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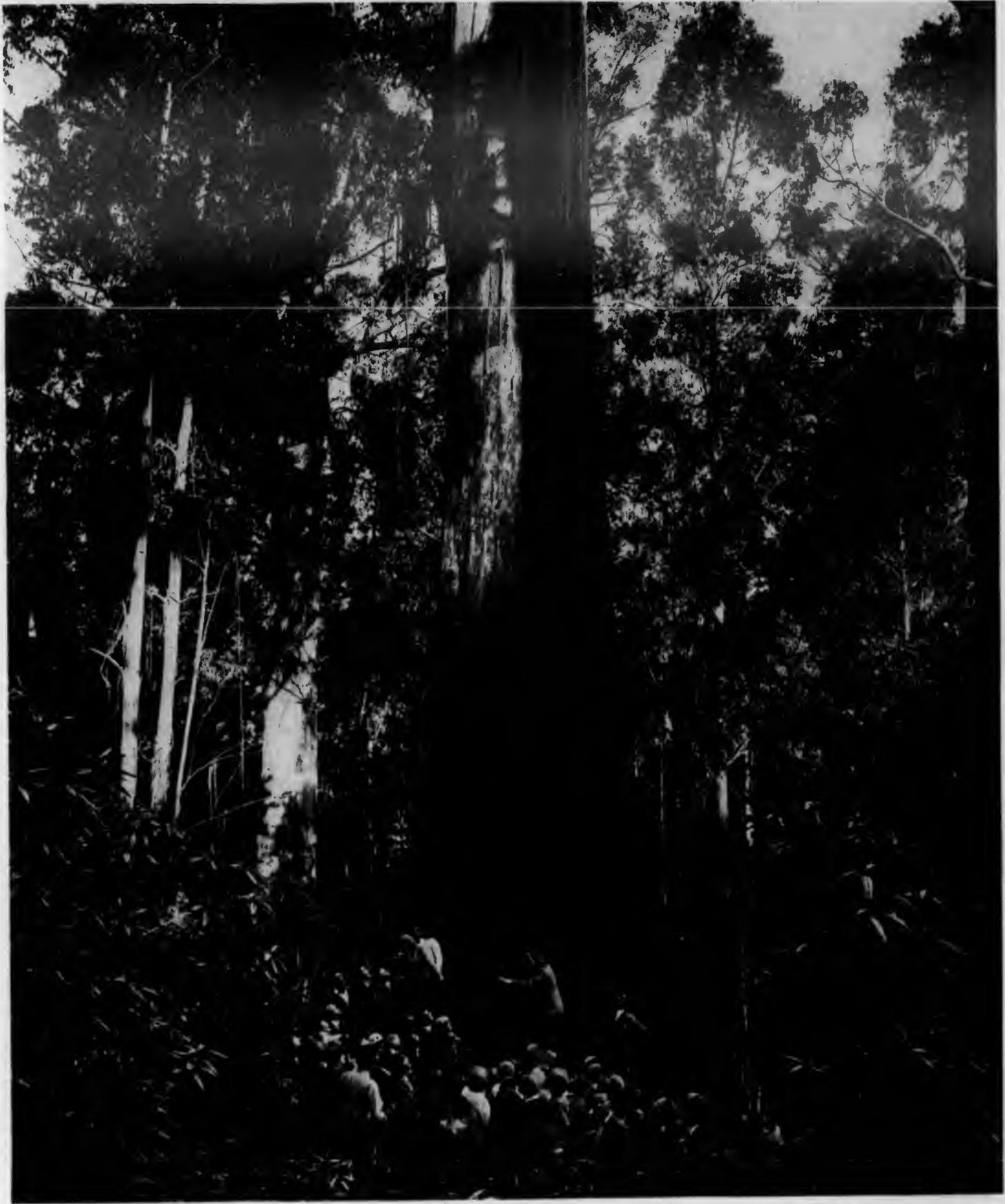
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# FOREST LEAVES

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THE PENNSYLVANIA FORESTRY ASSOCIATION

JANUARY-APRIL  
1945

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### THE PENNSYLVANIA FORESTRY ASSOCIATION

*Founded in June, 1886*

Labors to disseminate information in regard to the necessity and methods of forest culture and preservation, and to secure the enactment and enforcement of proper forest protective laws, both State and National.

#### ANNUAL MEMBERSHIP FEE, THREE DOLLARS

One Dollar of which is for subscription to FOREST LEAVES

Neither the membership nor the work of this Association is intended to be limited to the State of Pennsylvania. Persons desiring to become members should send their names to the Chairman of the Membership Committee, 1008 Commercial Trust Building, Philadelphia, 2.

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# FOREST LEAVES

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## Area of Forest in Pennsylvania

by GEORGE H. WIRT

IT IS PROBABLY safe to conclude that all of the land within the boundaries of William Penn's province, with the exception of a few mountain tops and a few valleys was covered with forest growth. Descriptions of conditions observed by explorers and early settlers refer to very few natural openings in the expansive forests.

William Penn requested his settlers to save one acre of forest for every five acres cleared. How much consideration was actually given to Penn's suggestion during the period of settlement and up to the Revolutionary War there is no way of knowing. It is probable that many individual owners did not keep 16% of their holdings in trees but it is more than likely that within large blocks of land as the areas now known as townships or counties more than that proportion was kept in trees.

However, after two hundred years of what seemed to be necessary destruction of forests some few people in Pennsylvania began to think the course of events had gone far enough in that direction and that a different attitude toward forests would have to be developed. It is interesting that the predominant note was against the unnecessary destruction of forest areas by fire and that such waste must be stopped. Unsatisfactory conditions were recognized as coming not so much by reason of the remaining area of primeval forests becoming smaller and smaller but because of the fact that the areas which had been cut over were being burned frequently enough to make them completely desolate and waste.

It was in 1887 that the Legislature of Pennsylvania decided that some State policy other than complete indifference in regard to forests should be formulated. A Commission was appointed to study the situation and found that there was a very amazing lack of knowledge as to forest areas, their conditions, the amount of timber being cut or still uncut, or even of the area being burned over. They found, nevertheless, that there were a number of things that ought to be done to improve local conditions until the facts could be learned.

Another Commission was appointed in 1893 to find out how things stood. The 1895 report of the second Commission could add very little to the forest data. A Bureau of Forestry was established that same year and the law specified that information as to forest areas should be obtained and published. That legislative directive has been a part of the forest laws ever since then.

A review of a few statements with respect to forest areas in Pennsylvania is interesting.

The Census of 1870 stated that there were 5,740,864 acres of unimproved farm lands in Pennsylvania. There was also an area of 11,445,800 acres within the State not specifically accounted for in the Census tabulations. This makes a total of 17,196,664 acres other than improved farm land. Certainly not all of this area was forests, but most of it was.

In the 1887 report of the U. S. Division of Forestry at Washington, the forest area of Pennsylvania was tabulated at 7,000,000 acres.

In 1893, Dr. B. E. Fernow, Chief of the U. S. Division of Forestry gave the land area of Pennsylvania as 28,790,000 acres, of which 65% was forest, brush and waste land. This was 18,713,500 acres. 24% of the total area could be considered as forests, or 6,909,600 acres.

Dr. J. T. Rothrock, for his forestry report of 1895 used the records of the tax assessors as reported to the State Department of Internal Affairs as the best but still unsatisfactory figures for forest area. This was 9,099,817 acres. The assessors' figures left 4,366,720 acres of the State area unaccounted for. Dr. Rothrock's comment was to the effect that at least one-quarter of the given forest area had no forest growth upon it.

In Fernow's Economics of Forestry (1902) he gave for Pennsylvania the same total land area as in his official report of 1893, namely 28,790,000 acres and again 24% as forest, or 6,909,600 acres. Based on 1900 Census figures, however, he estimated the forest, brush and waste land as 15,546,600 acres.

In the 1915 report of the Chief Forest Fire Warden it was stated that the forest area which would have to be protected from fire was estimated at 8,000,000 acres, of which 5,000,000 acres were being kept in a non-producing condition by frequent burnings. The protection code of 1915 made it the duty of the Chief Forest Fire Warden to gather information about forest areas, for it was very certain that the protection problem could not be handled satisfactorily until something reasonably definite as to forest areas and fire hazards was known.

In 1910, the Pennsylvania Department of Forestry and the U. S. Forest Service had cooperated in making a forest survey of the Ohio watershed for the Pittsburgh Flood Commission. The best maps available were obtained and taken into the field. From roads traveled, from hilltops and other points of observation, the forest areas were sketched on the maps and then the areas computed and tabulated. This method of mapping resulted in more accurate figures for forest areas than anything else available up to that time.

Two

In 1919 the Chief Forest Fire Warden, who had assisted in the Ohio Valley project, started a project to cover the entire State in the same manner but with some refinements and with a little more intensity. He and District Forester of Potter County, R. Lynn Emerick, obtained a land ownership map from the County Commissioners. With this map and road maps more than 1,000 miles of roads were covered. From then on to about 1926, other foresters worked in other counties until the State was fairly well covered. Some counties were not covered as intensively as others but it was felt that for the first time we had some reasonably dependable facts.

The foresters' maps were forwarded to Harrisburg and there the data were all transcribed to a large scale map of the State. That was the first complete forest map of Pennsylvania. A copy of that map was used in State College Bulletin number 317, "Land Use in Pennsylvania."

It was about 1919 that some satisfactory work was done by several companies doing airplane photographic mapping. The Chief Forest Fire Warden endeavored then to interest various State Departments in having the entire State photographed and photo-mosaics made for use of the Departments of Forests, Highway, Internal Affairs, Public Service Commission, Agriculture, etc. In 1932 he purchased such mosaics for Potter and Tioga Counties for use of the foresters. There were large blocks of State Forest in both counties and there were only two or three topography quadrangles available covering a very small portion of those counties. Good maps were not to be had. It is this type of photo-mosaic that the State should have as soon as possible after the war.

The 1919 to 1926 mapping indicated a forest area within Pennsylvania, of 13,200,000 acres. The foresters broke down that area into four classes. Their estimates indicated approximately 300,600 acres of severely burned land, 1,565,500 acres of burned areas with only worthless weeds and brush, 7,594,400 acres of fairly satisfactory forest growth ranging from sprouts to trees 6 inches in

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FOREST LEAVES

## Nature's Skyscrapers

by THOMAS DUNBABIN, M.A. (Oxon.)

*Australian Journalist*

**A**MONG THE things the Japanese annexed in their southern sweep of conquest was the tallest tree in the world. According to the "British Admiralty Pilot," an unassailable authority on these things, the tree is on Ceram Island, in the Moluccas, Netherlands East Indies, and towers 428 feet above the ground. The "Pilot" does not specify the species of the giant but the chances are that it is a eucalypt.

Presumably the height of the Ceram tree was calculated by British Navy surveyors. Nowhere else in the world has a tree more than 400 feet high been accurately measured. Reports of the existence of eucalyptus (gum) trees 480 or even 500 feet high on the Black Spur in Victoria, Australia, have not been officially confirmed.

A Victorian Government surveyor recorded the height of a mountain ash or swamp gum (*Eucalyptus regnans*) tree on Mount Baw-Baw (Victoria) as 326 feet. This is usually accepted as being Australia's tallest tree. It is a close second to the world's record of 340 feet, held by the great redwoods of California which the Americans call Washingtonia and the English Wellingtonia.

A mountain ash beam 160 feet long and squared to a width of two feet throughout its length was cut at Castra, Tasmania, for the London Crystal Palace Exhibition of 1851. Others among the 350 species of eucalypts or gum-trees—such as blue-gum of Tasmania, the karri of Western Australia, and the stringy-bark of Tasmania—nearly approach the mountain ash in height. The Mallee gum of the arid Australian interior, on the other hand, never grows higher than a dozen feet.

The whole race of eucalypts was originally confined to Australia and the nearby islands, including New Caledonia, New

Britain, New Guinea, the Moluccas and Timor. One isolated species grows on the mountains of Mindanao, in the Philippines. In the past 160 years, however, eucalypts have spread over most of the earth. In 1779 David Nelson, assistant botanist of Captain James Cook's third and last great expedition, brought to England seeds of the stringy-bark from Adventure Bay, Tasmania. Since then eucalypts have been planted far and wide on every continent. They have become the characteristic tree of vast regions in the Americas, Africa, Asia and Europe.

A blue-gum grows beside the Parthenon on the Acropolis at Athens, or did grow there before the war. Blue-gums wave over the Appian Way and spread over the Cam-

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*Eucalypts and ferns near Melbourne, flanking the Acheron Highway.*

JANUARY - APRIL

Three

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JANUARY - APRIL, 1945

## Forests, Soil and Water

AS THIS IS written the Brunner bill, commonly known as the anti-pollution or anti-silt bill, has passed the lower house in the Legislature, and now resides in the Mines and Mining Committee of the Senate where attempts are being made to render it innocuous by amendments. Whatever the opponents may say, such a law, with none of its teeth drawn, is necessary if Pennsylvania is to maintain her position as a state of diversified industry. Pure water is essential for many kinds of manufacturing. Lack of pure streams has forced more than one organization, which wanted to locate in Pennsylvania, to look elsewhere.

It is perhaps unfortunate that so much emphasis has been placed upon the anti-silt features of the bill, and especially regrettable that the anthracite industry has permitted the public to believe that it is the chief opponent of a strong measure. The public relations of the anthracite operators have been none too good for many years, and to permit the public, which unquestionably is rallying behind the bill, to assume that they are united in opposition will result in loss of business after the war. At the risk of show-

ing a division in the industry, it would seem wise for those operators who are not in opposition to make their position clear.

Silt dumping is only one of the types of pollution to be stopped. Industrial wastes and public sewage will be equally taboo. Even though the bill passes without weakening amendments, the streams of the state will never be as clear and pure as they were when the white man came, but at least one will be able to cross the Delaware in summer without becoming nauseated by the stench.

A companion measure, the so-called General Authorities Bill, is equally important because it will enable those municipalities, boroughs and townships, which have exhausted their borrowing power, to set up an Authority under which funds can be raised to construct sewage treatment plants to be self-liquidating through equitable charges on the users of the plant.

Because a municipality has been accustomed to dump its raw sewage into a stream is a weak reason for opposing either H. B. No. 1 or S. B. No. 423. The public accepts as just, charges for electricity, gas and other essentials; it should recognize the need for treatment of sewage as a health measure, if for no other reason.

To some, this Association may appear to be going far afield in supporting these measures. It must be apparent, however, to those who give it thought, that no one of our renewable resources, forests, soil and water, can be segregated and dealt with alone. They are interdependent, one upon another. If our forests are destroyed, our life-giving top soil will soon disappear. If our mountains are denuded, our streams decrease and disappear. Without pure water, top soil and forests, civilization itself disappears. This fact may be vividly verified throughout the pages of history.

The destruction of the life-supporting resources, soil, water and forests, has bred wars and pestilence. The loss is slow and gradual, the results are subtle and insidious. It is time to stop this trend in Pennsylvania.

H. G. M.

FOREST LEAVES

## Conservation Bills Discussed at Annual Meeting

IN LIEU OF the two-day conference planned for Harrisburg, which was cancelled because of War Mobilization Director Byrnes' directive, the annual business meeting of The Pennsylvania Forestry Association was held at 1600 Arch Street, Philadelphia, on February 6. President Thomas, in calling the meeting to order, commented on the increased activity of the Association and urged each member to do his share to aid in the passage of several bills now before the legislature.

The Treasurer's report, which was submitted and unanimously approved, will be found elsewhere in this issue. The Secretary in his report spoke of the excellent work being done by the regional advisory boards and recommended that the number of such boards be increased from three to five in order that more adequate coverage of all sections of the State may be had.

This change submitted in the form of an amendment to the by-laws, which had been approved at the January meeting of the Executive Board, reads as follows:

"That the first sentence of Article 4, Section 1, be stricken out and that the following wording be substituted:—'The State shall be divided into five sections described as northeastern, southeastern, central, northwestern and southwestern, and that an advisory board of eleven members for each section shall be elected at the annual meeting. Should a vacancy occur during the year, the President shall appoint a member of the Association from that section to serve until the next annual meeting.'"

Upon motion by Mr. Woolman, seconded by Dr. Wildman, the amendment was unanimously adopted.

### Community Forests

Secretary Mattoon spoke of the progress in community forest development and specifically mentioned the county forest of 400 acres recently created in Crawford County.

Three school forests in Luzerne and Lackawanna Counties to be planted this spring, on land deeded to the school districts by the Hudson Coal Company, were also mentioned. "It should be remembered," he said, "that the mere acquisition of a tract of woodland, or potential woods, does not justify its classification as a community forest. Unless it is managed to meet the economic or social needs of the community, it is not serving its purpose." Most recent data indicates that 97 forests in Pennsylvania, with an area of 63,979 acres, may fulfill the requirements.

Farm forestry talks were given during the year in several communities and articles on farm forestry have appeared in FOREST LEAVES. In this connection, it is pleasing to note the increased use of material from FOREST LEAVES by newspapers of the State.

Secretary Mattoon also mentioned the tercentenary celebration of the birth of William Penn and the part The Pennsylvania Forestry Association is playing in the development of "Penn's Woods," a 20-acre memorial planting, which eventually will contain one specimen of each species of tree indigenous to the State.

### Legislation

Secretary Mattoon in his report called the Association's attention to several bills before the legislature, and specifically mentioned House Bill No. 1, introduced by Charles H. Brunner, Jr., and referred to the Committee on Public Health and Sanitation. This is commonly known as the "Anti-Pollution Bill" and is the keystone of the conservation program of the Administration. This bill, with certain clarifying amendments, should be passed. While it is not strictly a forestry measure, it is not possible to lose one of our renewable resources and save the others. Therefore, The Pennsylvania Forestry Asso-

ciation should be interested in preserving not only the forests of the State, but also the soil and water. Under this bill it will be no longer possible for industry to pollute the streams with industrial waste, or the municipalities to contaminate them with raw sewage. A companion measure of equal importance sets up Municipal Authorities under which local governmental units may borrow money for the construction and operation of sewage treatment plants on a self-liquidating basis.

There have been several so-called strip-mining bills introduced, the best of which is Senate Bill No. 86 by Senator Thomas and referred to the Department of Mines. The bill at present requires stripping operators to give a bond of \$250.00 for each acre to be stripped and provides for regrading, after the coal has been removed, to such an extent that the original contours will be restored as much as possible. It provides no planting of the area so stripped. A clarification of the regrading section providing for the restoration of the soil to the angle of repose was recommended by Secretary Mattoon. He felt this would be a more suitable method of restoring the land and would make it usable. He also recommended an amendment to provide for planting the area under the direction of the Department of Forests and Waters.

With the passage of these two bills several strictly forestry bills will be considered. The first is House Bill No. 68, introduced by C. E. Moore and Baumunk, and referred to the Committee on Appropriations. This appropriates \$11,000,000.00 to the Department of Forests and Waters for the acquisition and improvement of forest land and recreational areas and for the encouragement of reforestation and silvicultural operations on private lands. This bill should have the active support of the members of The Pennsylvania Forestry Association. Another measure of equal importance is Senate Bill No. 109, introduced by Representative Crowe, and referred to the Committee on Forests and Waters, Game and Fish. This bill clarifies and adds penalties to the present legislation on forest fire hazards. Here-

tofore the Department could declare a certain condition a nuisance, or a fire hazard, and could ask the property owner to abate it, but had little authority to force action. Under this bill if the property owner does not abate the nuisance, the Department of Forests and Waters is empowered to do so and to bill the owner for all costs. This bill, likewise, should have the active support of the Association.

Secretary Mattoon also discussed the bill prepared by the Association entitled, "Minimum Standards of Forest Practices Act," under which the Department of Forests and Waters may divide the State into various districts, in each of which a local committee of forest owners and the public is appointed to draw up minimum standards for the forest areas of that particular district. These are to be submitted to the Department of Forests and Waters and the Forestry Commission and, if they meet with the approval of these two bodies, they are to be promulgated as law by the Governor. This proposed act is now in the hands of the Attorney General for his consideration, and it is hoped that he will approve it, as the Department of Forests and Waters has, and, that it will receive administration support.

Mattoon also mentioned a meeting of representatives of 22 state-wide conservation organizations in the office of the Attorney General, which he attended. This group, with Attorney General Duff, considered many bills and appointed a five-man legislative committee of which Mattoon is a member, to develop public support for worthwhile measures such as those mentioned above. On motion by Dr. Wildman, seconded by Mr. McCaleb, the meeting approved the Association being represented in this manner on the Legislative Committee and authorized the Secretary to speak for the Association.

The Secretary reminded the members that next year will be the 60th anniversary of the founding of The Pennsylvania Forestry Association and recommended that a committee be appointed to plan a suitable celebration on the assumption that condi-

*(Continued on page 14)*

## Plane Tree Disease Control

by JAMES M. WALTER

**T**HE CANKER STAIN disease has killed thousands of London plane trees (*Platanus acerifolia*) within a region that may be bounded by the Atlantic Ocean and a line connecting New York City, Pittsburgh, Pa., Vicksburg, Miss., and Norfolk, Va. This destructive disease is unusually well characterized by blackened, elongate cankers having annual zones  $\frac{1}{2}$  to 2 inches wide beneath which the wood shows reddish-brown to bluish-black discoloration distinctively distributed in radial patterns. Experiments carried out during the past 5 years have shown that the disease can be controlled by relatively simple, inexpensive, and practicable measures. These measures are as follows:

**1. Remove all diseased trees or parts of trees.**

Immediate removal of trees with trunk or extensive large limb infections is important because such trees cannot be saved, and they serve as sources of spread to other trees. Some trees having infections limited to branches may be saved by carefully pruning the affected parts. A clearance of 3 feet between the severing cut and the end of a branch canker nearest the trunk is usually necessary for success in removal of all infected wood. The surgery must be very carefully done to avoid inoculation of the tree at other points.

**2. Avoid all unnecessary mutilation of plane trees.**

The fungus that causes this disease does not enter through undamaged bark. The disease has been spread by boys trying out their knives and scout axes, by lawn mowers that injured buttress roots, and by moving vans that scraped lower branches.

**3. Before using pruning tools in a healthy plane tree, disinfect the tools and all other equipment that has been in contact with an infected tree.**

Pruning saws and climbing ropes are highly effective agencies of transmission. Saws, other cutting tools, soles of climber's shoes, and ladder parts that must come in contact with the tree may be readily disinfected by dipping or thoroughly swabbing them in denatured and rust-proofed alcohol of the type commonly used as antifreeze. Climbing ropes may be disinfected by exposing them to vapor from commercial formaldehyde for 3 hours. Effective fumigation of rope is attained with  $\frac{1}{4}$  pound of formaldehyde spread over about 100 square inches below a false bottom (to keep rope out of liquid) in a tightly capped container of about 10 gallons total volume.

North of the Mason and Dixon Line disinfection of pruning equipment is not necessary during the period Dec. 1 to Feb. 15, provided the wounds are left unpainted, because repeated tests have shown that the fungus is not infectious on open wounds made at that season.

**4. If wound dressing is necessary, use a gilsonite varnish (type covered by Federal Specification TT-V-51) in which phenylmercury nitrate has been mixed in 0.2 percent concentration.**

When fortified with this germicidal chemical, the asphalt paint is unable to carry the fungus. The most damaging and insidious means of transmitting the fungus in pruning operations has been through the use of contaminated wound paint. The can of paint, as handled by the practical arborist, rapidly collects sawdust and fragments of bark and wood, much of it carried in by the brush because of the stickiness of the paint.

**Phenylmercury nitrate is a highly toxic chemical and must be handled with caution!** However, a careful workman can safely mix it with the asphalt varnish by first mulling the fine powder in a small quantity of linseed oil and then thoroughly stirring it into

the varnish. Some people are very sensitive to mercurials carried in oils. Anyone using paint fortified with phenylmercury nitrate in this concentration should wipe away at once all spots that make contact with the skin. Phenylmercury nitrate is not expected to be generally available for uses such as this until the war is over, but small quantities are to be found at some drug stores and laboratory supply houses. The required amount is only  $\frac{1}{4}$  ounce per gallon of the standard specified gilsonite varnish.

Phenylmercury nitrate is not recommended for use with paints based on petroleum-residue asphalt because tests indicate that this combination may be too injurious to the cambium, causing enlargement of wounds. Moreover, a pint fortified with phenylmercury nitrate will not eliminate the need to disinfect pruning equipment. The fortified paint is not thoroughly effective in preventing infection at wounds made with contaminated tools.

5. In so far as possible, restrict pruning of plane trees to the period from December 1 to February 15.

As stated above, the chances of spreading the disease by pruning operations performed during this period are negligible unless a non-antiseptic paint is used. However, all tests on this question have been conducted in the northern portion of the area involved and it is not assured that the results will apply in the Southern States. There are other advantages in winter pruning of plane trees, one of which is avoidance of the discomfort caused the workmen by the stellate hairs from the undersurface of the leaves.

Those concerned with preventing the introduction of the disease into territory where it is not yet established should take care (1) that all equipment is thoroughly disinfected (see 3 for methods) before pruning and repair work is begun, (2) that either completely new painting equipment or paint fortified with phenylmercury nitrate is used for the job, or (3) that pruning be done only during the safe winter period.

The average telephone pole was a tree sixty years old when harvested.

Eight

## Nature's Skyscrapers

(Continued from page 3)

pagna, at the gates of Rome. They were first planted there by the Trappist monks of Tre Fontane, who used them as a protection against malaria. The late Duchess of Portland had a succession of young blue-gums brought from the hot-houses into her great drawing-room at Welbeck Abbey, England. She believed they warded off colds.

A gum-tree grows beside the Killarney Lakes in Ireland. Great eucalyptus forests, planted in the days of the Emperor Menelik whose army overthrew the Italians at Adowa in 1896, surround Addis Ababa, capital of Ethiopia. The Ethiopian magnate Ras Makonnen claimed that he owned 6,000,000 gum-trees. Menelik laid it down that any Ethiopian cutting down a eucalypt before it reached a certain size should lose his right hand. As a result of this conservation policy, the capital has stayed put. Before the eucalypt era, the capital of Ethiopia moved



An axe-man climbing a giant tree in an Australian forest.

FOREST LEAVES

on when handy supplies of timber and firewood were exhausted.

First eucalypts in the United States were Tasmanian blue-gums planted in 1856 at Santa Monica, California. By 1875, Elwood Cooper had 50,000 on his ranch near Santa Barbara. One of these was 42 feet 6 inches high three years and two months after the tiny seed had been planted. A California blue-gum grew 150 feet in 30 years and reached a girth of 16 feet 10 inches. Eucalypts are now widely distributed over the New World from California to Argentina. They flourish in South Brazil and in the remotest villages a couple of miles above the sea in the Bolivian Andes.

They grow in the Old World from Spain to China. In the 1930's eucalyptus oil pressed from the leaves of gum-trees in Andalusia competed sharply with Australian oil on the London market, until 1936, when Franco's rebellion and the activities of Queipo de Llano upset the Spanish trade in eucalyptus oil. Latest news of the eucalypt comes from Turkey. From 1939 onwards



Giant mountain ash at Marysville, Victoria. The highest recorded there is 30 feet 6 inches high.

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blue-gums have been planted in the swamps at Karabujuk and Aynos in Cilicia, near St. Paul's home town of Tarsus. All previous efforts to make any use of these malarial marshes, parts of which are below sea-level, had failed. In April, 1944, the Turks began to cut over the first 140 acres, planted five years ago. The trees are 55 feet high and the 140 acres are expected to give 7,000 pit props and 1,000 tons of firewood.

Extensive planting of eucalypts in Palestine has given rise to the world's record anachronism. In her book on Jezebel, Pamela Fränkau pictures Ahab, on his way home from Sidon, as coming over Mt. Carmel and seeing before him the vast forests of eucalypts. He was 2,800 years too soon. After that A. E. W. Mason's description of the hero of "Fire Over England" as riding through eucalypt forests on the way from Lisbon to Madrid falls flat. He was only 300 years too early.

Some eucalypts, such as blue-gum, red-gum and jarrah, are among the world's hardest and heaviest woods. No matter how dry it is, the wood of the blue-gum sinks in water. For this reason blue-gum piles were sought for the harbor works at Dover, England. Piles swept away by Channel storms would sink instead of floating away and becoming a danger to navigation. Thousands of piles for this work, from 90 to 120 feet long, were cut, squared, hauled out of the forest by teams of 24 oxen and shipped from Koonya on Tasman Peninsula, Tasmania.

## Area of Forest in Penna.

(Continued from page 2)

diameter, and 3,745,400 acres of forest with more than 50% of the area covered with merchantable trees over 6 inches in diameter.

Since 1926 several attempts at revising the forest areas have been made with the idea of using what seemed to be later and perhaps more accurate or complete data but the final results were always close to the 13 million acres of 1926.

Finally in 1937, as a result of the work

Nine

the varnish. Some people are very sensitive to mercurials carried in oils. Anyone using paint fortified with phenylmercury nitrate in this concentration should wipe away at once all spots that make contact with the skin. Phenylmercury nitrate is not expected to be generally available for uses such as this until the war is over, but small quantities are to be found at some drug stores and laboratory supply houses. The required amount is only 1/4 ounce per gallon of the standard specified gilsonite varnish.

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5. In so far as possible, restrict pruning of plane trees to the period from December 1 to February 15.

As stated above, the chances of spreading the disease by pruning operations performed during this period are negligible unless a non-antiseptic paint is used. However, all tests on this question have been conducted in the northern portion of the area involved and it is not assured that the results will apply in the Southern States. There are other advantages in winter pruning of plane trees, one of which is avoidance of the discomfort caused the workmen by the stellate hairs from the undersurface of the leaves.

