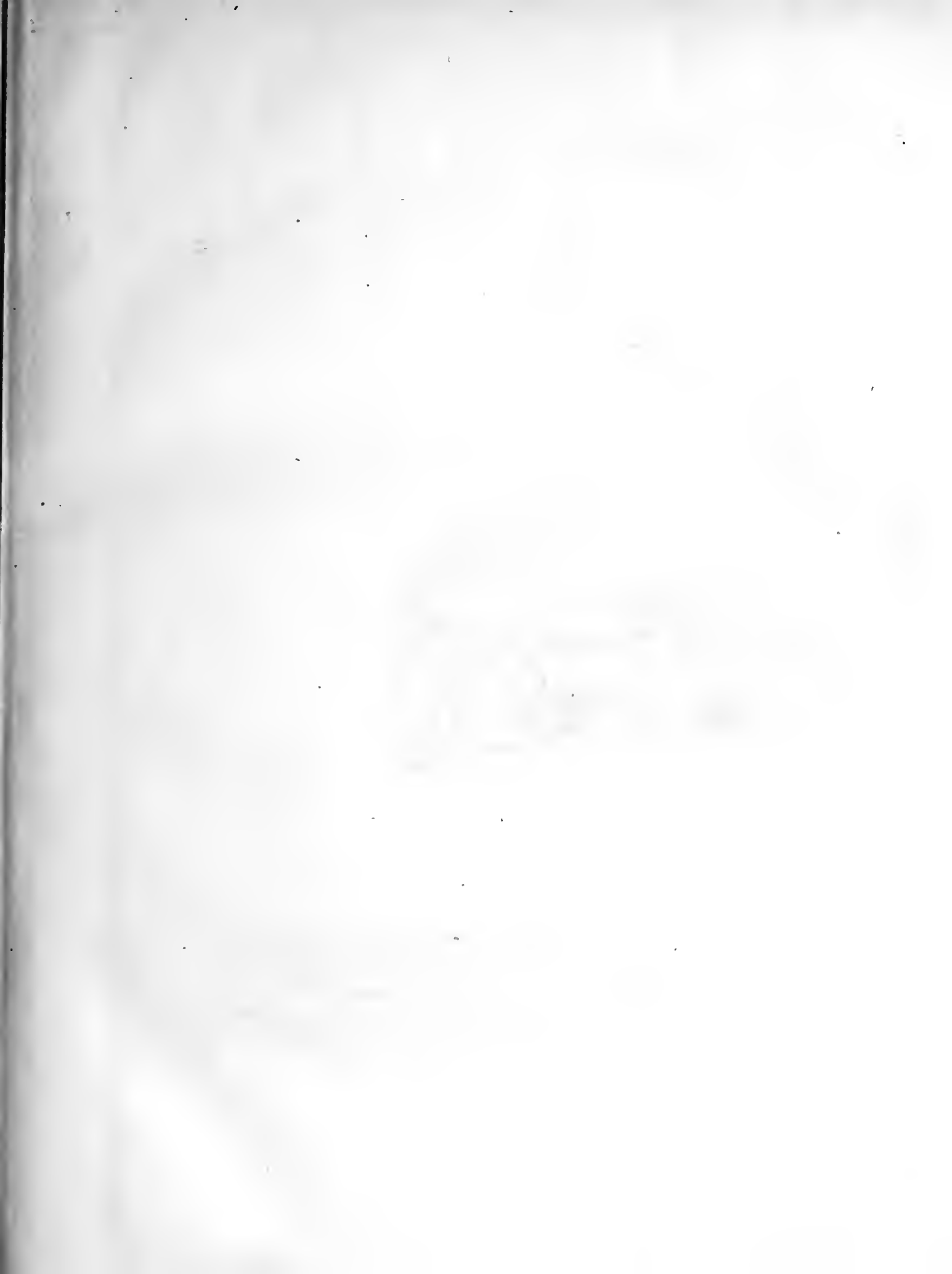
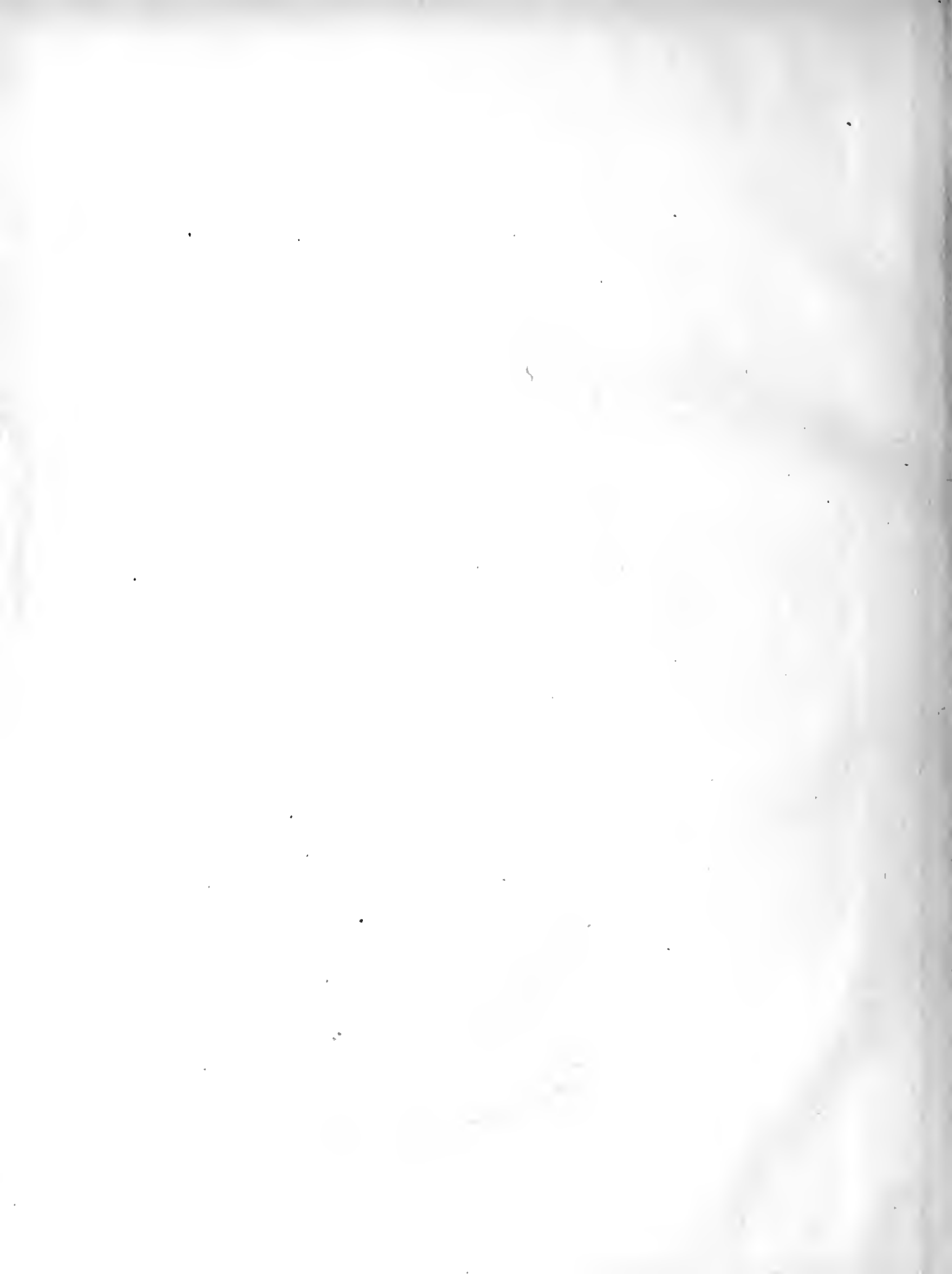


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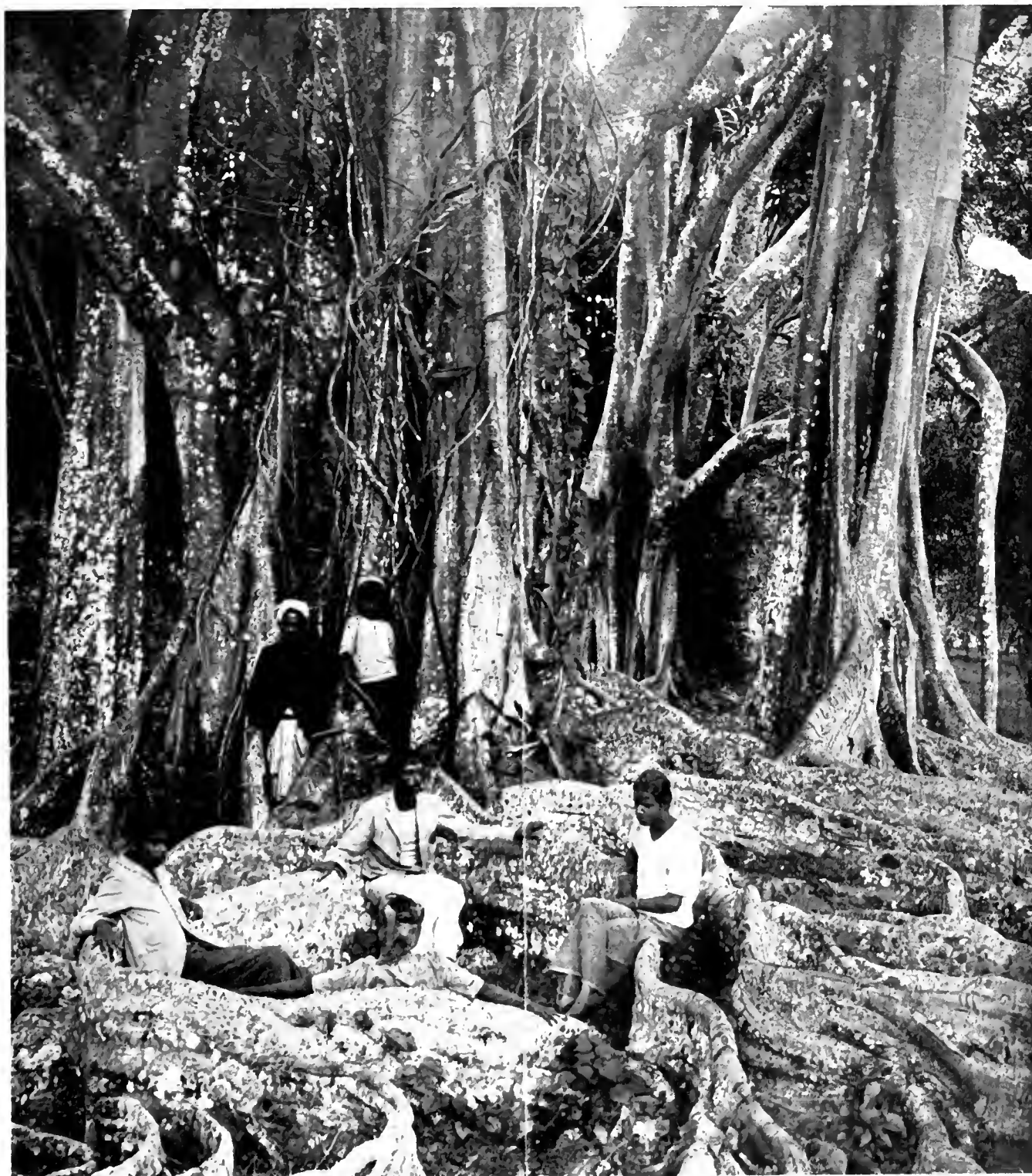
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American Forestry



Underwood and Underwood

THE GREAT SNAKY ROOTED RUBBER TREE IN THE PERADENUJA GARDENS NEAR KANDY, CEYLON

The American Forestry Association

Washington, D. C.

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Declaration of Principles and Policy of The American Forestry Association

- IT IS A VOLUNTARY organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs and any person is eligible for membership.
- IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.
- IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.
- IT DECLARES THAT FORESTRY is of immense importance to the people. that the census of 1913 shows our forests annually supply over one and a quarter billion dollars' worth of products; employ 735,000 people; pay \$367,000,000 in wages; cover 550,000,000 acres unsuited for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.
- IT RECOGNIZES THAT forestry is an industry limited by economic conditions. that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.
- IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

- National and State Forests under Federal and State Ownership, administration and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.
- State activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.
- Forest Fire Protection by Federal, State and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.
- Forest Planting by Federal and State governments and long-lived corporations and acquirement of waste lands for this purpose; and also planting by private owners, where profitable, and encouragement of natural regeneration.
- Forest Taxation Reforms removing unjust burdens from owners of growing timber.
- Closer Utilization in logging and manufacturing without loss to owners; aid to lumbermen in achieving this.
- Cutting of Mature Timber where and as the domestic market demands it except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.
- Equal protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.
- Classification by experts of lands best suited for farming and those best suited for forestry; and liberal National and State appropriations for this work.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

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HE SLEEPS WITH THE BIRDS

A peep at Guy C. Caldwell, carefully and (he claims) comfortably tucked away for the night in his hammock in the treetops. (Described on page 31)

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WHITE OAK PLANTED TO HONOR ROOSEVELT'S MEMORY

The sixty-second birthday of former President Theodore Roosevelt was commemorated at Oyster Bay by representatives of various societies and organizations who planted a white oak tree near his grave.

The ceremony was arranged by the New York Bird and Tree Club and was conducted with the consent of Mrs. Roosevelt.

Many prominent men and women took part and the first shovelful of earth was thrown upon the roots by Mrs. Thomas A. Edison, in behalf of her husband.



Underwood and Underwood

PLANTING THE WHITE OAK

Others who attended were Lord and Lady Rathcreedan, of the British delegation to the Tercentenary Celebration of the landing of the Pilgrims, who placed a wreath upon the grave.

