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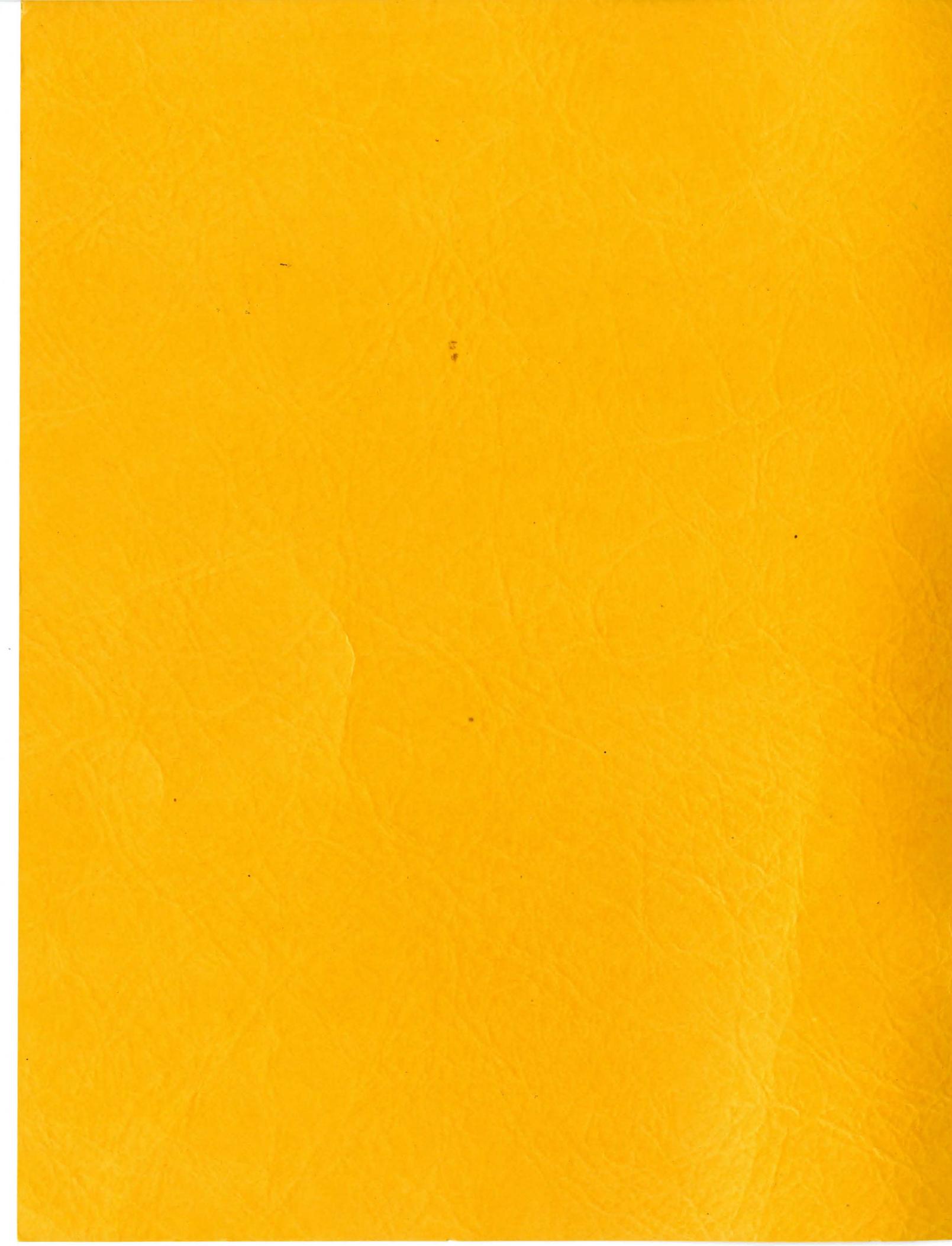
State of Iowa  
1950

# Conservation of Trees In Pictures

Issued by the  
DEPARTMENT OF PUBLIC INSTRUCTION  
and  
STATE SOIL CONSERVATION COMMITTEE

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THE STATE OF IOWA  
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This material is primarily designed as a supplement to Unit V of  
Iowa Elementary Teacher's Handbook for Conservation.

