.
 - * You don't cut or carve living trees, or harm wildlife, or needlessly destroy flowers and other plants.
 - * You close gates if you find them closed, and you go around the edges of cropland when there is no path across.
 - * You leave things as you found them - or better.
 - * You are friendly, considerate, ready and willing to help others.
- It's the way of the woods.

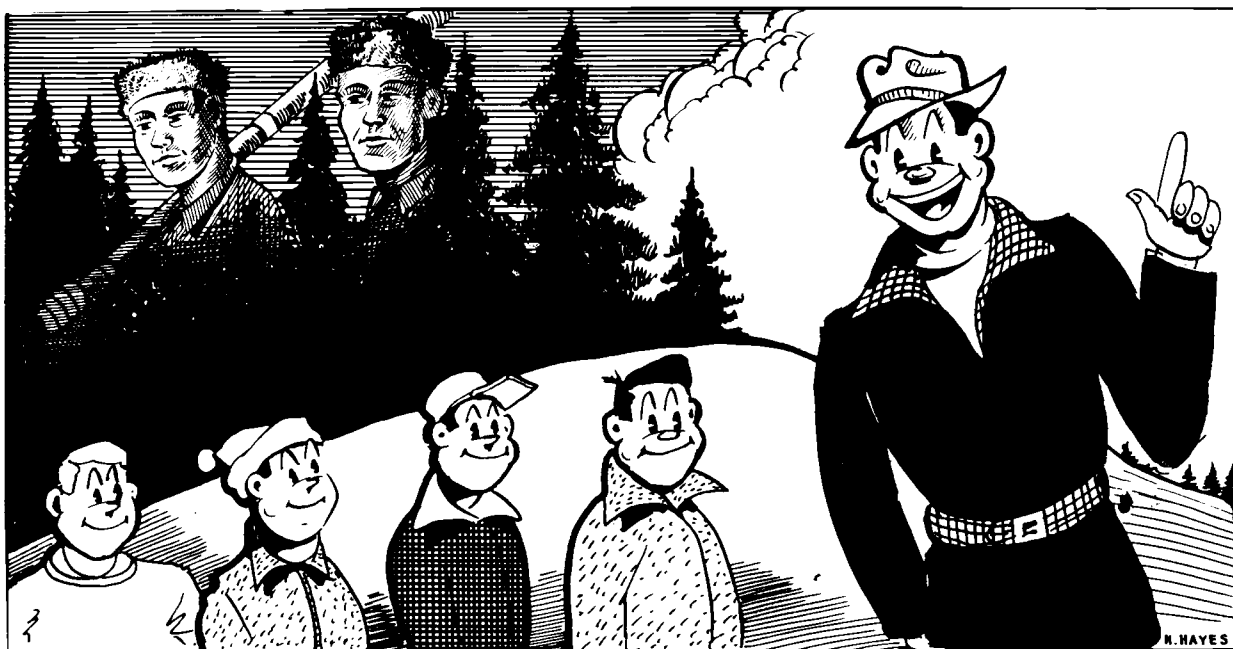
The 4-H Forester knows it is against the law in Oregon to build a campfire without first clearing the ground of flammable material. He knows it is against the law to leave a campfire burning and unattended. But it is his love of the woods that causes him to be careful. He wants to Keep Oregon Green and beautiful forever. People depend on trees for a living. They are an economic crop today.

The 4-H Forester understands the unwritten law of the wilderness, LEAVE NO TRAIL BEHIND YOU. He leaves the trail or campsite unspoiled. There is one thing he will leave when camping -- some firewood for the next camper.

The 4-H Forester is a good example of Forest Manners -- that's the best way to teach others.



Forest Hikes



The Douglas-fir 4-H Forestry Club takes its first hike on a dry winter day. Mr. McDaniel tells the boys, "A woodsman must have sharp eyes, just like Daniel Boone and Lewis and Clark."

1. Take at least three forest hikes. Go with your club, with a pal or two, or with your family. You may want to invite someone like a forester to go with your club on a hike.
2. Find and identify 10 or more forest items on each hike. Read the explanation and have some definite things to look for. Take a Hike Guide with you. Check or write in what you find.
3. Check or write in the forest items you found in this workbook when you get home.
4. Show the checked items to your leader, your parents, or another group who is interested in the woods and tell about each one.

SOME SEE AND SOME DON'T

"Truly the human eye is nothing more than a window, of no use unless the man looks out of it."

Bradford Torrey

Trees

WOLF TREE: Ever see a "Timber Wolf"? This one is a tree that robs space from better neighbor trees. A Douglas-fir "wolf" may have big limbs all the way to the ground.

OLD-GROWTH TREE: Look for the big, old trees. An old-growth Douglas-fir will have a thick, rough bark. It will probably be over 40 inches in diameter, and more than 150 years old.

SECOND-GROWTH TREE: A younger tree.

WINDFALL: A tree blown down by wind. You'll see the roots sticking up in the air.

SWELL-BUTTED TREE: All trees have some "swell" at the base. A tree with unusual flare at the ground.

SEED TREE: Look for a tree with a lot of cones (if it is a coniferous forest-like fir, pine, cedar, etc.)

SNAG: A standing dead tree, mostly bare; or a stem of a tree broken off at a height of 20 feet or more.

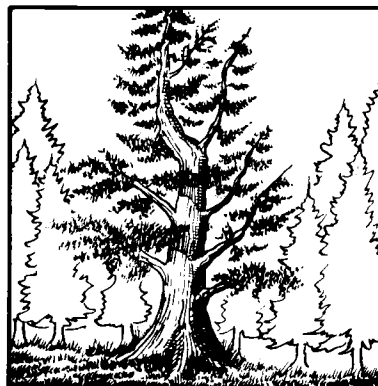
SUPPRESSED TREE: This is another name for a starving tree - starving and often dying for lack of light and food. It is overcrowded and overtopped by its neighbors.

PEELER LOG: A large log (over 24 inches for Douglas-fir) with practically no surface knots or defects. Should be at least 9 feet long. Look for it in the tree, or after cutting. Peelers can be "peeled" to make veneer or plywood; have high value.

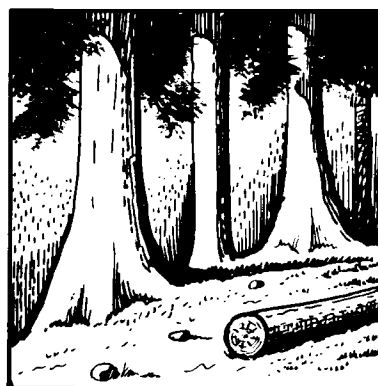
SAPLING: A small tree between 2 inches and 4 inches in diameter.

TOLERANT TREE: A tree species that can live in considerable (some) shade. Examples: cedars, white fir, maples, and hemlock.

CULL: A tree or log of merchantable (marketable) size that can't be used because of defects. You'll see cull trees and cull logs left in the woods after a logging.



"Wolfs" push trees around.



Swell-Butted



Suppressed



Tolerant White Fir

WIDOW-MAKER: A broken or dead limb or tree top that might easily fall on a person below. Woodsmen watch especially for "widow-makers" on windy days. They wear tin hats for protection too.

SPIRAL GRAIN TREE: You can see the twist of the grain when the bark is off a tree. You notice the spiral twist especially on pine snags. The curving lines look something like a corkscrew. Severe spiral hurts the quality of a tree for lumber.

SPAR TREE: A sturdy tree, often 150 feet high or higher, from which the top has been cut by a high climber. It holds pulleys and wire rope used in yarding and lifting logs.

SEEDLING: A tree (usually not over 1 foot in height) grown from seed.

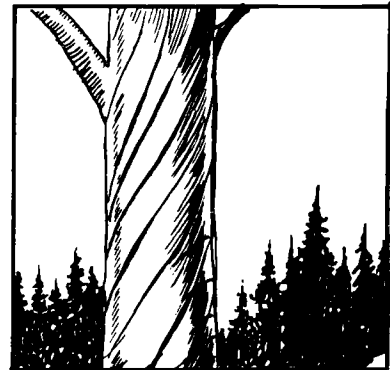
NATURAL REPRODUCTION: Little trees that come up from seed in forest openings, or below large trees. Called natural reproduction because no man planted the trees.

CONIFEROUS TREE POLLEN: Look for it in April and May. The yellow pollen dust from Douglas-fir flowers fills the air when branches are shaken. You may see the pollen on sidewalks, window sills, and other places where it has collected.

SPROUT: Look for these on stumps of broad-leaf shrubs, or trees like maple, cottonwood, and willow.



Widow-Maker



Spiral Grain



Natural Reproduction



Sprout

LIVE DOUGLAS-FIR STUMP: This may "stump" you, but a stump is not always dead. Roots of two trees may grow together. Where one is cut, its stump may receive nourishment from the uncut "buddy." Bark continues to grow over the top of the stump.

CONIFER (OR SOFTWOOD): Most Western trees have needle-like, or scale-like leaves, such as firs, pines, and cedars. These trees have cones, from which we get the name "conifer."