Those concerned with preventing the introduction of the disease into territory where it is not yet established should take care (1) that all equipment is thoroughly disinfected (see 3 for methods) before pruning and repair work is begun, (2) that either completely new painting equipment or paint fortified with phenylmercury nitrate is used for the job, or (3) that pruning be done only during the safe winter period.

The average telephone pole was a tree sixty years old when harvested.

Eight

## Nature's Skyscrapers

(Continued from page 3)

pagna, at the gates of Rome. They were first planted there by the Trappist monks of Tre Fontane, who used them as a protection against malaria. The late Duchess of Portland had a succession of young blue-gums brought from the hot-houses into her great drawing-room at Welbeck Abbey, England. She believed they warded off colds.

A gum-tree grows beside the Killarney Lakes in Ireland. Great eucalyptus forests, planted in the days of the Emperor Menelik whose army overthrew the Italians at Adowa in 1896, surround Addis Ababa, capital of Ethiopia. The Ethiopian magnate Ras Makonnen claimed that he owned 6,000,000 gum-trees. Menelik laid it down that any Ethiopian cutting down a eucalypt before it reached a certain size should lose his right hand. As a result of this conservation policy, the capital has stayed put. Before the eucalypt era, the capital of Ethiopia moved



An axe-man climbing a giant tree in an Australian forest.

FOREST LEAVES

on when handy supplies of timber and firewood were exhausted.

First eucalypts in the United States were Tasmanian blue-gums planted in 1856 at Santa Monica, California. By 1875, Elwood Cooper had 50,000 on his ranch near Santa Barbara. One of these was 42 feet 6 inches high three years and two months after the tiny seed had been planted. A California blue-gum grew 150 feet in 30 years and reached a girth of 16 feet 10 inches. Eucalypts are now widely distributed over the New World from California to Argentina. They flourish in South Brazil and in the remotest villages a couple of miles above the sea in the Bolivian Andes.

They grow in the Old World from Spain to China. In the 1930's eucalyptus oil pressed from the leaves of gum-trees in Andalusia competed sharply with Australian oil on the London market, until 1936, when Franco's rebellion and the activities of Queipo de Llano upset the Spanish trade in eucalyptus oil. Latest news of the eucalypt comes from Turkey. From 1939 onwards



Giant mountain ash at Marysville, Victoria. The highest recorded there is 30 feet 6 inches high.

JANUARY - APRIL

blue-gums have been planted in the swamps at Karabujuk and Aynos in Cilicia, near St. Paul's home town of Tarsus. All previous efforts to make any use of these malarial marshes, parts of which are below sea-level, had failed. In April, 1944, the Turks began to cut over the first 140 acres, planted five years ago. The trees are 55 feet high and the 140 acres are expected to give 7,000 pit props and 1,000 tons of firewood.

Extensive planting of eucalypts in Palestine has given rise to the world's record anachronism. In her book on Jezebel, Pamela Frankau pictures Ahab, on his way home from Sidon, as coming over Mt. Carmel and seeing before him the vast forests of eucalypts. He was 2,800 years too soon. After that A. E. W. Mason's description of the hero of "Fire Over England" as riding through eucalypt forests on the way from Lisbon to Madrid falls flat. He was only 300 years too early.

Some eucalypts, such as blue-gum, red-gum and jarrah, are among the world's hardest and heaviest woods. No matter how dry it is, the wood of the blue-gum sinks in water. For this reason blue-gum piles were sought for the harbor works at Dover, England. Piles swept away by Channel storms would sink instead of floating away and becoming a danger to navigation. Thousands of piles for this work, from 90 to 120 feet long, were cut, squared, hauled out of the forest by teams of 24 oxen and shipped from Koonya on Tasman Peninsula, Tasmania.

## Area of Forest in Penna.

(Continued from page 2)

diameter, and 3,745,400 acres of forest with more than 50% of the area covered with merchantable trees over 6 inches in diameter.

Since 1926 several attempts at revising the forest areas have been made with the idea of using what seemed to be later and perhaps more accurate or complete data but the final results were always close to the 13 million acres of 1926.

Finally in 1937, as a result of the work

Nine

of the U. S. Agricultural Administration and the Soil Conservation Service, the Pennsylvania Planning Commission and several State Departments, of which Forests and Waters was one, contributed a considerable sum of State money to cooperate in the photographing of the entire State.

In 1940 the U. S. Forest Service began a study of forest conditions in the anthracite region of Pennsylvania. As a part of that work they studied the air photographs and produced forest maps that were reasonably accurate and therefore dependable. Their money for mapping was limited and the Division of Forest Protection of the Pennsylvania Department of Forests and Waters twice during the project arranged that Federal money allotted for protection should be used to complete the 15 county maps needed for that study.

The Division of Protection, believing that the experience gained in mapping 15 counties should be used further, requested that the Forest Experiment Station and the State should take advantage of the experience gained in the anthracite field and carry the study on until a complete tabulation of forest areas in Pennsylvania was available for use. The tables of Circular 25 of the Pennsylvania Department of Forests and Waters are the result.

This tabulation is unquestionably the best set of facts which we have ever had on forest areas. It is based upon a careful study of air photographs and indicates that Pennsylvania has 15,127,640 acres of forest land. The fact remains, however, that even this careful study and its results had some limitations and some possibilities of error. The State Geologist has recently rechecked some of the geologic surveys and indicates that the area figures used by the U. S. Census will have to be revised upward by several thousand acres. In the meantime the figures of the 1940 Census are standard. More accurate mosaic maps on a large scale should be an immediate post-war project. They are needed as a basis for the study of many economic questions.

The next step in a practical forestry program is to complete a revised study of the

amount of wood on existing forest areas, how much is being grown, how much is being cut and wasted and how much additional area should be reforested. When all the forest facts are known a well balanced, forward looking State forest policy can be set up. As long as half truths and guesses are the basis of the forestry program little substantial progress will be made. This is definitely proved by the experience of the last forty years.

## The Finch Family (Fringillidae)

by MARTHA SERENE LEWIS

**T**HE FINCH FAMILY is so big and so varied that it is a great surprise to most of us when we learn that the cardinal grosbeak, our dearly loved red bird, and the despised little english sparrow belong to this same family. There is, however, one common trait, the strong cone-shaped bill so well adapted for crushing seeds. This characteristic of all the finches makes them of great economic value because they destroy weed seeds, as well as some insects.

Every year we are learning to appreciate more and more the usefulness of the sparrows who go about destroying obnoxious weeds even before the seeds are ripe and who continue their work through every season. It is impossible to estimate how many weeds are eradicated by birds, but when we see the flocks that descend upon ragweeds, foxtails, smartweeds and thistles we know that at least some of these plants are not going to be allowed to reproduce.

The largest of all bird families is the finch family, which has about twelve hundred species and subspecies scattered throughout the world, with two hundred in the United States. The other members of this circle, besides the grosbeaks and sparrows, are crossbills, redpolls, buntings, towhees, juncos, dickcissels, pine siskins, longspurs, goldfinches, purple finches and bull finches. Many of these are distinguished for their

(Continued on page 15)

# Roadside Planning in Pennsylvania

by LAURA L. BARNES, Director

Arboretum of the Barnes Foundation, Merion, Pa.

**P**ENNSYLVANIA IS RICH in its many highways connecting its large cities and smaller towns, but often the approach to these is far from sightly. With a little study and forethought, all roads could be made equal in beauty to those winding through our mountainous regions, or beside our flowing rivers and streams.

If the approach to a town is marred by dumps, sign-boards, etc., the impression one gets is not favorable, and is detrimental to the town's progress. Only hardy native trees, indigenous to that particular section, and that will grow under the prevailing conditions, should be selected.

A study should be made of soil conditions, whether dry or moist; whether a tree will grow in full sunshine or if it requires some shade; whether its roots will interfere with drainage or, being fibrous and near the surface, absorb all the moisture; also those trees are unwelcome which mess up the roadway with flowers, leaves or fruit. The altitude and prevailing winds should also be considered; those trees whose branches break easily, or that are easily uprooted, should not be planted. The tree selected should grow and thrive under the existing conditions, and there should not be the expense of replanting, of spraying, or of removing dead or diseased trees, leaving the row broken and unsightly. Some trees will not thrive in an atmosphere of dust and gas fumes, and trees with surface roots that extend to the roadway and that must be cut for road repairs, are doomed from the start.

Evergreens are not appropriate, as roadside trees must be trimmed to a regulated height, and this would deform an evergreen's natural beauty.

There are over one hundred trees native to Pennsylvania, so it should not be difficult to select a species adapted to a particular

environment. They may be planted to frame views, to provide shade, or in rows, as we remember those roads in Europe that were planted with miles of lindens, elms, oaks, etc., the shade of which was so welcome after a hot sunny ride. One species gives uniformity, but naturally we would not want the monotony of all roads planted alike; for that reason, the counties, cities or towns might select the native tree they prefer, that would be most suitable for growing in their section of the state.

Although a few native trees on the following list may have some of the objections mentioned, they may be used for roadside planting.

ACER (MAPLE) platanoides pennsylvanicum pseudoplatanus	GYMNOCLADUS (KENTUCKY COFFEE TREE) dioica
AESCULUS (HORSE CHESTNUT) hippocastanum glabra	LIQUIDAMBAR (SWEET GUM) styraciflua
BETULA (BIRCH) nigra	LIRIODENDRON (TULIP TREE) tulipifera
CARPINUS (HORN- BEAM) caroliniana	MAGNOLIA (CUCUMBER TREE) acuminata
FAGUS (BEECH) grandifolia	PLATANUS (BUTTONWOOD) occidentalis
FRAXINUS (ASH) americana nigra pennsylvanica	QUERCUS (OAK) alba borealis palustris velutina
GLEDITSIA (HONEY LOCUST) triacanthos	TILIA (LINDEN) americana
	ULMUS (ELM) americana

Good roadside planting may thus be an asset to the communities, as well as to the state, lending usefulness and beauty to its environment.

## Tree Insects May Become House Pests

by H. GLEASON MATTOON

**L**AST FALL and winter we received five or six calls from home owners who said their houses were being overrun by pretty little red bugs with gray wings. One woman was particularly annoyed because she had found three in her bed when she pulled back the covers and we don't blame her. Others told of their getting into bureau drawers, milk bottles and bathroom cabinets. All of them, men and women, said they had never seen these bugs before and asked what should be done about them.

Previous to 1890 the box elder plant bug, for that is what this beautiful red insect with red-piped, slate gray wings is, was not known east of Missouri. In the subsequent fifty years it has gradually spread east until it has now reached the Atlantic Coast. Why this insect should take Horace Greeley's advice in reverse has never been understood.

The fact remains that they have become an annoyance not only to trees but to people in New Jersey, Maryland, Ohio and Pennsylvania. In the fall, they congregate in large numbers on the sunny side of the trunk of the tree and as the nights grow colder they seek protected places in stone walls or more especially in houses to spend the winter. Though they are nearly one-half inch long they are so flattened they can crawl through the smallest crack around doors or screens.

The box elder plant bug sucks the sap from several kinds of trees but appears most numerous on box elder, sometimes called ash-leaf maple. The female bug lays numerous eggs in the summer and prefers to deposit them on the seed of the box elder tree. Since box elders are dioecious, that is there are male and female trees, by removing the female trees which produce the seeds the number of plant bugs will be reduced. Spraying the insects when they gather on the trunk of the tree with a pyrethrum spray or hot water will kill many.

Another tree insect which at times be-

comes a household annoyance is the elm leaf beetle. This imported European pest has killed more elms in this country than the Japanese beetle, Dutch elm disease and the Ohio elm virus combined. This one-quarter inch long beetle, greenish-yellow in color, with black eyes, a black dot on its head, and a black stripe down its back, feeds on the foliage of elm trees in the adult stage and, also, has an unattractive yellow and black grub. Since it has been in this country 100 years, native parasites periodically reduce the number. During the last few years it has been on the the ascendancy and more elms will die from its depredations.

Last winter we had a call from a woman in Harrisburg who brought samples of this insect to us for identification. She said she had swept up at least a bushel of them in her house. This is understandable because the elm leaf beetle was unusually plentiful in Harrisburg last year. Like the box elder plant bug it seeks a protected place in which to hibernate. A heated home being warmer than crevices in stone walls or outbuildings would be an inviting winter resort for this beetle.

While our minds are so much with our sons and brothers in the four corners of the globe, it is not without effort that we bring them back to considering such mundane and routine things as spraying our elms to save them from another European peril, but it should be done. There are 40,000,000 elms in Pennsylvania. We cannot spray all of them, but those we have planted in adverse locations (every lawn is an adverse location) are especially inviting hosts to the elm leaf beetle. These should be sprayed in early May, using three pounds of arsenate of lead plus a good sticker to one hundred gallons of water. If a thorough job is done, this spray should stay on the tree long enough to repel the Japanese beetle when it emerges to feed in late June.

While the box elder plant bug and the elm leaf beetle are annoying when hibernating in the house they do no feeding contrary to the belief of some. If they did as much damage as clothes' moths, buffalo bugs or silver fish and appeared in such numbers householders might well be alarmed.

## Pennsylvania Nut Growers' Association

A Practical Body of Nut Growers Whose Aim Is to Stimulate Greater Interest in Nut-Tree Planting



Black Walnut Kernel

### Resolution by the Pennsylvania Nut Growers' Association

January 11, 1945

This country imports many million dollars worth of nuts in every year.

Some of our states produce nut crops valued at millions. The State of Pennsylvania is naturally a forest covered land with many species and varieties of wild nut trees—Black Walnuts, Butternuts, Shagbarks, Shellbarks, Hazel Nuts, Chinkapin, The Quercus Muehlenbergii Oak that bears sweet acorns, and also many valuable trees of introduced Persian (English) Walnuts, Japanese Walnuts, Pecans and Chinese Chestnuts.

The locality of Grenoble in France has thousands of English Walnut trees and a very valuable money crop because one man named Mayette found one unusually good English Walnut tree and learned how to propagate it and started an industry. His neighbor copied.

With our great variety of soils and climates, Pennsylvania may easily exceed any other state in the variety of nut crops that can be grown within its borders.

The Pennsylvania Nut Growers' Association strongly recommends that Pennsylvania State College assign at least one man to devote his entire time to investigation and experimentation with nut trees and to the promotion of the nut industry in this state. Some of our members have been interested in this matter for many years and we are convinced that this field may have even greater importance if there can be a few nut

trees about the buildings and fields of tens of thousands of farm homes.

The childhood memories of gathering chestnuts and walnuts are precious. Such memories help to build up the spirit that makes strong rural communities.

We also urge that our Association may be consulted on matters of personnel and policy with regard to this important work.

## Grow More Butternuts

by R. L. WATTS

**M**Y INTEREST IN butternuts was nurtured when, as a small boy, I visited my grandparents who lived on the Susquehanna River in Clearfield County, Pennsylvania. After the usual exchange of comments about farm topics of interest to a lad, grandmother would remark, "Ralph, you will find a hammer and small bucket on the sill in the wood-house and there are plenty of butternuts on the loft," and she generally took the precaution by adding, "Don't forget to put the hammer and bucket back on the sill." A few minutes later I could be seen perched on top of a huge rock having the time of my life. Then, as now, butternuts failed some years but whenever there was a crop I always gathered a winter's supply.

Very unexpectedly my interest in butternuts burst into new enthusiasm in 1937. I had gathered half a bushel or more from a tree growing in Clinton County, Pennsylvania. When cracking them the following winter, I was delighted to find that at least 50% of the kernels came out in unbroken halves. Although the nuts were small, it did not take long to crack a pint jar full of bright delicious kernels. Some of them were sent to Dr. C. A. Reed, nut specialist of the U. S. Department of Agriculture, who with Dr. Zimmerman and Dr. Lewis E. Theiss, pronounced them high in crackability. Scions were sent to J. F. Jones for propagation but unfortunately, in spite of his well known ability in nursery practices, they failed to grow. The following summer this tree was destroyed by a storm, but it is gratifying to know that a sprout of the parent tree is now

large enough to furnish new wood for grafting purposes, and some will be sent to our Secretary, John W. Hershey, to Dr. J. Russell Smith, and to S. H. Graham, butternut grower of Ithaca, New York.

Last fall I had the great pleasure of collecting butternuts from 19 trees growing along Kettle Creek in Clinton County, Pennsylvania. The crop was light, although ample in yield for observation. Numbers were painted on the trees which correspond with the numbers on the bags of nuts. After drying, the nuts were carefully examined and cracked, and although I found one tree of considerable merit, it was apparent that no sample was equal to the nuts harvested from the tree previously mentioned, named Creighton for the farmer on whose place it was found.

In reviewing the sparse literature relating to butternuts, we find that a large number of selections have been discovered and named. The 1937 Year Book of the U. S. Department of Agriculture lists 18 varieties, namely, Aiken, Alverson, Baker, De Van Hostetter, Irine, Kenworthy, Lingle, Love, Luther, Mitchell, Robinson, Sherwood, Smith, Thede, Thill, Utterback, and Wright. Six of these were exhibited in various contests of the Northern Nut Growers Association and Baker and Irine won first prizes.

Craxey is a catalogued variety recommended by H. P. Burgart of the Michigan Nut Nursery at Union City. Weschcke is considered a superior selection named in honor of Carl Weschcke, President of the American Nut Growers' Association.

S. H. Graham, of Ithaca, New York, has three varieties which he considers of real merit. Besides Craxey, the Kinneyglan is a "heavy and regular bearer of good sized nuts. It is an extra good cracker but not perfect." Ivanhall is recommended by a friend of Mr. Graham. Edge is recommended by J. N. Gellatly of Westbank, British Columbia. Paul A. Dow, of Middlebury, Vermont, has two or three selections which he considers of value. Deming is a good selection growing on the farm of John W. Hershey.

We have mentioned about 25 named vari-

eties and no doubt there are many other seedlings of special merit which have not been discovered and brought to the attention of nut growers. Now, let us assume that all of the named varieties were propagated and catalogued by the nut nurseries, where are the wise men who can give sound counsel relating to the best varieties for planting? Which ones produce the heaviest crops, which are the most regular bearers, the easiest cracked, the largest kernels, the best flavor, etc.?

Has not the nut situation reached a point when our State Agricultural Experiment Stations should establish nut nurseries and orchards so that dependable information will be available to future planters? The last word on the propagation of butternuts has not been said. This is a very important field for study. The main reason why nurseries do not offer for sale named varieties of butternuts is because of difficulties involved in grafting or budding them.

The butternut is not free from the ravages of insects and diseases. The circulio is a very serious pest and methods of control should be studied.

The Pennsylvania Nut Growers' Association is to be commended for passing strong resolutions urging the State Experiment Station to establish a comprehensive program of nut investigations. Nut trees are found in every county and the whole field offers great possibilities from the standpoint of both aesthetic and commercial values.

#### CONSERVATION BILLS DISCUSSED AT ANNUAL MEETING

(Continued from page 6)

tions might be so changed as to make such a celebration possible.

#### Election of Officers

Mr. E. F. Brouse, chairman of the nominating committee, presented a slate of officers, directors and advisory board members for the coming year. There being no additional nominations, Mr. Worrell moved that the Secretary cast a unanimous ballot for the slate as presented. The following were elected:

Honorary President, Samuel L. Smedley; President, Wilbur K. Thomas; Vice-Presidents: Victor A. Beede, W. Gard Conklin, Dr. G. A. Dick, W. S. B. McCaleb, A. C. McIntyre, Mrs. E. S. Neilson, Dr. J. R. Schramm, Dr. E. E. Wildman, George H. Wirt, Edward Woolman, Mrs. Robert C. Wright.

Executive Board: E. F. Brouse, John W. Hershey, P. A. Livingston, Hardy L. Shirley, Leighton Stradley, Joseph J. Tunney. Secretary, H. Gleason Mattoon; Treasurer, Roy A. Wright.

#### NORTH CENTRAL ADVISORY BOARD

H. F. Alderfer .....State College  
W. G. Edwards .....State College  
E. O. Ehrhart .....Johnsonburg  
H. E. Elliott .....Coudersport  
Hon. Henry Hipple .....Lock Haven  
Robert R. Lyman .....Roulette  
Sterling McNees .....Harrisburg  
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George W. Reily .....Harrisburg  
A. F. Snyder .....Dushore  
R. D. Tonkin .....Tyrone

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Donnell Marshall .....Pottstown  
Stanley Mesavage .....Wilkes-Barre  
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C. N. Myers .....Hanover  
Edward C. M. Richards .....Westtown  
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J. B. Stoltzfus .....Gap  
Col. Laurence H. Watres .....Scranton  
R. C. Wetzel .....Wyomissing  
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C. M. Bomberger .....Jeanette  
C. F. Chubb .....Coraopolis  
Miss Margaret Coulter .....Greensburg  
Hon. James H. Duff .....Carnegie  
Dr. Robert B. Greer .....Butler  
Dr. O. E. Jennings .....Pittsburgh  
Hon. James A. Kell.....New Alexandria  
Mrs. John W. Lawrence .....Sharpsburg  
J. O. Miller .....Pittsburgh  
J. B. Morrow .....Pittsburgh  
John N. O'Neil .....Washington

To conform to the amended by-law, there will be some re-arrangement of members of the Advisory Boards. This will be done by appointment by the President.

## The Finch Family

(Continued from page 10)

beauty in form and color, as well as for their lovely songs.

General favorites are the song sparrow, fox sparrow, junco, indigo bunting, towhee, rose breasted grosbeak, purple finch, and goldfinch. I have known many persons who have taken up the study of birds after their first glimpse of the cardinal. His brilliant plumage, cheerful song, and quick friendly response to human attention probably have won him more friends than any other bird in Eastern Pennsylvania. When his loud clear whistle is heard in late February then we know that Spring is not far away. As a father and husband he is outstanding in his care of both mate and children.

One year a pair of cardinals built their nest in a privet bush, just outside our hall window in plain view from the stairs. The male was untiring in his devotion during the first sitting and while the young ones were still in the nest. As soon as the three little yellow birdlings were able to run about he would lead them under the window where we kept a supply of sunflower seeds and bread crumbs. The female, at the same time, was hatching a second brood in the same nest, and seemed to receive as much attention from her lover as when rearing the first family. That was twenty years ago and since then every winter several cardinals demand from us their daily food.

"Everybody's darling" is another name for the song sparrow whose music is one of the first joys of Spring. Ernest Thompson Seton speaks of its merry chant as "the sweetest of the familiar voices of the meadow lands." Probably many others would agree with him, but to me the fox sparrow's song has a melody unsurpassed by any other sparrow. In "Birds of America," it is described as "a series of whistled notes in descending intervals . . . with the notes prettily slurred together like those of the warbling birds . . . heard when the birds are foraging in little flocks."

England has a post-war reforestation program which will provide full employment for 50,000 men.

# Treasurer's Report

## RECEIPTS AND DISBURSEMENTS

YEAR ENDED DECEMBER 31, 1944

### RECEIPTS

Cash Balance, December 31, 1943		
General Fund	\$ 427.84	
Community Forest Fund	1,695.00	
		2,122.84
RECEIPTS:		
Dues	2,214.50	
Forest Leaves	34.65	
Rent	180.00	
Reprints	11.00	
Wheel of Fortune	6.60	
Income from Investments	611.00	
Life Memberships	240.00	
Special Activities	2,226.00	
Total Receipts	5,523.75	
Total	\$ 7,646.59	

### DISBURSEMENTS

Rent	\$ 540.00	
Telephone	138.28	
Office Expense	117.53	
Traveling Expenses	533.37	
Stationery and Printing	575.06	
Forest Leaves	732.95	
Postage	250.41	
Salaries	\$2,731.65	
Less: Tax Deductions	384.70	
	2,346.95	
Collector of Internal Revenue	384.70	
Miscellaneous Expense	99.28	
Special Activities	300.72	
Life Membership—Transfer	240.00	
Total Disbursements	6,259.25	
Balance, December 31, 1944	\$ 1,387.34	

### SPECIAL ACTIVITIES ACCOUNT

Balance,		
December 31, 1943	\$ 1,695.00	
Receipts—1944	2,226.00	
	\$ 3,921.00	
Less:		
Salary	\$1,241.65	
Miscellaneous Expenses	300.72	
Traveling Expenses	226.92	
	1,769.29	
Balance,		
December 31, 1944	\$ 2,151.71	

### INVESTMENT ACCOUNT

BALANCE SHEET—DECEMBER 31, 1944

#### ASSETS

Cash—		
The Cheltenham National Bank	\$ 748.82	
Securities	14,105.51	
	\$14,854.33	

Sixteen

### LIABILITIES

FOREST LEAVES FUND	\$ 2,818.88
GENERAL FUND	490.28
LIFE MEMBERSHIP FUND	\$8,215.17
Additions During 1944	240.00
	8,455.17
M. H. HANSEN—BEQUEST	3,000.00
LOUISE A. MCDOWELL—BEQUEST	90.00
	\$14,854.33

## FOR SALE

DOGWOODS  
WISTERIAS  
PERENNIALS  
JAPANESE MAPLES

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**Cherry Trees on Mazzard Roots**  
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Easily grown, heavy yielders. Northern strains Plant in the dooryard for Beauty - Profit - Shade - Nuts - Fun. Send postcard today for FREE booklet and price list on English Walnuts, Stabler Black Walnuts, etc. Excellent for ornamental purposes. I have experimented with nut trees for over 44 years.

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DOWNTOWN, PA. Box 65F

FOREST LEAVES

# Simple Arithmetic . . .

The PENNSYLVANIA FORESTRY ASSOCIATION now has members.	1200
If each of the present members secured	2
new members, the Association would have	2400
new members, or a grand total of members.	3600
The Association's annual income is now	\$ 5,500.00
2400 new members at \$3.00 each, would add	7,200.00
Making a total annual income of	\$12,700.00

With less than \$12,000 the Association cannot carry on the activities for which it was founded.

Won't you do your part?

## The Pennsylvania Forestry Association

Organized in 1886  
1008 COMMERCIAL TRUST BUILDING  
PHILADELPHIA 2, PA.

To support the activities of The Pennsylvania Forestry Association for the preservation of forest lands for wood production, outdoor recreation, regulation of stream flow and prevention of erosion, I enclose \$..... to cover membership for the ensuing year.

Membership Classes	Name
Annual member .....	.....
Club membership .....	.....
Sustaining member .....	.....
*Contributing member .....	.....
Life member .....	.....
Perpetual member .....	.....
Date..... P. O.....	
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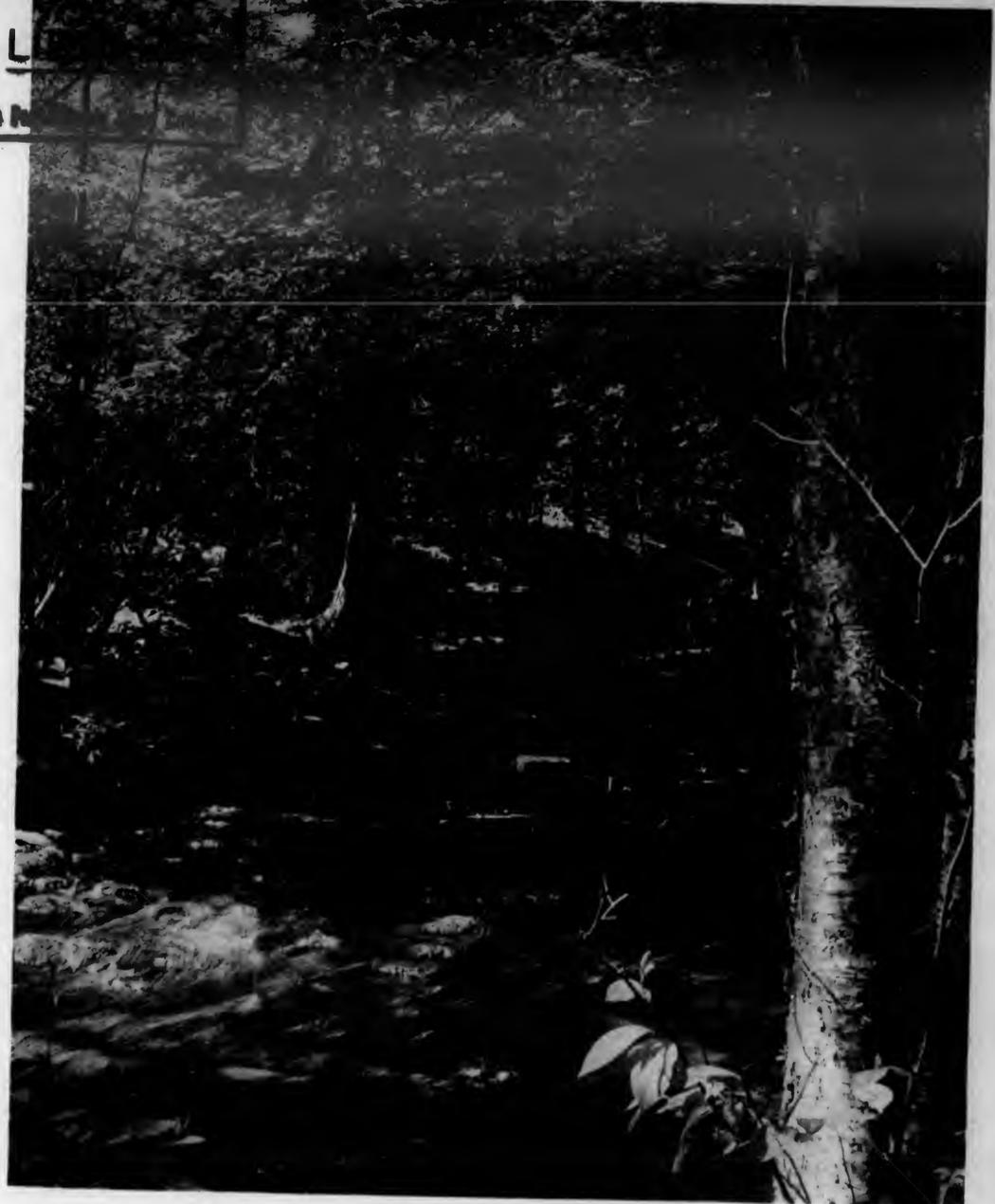
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# FOREST LEAVES

DEPT. OF FORESTRY



THE PENNSYLVANIA FORESTRY ASSOCIATION

MAY-JUNE  
1945

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DEPT. OF FORESTRY  
LEAVES  
The Pennsylvania Forestry Association



THE PENNSYLVANIA FORESTRY ASSOCIATION

MAY-JUNE  
1945

LIVINGSTON PUBLISHING CO.  
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INTENTIONAL SECOND EXPOSURE

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### THE PENNSYLVANIA FORESTRY ASSOCIATION

*Founded in June, 1886*

Labor to disseminate information in regard to the necessity and methods of forest culture and preservation, and to secure the enactment and enforcement of proper forest protective laws, both State and National.