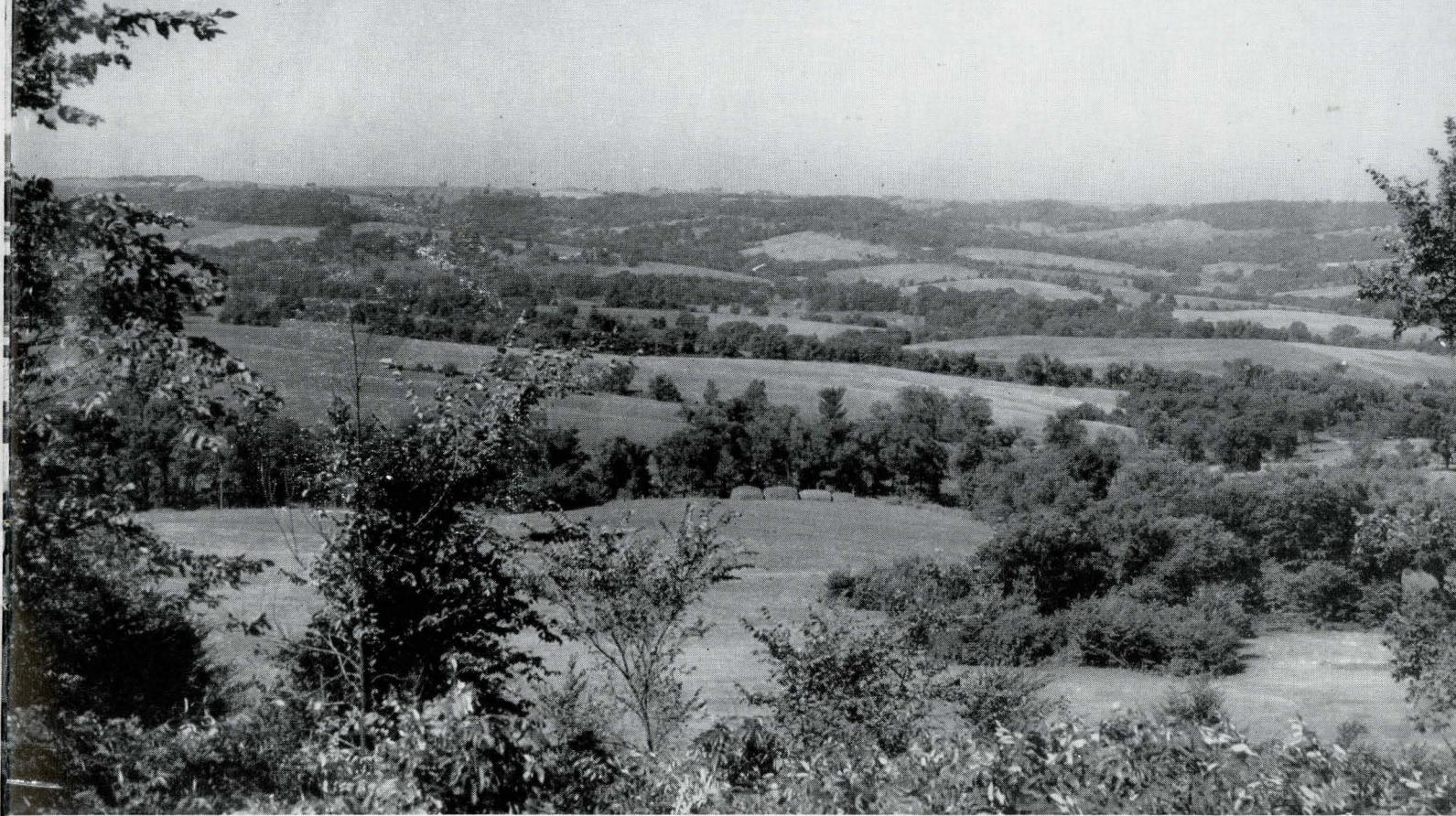
#### VOLUME XIV

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## Beauty and Conservation

Here is one of the many lovely scenes in Iowa. You see gently rolling land dotted with growths of trees and shrubs. Most of the timber remaining in Iowa is found along water courses and on such slopes as these. Not only is there beauty here, but there is love of the land and a desire to keep it beautiful and fruitful. Grass covers the topsoil, holding it firm and checking the flow of rain water as it forms rivulets along the slopes.