ANNUAL RING: Every stump, log, or piece of lumber shows the annual growth rings. The light-colored part of the ring is known as springwood, because its cells are formed with the first growth in the spring. The dark part of the ring is called summer wood because it is formed later, in summer.

TREE CROWN: The upper part of a tree. It is the part with the leaves or needles.

TRUNK: The main stem, or body, of a tree.

FOREST STAND: An area of trees that seem to belong together. It is a body of trees you can tell from other stands on nearby areas because of size, species, and how close together the trees are.

HARDWOOD (OR BROADLEAF): The broadleaf trees, like oaks, elms, alder, and maples, are known as hardwoods because most of them have a very hard wood. Nearly all hardwood trees drop their leaves in winter.

HEARTWOOD: Look at any load of logs on the highway. Heartwood is the dark inner core of the log. Heartwood is the non-living, inside part of any stem.

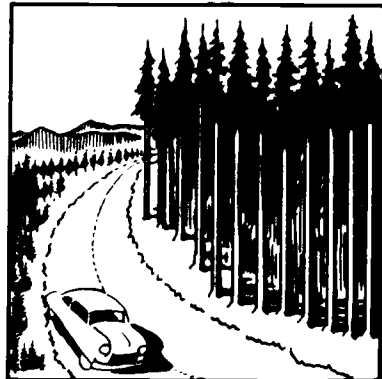
SAPWOOD: See it also on stumps, logs, or lumber. Sapwood is the living wood in a tree, found between the bark and the heartwood. It's almost always lighter in color than heartwood.



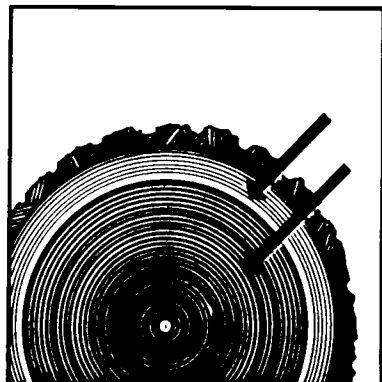
Live Douglas-fir Stump



Tree Growth Rings



Forest Stands

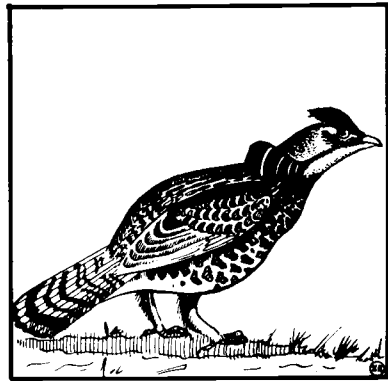


Heartwood -- Sapwood

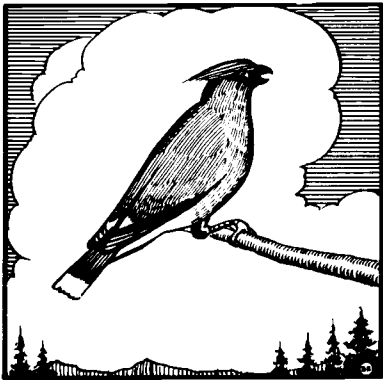
Wildlife

BLUE GROUSE: About the size of a hen pheasant. Bluish-gray in color, usually found near timber. Males can be heard hooting in the early spring in the top of tall trees.

RUFFED GROUSE OR NATIVE PHEASANT: Found in brushy places, particularly in vine maple patches. About the size of an overgrown banty rooster. Usually not seen until it springs into the air with a startling "Whirr." Drumming in spring sounds like a one-cylinder engine starting up. Reddish-brown color; has small crest on its head and a black band near the end of its tail.



Ruffed Grouse



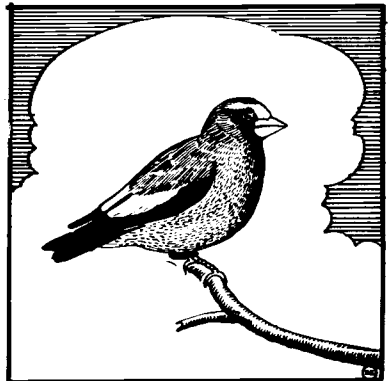
Cedar Wax-Wing

JUNCO: A little smaller than an English sparrow. Males have black hoods extending down over their breasts, dark gray backs, and light gray bellies. The bird turning in flight shows two white feathers at the edge of tail.

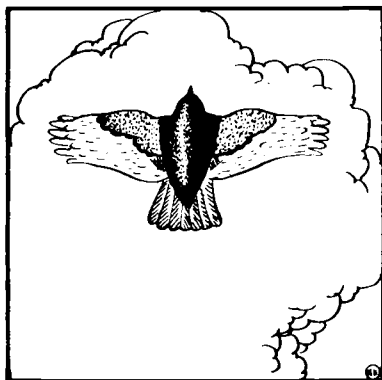
CEDAR WAX-WING: Smaller than a robin. Yellow belly and tip on tail. Perfectly blended yellow-brownish color. Seven inches long. Usually found in flocks. Likes fruit trees and berries. Found along edge of forest. Has a slight crest.

SONG SPARROW: A brown bird about the size of an English sparrow commonly found around brush piles and along fence rows. Its back is brown with some darker streaks. Underparts are gray with brown streaks.

EVENING GROSBEAK: A little smaller than a robin. Comes in flocks in the spring as it migrates northward. A black, yellow, and white bird with a short, thick beak; yellow forehead and stripe over eye; black crown.



Evening Grosbeak



Red Tailed Hawk

MARSH HAWK: About 20 inches long; wing-spread from 2-1/2 to 3 feet. Has white patch at base of tail. Commonly seen flying low over marshes, fields, and swamps. It is a beneficial hawk, eating mostly mice.

SPARROW HAWK: A little larger than a robin. Male is brightly colored with a reddish back; underparts are lighter with dark spots or streaks. This is the hawk that flutters and hovers in one place as it spots a grasshopper or some bug in the field to dive upon. Eats mostly insects and should not be killed.

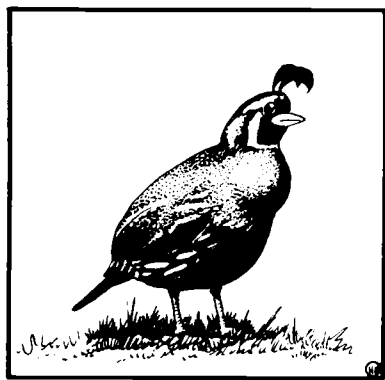
RED TAILED HAWK: About twice the size of a crow. Circles around lazily in the sky. Has wide, fan-shaped, red tail and short, rounded wings. Not a harmful hawk. Commonly seen sitting in dead trees or on telephone poles.

FLICKER: Slightly larger than a robin. Orange underparts, including lower side of wings and tail. White patch at base of tail (no red patch on Oregon Flickers).

PILEATED WOODPECKER: Nearly as large as a crow; black with brilliant red crest, white patches on wings.



Pileated Woodpecker



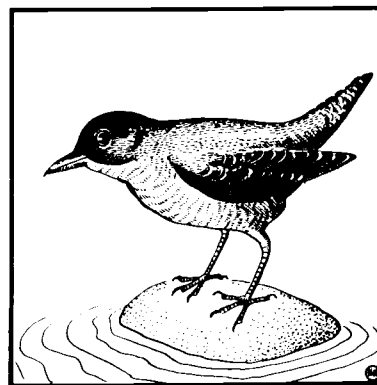
Valley Quail

STELLAR'S JAY: About 1 foot long, dark blue with black head and crest. Found in timbered areas. Jumps from branch to branch, usually going up a tree. CALIFORNIA JAY: Blue and gray with gray throat. No crest. Found in western Oregon. CANADA JAY: Brownish gray, lighter underparts. No crest. Found in high, timbered areas. Often called "camp robber."

VALLEY QUAIL: Heavier and chunkier than a robin. Often found on the edge of a field near a fence row or road. Has a plume that curls forward on the top of its head. Gray color with lighter mottled yellowish underparts.

MOUSE HOLES AND BURROWS: Mice eat about three times their weight in Douglas-fir seeds if they get a good chance. Moles and burrows are found in meadows under logs and near grass patches, or in the tangle of tree roots.

DIPPER OR WATER OUZEL: A little gray bird about 8 inches long with short, rounded wings. Found in thick brush along swift flowing streams. Has a distinctive bobbing motion. Dives under water to feed on insects. Nests under waterfalls. Listen for his song.



The Dipper



"Coon Tracks"

GROUND SQUIRREL OR GRAY DIGGER: About 18 inches long. Lives on the ground and digs burrows. Climbs in brush and low trees. Often seen on fence posts. Brownish-gray mottled color. Found in western Oregon, especially the Willamette Valley.