#### ANNUAL MEMBERSHIP FEE, THREE DOLLARS

Which includes subscription to FOREST LEAVES

Neither the membership nor the work of this Association is intended to be limited to the State of Pennsylvania. Persons desiring to become members should send their names to the Chairman of the Membership Committee, 1008 Commercial Trust Building, Philadelphia, 2.

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# FOREST LEAVES

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## A Forest Program for Pennsylvania

PENNSYLVANIA, RENOWNED for its great coal, steel, metal working, textile, and general manufacturing industries, is also an important timber producing state. From its 15 million acres of commercial forest land, close to a half billion board feet of lumber is cut annually as well as vast quantities of round products for fuel, pulpwood, mine timbers, and chemical wood. These important quantities of timber products come from forest lands that have undergone decades of abuse, through overcutting and fire, and even today for the most part have only a limited amount of forest care.

Maine, with only 16 million acres of forest land, recognizes timber as literally the support of her state's economy. Pennsylvania's forests are no less productive and are utilized even more intensively than Maine's, but because other industries overshadow the timber industries, the latter receive secondary public consideration. Aside from timber products, Pennsylvania's forests are intensively used for recreation, for the production of useful wildlife, and for the protection of watersheds important to industrial and municipal welfare. The proper protection and development of Pennsylvania forest resources is therefore a matter of concern to all citizens.

A great deal has already been accomplished towards rescuing Pennsylvania's forests from the threatened ruin they faced at the turn of the century. At this time logging of the original virgin timber was still in process. Fires raged unchecked and no concerted effort was made to check the rapid despoilation of the remaining forest area. But fire control has been introduced and, over most of the state, has been made effective. Some industrial landowners have introduced good forest practice. Many farmers, aided by the State District Foresters, extension foresters, farm foresters, Soil Conservation District technicians, and others have adopted good cutting practices. Close to 3,000,000 acres of land have been purchased for public forests and

game lands. Much has been accomplished; much remains to be done.

According to the most recent estimates, Pennsylvania has 15,127,640 acres of forest land, or 52 percent of its total land area. More than 14,000,000 acres are in forest tracts 50 acres and larger in size; approximately 750,000 acres are in tracts 10 to 50 acres in size; and 250,000 acres in tracts under 10 acres in size. Of the total forest area, 10 percent is estimated to contain saw timber in stands averaging 2,000 board feet per acre and greater; 44 percent cordwood; 23 percent young growth; and 23 percent is poorly stocked or non-restocking. Of the total forest land, 500,000 acres are in federal ownership; 2,485,000 in state, county, and municipal ownership; 2,936,000 in farm ownership; and the remainder in other private ownership.

During the past ten years, fires have burned over considerably less than one percent of the total forest area. Direct fire damage and the costs of protection and suppression total between \$400,000 and \$800,000 annually.

The total volume of timber standing on Pennsylvania's forests is estimated at approximately 7 billion board feet, and 70 million cords in pole sized timber. The current growth rates are low, not because the forest land is intrinsically low in productivity, but because so much of the timber land is stocked only with young growth and so little with saw timber, which on the whole grows the most rapidly. The total growth is estimated to be 226 million board feet, and 5 million cords. The total drain is 602 million board feet and 2 million cords. In other words, saw timber is being cut 2.66 times as fast as it is growing; cordwood, only .42 as fast as it is growing.

For the year 1939, forest products industries in the state employed regularly more than 78,000 men and turned out annually products valued in excess of \$350,000,000. This is exclusive of the men employed in the woods to cut and skid the logs and of the employment in cutting

mine timber, ties, fence posts, pulpwood, veneer bolts, and so forth. Altogether, it is estimated that the products from Pennsylvania's forests provide jobs for over 100,000 men annually.

Aside from the commercial output, Pennsylvania forests are dotted with over 6,000 ponds and lakes, shelter 100,000 miles of fishing streams, furnish restful sites for thousands of summer homes, and lure more than 10,000,000 people annually into their soothing vastness for recreational purposes.

Timberland owners in Pennsylvania, therefore, are in the most part blessed with productive forest soils, with a rich variety of our country's best hardwoods and softwood timber species, with the nation's most intensive markets for forest products, and with a climate conducive to rapid timber growth. Pennsylvania's forests could and should be well managed. If they were well managed, ultimately their productivity could be at least double what it is today. The Pennsylvania Forestry Association wishes to see the Commonwealth's forests well managed for all the many products they can furnish. It believes that the Commonwealth's forests should produce the bulk of the wood required for the State industries. It would like to see new industries established to use wood that today goes to waste. It believes that much timber waste can be avoided and returns to land owners, workers, and industries increased by developing integrated use of all forest products as opposed to single industry use or competitive use that prevails throughout most of the state today. It would like to see industries and communities that depend upon timber products guaranteed a stable future through sustained yield forest crops. The Association wishes to see the recreational value of the forests enhanced, to see their wildlife population increased, and the soil and watersheds well protected.

The Association realizes that forest productivity cannot be doubled over night, nor can all these other desirable goals be achieved in a short time. It believes, however, that progress towards these goals can be made at a far more rapid rate than is now the case. It is anxious that the Commonwealth take bold, aggressive steps to realize the full productive capacity of Pennsylvania's forest land. At the same time, it wishes particularly to emphasize that in achieving these potentialities we retain for the individual landowners, timber operators, forest workers, and local government the maximum possible freedom of action and the greatest possible public consideration of their individual and collective interests.

Private ownership controls 80 percent of the state's forest land today and is probably destined to continue indefinitely to hold the bulk of the forest area. Yet rare indeed are the for-

Two

est owners who know how much timber they have, how it is growing, or how much applied forest management could enhance their income. Timber growing as a business enterprise is practically unknown except for a few industrial holdings. The Association favors programs to place timber growing in the category of calculable business risks, recognizing that all features of silviculture, forest finance, and forest management must be worked out by painstaking research, and demonstrated on a practical scale before this can be fully achieved. It recognizes also that public aids to private owners may be the cheapest and most effective manner in which to achieve good forest management on much of the land. Where public ownership is needed because the timber is in too poor condition to yield a profit to the private owner, and where public aids to private owners are to be administered, the Association favors community and county action as opposed to state or federal action wherever local action can be effective.

The Association does not feel, however, that it is in the interest of private owners, local communities, or the Commonwealth to postpone indefinitely action by state and federal authorities while awaiting action by the local citizenry. Instead, it favors the general plan of cooperative action between the federal and the state and between the state and the local authorities to achieve these desirable goals. Such cooperative action has many of the advantages of uniform policy and standards realizable by state authorities, together with the flexibility and intimate integration of action with local needs that is possible only when local citizens have a hand in the affairs of public action agencies.

The Association recommends the early adoption of the following specific forestry measures:

1. Stop the clearcutting of immature timber. The Association believes that the clearcutting of immature timber is wasteful of timber, manpower, transportation, and forest productivity. Such clearcutting is unnecessary to meet the needs of Pennsylvania's industries; in fact, it has the opposite effect. It supplies only those industries that can use the smallest products and robs others of the large sized timber products which they require to remain alive. It substitutes low value use for high value use. low forest productivity for high forest productivity, low wages for potentially high wages, and perpetuates timber scarcity and forest deterioration. The Association recommends that the state adopt some simple but effective cutting practice rules that will prevent the indefinite perpetuation of forest depletion.

2. A comprehensive inventory of land resources of the state. The Association urges appropriate public agencies to conduct an in-

(Continued on page 15)

FOREST LEAVES

## Woody Plant Pest Council Needed

by H. GLEASON MATTOON

THE LATE FREEZES, high winds in May, and the deficiency in rainfall, (strange as it may seem, we have, as this is written, in the vicinity of Philadelphia an accumulated deficiency of 12% since January 1) have all affected plant growth adversely. In the northern part of the state freezing weather in early May, following an abnormally warm March, killed the new growth on many oaks, tulip trees, hickories, black walnuts, and others. Both the sycamore, *Platanus occidentalis* and the London plane tree, *Platanus acerifolia*, suffered greatly in all sections. Scarcely a tree can be found on which some of the early growth has not been killed.

Maples, particularly the sugar maple, have been attacked, in some cases severely, by one or more leaf spot diseases. Defoliation may occur, which naturally will weaken the tree, making it more susceptible to attack by other enemies. Beeches likewise present an unhealthy appearance. Leaf mottle and scorch have curled and browned the foliage. In the Harrisburg area new growth on Japanese yews was largely killed by late frosts.

### Insect Damage

Many Scotch pines will be seriously damaged this year by an unusually heavy spittle bug infestation. Each of the white froth-like accumulations at the base of needles contains an insect which sucks the sap from the twig. When plentiful they weaken some of the branches so much they die.

By the time this appears young caterpillars of the insect, commonly known as the bagworm, will be feeding on the foliage of trees. When young they are so small they are difficult to see, but by Fall the bags made of pieces of the foliage on which they feed, are familiar sights, particularly on arbor vitae and junipers. This insect attacks many other trees such as apple, oak, maple, willow and sycamore. In the Fall, after mating, the female moth lays as many as 1500 eggs in the bag from which she has emerged.

Dead limbs on elms, from which the bark appears to have fallen in small plates, are frequently caused by the elm bark borer. The infestation in Pennsylvania is heavy. While these insects damage trees, the most alarming aspect of the infestation, is the danger that Dutch elm disease may become epidemic, because the bark borer is a carrier of the disease.



Spittle bug on pine. Adult shown in insert.

These troubles are all apparent to the casual observer. Less in evidence, but nevertheless equally destructive, are several other fungi and insects; Verticillium wilt on maples, Sphaeropsis canker on oaks, saw flies, twig pruners, leaf spots, Japanese scale, European softscale, shoot moth, elm leaf beetle. The list could be enlarged many times without including all that might be found in one square mile of any suburban area.

The control of insects and diseases injurious to shade and ornamental trees has become an extensive business. Tree owners in Pennsylvania spend several million dollars annually striving to combat bugs and blights. In woodland and forest areas the destruction by insects and diseases is greater than that by fire.

### Woody Plant Pest Council

Because of these conditions and because the war has forced cessation of much of the federal

(Continued on page 12)

MAY - JUNE

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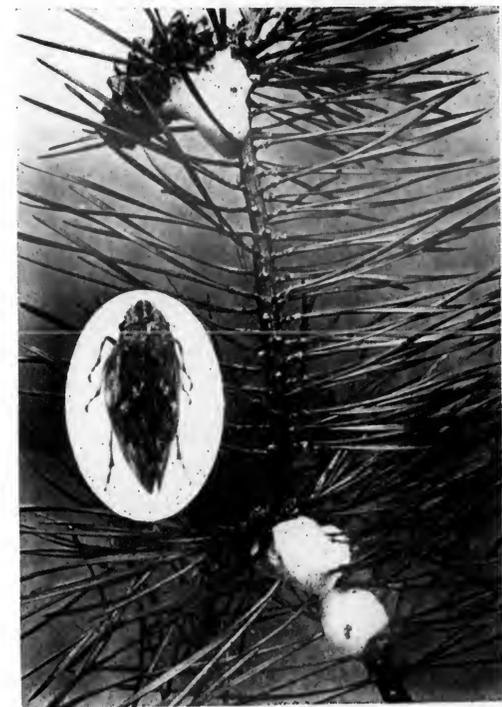
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Published Bi-Monthly by

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Disseminates information and news on forestry  
and related subjects.

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MAY-JUNE, 1945

## Is DDT a Blessing?

DDT, the super insecticide with the long name, has received so much publicity that the tree owner and insect hater is looking forward to its availability with unmixed joy. To him it is a panacea for all insect ills.

On the other hand entomologists, ornathologists, botanists and others are seriously concerned about its general use. When a news item, announcing the complete control of gypsy moth in a test in northeastern Pennsylvania also stated that "no insects or birds were observed in the area for nine weeks after the application," the question naturally arose as to the effect upon the pollination of flowers and the production of seed. What happened to the birds? Were they killed or driven elsewhere? Nature's balances are intricate and delicate. Will their disruption be more destructive than the one exotic insect it controls so thoroughly?

That DDT has been a blessing to the members of the Armed Forces because of its lethal effect upon body lice, mosquitoes, and other "bugs" that transmit disease, cannot be doubted. But promiscuous and unintelligent use of so powerful a weapon carries with it great and far reaching dangers. Ninety percent of the insect world is beneficial to man. Without these friendly aids, life would become intolerable and food would disappear. Continued research is necessary to learn the ramifications of the effect of DDT upon natural processes. Continued publicity and caution are also needed.

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DDT is but one of several new insecticides and fungicides resulting from war stimulated research that will soon be available for general use. War may also have brought to these shores new insects and disease, which we shall have to fight. Because of the disruption of the normal development in pest apprehension and control, The Pennsylvania Forestry Association has organized a statewide Woody Plant Pest Council, composed of plant pathologists, entomologists, botanists, foresters and other scientists, who have agreed to furnish authentic, factual information on this important subject to members of the Association. A detailed statement of the plan appears on another page of this issue.

\* \* \*

Elsewhere in this issue appears a synopsis of several new laws bearing on the wise use of our renewable resources, which were passed at the recent session of the General Assembly. That so much worthwhile legislation was enacted is due in large measure to the courageous stand taken by Governor Martin and Attorney General Duff. Without their unswerving support, even though the proposed law affected industrialists and others who had been their backers, the pure streams bill, the strip-mining reclamation measure and similar laws could not have been passed.

Every conservationist, every hunter, fisherman, forester and recreationist, owes to Governor Edward Martin and Attorney General James H. Duff a debt of gratitude. May they continue in public life. Theirs is the sincerity, honesty and forthrightness needed in public office.

\* \* \*

One year ago the Policy Committee of the Association was revived and reconstituted for the specific purpose of preparing for the consideration of the Executive Board, a forestry program in Pennsylvania. The members of that committee are Dr. Hardy L. Shirley, at present Director of the Northeastern Forest Experiment Station and newly chosen Dean of the New York State College of Forestry at Syracuse, E. F. Brouse, District Forester, and Professor Victor A. Beede, Head of the School of Forestry, Pennsylvania State College.

Elsewhere in this issue will be found their report entitled, "A Forestry Program for Pennsylvania." It is hoped that the members of the Association will study this report. Criticisms and suggestions are invited.

H. G. M.

Waterproof matches, used in jungle areas and at sea, will light after being under water many hours.

FOREST LEAVES

## Forests and Waters Bills Enacted By the Legislature

IN THE RECENT session of the General Assembly of the Commonwealth of Pennsylvania several bills actively supported by The Pennsylvania Forestry Association were enacted. In fact, this might be called a conservation legislature because more measures were passed for the protection or improvement of the renewable resources, forests, water and soil, than in any other previous biennium.

A synopsis of the new laws is presented below:

HOUSE BILL No. 1. This is the much discussed pure streams bill which was finally enacted without weakening amendments for the purpose of improving the purity of the waters of the Commonwealth, protecting public health, animal and aquatic life, and for industrial consumption and recreation. It authorizes the State Sanitary Water Board to set up standards of purity and forbids continued pollution of the streams. This bill was approved by the Governor May 8.

HOUSE BILL No. 66. An appropriation to the Department of Forests and Waters of \$1,000,000 for the improvement and development of the Ports of Philadelphia, Chester, Pittsburgh and Erie.

HOUSE BILL No. 67. An appropriation to the Department of Health of \$12,325,000 for the payment of a share of the cost of preparing plans and surveys for sewage or industrial waste, for sealing abandoned coal mines, for stream clearance and for experimental and research work relating to the pollution of streams and the prevention thereof.

HOUSE BILL No. 68. An appropriation to the Department of Forests and Waters of \$18,500,000 for acquisition of forest land and the development and use thereof, for reforestation, for the work of the Department with respect to forests and forest land. Acquisition of lands, buildings or other properties for State Parks and for the development thereof, and for the development and improvement of stream channels, for the construction of dams to create lakes and other stream clearance for flood control and for encouragement of proper forest practices by private land owners. For payment by the Commonwealth of a share of the cost of preparing plans and estimates for the construction of plants for the treatment of industrial waste and for the payment of a share of the cost of constructing such plants, for conducting experiments and research to determine approved methods for con-

trolling stream pollution and treating acid mine drainage and industrial waste, and for the purchase or condemnation of lands, easements or right of ways and the acquisition or construction of pipes, conduits, drains or tunnels and pumps and pumping equipment.

HOUSE BILL No. 94. An appropriation to the Department of Forests and Waters of \$300,000 for the use of the Pennsylvania State Park and Harbor Commission at Erie.

HOUSE BILL No. 119. This act provides for the construction and maintenance of roadside rests adjacent to State highway routes by the Department of Highways. The cost of planning, acquisition, construction and erection of any rest shall not exceed \$2500. The cost shall be paid out of moneys in the Motor License Fund and such moneys as may be necessary for this purpose are not to exceed \$150,000.

HOUSE BILL No. 434. An appropriation to the Department of Forests and Waters of \$10,000 for the acquisition of land within the limits of Bucktail State Park.

HOUSE BILL No. 631. The Ohio River Valley Water Sanitation Compact for the prevention, abatement and control of pollution from the rivers, streams and waters in the Ohio River Drainage Basin and making the State of Pennsylvania a party thereto. Approved by the Governor, April 2, Act No. 50.

HOUSE BILL No. 662. Promotes interstate co-operation for the conservation and protection of water resources in the Delaware River.

HOUSE BILL No. 1068. An appropriation to the Department of Forests and Waters of \$5,000,000. Empowering and authorizing the Water and Power Resources Board to carry into effect a project to correct the existing and prevent the future silting of the Schuylkill River and its tributaries by wastes from anthracite coal mining operations.

HOUSE BILL No. 1104. Creates the State Soil Conservation Commission in the Department of Agriculture. The Commission shall consist of the Secretary of Agriculture who shall be the chairman, the Secretary of Forests and Waters, the Dean of the School of Agriculture of the Pennsylvania State College, and three farmer members who shall be farmers to be appointed by the Governor from a list of six nominees submitted by the association known as "Pennsylvania State Council of Farm Organizations."

HOUSE BILL No. 1280. An appropriation to the Department of Forests and Waters of

MAY - JUNE

Five

\$1,978,000 for the payment of salaries and general expenses. For the payment of the extinction and control of forest fires, \$200,000; for the payment of salaries, wages and general expenses of the Washington Crossing Park Commission, \$100,000; for the payment of salaries and general expenses of the Valley Forge Park Commission, \$107,000; for the payment of salaries and general expenses of the Pennsylvania State Park and Harbor Commission of Erie, \$78,000; for the payment of annual fixed charges for county, school and road purposes, \$261,000; for the payment of fixed charges on lands acquired for the purpose of conservation of water, \$14,000; for the salaries and general expenses of the Navigation Commission for the Delaware River, \$75,000; for the payment of salaries and general expenses for the proper conduct of the work of a State Nautical School, \$205,000.

SENATE BILL NO. 183. This was the controversial strip mining bill. It affects only the bituminous area of the state. Though there were many attempts to weaken or nullify the bill, in its final form it will go a long way toward correcting many of the abuses in the strip mining of bituminous coal. It requires the operator to file a bond in the amount of \$200.00 per acre based upon the number of acres of coal that will be stripped during one year immediately thereafter, and no bond shall be for less than \$2000.00. It requires some regrading of the spoil banks and the covering of the exposed face of the coal vein to prevent leeching of acid water. Within one year after the open pit mining operations have terminated the operator shall plant trees, shrubs or grasses upon the land, according to the recommendations of the Department of Forests and Waters. It becomes effective immediately upon the signature of the Governor.

SENATE BILL NO. 423. Provides for the incorporation of "Authorities" for municipalities, counties and townships and such authorities to acquire, construct, improve, maintain and operate projects and to borrow money and issue bonds. Among its other duties the Authority shall have the authority to acquire by purchase or eminent domain such lands and water rights as may be deemed necessary. The water and water rights may not be acquired until approval is obtained from the Water and Power Resources Board.

SENATE BILL NO. 748. The Department of Forests and Waters with the approval of the Governor is authorized to accept free and clear of all encumbrances any grant of lands by the United States of America or any agency thereof used as or suitable for parks or recreational areas, with any improvements thereon, subject to agreement between the Commonwealth of Pennsylvania and the Federal Government. The acceptance of said grant shall be completed upon

delivery to the Commonwealth of a deed in fee simple, subject to the reservation, if any, of oil, gas and minerals upon approval of the Department of Justice. Said lands after acceptance shall be under the full control and supervision of the Department of Forests and Waters.

SENATE BILL NO. 700. The Minimum Standards of Forest Practice Act was reported out of committee a week before the end of the session and passed two readings in the Senate, where it was caught in the jam at the end. Many of us are grateful that the bill made that much progress. In the next regular session of the General Assembly it may be possible to have such a bill enacted.

All in all, this has been a gratifying session of the legislature. With the amount of money the Department of Forests and Waters now has, great progress should be made in increasing the facilities of the present parks and recreational areas, in acquiring and developing new ones, in adding to the State Forest holdings and in doing many other things that the Department was created to undertake.

## A Cubic Inch of Wood

DR. CARL C. FORSAITH of the New York State College of Forestry, Syracuse University, gives some astonishing facts about wood. A cubic inch of white pine, weight for weight, is stronger than common steel. When it is air dried it will support the weight of nearly 2½ tons lengthwise of the grain, although three-quarters of its volume is air.

The block contains between four and five million cells of a certain type called "trachoids." If placed end to end these cells would reach more than ten miles. White pine has three other kinds of cells. Organic matter constitutes approximately 99 per cent of the wood. Also there is to be found in it one-third of all known elements. Less than one per cent is mineral matter and that is what is left in ash when the wood is burned. This comes from the soil.

Chemically it can be said that about one-half of white pine is cellulose, from which photographic film, rayon, cellophane, smokeless powder and other products are produced.

Dr. Forsaith also states that around one-fourth of the block is lignin, which acts like a cement, uniting the wood cells. The chemical formula for lignin has not yet been determined.

Another quarter of white pine is made up of sugars, resin, wax, acetic acid and pentosan. (A kind of sugar which will not ferment).

Ethyl alcohol, which is exactly the same kind of alcohol that occurs in liquors and wines, can be made from wood.

## Restoration of Strip-Mined Lands

by V. M. BEARER

District Forester

THE FOUR OR five million acres of abandoned and neglected farmland which have been a sore spot in Pennsylvania for many years are unfortunately being increased now, rather than decreased because of young men leaving the farms and the old folks being physically unable to carry on all the farm work. Many more neglected fields are reverting to brush land. To this idle land burden is being added still another serious one in the form of strip-mined coal lands.

The wake of the strip mine project not only adds to Pennsylvania's liability as a tax burden in its own confines but likewise depreciates adjoining land and property values and leaves a bleak and ugly sore on the landscape, which years will not efface. Monstrous power shovels remove the surface to the coal bed, throwing up huge furrows, the crest of which may be 40 or more feet higher than the trough or bottom. Stagnant pools are often found in the bottom of the furrows. Usually no effort is made when removing coal, to draw out slopes to a degree that would reduce or prevent erosion. The steepness of the slope depends entirely on the character of the material dropped by the shovel and the manner in which it is dropped.

During the past several years many forest tree plantings have been made on these slopes or "Spoils Banks" without any soil preparation whatever. Some of them are partially successful with a stand of from 50 to 75% of the planting stock living three or four years after having been planted. A few, but, very few, are quite successful with a greater percentage of stand. In these few cases, the furrows are not very deep; they were left to erode several years before planting and no great soil slippage occurred after the seedlings were planted.

With but few exceptions, all areas suffer seriously from sliding and erosion, and any planting done on them before the earth becomes settled and stabilized is a wild gamble with small likelihood of even a fair degree of success. Planting stock on or near the crest is washed down into the troughs or bottom of the furrow. Those in the bottom are submerged in the wash while many on the slopes are washed out or have their roots seriously exposed by sheet erosion or gully erosion.

As the tree grows, it must have firm anchorage. True, the roots spread as the stem grows, but if they find only unstable soil as they spread, the tree will suffer from lack of support in later years. You who have lifted ornamental or

Christmas trees only six or eight feet in height, will readily recall how firm they stand, how stubbornly they stick. Then, on the other hand, perhaps you have occasionally found one in a waterlogged bottom or on a steep loose hillside where the tree is leaning over or has been completely uplifted because it could not get a tight hold on the earth. If the small tree cannot find a good hold on slipping soils, neither can the sixty, eighty or one hundred foot tree which we shall harvest later, from the seedlings and transplants set out in the plantation.

At least one coal company in Western Pennsylvania has made a good start in this reclamation project. With the use of bulldozers, four or five different areas have been backfilled by working the crest or anticline line into the trough or axis of the syncline and, in general, leveling off the areas to conform closely with the original contour. In fact, in most places the backfilled slope or plane is more regular than the surface was formerly. On a few of the completed backfills, farm crops are now being grown successfully and doing as well as similar crops growing elsewhere on the same or nearby farms. In some instances the growth on the reclaimed areas seems to be better than on the adjoining fields. Just why is not definitely known. It has been observed that often forest planting stock on untreated spoils banks grow better than the trees planted in old fields near them (although the percentage of stand is usually very low as has been above noted). Perhaps this is because of the breaking up of the subsoil or the increased capacity of the broken up soil to retain moisture and at the same time permit good drainage and deep root penetration. In the case of the larger trees, it seems probable their roots can readily penetrate the earth to greater depths where the "hard-pan" has been broken up and, therefore, suffer less from drouth. At any rate, there is ample evidence to show that both trees and annual farm crops can be grown on these areas once they have been restored to their approximate original contours.

It is generally agreed that if the areas are to be returned to productivity, the agency mining the coal should be charged with this obligation. Coal operators as well as others in the communities realize the seriousness of the after effects of strip mining. Many, perhaps most, of the coal companies are searching for a practical and workable plan to bring back and rehabilitate these sore thumbs. The question logically

arises—to what use can they be put, to the greatest advantage of all parties concerned? Shall they be tilled as farm lands, planted in forest tree seedlings, planted in shrubs, brush and vines merely to cover the area and prevent erosion, or are there other more important uses?

Some of the sites, where slopes are gentle or the area is flat, will doubtless prove very good farm land, if sufficient money is spent to roll out the areas into planes suitable to work farm machinery on. It is even probable that in some instances, where the slope is gentle, the exposure satisfactory, the soil moisture content liberal, and soil drainage is good, the reclaimed area may become, after properly fertilized, one of the garden spots of the farm. Where such favorable factors occur, it would seem expedient to use the area for intensive farm cropping.

More commonly are found areas where the hillsides are steep and the surface abounds with rocks. Such areas, unsuitable for farm cropping in the usual sense, should be artificially reforested.

Still other strippings are continuously or frequently swept by poisonous atmospheric gases or smoke and cannot, for that reason, support farm crops or forest tree growth. On such tracts, it may be well to plant any cover crop, if any there be, which will hold on, prevent sheet and gully erosion and possibly provide food and shelter for birds and game.

Trees may be planted on lands too steep, too rough, too wet or too dry for good farming. Small depressions and small abrupt elevations which make it difficult or impossible to operate farm equipment do not preclude the planting of trees. In fact, within sensible limits these irregularities usually add to the success of the plantations. This is not true, certainly, where such depressions or mounds cause slopes steep enough or long enough to give rise to serious erosion. However, when a wet season comes along, the trees on the mounds may grow better and when drought prevails, trees in the small basins do better. Hence despite these extremes, the plantation in general is going right ahead; what is one tree's loss is another's gain. Then, too, some species require more moisture than others and the forester must have this fact in mind when making up recommendations for planting stock. A proper mixture of stock with relation to species and to age will usually meet such varying conditions satisfactorily.

The forester should also plan for proper spacing and the proper method of mixing the trees in the plantation not only to secure the most rapid growth but, also, to reduce to a minimum the probable loss of stock through insect or fungous attacks. The season for planting must be given due consideration. He should also observe the condition of native growing

stock in the neighborhood and refrain from the use of such as will be seriously and frequently attacked by insect or fungous disease, unless he can arrange a proper mixture of species, the use of which will greatly minimize such injury. An examination of the planting site should first be made, followed by a simple planting plan. The tree planter should then be required to observe the requirements of the native plant material when reforesting the area.

Incidentally it might be noted that of about three hundred and seventy plantation studies made in Westmoreland County during the year 1940, in all cases where the plantings were established in accordance with the rules and requirements of this Department, excepting where the trees were injured by grazing, fire, mechanical injury or vandalism, the areas were doing much better than where haphazard methods or no apparent methods were followed. In fact most of the latter were failures.