The tree planting launched a movement initiated by the organizations to have trees planted throughout the country on Mr. Roosevelt's birthday in memory of the former President and other illustrious Americans.

AMERICAN FORESTRY

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EDITORIAL

FOREST PROGRAM PROGRESSES

THE movement to perpetuate the forest resources of the United States through the adoption of a comprehensive national forest policy continues to progress. Within the last few months the essential features of the program outlined by the Forest Service in the so-called Capper report on timber depletion submitted to the Senate last spring have been endorsed by a considerable number of interested and influential groups. AMERICAN FORESTRY has already presented the results of the meeting held in New York in October at which the entire matter was discussed at length and unanimous agreement on the essentials of a Federal legislative program was reached by representatives of the American Paper and Pulp Association, the National Lumber Manufacturers' Association, the National Wholesale Lumber Dealers' Association, the Association of Wood-Using Industries, the American Forestry Association, the American Newspaper Publishers' Association, and the United States chamber of Commerce.

Since then the proposed legislation has also been endorsed by seventeen state forestry organizations, by the Southern Pine Association, the Society for the Protection of New Hampshire Forests, the National Fire Protection Committee, the Western Forestry and Conservation Association and others.

A month later a well-attended conference of State forestry officials at Atlantic City endorsed the recommendations of the Forest Service relating to co-operation with States in fire protection and forest renewal, and urged upon Congress the enactment of legislation, accompanied by suitable annual appropriations, to make those recommendations effective. Both the State Foresters and the group of interests represented at the October meeting in New York appointed steering committees to do all in

their power to further the proposed legislation. A meeting of the committee representing the latter was held early in December at which the entire ground was covered in considerable detail and definite plans for further action approved.

There is thus a united movement in which timber producers, timber consumers, foresters, and the general public are well represented to secure the Federal legislation fundamental to the adoption of a national forest policy which will provide an adequate and permanent supply of timber for the people of the United States. So strong and well organized is the movement that it seems almost certain that bills looking to this end will have been introduced in Congress before this issue of AMERICAN FORESTRY reaches its readers. In urging their vigorous support of the legislation proposed we wish also to emphasize the fact that Federal legislation alone will not solve the problem, and that to be really effective it must be supplemented by State legislation in the timber-producing States.

This is obvious when it is remembered that the keynote of the whole program is local as opposed to national control, and that the proposed Federal appropriations for fire protection and forest renewal are to be available for co-operative work with the States only when the latter have enacted legislation making such provision for the same purposes as is satisfactory to the Federal Government. State action is, therefore, absolutely essential if the Federal legislation is to be made effective in practice.

Clear recognition of this fact, accompanied by vigorous efforts to secure the adoption of appropriate legislation in the various States, is vital to the success of the entire movement.

SAVE THE REDWOODS

NO less important than the protection of the National Parks already in existence is the setting aside of other areas which should be maintained in their virgin state as a national heritage. Among these are the magnificent redwoods of the California coast, one of the most impressive of the natural wonders of the country. Small groves of the bigtree, the sister tree of the redwood which is found in the Sierra Nevada Mountains, are now included in the Yosemite and Sequoia National Parks, and it is to be hoped are safe for all time. Red-

wood proper, however, is practically all in private ownership, aside from a relatively few trees included in the National Forests of northern California and in the Muir Woods, near San Francisco. These do not comprise the finest or most representative specimens, all of which are privately owned and are being rapidly destroyed through the progress of lumbering operations.

The Save the Redwoods League is conducting a vigorous campaign for the acquisition through donation and purchase of certain areas of the most typical primitive

redwood forests now left to be preserved as National and State Parks for the enjoyment not only of this, but of all future generations. These redwoods lie in Humboldt, Del Norte, and Mendocino Counties in northern California along the route of the new State Scenic Highway. Many of them tower 300 feet into the air, the tallest of living things. Many of them have witnessed the coming and going of untold generations of men. The opening of the Scenic Highway has made them for the first time readily accessible to the general public, and at the same time has emphasized the imminence of their

complete destruction by commercial interests. The object of the Save the Redwoods League to preserve adequate areas of these majestic trees in National and State Parks, as well as to establish memorial groves and to protect the redwoods and other timber along the Scenic Highway, deserves the heartiest support. The two Sequoias, the redwood and the bigtree, remnants of a species that once flourished in many parts of the world, are now the unique possession of the United States. They are a heritage that should be preserved for the enjoyment of generations yet to come.

FOREST EXPERIMENT STATIONS

FOR over a year the American Forestry Association has been endeavoring to further forest research in the United States through the establishment of a comprehensive series of properly manned and adequately equipped forest experiment stations.

European countries long ago recognized the necessity of experimental work as a basis for the intelligent management of their forests. Agricultural experiment stations in the United States have proved their value through the development of better methods and increased yields. The most progressive industrial organizations have acknowledged the importance of research by establishing research laboratories as private enterprises. Forest experiment stations are as necessary to forest management. They will furnish the basis for better methods of planting trees, of securing natural young growth on cut-over and burned-over areas, of increasing the rate of growth and yields of our existing forests, and of protecting them from the ravages of fire, disease and insects. If our forests are to be effectively perpetuated as sources of the wood so universally used in manifold forms in American economic life and as conservers of the water so essential to agricultural development on irrigated lands, the best methods for handling them must be determined by thoroughly organized and systematically conducted research.

Each important forest region of the United States should have an experiment station located within it, to study the local problems. The plan which the Association hopes to see adopted provides for ten such stations so distributed that practically the entire permanent forest area of the country can be conveniently studied. It includes a station for the northeastern States, one for the Alleghenies, one for the Lake States, one for the southern pine forests of the South Atlantic and Gulf States, one for the Southern Appalachian hardwood region, one for the Inland Empire, one for the central Rocky Mountains, one for the southwest, one for California, and one for the Pacific Northwest.

Not only is the improved management of these forests which can be made possible through research important to the industries and communities directly dependent upon them for their continued welfare and even existence, but also to the people situated far from the forests. Those in the prairie regions, for example, receive a large

part of the lumber necessary for building purposes of all sorts from the southern pine forests of the Gulf States and from the Douglas fir forests of the Pacific Northwest. Even such regions as New England and the Central States now receive a considerable share of their timber from the South and West.

During the sessions of last winter and spring bills were introduced in both Houses of Congress providing funds for the establishment of forest experiment stations, under the direction of the Secretary of Agriculture through the Forest Service, in five of these regions, namely, the Northeastern States, the Southern Appalachian Mountains, the Southern pine region, the Lake States, and California, in the last two regions in co-operation with the Universities of Minnesota and California.

The bills were referred to the Committees on Agriculture and Forestry, where they are still reposing, awaiting a call to action. Many local people in various regions took an active interest in these projects last year but it was not sufficient to force them to the front. Are we to secure their passage during the coming session of Congress? It will require greatly increased efforts to secure favorable consideration for these bills among the many that are demanding early attention.

Not only were these bills not acted upon last year but the appropriation for forest investigations of the Forest Service, an item in the Agricultural Appropriation Bill, was cut more than a third. As a result the experimental work at the Forest Service experiment stations which have been established on a small scale for several years in Arizona, Colorado, Washington, and Idaho, had to be practically abandoned. This winter the Association is working also to secure the re-establishment of adequately supported forest experiment stations in these four regions. This season's campaign is well started. Encouraging responses have already been received, but much more general and more active support must be obtained in order to secure the introduction and passage of measures to realize the establishment of these stations.

Forest experiment stations are one of the essential parts of a national plan to assure the perpetuation of the forests. Their value should be evident to every user of wood or its products whether city dweller or farmer, whether he lives in the shade of the forest or in the cities hundreds of miles from the source of supply. This

is a matter in which all our readers should be interested. Let that interest have a definite expression in bringing

to the attention of Congress this opportunity for passing constructive measures.

PRESERVE THE NATIONAL PARKS

THE National Parks, set aside as permanent recreation grounds for the people of the entire country, are threatened by commercial invasions from two distinct sources. The Federal Water Power Act, which finally became a law last spring, in addition to many constructive features, contained a provision authorizing the Water Power Commission to issue licenses for the construction, operation, and maintenance of dams, reservoirs, power houses, and other project works in the National Parks and Monuments on exactly the same basis as in National Forests and other public lands. That the possibility of commercial development afforded by this provision constitutes a very real danger to the integrity of the National Parks is clearly indicated by subsequent developments. The City of Los Angeles, for example, has already filed with the Water Power Commission applications for storage reservoirs and power house sites on Merced Lake in Little Yosemite; for a diversion of Buena Vista and Illilouette Creeks, and a storage reservoir just below Wawona, and for reservoirs in Virginia and Tuolumne Canyons. The Sierra Club has stated that "there is only one thing worse that could be done for the complete commercialization and ruin of the Yosemite National Park, and that is the damming and flooding of Yosemite Valley itself!"

The present Secretary of the Interior has declared that this tendency to commercialize the National Parks should be "resisted to the utmost," and the Water Power Commission has voted to entertain no application for power licenses in the National Parks and Monuments pending further action by Congress. Secretaries and Commissions change, however, and there is no assurance that the present policy may not be reversed at any time without notice. Real assurance that the National Parks will be saved from commercialization by the water power interests can be secured only by amending the Water Power Act so as to make this impossible.

The other threatened invasion of the Parks comes from the irrigation interests. During the last session of Congress the Smith Bill (H. R. 12,466), granting easements for dams, reservoirs, canals, and other irrigation works in the Yellowstone National Park was passed by the Senate and reported favorably to the House. The irrigation interests by which this bill was promoted wish to flood immediately an area of nearly 8,000 acres in the Bechler River and Falls River Basins in Yellowstone Park, and eventually to use also other parts of the Park. Pressure for the passage of the bill was accompanied by gross misrepresentation. Thus the two basins which it is proposed to flood were described by its advocates as swampy and the whole region was said to be of absolutely no scenic value. Later investigation proved the "swamps" to be a veritable campers' paradise of beautiful meadows interspersed with pleasant woods and

bordered by one of the most remarkable and lovely series of waterfalls in any of the National Parks!

While in theory the Smith Bill upholds the basic principle of Park protection by directing the secretary of the Interior to confirm the easements which it grants only in so far as they would not interfere with Park uses, the fact remains that should any Secretary at any time make such easements effective, his action could not be subsequently reversed and the damage done would be irrevocable. It is also clear that the Smith Bill is exceedingly dangerous because of the precedent which it sets, and that if it becomes a law similar concessions by irrigation interests will be eagerly sought in other parts of the National Parks.

These proposed raids on the National Parks raise a fundamental question of national policy. Are the Parks to be distinguished in their use from other public lands, and if so how? The underlying motive in their creation has been the desire to preserve forever in their primitive condition a few widely separated examples of the American wilderness as havens into which the people can occasionally escape from the grind of the work-a-day world for recreation, inspiration, and the study and enjoyment of our native wild animals, birds, and plants living natural lives in the natural homes of their ancestors. Unlike the National Forests, which are handled principally for economic purposes, the distinguishing feature and at the same time the greatest value of the National Parks lies in the very fact that they are consecrated to recreational, esthetic, and scientific ends to the exclusion of those commercial activities which elsewhere rule supreme. If the camel's nose of business is ever allowed to enter, no matter in what guise, it is only a question of time when this distinction will disappear.

Altogether only one-quarter of one per cent of the area of the continental United States, exclusive of Alaska, has been set aside through the creation of National Parks and National Monuments for non-economic purposes. Surely this is not an unreasonable area to devote to the preservation of some of the finest and most inspiring examples of wild life and of natural scenery in the country. If the United States should ever reach the point where its natural resources properly handled are unable to meet the economic needs of its people, it will then be ample time to consider whether the basic idea of the National Parks should be abandoned and commercial exploitation permitted. Certainly that time has not yet been reached. Until it is the dividends received from the Parks as such through the development of the spiritual, mental, and physical strength of the people will be of far greater value than the comparatively small commercial advantages which could be derived from their economic utilization.

Elihu Root was right when he wrote, in connection

with another attempt to utilize one of the Parks for an object foreign to the purpose for which it was created, "Many years of conflict . . . against all sorts of incursions have shown me that the only safety is in beating back every invasion." To help preserve the integrity of the National Parks by beating back the present invasions by the water power and irrigation interests should be the duty of every far-sighted American citizen.

Both the Water Power Act and the Smith Bill are dangerous because they place the future of the Parks in the hands of administrative officials without opportunity for appeal, and because they violate the fundamental principle for which the Parks were established. Only through amendment of the former and defeat of the latter at the present session of Congress can the very real dangers by which the Parks are threatened be averted.

THE MENACE OF THE WHITE PINE BLISTER RUST

WHEN the white pine blister rust first made its appearance in the United States the predictions of those who uttered warnings as to the possibility of its doing serious damage to the white pines of the country were taken, in many quarters, with several grains of salt. Since then the situation has been studied so carefully and the feasibility of control measures has been investigated so thoroughly that it is now possible to draw conclusions based on the solid foundation of established facts. The latest developments in connection with the progress of the disease, as brought out at the Sixth Annual International Blister Rust Conference, held at Boston in November, under the auspices of the American Plant Pest Committee, must convince even the skeptics that the blister rust is not to be scoffed at.

It is now clear that in the Northeastern and Lake States at least the blister rust has come to stay. Throughout these regions, where white pine and currants and gooseberries occur on the same area, the white pine is in real danger of attack. Sample strips run in New England and New York during the last year indicate that approximately 10 per cent of the pine stands are already infected. Furthermore, a hasty survey of conditions throughout these States has indicated that wherever currants and gooseberries occur the disease is also present. There is, therefore, every probability that the present infection will increase rapidly, particularly where local climatic and vegetative conditions are favorable for its spread, unless energetic control measures are undertaken promptly. The damage caused by the disease is of two main sorts—it kills the smaller trees, up to approximately 20 feet in height, whether in the nursery, in plantations, or in natural stands, and it decreases the rate of growth of the larger trees. In severe cases it may even result in the death of the latter.