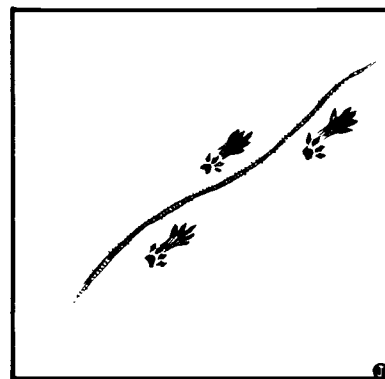
OREGON GROUND SQUIRREL (Sage rat): Eastern Oregon; short tailed; less than 1 foot long; gray or gray-brown.

RACCOON: An overgrown, monkey-faced, cat-like animal with a ringed tail, long slender toes; usually follows streams. Tracks can often be found along streams.

PINE SQUIRREL (Chickaree): 12 to 13 inches long; dark brownish-gray with the stomach a pale orange or light yellow. The tail is dark gray, having a rusty color above with white edging on the tip.

CHIPMUNK: Smaller than a squirrel. Dark stripes running down its back. The western Oregon chipmunk is larger and darker than his eastern Oregon cousin. Commonly found in brush patches and on the edges of timber or woodlots.

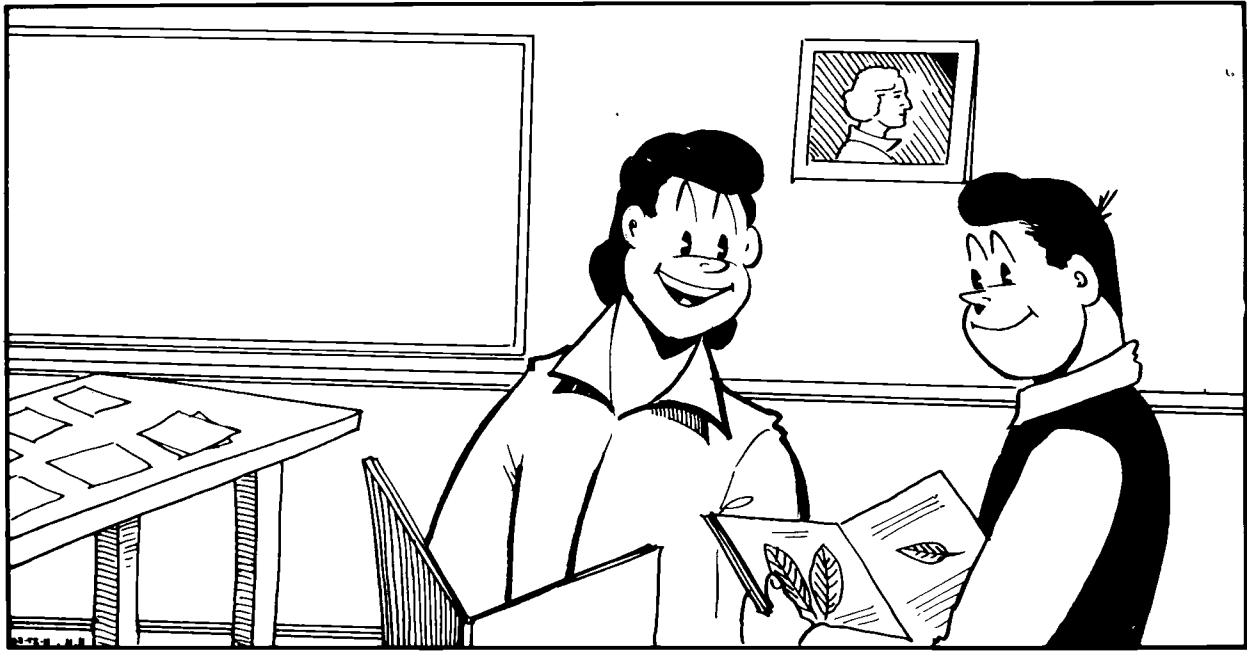
MUSKRAT: A big thick-bodied rat with a long, flat, naked tail. Beautiful dark brown fur. Usually comes out just before dusk; can often be seen swimming in ponds or streams with just its head out of the water.



"Muskrat was here"

"I think it is a good rule in hiking never to set out with the determination that you are going to show how hardy you are. It is as bad as setting out to show how smart you are."

Ernest Thompson Seton, "The Book of Woodcraft."



Optional Problem: Linda collects 10 additional shrubs for one option.

 BLACKTAIL DEER: Large bushy tail, black on top, white underneath. Found west of the Cascades. **MULE DEER:** Short mule-like tail with black and white tuft of hair on end. Found east of Cascade Mountains.

 RATTLESNAKE: Has a button or rattles on his tail. When alerted often makes a buzzing noise with the rattles. Oregon's only poisonous snake.

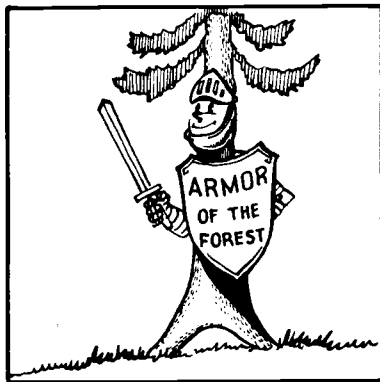
 GARTER SNAKE: Yellow to pale reddish stripe down its back. Several kinds in Oregon. Eats mostly insects, worms, and slugs. **BULL SNAKE OR GOPHER SNAKE:** Yellowish-tan snake with a row of dark blotches down its back. A very beneficial snake, eating lots of mice, rats, and gophers in farmers' fields. Should not be killed.

_____	_____
_____	_____
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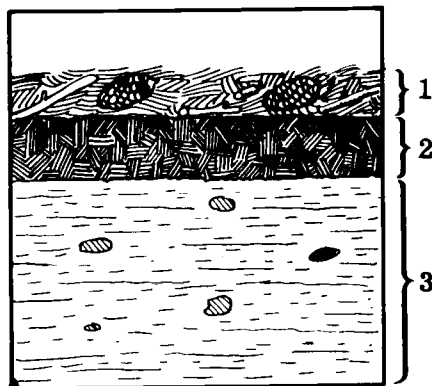
Member has found and understands checked items in these seven sections.

Parent or Leader

Soil and Water

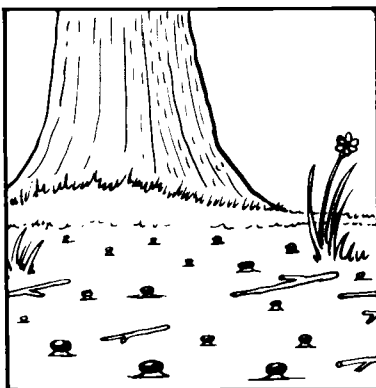


Forest armor protects slopes.



1. Duff 2. Humus
3. Mineral Soil

SOIL HORIZONS: Look for these in road cuts in hilly country where the soil changes color as you go deeper. Often you will see three different layers. The scientific name of the top one is A-Horizon. It has some plant or animal material like the humus and is usually dark on top.



Erosion Sheet

Forests are nature's chief protectors of soil and water. All life depends on soil. Water from timberlands is worth more than the timber. Forests protected from fire lose practically no soil from water runoff. Forests are a spongy blanket on the hills, soaking up the rain and dripping it underground into the great supply of earth water. That's the water we must have.

FOREST DUFF: Yes, the forest floor has a thick rug of fallen leaves, twigs, and weeds that have been pressed down on top of the soil and are decaying. You have to scrape away this duff when building campfires because it will burn when dried out.

HUMUS: Under the duff cover you'll find the humus -- a dark, spongy layer of old, rotted material. It's so decomposed you can't tell what it came from. The humus is rich in plant foods and minerals. It is full of holes, which soak up rainwater. What a fine place for seeds to grow! The ground below a humus cushion doesn't bake tight. Water seeps through to the underground streams.

MINERAL SOIL: No trouble finding this one. It's the soil (clay or sand) found under the duff and humus.



Soil Horizons

WATER EROSION: There are two kinds of water erosion: The kind that washes channels or gullies, and the kind known as sheet erosion, which takes off surface soil that you don't notice. Look for sheet erosion on bare soil. If you find a pebble raised up on a little pedestal (stand), it means raindrops have worn away the dirt around it. The penny shows size.

ROCK OUTCROP: A rock formation that sticks out of the ground. Most often seen on slopes.

CLIFF: A cliff is a high steep face of rock.

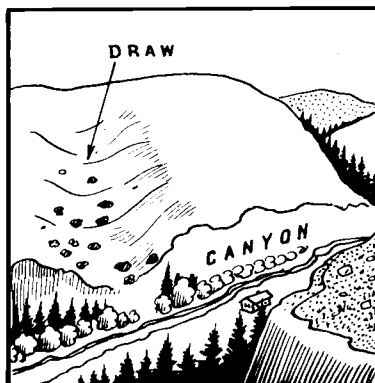
BLUFF: A bluff is a steep bank. FALLS.

RAPIDS.

DRAW: A small drainage with gentle slopes. Often has no definite water channel. May be grassed over or even farmed.