Roots of trees and shrubs collect this water as it trickles slowly down to them through the grass covering above. The roots store the water and send it up to the leaves where it passes out into the air as vapor, ready to make more rain.

Birds and four-footed animals come here to find food, homes, and protection. So, by conserving the topsoil, other important natural resources—trees, water, and wildlife—are also being saved and wisely used.

Soil gives nourishment to trees and plants, providing food for people and animals. Trees provide food, shade, and shelter for people as well as for certain plants and animals. Without water soil could not produce the plants which provide us with food and fiber and numerous other important things. Both land and water animals depend upon water for their existence.

Certain minerals are essential to our way of life. Certain forms of wildlife play a great part in the balance of nature. Surely, then, since our very lives depend upon natural resources, the conserving of them is the obligation of each one of us. And with conservation, there comes beauty!



## One Reason for Trees

How would you like to step right into this natural forest? You'd probably be invited to have a swim and then to help eat those fish frying over the fire! You wouldn't find a scene like this without trees, would you? So here is a very good reason for planting trees, caring for them, protecting them from fire and disease, and saving them from being cut or grazed.

The people of the United States now own 180 million acres in national forests. Our President is given the power to set aside forest reserves for the purpose of "securing favorable conditions of waterflows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States."

National forests are something more than just large areas covered with trees. They are a place where trees, underbrush, grass, water, and wildlife combine to give the forest a greater value than that of producing wood.

State parks and national forests are given protection so that they will not be destroyed and so that they can be enjoyed by everyone. To most of us a state park or a national forest means recreation. We go there to escape the city heat, to find rest and quiet, to vacation, to camp, to fish in its streams and lakes, and to observe its wildlife.



## Trees Destroyed – Erosion Begun

A beautiful forest once grew here. Tall shapely trees provided homes and protection for wildlife. Leaves falling on the forest floor year after year made hiding places for small woodland creatures. They formed a forest carpet which held the rain-drops, causing the rain to seep slowly into the ground. The tree roots stored this water and sent it up the trunk and out to the leaves. From there the water passed off into the air as vapor, cooling the air about the woods. The leaves, twigs, and fallen branches on the forest floor gradually decayed and turned to rich humus. All parts of the forest worked together for good.

Then men came into this forest chopping and burning. Not only were the trees destroyed but the forest carpet and the rich soil as well. The wildlife perished or moved out. Shade, cooling vapor, shelter for wildlife—all disappeared.

Now here is only desolation. Worse than that—erosion has begun to eat away at the soil once held together by tree roots and covered over by forest litter. Rain will strike the ground with full force and will rush down the slightest slope, causing small ditches to form. There are no longer any leaves and roots to protect the soil. Gullies will continue to grow as they have started here, and will widen and deepen until huge sections of the land will be destroyed. Until a new forest growth can be started, no wildlife can live here. And all because of the thoughtless acts of men who wanted the profits that forests would bring them but who did not know how valuable forests *really* were!



## In Need of Trees

Isn't this an ugly scene? Notice how this once good farm land has eroded and disappeared. Uncontrolled run-off water on sloping fields has caused this destruction of acres of fertile soil and plant food.

Somewhere the native vegetation which once covered this land was destroyed. The soil was left unprotected, and the rain began to do its deadly work. Tiny rills formed tiny ditches which, unchecked, deepened into larger ditches. Topsoil was washed away first, and then the non-productive soil followed.

Now this spot, as it is, will not do for crops or pasture. If nothing is done to prevent further erosion, the gully will gradually eat away still larger portions of the farmland. Trees, grasses, and shrubs are needed here!

The prevention and control of gullies is one of our most important conservation problems. A huge gully like this one is very difficult to remedy. Vegetation is probably the best answer. Grasses, shrubs, and trees which grow rapidly should be seeded or planted all through this gully. Cottonwoods and willows would be good to plant at the bottom of the gully. A little farther up the sides where it is dryer locust trees might do well. (They don't like to get their feet wet!) A mixed planting of pines and hardwoods should grow around the top and on the lip of the gully.