White pine, one of the most important commercial trees of central and southern New England and of large areas in New York and the Lake States, is thus in imminent danger of having its value very materially decreased. Fortunately the results of work undertaken during the past few years have shown that its control is possible by the eradication of currants and gooseberries, from which alone the pine can be infected, and the value of which is obviously much less than that of the latter. Experience in New England during the past year has proved that such eradication is not only feasible but that with adequate organization it can be conducted

on a considerable scale at the very reasonable cost of about 25 cents per acre. While the cost elsewhere has so far been higher, it is still moderate in comparison with the magnitude of the pine values involved. In those areas where currants and gooseberries are present there is, therefore, no excuse for not protecting the pine by undertaking their eradication.

West of the Great Plains the situation is very different. There more species of 5-needled pines occur, all of which are highly susceptible to the disease. Currants and gooseberries are found throughout the region in a wide variety of species, many of which reach the size of large shrubs, the eradication of which, under any conditions, would be difficult. This emphasizes the importance of maintaining with the utmost strictness the quarantine which the Federal Horticultural Board has established at the Mississippi Valley prohibiting the shipment of currants, gooseberries and white pines to States west of this line. During the past year several wilful violations of this quarantine have been detected. Shippers of nursery stock should co-operate heartily with Federal and State authorities in preventing shipments beyond this line, and the latter should use every means at their disposal to see that the quarantine is rigidly enforced. Only in this way can the tremendously valuable stands of the various white pines in the Rocky Mountain and Pacific Coast States be protected.

Several things stand out prominently in the present situation. The white pine blister rust is a real menace to white pine stands throughout the eastern United States. This menace can be reduced or eliminated completely by the local eradication of currants and gooseberries. The danger to white pines in the far Western States is still greater than to those in the East, should the disease ever become established there. It can be prevented from doing so only by the strictest enforcement of the present Federal quarantine prohibiting shipments of white pines and currants and gooseberries into that territory. It is, therefore, of the utmost importance that Federal, State, and local authorities, nurserymen, timberland owners, and the public generally should co-operate heartily in using every effort to eradicate currants and gooseberries in those parts of the eastern United States where white pine is of commercial importance, and to prevent the introduction of the disease into the West.

SAFEGUARDING THE WHITE PINE CROP

BY SAMUEL B. DETWILER

WHITE pine can be protected from serious damage by the blister rust, but action must be prompt.

This is the substance of the conclusions reached by the Sixth Annual International Blister Rust Conference recently held in Boston, Massachusetts, under the auspices of the American Plant Pest Committee. Experiments begun in 1916 demonstrate that this disease is effectively controlled locally by destroying wild and cultivated currant and gooseberry bushes within 200 to 300 yards of the pine. Local control is practicable because the spores which cause the infection in the pines are very delicate, living only ten minutes or less, even under favorable conditions. Simple methods of field work have been developed which insure destruction of over 95 per cent of the wild currant and gooseberry bushes, which abound in white pine regions. The cost of control work averaged only 35 cents per acre on more than a quarter million acres covered in 1920. East of the Great Plains, the disease is permanently established and spreading rapidly, but any body of white pine may be protected locally, at moderate cost. The white pine blister rust has not been found in the far West. The hope of saving the western white pine forests from infection lies in strict enforcement of the Federal and State quarantines.

The conference was well attended and great interest was shown in the many phases of control work. All of the New England States, New York, New Jersey, Wisconsin, and Minnesota were represented officially, as well as the United States Department of Agriculture. Representatives of a number of forestry and plant pathological organizations in the United States and Canada also took part. The conference opened with brief reports by the State and Federal officials on the

progress of co-operative control work. Results of scouting for the blister rust in thirty-three States, and control work in nine States, were summarized. This was followed by reports on pathological investigations of the disease by Dr. H. H. York, Dr. L. H. Pennington, Dr. Perley Spaulding, Dr. G. P. Clinton, Dr. Walter H. Snell, and Dr. Haven Metcalf. The remainder of the

program dealt with various aspects of local control of the disease in infected regions, including a resume of experimental work conducted by the Office of Blister Rust Control, United States Department of Agriculture, and papers embodying constructive suggestions on the many details of the practical field work.

As a result of five seasons' experimental work, it was shown conclusively that the removal of currant and gooseberry bushes from the vicinity of pine stands effectively controls the blister rust. The proof of this fact is among the most important data presented to the conference. This report was made by Dr. William E. Pickler and Mr. L. W. Hodgkins, of the Office of Blister Rust Control, as a result of re-inspection of the control area at Lenox, Massachusetts.

In 1916, currant and gooseberry bushes were uprooted extensively in the vicinity of Lenox, Massachusetts. This was the first attempt at local control of the blister rust by eliminating all of these secondary hosts of the blister rust from a large territory. Con-

sequently, the workers lacked training and experience, and the work resulted in the removal of not more than 70 to 80 per cent of the wild currant and gooseberry bushes. Since 1916, this work has been standardized so that an average efficiency of 95 per cent of the wild currants and gooseberries are destroyed in once going



WHITE PINE BLISTER RUST CANKER ON A TRUNK SIX INCHES IN DIAMETER

White pine blister rust is caused by a parasitic fungus imported from Europe twenty years ago. In 1915 and 1916, it was discovered to be widely distributed in New England and northeastern New York, with spot infections in Minnesota, Wisconsin, Ontario and Quebec. Since 1916, experimental control on a large scale has been carried on in the New England States, New York, Wisconsin and Minnesota, in close co-operation with the United States Department of Agriculture. Control of the blister rust is possible because the disease does not advance directly from one pine to another. It must pass through a period of development on the leaves of currants or gooseberries (*Ribes*) before it can harm healthy pines. Therefore, the essential feature in control work is to destroy wild and cultivated currant and gooseberry bushes adjacent to the pines.



Photograph by A. B. Brooks.

PULLING WILD GOOSEBERRY BUSHES WITH THE DERBY HOOK

Large bushes like this one are well anchored and require considerable labor to uproot. The work is made easier by special implements invented for the purpose. Many of the bushes are smaller and less expensive to destroy. The average cost of clearing the land of wild gooseberry and currant bushes was 35 cents per acre in 1920. This low cost was obtained by employing scientific methods in locating wild currant and gooseberry bushes. Costs are expected to be still further reduced in areas where wild bushes are very numerous, as a result of successful experiments in destroying such bushes by spraying them with chemicals.

over an area. In the summer and fall of 1920, Dr. Pickler and Mr. Hodgkins conducted a survey to determine the effect of control work done at Lenox four years before. They made a similar survey in an area from which the currant and gooseberry bushes have never been removed. This area is located in the Berkshire region, at New Boston, Massachusetts, not far from Lenox. Climatic conditions in these localities are similar. Careful inspection was made of 20,605 pine trees under 20 feet high. Plots consisting entirely of young pine growth were selected, so that each tree could be thoroughly examined, and every white pine on the plot was included in the survey. The resulting data show that since 1916, with not to exceed 80 per cent of the currants and gooseberries removed, the rate of blister rust infection is approximately 2100 per cent less at Lenox than at New Boston, where no bushes have been removed. Blister rust infection at New Boston, since 1916, has taken place at the rate of 571 blister rust cankers in 10,000 pines. At Lenox, in the same period, the rate has been only 26 cankers in 10,000 trees, or less than one-twentieth of the amount of infection found at New Boston. It should be noted that in and surrounding the survey plots at Lenox, an average of 47 currant and gooseberry bushes per acre was found in 1920. The average height of these bushes, however, was only 1.3 feet. It is apparent, therefore, that when the Lenox area was

covered by the crews in 1916, small bushes were missed and others have since developed from seeds and sprouts. Dr. Pickler classified the bushes according to origin, and found that 18 per cent had been overlooked in 1916, 62 per cent were seedlings that grew since 1916, and 20 per cent were sprouts that developed as a result of breaking off the tops of the bushes instead of uprooting them.

The results of Dr. Pickler's study merely confirm the conclusions previously reached by scientific investigators. It has long been known that the blister rust must pass through two stages of development on currant or gooseberry leaves, before it can infect the white pine trees. At last year's conference, Dr. H. H. York reported that he found the sporidia which produces the disease in the pines, to retain their germinating power for a period of *less than ten minutes*, even when the humidity and temperature are favorable to long life of

the spores. This explains the reason that under ordinary forest conditions, currants and gooseberries do not need to be uprooted farther than 200 to 300 yards from pines.

In the majority of cases, currants and gooseberries cause infection on pine trees only within a limited radius. This is demonstrated by studies made of the percentage of pine infection in the zones around isolated currant and gooseberry bushes, or groups of bushes. With the



Photograph by A. B. Brooks.

A FEW SKUNK CURRANT PLANTS FROM A CONTROL AREA

Skunk currant grows as a mat of tangled, prostrate stems in moist localities. The bushes shown were pulled by a crew and piled for burning. Although finding and uprooting the skunk currant plants is tedious work, the inspectors find that the crews do it efficiently. On 77 acres of swampy land, a crew removed 31,752 skunk currant plants in the first working, and only 46 additional plants were found when the checking crew went over the ground again.



Photograph by A. B. Brooks.

DIGGING A WILD GOOSEBERRY BUSH "TWELVE FEET HIGH"

This bush grew twelve feet above the ground, in the crotch of the branches of a large maple tree. The seed from which it developed probably was carried by a bird or chipmunk. Bushes that grow like this one are curiosities. Practically all of them are found on the ground. One crew discovered a gooseberry bush growing in a chimney on top of a house.

exception of the European cultivated black currant, it has been found that the destructive effect of such bushes does not usually extend beyond 300 yards, and frequently does not exceed 100 feet, depending on conditions. It was therefore the opinion of the conference that a zone 200 to 300 yards in width, cleared of currant and gooseberry bushes, will insure the commercial growing of white pines, under average conditions.

The cultivated black currant is so highly susceptible to the blister rust, and produces such tremendous numbers of infecting spores, that the conference declared it to be a serious public nuisance, and exceedingly detrimental to the growing of white pine. The conference therefore advised that State legislation be provided for the general destruction of this species in pine-growing sections. The conference urgently recommended the removal of all currant and gooseberry bushes within at

least 200 yards from white pine stands, by every owner of white pine, State, Federal, and all other agencies interested in perpetuating white pine as a crop. This was recommended not only for sections where the disease is now present, but in all other white pine areas east of, and including Minnesota.

Reports of extensive surveys made in the Northeastern States in 1920 developed the rather startling fact that in large areas, an average of 10 per cent of the pines are already attacked by the blister rust. The first infection on these areas dates back to 1906 in some cases, and up to 1911 in others. The data on which the percentage of infection is based, was obtained by examining the white pines growing on a strip 99 miles long and one rod wide. This strip consisted of four separate lines extending from Littleton to Woodsville, and Piermont, New Hampshire; Wells River to Barnett, Vermont; Lewis to near Ausable Forks, Essex County, New York, and in the vicinity of Ipswich, Massachusetts. In addition to the strip lines, 296 quarter-acre plots, adjacent to the line, were examined. A total of 45,840 pines were inspected for the blister rust, about half of this number being on the plots. On the strip lines, infection averaged 7.4 per cent, and on the plots, 28.1 per cent. It is apparent that at least 10 per cent of the pines are infected in the regions covered by the surveys.



Photograph by A. B. Brooks.

DIVING FOR SKUNK CURRANTS IN A BRUSH PILE

A member of a crew that is removing skunk currants from an area recently logged, finds a bush beneath the slash. The crews develop a competitive interest in their work that adds to efficiency. A crew member who is highly proficient in finding currant and gooseberry (*Ribes*) bushes under difficult conditions, is given the honorable title of "Ribes hound" by his fellow workers.

A total of 930,348 acres were cleared of 12,927,494 currant and gooseberry bushes in the New England States and New York from 1917 to 1920, inclusive. In 1920, 267,076 acres were brought under control in these States, and 11,672 acres in Wisconsin and Minnesota. The owners of cultivated currants and gooseberries have shown a fine spirit of co-operation in destroying their bushes, even when the pines thus protected are on adjacent property. In New Hampshire, 43,377 cultivated bushes were uprooted in 1919 and 1920, and 2,130 owners, out of a total of 2,130 signed cards, releasing all claim to compensation from the State. Pine owners and communities in pine-growing sections are financially co-operating in control work, and many individuals are protecting their pines without assistance. A total of \$25,344 was subscribed by local co-operators in New Hampshire, New York, Massachusetts, and Vermont. The voters of 50 New Hampshire towns appropriated \$8,421 and individuals in this State subscribed \$5,168 additional.

In 1920 the cost of control in all States averaged 35 cents per acre as compared with 54 cents in 1919, and 66 cents in 1918. These cost figures include labor, supervision and transportation of field men. In the New England States in 1920, the total cost per acre ranged from 16 cents in Rhode Island to \$1.24 in Vermont, averaging only 23.6 cents per acre for these six States. The cost of the work varies considerably according to the number of bushes per acre and other conditions. In New England, there was an average of 13 bushes per acre, 98 in New York, and 178 in Minnesota. The results of three years' ex-

periments in killing currants and gooseberries with fuel oil and dip oil indicate that much expense will be saved by the use of these oils, instead of uprooting the bushes by hand. Other experiments now in progress give promise of greatly reducing costs where conditions are most difficult.



EFFECT OF A BLISTER RUST CANKER ON A FINE WHITE PINE

This tree is twenty feet high. It was infected with the rust eight years before the top died. The blister rust is an insidious disease. A tree is severely diseased before the infection becomes noticeable to anyone not expert in detecting the cankers. Blister rust infection on pine in the northeastern states is increasing rapidly. A strip survey in one locality in New Hampshire indicates that one-fourth of the pines on an area of 72 square miles are already infected with the rust. The disease is also widespread in Minnesota, Wisconsin, Ontario and Quebec. There is abundant evidence of the destructiveness of the blister rust to merchantable trees as well as young white pine stands. This destruction is caused by infected currant and gooseberry bushes near the pines. The longer such bushes remain, the more rapidly pine infection increases. After several years, all of the trees becomes infected and gradually die.