RAVINE: Steeper and deeper than a draw. It usually has a stream channel, but may be dry part or most of the year.

CANYON: High, steep slopes with little or no valley floor. Stream may be dry part of year.



Draw entering canyon



Bench

The Willamette Valley is a large, fertile valley. Smaller valleys, canyons, ravines, and draws feed into it and are a part of the Willamette River Basin. Dams are built to store water.

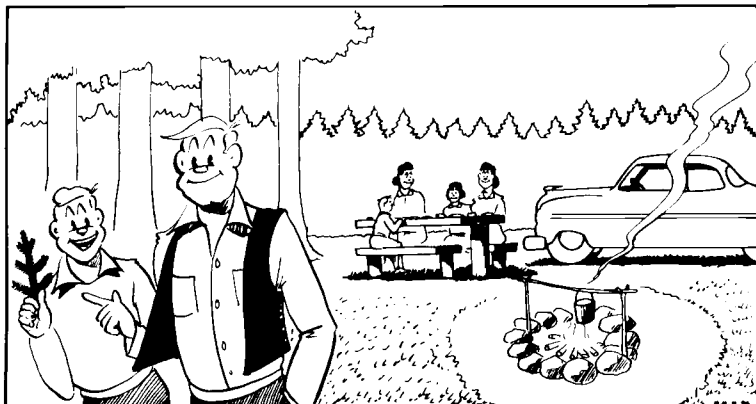
BENCH: A bench is a level spot; a sort of terrace or shelf on a slope.

SADDLE: A short ridge between two higher points.

DIVIDE: High ridge between two drainage basins.

PASS: A passageway between two valleys or basins or through a range of mountains.

SPRING: A place where water runs out of the ground. MARSH: A springy, waterlogged area where grass and sedges grow. May be dry part of year. SWAMP: A low, poorly drained area where brush and trees grow. May be dry part of year.



The whole family drives to a forest park for a picnic. Joe shows his Dad some of the things he learned on the hikes. Dad, "You know the woods like a squirrel. Why, I didn't know a wolf-tree from a 'widow maker.' "

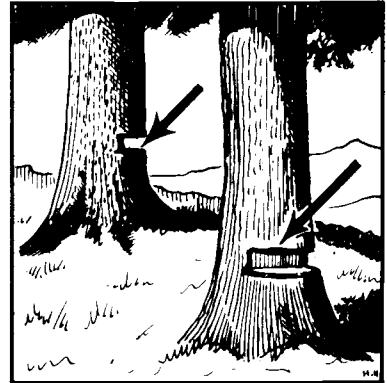
Logging



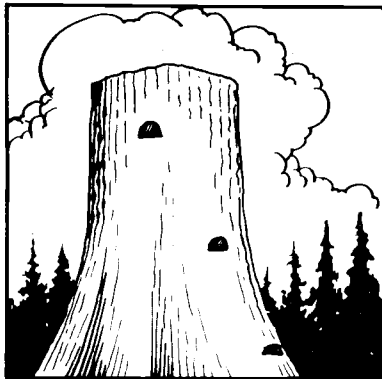
Log Landing with Rollway

UNDER CUT: Most stumps show an under cut. It's a notch that loggers saw to make the tree fall where they want it to.

CHOKER: A noose of wire rope something like a cowboy's lasso, by which a log is pulled. You may have to find a logging job to see chokers being used.



Under Cuts

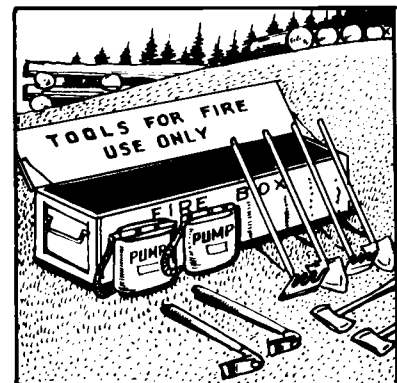


Springboard Holes

SPRINGBOARD HOLES: Old stumps may have notches cut to hold springboards. Timber fallers would stand on the springboards, so they would be above the swell of the stump and wouldn't have to saw through that part. Steps (as shown) were needed on giant trees. Today power saws are used, and springboards have been discarded.

SLASH: Branches, bark, tops, uprooted stumps, or broken trees that were left on the ground after logging. Slash may create a high fire hazard or an insect hazard. Forest inspectors require dangerous slash to be burned at a safe time after fall rains start.

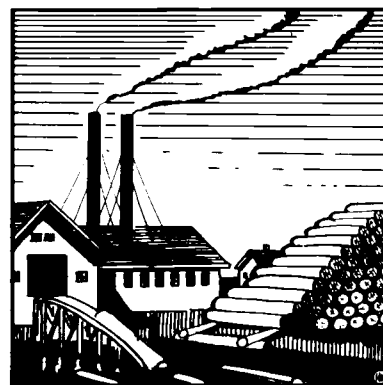
FIRE TOOL BOX: Look for the red box at active landings where loggers are working. It has hazel hoes, shovels, axes, and other tools. You can't use these tools except for fire.



Fire Tool Box

COLD DECK: Logs stacked in a large pile where they will stay for a time before being sawed or moved elsewhere.

LONG BUTT: Look for these in logged woods, particularly old loggings of large timber. When the butt log has rot, loggers may cut off a section and leave it in the woods. This is the "long butt." Old-growth long butts can be seen 30 to 40 years after the logging.



Cold Deck



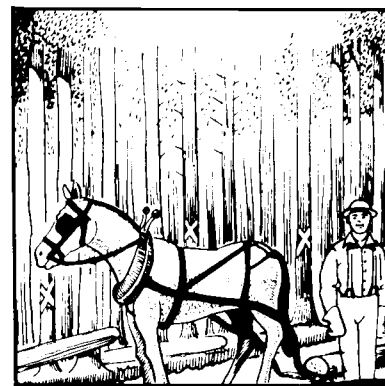
Clear Cutting

CLEAR CUTTING: All of the merchantable timber is taken in one cutting. You can easily spot a clear cut area, although patches of younger trees may have been left. Clear cutting is usually needed when the time comes to start a new Douglas-fir forest, because the seedlings won't grow in heavy shade. Fir seeds shower down on the bare area from blocks of seed trees. The owner may plant seedlings.

HARD HATS: Worn as a safety measure to protect woods workers from "widow-makers" and other falling objects.

THINNING: Thinnings are made in younger stands. The purpose is to take out some of the trees so that others will grow faster and have better quality.

DONKEY: The donkey doesn't eat hay, but he's found on many logging jobs. A donkey is a portable engine mounted on a sled. It has a drum and cable for pulling logs.



Thinning



Selective Cutting

SELECTIVE CUTTING: A method of harvesting mature stands that takes part of the trees and leaves others to grow. Little trees start in the openings. Commonly used in Ponderosa pine.



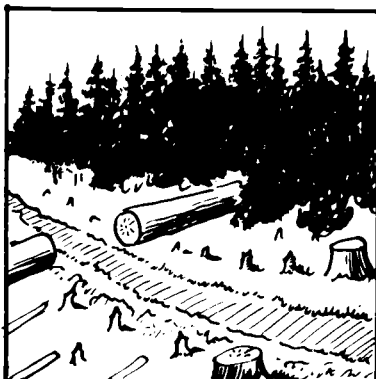
Forest Lookout



Guard Station



Campfire



Fire Line

Fire Control

FOREST LOOKOUT: It is usually a tower on top of a mountain, used mainly for locating fires.

SLASH BURNED AREA: You may find places where logging slash was burned to reduce fire danger.

FIRE PREVENTION SIGN: Have you seen Keep Oregon Green posters? Do you know Smokey, the fire prevention bear?

FOREST CLOSURE SIGN: You will find these along roads or trails during fire season.

GUARD STATION: Report fires and get campfire permits at Guard Stations of the State Forestry Department and U. S. Forest Service. These stations have men and equipment for fighting forest fires, and private timberland owners will have the same at their woods headquarters.

FLASH FUEL: Light fuels such as dry grasses, dead fern, dried twigs, and needles. These catch fire easily and burn rapidly.

FIRE KILLED TREE: Can you be sure that the tree was killed by fire? Examine it carefully.

CAMPFIRE: Can you find the remains of a campfire?

FIRE LINE: A cleared trail to stop or to check ground fires. You may see plowed fire lines along highways. Woods roads serve as fire lines, so count one for this item. Fire trails or lines may be put around logging slash before burning it.

Insect Life in the Forest

Did you know that insects cause more damage to our forests than fire? Insects damage trees by feeding under the bark and by boring into the wood. The larvae of some moths, butterflies, and sawflies feed on the foliage of trees. Many of the insects you find in the forest are beneficial because they destroy harmful insects.