This could turn out to be a wildlife refuge if the needs of birds and other small animals were considered and if good cover for them were planted on the gully's outer edges. Multiflora rose would make fine cover and serve as a fence, too, to keep out livestock. Probably a regular fence should be added to keep out all animals that might graze on the new vegetation.

Check dams sometimes help, in preventing water from continuing to eat away at the soil. All such remedies are, of course, rather expensive. And it takes a great many years for vegetation to take hold and to heal such a deep cut in the earth. It *can* be done, however. The next picture shows you how.



## What Trees Can Do

Here is a gully, transformed by trees and underbrush. See how erosion has been stopped and the gully healed. The roots of the trees hold the soil firm. They collect and hold rain water. Leaves, twigs, and branches fall and cover the ground. As these gradually decay, they will form soil, although this will take a long, long time.

The trees will drop their seeds which will grow into more trees. The fallen branches and the thickness of the undergrowth will make hiding places and homes for woodland animals. Birds will come here to build nests and raise families. They will eat the insects which might ruin the trees.

This is a wonderful example of conservation measures which consider saving soil, water, trees, and wildlife. A refuge for wildlife has replaced the ugly gully. That is a splendid act of conservation. In our country wildlife is held in trust by the State or Federal government and does not become the property of any person "until reduced to possession in a legal manner".

That means wildlife is entrusted to our care. We know that we benefit in many ways by birds, helpful insects, and certain mammals. In return for those benefits we can provide for them in refuges such as this picture shows.

Food for wildlife is found in the refuge. But that is not their only need. They want close, protective cover for roosting, for shelter, and for laying eggs and rearing their young. Also, they like sunny patches for sunning themselves and sandy patches for dust baths. Here is a place that invites all wildlife to enter and take up residence.