The cost per acre of control work has decreased and the efficiency has increased each year. This has been accomplished through improved methods and effective field organization under the direction of the State officials in charge of this work, in co-operation with the United States Department of Agriculture. The bushes are uprooted by crews of laborers under the direction of a trained foreman. Uniform efficiency is secured through systematic checking. Every day or two the crews check part of the area they have already worked. At times, a special checking crew goes from one control area to another, making complete checks of large-sized blocks.

The currant and gooseberry bushes removed by a crew in each working of an area, are recorded by number and species for each "block" or small sub-division of the control area. This enables the checking crew to determine the percentage of bushes removed by the crew which first covered the area. A "complete check" means that the area has been gone over many times until no more bushes are found, not even tiny seedlings. In 112 such checks covering 316 acres, 65,014 bushes (97 per cent) were destroyed in the first working of the plots. Only 1,965 bushes (3 per cent) were found in going over the area three to five times after the first working. Five other methods of checking are used. In

1920, in the New England States, 682 checks were made by these various methods, on areas totalling approximately 6,000 acres. The crews that went over these areas the first time destroyed 97.2 per cent of the total number of bushes.

In Wisconsin and Minnesota, white pine blister rust is widely distributed on currants and gooseberries and is attacking pines at a number of points. In Minnesota infected currants were found as far north as Tower



Photograph by A. B. Brooks.

ONE YEAR OLD SPROUTS OF WILD GOOSEBERRY BUSH

This growth resulted from breaking off the top of a large bush. The crews use specially constructed digging implements and the entire crown of the bush is taken out and hung up so it cannot grow again. Wild currants and gooseberries do not reproduce rapidly in an area that has been worked by an efficient crew. Thorough checking on 2485 acres in 8 separate tracts previously gone over by eradication crews, showed that on an average acre, 62 bushes (95.5 per cent) were destroyed in the first working and 3 bushes in the second working. Of the latter, two bushes were missed in the first working, and one bush developed from seeds or sprouts. Bushes missed by the crews usually are small plants growing in underbush. Such plants have less leaf surface than the average plant; therefore, the total percentage of protection to the pines is considerably greater than the total per cent of currant and gooseberry bushes destroyed.

and as far west as Grand Rapids. Local control areas were established in these States in 1920, resulting in 11,672 acres cleared of currants and gooseberries at an average cost of \$1.04 per acre. During the past season, no blister rust was found outside of the above-mentioned States, with the exception of two "spot" infections on black currants in New Jersey. The "spot" infections found in Michigan and Pennsylvania in previous years appear to have been successfully eradicated, and in New Jersey the disease is apparently under control.

The Rocky Mountain and Pacific Coast forests are as yet apparently free from the white pine blister rust.

During the past three seasons, 146,929 white pines, and 318,093 currant and gooseberry plants have been traced and inspected in the far West. These plants were shipped from infected regions prior to enactment of quarantines, and were, therefore, possible carriers of the blister rust. None of these were found to be infected with the disease. Active scouting for the blister rust is in progress on wild currants and gooseberries and introduced host plants, but no signs of the disease have been found. Sixty-five species of currants and gooseberries are indigenous to western North America. Out of this large number, there are species adapted to nearly every site condition existing in these regions, and they afford an unbroken chain for the dissemination of white pine blister rust, if the disease is once introduced into this region. A single shipment of diseased pines, currants or gooseberries may result in enormous losses, both to pri-



A CREW UPROOTING WILD CURRANT AND GOOSEBERRY BUSHES TO PROTECT NEARBY PINE STANDS

The men work in line formation, the spacing between men varying according to character of the land. The number of men in line varies from four to six, although for most conditions, five men is considered preferable. Small bushes are pulled by hand, and larger ones dug up with specially constructed "Ribes picks." The foreman follows closely in the rear of the crew and checks their work. The work of each crew is also checked frequently by Federal inspectors. As a result of many large-scale experiments, modifications of the general method have been developed. Thus, there are special "stone-wall crews," "checking crews," "advance Ribes scouts," a "head linesman," and a "chemical crew." The methods are not elaborate, and unskilled laborers, working under a trained foreman, quickly learn to do excellent work.

vate and Government holdings. Sugar pine, western white pine, and limber pine, the three most important five-leaved pines in the West, are known to be highly susceptible to the white pine blister rust. The conference, therefore, urged that great attention be paid to the strict enforcement of the Federal quarantine prohibiting shipment of blister rust host plants west of the "Mississippi Valley line."

FINE YIELD FROM WHITE PINE

TWO acres of white pine, near Keene, New Hampshire, were sold three or four years ago, before the war prices, for \$2,000 on the stump. The total stand was 254 cords, which equals 170,000 board feet, or an

average of 85,000 feet per acre. The trees were from 80 to 85 years old; so the growth on each acre was about 1,000 feet per annum and the gross returns about \$12.20 per acre per annum.

THE NATIONAL FOREST RESOURCES OF ALASKA ARE FOR USE

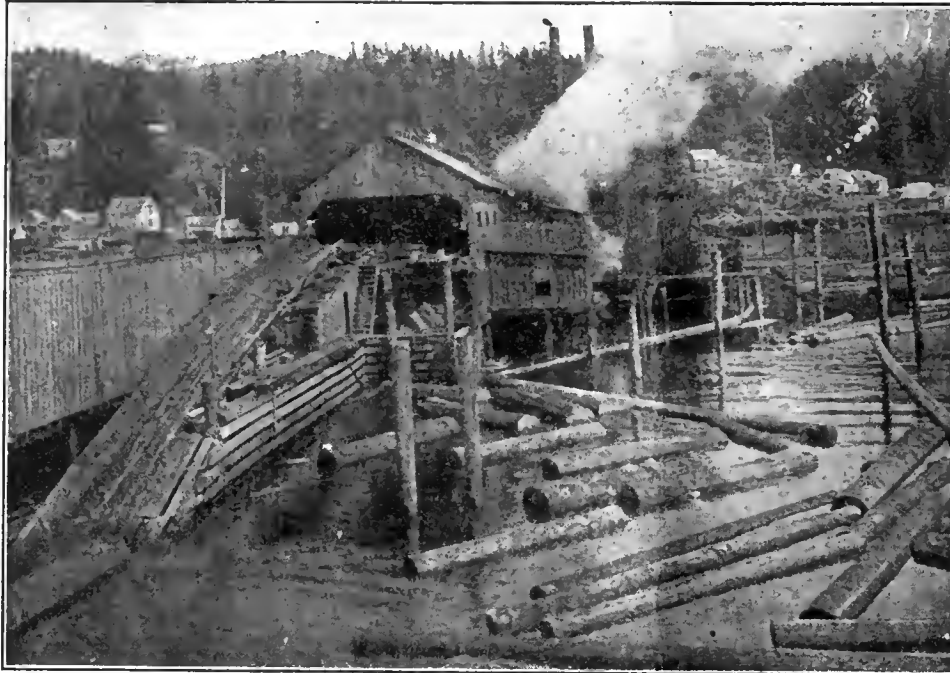
BY JOHN D. GUTHRIE. U. S. FOREST SERVICE

THE National Forests of Alaska are playing an increasingly important role in the development of that rich storehouse of the Nation. Within a few years they will probably play the leading role. The timber resources of the Tongass and Chugach Forests

has changed slightly. It is now claimed that the Forest Service has been forced to sell Government stumpage in Alaska! The facts, easily accessible in many public reports, are that the Forest Service has been offering timber for sale on the Alaskan National Forests ever since it took over these Forests in 1905. It is selling timber today under practically the same regulations as those of 1905 and each year since. The actual purchasers of National Forest stumpage on the Alaskan Forests during the past fifteen years have known that they could buy Government timber at any time, anywhere. They have also known that the many sawmills in Alaska have been buying and sawing Government timber since 1905. Not only has this lumber supplied the material for local uses, such as canneries, residences, stores, boats, and boxes, but the highest grade of Sitka spruce was shipped out for airplane stock during the war, and Sitka spruce is now being shipped to eastern markets.

The total of 444 million board feet of timber cut from the

Alaskan National Forests in the past fifteen years covered a large number of individual sales, advertised and offered to the highest bidder as required by Federal



SAW MILL OF THE KETCHIKAN LIGHT AND POWER COMPANY. ALL TIMBER CUT FROM THE TONGASS NATIONAL FOREST

have served local development ever since the administration of these Forests was taken over by the Forest Service in 1905. Now a larger form of development is in prospect. Its effect on the economic upbuilding of the Territory is bound to be of an almost revolutionary character.

It has become a habit to say that Alaska's resources are locked up. The fact that over 444 million board feet of timber has been cut from the Tongass and Chugach Forests during the past fifteen years, while the Forest Service has been in charge, has not prevented a parrot-like chorus of the assertion that Alaskan timber is still "bottled up." Within the past few months, however, and especially since the 100 million foot pulp sale has been consummated by the Forest Service, the plaint



WHITE SPRUCE BRIDGE TIMBERS CUT ALONG RIGHT OF WAY, NEAR HEALY, AT THE END OF STEEL ON THE GOVERNMENT ROAD



HEALY, END OF STEEL ON THE GOVERNMENT RAILROAD, 109 MILES SOUTH OF FAIRBANKS

law. For no single year was the cut less than two million board feet, and the average was nearly 30 million. Two and one-half million board feet were cut in 1905, fifteen million feet in 1909, and 45 million feet in 1914. The peak of 47,900,000 feet was reached in 1918. With one pulp sale of 100 million feet already made, the amount sold from the Alaskan Forests for the present year will undoubtedly run well over 150 million feet. If a second large pulp sale, now pending, is made the total Government stumpage sold from the Alaskan National Forests in 1920 will exceed one billion eight hundred million board feet. Pulp mills are coming to Alaska because of economic conditions, such as the scarcity and high price of pulp material in the eastern centers; not because of any radical changes in Forest Service regulations, and in spite

of the propaganda of misinformation by the anti-conservation press.

Not only has over 444 million board feet of timber been cut from the Alaskan National Forests for commercial purposes during the past fifteen years, but in addition the Chugach National Forest has furnished over 40 million feet of timber, free of charge, to the Alaska Engineering Commission for use in the construction of the Government Railroad.

In addition, any bona fide settler, resident, miner, or prospector may take from the Alaskan National Forests free of charge 10,000 board feet of green or 25 cords of dry timber each year, provided it is needed for personal use and is not sold. A considerable amount of timber is cut under this privilege, and the fact that material for building purposes and wood for fuel can be obtained without cost is of great importance to the local people.

The Chugach Forest is located in the Prince William Sound country, in the vicinity of Seward, Anchorage, Cordova, and Katalla. The construction of the Government railroad is in charge of the Alaska Engineering Commission, headed by a regular army officer. The railroad starts at Seward, on tidewater, and runs north through the Chugach Forest on the Kenai Peninsula to Anchorage, and thence north up the Susitna River. When completed it will have its northern terminus at Fairbanks, some 465 miles from Seward. The Forest Service has granted each year since 1916 a free-use permit to the Alaska Engineering Commission for construction timbers to be cut on the Chugach National Forest. In 1916 the Commission cut 11,363,770 board feet of National Forest timber to be used in railroad construction work. In 1917 over seven million feet was granted free for this purpose. During 1918 and 1919 shortage of labor seriously interfered with construction work on the railroad, but in spite of this over five million feet of free timber was granted each year. Since the close of the fiscal year 1919, more than ten and one-half million board



CONSTRUCTION OF STEEL BRIDGE OVER THE SUSITNA RIVER, 261 MILES NORTH OF ANCHORAGE. PRESENT END OF STEEL ON THE GOVERNMENT RAILROAD

feet of free timber has been furnished for this work.

This timber which the Chugach Forest has contributed free of charge to the Alaska Railroad has consisted not only of sawtimber to be cut at several sawmills operated either by the Commission or by private concerns for the Commission, but of such material as piling, bridge timbers, railroad ties, and telephone poles, covering a wide variety of uses, for docks, snowsheds, section houses, stations, storehouses, quarters for offices and employees, etc.

The latest free permit issued by the Forest Service was made in September, 1920, and covered 2,500,000 board feet of sawtimber, 120,000 railroad ties, and 170 linear feet of piling. These free-use permits are issued in accordance with a Congressional enactment permitting the Forest Service to

grant free National Forest material to the Alaska Engineering Commission for Government works. This free use timber is cut from a strip five miles wide on either side of the right-of-way of the Government railroad. The timber is designated for cutting by forest officers, seed trees being left to reseed the cut-over area. These

permits to the Commission run for one year and contain the usual conditions regarding protection from fire, prevention of waste, and avoidance of unnecessary damage to trees left standing.

The National Forests of Alaska have thus for the past fifteen

years been helping in the local development of Alaska by furnishing a supply of lumber for its industries and for Government use in building a railroad which is going to mean greater things for that country.



SHIP CREEK RANGER STATION, ANCHORAGE, ALASKA, ON THE CHUGACH NATIONAL FOREST



DEDICATION OF THE SCOUT RESERVATION

The Boy Scouts of the District of Columbia have dedicated the Woodrow Wilson Boy Scout Reservation, a forty-one acre tract at Burnt Mills, Maryland. The tract is the gift of Robert S. Brookings to the 2,500 Boy Scouts of the District. There are streams, wooded hills and a fine swimming hole, as well as spaces for athletic events. After the raising of the colors, the Scouts repeated the allegiance to the Flag, the Scout oath and the Scout laws. (Photograph by Underwood and Underwood.)