Too little restoration or back-filling and leveling off has been done, as yet, to approximate closely the cost of such work. In some cases the areas have been brought back to a greater degree of refinement than is necessary for the growing of trees. As more work is done, better and more efficient methods should lead to a reduction in the per unit cost. If the operator were required to account for his expenditures on a standardized form, a study and analysis of data thus assembled should likewise lead to better and more economical methods in the future.

While strip land reclamation would make desirable post war work, yet, from many viewpoints it would be better to have the work done at once following the mining operation. The sooner it is done the sooner the area will again become productive. Doubtlessly, some few reclaimed areas will prove to be more valuable than they were in their former condition viewed from both the intrinsic and the aesthetic viewpoint, since in many places the land surface was, before mining, nearly worthless.

It seems most probable that the Commonwealth would be justified in supplying nursery stock or at least a limited number of trees each year for planting stripped areas without charge. If all desired stock could not be granted gratuitously, that which is available could be pro-rated.

Legislation cannot be made retroactive to reach back to spoils banks which were made years ago but if the owners of such were given planting stock without charge, some would probably plant at least a part of their holdings. This small contribution on the part of the State should return a considerable profit in later years wherever planting is properly done. Then, too, it would be one more desirable project for postwar work.

## Reimbursement of the Commonwealth for Its Forest Fire Extinction Expenses

by GEORGE H. WIRT

Chief Forest Fire Warden

PRIOR TO THE COMING of William Penn the people who had settled in what is now Pennsylvania were subject to the laws of the Duke of York. One of his laws provided that if any person kindled a fire in the woods and it spread to cultivated or enclosed ground he was liable for the damage caused, also a fine, stripes or "Service to Expiate the Crime."

William Penn did not believe in corporal punishment and that may be the reason why as early as 1683 he suggested a law which was passed by his second council which provided merely for making good whatever damage resulted from a fire set in woods, lands or marshes. Within the next seven years apparently it became common practice to set fires for clearing land and in 1700 the General Assembly made March and April open season for fire. Damages were to be paid only for fires set in the other ten months. By March of 1712, however, the fires in March and April were sufficiently disturbing that the law was changed so that if anyone set fire within one mile of fences or buildings the owners of such improvements were to be notified 24 hours before the start of the fire or all damages were to be paid by the fire setter. In case of notice being given, this certainly made the property holder get out and be ready to protect his own property as best he could and to suffer whatever damage he could not prevent.

In 1735 the preamble to a new law stated "Whereas it hath on experience been found that the setting the woods on fire at any time hath proved rather hurtful than beneficial to this province and great losses have happened by occasion of such fires." The law, therefore, made no exceptions as to when fires could be set without liability for damages. It provided that the damages could be sued for either in common pleas court or if less than forty shillings (approximately ten dollars) could be collected by a Justice of the Peace. It also provided that if fires were set by servants, negroes, or slaves, damages should be paid by the Master or Mistress or the person should be whipped and sent to the workhouse. This law remained unchanged for 60 years. Then in 1794 a new law went into effect. The criminal aspect of starting forest fires was further emphasized. What was formerly a crime only when committed by a servant or slave now became so without distinction of person. From then on there has never been

any question as to the fact that it was a crime to needlessly, carelessly, or maliciously set fire to forests and that responsibility for the fire carried with it liability for the fire. The changes in the law were concerned with methods of enforcement rather than the principles at issue and yet in spite of the generally recognized facts about widespread and frequent forest fires as well as the tremendous havoc occasioned, few people were being punished for starting fires and forest land owners would not even attempt to collect damages.

This condition was recognized when the new protection code was formulated for the 1915 Legislature. A distinction, therefore, was made in the penalties provided for the setting of fires. Ordinary carelessness was distinguished from deliberate maliciousness. There is no question as to the fact that the results of forest fires are the same regardless of how they started. The effect upon the property, the property owner, the community and the Commonwealth is just as serious in one case as in another but nevertheless courts and juries are definitely averse to convicting people for the setting of forest fires and by so doing branding them as criminals. On the contrary both courts and juries will award damages which are unreasonably high and indefensible except as punitive damages.

The 1915 Legislature provided in the new Forest Protection Code which went into effect on September 1st of that year, that the Chief Forest Fire Warden should "take such measures for the prevention, control, and extinction of forest fires as will assure a reasonable protection from fire to woodlots, forest, and wild land within the Commonwealth." It is self-evident that one very effective preventative should be that those who cause forest fires should be punished in some way. The penalty provided in the law which could be imposed only after criminal prosecution certainly would never meet the situation because it was recognized from the very beginning that a very small percentage of those who caused forest fires would ever be convicted as a result of criminal processes in court. It was recognized immediately, therefore, that if it were possible to impose a cash penalty upon those who could be identified as responsible for forest fires a great deal of good might be accomplished and, unquestionably, fires would be prevented in consequence of such policy.

On the assumption that the expenses of the Commonwealth incurred in the performance of its police powers for the extinction of the fire is a damage to the Commonwealth for which the party responsible for the fire was liable and that there was a very much better chance of penalizing the fire setter by having him pay the extinction bill than in any other way, in 1916 the Chief Forest Fire Warden carefully studied each forest fire report that came from the fire wardens and where there seemed to be sufficient evidence to sustain a claim for reimbursement and where the party responsible could be identified, a statement was sent to the party concerned informing him that the Commonwealth had incurred an expense as a result of his acts, that to this extent the Commonwealth had been damaged and out of common fairness to the other citizens he should reimburse the Commonwealth for the unnecessary expense for which he had been responsible. A number of corporations and individuals paid these bills and the money was used by the Department of Forestry to pay other fire bills and to that extent saved the appropriation set aside for the protection of forests from fire. As might be expected a number of individuals who unquestionably were responsible for forest fires would not admit such responsibility and even though the fire wardens could present reasonable evidence for the establishment of responsibility bills were not paid and could not be collected because there was no law on the statute books providing for such collections and criminal prosecutions were out of the question.

After several years of working without any specific authorization for the handling of this business, successive efforts were made to obtain from the Legislature a law specifically directing the repayment to the Commonwealth of fire extinction expenses when responsibility could be established. Finally, in 1929, such a bill was passed and approved by the Governor. However, authorization for all legal action was given to the Department of Justice where it has remained to this day. This particular phase of the situation never has been satisfactory and probably never will be.

In the handling of forest fire reports it is readily discovered that all of the reports can be divided roughly into two groups. There are reports on fires, the origin of which is definitely "unknown." The fire may have come from any one of a number of causes. It is very certain that the Commonwealth must pay for the extinction of such fires without any hopes of reimbursement for its expenses, without considerable investigation and even then with little chance of getting satisfactory results. The other group comprises the reports of fires for which reasonable conclusions can be drawn as to the origin

of the fire. Such fires may be roughly spoken of as being fires of "known origin."

This latter group can very definitely be divided into two groups, one of which comprises the fires which unquestionably can be identified as to origin but without definite evidence as to the party concerned. As for example, fire may be identified as having come from a burning brush pile but no evidence is known as to who was responsible for setting the brush pile on fire. The other fires in this group are those where cause of the fire is known and also the individual or party responsible for the cause. It is this latter group of fire reports from which we get the information to send out claims for reimbursement.

The information which comes to the Harrisburg office on the forest fire reports comes from the forest fire wardens through the district foresters. It is very evident that the forest fire wardens are subject to all of the frailties of human nature. The wardens may or may not be capable of making satisfactory investigations as a result of which responsibility for a fire can be placed. They may or may not make a careful investigation as to the origin of the fire which has been extinguished. They may jump at incorrect conclusions or the information which is given to them may be absolutely incorrect. They submit the best information they have and use their best judgment in presenting their conclusions and their reports are submitted under oath. Consequently, when a forest fire report comes to the Chief Forest Fire Warden on which he finds that "John Doe" was responsible for a forest fire as a result of certain things which he did or did not do and a claim is sent to him, "John Doe" is given the opportunity to deny responsibility or to plead his own cause in any way he wants before he has any reason for paying the claim which was presented. It is then the responsibility of the Chief Forest Fire Warden to find sufficient evidence to establish responsibility or to withdraw the claim if it was improperly sent.

Several years ago a law went into effect by reason of which any money which is owing to the Commonwealth and not paid within ninety days after the date upon which the claim was presented would thereafter be collected by the Department of Justice. The present procedure with respect to these claims for the cost of extinction, therefore, is for the Chief Forest Fire Warden to send out the statements to those who are reported as being responsible for forest fires. If the responsibility is admitted and the bill paid within ninety days the account is closed or if it is established within ninety days that there is no responsibility the claim is withdrawn. If the claim is not paid regardless of whether responsibility is acknowledged or

### Three Years of Record of Forest Fire Extinction Claims

	1941	1942	1943
Total number of forest fires reported .....	4,084	2,010	2,117
Total cost for fire extinction .....	\$197,970.14	\$101,133.20	\$118,771.21
No. fires for which claims for extinction were sent.....	745	468	506
Percent. of total no. fires for which claims were sent.....	18.2%	23.2%	23.9%
Number of fires for which claims were paid .....	482	270	312
Percentage of claims sent out which were paid .....	64.6%	57.6%	61.6%
Number of claims sent which were withdrawn .....	157	72	62
For lack of evidence .....	65	42	51
For inability to pay .....	92	30	11
Number of claims still outstanding .....	106	126	132
Amount of claims sent out .....	\$45,295.63	\$23,821.79	\$24,395.50
Amount of claims withdrawn for lack of evidence.....	7,722.04	2,832.21	3,142.55
Amount of claims withdrawn for inability to pay.....	5,208.60	1,092.79	364.77
Amount of claims withdrawn in part .....	848.22	656.11	270.18
Amount of claims paid .....	20,289.28	11,301.31	11,572.79
Percentage collected of amount possibly collectable.....	44.5%	47.4%	56.1%
Amount outstanding .....	\$11,227.49	\$7,939.37	\$9,045.21

proved, a copy of the claim is forwarded to the Department of Justice and from then on the proposition is in their hands with the understanding, of course, that the forest protection organization will do whatever it can to sustain its belief in the responsibility of the individual concerned and when it is unable to sustain that responsibility the Department of Justice is so notified and the case is closed.

Even when responsibility for the fire is admitted or can be definitely proved there are many cases in which the cost of extinction is not collected. The Department of Justice will not take legal action to collect a bill below approximately \$100.00. They will not start any action if the party responsible for the fire obviously does not possess enough property to cover the amount of the bill if execution of a judgment becomes a necessary part of the procedure. And, of course, nothing can be done if insufficient evidence to establish responsibility for the fire is not available. If this evidence is not obtained soon after the fire, the possibility of its being obtained decreases with each month that elapses after the fire. Not infrequently we have an individual who took no precautions in the burning of his brush and who, because of his age, poverty or other unfortunate circumstance, was unable to reimburse the Commonwealth even for a small part of its expenses. The feeling in the average community is that the Commonwealth should bear the expense and the individual should be relieved of his financial responsibilities. In addition to this common feeling throughout the Commonwealth there is the further proposition which at times makes

itself known namely the so-called "persecution" of the citizens of the state by the government of the state. Although there is no foundation for such an attitude, nevertheless it is resented and not infrequently that resentment is expressed by someone's deliberately going out and starting additional forest fires.

#### ROSIN FROM STUMPS

Throughout the vast pineywoods region of the South there are millions of tons of long-leaf pine stumps, many of which are now processing in turpentine and rosin plants in Louisiana and Mississippi for the extraction of such prized chemicals as pine oil (formerly imported from Sweden), acetone, rosin, camphor, and a by-product vanillin. Other chemicals which tend to concentrate in the longleaf pine stump since it was cut 25 or 30 years ago have been isolated by research chemists and many believe that around these stumps an independent chemical industry can be built, which would include the manufacture of synthetic rubber and plastics.

Most of America's \$40,000,000 loss from forest fires is caused by man's carelessness.

More than 700,000 different items shipped to the Army are wrapped or boxed in paper.

## Woody Plant Pest Council Needed

(Continued from page 3)

and state work which heretofore kept the public informed concerning the spread and seriousness of some tree trouble, the Executive Board of The Pennsylvania Forestry Association at its May meeting, authorized the formation of a statewide Woody Plant Pest Council. It will be composed of entomologists, plant pathologists, botanists, foresters and other scientists, who will assume responsibility for assembling and disseminating authentic information concerning insects and diseases affecting trees and shrubs and methods of control.

Such a council is now being formed, having on it many of the leading scientists in the state. It is hoped that there will be issued a series of leaflets of an informative and instructive nature, in addition to articles in FOREST LEAVES. Among the matters to be considered are:—

1. The extent of the spread during the war years, when no scouting has been done, of such exotic and serious diseases as Dutch elm disease, phloem necrosis, Woodgate rust on pines, canker on oaks, and wilt on maples.

2. The spread and seriousness of such insects as the gypsy moth, Nantucket shoot moth, Japanese beetle, Japanese scale and larch case bearer.



Sawfly caterpillars devouring foliage of pine.

Twelve



Tip moth damage on pine.

3. Control measures.

4. The efficacy of the numerous new insecticides and fungicides. As a result of war stimulated research many new materials will be released soon for civilian use, some of which may do more harm than good. For instance, the much publicized DDT is so potent a weapon against insect and possibly bird and animal life, that, if generally and unwisely used, it may seriously upset farming and horticultural pursuits by destroying beneficial insects and driving away insectivorous birds. The more successful man becomes in artificial control of insects and fungi, the greater the danger of serious disruption of nature's intricate balance upon which human existence depends.

5. Should the demand merit it, some way might be found whereby tree owners may benefit from the collective knowledge of the members of the Woody Plant Pest Council. A special membership in the Association, which would include at least one inspection annually of the member's trees and shrubs, to be followed by a report, detailing the troubles found and giving specific directions for their control, might be arranged if it is desired.

More than 4,000 uses of wood have been counted, and the list is still growing.

FOREST LEAVES

## Pennsylvania Nut Growers' Association

A Practical Body of Nut Growers Whose Aim Is to Stimulate Greater Interest in Nut-Tree Planting



Black Walnut Kernel

## The Chinese Chestnut As A Timber Tree

AN OPEN LETTER TO FORESTERS

from J. RUSSELL SMITH

I HAVE BEEN EXPERIMENTING with the Chinese chestnut tree, *Castanea molissima*, for nearly 20 years (with a special interest in its horticultural aspects). I keep hearing over and over that it is a poor timber tree. I am curious to know upon what basis of research such a conclusion can rest.

One experiment station man says: "The present best varieties for nuts make poor timber trees." I wonder how thoroughly he has tested them.

Another State employee in the Chestnut Belt writes a long article telling that his experience (very little of it, apparently) shows that "oriental" chestnuts cannot fight it out against the native growth in an American forest; and he gives his conclusion in this morsel:

"If one assumes (italics mine) that the oriental chestnut will resolve itself into an 'orchard' tree requiring orchard care, such as cultivation and fertilization, he will at once appreciate more fully the reasons for the rather disheartening results of the past. This would eliminate this species (there is no such species as "Oriental"—JRS) as a forest tree, and decidedly change its value from a game management angle. Planting of it would be restricted to cultivatable areas—areas readily accessible to machinery. This fact, however, would little affect those interested in growing them commercially."

Note that his conclusion begins with "If one assumes . . ."

I wish to state:

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Thirteen

## Woody Plant Pest Council Needed

(Continued from page 3)

and state work which heretofore kept the public informed concerning the spread and seriousness of some tree trouble, the Executive Board of The Pennsylvania Forestry Association at its May meeting, authorized the formation of a statewide Woody Plant Pest Council. It will be composed of entomologists, plant pathologists, botanists, foresters and other scientists, who will assume responsibility for assembling and disseminating authentic information concerning insects and diseases affecting trees and shrubs and methods of control.

Such a council is now being formed, having on it many of the leading scientists in the state. It is hoped that there will be issued a series of leaflets of an informative and instructive nature, in addition to articles in FOREST LEAVES. Among the matters to be considered are:—

1. The extent of the spread during the war years, when no scouting has been done, of such exotic and serious diseases as Dutch elm disease, phloem necrosis, Woodgate rust on pines, canker on oaks, and wilt on maples.

2. The spread and seriousness of such insects as the gypsy moth, Nantucket shoot moth, Japanese beetle, Japanese scale and larch case bearer.



Sawfly caterpillars devouring foliage of pine.

Twelve



Tip moth damage on pine.

3. Control measures.

4. The efficacy of the numerous new insecticides and fungicides. As a result of war stimulated research many new materials will be released soon for civilian use, some of which may do more harm than good. For instance, the much publicized DDT is so potent a weapon against insect and possibly bird and animal life, that, if generally and unwisely used, it may seriously upset farming and horticultural pursuits by destroying beneficial insects and driving away insectivorous birds. The more successful man becomes in artificial control of insects and fungi, the greater the danger of serious disruption of nature's intricate balance upon which human existence depends.

5. Should the demand merit it, some way might be found whereby tree owners may benefit from the collective knowledge of the members of the Woody Plant Pest Council. A special membership in the Association, which would include at least one inspection annually of the member's trees and shrubs, to be followed by a report, detailing the troubles found and giving specific directions for their control, might be arranged if it is desired.

More than 4,000 uses of wood have been counted, and the list is still growing.

FOREST LEAVES

## Pennsylvania Nut Growers' Association

A Practical Body of Nut Growers Whose Aim Is to Stimulate Greater Interest in Nut-Tree Planting



Black Walnut Kernel

## The Chinese Chestnut As A Timber Tree

AN OPEN LETTER TO FORESTERS

from J. RUSSELL SMITH

I HAVE BEEN EXPERIMENTING with the Chinese chestnut tree, *Castanea molissima*, for nearly 20 years (with a special interest in its horticultural aspects). I keep hearing over and over that it is a poor timber tree. I am curious to know upon what basis of research such a conclusion can rest.

One experiment station man says: "The present best varieties for nuts make poor timber trees." I wonder how thoroughly he has tested them.

Another State employee in the Chestnut Belt writes a long article telling that his experience (very little of it, apparently) shows that "oriental" chestnuts cannot fight it out against the native growth in an American forest; and he gives his conclusion in this morsel:

"If one assumes (italics mine) that the oriental chestnut will resolve itself into an 'orchard' tree requiring orchard care, such as cultivation and fertilization, he will at once appreciate more fully the reasons for the rather disheartening results of the past. This would eliminate this species (there is no such species as "Oriental"—JRS) as a forest tree, and decidedly change its value from a game management angle. Planting of it would be restricted to cultivatable areas—areas readily accessible to machinery. This fact, however, would little affect those interested in growing them commercially."

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Thirteen

ment of Agriculture. This survey should bring out at least two, maybe ten trees of unusual promise as timber trees. In any case the best trees found should become active parents.

(6) Next spring, there should be planted a hundred acres or so of Chinese chestnut seedlings, 20 feet apart, to grow and be ready to be grafted with scions from these two or three or five or ten Chinese chestnut trees of best timber promise that the proposed foresters' survey finds.

Whether these forest seed producers are put out two varieties together, or mixed up, is a question for the geneticist. This hundred acres of young trees should soon be producing nuts for the foresters' seed beds. The first 10,000 seedlings from this parentage should be planted where they can be watched, to select the best two or three as parents for further improvement of timber strain.

We already have done something like that in horticultural selection, and have highly meritorious trees. And we are diligently testing for still better strains.

(7) Send one or two competent men to China, so that they may arrive the last of June, 1946, and spend July, August, September, and October scouring the mountains of West China, far beyond the Japanese, to get seed from the wild Chinese chestnut in its best timber form—also scions from same.

(8) Plant out an orchard of seedling trees this year to receive these scions, and as soon as possible, begin to grow seed for the timber molissima plantings.

Immediately upon arrival, the seed of the forest molissima should be planted, and a few thousand seedlings planted under those conditions that will most quickly let competent persons pick our two or three or four best timber trees from the lot. Make orchards of these for forest seed production.

In these early stages of forest extension, it will be necessary to produce seed, deliberately, and on a large scale. How easy it would be to select the best of 10,000 as forest seed producers!—and, again, the best of 10,000 in the next generation.

The process can be greatly shortened by grafting promising strains onto established trees.\*

These wild molissima trees from the Chinese mountains may be expected to have a seed that weighs a half, or a third, or perhaps only a quarter as much as the ones that we horticulturists are now producing. For wild reproduction in the forest, this will be a very distinct advantage. The squirrel must have difficulty in planting a Japanese chestnut, 1½" to 2" across. It will be less work for Assistant Squirrel to plant a Chinese chestnut an inch and an eighth

\* See *Tree Crops, A Permanent Agriculture*, by J. Russell Smith

across, than to plant a Japanese nut that weighs two or three times as much. He would have still less trouble to punch into the ground a much smaller wild molissima.

I wish to announce that when I make these statements about the small, wild molissima nut, I am assuming. But the betting is good that I'm right.

As to getting the *Castanea molissima* to run wild in the forest, I suggest experimenting with the following method:

Plant not less than 50 trees in a clump, and plant them so that the outer branches of the clump can get sunlight and bear nuts. Perhaps plant them in an open space in woods that need to be heavily logged in eight or ten years. The reason I ask for 50 trees in one place is that I desire that there shall be enough trees to push each other up, and enough nuts in the one place to fill the bellies of all the squirrels that come, with enough more to cause them to humor the capitalistic instinct, and bury the seed.

When we get our plantations of forest seed trees going rightly, we can perhaps plant clumps of seedlings or seed in the forest at intervals of 200 yards, a quarter of a mile, half a mile, depending upon various conditions. We will then be on the way to chestnut timber again.

It seems too bad that something like this was not done ten years ago. *We need chestnut timber.* We have meditated plenty long enough.

## Planting of Chestnut Trees

ACCORDING TO A telephone conversation with our Secretary, John W. Hershey, Mr. Hayden W. Olds, Asst. Chief, Ohio Conservation, Columbus, 15, Ohio, says they have been distributing several hundred Chinese chestnut seedlings each year, six to a farmer to be planted on the co-operative farm-game plots. Mr. Olds continued, that they are not only instructing the farmers how to plant them but are instructing them in cultural care as well.

It is well to note that Chinese chestnuts must be planted on light, fertile soil, they cannot stand heavy, low, wet places. Given the cultivation and fertilization of a peach tree they bear in 3 to 5 years like the peach. You'll see a rapid spread of the chestnuts by gray squirrels after such a program as this has been progressing for a time.

Mr. Hershey said, observation shows that trees planted in recently cut woodlands do remarkably well, while on wornout soils without cultivation they stand for 5 to 6 years before they start to grow. In such "old field" areas if black locust is planted with them the locust feeds the ground, stimulates chestnut growth, smothers out competing grasses and weeds and brings in an extra dividend in the chestnut grove.

## Forest Program for Penna.

(Continued from page 2)

telligent program of land use and as a guide to rural settlement. Such an inventory should include: (a) land that is suitable for agriculture in varying degrees; (b) land which is suitable for forest, wildlife, and recreational use; (c) the location and extent of idle land not under crops or forest cover; (d) the location of tax-delinquent and tax-reverted land; (e) a detailed soil survey, types of soils in each county, their physical adaptation for crops, present soil cover, and degree of erosion if any. Less than one-third the state is now adequately surveyed.

A comprehensive timber survey should be included under (b). This should show current timber volumes by species, current timber growth, and drain caused by use and by destructive agencies. It should constitute an over-all size-up of the place which forests play today, and are likely to play tomorrow, in the economy of the Commonwealth.

### 3. Effective control of forest fires.

Forest fires should be further reduced in numbers and in destructiveness throughout Pennsylvania, but particularly on the more accessible and productive land representing more than eighty percent of the total woodland area. It is on this land that our timber and wood products are growing. The money further invested in forest fire prevention and control on the producing land where the fire hazard is the lowest will undoubtedly be returned many fold to the owners and to the people of the state in timber, wild life conserved and in all the other benefits attendant upon maintaining a good forest cover.

"Hot spots," where efforts at forest restoration are doomed to failure unless forest fires can be greatly reduced in number and severity, should be made a special object of study by the Department of Forest and Waters. The Association suggests that means be explored of increasing local responsibility for fire prevention and control.

4. Additional public forests. The Association believes that public agencies should acquire those forest lands which are unprofitable for private investment and which are not needed in private hands for recreational or other purposes. In general, much of the badly cut over lands fall into this class. What is necessary is recognition of land use according to its needs and capabilities.

In pursuing this policy, the state is not to be discouraged from purchasing valuable timber lands for demonstration and other purposes. In fact, it is believed that the public should even-

tually own double its present area of forest land. A long range acquisition program by state, county, and community adequate to purchase an additional two million acres is advocated, with special emphasis upon community and county forest development.

5. Public aid for owners of small forest properties. Small holdings of farmers and others make up the bulk of Pennsylvania's forest land. Many are interested in practicing good forest management but are deterred from lack of certain essential public aids. These include a timber management and marketing service such as is now provided by farm foresters; public research to give them detailed information on growth, yield, costs and returns from forest land management; and the encouragement of cooperative sustained yield management through pooling of timber resources and management costs under public supervision.

6. Sustained yield forestry for each important forest community and forest industry. This must be worked out through local and state governmental aid to the communities concerned and to the industries involved. It requires an organization of landowners and wood using industries in which the rights of each are fully protected from encroachment.

7. The full use of our forest products. The Association realizes that the basic purpose of growing timber crops is to harvest and use them. To this end, the Association favors action that will lead to reduction of waste and to using the wood that is grown for its highest purposes. Today, too much of the potentially high quality maple, oak, cherry, and ash is used in the mines for props, burned for chemical wood, or converted into pulp for paper, when it might better be developed for handle stock, flooring, furniture, and all sorts of special products yielding a high price and furnishing a large amount of labor to local citizens. The Association favors the introduction of new wood using industries into the state wherever local timber resources are adequate to supply the needs of the new industries without jeopardizing existing industries, and without at the same time delaying the restoration of forest productivity.

8. More effective soil and water conservation. The Association endorses the land use and conservation programs of Soil Conservation Districts which include planting of abandoned farm land and of other areas subject to erosion. It also urges particular care be given along highways and railways and along mountain streams to avoid land slips. The Association recognizes that flood control and water supplies for municipal use are important economic problems in the state in which good forest land management plays a crucial role. It recognizes also that much more needs to be known about the exact

manner in which forests affect both peak flood runoff and minimum low water flows. This is a subject requiring public action and research on an extensive scale.

9. Development of forest recreation and aesthetics. The Association favors the full development of Pennsylvania's forests for all sorts of recreational use. It welcomes the extension of hiking and horseback trails, roadside picnic areas, the construction of youth hostels with forest recreation as a base; and the planting of forest trees on unsightly areas such as highway and railway cuts, mine refuse banks, mine stripping areas, and other areas covered with municipal or industrial refuse but capable of supporting timber growth, or on which trees can be used to screen their unsightliness. The Association favors the permanent preservation of typical areas of the natural forest formations of Pennsylvania as a permanent heritage for inspiration and scientific research. The Association further favors the zoning of state highways and forest areas to prevent undue encroachment of unsightly or undesirable commercial developments, particularly billboards, taverns, and so forth. As a public safety measure alone, it is desirable that these be kept at a reasonable distance from state highways.

10. The Association is keenly aware that in the last analysis progress in forest conservation depends largely upon the professional activities of trained foresters. Pennsylvania's great stake in forestry justifies the State in maintaining the highest grade of professional training and research in this field. It, therefore, recommends that the Pennsylvania State Forest School, now a Department in the School of Agriculture at the Pennsylvania State College, be organized as soon as expedient as a separate school at that institution.

11. Civil Service status for the Department of Forests and Waters. Inasmuch as administering the state's forests and water resources requires professionally trained men, it is recommended that the Department of Forests and Waters be placed under the State Civil Service laws.

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If each of the present members secured	2
new members, the Association would have	2400
new members, or a grand total of members.	3600
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2400 new members at \$3.00 each, would add	7,200.00
Making a total annual income of	\$12,700.00

With less than \$12,000 the Association cannot carry on the activities for which it was founded.

Won't you do your part?