Bark Beetle Galleries

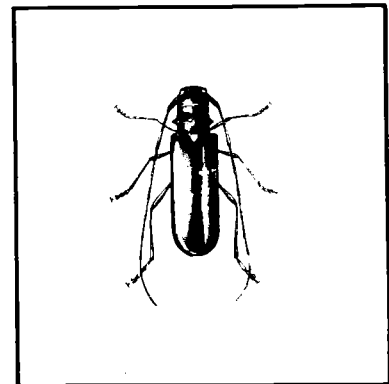
BEETLES: BARK BEETLES AND THEIR LARVAE feed just beneath the bark. The adult beetles are dark colored and about the size of a match head. The tunnels which the bark beetles make are called GALLERIES.

Beetles that bore into wood are called WOOD BORERS. The adults of some of these are called LONG HORNED BEETLES because they have long antennae or feelers. The adults of other wood borers have a shiny, metallic appearance. Indians have used their wing covers to make necklaces.

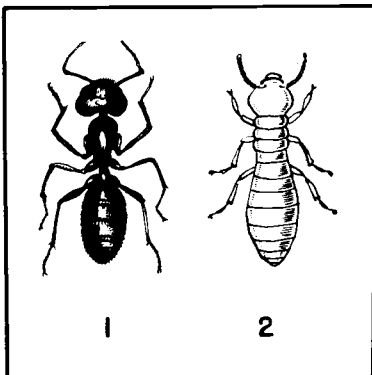
 BUTTERFLIES AND MOTHS: The LARVAE OR CATERPILLARS of these insects feed on foliage of many trees. The larvae of some moths feed on the bark and wood of trees. Others feed within cones and destroy seed. The LARVAE of a few small moths mine in needles and leaves.

 BEES WASPS ANTS AND SAW-FLIES: These insects are closely related. They are often referred to as social insects because they live together in HIVES OR NESTS. These insect homes are made in many ways. WASPS and YELLOW JACKETS build homes from paper which they make by chewing up wood.

 CARPENTER ANTS make their home in old logs and wood. The LARVAE of sawflies feed on needles of forest trees.



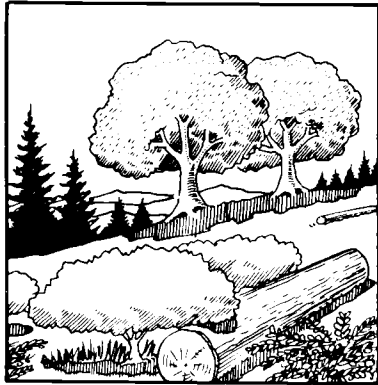
Long Horned Beetle



1. Carpenter Ant
2. Termite

 TERMITES are also social insects. They make their HOMES in logs and wood. Termites have different castes. Those with the large head and mandibles are the SOLDIERS. They protect and fight for the rest of the colony. In the fall of the year some of the TERMITES DEVELOP WINGS and fly away to make a new home.

Extras



Brush



Catface



Cone Cuttings



Witches Broom

BRUSH: Shrubs and woody vines or scrubby trees that won't produce merchantable timber. Salal, vine maple, manzanita, scrubby alder, and salmonberry are examples.

SHRUB: How can you tell a shrub from a tree? Sometimes it isn't easy. A shrub is a woody plant not over 10 feet high which usually has more than one stem.

PITCH: A fragrant, resinous juice from Douglas-fir, true firs, and other coniferous trees. Notice the balsam blisters on Douglas-fir saplings. Press them and the balsam squirts out.

CATFACE: A scar at the base of a tree or on the surface of a log, caused by a wound. Fire may cause the catface. Bark may grow back over the wound.

GRASS SOD: Grass that forms a solid covering or turf over the ground. Tree seedlings have a hard time getting started in a grass sod.

GALL: A plant tumor or swelling on twigs, leaves, or limbs. Often seen on Oregon oak leaves. Open up the marble-like gall in the fall and you may find a little worm. It's his home.

CONE CUTTINGS BY SQUIRRELS: The squirrel is your real woodsman. He will drop cones to the ground either to eat the seed or to hide the cones for his winter food supply. Look for cuttings in the early fall, when cones are "ripe" but haven't opened. You can collect unopened ones and sell them to tree seed dealers.

BRACKEN FERN: Everybody knows the big bracken fern. It's very common in field and forest openings. Fern protects tree seedlings; a fern fire is a forest fire.

WITCHES BROOM: Abnormal bushy growth where many short, thick branches come out together, due to injury or disease. Most likely found on juniper in eastern Oregon; hemlock and fir in western Oregon.

POISON OAK: "Leaves in three, leave it be," says the warning. An erect shrub or climber with shiny leaves and greenish-white berries. Leaves and stems are reddish in spring and fall. Edges of some leaflets are smooth, others are lobed.

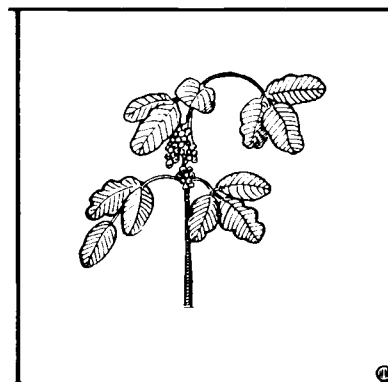
BEARING TREE OR WITNESS TREE: Bearing trees have a large blaze with a small blaze under it. Most private forests and farms were surveyed 60 to 80 years ago, so the blazes are now grown over and may show only as bulges in the bark. Sometimes new bearing trees have been marked. On these you may be able to see the numbers carved on the blaze.

SECTION CORNER: Each square mile in the land survey is known as a section. At each corner of the section the surveyors place rocks or stakes. You may not find the stake, but in many cases you can find the witness or bearing trees near the corner.

ANIMAL DAMAGE: Bears strip off bark of conifers; especially common in northwest Oregon. Porcupines girdle upper trunks of pines. Deer nip off tops of fir seedlings when snow covers the ground.

CONK: A conk may look like the front of a horse's hoof stuck on the side of a tree or log. When you see a conk, you know that a wood-destroying fungus has been at work in the tree. The conk is the fruiting-body of a fungus. It is not hard to find brown conks on living Douglas-fir trees. Conks may have other shapes and colors. Often they are found on logs or dead trees.

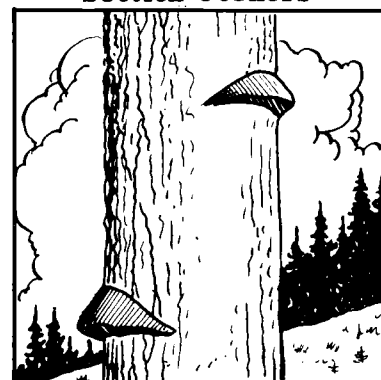
WILD ROSES: You can eat the red rose hips (fruit) raw from September through December. It is one of the very few wild foods to be found in late fall. You can tell it by the five to nine leaflets and thorns on the stem.



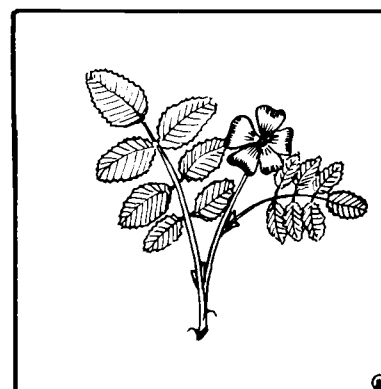
Poison Oak



Bearing Trees and
Section Corners



Conk



Wild Roses

What Options Will You Choose?



A 4-H Forester does 5 options from the groups shown on these pages. You will have another book that explains some of the options, and names additional ones.

Do at least one "A" option and one "D" option; the others may be from any group. Show on the 4-H Forester's report page the options you did. Have your leader or parents initial the ones you do.

GROUP A: Forest Appreciation

- ___ Collect, press, and mount 10 additional trees and shrubs.
- ___ Collect, press, and mount 10 additional wildflowers.
- ___ Camp out overnight with a 4-H group or your family.
- ___ Make a display of leaf prints (5 different kinds).
- ___ Plant 10 trees. ___ Make a centerpiece of forest materials.
- ___ Make and post a fire protection sign.
- ___ Take part in an Arbor Day program. ___ Make feeding shelter for song birds.
- ___ Label trees or shrubs in a park or about picnic grounds.
- ___ Participate in tree identification contest.
- ___ Make a display of at least one preferred food for each big game species.
- ___ Sandpress one or more wildflowers. ___ Clean up a camp ground or picnic area.
- ___ Make a winter bouquet. ___ List your spring, summer, and fall wildflowers.
- ___ Have your own tree. Record opening of buds, flowering, fruiting, wildlife use, diameter, height, branch growth.
- ___ Make a club window display on forest fire control.
- ___ Join the Oregon Green Guard. ___ Take 4-H Entomology project.
- ___ Visit and understand a place like a Guard Station, Ranger Station, tree farm, or forest industry.
- ___ Name your own.