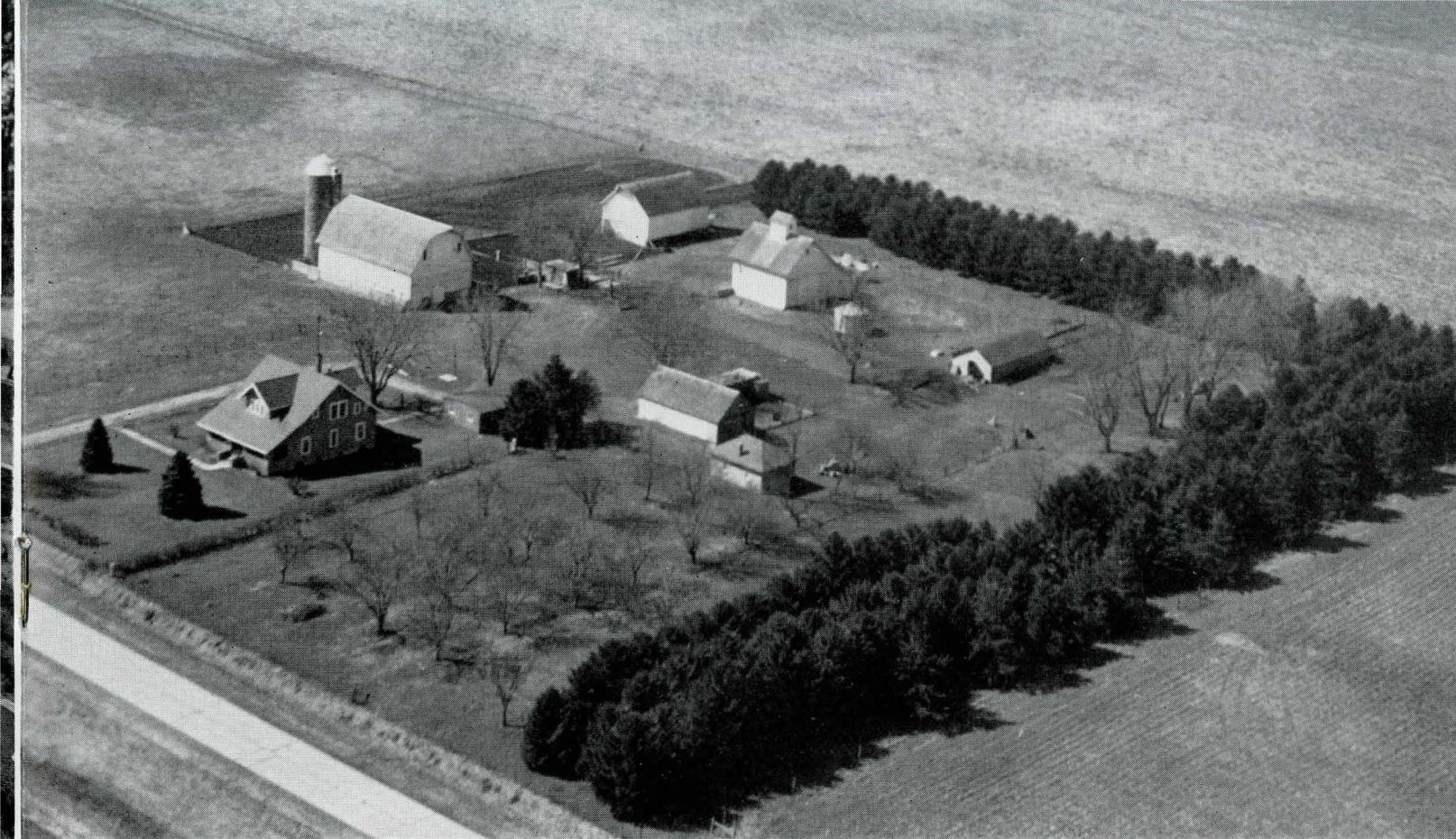
## The Beginnings of a Forest

Sometimes we must help Nature to maintain her forests. Collecting tree seeds and planting them in beds like this is one way to start that help. In some states school children gather tree seeds and send them to state nurseries where the planting is done.

The seed beds like those in this picture are carefully prepared for the seeds. Good rich soil, fertilizer, water, and sunlight must be provided. The tiny trees that grow from these seeds are called "seedlings". This term is given to young trees which grow from *planted seeds*. Those trees which spring up from seed that falls on the ground (planted by Nature) are called "wildlings". Often these are eaten by grazing animals.

When the seedlings are wanted for a farm planting, or a forest, or a school yard, they are taken out of these seed beds and re-planted. Then we call them "transplants" to make clear that they had their start somewhere else.

Some trees—the black walnut, the oaks, and other trees that bear nuts—can be started by "direct planting". This term is used when the seeds are not started in nurseries, but are planted in the spot where it is desired they shall grow. Many of them may fail to grow there, however, because squirrels may dig up the seeds, especially the nuts.



## Trees Make Windbreaks

Do you see how the trees on this farm are planted on two sides of a square—the north and west sides? They form a windbreak, protecting people, buildings, and farm animals from cold bitter winds in winter and hot dry winds in summer. They save money spent for feed for cattle, too. Cattle protected by windbreaks do not require as much food to keep them warm as do cattle which are unprotected by trees in extremely cold weather.

Windbreaks like the one in this picture add to the beauty of farm and countryside. They furnish hiding places for wildlife. The evergreens which keep their needles the year around are especially good for sheltering birds and animals.

Trees that are planted as windbreaks are selected for the type of soil and climate and the amount of rainfall most favorable for them. In North Dakota, cottonwoods do very well as windbreaks. In Iowa, evergreen trees are quite commonly used.

Windbreaks are usually planted this way: First there is a row of shrubs such as willow, chokecherry, and honey suckle. These do not grow as high as the windbreak trees. Next to them is a row of shorter growing trees—perhaps plum, Russian olive, or Russian mulberry. The center of the windbreak is formed by a row of evergreen trees that grow very tall, like white pine, Norway spruce, and Douglas fir. The next two rows are like the first two. This makes a slanting arrangement for the wind to strike against.



## Conservation or Not?

Here is an interesting example of two ways to treat a woodland.

The area on the right side of the fence is a grazed woodland. Horses and cattle have been turned in here and allowed to graze.