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Organized in 1886  
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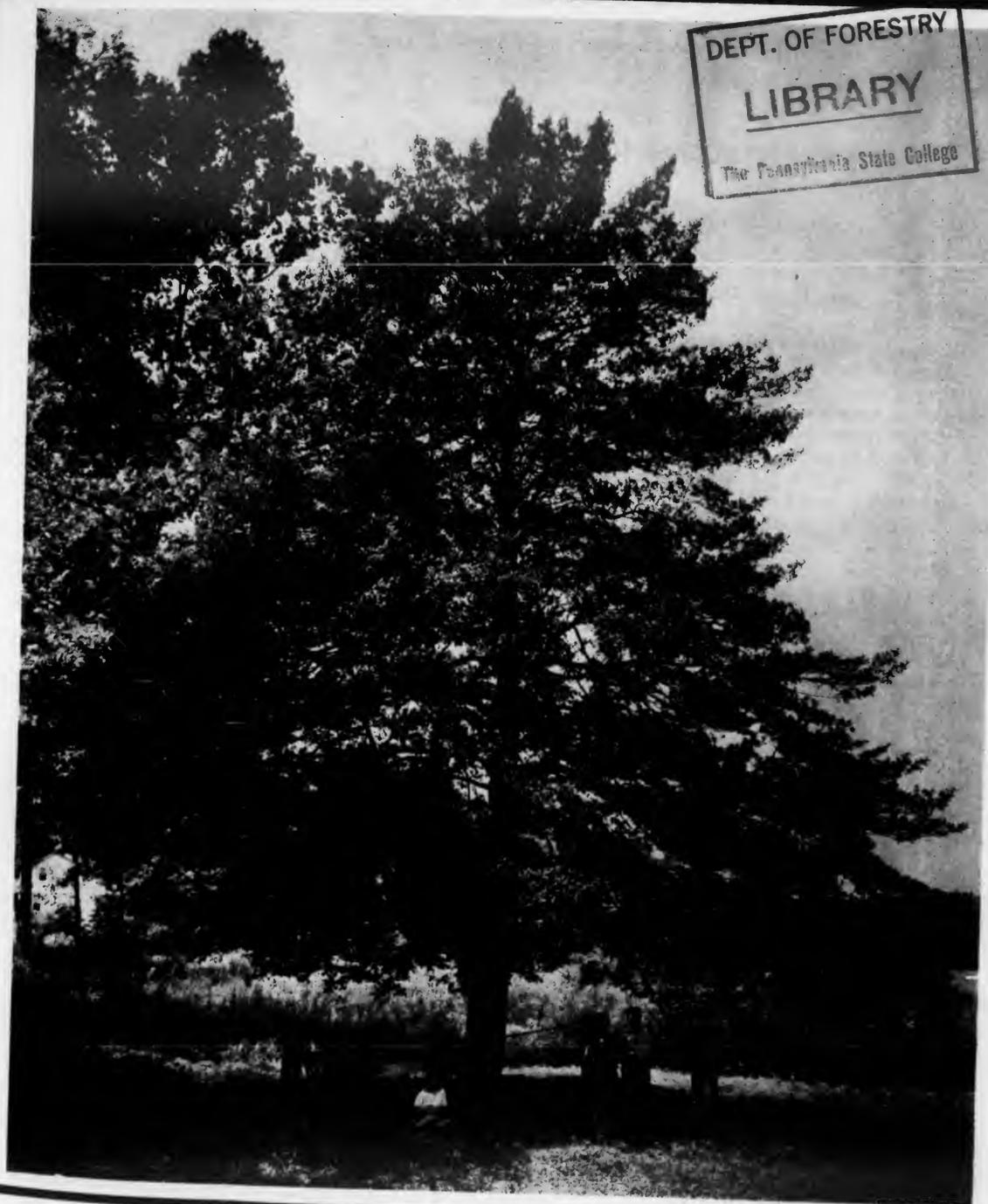
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## Rise of the Forest Conservation Movement in Pennsylvania

by HENRY CLEPPER

ALTHOUGH SYLVANIA WAS acceptable to William Penn as a name for the new province, Charles II made the decision as kings were accustomed to do in those days. In choosing Pennsylvania he gave us the only state in the Union embodying the word forest in its name. Another feature of significance about the King's grant to Penn is that this transaction involved what was until that time perhaps the biggest timber deal in history.

At this distant perspective of time we have little conception of the grandeur and sweep of those primeval forests, but Dr. Joseph T. Rothrock, to whom we shall have occasion to refer later, has given us a word-picture:

"Pennsylvania, under original natural conditions, was one of the best wooded States, if not the very best, in the entire eastern half of the Union. Not only were her forests dense and her trees large and valuable, but they comprised a variety that were of greater commercial value than could be found, probably, in any other State. To say that for years Pennsylvania stood first as a lumber producing State, and then second on the list, is but another way of expressing the same truth.

"To illustrate this we have but to call to mind the fabulous quantities of white pine, hemlock, hickory, black and white walnut, chestnut, oak (of various kinds), ash, elm, beech, cherry, black and yellow birch, and latterly pitch pine, that have been consumed within the limits of the State, or exported.

"It is true that a portion of her area was treeless. Here and there a lake or an open meadow occupied the surface, but these formed a very small proportion of her territory."<sup>1</sup>

Of Pennsylvania's land area of 28,828,800 acres, it is estimated that the original forests covered not less than 99 percent. Now, after nearly three hundred years of settlement, clearing, and

exploitation, followed by some farm abandonment and natural reconversion to forest, the woodland area is estimated to total about 15 million acres, or 52 percent. Considering the fact that one-half the original area is still wooded, we might assume that the state has not too prodigally squandered this valuable natural resource. Unfortunately, at least 1.5 million acres are unproductive and practically idle as a result of fire and discontinued agricultural use.

Notwithstanding the fact that the dense and apparently limitless forests offered an obstacle to the expansion of agriculture and settlement, one of the early acts of the proprietary government was an attempt to maintain timber supplies. The provision was a part of the document entitled "*Certain conditions, or concessions, agreed upon by William Penn, Proprietary and Governor of the province of Pennsylvania, and those who are the adventurers and purchasers in the same province, the eleventh of July, one thousand six hundred and eighty-one.*" It has been recorded as follows:

"XVIII. That, in clearing the ground, care be taken to leave one acre of trees for every five acres cleared, especially to preserve oak and mulberries, for silk and shipping."<sup>2</sup>

In his *Report on Forestry* (1877), Dr. Franklin B. Hough, special agent for the United States Department of Agriculture, commented, "It is probable that this law was not observed in a single instance."

#### Early Legislation for Forest Protection

During the colonial period and on into the first half of the 19th century, little official attention was given to forest conditions. Pennsylvania was not more backward than other states in this respect; there was simply no public

<sup>1</sup> Annual report of the Pennsylvania Department of Agriculture; Part II, Division of Forestry, by Dr. J. T. Rothrock. Harrisburg, 1896.

<sup>2</sup> The Federal and State Constitutions/Colonial Charters and other Organic Laws of the States, Territories, and Colonies. Compiled by Francis Newton Thorpe. Volume V, pp. 3044-3047. Government Printing Office, Washington, D. C. 1909.

sentiment for forest conservation. The woods were so extensive, so dense, so abundant with numerous species of high quality that they were ruthlessly cut and burned without more than a few people realizing that the supply of virgin timber might eventually be exhausted.

An act of the assembly passed in 1700 provided penalties for felling trees "on another's land without leave." On March 29, 1735, an act was passed "to prevent the damages which may happen by firing the woods." This law was repealed by the act of April 18, 1794, which provided fines "for firing woods, not exceeding \$50, and not less than \$20." An interesting feature of this latter act was contained in Sec. 4 which provided that "if the offender be a servant and his master do not pay the damage, the punishment to be imprisonment at hard labor for three months."

Again on March 29, 1824, the assembly enacted a law which provided damages for timber trespass. Setting woods on fire was punishable by a fine of not over \$500. Firing woods was declared a misdemeanor by the act of March 31, 1860, and made punishable by a fine not exceeding \$100; cutting timber on lands of another was declared a misdemeanor also.

On April 9, 1869, an act made the firing of mountain or other wild lands in Union County punishable by fine not exceeding \$50 or imprisonment not exceeding one year. This law was extended by act of June 2, 1870, to certain other counties with the following interesting declaration, "it is important to the people of the States that timber lands should be protected from fire, which, owing to malicious conduct and carelessness of individuals, is causing vast havoc to the young growing timber, especially upon our mountains."

Although the Legislature enacted the institution of Arbor Day, which went into effect April 15, 1885, an act of June 1, 1887, appears to be the first legislative attempt to encourage state-wide reforestation. "In consideration of the public benefit to be derived from the planting and cultivation of forest or timber trees," owners of land planted with such trees not less than 1200 to the acre were entitled to receive a rebate on taxes, not to exceed 45 cents per acre for the first ten years, 40 cents per acre for the second ten years, and 25 cents per acre for the third and final ten years.

None of the foregoing legislation appears to have accomplished the desired result, which was to protect and rehabilitate the woodland of the state. We have seen numerous examples in America of legislation which was worse than useless when not supported by public sentiment, and Pennsylvania's early attempts to stem the tide of forest devastation were of that category.

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It is difficult if not impossible to fix upon a date when public sentiment began to support the forest conservation movement in Pennsylvania. Certainly, such sentiment was not greatly in evidence prior to the Civil War, but that it began to crystallize shortly thereafter can be adduced from the writings of individuals such as Dr. Joseph T. Rothrock and by increased activities among citizens' groups which resulted in the organization, in Philadelphia in 1886, of the Pennsylvania Forestry Association.

Writing in an official report in 1897, Dr. Rothrock, then Commissioner of Forestry, stated, "For twenty years past public sentiment has been shaping itself in favor of protective measures." Let us briefly review some of the developments which influenced and hastened public interest in forestry.

#### *Development of Public Support*

In messages to the Legislature in 1873 and again in 1874 Governor Hartranft "called attention to the rapid destruction of the forests within the state and suggested the possible need of regulatory legislation."<sup>3</sup> Although no immediate action resulted, it may be assumed that his comments made some impression; at least they marked a trend of the times—a growing awareness of the ruthless, wasteful destruction of forests by axe and fire and the need for a state policy of protection and conservation.

Although, as will be seen, Pennsylvania was in time to establish a forestry policy designed specifically for its own needs and to solve its own forest problems, the growth of public support was not wholly an internal development. Several external influences might be cited as contributing factors to the interest in, and demand for, public action in the state.

One of these factors was the creation in 1873 by the American Association for the Advancement of Science of a committee "to memorialize Congress and the several state legislatures on the importance of promoting the cultivation of timber and the preservation of forests." This action followed the presentation at Portland, Maine, by Dr. Franklin B. Hough of New York of a paper "On the Duty of Governments in the Preservation of Forests" which proposed that the association "bring the subject of protection of the forests, and their cultivation, regulation, and encouragement, to the notice of our several State governments, and the Congress with respect to the Territories."<sup>4</sup>

The committee's recommendation, made to the Congress in February, 1874, brought about

<sup>3</sup> A Half Century of Forestry in Pennsylvania by George H. Wirt. Journal of Forestry, October, 1943.

<sup>4</sup> A National Plan for American Forestry. Vol. 1. United States Government Printing Office, Washington, D. C. 1933.

(Continued on page 10)

FOREST LEAVES

## AMERICAN HOLLY

by MAYNARD M. FULTON

AMERICAN HOLLY, *Ilex opaca*, is one of the most beautiful trees that grows in eastern United States. For many centuries it has been a Christmas symbol; time and changing customs have not affected its popularity. Unfortunately much of our native holly has been destroyed by vandals.

The one who is fortunate enough to have one of these priceless possessions, 200 or 300 years old, swells with pride when he stands in awe at the beauty of such an evergreen, which may be 50 to 75 feet high and loaded with bright red berries at a time when most other trees are bare. It is no wonder that Mr. Cyrus Holmes, who is now past 86 says it is necessary each year, around the middle of December, to keep his shot gun handy; the only real way to prevent vandals from destroying these beauties.

W. Dallimore, the English author, in writing on holly, yew and box, says that many hollies grow to be 300 to 800 years old. Some are believed to be 1200 years old. There are at least three trees in York County, Pa., that are more than 200 years old and two of these may be 300 years or more.

Washington Irving writes in the life of George Washington, "How pitiful in the age of reason and religion is that false ambition which desolates the world with fire and sword for the purpose of conquest and fame, —." At the opening of the year 1785 the entries in his diary show him diligently employed in preparations to improve his groves and shrubbery. On the 10th of January he notes that the white thorn is full in berry. In February he transplants ivy under the walls of the garden to which it still clings. In March he is planting hemlock trees, that most beautiful species of American evergreen. In April he is sowing holly berries in drills, some adjoining a green brier hedge on the north side of the garden gate; others in a semi-circle on the lawn. Many of the holly bushes thus produced are still flourishing.

It has been my pleasure to have seen these trees as well as boxwood and other fine specimens, but the two hollies facing the Potomac in front of the mansion were planted many years before Washington came to Mount Vernon. James Buchanan, another of our Presidents, must have liked this plant as it is reported that he, too, planted the holly at Loyaltown, Pa., which is still producing berries. How fortunate it is these trees are near private homes,

otherwise, they, too, might have been destroyed.

There are more than 300 species of holly and perhaps more than a dozen of these in the United States. *Ilex opaca*, American holly, is indigenous to the east coast from Massachusetts to Florida, and from Indiana to Mexico, reaching its greatest abundance in the coastal region, its greatest size in Texas, and its greatest beauty in the Carolina mountains. It is not generally known that native holly is growing within 15 miles of Pennsylvania's State Capitol. The only reason it is still there is that there are no roads leading to it. In building the dam which supplies Harrisburg with its water much native holly was destroyed as was rhododendron, hemlock and other fine trees and shrubs.

Many persons believe that holly is difficult to transplant. Some years ago I made a planting in which holly was not included and I asked the landscape architect why. His answer was that I should not fool with holly because it was not pretty and that it would not do well in this area. Somehow this statement seemed to be a challenge and I asked him to bring fifteen plants. These were native ones from the mountains, 3 to 6 ft. in height. After planting they stood there for three years, without growing. Nothing happened and they were not pretty. One day I applied a 5 inch mulch of rotted sawdust. Afterward I became alarmed, so I called three nurserymen and told them what I had done. One said, "Why in the world did you do that?" My rather weak reply was, "It's probably a lazy man's way of getting rid of those high weeds."

I called another and he was not sure, but thought it might help to hold moisture. The third one was sure I would kill every plant because sawdust was full of tannic acid. Some months later you can imagine my surprise when I found that instead of all being killed there was more new growth and the leaves were much greener. Indeed, there was such a change in the plants that I became eager to experiment further, and at this point my real interest in holly began. I have since learned that holly must be planted in acid soil and that lime or chemical fertilizer should not be used.

If a holly tree is not doing well, try this: Take a garden rake and pull away the hard top soil around the trunk in a circular manner. When finished, a basin will be formed which will be

(Continued on page 16)

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JULY - OCTOBER

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Chancellor William P. Tolley, of the university, in making the announcement as spokesman for the trustees of the college, recalled the fact that Dr. Illick had served as acting dean since the retirement of Dean Samuel Spring on June 30, 1944.

"He has demonstrated that he has administrative ability of a very high order and we believe the college will make unprecedented progress under his direction," said Dr. Tolley.

"He has already made a signal contribution in the formulation of the plans for three new buildings—general forestry, wood technology and a paper and plastics laboratory which will be built by the state during the post-war period.

"We believe that the College of Forestry is the foremost institution of its kind in America. Many members of its faculty enjoy an international reputation. As we canvassed the field for

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Dean Illick organized the notable meeting of industrial representatives at a conference on new developments in wood products which was held at the College in 1944. He taught at Pennsylvania State Forest School, at Biltmore Forest School, studied at the University of Munich, was subsequently Director of the Pennsylvania State Forest School, and later, Chief of Silviculture, Pennsylvania Department of Forests and Waters, and successively Chief of Research and State Forester of Pennsylvania.

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Dr. Illick is the author of many books, formal bulletins, short articles and papers dealing with the field of forestry. He is a member of the American Association for the Advancement of Science; senior member Society of American Foresters; Pennsylvania Engineering Society; and the American Society of Public Administration.

Long before supplies of oils and minerals become tight, says the Secretary of Agriculture, different forms of wood will increasingly be used to supplement them.

England has a post-war reforestation program which will provide full employment for 50,000 men.



FOREST LEAVES

## Britain's War Ravaged Woods Will Rise Again

by HUBERT E. BIRD

British journalist and broadcaster who has made a study of post-war planning questions.

THE SIGNIFICANT HISTORY of Britain's forest trees begins with the first Neolithic Man who was bright enough to fix his stone hand-axe with a wooden haft. It is brought up to date with the wooden frame of the R.A.F. Mosquito aircraft. Between these two moments of history Britain's forests have been drawn on for fuel and furniture and boats and buildings; for Yule logs and roof-trees and men-of-war.

At the beginning of the 19th century came a scare. It has been coming periodically ever since. Then the question was: how would Britain find the "Hearts of Oak" for her Royal Navy, when the iron-smelting of the South had denuded the Kentish Weald of its oak forests? Now it is: How is Britain to face up to her war needs with such limited resources of home-grown timber?

At the end of World War I, in 1918, this question came acutely to the fore. Experience has shown that bringing timber from abroad in face of U-boat and sea-mine was no simple matter. Something had got to be done to restore Britain's forests with quick-growing timber as an emergency source of supply. The Acland Committee was appointed to look into the matter and a policy of State afforestation was accepted and put into practice.

Under a specially appointed Forestry Commission of experts 1,144,000 acres of land were brought into Government Forestry Estate between the years 1919 and 1939. The political and economic confusions of those twenty years curtailed the scope of the original scheme somewhat, and the history of the last five years has shown what a regrettable thing that was. The inadequacy of the home-grown supplies has once again raised the cry "Britain MUST grow more timber."

Now a new scheme of afforestation has been designed for Parliament's approval. It involves the establishment of huge Government Forestry Estates, to be set up and brought to full fruition in the course of the next 50 years, and the bringing into effective production of 5,000,000 acres of woodland. This is a big job, but at peak production only one-third of Britain's requirements could be met from home forests. The 5,000,000 acres aimed at will be made up of 2,000,000

acres of existing woodland, much of it in private ownership, to be brought under systematic management and then made fully productive, and the planting of 3,000,000 of Britain's 16,000,000 acres of uncultivated land with new young timber.

The scheme will give work to 250,000 employees, of whom 50,000 will find full-time occupations in the forests, the other 200,000 being employed by the associated forest industries. Already the scheme has roused great interest among serving men, and the work itself has much to recommend it. It is a healthy outdoor life, and carries on the great British tradition of tree-planting, which has given Britain her characteristic landscape as well as much valuable timber in these last hard-pressed few years. Here it links up with the past, but insofar as it is producing an essential commodity for coming generations it is an equally vital link with the future.

To turn a quarter of a million ex-service men loose on this job when gunfire ceases would be a beautiful gesture—but a sorry business in the outcome. For the woodman's craft needs skill and technical knowledge. Some can be got in the forest, but in these days of scientific precision some must be got in the classrooms, too. The opportunity to learn the art and science



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Five

JULY - OCTOBER

INTENTIONAL SECOND EXPOSURE



They learn to be Lumberjills stripping the bark from a tree to be used as a telegraph pole.

of forestry is there—at the Universities of Oxford, Edinburgh, Aberdeen and Bangor—and it will be made possible by a scheme of Government assistance for the ex-service man who is interested to take it.

Besides these University Schools of Forestry, there are the Forestry Commission's own two academies at Parkend in the Forest of Dean, and Benmore in Scotland. These two admirable institutions have grown out of the Forestry Commission's Apprentices' Schools which, in the twenty years between the wars, have turned out between four and five hundred skilled and qualified foresters.

The new scheme is an admirable project and one which will change the face of England quite a deal. Already schemes for re-planting derelict woods, draining and ditching, have been put forward, and extensive researches made into the botanical possibilities of great stretches of moorlands and fens and mountainsides.

Ecologists have stated the case for a judicious choice of timber to be grown in particular localities, and country planners have urged that sites for the new forestry estates be chosen with discrimination. The familiar round, turf-capped headlands of certain famous beauty spots, for

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example, could easily lose their character and beauty by arbitrary sited forest estates.

Afforestation there must be, but, plead the rural planners, let the new woods lie as gently on the bosom of the earth as though Nature and not Man had planted them there. Let the edges of the new plantations be, not the harsh straight lines of the surveyor, but those of the landscape's own contours. So the new forestry estates can be an added grace to the country scene as well as an asset to the national economy.

The Forestry Commissioners have in most cases turned a sympathetic ear to these pleadings, and, given this understanding between them and the lovers of Britain's kindly countryside, the next half-century should see a refurbishing of her natural beauty as well as an increase in her depleted resources.

## Booklet on Brush Burning Issued

TO ALL RURAL RESIDENTS:

Each year during the spring and fall forest fire seasons, many forest fires are caused by brush and field burning in this area. In most cases these fires are caused by persons who do not stop to consider "FIRE BEHAVIOR" on certain days. In order to assist in the prevention of these fires, we are presenting you with a booklet, "Brush Burning in Pennsylvania," with the hope that you, as a rural resident, will study the helpful information and instructions contained in this booklet.

You can be of further assistance to us in the protection of nearby woodlands by calling your local fire tower before you burn brush or grass areas. Any smoke from burning within range of the fire tower is noticed by the towerman and is reported by him to forest patrolmen for immediate investigation. If you call the tower before you burn, you will prevent unnecessary loss of time for the patrolmen. The towermen, being informed by the district weather instruments of the weather conditions will tell you whether it is safe to burn or will assist you in selecting a proper day for burning.

REMEMBER—You pay the extinction cost of fires you cause. PLAY SAFE—Hang this booklet in a convenient place in your barn, shed or garage, read it thoroughly, before you are about to burn. If in doubt at any time, call the fire tower or your Division Forest Inspector who will be glad to assist you. Everyone loses when woodlands burn. Protect our most valuable natural resource, the "forest."

DEPARTMENT OF FORESTS & WATERS  
Shamokin-Division

J. L. ROHRER, Div. Inspector

FOREST LEAVES

## Let's Be Different in Choice of Shade Trees

by H. GLEASON MATTOON

EACH KIND OF shade tree has its loyal friends so we expect to be verbally chastised for criticizing the sheep-like attitude of tree owners in sticking to a few species. If all Norway maples growing on lawns were laid end to end, the money uselessly spent in trying to make grass grow under them would be saved. But that suggestion won't help much for there are those who prefer Norway maples to grass.

So many misbeliefs are rampant regarding trees that we shall not try to dispel them. Maples are believed to be among the most rapid growers yet there are several kinds suitable for shade which grow faster. Then too, styles in trees and shrubs change as they do in women's clothes, though not so often. The magenta flowered *Azalea amoena* reached the zenith of its popularity during the latter years of Queen Victoria's reign. The strawberry shrub was planted more frequently in those days, too, when men were more fastidious and its maroon flowers graced many a lapel. It is frequently possible to determine fairly accurately when a house was built by identifying the trees on the grounds surrounding it. The pagoda tree, *Sophora japonica*, was introduced into this country from China in 1747 but it did not become popular until about 1890. Why this popularity should wane is hard to say for it has no drawbacks. Its light, feathery foliage and racemes of showy, white, pea-shape flowers in August should recommend it highly. It has few troubles and lawn grass luxuriates under it. Even in winter the green twigs are attractive.

Another tree of the same family has lost popularity since 1900 without cause—the Kentucky coffee tree, *Gymnocladus dioica*, native to the mountains of Kentucky and neighboring states. While the foliage is denser than that of the pagoda tree, it is still light and airy. This tree eventually becomes 90 feet in height with a straight majestic trunk. The foliage is pink when unfolding in the spring and turns a brilliant yellow in the fall. Though the flowers are inconspicuous the seed pods are large and attractive. The seed which is the same color as roasted coffee but somewhat larger, has been and still is used by the mountain whites of the South in lieu of coffee. While we have never drunk coffee tree coffee, we will lay a wager it is better than the ersatz coffee, millions in Europe depended upon.

A smaller tree which merits more followers is *Koelreuteria paniculata*, variously known as varnish tree, China tree and Pride of India. Like the two mentioned above, it has no serious en-

emies. The numerous panicles of bright yellow flowers which appear in July are its chief virtue, although its foliage does not suffer in comparison with that of other trees.

The chief drawback to the honey locust, *Gleditsia triacanthos*, particularly where children play, is the multitude of long, sharp, branched thorns which grow out from the trunk and branches. The objection has now been overcome by the development of a thornless variety, *G. triacanthos inermis* which in other respects is as attractive as its parent. Planted near the house the feathery foliage provides ample shade without the denseness which makes rooms dark. The long, brown, twisted pods persist into the winter and add to the charm of the tree.

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Had there been a scattered few London plane trees in Lower Merion, the chances of the disease spreading from one to another would have been remote. So let's be different in choosing our lawn trees, if for no other reason than that the chance of losing them is not so great.

During the 1941 blitz on London, engineers found wood frame buildings standing amid the wreckage of stone, concrete and steel structures.

Timbers installed temporarily to support weakened masonry walls in a canal at Bristol, England, are still in place after 100 years.

Seven

JULY - OCTOBER



They learn to be Lumberjills stripping the bark from a tree to be used as a telegraph pole.

of forestry is there—at the Universities of Oxford, Edinburgh, Aberdeen and Bangor—and it will be made possible by a scheme of Government assistance for the ex-service man who is interested to take it.

Besides these University Schools of Forestry, there are the Forestry Commission's own two academies at Parkend in the Forest of Dean, and Benmore in Scotland. These two admirable institutions have grown out of the Forestry Commission's Apprentices' Schools which, in the twenty years between the wars, have turned out between four and five hundred skilled and qualified foresters.

The new scheme is an admirable project and one which will change the face of England quite a deal. Already schemes for re-planting derelict woods, draining and ditching, have been put forward, and extensive researches made into the botanical possibilities of great stretches of moorlands and fens and mountainsides.

Ecologists have stated the case for a judicious choice of timber to be grown in particular localities, and country planners have urged that sites for the new forestry estates be chosen with discrimination. The familiar round, turf-capped headlands of certain famous beauty spots, for

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example, could easily lose their character and beauty by arbitrary sited forest estates.

Afforestation there must be, but, plead the rural planners, let the new woods lie as gently on the bosom of the earth as though Nature and not Man had planted them there. Let the edges of the new plantations be, not the harsh straight lines of the surveyor, but those of the landscape's own contours. So the new forestry estates can be an added grace to the country scene as well as an asset to the national economy.

The Forestry Commissioners have in most cases turned a sympathetic ear to these pleadings, and, given this understanding between them and the lovers of Britain's kindly countryside, the next half-century should see a refurbishing of her natural beauty as well as an increase in her depleted resources.

## Booklet on Brush Burning Issued

TO ALL RURAL RESIDENTS:

Each year during the spring and fall forest fire seasons, many forest fires are caused by brush and field burning in this area. In most cases these fires are caused by persons who do not stop to consider "FIRE BEHAVIOR" on certain days. In order to assist in the prevention of these fires, we are presenting you with a booklet, "Brush Burning in Pennsylvania," with the hope that you, as a rural resident, will study the helpful information and instructions contained in this booklet.

You can be of further assistance to us in the protection of nearby woodlands by calling your local fire tower before you burn brush or grass areas. Any smoke from burning within range of the fire tower is noticed by the towerman and is reported by him to forest patrolmen for immediate investigation. If you call the tower before you burn, you will prevent unnecessary loss of time for the patrolmen. The towermen, being informed by the district weather instruments of the weather conditions will tell you whether it is safe to burn or will assist you in selecting a proper day for burning.

REMEMBER—You pay the extinction cost of fires you cause. PLAY SAFE—Hang this booklet in a convenient place in your barn, shed or garage, read it thoroughly, before you are about to burn. If in doubt at any time, call the fire tower or your Division Forest Inspector who will be glad to assist you. Everyone loses when woodlands burn. Protect our most valuable natural resource, the "forest."

DEPARTMENT OF FORESTS & WATERS  
Shamokin-Division

J. L. ROHRER, Div. Inspector

FOREST LEAVES

## Let's Be Different in Choice of Shade Trees

by H. GLEASON MATTOON

EACH KIND OF shade tree has its loyal friends so we expect to be verbally chastised for criticizing the sheep-like attitude of tree owners in sticking to a few species. If all Norway maples growing on lawns were laid end to end, the money uselessly spent in trying to make grass grow under them would be saved. But that suggestion won't help much for there are those who prefer Norway maples to grass.

So many misbeliefs are rampant regarding trees that we shall not try to dispel them. Maples are believed to be among the most rapid growers yet there are several kinds suitable for shade which grow faster. Then too, styles in trees and shrubs change as they do in women's clothes, though not so often. The magenta flowered Azalea amoena reached the zenith of its popularity during the latter years of Queen Victoria's reign. The strawberry shrub was planted more frequently in those days, too, when men were more fastidious and its maroon flowers graced many a lapel. It is frequently possible to determine fairly accurately when a house was built by identifying the trees on the grounds surrounding it. The pagoda tree, *Sophora japonica*, was introduced into this country from China in 1747 but it did not become popular until about 1890. Why this popularity should wane is hard to say for it has no drawbacks. Its light, feathery foliage and racemes of showy, white, pea-shape flowers in August should recommend it highly. It has few troubles and lawn grass luxuriates under it. Even in winter the green twigs are attractive.

Another tree of the same family has lost popularity since 1900 without cause—the Kentucky coffee tree, *Gymnocladus dioica*, native to the mountains of Kentucky and neighboring states. While the foliage is denser than that of the pagoda tree, it is still light and airy. This tree eventually becomes 90 feet in height with a straight majestic trunk. The foliage is pink when unfolding in the spring and turns a brilliant yellow in the fall. Though the flowers are inconspicuous the seed pods are large and attractive. The seed which is the same color as roasted coffee but somewhat larger, has been and still is used by the mountain whites of the South in lieu of coffee. While we have never drunk coffee tree coffee, we will lay a wager it is better than the ersatz coffee, millions in Europe depended upon.

A smaller tree which merits more followers is *Koelreuteria paniculata*, variously known as varnish tree, China tree and Pride of India. Like the two mentioned above, it has no serious en-

emies. The numerous panicles of bright yellow flowers which appear in July are its chief virtue, although its foliage does not suffer in comparison with that of other trees.

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JULY - OCTOBER

# COOK FOREST DISCUSSED

Two Advisory Boards Meet with Secretary Kell

MEMBERS OF BOTH the Northwestern and Southwestern Advisory Boards of The Pennsylvania Forestry Association, and officers and directors of the reorganized Cook Forest Association met with Secretary Kell of the Department of Forests and Waters at Cook Forest on Friday, October 5, for an interesting and informative discussion of the future of Cook Forest. H. Gleason Mattoon, Secretary of the Association, presided, following an excellent lunch at the Log Cabin Inn. Among those present were: W. E. Alexander, Clarion, former Superintendent of Cook Forest, Edmund W. Arthur, L. G. Barnes, Dr. Paul G. Chandler, Mr. and Mrs. C. F. Chubb, A. W. Cook, Jr., T. B. Cook, Jr., Miss Margaret Coulter, Dale Fleming, newly elected Chairman of the Northwestern Advisory Board, Merritt J. Harding, district forester under whose jurisdiction Cook Forest has been, Dr. Arthur E. Henn, Mr. and Mrs. George M. Hummer and George W. Huntley, Jr., member of the legislature from Emporium.