GROUP B: Woodsmanship

- ___ Complete satisfactorily a simple pacing and compass problem.
- ___ Prepare a lost-aid kit for your own use.
- ___ Make plaster of Paris tracks of forest animals and birds.
- ___ Fit a new handle to an axe, or make a sheath for the axe.
- ___ Make a bough bed, without damaging any trees. Cut lower limbs, not the tree.
- ___ Copy chart showing principal constellations to be seen in the spring, summer, or fall sky. Point out to your parents.
- ___ Build a safe campfire, and put it out.
- ___ Tie 5 knots useful to a woodsman.

Let's Show How It's Done



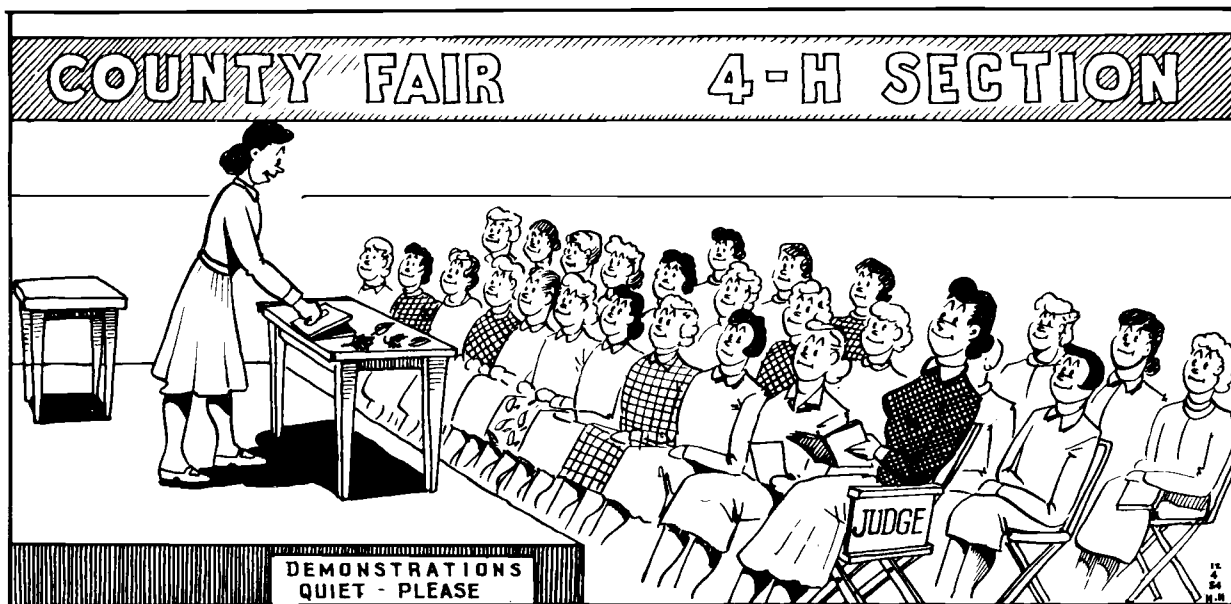
By the light of the campfire the Douglas-fir Club has a time to "show and tell." The other 4-H foresters watch as Joe demonstrates how to build a safe campfire and put it out. Each boy has his turn to "show others."

Can you show someone else how to do something so he can do it too? Can you stand up and talk before a group?

These abilities will always be important for you to have. They help you in many ways - in your school, at home, in your work, and everywhere else. As a 4-H Forester you have a chance to learn and practice. Practice will make it easy.

One of the things you must do in this project is to show and tell how to do or make something. We call it a demonstration. You may give your demonstration before your club, school class, family and friends, or a group at a fair or elsewhere. Get the practice - that's the important thing for you. Plan what you are going to do and say. Do your best, then practice so you can do better.

If you want to give a second demonstration it will count as a Personal Development option (see page 27).



It's a great moment for Linda! She's demonstrating how to make leaf prints. She started by showing her friends and family. Next the school teacher suggested she show the class. Then she wrote the 4-H office and signed up to compete at the county fair. Why not? -- It's fun whether you win or not.

SUGGESTIONS FOR DEMONSTRATING

1. Select something that you like to do.
2. Tell your audience who you are, what you are going to do and why.
3. Show and tell how it is done. Go slowly.
4. Be sure that everyone can see.
5. Do one step at a time, and explain each step as you go.
6. When you are through show what you have done or made.
7. Tell why it is important.
8. Summarize by reviewing what you have done.

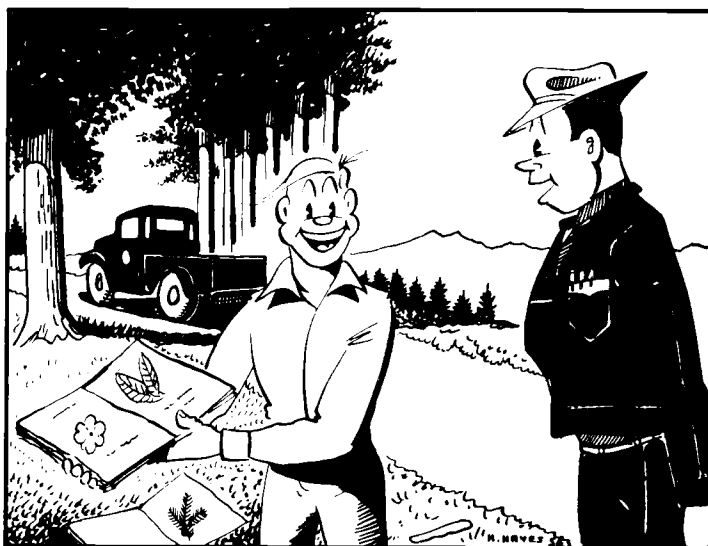
SUGGESTED FORESTRY DEMONSTRATIONS

1. How to identify three trees.
2. How to make a leaf print.
3. How to tie one or more useful knots.
4. How to build and put out a campfire.
5. How to plant a tree.
6. How to mount a pressed leaf specimen.
7. How to use a compass.
8. How to pace distances.
9. How to sharpen a hand axe.
10. How to make and use a plant press.

You will think of other ideas, or your leader may have suggestions. You may want to demonstrate how you made one of your options, or how it is used.

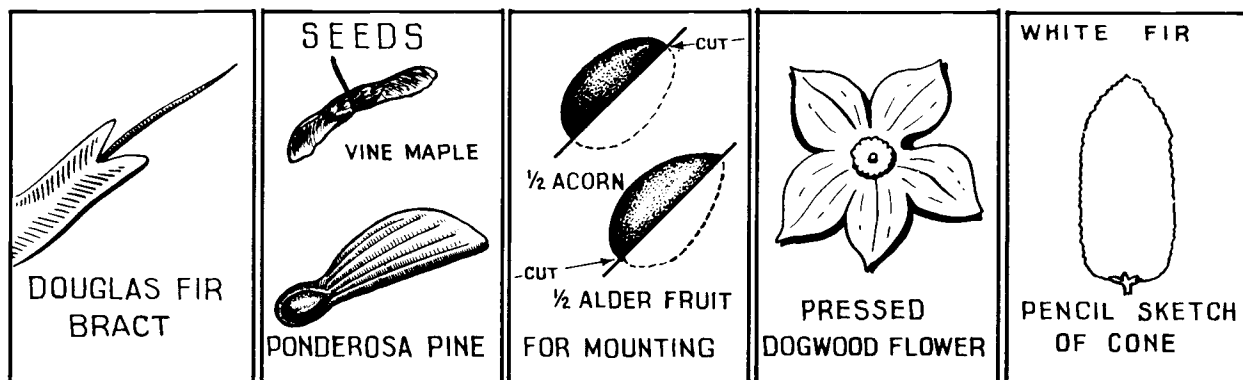
Let's Go Collecting

Joe and his pal, Bill, ride their bikes to a woods to collect specimens. The forester tells Joe, "There is no better way to learn the trees than to make a collection of their leaves and fruits. I did it when I studied forestry. I still have the specimens I collected, too."



WHAT YOU COLLECT

1. Collect, press, and mount foliage and seed or flowers of at least 10 forest plants including 5 or more forest trees. Take any of the trees in "Trees to Know in Oregon," Extension Bulletin 697.
2. In addition to your pressed foliage, include one or more of the following on your cards:
 - a. A cone bract, like the "pitchforks" of Douglas-fir.
 - b. Small seeds, like those of pine, fir, maple, ash, and very small cones like cedars.
 - c. One-half of small cones or fruits, like those of oak, juniper, alder, and locust.
 - d. A pressed flower of the tree or shrub.
 - e. A pencil sketch or outline of the cone, fruit, or flower. Run outline underneath your specimen if necessary.



Linda decides to make her plant press of corrugated cardboard from grocery boxes. Her brother Jack gets the tin snips. They cut 12- x 14-inch cardboard sheets. She found an old inner tube for rubber bands. The plant press was made in 1/2 hour.



MATERIALS NEEDED FOR COLLECTING

Cardboard from paper boxes.

Newspapers.

Rubber bands from old inner tube.

Glue.