Notice how all underbrush is gone. All low branches have disappeared. No seedling trees are growing up. Some tree roots are being exposed. The forest floor will not build up very fast because it is being trampled on by animal hoofs. When forest litter disappears erosion starts more easily. You can see the beginnings of it even now. There is little protection here for wildlife.

Doesn't this grazed woodlot reveal to you the way the owner fails to think about conserving our natural resources? The trees here will eventually die. With no seedlings to grow up to replace them the woodland can disappear. Without tree roots to help hold the soil in place, erosion will go on rapidly. Without a forest floor to help protect the soil and to build up more, raindrops will hit the ground with greater force, helping erosion along. Without trees and underbrush birds and small animals will find no shelter and will leave the area, thus giving the owner less cooperation in maintaining a balance in nature.

The man who manages the woodland on the left side of the fence is undoubtedly a conservationist at heart. Here is protected woodland. Here you will find trees of all ages and sizes which a well-kept woodland must have if it is to keep alive and growing.

Notice the thick growth of underbrush and the fine, deep, forest litter. Soil building and soil protecting are going on here. Wildlife will find shelter and places to rear their young. New trees will replace those cut down for lumber and those that die a natural death. No trampling of animal hooves will cut open the soil making it easy for erosion to start. Tree branches, leaves, and underbrush, all will break the force of rain and allow it to seep more slowly into soil where roots will store it. Here is conservation at work!



## Trees are a Crop

In some parts of Iowa there were originally no timbered areas. So, many settlers planted trees and started their own woodlots. This photograph shows such a woodlot—a plantation of cottonwood—which was planted in 1875 near Little Sioux, Iowa. It is located on good level bottomland with fair drainage.

These 5 acres of cottonwood now furnish fuelwood, posts, and building lumber. During the last 50 years this woodlot has produced 100,000 board feet of lumber—(the equivalent of lumber necessary to build four large barns) 500 standard cords of fuelwood, and nearly 100 small piling. This owner finds it pays well to take good care of his trees.

But there are other values to such a woodlot besides the financial one. Notice how a “forest floor” is being built up, to enrich the soil and help prevent erosion. Small wildlife is protected here. And what a fine place for a family picnic!

Trees are really an agricultural crop, much like wheat or corn. They can be harvested. They can be replaced by new growth. But both crops need careful attention. Trained forest managers and farm lot owners regard their forest lands as *tree farms*, which can produce not one, but many continuing crops of trees. Of course, it takes much longer to grow a crop of trees than it does to grow a crop of corn. And the *entire crop of trees* cannot be harvested each year as a crop of corn can.

Forest land can be managed so that a crop can be harvested each year, or every five or ten years, depending upon the *kind* of tree growing, its swiftness of growth, its purpose after cutting, etc. The important thing is that trees shall be continually growing.



## Fire – An Enemy of Forests

This is the way many of our terrible forest fires start. While lightning does cause some forest fires, many more of them are started by careless smokers—people who toss lighted cigarettes out of car windows or drop cigarettes in the dry leaves in the woods. Such persons are responsible for *one* forest fire out of every *four*. Think of being the cause of thousands of acres of beautiful timber going up in smoke! Think of the value lost in money alone! (It runs into millions of dollars.) Consider the horrible waste when we are in such great need of lumber! It takes hundreds of years for some forests to grow. And all the new little trees perish, too, in a fire. Picture the tragedy of loss in wildlife!

Even the soil is harmed in a forest fire. The “forest floor” composed of dry leaves, twigs, and branches, burns. Even worse, the rich humus under the litter is burned, too. It is very difficult for a new forest to grow up from the ashes of a former one.

Foresters tell us that about *40 million acres* of forest are partly or completely destroyed in our country *each year*. Even if we started reforesting, it would take us *200 years* to replant them! And it would cost us around 300 million dollars! If we do not replant, some trees may start again from seeds blown to the spot. But usually inferior trees take root in burned areas.

Do you see that no *cure* for forest fires is possible? We can only *prevent* such fires if we wish to save our forests. Even you children can be of help here—when you build camp fires. You can use great caution in building a camp fire in the first place. And when it is once built, you can *make certain* that not a spark of fire is left anywhere when you are through using it. If you see a fire out of control ask your parents or neighbors to call the nearest District Forester or Conservation Office.