Also present were H. Rhea Klahr, member of the Sanitary Water Board, James A. Kell, Secretary of the Department, Dr. O. E. Jennings, Dr. C. H. Lewis, Vice-President of the Cook Forest Association, George MacBeth, C. H. Meserly, William Mull, Edwin W. Tompkins, H. G. Tompkins, Joseph D. Wentling and Theo L. Wilson.

Conservationists in western Pennsylvania are deeply interested in the future of Cook Forest. So also are those through whose efforts \$400,000 was privately subscribed toward the purchase of this 6,000 acre tract. The ancient white pines and the very old hemlocks are outstanding features of the area, and should for as long as possible be preserved. Although Dr. Jennings pointed out that a white pine forest is not the climax type and that sooner or later this species will be supplanted by a hemlock, birch, beech stand, it was generally agreed that the Department of Forests and Waters had the responsibility of preventing, in so far as possible, insect and disease depredations. Mr. Harding, district forester, discussed the measures adopted to reduce bark beetle population, while living up to the instructions not to remove, unless necessary, any plant material in the primaeval area.

Anthony Wayne Cook, Jr., Dr. Henn, Dr. Lewis, Judge Wilson, Mr. Huntley and Mr. Klahr took part in the discussion, not only of insect damage to the older trees, but also of the

need for increased facilities in the park. That the public enjoys and appreciates Cook Forest Park is attested to by the numbers who visit it. Weekends of from 5,000 to 10,000 persons are not uncommon, while as many as 20,000 have driven from 10 to 140 miles to spend a few hours there on one weekend. The demand for overnight accommodations is much greater than the supply. Cabin owners report almost complete advance bookage of their accommodations for 1946. The feeling was general that an increase in the facilities should be made but that they should be spread over a large area to reduce the concentration of persons.

Secretary Kell spoke of the Department's program, not only for Cook Forest Park, but for all sections of the state. He emphasized his responsibility to see that the funds available to his Department shall be spent fairly so that all citizens in all sections will benefit. Mr. Kell also announced that the state would soon take over the five federal recreational developments in Pennsylvania. With the acquisition of Raccoon Creek, Blue Knob, French Creek, Hickory Run and Laurel Hill 31,000 additional acres of park land will be added to the 42,000 now managed by the Department of Forest and Waters.

Following the meeting, various parts of the Park were visited, not only to enjoy the beauties of the place but also to have first hand knowledge of the problems and developments discussed.



FOREST LEAVES

# Flora of Which the Birds Approve

by MARTHA SERENE LEWIS

IN THE BEGINNING it should be said that there is no flora of which the birds do not approve. But, like the Quaker philosopher who said that he loves everyone but likes only a few persons, each bird family has its favorite flora.

Cardinals, brown thrashers, catbirds, robins and hermit thrushes like nothing better than a green brier patch. The thorny tangle makes an excellent nesting place safe from cats, and the blue black berries from this member of the lily family (*Smilax rotundifolia*) make good eating when ripe.

That doesn't mean you have to clutter up your own precious garden with green brier: cardinals are equally fond of nesting in wild grape, wisteria and California privet. A pair have their home in a wisteria vine that has covered an old sassafras tree on our lawn and the male is singing as I write. Since the cardinal is such a general favorite it is well to know what he does like. The sunflower is his first love. You cannot have too many sunflowers if you want to make love to the cardinal. He also likes pokeberries, hackberries and mulberries. Just remember he belongs to the finch family (described in a recent issue of *Forest Leaves*) whose members have one common trait: a strong cone-shaped bill adapted for crushing seeds. In other words he is a seed eater.

Birds may be divided into three classes: fruit lovers, seed eaters and insect destroyers. Some are omnivorous. For this reason it is always possible to plant your garden with really beautiful trees, shrubs and herbaceous plants and still have a first class bird sanctuary. You can even call upon the birds to help carry out your favorite color scheme. A few beautiful combinations are: thistles and gold-finches; violets, blue and purple, with the black and gold of the magnolia warbler; cardinals swaying above lavender wisteria; bluebirds and apple blossoms; rose-breasted grosbeak and black haw (*viburnum prunifolium*); cedar waxwings and purple finches on the red berries of the mountain ash. And above, remember, is the blue of the sky, when the sun is shining, or the lovely dull gray when rain is falling.

The dogwood family (*Cornaceae*) is liked by almost every bird. From bright yellow blossoms of the *Cornus mas* in early spring to bright red berries of *Cornus florida* in late September there is something in every member of the dogwood family for a great variety of birds. The name is from the Latin *cornu*, a horn, because the wood is hard like a horn. Flowering dogwood, beautiful every day in the year, attracts

ruffed grouse, quail, all the thrushes, brown thrashers, catbirds, red-eyed vireos, cedar waxwings, white-throated and song sparrows, purple finches, evening and pine grosbeaks and downy woodpeckers. It is entirely too well liked to my liking by the robins and purple grackles in the fall when they descend in droves upon the berries and destroy their beauty in a single day.

Another flower family equally approved by the birds is the rose family, *rosaceae*. The fruit eaters like the berries, cherries, plums and apples supplied by this big family; the seed eaters, the seeds, and insect destroyers, the various insects continually fought by man. Some of the members of the rose family and the birds which flock about them are:

June berry (*Amelanchier oblongifolia*): Baltimore oriole, robin, wood thrush, veery, hermit thrush, catbird and cedar waxwing.

Mountain ash (*Pyrus americana*): woodpeckers, evening and pine grosbeaks, Baltimore orioles, robins, catbirds, cedar waxwings, brown thrashers and purple finches.

Chokeberry (*Pyrus arbutifolia*): meadow larks and brown thrashers.

Blackberry and raspberry: quail, ruffed grouse, red-headed woodpecker, chewink starling, song, fox and white-throated sparrows, bluebird, brown thrasher, red-eyed vireo, cedar waxwing, olive-backed and wood thrush.

Rosas *blanda*, *virginiana*, *humilis* and *rubiginosa*: ruffed grouse and quail.

Strawberry (*Fragaria virginiana* and *vesca*): robins, catbirds, chewinks, thrushes, brown thrashers.

These are only a few of our native plants of which the birds approve. It is possible to study botany without a knowledge of the birds. There are some unfortunate persons who do go on botanical trips with specimen cases on their backs and their eyes on the ground who never look at birds or listen to their songs. But it is not possible to study ornithology without a knowledge of the flora in which birds live and upon which they depend for their living. To have an intimate friendship with both bird and bush is one of the ways of walking with God.

Firewood sold by farmers is now subject to price ceilings.

The average United States farmer has 27 acres of woodland, enough to grow a new six-room house annually.

## Forest Conservation in Pennsylvania

(Continued from page 2)

the appointment of Dr. Hough as special forestry agent in the United States Department of Agriculture by act of 1876.

The foregoing example is only one of several that could be cited to illustrate the effect of scientific thought in shaping public opinion for forest conservation. Conspicuous among the scientists was George P. Marsh whose book *Man and Nature or Physical Geography as Modified by Human Action*, published in 1864 and reissued ten years later under its better known title "*The Earth as Modified by Human Action*," exerted a powerful influence on contemporary scientific Americans. In France and Italy studies of the effects of deforestation on streamflow and local climate, particularly in the Pyrenees and Alps, were causing alarm. His book set thinking men to consider the possibilities of radical changes in regional climatic conditions, in water supplies, in power and navigation as a result of continued forest destruction.

In 1875 occurred another event which was to have a profound influence on forest conservation in Pennsylvania. On September 10 of that year the American Forestry Congress (now the American Forestry Association) was organized in Chicago. Then, as now, a citizens' organization, it has aggressively espoused for nearly seventy years the cause of forest conservation by wise use. To it more than to any other agency belongs the credit for having created the public sentiment of the nation and for having given life to the early conservation movement of America.

One year later, on September 15, 1876, a group of persons interested in forestry attended a meeting in the Judge's Hall of the Centennial Exposition in Philadelphia. A paper was read by Dr. Franklin B. Hough who that year had been appointed a special agent of the United States Department of Agriculture to study the forestry conditions in the United States as they then existed. His appointment, it will be noted, reflected the increasing recognition of the need for a national forest policy.

Another paper was read at this meeting by Mr. Burnett Landreth, a nurseryman of Bristol, Pennsylvania, who had been appointed chief of the Bureau of Agriculture for the exposition. Published in the 1876 report of the Pennsylvania Agricultural Society, his paper is significant because it contains one of the earliest proposals that courses in professional forestry be offered in agricultural colleges. "Among other things," he stated, "I wish to start the inquiry,

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whether in our classification of agricultural instruction the time has not come to teach forestry as a science—I say science because it is susceptible of exact results." As we shall see, twenty-seven years were to pass before Mr. Landreth's proposal finally materialized.

In the meantime, however, the teaching of the scientific principles of forestry as they were understood in that day was not wholly neglected. In 1855 the great French botanist F. Andre Michaux left a legacy of \$14,000 to carry out a provision of his will "for the extension and progress of agriculture, and more especially of silviculture in the United States." The custodian of the fund was the American Philosophical Society of Philadelphia.

Dr. Joseph T. Rothrock, who had been elected professor of botany in the Auxiliary Faculty of Medicine at the University of Pennsylvania in 1877, was in that same year appointed Michaux lecturer by the American Philosophical Society of Philadelphia. This appointment marks a milestone in science as well as in conservation; it was to have an immediate as well as a continuing effect on Pennsylvania forestry for his lectures continued for fourteen years.

Although Pennsylvania unquestionably profited from the stimulus of the general conservation movement, it did not rely on outside leadership. The growth of forestry in the commonwealth was essentially an indigenous development, principal credit for which belongs to Dr. Rothrock, who gave more than half his life to it.

### Dr. Joseph T. Rothrock

No account of forestry in Pennsylvania or, for that matter, of medicine or education, could be written without mention of Dr. Joseph Trimble Rothrock. He was the father of Pennsylvania forestry.

The son of a physician, Dr. Abraham Rothrock, he was born April 9, 1839, in McVeytown, Mifflin County, Pennsylvania, and died June 2, 1922, in West Chester, Pennsylvania.

His preparatory education was obtained at Academia, Juniata County, and at Freeland Seminary (later Ursinus College). He received the bachelor of science degree from Harvard University in 1864. His college career was interrupted, however, when in 1862 he enlisted as a private in the 131st Pennsylvania Volunteer Infantry. Wounded at Fredericksburg, he later won promotion to the captaincy of Company E, 20th Regiment, Pennsylvania Volunteer Cavalry.

Delicate health made it desirable for him to spend much time out of doors. His mother, who was related to William Darlington, a noted

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Pennsylvania botanist, doubtless influenced his early interest in botany. At Harvard he was attracted by the work of Asa Gray, who visited his student friend in Mifflin County.

From Harvard he went to the University of Pennsylvania in 1864 to study medicine, but his course was interrupted the following year on becoming a member of a party of exploration to British Columbia. Returning to the university, he was graduated in medicine in 1867. During 1867-1869 he taught botany at the Pennsylvania State Agricultural College, and in the latter year he began the practice of medicine at Wilkes-Barre, specializing in surgery.

Appointed surgeon and botanist in 1873 to an exploring expedition west of the 100th meridian, commanded by Lieutenant Wheeler of the Corps of Engineers, he made numerous botanical collections in Colorado, Arizona, New Mexico, and California during the period 1873-1875. Volume VI of the reports of the Wheeler expedition gives an account of his work. He discovered and described numerous new species of plants.

Dr. Rothrock's active interest in forestry, as distinct from botany, may be said to date from 1877 when he was appointed Michaux lecturer. His audiences are reported to have increased from three persons to the capacity of the auditorium. In order to hold their attention he found it occasionally desirable to combine forestry with lectures on botany.

In 1881, following botanical study in Europe where he doubtless learned about scientific forestry from observation of the well-managed forests of Germany, he presented an essay "Forestry in Europe and America" in a competition held by the Pennsylvania Board of Agriculture and was awarded the prize.

The urgent need for forest conservation in the United States, particularly in Pennsylvania, had become so firmly fixed in his mind that he began a strenuous platform campaign of education. Although offered the chair of botany at Harvard, he declined it from a conviction that forestry should be his life career. He was a leading spirit in the organization of the Pennsylvania Forestry Association.

### The Pennsylvania Forestry Association

Many, if not all, progressive movements in the course of American History have been actively supported by women, and conservation in Pennsylvania is no exception. Their influence was recognized editorially in the first issue of *Forest Leaves* and merits quoting. "In the winter of 1886 a few prominent women of Philadelphia were impelled by the increasing destruction of the noble forests of Pennsylvania to some concerted action in the way of forest preserva-

tion and the replanting of waste lands, in order to supply the timber for the absolute needs of the near future. After a few informal meetings, held at the residence of Mrs. Brinton Coxe, a public meeting was called at the Hall of the Historical Society, on the evening of May 26th, at which Mr. Clayton McMichael presided."<sup>5</sup>

At this meeting addresses were made by Dr. Rothrock and Mr. B. E. Fernow, chief of the Division of Forestry, United States Department of Agriculture.

So immediate and so enthusiastic was the interest aroused by this meeting that it was decided to form an association. At a second meeting held in the Historical Society on June 2, a committee was appointed to draft a constitution which was accepted at a subsequent meeting on June 10. Among other projects, the members voted to raise \$5,000 to carry on the work of the organization.

The first formal meeting for the formation of a permanent Association was held in the Young Women's Christian Association of Philadelphia in the evening of November 30, 1886, with Dr. Rothrock formally elected president, in his absence because of illness. Thereafter, his campaign of public education in forestry was carried on under the auspices of the Association, and from 1891 on he devoted most of his time to this work.<sup>6</sup>

### State Forestry Commissions

California became the first state to create, in 1885, a state board of forestry, to be followed within a few months by Colorado, Ohio, and New York. For the most part they were abortive efforts; of these four attempts all, except that of New York, had been discontinued by 1893.

Pennsylvania's first forest inquiry by a special commission, authorized by the Legislature, was appointed by Governor James A. Beaver,

<sup>5</sup> *Forest Leaves*, Pennsylvania Forestry Association, Philadelphia, July, 1886.

<sup>6</sup> For the purpose of focusing attention primarily on events rather than on personalities, the author has failed to mention by name many other Pennsylvanians who gave generously of their time, talents, and money to the cause of conservation. For the most part these individuals were members of the Pennsylvania Forestry Association into which organization their united efforts and enthusiasm were forcefully channeled. Failure to give them individual credit does not imply lack of appreciation for their manifold contributions. For example, Gifford Pinchot, who was to become chief of the United States Forest Service (1898-1910), later Commissioner of Forestry and Secretary of Forests and Waters for Pennsylvania, and subsequently Governor of the Commonwealth, became a member of the Association in 1887. It is interesting to note that he, a Pennsylvanian, was the first technically educated American forester. In the absence of a professional school of forestry in the United States, his training was obtained in Europe.

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Eleven

April 28, 1887, with instructions "to examine and consider the subject of forestry in Pennsylvania." Although the commission itself accomplished little, its creation was significant as marking the first tentative step taken by the Commonwealth along the road leading toward a constructive forest policy.

Commenting editorially on the report, *Forest Leaves* said, "The fact that the services of the Commission were given gratuitously should excuse them from criticism, and we thank the individual members for the work which they have done. It would seem almost unkind to find any fault with the results of the Commission's investigations, when the great State of Pennsylvania, through its Legislature, expresses itself as interested in preserving or propagating forests to an extent which is measured by the information which can be obtained without pay."

A bill was drafted by the Commission to authorize the creation of a permanent Forestry Commission with officers in every county "who should discover the causes of the destruction of our forests, procure the punishment of offenders who start forest fires, and ascertain the best means of replacing forests in the wasted districts."

Submitted by the Governor to the Legislature with his commendation, the bill was referred to a committee which returned an adverse report, and the subject received no further consideration. The situation was summed up by the Hon. Washington Townsend of West Chester at a meeting of the American Forestry Congress held in Philadelphia, October 16, 1889. "Pennsylvania is not ready to adopt a proper system of forestry," he said. "When the people thoroughly understand the matter it will come."

"The first Legislature, however, to measure the magnitude of the problem was that of 1893, which authorized the appointment of a commission to examine into and report upon the forestry conditions of the State."<sup>7</sup>

An act of the Legislature approved May 23, 1893, by Governor Robert E. Pattison authorized him to appoint a forestry commission, one member of which was to be a competent engineer; the other, "a botanist practically acquainted with the forest trees of the Commonwealth." The salary of each commissioner was \$2500 per annum and expenses, and that of a statistician \$1000 per annum and expenses. An appropriation of \$20,000 was made available, and the commission was directed to report to the legislature not later than March 15, 1895. This

<sup>7</sup> *Forest Leaves*, Pennsylvania Forestry Association, Philadelphia, April, 1889.

<sup>8</sup> Third annual report of the Pennsylvania Department of Agriculture; Part II, Forestry, by Dr. J. T. Rothrock, Commissioner of Forestry. Harrisburg, 1898.

Twelve.

forestry commission was charged with the following duties:

"To examine and report upon conditions of slopes and summits of important watersheds for the purpose of determining how far the presence or absence of forest cover may be influential in producing high and low water stages in the various river basins.

"To report how much timber remains standing of such kinds as have special commercial value, how much there is of each kind, the part or parts of the state where each grows naturally, and what measures, if any, are being taken to secure a supply of timber for the future.

"To suggest such measures as have been found of practical service elsewhere in maintaining a proper timber supply.

"To ascertain as nearly as practicable what proportion of the state not now recognized as mineral land is unfit for remunerative agriculture and could with advantage be devoted to the growth of trees.

"To ascertain what wild lands, if any, now belong to the commonwealth, their extent, character, and location, and what part or parts of such lands should be suitable for state forest reserves; and should such lands be insufficient for such purpose, to ascertain and report what other suitable lands there may be within the state, together with their extent and value."<sup>9</sup>

Dr. Rothrock was the botanist member of this commission. The first engineer member to be appointed, Colonel A. Harvey Tyson of Berks County, was succeeded by William Findlay Shunk of Harrisburg who was unable satisfactorily to complete his part of the report because of illness.

The commission, however, presented a comprehensive, and somewhat remarkable, report of 342 pages to the Legislature on March 14, 1895, one day before it was due. It was largely the work of the botanist member.

Not only did the commission's report cover the assignment given it by the Legislature, but it presented to the people the first reasonably complete information on forest depletion in the commonwealth. It contained facts on the enormous and widespread damage done annually to the woodland by fire; an estimate of the extent, location, and species in the remaining timbered areas; the relation of forests to streamflow; a discussion of state forest reservations; an account of German forestry practice; and many other pertinent and important data.

During the period when the commission was studying the forest situation, citizens who supported the movement had prepared for additional legislation in 1895. As mentioned previously, the report had been presented to the Legislature on March 14, 1895.

<sup>9</sup> *A Half Century of Forestry in Pennsylvania* by George H. Wirt. *Journal of Forestry*, October, 1943.

(Continued next issue)

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## Pennsylvania Nut Growers' Association

A Practical Body of Nut Growers Whose Aim Is to Stimulate Greater Interest in Nut-Tree Planting



Black Walnut Kernel

### Nut Notes

The excess of rain this year is helping to restore soil moisture.

But it has aided in leaching free plant food from the soil.

That will mean poorer growth next year unless the plant food content of the soil is restored.

Nut trees require plenty of food for normal growth and full nut production.

Apply the plant food this fall because the roots remain active until the ground freezes and will store it up in buds and branches for growth next year.

Wild black walnuts in many places have a large crop of nuts but examination indicates that few of the nuts are well filled.

Most wild walnuts lost their leaves by the middle of August. Without their manufacturing plant, the nuts could not have well filled kernels.

In some cases a second crop of leaves was put out. This has been a drain on the plant food reserve of the tree. The buds that developed into late growth and leaves were those that had been formed for next year.

Never in the last 15 years would spraying with a fungicide in early June have been as worth while as this year. The continual moist weather was ideal for rapid development of leaf spot diseases and early defoliation. Trees sprayed with Bordeaux mixture by June 10th last still had a good crop of leaves in early October.

A few wet years will alienate people from black walnuts as a lawn tree. No one wants a species of tree that is bare of foliage in late summer. Let the sellers of walnut trees take heed. Recommend annual spraying in June if you want satisfied customers.

Pecans have little or no crop in eastern Pennsylvania. The same is true of chestnuts. The native hazel nuts have a light crop while English

walnuts have but a sample. Even beechnuts are scarce in the mountains, a fact which is giving concern to game wardens. What will the bears do for surplus energy during the hibernation period without beechnuts?

Apple growers, when they meet at the Farm Show, discuss the whys and wherefores of a light crop, and how spotty or biennial bearing can be overcome. The peach enthusiasts, the cherry, plum and berry producers are also concerned with production and they have learned how to get results. A late freeze, a drought or some other meteorological abnormality might defeat them occasionally, but by and large, production is not the greatest problem.

I wonder whether the Pennsylvania Nut Growers' Association is fulfilling its purpose as a "practical body to stimulate interest in native nuts in their improved form." There are two practical reasons for growing nut trees—one is aesthetic, the other economic. If the two can be combined, so much the better. In fact, if such a combination cannot be found, many farm and suburban home owners do not want nut trees.

No quarrel can be had with the beauty of nut trees, but we are still too ignorant of the producing qualities of many varieties. And more's the pity, there are those who are not anxious to know the bearing qualities. It seems to me the time has come for us to give more attention to the yield. A Wiltz Mayette may be a lovely tree, but if it produces no worth while crop, why call it a nut tree? The same might be said of some varieties of other species.

Mr. C. A. Reed, of Beltsville, is assembling information on the preferred varieties of nut trees. This is a worth while project, but since it covers the entire country, it may have only partial value for Pennsylvania conditions.

I have no desire to criticize his effort, rather I propose that the Pennsylvania Nut Growers' Association supplement it at the Annual Meeting in Harrisburg on January 24th by assembling as nearly complete information on yield for each variety in this most trying year. I should like to hear from every member of the Association who has a nut tree. May I have factual information on the crop this year and a comparison with other years.

For instance, I shall report that at Andelot, the yield from 550 trees this year is 1500 bushels of nuts as picked from the ground. How many bushels that will be of hulled nuts is not yet available but will be for the meeting. Thomas leads this year, with Ohio a close second. Ten Eyck was third, with Stabler a poor fourth. While the crop of Stablers was greater than ever before in the 13 years since planting, it is still such that this variety is an economic loss. Year

JULY - OCTOBER

Thirteen

in and year out Ohio has been a constant bearer with the result that people are now ordering a bushel of Ohios, not a bushel of black walnuts. This will be elaborated upon at the Farm Show meeting, so that you may know the yield of hulled nuts for each variety.

Can I depend upon the other growers to report in like manner? We need such facts from the owner of one tree as well as from the orchardist. We need it from all sections of Pennsylvania and from other states. We need a statement of the type of soil in which the trees are growing and something about care, including fertilization.

We need this from the Bombergers, Browns and Buckwalters, from the Hostetters, Hoopes and Housmans, the Sheibleys, Shellys and Summers; Wagners, Walkers and Wrights. We should like to have these reports given in person, but whether or not you can be there, we need the report. By the time this FOREST LEAVES reaches you, your crop will have been harvested, cleaned and sold or eaten, so the facts should be fresh in your mind. Please jot them down and send them to our secretary.

H. G. M.

## Proper Cracking of Nuts

(From a letter in the Boston Herald)

THE AUTUMN NUT crop is ready to eat now, spread out on old newspapers under the attic rafters. The oily green skins of the butternuts have dried and turned black. So have the skins of the black walnuts in those few attics which display any. The thick jackets of the hickory nuts have split apart and the white shells fallen out.

Now and then a squirrel has somehow gained entrance to the garret and rolled the nuts over the floor, making such a racket that you would have thought the boy of the house was up there playing football, instead of sleeping soundly in a chamber underneath. But the squirrel has now been eliminated and the small boy has brought down a shoe box full of nuts and announced his intention of cracking them on the sitting room hearth. He always makes this announcement, hope springing eternal, though he well knows that he will be sent to the woodshed, to crack the nuts with a hammer on a flat stone placed under the chopping block.

Anybody can crack a butternut after a fashion, but it takes skill to crack one so that the meat is not shattered, and can be lifted out entire, an inch-long, paddle-shaped kernel with a little handle to hold it by. The boy takes great pride in his skill and does not eat more than every third nut as he cracks.

Fourteen

It is hard, also, to crack a hickory nut properly, and still harder to crack a black walnut. The latter is round, so it is difficult to see which way the meat lies, and it is tough—and, let me confess, scarcely worth eating when you do get it out, certainly not in comparison with its cousin, the butternut, or the sweet morsels of hickory meat.

Once the nuts are cracked, they are placed in a bowl and brought in for the family. When the feast is over, the shells are dumped on the coals in the fireplace and flare up in merry flames. Or else the bowl of butternuts is brought to the kitchen where a pan on the stove is giving forth a pleasant odor, the meats are chopped, stirred into the melted maple sugar, and the mixture poured into moulds to harden.

There may be a candy shortage in town, but there need be none on a farm where maple and butternut trees abound. No "store" candy at any price is so delicious as this ancient Yankee concoction of maple sugar and butternuts. Maybe butter is used in the making, too—real butter from a cow. Who hankers for bon-bons when he can have butternut maple fudge? Or who wants salted pecans when he can pick the sweet meat of hickory nuts out of their clean white shells?

## Further Research Needed

Comments on Professor J. Russell Smith's article "The Chinese Chestnut as a Timber Tree—an Open Letter to Foresters" (Forest Leaves 35 (2): 13-14, 1945) by Jesse D. Diller, Associate Pathologist, Division of Forest Pathology, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture.

PROFESSOR SMITH'S STATEMENTS on the Chinese chestnut as a potential timber tree, together with suggestions for selecting, propagating, and establishing the best strains of this species under forest conditions are of interest to foresters and farm woodlot owners. In this article he presented information about a certain planting of Asiatic chestnuts made in 1897 and proposed an extensive investigational program for testing the adaptability of Asiatic chestnuts for forest plantations in this country.

This Japanese chestnut orchard visited by Professor Smith in 1900 was investigated by the Division of Forest Pathology during the winters of 1943-44 and 1944-45. Certain additional data, not available to Professor Smith, were obtained and should be considered before conclusions are drawn regarding the reproduction of these trees. Of the original 2,000 two-year-old Japanese chestnut seedlings planted in the autumn of 1897, only one-fourth are still alive; but of these only 133 (6.7 percent) have full crowns and still make

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a small yearly diameter increment. This remnant of best trees average slightly over 13 inches d.b.h. and are approximately 30 feet in height and crown spread. They have always made slow growth, are short-boled, and have "orchard" rather than "forest-tree" form. The largest tree, located on the edge of the orchard adjacent to an open field, measures 23.7 inches d.b.h. and 34 feet in height, and has a crown spread of 44 feet. In 1926 alternate rows of chestnuts were removed in an attempt to rejuvenate the then stunted trees, and also to provide better pasture for domestic livestock. Occasional surface fires have swept over the orchard (destroying many volunteer Japanese chestnut seedlings), but since 1943 the orchard has not been burned over and grazing has not been permitted.

Professor Smith believes that finding "nearby, a considerable volunteer growth of seedlings from these trees is . . . a matter of great significance. These seeds are much larger than mollisima. Therefore, there are fewer of them, and it must be more difficult for them to become covered enough to sprout." In a survey of 8 acres of 40-year-old second-growth timber adjoining the Japanese chestnut orchard on two sides, over 150 volunteer Japanese chestnut seedlings, ranging from 1 foot to 22 feet in height, were found—some of them at a distance of over 700 feet from the orchard. Squirrels are the most probable means of dissemination of the seed. Although seed from some of the trees is much larger than that of certain Chinese chestnut strains, as is to be expected from an orchard established from ungrafted seedlings, there is great variation in size of nuts among the trees. Some produce nuts that measure 1 3/4 inches across (21 nuts to a quart); others measure only 3/4 inches across (50 nuts to a quart). In this orchard there appears to be no appreciable difference in tree form in those bearing large and very small nuts.

Many Chinese chestnut strains brought to this country have "large-sized seed," but the Division of Forest Pathology has under test certain Chinese chestnut strains that produce nuts only slightly larger than those of the native American chestnut. One of these "horticultural" strains is an introduction made by the U. S. Department of Agriculture from Nanking, China, in 1924, and has proved to be the most valuable of the numerous early introductions from China thus far tested. It was widely distributed from Massachusetts to Georgia. In one planting in Delaware and in another in North Carolina, on deep, well-drained, moist sites, some of the trees have attained a diameter of over 6 inches d.b.h. and 50 feet in height in less than 20 years. While seedlings of this Nanking strain do show variation (as Professor Smith states "prevails among the Chinese chestnuts"), yet in more recent extensive field plantings in

eight eastern States it has thus far continued to show the greatest promise. The seed of this strain averages about 35 to 40 nuts to a quart.