AMERICAN GROWN CORK

BY GEORGE N. LAMB

Son the edge of a cotton field a half mile north of Daphne Station, west of Cordele, Georgia, is undoubtedly the largest specimen of cork oak (*Quercus suber*) in America. The tree is over one hundred years old and tradition says that the acorn from which it grew was brought to this country from Spain by a Southern planter. At the



THIS IS THE LARGE CORK OAK GROWING ON THE EDGE OF A COTTON FIELD AT DAPHNE, GEORGIA. IT IS PROBABLY SEVENTY-FIVE TO ONE HUNDRED YEARS OLD AND IS A REMARKABLE AND BEAUTIFUL EXAMPLE OF THE LARGE PROPORTIONS THE TREE ATTAINS

time it was secured Spain prohibited the export of cork oak acorns in order to protect their monopoly on the cork industry.

The gigantic size of this exotic is attested by the fact that it is $45\frac{1}{2}$ inches in diameter one foot from the ground. It has a height of 60 feet and a spread of 60 feet one way and 70 feet the other. The tree forks into four



THIS IS A CLOSE-UP OF THE BRANCHING OF THE OLD CORK GIANT, AND SHOWS CLEARLY THE CORKY BARK OF THE FIRST LIMBS



OUTER SURFACE OF HEAVY CORK BARK



INNER SURFACE OF HEAVY CORK BARK

branches at eight feet from the ground. In general appearance at a distance it might be a symmetrical, spreading live oak, but on coming closer its heavy limbed appearance is striking. The thick corky bark extending out to the small branches causes this effect.

The bark on this specimen, never having been harvested regularly, is very thick and coarse, except in one place on the trunk where a portion had been removed by accident or otherwise. At this point the new bark was smooth and of excellent quality. The rough bark was from 12 to 15 years old and 2 to 2¾ inches thick on the main trunk.

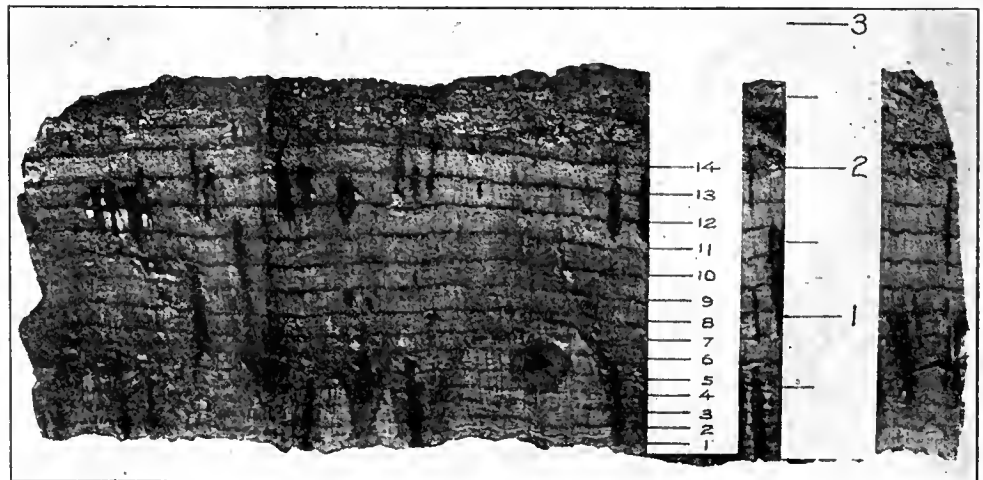
The writer has also seen smaller specimens of cork oaks at Byromville, Georgia; Atlanta, Georgia, and Columbia, South Carolina, growing so vigorously that there seems to be no doubt that the tree will thrive in the longleaf pine section of the Atlantic and Gulf States. If cork oak could be substituted for the "scrub" oak that is now coming in on the cut-over longleaf pine lands, a valuable economic resource

would be available for future generations: The combination of longleaf pine and cork oak would bring together two trees which furnish excellent wood and also yield a revenue from other sources while they are coming to maturity. Properly handled the pine will yield quantities of valuable turpentine and rosin in its early life and then make desirable lumber when mature. The cork oak yields a crop of cork every few years and finally produces a crop of excellent wood.

One of the greatest causes of damage in this region is fire although longleaf pine is particularly resistant. Cork oak should be able to survive as well or better than pine as the thick corky bark would protect the growing tissue from the heat and is in itself very non-combustible.

Should cork oak ever be established in the longleaf pine region it would bring together not only two trees furnishing valuable wood and valuable by-products, but would also bring together the two most singular and striking species appearing anywhere in the forests of the world.

This remarkable specimen of cork oak at Daphne has been nominated for a place in the Hall of Fame for Trees being compiled by the American Forestry Association at Washington, D. C.



AN INTERESTING PICTURE OF A CROSS SECTION OF THE ROUGH BARK FROM THE DAPHNE CORK OAK. THESE SPECIMENS WERE COLLECTED AND PHOTOGRAPHED BY THE WRITER

FOR A NATIONAL FORESTRY BILL

THE National Forest Program Bill has been introduced in the Senate and in the House. It is expected that hearings will be held before committees of the Senate and House early in the year for the purpose of presenting arguments in favor of the bill—and the prospects for its passage are very bright. The fact that practically every interest concerned in forestry is in favor of the bill in itself alone almost assures its success as Congress can not well ignore a very general demand for the adoption of such vitally important, sane and practical legislation.

The bill has now been endorsed by the following:

American Forestry Association.

United States Forest Service.

Western Forestry and Conservation Association.

Society for the Protection of New Hampshire Forests.

National Lumber Manufacturers' Association.

National Wholesale Lumber Dealers' Association.

American Paper and Pulp Association.

American Newspaper Publishers' Association.

Southern Pine Association.

Association of Wood-Using Industries.

National Forest Fire Protection Committee.

The California White and Sugar Pine Association.

Empire State Forest Products Association.

New York City Federation of Women's Clubs, and the forestry departments of seventeen states.

The Chamber of Commerce of the United States is asking its members to take a referendum on the subject of endorsing the bill and it is expected that the business interests of the country will unanimously call upon Congress to pass the bill.

A committee of representatives of the organizations which have endorsed the bill has been formed. It is called the National Forestry Program Committee, and R. S. Kellogg, of New York, is the chairman.

Every member of the American Forestry Association is requested to personally urge the Senators of their State and the Representatives from their districts to give unqualified support to the bill.

Of the need of the bill Colonel W. B. Greeley, United States Forester, says in his annual report:

"In the report of the Forester for the fiscal year 1919 my predecessor, Colonel Henry S. Graves, set forth the urgency of a national forestry policy. During the major part of the fiscal year covered by this report the movement gathered headway under his leadership. Since his resignation, on April 15, 1920, the movement has continued along the lines laid down by him, and the program which he formulated has been further developed.

"This program is based on the conviction that the problem of halting forest devastation is fundamentally a national, not a local, problem, and must be faced and handled as such. At the same time it is felt that the speediest, surest, and most equitable action can be secured through dependence on the police powers of the States for the enforcement of such reasonable requirements as

should be made of private owners and on the State governments for providing organized protection of private lands against fire. Because the problem itself is essentially national—that is, one affecting the public welfare of the entire country and requiring to be attacked as a whole, not piecemeal—both Federal leadership and a large measure of Federal aid are obligatory. It should be obligatory upon private owners to apply the safeguards necessary to prevent devastation. There is a practical unanimity of agreement that the first and most essential step is nation-wide protection from forest fires, applicable to all classes of forest land and borne jointly by the landowner and the public.

"When the movement was inaugurated the chief effort was directed toward laying the need for action before those having first-hand knowledge of forest conditions and most directly concerned in forest industries. Conferences were held in various parts of the country with representatives of the lumber, paper, and other forest-using industries, and with State officers having to do with forest matters. The widest discussion of the situation and the precise measures needed was invited. Interest in the subject developed rapidly. Organizations of the various industries dependent on forests for raw material began to canvass the situation, in many cases to appoint forestry committees and to formulate programs of their own. It was chiefly along these lines that the movement advanced during the year, though there was not lacking evidence of a decided awakening of interest on the part of the public generally. To this the acute shortage and skyrocketing prices of lumber and newsprint, which marked the year, undoubtedly contributed.

"The crucial character of the forest situation of the country was made more clear than ever before by the results of a study made in the latter part of the year by the Forest Service, in response to Senate resolution 311. The results of this study were embodied in a report entitled "Timber Depletion, Lumber Prices, Lumber Exports, and Concentration of Timber Ownership," and were submitted to the Senate on June 1. It was found that over two-thirds of the original forests of the United States have been culled, cut-over, or burnt, and three-fifths of their merchantable timber is gone. The country is taking about 26,000,000,000 cubic feet of wood annually from its forests and is growing but 6,000,000,000 feet. We are cutting timber of every class, even trees too small for the sawmill, much faster than they are being replaced in our forests.

"There are still large quantities of timber in the United States, but they are not in the right place. Sixty-one per cent of what is left lies west of the Great plains, far from the bulk of our population, agriculture, and manufactures. The exhaustion of one forested region after another in the Eastern States has been reflected in rising transportation costs, in shortages of supply resulting from the overloading of transport facilities, and in

a narrowing field of competition between regional groups of sawmills. The distance between the average sawmill and the average home builder is steadily increasing; and we shall soon be dependent for the bulk of our construction lumber upon the forests of the Pacific Coast. These conditions have had a vital bearing upon the high cost of lumber, which, during the year, reached a prohibitive figure for many uses and checked the building of homes which is so urgently needed.

"We have used up our forests without growing new ones. At the bottom of the whole problem is idle forest land. The United States contains 326,000,000 acres of cut-over or denuded forests containing no saw timber; 81,000,000 acres of this amount have been completely devastated by forest fires and methods of cutting which

destroy or prevent new timber growth. The area of idle or largely idle land is being increased by from 3,000,000 to 4,000,000 acres annually as the cutting and burning of forests continue. We are short of growing forests.

"To stop the devastation of our remaining forests and put our idle forest lands at work the first step must be the enactment of a Federal law whose two chief provisions are (1) a comprehensive plan of Federal co-operation with the States in fire prevention and the development of forestry practice, and (2) extension of the National Forests through purchases along the line initiated by the Weeks Act, through the inclusion of other timberlands now in Federal ownership, and through exchange.

FORESTRY IN CONNECTICUT

SOME startling facts regarding the present forest situation in Connecticut were brought out at a special meeting of the Connecticut Forestry Association at Hartford on November 27. This was the largest forestry meeting ever held in the State and was attended by many prominent lumbermen, landowners, and foresters. The Committee on Connecticut Timber Supply reported that the State now consumes annually 305 board feet of saw timber per capita as against a production of 51 board feet. The production of lumber has decreased by 50 per cent from 1910 to 1918, and now amounts to less than 17 per cent of the lumber consumption, in spite of a falling off of 35 per cent in this consumption during the last eight years.

At the present rate of cutting the Committee estimates that the existing hardwood supplies will last but fifteen years and the white pine but twelve years. So far as the hardwoods are concerned, the crisis naturally arising from their destruction by cutting is aggravated by the ravages of the chestnut blight. This has destroyed the most valuable and rapidly growing hardwood species in the State, which has been the mainstay of the farmers who own the vast bulk of the forest lands. With the disappearance of the chestnut many of these can no longer afford to hold their lands for timber growth.

This situation means that Connecticut is facing in the comparatively near future a timber famine which will result in the elimination of the bulk of its sawmills and in the disappearance of many local wood-using industries. The resulting high prices for lumber will delay or prevent many needed improvements. Immense sums will have to be paid for freight on lumber brought from the Pacific Coast. State and local revenues will be reduced because of the low taxable value of nonproducing forest lands and the closing of industries dependent on the forest for their raw material.

This gloomy outlook exists in spite of the fact that the forest area has increased from 29 per cent of the total area of the State in 1903 to 46 per cent, or nearly 1,500,000 acres, at present. The State already pays \$3,000,000 annually in freight bills for the transportation

of lumber from other forested regions, an amount sufficient to replant each year one-eighth of the entire area of forest land in the State. That this expenditure constitutes an unnecessary drain upon the resources of the State is shown by the fact that under proper management Connecticut could produce an amount of saw timber equal to her present consumption of 375,000,000 board feet a year on 86 per cent of the present forest area. It is up to the people of the State to say whether or not they wish to adopt measures which will make this possible, or to follow the present course of forest destruction and general impoverishment.

The Connecticut Forestry Association in the resolutions adopted at its recent meeting pointed out that it is of the utmost importance that these facts be brought to the attention of the public at large and that a progressive program of forestry be undertaken by the State. Among the specific activities advocated by the Association was the giving by the farm bureaus in the several counties to the farmers in the State, such information and advice as to growth, management, and marketing of forest crops as they now give with respect to annual crops. This would undoubtedly be a most important and effective step in the attempt to increase the production of timber on Connecticut's forest lands, most of which are in the hands of farmers.

The Association also approved of the purchase by the State during the next ten years of at least 100,000 acres of forest land to be organized and administered as State Forests for the continuous production of the timber essential to the State's industries, and urged an appropriation of \$50,000 for this purpose by the General Assembly of 1921. The Committee on State Forests further suggested that this expenditure should be in the hands of the State Park Board and that this Board should appoint the State Forester. The need for a general reform in the present method by which an annual tax is imposed on growing timber was recognized by the Association, which proposed that standing timber should be exempted from annual taxation but should pay a products tax at the time it is cut. This products tax,

according to the recommendations of the Committee on Forest Taxation, would be collected from the person who cuts the timber, and operators would be required to take out licenses. Exemptions are proposed for material to be used for domestic purposes, including buildings,

and on any amount less than \$50 in value. This is a forward-looking program, which should receive the hearty support of the people generally in Connecticut as a step toward increasing the prosperity of the State through the rational handling of its forest resources.