## Fire Detection Is Important

Here are a lookout man and a "smoke chaser" guarding a forest from fire. They are standing on the balcony of a lookout tower. These towers are found in Northern Minnesota, Wisconsin, Illinois, Missouri, and Michigan and other large timber areas of the United States.

There are more than 5,500 lookout towers in our forest areas. They are always built on high land and they are connected by telephone or radio. In the top of each firetower a table holds a map of the surrounding land and the other towers. When a lookout sees smoke, he determines its direction. A lookout in another tower does the same. Where the two lines of direction cross, there the fire will be found. By this method of locating the fire, men can be rushed to begin fighting it.

The smoke chaser goes out alone, first, to the scene of the fire to see if he can put it out by himself. In some states he is taken by plane to the spot and dropped by parachute. In the pack on his back are a canteen for drinking water, another water bag, an ax, and a shovel.

When he reaches a fire, his first act is to "build a line" around it if possible. This means: He scrapes away the leaves and humus from the fire in all directions. He thus makes a line about two feet wide all around the fire. If the fire is not raging too fiercely, it will die out when it reaches the line of moist earth which lies under the leaves. Sometimes, however, the fire rages so intensely that the smoke chaser cannot get the fire line made in time to control the fire. Or, the fire may leap over the fire line and continue destroying everything in its path. But all this time the lookout man has been keeping the burning area under observation through his field glasses. If he feels sure that the smoke chaser is in need of help in putting out the fire, the lookout man sends other fire fighters to help.



## Pulpwood Is an Important Crop

This picture shows woodrack cars being loaded with pulpwood. The logs have been cut on some land near the water and floated down to this spot. The logs will be sent to a mill where they will be cut again—this time into 2-foot lengths. A great revolving drum will remove the bark, and huge grindstones will grind the logs into fine splinters. Flowing water will carry this “pulp” to great tanks where various ingredients are added to it. The pulp may emerge from the mill as paper or in some other form.

At one time only spruce and hemlock trees were cut for pulp, but now a number of other trees can be used for paper. Poplar, southern yellow pine, jack pine, beech, maple and birch are among these.

It is a good thing that we can use these other trees for pulpwood because we use so much paper. We need many acres of forests to produce enough paper for our use. America is the greatest user and producer of paper in the world. Just *one* Sunday edition of a large newspaper, we are told, requires the paper from *80 acres* of forest! While pulpwood is used principally in making newsprint and other paper products, it has many other important uses, too. The logs in this picture may become gunpowder, camera film, imitation leather, rayon products, glycerine, alcohol—to name only a few.

A wise owner of a woodlot practices conservation in various ways so as to produce the best “sustained yield” and the best possible income. He keeps animals from grazing there. He carefully selects only certain trees to be cut. He allows seedlings to grow and he plants new trees. He keeps his trees safe from fires. He watches that insects do not start decay in the trees. He is on his guard against diseases that attack trees. In all these ways of conserving trees he is benefitting himself financially. How is he helping to conserve soil, moisture, and wildlife at the same time?



## Railroad Ties Get Treatment

Altho' we have the most modern streamlined trains on our railroads, we still must have the old-fashioned wooden ties which hold the steel rails. Nothing else has been found that makes as good a "cushion" for the rails as wooden ties do. They have been used ever since our first railroads were built. Wooden ties could be obtained very cheaply in the East where white oak trees were cut down for just such use. In those days a white oak railroad tie cost *only 10 cents!*