During the past 10 years in selecting the best timber from Asiatic chestnuts the Division of Forest Pathology has proceeded on a slightly different course from that suggested by Professor Smith. In addition to making wide distribution of Asiatic chestnut planting stock to Federal and State agencies, in 1936, 1938, and 1939 the Division established 21 Asiatic chestnut "climatic" test plots on cleared forest land in eight eastern States. These 21 plots with their isolation borders aggregate slightly less than 32 acres and accommodate nearly 22,000 trees spaced 8 by 8 feet. More than twenty strains are being tested at each place. They originally included Chinese (among them the Nanking introduction), Japanese and Henryi species, as well as hybrids, and progeny of some of the oldest introduced chestnuts.

Final judgment cannot be passed on the merits of a strain in only 6 to 9 years of testing in the climatic test plots, or even over a period of 20 years. Not less than one complete rotation of 60 to 80 years is required, yet the Nanking introduction shows such unusual promise in all the plots, and its performance in 20 years has been so striking that arrangements have been made to plant seedlings of this strain on thirty 1/4 acre plots in the spring of 1946 on Federal- and State-owned lands in 17 States. The trees will be planted 10 by 10 feet, 110 trees on each plot. All plantings will be made on forest soil.

Professor Smith's suggestion that the mountains of west China be scoured for the best timber-form wild Chinese chestnuts, we believe is sound. This type of plan was followed by Professor R. Kent Beattie of this Division in Japan and Korea from 1927-30. But new strains from China also must be thoroughly tested under varied climatic conditions before being extensively propagated for wide distribution in our forests.



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Fifteen

## American Holly

(Continued from page 3)

much lower at the trunk of your tree. This basin will hold a lot of water. Add oakleaf mold and let it rot. This mulch keeps the roots moist and cool. If the ground is very poor, broadcast some cottonseed meal on the mulch. You may use a little dried blood, beef scraps, fish scraps, for nitrogen, which the holly needs. Do not use ammonium sulphate, calcium nitrate, nitrate of soda, or other chemical fertilizers. You may kill your tree trying to help it and it takes too long to grow a holly to take chances.

The American holly may be grown from seed, which occasionally does not germinate for two or three years. In this method there is no way of knowing the sex of the resulting plants. Of course, only pistillate or female trees bear berries. By growing trees from cuttings, the characteristics of the parent tree are retained. With the development of root stimulating hormones, the time required to root cuttings has been reduced from four months to six weeks. Holly also comes true by layering, grafting and budding, all of which are more difficult, but interesting, if you have the time, equipment and patience to experiment with them.

This might be a good place to say that you should never plant a single holly tree unless you do not care for the bright red berries. The holly is dioecious; that is, male and female flowers appear on separate trees. The pistillate, or female plants, bear berries, but there is no assurance a female tree will have an abundance of berries, unless a male tree is growing nearby.

Contrary to popular belief, holly is not difficult to transplant, if care is used during moving. Like other evergreens it responds better when transplanted in the spring. Some persons have had excellent results when moving holly late in August or early in September, because at that time new growth is hardened and the roots can become established before cold weather.

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The war clouds break. The first bright rays of peace reach into every hamlet. The world suffers, but by the grace of God and with purposeful striving there shall be born of this travail a new world wherein our sons and daughters may dwell in harmony.

Every village has seen the shadow of war. It has darkened homes that hitherto knew only love and happiness. And the darkness will lie heavily upon them, who wait in vain for him whom war has claimed.

May the memory of those who have made the sacrifice be honored suitably, not by some fragment of war's machine, nor by cold, lifeless stone. They gave their lives that we may live. Is it not more fitting, therefor, that they be remembered by some living things that will grow sturdy and fruitful even as they would have done?

A single tree of some worthy kind or a grove of several sorts, planted and nurtured by those near to him will become a source of inspiration and a symbol of growing affection.

THE PENNSYLVANIA FORESTRY ASSOCIATION

NOVEMBER-DECEMBER  
1945

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## Action Through Education

*The Forestry Program of the Forest Industries*

*by G. H. COLLINGWOOD*

OVER NINETY PERCENT of this country's forest products are produced from some 341 million acres in private ownership. With areas in public ownership the forests support America's fifth largest manufacturing industry, capitalized at some ten billion dollars. The gross value of their annual products exceeds four billion dollars—about six percent of the national income. Over one million eight hundred thousand workers derive direct employment from the forests. In addition wages and salaries are paid another two million workers who derive indirect employment from the forests. The industries represented by these figures are wide spread and varied. They include some 40,000 sawmills, nearly 1000 pulp and paper mills, numbers of veneer mills, cooperage plants, planing mills, etc., and logging camps to supply the various mills.

These figures are astronomical. They reveal the stake which thousands of individual property owners and investors hold in the forests and forest industries of this country. Wages to produce useful material, and taxes for the support of local, state and federal governments are paid because thousands of private investors have assumed risks necessary to production. Fortunately, their forest investments are increasingly protected by the application of forest practices.

Nearly eighty percent of this country's commercial forest land in private ownership is owned by 4,000,000 farmers and small business people. They own over 270 million acres in lots of less than 500 acres. Individuals and corporations who own 500 acres or more control only about 70 million acres.

As owners of forest lands, as operators of manufacturing plants dependent upon forest products, as employers of labor, the forest industries have a responsibility to help the continuous productivity of all forest lands—in fact to help manage them for sustained yield. The forest industries realize that universal application of sound forest practices to all forest lands is vital to a complete and adequate national forest policy. This is a job which demands the

participation of every forest owner—small as well as large.

This country has the land and its leaders have the "know how" whereby our forests can supply all the wood this country needs and allow a margin for export. It is largely a problem of applying the "know how." It remains for landowners or operators to take measures to increase their annual timber growth. This can be done, but it will require education and service, supported by informed public opinion.

Fire prevention and suppression have long been first among the problems in forest conservation. As interpreted by the Secretary of Agriculture, the State Foresters are the agencies through which all forest protective activities are administered, and the forest industries have pledged to help support permanent, dependable protection against fire on all lands, irrespective of ownership.

During the present fiscal year Congress has appropriated \$7,300,000 for the cooperative forest protection program. This is being supplemented with \$8,760,915 from 42 States and Hawaii. Next year, Congress willing, the federal appropriation for this same program may be \$8,300,000 but the matching requirements demand increased appropriations in some states, if those states are to have the advantage of the larger appropriation.

After more than 30 years of teamwork between State Foresters, the public and the Forest Service, last year revealed a remarkable forest fire record. Scarcely half the area burned in 1943 was burned in 1944. Last year's damage from forest fires were \$25,775,000 or \$20,758,000 less than were the damages in 1943. In other words, the savings of one year exceeded the combined appropriations of 42 State legislatures and the federal Congress for that year. How did this happen? Improved fire techniques, fewer campers, and more money all contributed. But top credit belongs to the increased popular appreciation of the importance of forest and forest products. This was the result of educational efforts by State, Federal and industry agencies.

*(Continued on page 12)*

## Instructions for Use of DDT

Against	Type of Preparation	Where Used	When Used	Results	Cautions
FLIES	Oil-base spray containing 3% to 5% DDT, applied with a coarse spray on walls.	Indoors: Walls, ceilings, screens, doors, electric light fixtures and cords, long beams.	Spring and early fall as a rule.	Most effective treatment to date.	1. Keep away from fire. 2. Never spray pets. 3. Wash off if spilled on skin. 4. Test before using on wallpaper, lampshades, as solvents sometimes leave light stain.
	Water-dispersible powder containing 5% DDT, applied as coarse spray. (Roughly, 1 tablespoon of powder containing 50% DDT to 1 gal. of water).	Outdoors: Furniture (especially undersides), porch walls, screens, and ceilings, barn walls, stalls, chicken houses, kennels, compost pile.	Every 2 or 3 weeks if exposed to direct sunlight.	Excellent	1. Shake container between sprays to keep DDT in suspension. 2. Don't use indoors; leaves thin film on furniture.
MOSQUITOES	Oil-base spray containing 3% to 5% DDT, applied as a coarse spray or with mop brush.	Same as above, but especially on screens.	Spring and fall indoors, every 2 to 3 weeks outdoors.	Same as above, but especially on screens.	Same as for flies.
COCK-ROACHES	Powder containing 10% DDT, preferably combined with quick-acting poison like pyrethrum.	Baseboards, moldings, under sinks, in dark damp corners.	When roaches are present. Takes about a week for roaches to disappear.	Slower acting than for flies or mosquitoes, but in combination best roach control yet.	Color powder to avoid mistaking it for flour, cornstarch, etc. Avoid excessive inhalation or contamination of foodstuffs.
BEDBUGS	Oil-base spray containing 5% DDT.	Mattresses, springs, pillows, joints of bed frame, walls near bed.	When bedbugs are present.	Free of bedbugs for six months or more.	Same as for flies.
	Powder containing 10% DDT.	Same as above.	Same as above.	Same as above.	Same as for cockroaches.
CLOTHES MOTHS	Naptha-based (quick evaporating) spray containing 5% DDT.	Directly on woolens or insides of closets, cupboards, trunks.	When storing woolens for summer.	Excellent moth control.	Use quick evaporating solution to prevent woolens from staying wet very long when closed up.
ANTS	Oil-base spray containing 5% DDT.	Indoors: Baseboards, pantry shelves, window sills, behind sinks. Outdoors: Directly in ant-hill.	When you see ants in house—or ant-hills outdoors.	Tests incomplete—some species more susceptible than others.	Same as for use of oil base spray for flies and mosquitoes
TERMITES	Fuel oil spray containing 5% DDT. or Emulsion with 5% to 10% DDT.	Apply to soil around foundations of buildings.	When evidence of termites appears or danger of termite attack is apparent.	In experiments lasts at least 2 years against termites. Not finally tested.	Same as for oil-base for flies.

## What Can DDT Do For and To Us

by H. GLEASON MATTOON

WHEN IN 1940 THE Swiss firm, J. R. Geigy, A. G., of Basle, discovered the insecticidal property of the chemical now known as DDT, patents were taken out to cover its manufacture and use as an insecticide. Some two years later the American and British branches brought these patents to the notice of entomologists and chemists in the two countries, who were seeking substitutes for rotenone and pyrethrum.

The amount of research and experimentation carried on since that time has been prodigious. A short while after the first samples arrived in this country, procedures for effective use against the body louse, mosquito, flea and other disease carriers, which have in past wars decimated armies, were developed. DDT unquestionably played a major role in the United Nations' campaigns in the Pacific, Africa and Southern Europe. Its peace time use, alone or in combination with pyrethrum, may be important particularly against household pests. With the determination of effective dosage and proper carriers, DDT will increase in popularity as a household insecticide precisely for the reason that it destroys insects of all kinds. No one likes "bugs" in the house and, for that reason, there is no risk of killing anything but enemies. DDT will not likely be used alone in such sprays because it lacks the dramatic knockdown of the pyrethrins or the thiocyanates. It makes up for that deficiency with positive kill.

Its effect on insects is invariably the same. Nerve centers are attacked, followed by erratic flight or violent activity. The paralysis starts in the rear legs, progressing to complete paralysis and then death. This may require from a few minutes to several hours. The following sprays and dusts of DDT are recommended against household pests:

### FARM AND FOREST USE

Its use out-of-doors, however, is quite a different matter; it may be likened to firing a shotgun, whose spreading charge kills friend and foe alike. While it destroys the Japanese beetle, codling moth, cabbage worm, corn ear worm, gypsy moth, tent caterpillar, and a host of other pests, it is equally effective against many of the parasitic and predacious insects, without which garden, orchard or forest crops would be impossible. We have come to think of poison as the only control for insects, forgetting or being ignorant of the fact that lady bugs, Ichneuman flies, aphid lions, and numerous other beneficial

(to us) insects kill many times the number of injurious ones than we ever could with our poison. If we therefore spread DDT promiscuously over the landscape we will be reaping a whirlwind of destruction. While DDT kills both the adult mosquito and the larva in ponds and pools, it also kills much aquatic life. Whether trout or other game fish are killed is questionable, but if the lower aquatic life upon which they feed is destroyed the end result is the same.

For large scale use in the forests, spraying DDT from the air has definite possibilities if no thought is given to the effect of wholesale killing of all sorts of insects, beneficial as well as injurious. Beekeepers are thoroughly aroused by the possibility of its general use in orchards. In anticipation of this, the Food and Drug Administration in Washington has announced informally a tolerance of seven milligram of DDT residue on apples. Since no way is now known to remove the residue without injuring the fruit, this does not mean much. The Food and Drug Administration, also, states that DDT should not be used on food crops or in the storage, handling or manufacture of food unless it is required. Since safer insecticides, such as pyrethrum and rotenone, are becoming available there is little excuse for using DDT on leafy crops.

Unfortunately, but little research has been done to determine whether plants absorb the chemical and whether, if absorbed, it will affect those who consume some part of the plant. Experiments carried on by Dr. James C. Munch indicate that sufficient DDT is transmitted from the foliage to the tubers of potatoes to injure those who eat them. Other than this no information is available as to the absorptive powers of plants, nor are the facts known regarding the cumulative properties of DDT or the carriers.

The U. S. Public Health Service has issued reports on the results of exposing mice, rats, guinea pigs and dogs to various concentrations which conclude that such injury as is noted is due to the oil carriers. If injury occurs it would seem irrelevant which part of the formulation is presumed to be damaging.

Since it is recognized that the use of DDT in any form out-of-doors may grossly disturb nature's equilibrium and that the chemical may be absorbed by plants in sufficient quantities to be toxic to man, we must conclude that the Food and Drug Administration should forbid its use in orchards, forests and gardens until additional research has been completed.

# FOREST LEAVES

Published Bi-Monthly by

The PENNSYLVANIA FORESTRY ASSOCIATION  
Disseminates information and news on forestry  
and related subjects.

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NOVEMBER - DECEMBER, 1945

## Pennsylvania's Forest Waste

Wood products are the principal commodity grown on over one-half the land area in Pennsylvania. Through abandonment and replanting of marginal lands, the wooded area of the Commonwealth has steadily increased from a low of 8,000,000 acres to the present 15,100,000 acres. The forests are coming back in Pennsylvania.

But they are poor, woefully poor. This is due in part, of course, to the heavy cutting necessary to meet war's demands, but more important than this is the seeming indifference of woodland owners to forest management practices that encourage the growth of better timber. A well-stocked forest is a rarity.

Numerous factors have favored over-cutting and the production of low grade trees. Chief among them is a tax system which encourages early cutting. Two attempts to establish a more equitable system of forest taxation have come acropper in the courts. Apparently, only through amendment of the Constitution can forest owners hope for reasonable tax deferment until trees reach maximum worth. A severance tax, which is economically preferable to the present system, is working well in several states. Perhaps, some day the demand for a fairer forest tax method will force amendment of the Constitution.

Of the wooded area in Pennsylvania over 20% is in farm woodlots ranging in size from 10 to 50 acres. Such small plots individually have too little to market, but in the aggregate they could produce hundreds of thousands of board feet annually for home consumption and to sell.

### Cooperative Marketing

The need is for a joint management and marketing program by groups of farm owners. With this thought in mind, several woodland

Four

owners in Delaware and Chester Counties have formed under the aegis of The Pennsylvania Forestry Association the Chester-Delaware Woodland Cooperative Association. Paul Coates of Coatesville has been named temporary President with John W. Tyler of Norristown as Secretary. The Executive Board consists of Charles H. Robinson, Wagontown; Noah Hershey, Parkesburg; Fred W. Coates, Coatesville; J. Edward Stouff, Thorndale, and Fred Hunter, Coatesville.

The purpose of this organization is to insure better woodland management and greater wood products income for the owners. Before it can function, a survey of the two county areas must be made to determine the available growing stock and the present rate of growth. The work of organizing the cooperative has been done by J. Howard Mendenhall of Manoa, Pennsylvania, a graduate forester of the class of 1942, Pennsylvania State College. Mr. Mendenhall majored in lumbering and management and is well qualified by temperament and education to undertake such a project.

Every effort will be expended to raise the funds necessary to carry out the survey. Without a record of the present stand in the woodlots and the potential growth, the cooperative would be starting with no knowledge of the possibility for success. It is believed that the basic growing stock in the southeastern counties is equal to that of any other section of the Commonwealth. By next summer when the survey is completed, this belief will be verified or disproved. It is hoped that owners having at least 5,000 acres in woodlots will join in this venture. That appears to be the minimum necessary for effective functioning. Inquiry by any reader of FOREST LEAVES who owns woodlots in either of the two counties is invited.

No Wood Products Cooperative is functioning in Pennsylvania so this is a new departure. If it succeeds, very likely it will be the forerunner of many organizations of a similar nature. Farm buying and selling cooperatives in almost every field but forestry have had considerable success. There is no reason why a similar approach to wood production and distribution can not be accordingly successful, particularly if the manager is sufficiently acquainted with the market to reduce the large waste which usually attends lumbering operations.

Frequently less than 35% of the tree is utilized. The fact that 65% made up of tops, slabs, sawdust and stumps, brings no return explains the low income which is so frequently received by the timber owner. Close utilization is the key to success in wood operation today. If the Chester-Delaware Woodland Cooperative Association can reduce this waste by as much as 20%, its chances for success are bright.

FOREST LEAVES

# Nothing To Do In Winter?

by CHARLES E. ZERBY

**W**HAT DO YOU'RE GLAD for this snow — no fires! What do you foresters do in the winter, anyway?" From such remarks it is apparent that the public does not know what a forester does between his autumn and spring seasons of intense activity. Let us catalogue his chores — see what he actually does in winter.

The winter season affords opportunity for two important phases of activity, summing up what has been done in the year just closing and planning for the year just opening.

If the forester gets his field work completed, his transactions all closed, by December 31st, he can at once attack the sheaf of report forms sent to him from Harrisburg. His boss, being an inquisitive soul, wants to know from the standpoint of assistance to the public how many people were helped in their tree planting or tree care problems, the number of plantations checked over and how well they are growing. The reports cover insect and fire damage to planted forests, also trespass and misappropriation of State seedlings for Christmas trees or other forbidden uses; and, if any, what the forester has done about it.

The forester's cooperation with Uncle Sam as a volunteer helper in boosting lumber production for vital war uses is an interesting experience. Contact with sawmill owners may convince him that his best contribution is to remain away and let the harrassed operators continue to solve their problems in their own way.

The progress made so far reveals that timber resources are greater than estimated. Some really big timber is being lumbered, but most of the cut is small—too small—and it is being cut at a rate and in a manner that would cause the noble red man, if he could see it, to retire to his tepee weeping.

Having reported on his assistance to and cooperation with others, the forester now accounts for the management of his own affairs. He prepares a statement on the work done and funds expended in maintaining and extending his forest roads, trails, boundaries, telephone lines and plantations; the repair and construction of all buildings, observation stations, park and recreational facilities and heavy equipment.

Then, if he has sold any forest products (wood or mineral), rented any cabins, or collected any telephone tolls, during the year, he must make his return promptly and accurately.

Miscellaneous reports are required on recreational use of the forest, game kill, fish planted,

products used, car mileage for all automotive equipment, etc. Foresters having nurseries and timber operations have additional accounting to make.

Forest protection calls for a separate columnous report. If the forester and his inspectors are successful in getting all fire reports with the accompanying payrolls for extinction in promptly from the field, the investigations made, the areas checked, he has the material on hand to start his Protection Report. Data from individual fire reports comprise scores of pages of statistics, mostly dry and not of general interest. However, on one page is disclosed the fact that fire loss may be exaggerated, that many fires burn repeatedly on the same areas—sometimes two in the same year.

Also the forester prepares a history of the several hundred local fire wardens forming his protection set-up. Those receiving certificates of merit for long period of service, the activities of the Fire Wardens' Association, the supply, maintenance and inventory of their tools and equipment, their crews of organized fire fighters, and the number of visits made to each warden during the year. The activities of forest inspectors, towermen, rangers, patrolmen, require several reports to relate annually their accomplishments, efficiency and cost.

Other captions in this lengthy and detailed report request information on the weather, causes of forest fires, fire hazards, investigations, law enforcement, special community problems, cooperation with other agencies, educational work, and equipment needed.

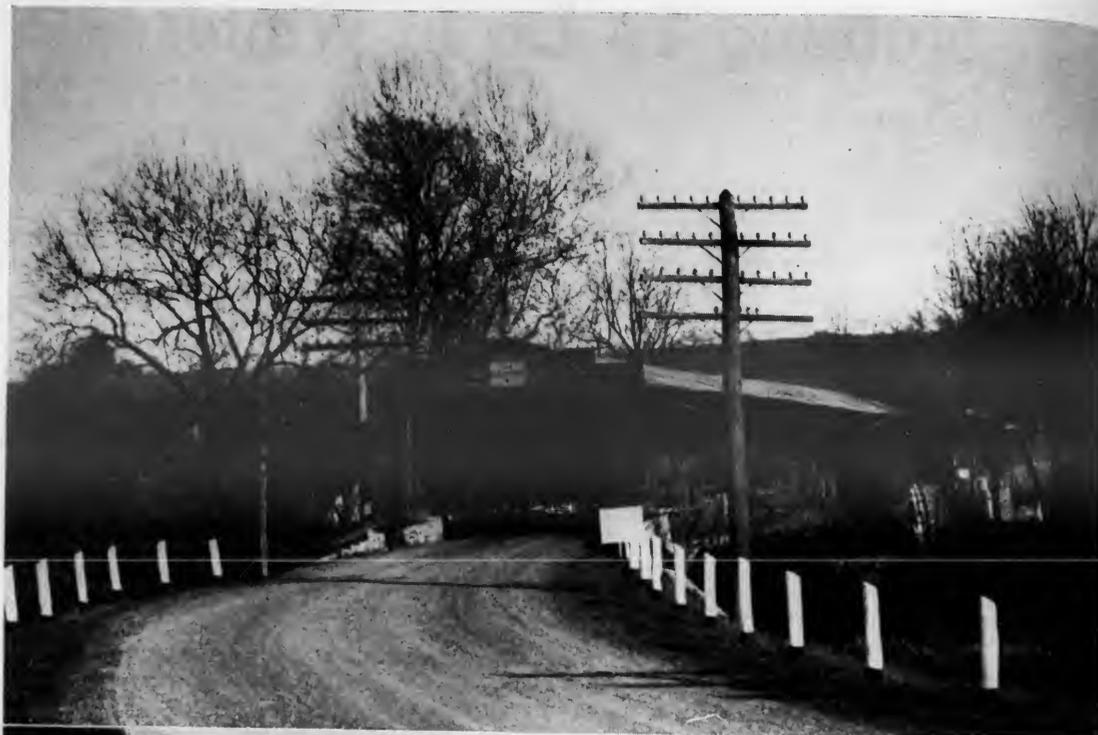
Annually the district maps need correction or revision. Changes are constantly taking place in area classification, roads are relocated, obsolete features must be removed. Winter is the time to do this drafting and also to draw up specifications and sketches for building jobs. All forest areas burned over during the year are sketched on a map. This record shows beyond question where the fire trouble lies.

Thus the forester swamped by paper work welcomes the opportunity for a day outdoors in the crisp wintry woods to make a woodlot examination or appraise a planting site. And in winters of deep snow comes a call to help cut browse for the starving deer. If the deer could only look over the data piled on the forester's desk they would learn that many thousands of acres of browse are incidentally made for them

(Continued on page 11)

NOVEMBER - DECEMBER

Five



Photos: Top, Penna. Dept. of Commerce; bottom, Penna. Dept. of Highways.

Two covered bridges retaining original design without modernization. Top, twin covered bridges over Conodoguinet River, Cumberland County. Bottom, bridge over Juniata River in East Province Township, Bedford County.

# Pennsylvania's Covered Bridges

by H. GLEASON MATTOON

**H**UNDREDS OF COVERED wooden bridges erected one hundred years ago by craftsmen who never heard of a structural engineer, are still standing. They have outlived a generation of iron and steel bridges that have been erected, rusted out, and been replaced in the meantime.

Most of these old bridges were built with lattice trusses, a series of overlapping triangles. Mathematically they might extend to any length without sagging. It used to be said that they were built by the mile and sections were cut off as needed, like liverwurst. Judging from newspaper accounts, the same type of truss carried the American armies across the Rhine.

The roofs were put on and the sides housed to protect the wood from the weather. Their longevity proves the early builders were justified in covering them. Many of the bridges in Pennsylvania and other northeastern states have been in use more than 100 years. They are treasured as historic markers; some are carefully policed and guarded against fire.

Pennsylvania has over 300, while Ohio has double that number. In rural New England a great many are still in use, especially in Vermont. Of the thirty-four Pennsylvania counties that have covered wooden bridges, Washington with 49 leads and its neighbor, Greene County, in the extreme southwest is second with 26. According to our records, Beaver, Clearfield, Clinton, Lebanon, Montgomery, Montour, Sullivan and Westmoreland Counties have but one covered bridge each. Since this information was assembled in 1940, some of these may have since



Photo: Penna. Dept. of Highways

Covered bridge over Conodoguinet Creek, Cumberland County, near Camp Hill, Pa.

been destroyed. Information concerning their present condition will be appreciated.

The oldest bridge now standing about which construction information is available, was built across Buffalo Creek in East Finley Township, Washington County, in 1801. The one across the west branch of Brandywine Creek, Chester County, was put in use in 1807. Though most wooden bridges were built in the 19th century, records show that 5 in Greene County were constructed after 1905, the most recent across Ten Mile Creek in Jefferson Township, in 1918.

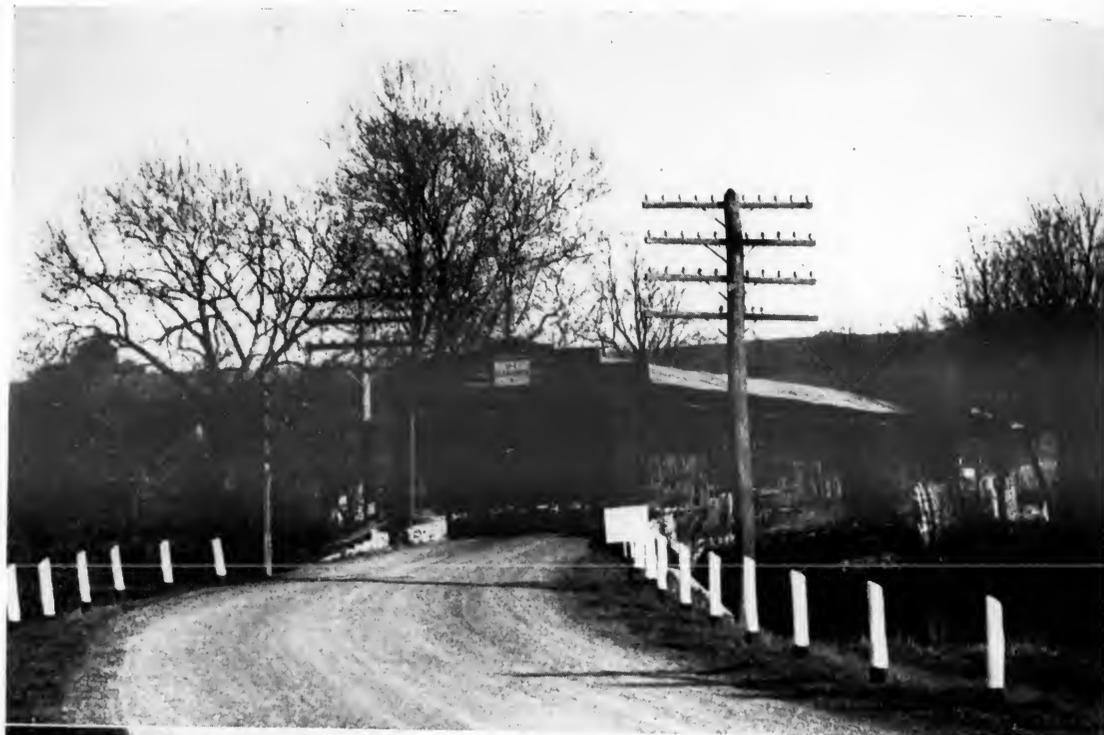
The longest single span is that in Tyrone Township, Perry County, which extends 196 feet across Sherman's Creek. The shortest is the 26-foot span over Raven Creek in Columbia County. Meandering Conodoguinet Creek in Cumberland County is spanned at ten points by covered wooden structures between Newburg and its confluence with the Susquehanna across from Harrisburg.

In a number of the early bridges no nails or bolts were used. The angles of the triangles were fixed with wooden pins so accurately formed that they would fit snugly into the bored holes, with a portion of the pin still projecting and slightly too large to go into the auger holes when first built. After the bridge had stood for some time and the wood had had time to cure and shrink, if it were going to, the builders would drive the pins farther into the holes to give the truss its final tightening.



Photo: Penna. Dept. of Commerce

Old Covered Bridge, Juniata County, near Port Royal.



Photos: Top, Penna. Dept. of Commerce; bottom, Penna. Dept. of Highways.

Two covered bridges retaining original design without modernization. Top, twin covered bridges over Conodoguinet River, Cumberland County. Bottom, bridge over Juniata River in East Province Township, Bedford County.

Six

FOREST LEAVES

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Photo: Penna. Dept. of Commerce

Old Covered Bridge, Juniata County, near Port Royal.

NOVEMBER - DECEMBER

Seven

# New Forests Bring Prosperity to Forsaken Welsh Hills

by L. F. EASTERBROOK

"London News Chronicle" Agricultural Correspondent

THE TIME IS COMING when the new forests that are being planted in Wales will grow all the wood for the 1,000,000 tons a year of pit props that the coal mines in the Principality consume.

Moreover, they will be a mere by-product of the industry, for the pit props will be thinnings, taken out in the ordinary process of growing large trees for "saw timber."