STATE FORESTERS' MEETING

A WELL attended meeting of State Foresters from seventeen different States was held at Harrisburg, Pennsylvania, on December 8 and 9, for a general discussion of forest problems of mutual interest to the various State forest organizations. Governor Sproul, by whom the conference was called, opened the meeting with an address emphasizing strongly the need for a comprehensive national forest policy to check the devastation of our rapidly dwindling forests. Governor B. M. Olcott, of Oregon, was elected chairman of the conference and presided over its two days' session.

The two most important papers presented at the conference were those by Colonel W. B. Greeley, Chief Forester, on "The Nation and the National Forest Policy," and by Gifford Pinchot, Commissioner of Forestry for Pennsylvania, on "The States and the National Forest Policy." Colonel Greeley urged the adoption of a forest policy which would leave the actual control of fire and of cutting operations in the hands of the individual States under the leadership and with the financial and technical assistance of the Federal Government. He advanced the idea that forest lands are public utilities and held that the States should be encouraged to go just as far as they will in reforestation, and that any State inclined to impose restrictions on their handling should be given a clear field. Mr. Pinchot, on the other hand, favored Federal as opposed to State control of cutting, since in his judgment Federal control is the only form that can be obtained, and if obtained can be effectually enforced. Both Colonel Greeley and Mr. Pinchot were

in agreement that forest fire protection should be handled by the States with the co-operation and assistance of the Federal Government.

Other papers covered a wide variety of subjects, including the timber needs and supply of the various forest regions of the country, the problem of State-wide forest fire protection, the organization of State forest work and State forests, timber surveys, and private forestry. J. H. Wallace, Commissioner of Conservation in Alabama, urged immediate action for the creation of a Federal Department of Conservation, to include natural resources. He declared that the conservation activities which are now scattered through half a dozen different Departments should be co-ordinated, and that this would be a real aid to the States in the development of their policies.

One of the interesting developments of the meeting was the establishment of an Association of State Foresters to bring together the forest officials of the several States for the discussion of problems of mutual interest and to promote co-operation in forest matters between the various States as well as between the Federal Government and the States. W. T. Cox, of Minnesota, was elected president of the association; F. W. Besley, of Maryland, vice-president, and R. C. Jones, of Virginia, secretary and treasurer. These officers, with Gifford Pinchot, of Pennsylvania, and C. R. Pettis, of New York, constitute the executive committee. It is anticipated that the new association will be productive of much good by establishing close relations between the various State forest officials.

STATE FORESTERS DEMAND LEGISLATION

AS a result of a conference of State Forestry officials held at Atlantic City, November 12 to 13, 1920, for the purpose of considering the question of National Forestry legislation, and attended by officials from sixteen of the thirty-four State Forestry Departments, representatives of the Forestry Departments in the following States, fully endorsed the recommendations of the United States Forest Service, relating to co-operation with States in fire protection and forest renewal, as embodied in the report on Senate Resolution No. 311, known as the "Capper Report:" Alabama, Connecticut, Illinois, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts,

Michigan, Montana, New Jersey, New York, Ohio, Oregon, Virginia and West Virginia.

They also urged upon Congress the enactment of the legislation necessary to make those recommendations effective, accompanied by suitable annual appropriations, which, for the fiscal year ending June 30, 1922, should not be less than one million dollars (\$1,000,000), to be expended by the Secretary of Agriculture in co-operation with the several States, for forest fire prevention and control, forest investigations, and timber production, including forest planting.

ACCORDING to figures of the Forestry Department of Canada two-thirds of Canada's forests have been destroyed by fire the past 75 years. But Canada still has 1,900,000 square miles of wonderful forest land.

THE lumber required to make boxes for Washington's 1919 crop of apples, says the Reclamation Service, was sufficient in quantity to build 9,660 average country houses, each sheltering a family of five persons.

FOREST GUIDES DEPARTMENT

SOLAN L. PARKES, EDITOR

The Forest Guides Department will be a monthly feature of the "American Forestry" Magazine. It will furnish information and instruction to the Forest Guides about our forests, woodlands and trees, and everything connected with them. The editor will conduct a Question Box, and any Forest Guide may ask and will receive an answer to any question about the great outdoors. Scoutmasters will read the Forest Guides Department at meetings of the Forest Guides, and will assist the editor by furnishing him with information about the activities of the Guides. It is expected that this department will soon be read by every Boy Scout organization in the country, while other sections of the magazine will give them equally valuable information about various details of the forests and forest life.

THIS Forest Guides Department is made a part of the "American Forestry" Magazine with the object each month of teaching Forest Guides about the trees, the wild flowers, birds, and wild life of the forest, in order that you may know the vast benefits and pleasure you derive on your hikes or in your camps. We want to teach you that trees represent to us more than the wood and the lumber that we get from them. We want to teach you that the birds are here for a purpose, instead of just flying through the air. We want to teach you, besides, that the wild flowers are also performing a duty for us, and that every animal of the forest is working in some way or other for our benefit. We want to teach you to know the trees, without becoming a forester, the wild flowers, without becoming a botanist, the birds, without becoming an ornithologist, the insects, without becoming an entomologist, and so on.

IN this department, it will interest us less as to just exactly how many board feet of sawed lumber there may be in any one given tree, and much more to know what benefits we derive from the standing tree.

It will interest us more to know how birds live, and on what they feed, and how to attract them, and also to know them by their song and color, than it will interest us, perhaps, to know their structural form.

We will lay greater stress in telling you of the great benefits we derive from the wild flowers as we leave them on their plants or shrubs, than we may care to teach you about

plucking them to study their form, or have them adorn your person for but a little while, and then cast away.

We will teach you about the great loss we suffer when forest fires sweep through our forests; how the forest floor conserves for us our water supply, on which our very life is depend-

THE FOREST GUIDES DEPARTMENT

The Forest Guides, originated, organized and under the direction of Solan L. Parkes, as Chief Forest Guide for the State of Pennsylvania, in the belief that our forests, together with their wild life and plant life, should be protected and conserved for our common good, pledge themselves to "do nothing wilfully or carelessly to injure any forest tree, wild plant, bird or harmless animal, and to do all in their power to protect and conserve the same, to urge others to do likewise, and to prevent and extinguish forest fires."

Believing that this Forest Guide movement, so ably organized and directed by Mr. Parkes, needs and deserves support and stimulation, The American Forestry Association has made its magazine, "American Forestry," the official organ of the Forest Guides. It is confidently believed that other States will soon follow Pennsylvania's aggressive lead in this field and that the Forest Guides, from a present enrollment of 6,000 in Pennsylvania, will soon be numbered in the tens of thousands throughout the land.

ent; how forest fires destroy the tree sheds, that otherwise spring to life and give to those that follow us a crop of timber on which to draw for their needs.

We will teach you that if there were no standing trees or shrubs, that the birds would not be with us, for there they build their nests to rear their young, while they fly to neighboring fields

Somewhere near your home, when the snow covers the ground, perhaps many feet deep, there will be birds, unable to find anything to eat. Each Forest Guide should establish a feeding station, and provide food, during the winter months, for our feathered friends. You will be surprised, after a little while, how tame the birds will become, and the excellent opportunity you will have to study the different kinds.

* * * * *

TO help you more, we will establish a question box, and answer any question which Forest Guides may ask in order to help solve the problems which confront them.



SOLAN L. PARKES, CHIEF FOREST GUIDE FOR THE STATE OF PENNSYLVANIA AND EDITOR OF THE FOREST GUIDE DEPARTMENT OF THE AMERICAN FORESTRY MAGAZINE

Boy Scouts not living in Pennsylvania, who would like to become Forest Guides, are requested to write me.

Scoutmasters desiring articles on special subjects, we will be glad to hear from you.

All mail for the Forest Guides Department should be addressed to Solan L. Parkes, Chief Forest Guide, Box No. 9, Reading, Pennsylvania.

The enrollment of Forest Guides among the Boy Scouts of America is one of the most valuable of recent contributions to the progress of forestry and fire protection in the United States. It will bring to bear the activity and enthusiasm of thousands of capable boys in the work of preventing and extinguishing forest fires, and will be of enormous value also in the creation of public sentiment against them.

The Forest Guide plan originated in Pennsylvania. It was devised by Solan L. Parkes, Scout Executive of Reading, to whom the full credit for originating the idea is directly due. Already in a few weeks nearly 6,000 Pennsylvania Boy Scouts are enrolled as Forest Guides. I hope the movement may spread to every other forested State.—
Gifford Pinchot.

and devour the insects that would, otherwise, destroy the farmer's crops.

We will teach you that while we go on learning of this work in conservation and preservation in such language that all can understand, the realization will come to us, and stay by us, that all things were placed in the world by a Supreme Being.

* * * * *

NEXT month, we will have an article on the identification of trees in winter, by J. S. Illick, of the Forestry Department of Pennsylvania. This will be very interesting and instructive, and will give you a great deal of pleasure on your hikes, where, by bark and bud, you will learn to know the trees in winter.

* * * * *

WE will learn to do by doing, and with the first appearance of this department, I want each Forest Guide to do a good Scout turn.

AMERICAN BEARS

BY R. W. SHUFELDT

(PHOTOGRAPHS BY THE AUTHOR AND OTHERS)

THE appearance as well as many of the habits of an ordinary bear are known to most people, and this has been the case for ages and generations; so that it is not at all surprising that the world's literature on bears, together with the pictorial illustrations of them, is enough to make a library of itself. There is also a large myth-lore about bears, both in adult and in juvenile history, and hundreds of times they have been the subjects for the sculptor's chisel or otherwise reproduced in solid form.

No bears occur in either African or Australian regions, and only one species in the Neotropical region.

Most bears are vegetable feeders, though the Grizzly and Polar bears are almost exclusively flesh-eaters; it is said, however, that the latter will eat grass in the summer time. Comparatively speaking, they are all animals of considerable size, differing not a little in their habits and modes of life. In addition to the Grizzly and Polar bears, the best known bears of the world are the common Brown bear of the Old World (Fig. 1); the American Black bear and its varieties; the Spectacled bear of the Peruvian Andes; the Sloth Honey bear, and the Malay or Sun bear; and there may or may not be one or more varieties or subspecies of any these. Bears seem

to have been derived from some extinct dog-like ancestor; though fossil remains of bears have been discovered that belong to the typical bear family. The well-known extinct Cave bear of Europe belongs in the last-named group, and was a species of immense bulk.

After a fashion, the majority of bears can manage to climb trees, and I once saw a Black bear climb to the top of a telegraph pole; in descending they come down hind feet first, and it is said that the adult Grizzly is unable to climb.

Most flesh-eating bears are very ferocious in disposition and extremely dangerous in attacks on their enemies; however, the true vegetable feeders are very often, even in nature, gentle and harmless. I once heard a story of

a Brown bear in the wilds of Norway that overtook a child that had gathered a basketful of berries, of which fruit the animal is very fond, never molesting the little peasant girl in the least; she thought all the time that it was a big dog she had to deal with.

The small black bear, with the white crescent on its chest, so frequently seen in zoological gardens in this country, is the Malayan bear, which is a species easily tamed. In the Honey bear of India two of the upper incisor teeth are lacking, and its lips are very extensible. The soles of the feet in the Polar bear are more or less hairy, only the small pads being naked, and this allows these animals to walk on the ice without slipping. For many years past, the pelts of some of the species—notably the Black bear of this country—have played an important part in the fur trade, thousands having been shipped to Europe every twelvemonth; but the skins of some bears are quite valueless as furs. It is the Brown bear of Europe that can be so easily tamed and taught to stand upright on its hind legs and dance to music.

There is much yet to be learned about the bears of the United States before knowledge of their habits, ranges, and anatomy will be complete. This is the more remarkable from the



A BROWN BEAR SCENTING GAME

Figure 1. Of all the existing species of bears, this European Brown Bear has perhaps been known as long as any of them; it is noticed in works many centuries old. This is the bear that can be so easily tamed and taught to stand on the hind legs and dance.

fact that naturalists, hunters, and others of this country have written about them, published pictures of them, and talked about them for wellnigh three centuries. At as recent a date as 1884, Prof. F. W. True, of the United States National Museum, published in the Proceedings of that institution a "Provisional List of the Mammals of North and Central America and the West Indies," in which was supposed to appear the names of all bears known to science at that time in the vast region named. In that list only four species were given and no subspecies. These four were the Black bear, the Grizzly bear, the Barren Ground bear, and the White or Polar bear. As for the ranges of these animals, even less than a quarter of a century ago they were of so indefinite a

nature as to be particularly valueless. No attempt will be made here to list the many North American bears that have been described by our naturalists, as this would carry us far beyond our space limits. However, one writer on the subject claims to find no fewer than forty or more different kinds of bears—a statement that saner naturalists take with a very large pinch of salt.

No bear in all the world is more interesting in its habits than the Polar or White bear of the Arctic regions, also widely known as the Ice bear. This species

has an individuality that no other representative of the bear family possesses; and its history, as it has been recorded by man, extends back over more than a century. So distinctive are the characters of this great, white, hairy-footed, black-nosed bear, that apparently no zoologist has ever made any attempt to record more than the one species of the animal—every writer on the subject considering the ice bears of the north, on the two Hemispheres, to be identical. In North America they have been reported as far south as northern Labrador; while in the realms of its ice bound home it ranges everywhere. This is not at all surprising, as this bear, with its love

of roaming and great, fur-padded feet, can move over the most slippery ice almost anywhere and that at a very good speed. Moreover, it is as fine a swimmer as a seal, and behaves, in the ice-cold seas of the north, with as much unconcern as though it had been born in that element. It has been known to drift for miles upon a floating iceberg, and this evidently for pleasure and convenience, rather than from necessity, as a number of Arctic explorers have reported having seen Polar bears, hale and hearty, swimming in the open ocean all the way from forty to eighty miles from any land

or other landing-place. As for the size of a big male of this species, this is, even at the most recent time, a matter of dispute by observers, and the total length of various specimens has been given all the way from seven feet to thirteen, with weights to correspond. It is not at all unusual to find these immense bears in menageries and zoological gardens, both in this country and abroad; hunters in the Arctic regions have often captured the cubs after killing the old she-bear, and these invariably command a good price, selling readily to dealers in wild

animals. In confinement the Polar bears will feed on many kinds of vegetables and fruit, and they have been known to thrive on wheat bread alone. Where they are more or less numerous, Arctic explorers have found them to be a downright nuisance, as they steal provisions however carefully concealed. Normally, though, this bear is a typical flesh-eater, and prefers seals, fish, and other kinds of flesh above everything else, when chance throws it in his way. The meat of the ice bear does not agree with man, as a rule, though dogs will thrive on it well, and in that way it has often been a boon to the explorer in the Polar regions.