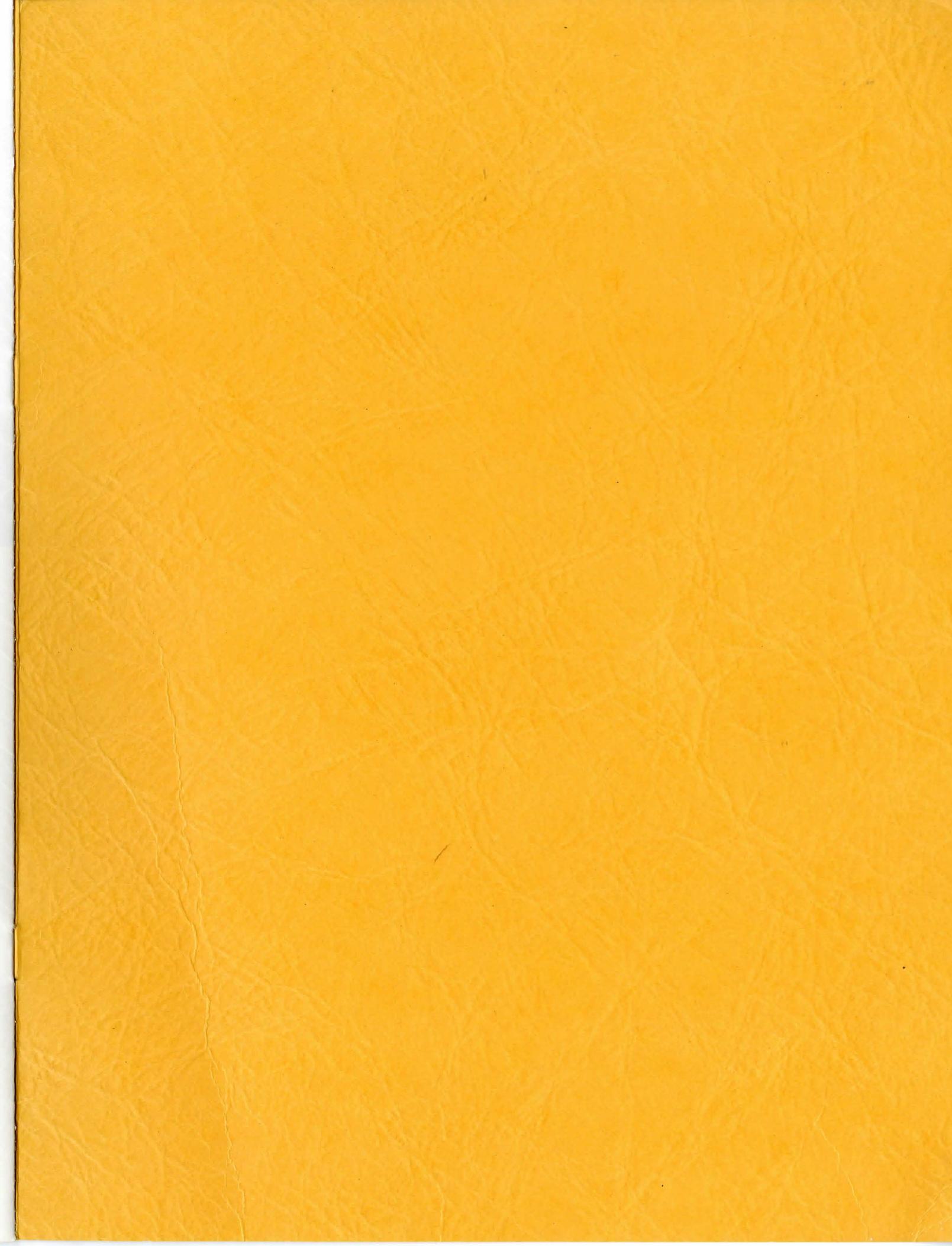
An average mile of railroad track in our country uses about 3000 cross ties. Our railroads extend for so many miles across the United States in all directions that we need more than a billion ties. But, in time, these ties decay and about 50 million a year need to be replaced. That means new ties must be grown somewhere.

Because there is a shortage of lumber we try to make all ties last as long as possible. One way to do this is to treat the logs with a preservative which will protect them against insects and disease. This treatment is really a conservation practice for it saves the wood of the cross ties and more than doubles the years of service they can give without the preservative—about 25 to 30 years.

Because the treatment preserves wood, practically all kinds of trees in a small forest can be cut for cross ties. Oak, Southern pine, and Douglas fir are the ones most commonly used. Nearly 95% of all cross ties now receive this preserving treatment.

This picture shows a "treating plant" in Iowa to which fence posts, telephone poles, and railroad ties are brought to be treated. They will then be sent to various places throughout the state to be put to use. Railroad companies are acting as conservationists here for by saving cross ties in this manner they help to reduce the number of trees that must be cut down.





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