Gummed cloth mending tape (only 2 or 3 inches).

4-H forestry mounting cards (furnished by county or city extension offices).

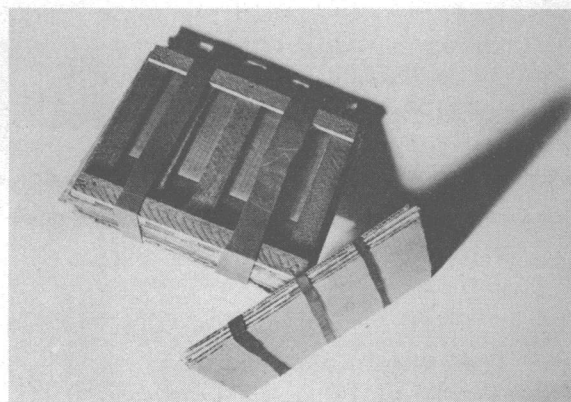
Small brush to spread glue.

Here are all of the materials for collecting except the mending tape. The books, or other weights, are used for pressing. A bag of sand is the perfect weight for pressing.



Make a Plant Press - It's Easy

You'll want a plant press to press your specimens. All plant collectors have them. Make it either of cardboard or of wood. The picture shows both kinds. One will do just as good a job as the other.

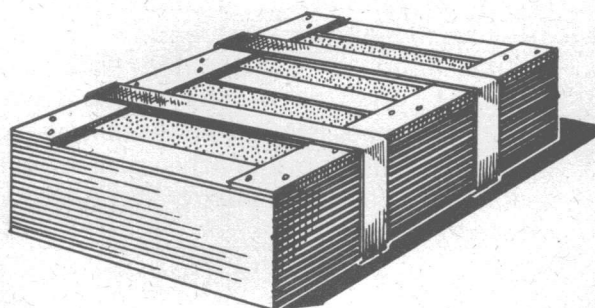
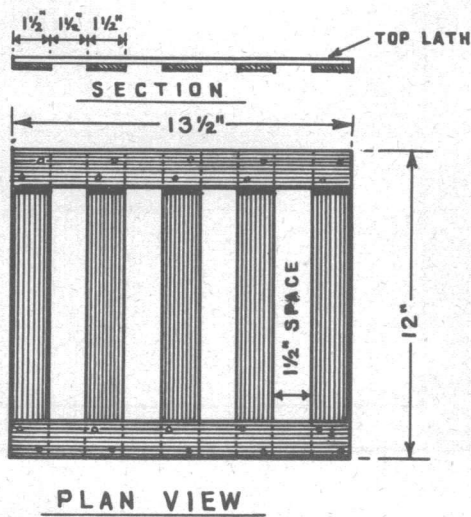


Cardboard plant press. It is a lot easier to make, and costs nothing. You'll want two or three of them. Get these materials to make one:

1. Four 12- x 14-inch sheets of corrugated cardboard; it has a corrugated filler that allows air circulation.
2. Three or four large rubber bands. Old inner tubes provide good ones.
3. Sheets of newspaper.
4. One wooden board about 1 x 12 x 14 inches.
5. Two bricks or other weights.

Plant press of wood. If you like to make things with tools, this press is not hard to make. It's the kind most botanists use. Wood lath can be used, or other wood strips. Follow these instructions:

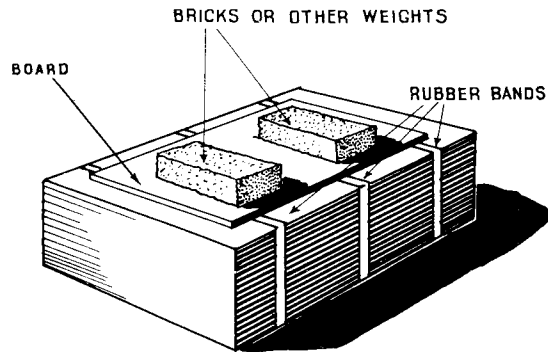
1. Cut 10 pieces of lath 12 inches long, and 4 pieces of lath 13-1/2 inches long. Smooth lath with a hand plane.
2. You will need 40 small nails, or round-head 1/2-inch screws.
3. Tools needed are hammer, screwdriver, and a square. A small hand drill helps to keep lath from splitting.
4. Make two frames to look like the drawing. Be sure they are square.
5. Get two straps, or rubber bands from a large inner tube. Rubber bands work better.
6. Finally, you need newspaper and corrugated cardboard and you are ready to go.



PLANT PRESS

How to use the cardboard plant press. Most of you will use this press; these are suggestions:

1. One press will take care of 3 specimens. If you make up more pressings at the same time, make up more presses.
2. This press is easy to carry on field trips. Slip the rubber bands around the press to keep it tightly together.
3. At home, weight down with bricks or other weights, as shown.



Keep your press in a warm, dry place until the specimens are dry (do this with any kind of press). It will take from 5 to 12 days. In cool, wet weather you can put the press near the stove or heat register, but do not put it where it will get too warm or become a fire danger.

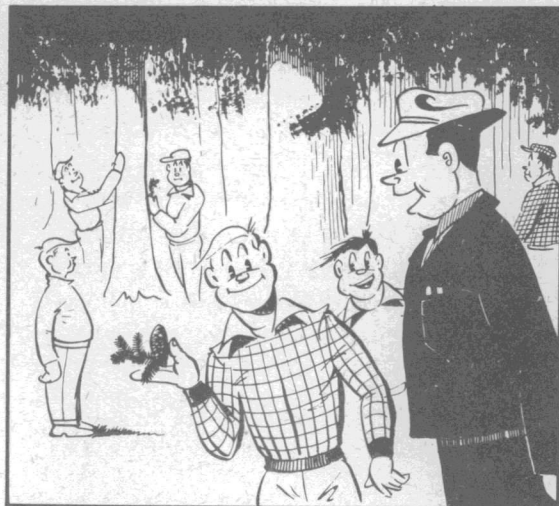
4-H FORESTRY NOTEBOOK

First Year 10 mounts only (at least 5 trees)
 Second Year 20 mounts only (any forest plants)
 Third Year 30 mounts only (any forest plants)
 For each additional year, 10 more mounts.

Basis for Judging Exhibit

	Excellent (Blue)	Good (Red)	Fair (White)	Poor
<u>Accuracy</u> -Correct common name; use names in 4-H project material. Scientific names are not required but may be included; all names, correctly spelled.				
<u>Completeness</u> -The required number of trees and other forest plants. Foliage and 1 or more of the following: Cone bract, seeds, 1/2 small cones or fruits, pressed flower, or pencil sketch of cone, fruit, or flower.				
<u>Selection and Condition of Specimen</u> -Foliage that "looks right" for the species--not oversized, off color, underdeveloped, or deformed.				
<u>Mounting and Appearance</u> -Specimens carefully prepared, arranged neatly, and securely fastened. Notebook sturdy and attractive. Originality counts!				
SCORE OF EXHIBIT				

The Douglas-fir 4-H Forestry Club goes up in the Cascades to collect specimens. Joe finds a Noble fir tree. The club leader, Mr. McDaniel, suggests that he collect several cone scales if he can find good ones on the ground. Joe knows he must have something from the cone for his mounting card.

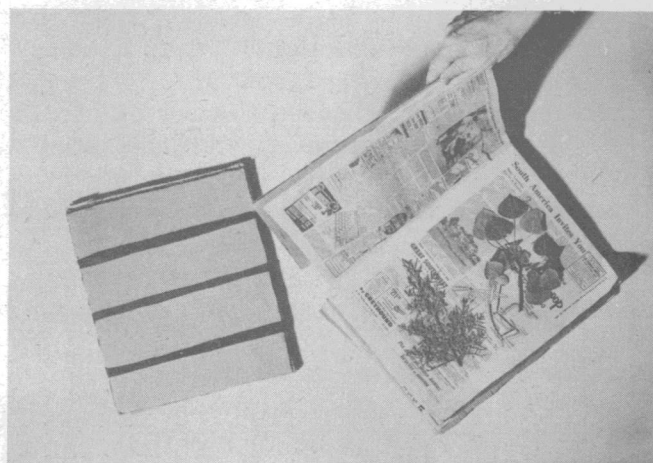


How to Collect and Press Specimens

You can do a lot to make your specimens look natural and keep their color. We have three rules for good-looking specimens:

First Rule. Be sure to get good average specimens by selecting those that appear fully developed and of average shape and size. Don't gather specimens from small seedlings or new growth because these may not look right.

Second Rule. Press specimens while they are fresh so they will look natural. Keep them moist until pressed. It helps to take your plant press with you on your collecting trips. Lay the material to be pressed on the inside of a folded newspaper or paper towel (never use slick magazine paper). Place several folds of newspapers, large blotters, or linoleum deadening felt between specimens. Be sure the specimens are flat and smooth. Change the newspapers, or air the blotters, should they become damp.



Third Rule. Dry the specimens fast. Their colors will be more natural. So keep your plant press where it is warm and dry, and where air circulates freely.