A writer says in *Animal Life* that

“when the first discoverers went to the Arctic Seas, dressed in thick clothes and skins, the Polar bears took them for seal. On Bear Island, below Spitzbergen, a Dutch sailor sat down on the snow to rest. A bear walked up behind him, and seized and crushed his head, evidently not in the least aware what kind of animal it had got hold of.” That is a pretty good story; but we must believe that Bruin, on that occasion, knew pretty well that he had not tackled either a seal or a walrus—much less a fish or a clutch of gull’s eggs. In hunting the seal the Polar bear is at his best, and he commands



THE POLAR OR WHITE BEAR

Figure 2. This group of Polar Bears represents a female with her two young; the latter are about to feast upon a dead harbor seal, captured for them by their mother. These bears are so clever that when hunting seals they conceal the black tips of their noses, the only part of them that is not snow white. This is a group in the United States National Museum, photographed by the Author.

a score of ways to outwit his prey. Making no noise, he will stalk him over the ice, and adroitly pounce on him at the finish. He will watch a seal-hole as a cat will patiently await the coming out of a mouse; he will hunt him leisurely along the edge of the ice-floes; then, if the seal happens to be up on the ice and awake—and the bear hungry and believes himself discovered—he will, in a careless sort of way, slide into the water, dive, and then swim around to the point where the seal rests, seizing him before he has a chance to escape. Several Arctic explorers state that they have seen this bear



ONLY THE BEAR CUBS CLIMB TREES

Figure 3. It is remarkable to note the agility with which a cub will ascend a tree; but still more interesting to note that hunters agree that full grown bears do not climb the trees.

capture fish in the water, diving for them just as a seal does—which is not hard to believe when one has observed how much the animal is at home in water, in which he cuts almost as many capers as an otter.

From Nordenskjöld's "Voyage of the Vega" we learn that "when the Polar bear observes a man, he commonly approaches him as a possible prey with supple movements and a hundred zigzag bends, in order to conceal the direction he means to take, and to prevent the man from feeling frightened. During this approach, he often climbs up onto blocks of ice, or raises himself on his hind legs, in order to get a more extensive view. If he thinks he has to do with a seal, he creeps or trails himself forward on the ice, and is then said to conceal with his forepaws the only part of his body that contrasts with the white color of the snow—his large black nose. If the man keeps quite still, the bear comes in this way so near that it can be shot at the distance of two gun-lengths, or killed with a lance—which the hunters consider safer." Should this bear grapple with a man, it rarely or never resorts to hugging his intended victim as our Black bear does, instead he uses his short, sharp claws, and bites like a tiger.

It is now well known that it is only the females of

the Polar bears that hibernate during the months of the long Arctic winter. The males ramble around during the entire year, fitted, as they are, to withstand the most severe cold. They never make any attempt to escape it, either by migrating farther south or by hibernation.

Years ago the Esquimaux reported to Captain Lyon that "at the commencement of winter, the she-bears are very fat and always solitary. When a heavy fall of snow sets in, the animal seeks some hollow place in which she can lie down, and then remains quiet while the snow covers her. Sometimes she will wait until a quantity of snow has fallen, and then digs herself a cave; at all events it seems necessary that she should be covered by and lie in the snow. She now goes to sleep, and does not wake until the spring sun is pretty high, when she brings forth two cubs. The cave by this time has become much larger from the effect of the animal's warmth and breath, so that the cubs have room enough to move; and they acquire considerable strength by continually



A BLACK BEAR FORAGING

Figure 4. When not hibernating, bears get a very large amount of physical exercise in the routine of their daily life, and it is truly extraordinary how much ground one will cover in the course of a day.

suckling. The dam at length becomes so thin and weak that it is with great difficulty she extricates herself when the sun is powerful enough to throw a strong glare through the snow which roofs the den. The natives, by means of dogs, which scent them through the snow, and begin scratching and howling very eagerly, find and kill the bears during their confinement. As it would be unsafe to make a large opening, a long trench, of sufficient width to enable a man to look down and see where the bear's head lies, is cut; he then thrusts in his spear. The old one being killed, the hole is broken open, and the young cubs may be taken out by hand, as, having tasted no blood and never been at liberty, they are harmless

and quiet." Some writers assert that the cubs are born during the very early part of the winter, and remain in the snow-den until May, when all three animals come forth, and that at a time of the year when food is abundant. Surely the mother needs it then; and she also has the task of teaching her cubs how to provide for themselves.

The superb valor that a she-bear will display when defending her cubs is vouched for by those who have witnessed such scenes. Out of a large number of such stories, let us select the following, told by Scoresby in his *Voyage to Greenland*. He narrates that "early in the morning, the man at the mast-head gave notice that three bears were making their way very fast over the ice, and directing their course toward the ship. They had probably been invited by the blubber of a sea-horse which the men had set on fire, and which was burning on the

portion for herself. As she was carrying away the last piece, the men leveled their muskets at the cubs and shot them both dead; in her retreat they wounded the dam, but not mortally.

"It would have drawn tears of pity from any but unfeeling minds to have marked the affectionate concern manifested by this poor beast in the last moments of her expiring young. Though she was sorely wounded, and could but just crawl to the place where they lay, she carried the lump of flesh she had fetched away, as she



READY FOR A NOONDAY NAP

Figure 5. In the forest, Black Bears are extremely cautious as to where they take a mid-day nap; this cut exhibits their usual procedure under such circumstances. If they do not sleep with one eye open they have both nostrils alert, and their keen sense of smell warns them of approaching danger.

ice at the time of their approach. They proved to be a she-bear and her two cubs; but the cubs were nearly as large as the dam. They ran eagerly to the fire, and drew out from the flames part of the flesh of the sea-horse which remained unconsumed, and ate it. The crew from the ship threw great pieces of the flesh, which they had still left, upon the ice, which the old bear carried away singly, laid every piece before her cubs, and, dividing them, gave each a share, reserving but a small



Photograph by Mr. H. K. Vreeland.

A MONSTER GRIZZLY

Figure 6. This picture shows a big Grizzly at home in the forests of northwestern Wyoming. Strong shadows of the trees cross the trail behind him, and his own deep shadow obscures his right foreleg and its enormous claws. These latter, however, are well shown on the feet.

had carried the others, tore it into pieces, and laid it down before them; and when she saw they refused to eat, she laid her paws first upon one and then on the other, and endeavored to raise them up. All this while it was piteous to hear her moan. When she found she could not stir them, she went off, and when at some distance looked back and moaned; and that not availing to entice them away, she returned, and smelling around them, began to lick their wounds. She went off a second time as before; and having crawled a few paces, looked again behind her, and for some time stood moaning. But, still her cubs not rising to follow her, she returned to them again, and with signs of inexpressible fondness, went round first one and then the other, pawing them and moaning. Finding at last that they were cold and lifeless, she raised her head toward the ship and growled her resentment against the murderers, which they returned with a volley of musket-balls. She fell between her cubs, and died licking their wounds."

And we boast of the humanity of man! The word

humanity is often only another name for the most unmitigated cruelty. As long as these men had slain this bear's cubs—the least they could have done was to have shot her immediately afterwards, and saved her all the unnecessary pain and mental distress she subsequently suffered.

This brief account is by no means all that could be written about this fine species of bear—how it attacks the young whales, for example, also the young and old walruses and other animals; further, how much they enjoy flattening themselves out on the ice, with fore and hind limbs stretched to their utmost.

There is not very much literature on the Kadiak bear, comparatively speaking. Stone and Cram, in their "American Animals," give us three fine reproductions of photographs of it, taken by Mr. A. R. Dugmore, but refer to it only in three lines of type. Doubtless it has many of the habits of its kind; and inasmuch as it has not been rendered fearful of man, it is likely that it is a more or less dangerous antagonist to encounter in its native wilds.

The life histories of the Grizzly bears teem with interest. All true hunters of big game delight in reading a good bear story—if such a story describes an exciting grizzly hunt, so much the better. Although descriptions of such hunts have been published by the hundreds, the most hazy notions exist in many quarters in regard to these animals—their size and weight, some of their habits, their definite distribution, the distinction between them and other large American bears, and even the alleged specific and subspecific differences of the various grizzlies themselves. For example, Stone and Cram state in their "American Animals" that the Grizzly is the largest bear in the world, while on another page of the same work they say that a Kadiak bear is larger than a Grizzly! To my knowledge there have not been any reliable or extensive comparisons made of the skins, measurements, and weights of recently slain specimens

of these animals; and, as a rule, only their skulls have been used upon which to base specific and subspecific forms—sometimes only the teeth. Geographical distribution, of course, is something, but it is by no means sufficient for such purposes. Doubtless all the Grizzlies are very much alike in their habits, so that a description of the general habits of one kind would answer very well for any of the others.

As a rule, this enormous bear will not attack a man, for his experience during the last half-century has taught him better; with the rapid improvement in rifles, the Grizzly has become more and more convinced that the wisest plan is to keep out of the hunter's way. Still, if brought to bay, or painfully wounded, a Grizzly will



CLOSE-UP OF A GRIZZLY

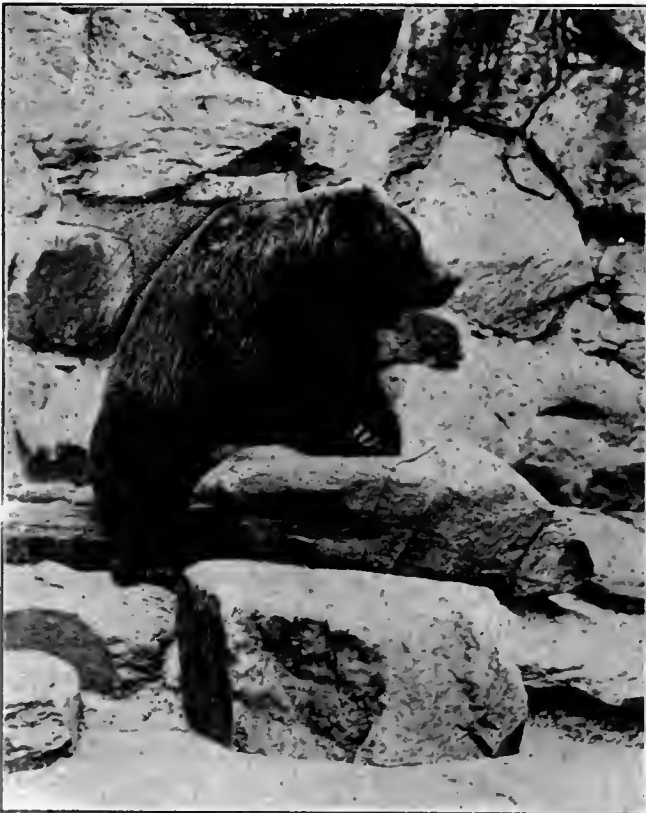
Figure 7. In the National Parks where the Grizzly is thoroughly protected, it is a well-known fact that a person can readily approach one of them; when it has been born and reared under such conditions; the animal will never take it into its head to attack one, unless teased or injured. They are seen in great numbers by visitors to the National Parks.

assume the offensive, when it will be the hunter's turn to look out for his life. The bear can stand an enormous amount of punishment; and if he can grapple with his enemy, he can crush a man's skull as easily as one breaks an egg. Grizzlies, when full-grown, have never found any trouble in killing such animals as bison, moose, horses, and oxen, carrying them away to be devoured at their leisure. Apart from man, his great destroyer, he lives supreme in his habitat. It has been said that a cougar could

attack and kill an old grizzly, but the story is hard to believe. I have known men in my time who would vouch for having seen a big Grizzly knock down a bull bison weighing half a ton, and drag the quarry away with apparently no more effort than that displayed on the part of any of the smaller animals in dragging off animals they have killed, as large—or larger—than themselves. Many a bull elk has fallen a prey to this powerful and ferocious bear; while ranchmen, in years gone by, in many parts of the West, know full well how handily an old Grizzly can make off with some of their stock. When nobler and heavier game is scarce or unprocurable, however, he will nose around through the forest, digging out with his immense clawed fore-feet

any of the small rodents from their burrows; he will even catch and eat grasshoppers where they are very plenty, or big mountain locusts that are indifferent hoppers. He will eat some fruits, various berries, and the soft, green grass in the open parts of the mountain. Except when young, this bear is not a tree-climber, as he is altogether too heavy and clumsy; but it is remarkable how quickly he can get about, if he chooses. Especially is this the case with the she-bear in the spring,

particularly unfortunate in keeping up my end of the record—so much so that a good deal of fun was being poked at me by the members of the mess and my brother officers in camp. Of course the men and the Indian scouts did not say anything; still, a few of them “looked a heap.” I was becoming a little nervous under the treatment, though I had made up my mind to take the punishment, rather than give up the chances of finally bagging something. In this frame of mind, I was lying in my tent one morning, just before the peep of day or about an hour before sun-up, and once more I was seized with the fever to sally out and try it; so, before the desire wore off, I was up and dressed, and found myself making hasty strides in the direction of Wolf Creek, armed with an officer’s carbine, a knife, a belt of cartridges, and an army revolver. I had standing permission to make these trips, so long as I did not unnecessarily expose myself to danger from hostile Indians



A GRIZZLY IN CAPTIVITY

Figure 8. Superintendent Ned Hollister, of the National Zoological Park, Washington, D. C., kindly supplied this fine photograph of a big Grizzly; it represents one of Uncle Sam’s treasured animal possessions.

when she has her cubs with her; and, unless a man is very powerful, very agile, clear-headed, possessed of nerve, knows a Grizzly, is armed with a heavy, modern rifle, and a crack shot under all circumstances, it would be safer for him to keep well away from an old she-bear.