Thus another Lloyd George dream will come true. For it was he, in the "Green Book" published 20 years ago, who drew attention to the folly of importing foreign pit wood to a land which he described as having "climatic conditions for forestry that are unsurpassable."

In this also Lloyd George proved a true prophet. We knew that timber would grow in Britain better than in almost any other country; that at 50 years Corsican pine in our country produces five times as much timber as an average crop of Scots pine in Southern Finland in the same period, and more than double the quantity of Scots pine in Prussia or Sweden. But now that we are putting this to the test and growing timber in large lots, we are finding that it is doing even better than was expected.

I have recently been with the British Forestry Commission looking at some of their new forests in North Wales. So well do trees grow under those conditions that the Commission have had to revise its figures for the employment these woods will give. Eventually, it estimates, direct employment in the woods and employment in forest industries will require a man to every 20 or 25 acres.

This figure would not be reached for a number of years, not until the trees have matured. But they are growing so quickly that many more men than was expected will be required in the earlier years.

The Commission is planting 100,000 acres of new woodlands in Wales, and this figure will probably be doubled.

As regards the price of pit props, there is no reason why home-grown timber cannot compete, with so much in its favor, provided we take some pains with its marketing.

In Dovey Forest, which lies in Merioneth and Montgomeryshire, I saw a steep hillside planted with Japanese larch. The land here is so poor that it sold for only some £3 per acre. Each acre may have carried one sheep for half

a year. In the six months of winter those sheep would have had to be sent to valley farms.

The plantation is 16 years old. It has produced already a net profit of £10 per acre from the sale of thinnings, and if the plantation were sold as it stands today, it would realize a net profit of about another £40 per acre.

It will employ a man for every 20 or 25 acres when it is in full working order. But as a hill sheep farm it would only employ a man for every 500, or often 1,000 acres. Both economically and socially, therefore, there is an indisputable case for afforesting such land. We would be producing riches in timber and in money, but also in terms of human life.

For the fact is that the remoter parts of Wales are becoming depopulated, like the Highlands. The younger generation will not face the isolation of such a life. You can see the deserted homesteads, with bracken eating up the empty hillsides. But if forestry and its attendant industries can be established here, with the consequent demand for twenty and thirty times as many people, new communities will be built up, new villages created.

The Forestry Commission is creating forest holdings, in which a man has 10 acres or so of land of his own, to use as a small holding, and is also guaranteed 150 days' paid work in the woods. In the five forests that I saw there are already 140 of these. Thus a background of security is given to the uncertain business of small-scale farming.

But the Commission does more than this. It does not afforest good agricultural land, although it often has to acquire it as part of a large block of poorer land for tree planting. On the good land, the farms are retained as farms. The Commission helps its small holders to become tenants of its larger farms, if they make good in the smaller ones and are anxious to progress.

In Snowdonia is one of Britain's four national forest parks, where campers and hikers are encouraged by the Commissioners. They aim at creating one new forest park a year for 10 years. Huts and hostels are provided, and the Commission is planning to issue books and pamphlets to tell visitors about the local history of these places, as well as about the forestry that is going on there.

# Rise of the Forest Conservation Movement In Pennsylvania

(Continued from Last Issue)

But on March 13, Governor Hastings had approved an act which created the Department of Agriculture and which furthermore provided for a Division of Forestry within the Department. Following presentation of the forestry commission's report, a joint resolution of the Legislature directed that it be printed as a part of the first report of the newly created Department of Agriculture.

It was logical that Dr. Rothrock should be named as the head of the Division of Forestry. Certainly, in the entire commonwealth there was no one better qualified than he; and he became the first Commissioner of Forestry in 1895. Six years later he succeeded in having the division raised to departmental status. From 1901 until 1929 it was officially the Department of Forestry, and in the later year, under the administrative code, it became the Department of Forests and Waters.

## State Forests

"The Legislature of 1897," Dr. Rothrock said, "took vigorous hold upon the work, and in one session laid a solid foundation for the forestry interests of the future." It passed a law which he considered "the most distinct advance . . . in public sentiment in favor of the forestry work."

This law provided for the acquisition of three state forestry reservations, each of not less than 40,000 acres on the watersheds of the Delaware, Susquehanna, and Ohio Rivers. Thus a policy of acquisition and administration of forest land became an important keystone in Pennsylvania's early forestry program.

The bill had been introduced at the request of the Pennsylvania Forestry Association, the members of which organization were becoming greatly concerned over the rapidly increasing area of land which was later to be designated "the Pennsylvania desert." Dr. Rothrock later acknowledged that "there were grave doubts as to its passage. But these soon disappeared and it then for the first time became evident how strong and how general the sentiment in favor of the most active forestry legislation had become."

Although the bill was passed by a large majority, another bill was introduced in the Senate to repeal it, but was dropped in committee for all political parties had joined in the legislation. Moreover, the lumber interests of the state, if

they did not actually support the bill, at least did not actively oppose it. Dr. Rothrock noted that "the lumberman, who once looked upon all forestry agitation as an interference with their business, have come to be among the warmest friends of the movement, which is intended to perpetuate, not to limit, their vocation."

At the turn of the century "New York and Pennsylvania were the only states which had actually embarked on policies of permanent forest land ownership and administration."<sup>10</sup> By the time of Dr. Rothrock's resignation as Commissioner of Forestry, June 1, 1904, the Commonwealth had acquired state forests totaling 443,592 acres. He continued his active interest, however, by serving as secretary of the State Forestry Reservation Commission; and on his resignation from this body in December, 1913, the commonwealth had acquired nearly one million acres of state forests.

It is noteworthy that this legislation of 1897 marked the beginning of Pennsylvania's state-forest system which now totals 1,655,822 acres. In addition the Allegheny National Forest, established in 1923, with an area of 461,343 acres, the state game lands and refuges with an area of 755,489 acres, municipal and community forests totaling 67,414 acres, together with other publicly owned forest lands to the extent of 75,236 acres, bring the total of Pennsylvania's public forests to 3,015,304 acres.

Mere acreages in themselves are not important. What is of the highest importance is that these lands are managed and protected in accordance with improved forestry practices. In the chapter "State Accomplishments and Plans" of the voluminous document entitled *A National Plan for American Forestry* (1933) may be found this interesting comment (page 764): "Of all the States, Pennsylvania has achieved most in putting into effect actual forest management and reclaiming to economic productiveness through State acquisition and administration extensive areas of depleted and degenerated forest and idle cut-over land."

## Forestry Education

As was previously mentioned, a public meeting was held in the Historical Society of Philadelphia, May 26, 1886, at which Dr. Rothrock gave an address; in it he compared forest conditions in the United States with those in Europe, where most of the nations, except England, each had one or more technical schools of forestry.

The first issue of *Forest Leaves* of July 1886, published by the Association, predicted that "Forestal study in our colleges will eventually become an important branch of a general col-

<sup>10</sup> A National Plan for American Forestry. Vol. 1, p. 772. United States Government Printing Office, Washington, D. C. 1933.

legiate course." At a meeting of the Association held November 30th, 1886, Dr. William Pepper, provost of the University of Pennsylvania, spoke on forestry education and suggested the establishment of a chair of forestry in one or more of our colleges. About this same time the Association was asked to provide the Scientific Society of the University of Pennsylvania with a course of lectures on forestry which were given early in 1887, and which "were well attended and much appreciated." A second series "more comprehensive than those last spring" were scheduled for the coming winter.

That rising public sentiment in Pennsylvania at this period was not only a power in helping shape a forest policy for the state, but for the nation as well, is evident from the fact that the American Forestry Congress (now the American Forestry Association) held its eighth annual meeting at Horticultural Hall in Philadelphia, October 15-18, 1889, by invitation of the Pennsylvania Forestry Association.

One of the highlights of this congress was an impressive address delivered by Hon. Carl Schurz on the need for a national forest policy, "in the course of which he referred to his own unsuccessful attempts, as Secretary of the Interior, to inaugurate such a policy."

A resolution adopted unanimously by the congress is worth recording here because it anticipated the development of America's splendid forestry educational and research systems. When we recall that at this time there was not a single school of forestry, not a single forest experiment station, in the entire western hemisphere, we begin to realize with what prophetic influence a comparatively small group was molding public opinion.

"It is the sense of this Congress," the resolution read, "that our Agricultural Colleges should regard it as one of their most manifest duties to give the subject of Forestry a prominent place in their curricula of instruction, and that every Experiment Station should engage in investigating and making experiments in those branches of Forestry which have special importance in the localities in which they are situated, or which are of general interest to Agriculture and the Arts."

The trustees of the University of Pennsylvania in 1889 acceded to a request of the Pennsylvania Forestry Association to establish a chair of forestry "so soon as an adequate endowment for such a chair can be secured." In the issue of *Forest Leaves* for March, 1890, was published a suggested forestry curriculum for the university. But, the chair was never established, presumably because the necessary funds were not raised.

It must not be assumed that up to this time

instruction in forestry had been wholly neglected. "Prior to the development of professional education in forestry in the United States, forestry had indeed already gained a certain recognition as an adjunct of agricultural education. No fewer than twenty-two land grant colleges gave some instruction in forestry before 1897."<sup>11</sup>

Professor William A. Buckhout of the Pennsylvania State College, who was a member and secretary of Governor Beaver's forestry commission of 1887, was one of the group of educators in the agricultural colleges who were giving lectures on various phases of forestry. His work was offered as part of his work in the Department of Botany. Unfortunately, most of those in the agricultural colleges who attempted to lecture on forestry had themselves no training in the subject, and consequently were unable adequately to teach the art of silviculture and the technical and economic factors affecting forest protection and management.

In 1898 Cornell University began its excellent course in forestry, and the Biltmore Forest School in North Carolina began training students under an eminent German forester, Dr. C. A. Schenck. Yale University started its professional course in forestry in 1900. Still Pennsylvania had none, though Dr. Rothrock and other influential members of the Pennsylvania Forestry Association had vainly tried to interest the Pennsylvania State Agricultural College for several years, and in 1898 had formally asked for such a course at State College or at the University of Pennsylvania. For various reasons, neither institution took action, much to Dr. Rothrock's disappointment.

In the issue of *Forest Leaves* for October, 1901, he outlined a plan for establishing "a school for practical instruction in forestry"—not at State College, not at the University, but on some desirable location on state-owned land. "It will guarantee to the State in the promptest and most certain manner, and without any pecuniary risk to the Commonwealth, a body of trained foresters who will be intimately acquainted not only with forestry principles, but with the ground upon which these principles are to be applied, and it will create a self-respecting, cultivated body of men, with the *esprit de corps* which will enable the American forester to take rank with the forester of any other country."

Finally in 1903, the Legislature passed an act which provided for a school of forestry at Mont Alto, to be known as the Pennsylvania State Forest Academy "with the traditions of West Point and Annapolis as ideals." The state for-

<sup>11</sup> Forest Education by Henry S. Graves and Cedric H. Guise. Yale University Press, New Haven, Conn. 1932

ester at Mont Alto, Mr. George H. Wirt, was named as director of the school.

Mr. Wirt, born in McVeytown, November 28, 1880, had been graduated from Juniata College with the M. E. degree, and from the Biltmore Forest School in 1901 following instruction in Germany. He was therefore the first technically educated forester to be employed by the commonwealth, having been appointed April 1, 1901. Incidentally, he still serves in the Department of Forests and Waters as chief of the Division of Forest Protection and as such is the chief forest fire warden of Pennsylvania. He has been an able and devoted servant of the commonwealth for more than 43 years.

In 1907 the Pennsylvania State College established a Department of Forestry and began instruction on the professional level. Thus beginning in 1907 there were two technical schools of forestry in the state. The name of the State Forest Academy was subsequently changed to the Pennsylvania State Forest School, but it continued in the policy under which it was established, to train foresters for service in the state forests.<sup>12</sup> In 1929 it was merged with the Department of Forestry at the Pennsylvania State College, so that now there exists only the one school of forestry in Pennsylvania. It is, however, rated by the Council of the Society of American Foresters as an approved school.

In presenting this brief historical sketch of the rise of the forest conservation movement during the latter part of the past century, I have attempted to show how enthusiastic and unselfish public sentiment shaped the development of forest laws and forest policy in Pennsylvania. But this movement had a social and economic significance far beyond the conservation of forests alone. It helped establish the concept of conservation as an instrument of public policy for other natural resources—soil, water, and wildlife.

Pennsylvania became a great industrial commonwealth through the exploitation of her natural resources. She can only continue to be great through their wise use and preservation.

<sup>12</sup> The Report of the Committee on Conservation to the Pennsylvania State Grange, Tyrone, December 11, 1918, contains an interesting statement (page 8): "The high integrity, skill, and devotion to duty of the state foresters constitute a remarkable tribute to the spirit and efficiency of the training at Mont Alto."

We just heard that W. Edwin Crouch, outstanding real estate man of Easton, Maryland, has planted a hundred pecans and hicans along his drive in honor of his boy who has just been discharged from the Army. That's planting beauty for future profit.

## Nothing To Do in Winter?

(Continued from page 5)

through fire and lumbering. The feast is set, but the guests linger in the byways.

Planning to do better work and more of it during the coming year is the second phase of the forester's winter work.

The first warm days of early spring bring inquiries from the prospective tree planters. Their interest must be maintained despite the shortage of labor for planting. After the war these enthusiasts will head a renewed reforestation movement; they must be helped and encouraged now in all ways possible. His own spring planting project requires much thought from the forester.

All equipment must be in condition for another year's work. Tires, gas and fuel oil are no longer purchased at will; the ration board wants to know why. Even the disposal of surplus property requires care. Repair parts are practically non-existent, hand tools are rapidly disappearing, so, while wrestling with priorities, the forester schemes and contrives and connives to keep his buildings and equipment in use.

The protection force must be met with early, so that it be prepared for the first spring fire. This is a visiting job largely for the inspectors, but the forester must shape it up and supply the push. The extinction crews must be organized, vacancies and resignations filled, tools and equipment repaired and replaced, radio operators trained, and meetings for training scheduled.

Getting the organization altered for the coming fire season is the first step in preparedness, the second is planning for fire prevention. From his maps the forester knows where and how fires occurred in specific areas. Undoubtedly he can expect fires in the same areas this year; but how can he forestall them? Can he have the hundreds of miles of railroad hazards and other known hazards abated before the fire season begins? Contacts, planning and cooperation with the railroad officials and landowners, all of which are winter jobs, must be done early so that prevention work can start as soon as the snow goes in the spring.

The manuals of instructions for the fire tower observers and the inspectors must be revised and corrected. They must include all the latest instructions and up-to-date lists of wardens in their immediate coverage, as well as the personnel lists off the adjoining districts and this means that the lists must be prepared and exchanged with a neighboring districts during the winter.

Foresters having nurseries will have a big job in finding where labor, seeds, and fertilizer

Eleven

Ten

FOREST LEAVES

NOVEMBER - DECEMBER

can be obtained for early spring work.

Another winter duty is the preparation of the budget for the coming fiscal year. This must be carefully prepared so that the forester has, or at least has requested, sufficient allotments to do his year's work effectively and efficiently.

Amidst all of these reports and planning, he must take care of his usual routine office work, the monthly bills and reports, correspondence, usually some complaints to run down, such as "Why a certain fire fighter was not paid for fighting fire last February 30th," etc.

During winter is the only convenient time the foresters can meet with one another and exchange views at conventions and also it is the time to prepare articles for publication.

This, in general, is what the forester does in winter. When his friends see this tally of tasks they will know definitely that the hibernation instinct has no part in the forester's make-up.

## Action Through Education

(Continued from page 1)

Next to more adequate protection from fire, all forest owners and forest operators should develop and adopt forest practices to insure continuous production of timber as harvested. Many believe that education should precede, and accompany the application of police powers. And under police powers are included forest protection and the administration of regulatory laws. The forest industries would encourage more activities of the nature of the Farm Foresters, and more services of an action nature, by State Foresters that small owners may be helped to manage, mark, and market their forest crops.

During the past four years the forest industries have cooperated with the regional lumber manufacturing associations to center much of the program with State Foresters. The State Foresters, in turn, worked through Extension Foresters, Soil Conservation Service Foresters, State Forestry Association, Chambers of Commerce and other interested groups to certify 868 Tree Farms in 10 states. They cover 10,867,377.5 acres.

The Tree Farm is a demonstration forest. It may be less than 10 acres or more than 500,000 acres. The distinction is that these forests are protected and managed for the purpose of growing continuous forest crops for commercial purposes. The name "Tree Farm" evolved from the fact that trees grow and that timber is a crop. Areas of growing trees respond to protection and care much as do the more generally recognized land crops.

The growing trees which comprise a Tree Farm may be of natural origin; they may be the

result of conservative cutting; they may have been planted; or they may be the product of a combination of two or more sources. In any case, before an area is recognized as a Tree Farm, the owner must show willingness and intent to use his land to produce forest crops. He must provide reasonable protection from fire, insects, disease, and from damage by excessive grazing. He must plan to harvest the growth so as to assure continuous crops of forest products. Finally, he must be willing to furnish information to the State Forester or other cooperating agents concerning the progress of his Tree Farm.

Preparations for additional Tree Farms are underway in Florida, Maryland, New Jersey, New York, Ohio, South Carolina, Tennessee, West Virginia and Wisconsin. Two or three may be ready for announcement before the end of the year.

Tree Farms are one of several vehicles for demonstrating the economic advantages of sound forest practices to forest owners and operators. To this end every existing vehicle should be used and new ones should be developed, for as expressed in American Forests for September, "an ounce of woodland interest may be worth a pound of public control."

Interest is basic to all education. We who are interested in better forest practices would focus the interest of the landowner that he may be encouraged to consider how he can make his forest more productive—and therefore more valuable. Call it "enlightened self-interest" if you wish. It touches a mainspring capable of starting human actions.

The program of education has been developed through lectures, publications and demonstrations. Through the 4-H Clubs it also reaches boys and girls. There are outstanding opportunities for Extension Foresters. They are neither police agencies nor action agencies for providing services to individual operators. But the educational activities of Extension Foresters have encouraged thousands of forest owners to accept sound forest practices. The policing and servicing functions of State Foresters can be supplemented and supported by the educational and demonstration activities of Extension Foresters.

Most states have a State Forester's organization qualified to manage state-owned forest lands, to administer and enforce state laws relative to privately owned forest lands and to provide adequate co-operation with all timberland owners in the state to the end that individual forestry problems and those of the State may be solved. Where this does not exist, every effort should be made for its early fulfillment. This is an action program which required educational support. It includes jobs for which the State Forester is equipped by law as well as by technical training. Such a program needs to be

supported by individual citizens, but it can best be fulfilled through the coordinated efforts of many citizens and citizen groups.

Forest Industries Information Committees can help achieve such programs in each State. They plan to meet with the State Forester to discuss the objectives and functions of his department. The committee would consider the current budget, the desired appropriations, and other matters relative to the State Forester's program. Thereafter, each committee would support the program before the State legislature. From one year to the next this interest would be continued that the work of the State Forester and his organization may be increasingly efficient and effective.

Adjustments of pay and employee conditions are problems which these industry committees must also consider. It is probably safe to say that neither is satisfactory in any State, but their correction is a difficult and delicate job. It must be undertaken, however, to provide the continuity of program and security of personnel essential to any competent organization. Security of personnel, however, should be provided with full consideration to professional ability, integrity and competent administration.

Not the least responsibility which the forest industries would assume is the support of public regulation when necessary or desirable. Fundamentally, such regulation as may be adopted should be administered under State law. This means by the State Forester. The industries have repeatedly declared that the need or desirability of forest regulation and its scope if undertaken should be determined by the people of each state.

To date, fourteen states have enacted laws intended in one way or another to regulate

timber cutting and forest practices on privately owned lands. The States, together with some data concerning their forest status are shown in table below.

These fourteen states produced more than half the lumber cut in 1943. They include 65 percent of the commercial sawtimber stand and nearly half of all the commercial forest area in private ownership within the United States.

Admittedly there is variation in the effectiveness and the extent to which the laws of each state are enforced. It is generally conceded, however, that best results have been achieved in states where industry leaders participated in formulating the laws, and where industry helped support their enforcement. In many states, industry groups employ foresters who cooperate with State Foresters and their staffs to inform operators of the meaning of the state laws. They also encourage operators to obey the laws. Thus through intelligent informed cooperation the laws are enforced in spirit as well as in letter.

Education and service are two fundamental vehicles which the forest industries would use in solving this country's forest problems. We recognize that timber is a crop, and that protection and management are essential to its continuous production. We recognize that growing forests and forest using industries are vital to the national welfare. When forest owners learn how protection from fire and sound forest practices pay profits, we believe they will seek help in their application. It therefore follows that the forest industries hope the State Foresters will use education and service as vehicles to achieve more satisfactory production on all forest lands. The forest industries offer their cooperation toward larger public support for their work.

State	Total Commercial Area Thousand Acres	Commercial Forest Area in Private Ownership Thousand Acres	Commercial Sawtimber Stand M. bd. ft.	Lumber Production 1943 M. ft. B.M.
California	13,655	6,799	213,480	2,352,592
Idaho	15,215	3,610	89,501	889,748
Indiana	3,438	3,322	2,182	156,081
Louisiana	16,185	15,573	42,423	1,082,230
Maryland	2,386	2,255	1,274	131,942
Massachusetts	3,001	2,779	2,042	95,983
Minnesota	17,244	6,167	12,455	195,658
Mississippi	15,859	13,875	35,932	1,634,004
Nevada	377	177	778	
New Hampshire	4,575	3,832	6,956	392,332
New Mexico	4,018	1,040	13,823	109,099
Oregon	24,452	10,567	434,400	6,401,424
Virginia	13,375	11,950	22,150	1,098,070
Washington	19,562	10,431	308,768	4,490,086
TOTAL	153,342	92,377	1,150,164	19,029,249

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## Nut Trees in America

by JOHN W. HERSHEY  
Downingtown, Pa.

As America passes from the stage of youth to maturity, people more and more turn their thoughts to the more permanent and dual purpose of ornamental plantings. Bird feed, squirrel feed, and feed for home consumption.

Among trees for such plantings nothing quite stands out like the monarchs of America's virgin forests, the nut trees.

And to this natural collection were added the English walnut of Europe (*Juglans Regia*), classed for centuries as a royal gift by kings and God's gift to man by the poor for their bounteous production of hermetically sealed potent feed. The English walnut was brought here and planted by European immigrants, and was known locally by the country from which they came, French, German, Dutch or English. But the English seemed the most popular. Its true name might be called Persian for it is from this country the fine selections spread over the world from the strife torn shore of China to the turbulent peoples of western Europe, from the hot climate of Northern Africa to the northern slopes of the Carpathian Mountains in Poland and southern Russia. Then on to the Americas.

Grafting and budding of nut trees in south-

ern Europe was not so much of a chore. In America they just didn't propagate.

To the English walnut the thrifty pioneer of America quickly added to his list of respected and adored trees the American black walnut, the butternut, the hickory, especially the shagbark or eastern shellbark, *Hickoria ovata*. The western shellbark, the *H. laciniosa*, found in the Mississippi River basin and the pecan of the mid west and south.

### A Marked Drawback

As people started to landscape and ornament their homes, two barriers prevented them from progressing with the nuts. One, from the standpoint of easy planting trees, the nut trees could not be moved readily. Hence grew the popular belief, "Nut trees won't transplant." This has been one of the biggest obstacles in the pathway of making this group of trees popular to this day. The other, failure to propagate, bud or graft fine selections of easy cracking nuts.

The late J. F. Jones, father of successful propagation of thick barked species, overcame this obstacle in his pioneer nut nurseries at Lancaster, Pennsylvania, and offered his first trees for sale, I believe, about 1917.

Since then, the Northern Nut Growers Association has been holding contests every few years for better nuts and a number of extra fine ones have been found by them and by private investigators.

Added to this, marked and startling progress has been made in locating varieties (clons) of the English walnut. Until recently the run of English were so temperamental they were quite discouraging. Winter killing every so often or not growing.

No progress has really been made with the butternut in locating fine selections of thin shelled varieties and worse yet, no one has learned how to get a graft to grow, or at least more than one. So the best that can be offered in these are select seedlings.

The next addition to reach America was the Chinese chestnut to take the place of the dear old American chestnut—not a timber tree, as it is low growing but like an old apple BUT it does bear a fine sweet nut like the American, only somewhat larger.

### Ornamental Merits

The American black walnut is one of the finest for distant plantings, in meadows or fence row on the farm or at the far end of the lawn or an estate.

The English walnut with its lighter husk is much more desirable for small places and for hanging over houses.

The pecan, hican and shagbarks are excellent for planting either on small lawns or in large landscaping.

The filberts, a bush 18-20 ft. high, are excellent as lawn specimens or for informal hedges, planted 8 feet apart.

The Chestnut is a beautiful small tree with its deep rich glossy foliage and large burrs hanging on over the summer.

### Foliage

Many people are anxious for early spring foliage and, of course, this is desirable in many places. But in many places a tree that pushes late, permitting the early spring sun to warm things up in the morning when planted next to a home is very desirable. By the same token their characteristic of dropping their leaves early in the fall helps out by letting the sun in on early fall days before the furnace is started. All are thin foliage trees and make the coolest shade in the summer, which permits the growing of flowers, vegetables and lawn under them.

All except the filbert have compound leaves, that's the long leaf with side leaflets. The American walnut leaf is a light green sometimes turning yellow in autumn. The tree is a wide spreading stately specimen living to 150 years old.

The hickories vary in color, but the shagbarks run a dull green turning to brown in

autumn. The tree is a narrow columned grower with the short limbs coming horizontally from the trunk except *Ovata pubacena* in the south which is a spreading grower.

The western shellbark is a wide spreading monarch, with limbs taking off from the trunk at a 45 degree angle. One can tell this from the eastern shagbark by its trunk plates of rough bark. They come off in long narrow strips while the eastern shagbark shag is mostly found in short rough plates. The foliage is greener, larger and more lustrous.

The pecan runs to smooth bark although of the hickory family. Its foliage is fine and narrow leafed, light or yellow in summer turning to a handsome yellow and gold in autumn, hanging on till late in the fall. The tree structure is of awesome magnitude, often making two hundred feet in height and 150 feet spread. It is known to live 1200 years.

The hican is much like the pecan in growth but the foliage is a deep rich green never turning in the autumn until the heavy frosts cut it down. This characteristic is most desirable in creating a contrast in a border of scarlet and gold colors.

The English walnut has a light green leaf with larger leaflets than the other walnuts, the tree a large grower and spreading. It is an excellent lawn beauty with its whitish barked limbs and rough, gray, furrowed bark on old trunk.

The butternut has yellow green foliage. It is spreading and large in the North, weakening as it goes South until we find it in southern Virginia down to Alabama clinging to the ridges and mostly half dead from limb bark blight.

The filberts have a simple egg-shaped roundish leaf with fascinating scalloped edges. One outstanding attraction of this bush is that the male catkins come out in the autumn and stay with you all winter reminding you that another spring is coming. Then in early March or April the minute reddish female flowers appear in a warm balmy week the catkins swell and ripen diffusing their pollen to the four winds. Then they go to sleep again and in spite of the cold you will see in the late spring little buds growing into big buds, then suddenly you see their little hoods. As these swell and grow a nut forms under the odd and attractive hood and shortly in the autumn the hood dries and out falls a gorgeous reddish brown to brownish yellow nut.

The only member of the nut group outstandingly different in fall foliage is the Chinese chestnut, which has a simple leaf, oblong and glossy that turns brown in autumn and hangs often until December.

### Soil Requirements

All do well on agriculture soils, the English demands it. The American walnut will do on a

5.5 Ph, but sweeter is better. The chestnut leans to acid soil.

The walnuts and chestnuts are best on well drained soils. The pecans and hickories are at home on bottom lands but will do well anywhere humus, food and moisture are provided.

The filberts love moisture, yet we also find their cousin, the American hazel growing all over the mountains of America where ever the axe or plow hasn't met up with them. All nut trees love deep soil.

*Planting Nut Trees*

The filbert and the chestnut can be planted by the best planting expert with success.

With all the others it's best, first buy from a recognized nut nurseryman who has taken care of his trees before shipping and follow only his instructions. I cannot emphasize this too much. You know the old saying, "God protect me from my friends I can take care of my enemies myself." And friendly advice on planting nut trees surely causes enormous losses.

This reason lies in their being tap root trees with a few side roots. Success lies in following a few simple instructions that the nut nurseryman has worked out through losses and tears.

Dig a hole so you don't crowd the 3 to 4-foot tap root on the hickory and pecans, 2 feet on the walnuts. Don't damn the nurseryman for not shipping you a tree with a bush of roots like the beard of a rustic. Then plant them carelessly because you are sure they won't grow anyway. But say, I've got some rare trees here that few people have because they don't know to plant them.

Then drop six inches of top soil in the bottom of the hole, tramp well, then slowly fill the hole and tamp well and hard. Tamp the soil up against the tap root, pull out the few side roots spreading them as far as possible. Don't water as you plant "because that's always the way you did it on other trees." When you come to the last root you'll be about 2 inches from the top of the soil, here mix in two pounds of raw bone, tankage or dried blood.

Then after you've made your last tramp around the tree soak with water. Keep cultivated in a wide circle, water if the least bit dry the first summer and sometimes the second. Use warm water, just so you can stand your hand in it for Best results. Such a tree will make 2 to 4 inches growth the first year. Keep up the good work of hoeing and watering and it will often make 6 feet of growth the second season and keep on going at high speed.

Yes, it's a little work and care but in return you receive a beautiful lawn tree and wagon-loads of nuts of the highest quality for home use, market and wildlife.

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new members, or a grand total of members.	3600
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Making a total annual income of	\$12,700.00

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Forest Leaves, the Association's magazine, is sent to members in all classes.

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