Here is a way to dry your specimens fast without changing the newspapers. Place one sheet of corrugated cardboard between each of the specimens. Notice the "straws" in corrugated cardboard. Make these "straws" run the same way in your press. A wood press, if it is tightly bound, can be stood up-and-down so warm air can move up through them.

Linda selects her best specimens for mounting. She finds they are usually ready to mount in a week, if she keeps the press in a warm, dry place. If the specimens dry too long, some of them seem to get brittle.



How to Mount Your Specimens

You may use one of the methods described below. Mount your specimens on the cards provided by the 4-H club office.

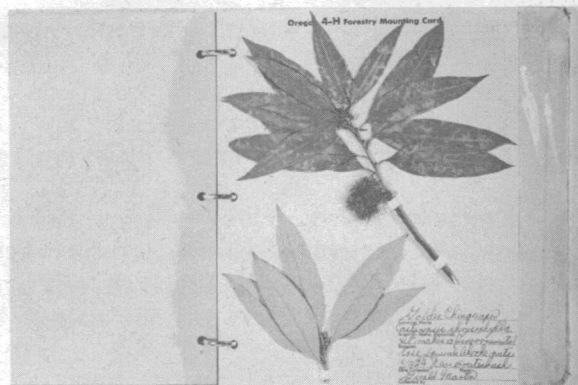
Tape Method (Good). The specimen may be held in place on the mounting cards by narrow strips of Scotch tape or gummed cloth mending tape. The mending tape is better because Scotch tape may cause cards to stick to each other later. Scotch tape is all right for a while, but does not last.

Glue Method (Better). This gives you more attractive and more durable mounts. Use a good liquid glue, if possible, rather than paste, mucilage, or rubber cement. Rubber cement is too stiff and isn't easy to thin. Thin the glue with water so it will spread freely with a brush. Paint glue on the back of the specimen, which is then placed on the mounting card. Use narrow strips of gummed cloth mending tape to hold down twigs or stems. Glue alone will not hold woody stems or heavy parts. Gummed cloth does hold, and looks nicer. Cover the mount with a sheet of waxed paper or newspaper and place a weight on top that provides even pressure. A partially filled bag of sand is best.

Mounts prepared in this manner may last a lifetime if cared for.

Would it help to mount a second specimen, maybe a small one or part of one to show the underneath side of the leaf? If the underneath side has features that help to identify the species, a second specimen is suggested where there is room. The under-leaf yellow color of the Golden Chinquapin (shown in the picture) gives the tree its name.

You can't mount Spruce, Larch, or Hemlock foliage by the tape or glue method. The needles fall from the twig. Exhibit spruce or hemlock needles in a small cellophane or plastic bag taped to the card.



You May Exhibit Your Mounts

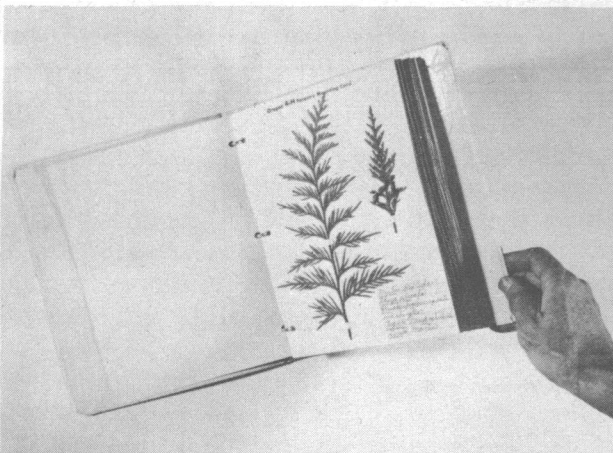
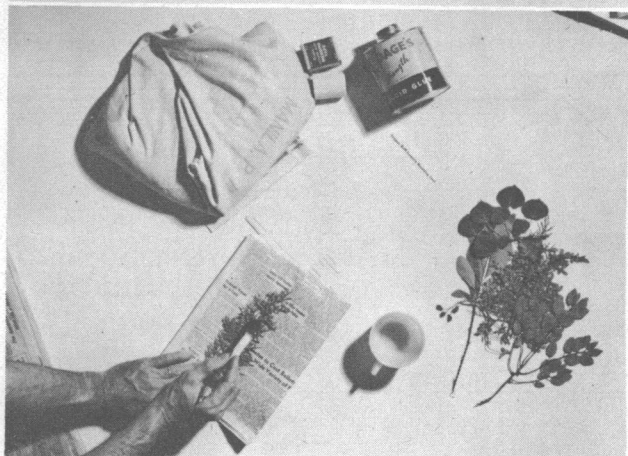
Linda's collection is on exhibit at the Fair! She is pleased to have so many people look at her work. She didn't get a blue ribbon, but people tell her she has a fine collection that will be worth keeping.



Your first year 4-H Forestry exhibit will consist of 10 mounts only. Choose the best ones from all that you have made. If you exhibited a collection of leaf mounts last year, you can collect and mount 10 additional species. Second year forestry members will exhibit 20 mounts, third year 30, and so on regardless of the project division carried. (See page 33.)



To exhibit, you will need a cover and some means of fastening or holding your mounts together. The cover will be judged. Use your own ideas in making the cover. A notebook with large ring binders works very well.



Paul Bunyan

Woodsmen young and old like Paul Bunyan. The famous stories about him come from old-time loggers of Canada and the United States. They are so wonderfully told that Paul Bunyan has become the greatest make-believe hero since ancient times. There are a dozen books about him. Only a few facts will be mentioned here to introduce the great logger and his chief helpers.

Who Was He? Paul Bunyan was the all-time, all-American logger. As an example of his work, he logged off North Dakota and grubbed out all the stumps. This is proved by the fact that no pine forests are seen there today, and old timers saw the job done. He was a powerful giant, known throughout the entire timber country of America for his ability to do great things. (Maybe he didn't invent geography, but he made a lot of it. They say he dug out Coos Bay for milking whales. His Blue Ox was sick, and needed milk.)

For a big man, Paul Bunyan was very quick on his feet. He could blow out the light at one end of the bunkhouse, and get into his bunk before the room got dark.

He was a marvelous woodsman and could track anything. One day he came upon an old skeleton of a moose. He got so interested he spent a whole afternoon tracking the moose back to the place where it was born.

He was so strong he could brand a log by pinching through the bark and wood with his fingers. He could lift himself by his coat collar -- something very few men can do.

Babe, The Big Blue Ox. To log timber, you've got to have power. Paul Bunyan did not have diesel tractors or donkey engines. Instead, he had Babe, the Big Blue ox. Babe could pull anything that had two ends. He weighed 10,000 pounds and it took a large crew to feed him.

Paul would hitch Babe to a crooked logging road and pull it out straight. The cook shanty was a quarter of a mile long. Babe could drag it, cellar and all, from one camp to another. Babe was mischievous and would sometimes run away. It was impossible to follow him because his tracks were so far apart. A settler and his wife and baby, on their way to Oregon, fell into one of these tracks. The son got out when he was 57 years old and reported the accident. Thousands of lakes in Minnesota were caused by Babe's tracks.

Some of Paul's Helpers. Big Ole, the blacksmith, was a powerful man. He made shoes for Babe. Once he carried two of these shoes, and sank knee deep in solid rock at every step. Chris Crosshaul was a camp foreman. He had such sharp sight that he could see to the tops of the tallest fir tree in just three looks. Shot Gunderson was the best log-spinner in camp. He could spin a big log so fast with his feet that it would slide out of its bark. The foam would be so tough that he could walk ashore on it.

Johnny Inkslinger was Paul's bookkeeper and idea man. Johnny invented accounting and bookkeeping at about the same time that Paul Bunyan invented logging. He saved Paul 10 barrels of ink by leaving off the dots from the I's and J's and the cross marks from the T's. He suggested to Sourdough Sam the idea of putting kernels of popcorn in the pancake batter so that the flapjacks would turn themselves. On his desk was a trained pet mouse who blotted the time sheets by rolling over them. He bought a big watch from a peddler, and fixed it to gain so much time that it paid for itself in a single week.

Paul's Wonderful Deeds. Your club will be interested in Paul's great deeds and adventures. Learn about the Pea Soup Lake, the Double-end Mosquitoes, the Round River Drive, the Buckskin harness, the Seven Axemen and the Little Chore Boy, the Reversible Dog, and the Pyramid Forty. Paul Bunyan showed a lot of "cleverality" in all the things he did. His men encountered strange animals that you seldom see today, such as the hoop snake, the Hide-behind, the splinter cat, and the giddyfish. There were also upland perch that nested in trees and piano birds whose loud notes filled the woods with music.

Get Things Done. The men who work in the woods have done things that seemed impossible. Paul Bunyan stands for that sort of spirit. He didn't get discouraged and quit. He kept working. He used his head. You can do any worthwhile thing you want to. Just remember Paul Bunyan.



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