One of the most interesting experiences I ever had with a Grizzly was during the summer of '77, and it occurred in the northern foothills of the Big Horn Mountains, in the dry bed of a stream called Wolf Creek. At that time I was surgeon with some of the Fifth and Third Cavalry, and they had been in camp for a number of weeks on the plains, about twelve miles north of the stream mentioned. The Sioux Indians were giving us a good deal of trouble, and practically had us temporarily penned in. They were shooting every courier we sent out, and ambushing every one else who tried to reach us. Big game was more or less abundant in the neighborhood, and somebody was obliged to get it, even at the risk of life. Days had passed, and I had been par-



WINTER COAT OF A GRIZZLY

Figure 9. Another fine picture of one of the big Grizzlies of the Washington “Zoo,” supplied by Mr. Hollister, to be used in this article. It was taken in the winter, at a time when this animal is hibernating in nature. Note what a magnificent coat it has.

and returned to sick-call at seven in the morning. This gave me about three hours; but even then, one might run into deer, bear, buffalo, or almost anything else in that locality.

When about half a mile out of camp, I took to the scanty timber and undergrowth that skirted the banks of the creek coming from the foothills, and into which Wolf Creek formerly flowed. Cautiously I followed up the game paths, and with the utmost care peered into every nook and place where a deer might have spent the night, or a bear foraging for what he could find. Every once in a while I would stand still in a likely

place, and listen most intently for at least ten minutes; but no, not a sound that brought the slightest encouragement, and I was doubtless doomed to another punching at the mess at breakfast for being such an incorrigible tenderfoot.

About five o'clock I reached the fork where the dry bed of Wolf Creek began. Here were some signs of game: deer tracks crossed to and fro in the white sand of the bottom of the creek, or more abundantly imprinted on the mud about the shallow pools where they had been drinking. Most of the big timber had disappeared, and, for an acre or so about, the place was filled in with a rather dense growth of young, wild cherry trees. These averaged some eight feet in height, and were laden with ripe cherries—the very thing I thought a bear would appreciate. Beyond and about these trees a scrubby growth was present, disappearing about a hundred yards further on where the foothills commenced, upon which latter were scattered, and not so far apart, dark stone boulders, most of them large enough to hide three or four men. A magnificent morning sun now illumined the scene, the generous rays penetrating the less dense masses of undergrowth. Although there was no

“swamp” about it, the plainsmen often called a place like this a “cherry swamp,”—I suppose for the reason that, in wet weather or during prolonged rains, it became more or less flooded with water. This was not the case now, however; for the greater part it was as dry as a powder-horn, and one could follow the labyrinth of game paths running through it in all directions without so much as dampening one's moccasins.

This cherry swamp was my best hold now; in a few moments I was within its shadows, treading my way slowly and cautiously through the game trails and the old and more widened game paths. Hardly had I penetrated more than forty feet, when I caught sight, by a very small puddle, of one of the biggest grizzly tracks

I had ever seen. The hinder three-fourths of it was impressed upon the smooth, shiny mud, while the immense claws had reached into the shallow puddle. A peculiar sense of delight crept over me, associated with the sudden awakening of all my faculties to their maximum point of keenness, as I realized that I might not come out of that cherry swamp alive. I knelt to make a close examination of the track. The first particles of mud stirred up by the bear's claws had not yet commenced to settle to any extent; therefore, the track was not over ten minutes old, probably less. Putting my ear close to the ground, I listened intently; but, although I heard various noises, none were made by a big bear.

Arising, I loaded and cocked my carbine, and, carrying four loose cartridges in my left hand, I took up the trail. It was not difficult to follow, and I soon met the first sign in the path: a place where he had stopped to eat cherries. This caused me to examine my small-arms carefully, to rub my chilled muscles a trifle, and to peer among the cherry trees in every direction. The slight breeze was in my favor; undoubtedly the bear was between me and the foothills, so, if he did not show fight and started to go, he could run in the direction of



A GRIZZLY IN THE BRONX PARK

Figure 10. Our American zoological gardens usually have on exhibition from one to five grizzly bears at a time; they are interesting animals, if kept in sufficiently spacious dens. Photograph by Elwin R. Sanborn, and published through the courtesy of the New York Zoological Society, as were also Figures 11 and 12.

his home. The place was as silent as the grave, and I was possessed by a very mixed lot of emotions. I wanted that Grizzly in the worst way; I fully realized the dangerous place I had struck him in; and I knew, if a fight ensued, the chances were about equal—perhaps in favor of the bear. Presently I took up the trail again; in Indian fashion, noiselessly I moved along. Scarcely had I advanced an hundred feet, when a peculiar sound coming from my left caught my ear. A kind of swish! then, silence. In the direction of the sound I observed a young cherry shaking. Ah, I thought, he is bending the trees over, sucking off the cherries, and letting the trees spring back. As I rapidly advanced a short distance, I racked my brains as to where I could take up

a position so he would approach me head on, in that I might get a between-the-eyes shot at him. He was not far off, and pretty soon I heard him for the first time—giving little puffs and grunts of satisfaction, but no sign that he had in any way taken alarm. It was after six o'clock, and as I had to be back at sick-call in camp at seven, I did not altogether fancy the way things looked. As I straightened myself up to take a general look-around, and to get the lay of the land as far as possible, a small cherry tree, almost directly in front of me and not over sixty feet away, was bent over as easily as I would bend a broom straw. Noiselessly and rapidly I put in for the point with my very best wits about me.

Judging the distance as best I could, I stopped about twenty feet from where the tree was bent over. Crouching low, I gazed steadily in among the small tree trunks and scattered underbrush. Swish! Up went the tree again, locating the bear for me with absolute certainty. A moment more—and I saw him; but only a small part of his left haunch. He was evidently a perfect monster. I drew a fine bead on the part, and was deliberating whether I should attempt to cripple him or not. My carbine was a piece of considerable power for rifles of that period, shooting the .45 cartridge; and ten times that distance I had shot through two big elk, killing them with one ball; but wapiti and bear are two very different kinds of animals. I had had a friend or two torn up and badly lacerated by Grizzlies

after incautiously crippling the animals. However, as I debated the matter in my mind, the bear moved a few feet, thus passing still further out of view, and then out of sight altogether. I waited patiently five or six minutes, to see if he would not come my way again; but all was silent, no more trees pulled over, and I was getting as mad as a hatter. I made direct for the place where he had bent the tree over—he was gone! I then took up his trail in a fit of desperation, but was soon satisfied that he was through and was going home.

Bouncing out of the swamp, I went rapidly up among the boulders on the first foothill, mounting a sloping one with a good, flat top, which afforded me a fair view. Hardly had I done so, when I caught sight of the Grizzly

about one hundred feet ahead of me up the hill, and he certainly was the most ponderous old brute in the shape of a bear that I had ever seen. Time was limited, so my only chance now was to bring him to bay. I drew down on a spot just back of his ear, and let him have it. No lion that ever lived let loose such a blood-curling roar, and; rolling himself up in a ball, he came down the hill. Quickly I had in another cartridge, and let fly at him. I think I caught him high up in the bowels, for he turned to bite himself most savagely just in front of the flank. This time he saw me, and I began to think he was my bear; but he was on his feet in a jiffy, and, snarling and looking back, with a surprisingly

rapid and shambling gait, he was soon among the boulders and close to a big canyon.

In a moment I was down and after him. This time he left a thick, scarlet trail—but it was of no use. I was obliged to return, and I knew it would take at least an hour to follow and overtake him; so, disgusted, I went back to camp. Directly after sick-call I started over to hunt him up, accompanied by Delany, General Crook's old guide, and a few Indians. We struck the trail; but after half a mile the bleeding became very irregular, and we followed him with extreme difficulty. At last the trail was lost—at least I could not follow it—and gave it up. But I shall always think that those Indians found him and slew him; or, what is more probable, found him dead, and passed him over to the hostiles of their own tribe

all about us—and that was the end of it. However, I was not badgered quite as much as before, and in another year I was continually in demand to join hunting-parties for the killing of big game for the post.

A writer (Morwitch), contributes an interesting and instructive account of Grizzly bears, writing from Missoula, Montana: "Most hunters have a mortal dread of meeting a bear for fear of getting torn to pieces on sight; but I have found the cases very rare where a bear was looking for someone to chew up. In nearly all cases the bear is as badly frightened as the hunter. Bear hunting, as a rule, is too hard work for the ordinary hunter, and to be a successful bear-hunter requires a lot of patience, determination, and a thorough knowl-



Photograph by Elwin R. Sanborn.

FINE SPECIMEN OF A BLACK BEAR

Figure 11. Usually this bear is very black, every hair of him, and exceptions to this law of nature are rare. Occasionally one is found with a white patch or a white collar.

edge of their habits, so as to be able to tell just where to look for them. If in the spring, then look where the first vegetation starts, close to the snow line. Although bears never refuse to eat any kind of food at this time of year, yet this is the first place they look for something to eat. As the snow melts away from the hills and ridges, they search these for decayed logs, stumps, and turn over rocks, looking for grubs, ants, etc. As the season advances, and vegetation gets more or less unpalatable, they search streams for frogs, fish, etc.—fish being a choice food for them, especially in a country where salmon abound. From the first of June to the middle of July, they are not confined to any particular spot, but are wandering anywhere in quest of any kind of food. At this season, and the late fall, they are likely to be found anywhere, but most likely not at all, if one is not a very careful hunter. A bear is always on the alert; no sound escapes his notice, and he hears anything; no matter how taken up he is with feeding, he will stand up and listen and look until he finds out the cause—and he is never mistaken. If the sound is not repeated, he at once becomes suspicious and proceeds to leave; and all your climbing and stalking has been in vain as far as

that bear is concerned. From the middle of July, when the berries commence to ripen, these constitute their chief diet—no matter what kind of berries they are, although they prefer black haw, for which they will leave all others. These are found on nearly all the creeks in Idaho, Montana, and the eastern parts of Washington; but as they do not ripen until other kinds are nearly gone, they feed on huckleberries, wild gooseberries, currants, etc. The best time to shoot bears, when they are feeding on berries, is early morning. They feed from sunrise until ten o'clock, and then from three in the afternoon until dark. In places where they are not much hunted, I have found them feeding at all hours of the day. They are extremely cautious, are the most wary of all game, and gifted with a great amount of intelligence. A

hunter's success is in patience, perseverance, a good gun, and the knowledge of how to use it." Another writer says in part: "Of the bear family, we have in the mountain region of Colorado four varieties: the black, the brown, the gray or silvertip and the little range bear. The first is coal black, every hair of him, except in very rare instances. I have seen one with a white strip in his face, and one with a distinct white collar around his neck. He is about twice the height of the little southern black fellow, and more than a third heavier than the one found in the mountains of Pennsylvania and northern New England. The cinnamon is the common North American brown bear, and found nowhere else on earth. He is bigger and bolder than his

black brother; and while he is not aggressive, yet when wounded or cornered he is a fearful antagonist, quick as a flash, and with the strength and staying power of a dozen Corbetts. His greatest weight, at mature age and in best condition, is from eight to nine hundred pounds, and the average is about six hundred and fifty. The silvertip or gray bear is the largest and most pugnacious variety found here, and is the one called "grizzly," although the monster, whose name he has



Photograph by Elwin R. Sanborn.

AT HOME IN WATER AS WELL AS ON LAND

Figure 12. Few are aware of the fact that the Polar Bear is as much at home in the waters of the Arctic Seas as it is on the ice, and that it is quite the equal of any of the seals in the matter of swimming. Seamen report seeing them as much as eighty miles from land or ice floes.

usurped, would make a meal of the Colorado animal, and go to bed hungry. There is a wonderful diversity of color in this species, running from almost black to almost white, that is puzzling to the novice; but it is partly accounted for by the difference in age and the influence of the seasons, and also by the fact that this animal hybridizes with both the black and the brown kind; just as do the gray, black, and red foxes, whose mixture produces the varied and beautiful fox skins. In these mountains it is not an uncommon thing to see a brown or black she bear with two cubs, one of each color, or a silvertip with one dark brown and the other a dirty white. The little brown fellow, called the range bear or "ranger," is the least known of all the family, and is, in fact, very rare. He seems to live, like the mountain

sheep, mostly above the timber line; and in spite of the fact that the taste of the yampa, the sarvis, and rasp-berry and the choke cherry are unknown to him, his flesh is the only bear meat I have ever tasted that is fit to eat. This little fellow is of light chocolate color; his hair is very long and silky, and his ordinary movements are quick and active as those of the fox. When traveling or hunting for his food, he has a way of sitting up like a monkey every few yards, turning his pretty little head from side to side with all the nimbleness of a squirrel. I do not know whether he can climb a tree or not, nor do I really feel certain that the others cannot; but, singular as it may seem, it is a fact that they never do except as cubs. You may pursue a young one, and if he finds you gaining on him, he will scratch up the nearest tree like a kitten. On the other hand, if a wounded adult should tree you, he will sit at the root thereof till hunger calls him away, or confine his efforts to tearing at the trunk with tooth and toe-nail.

"It has been disputed by many hunters and naturalists that the bear hibernates or "holes up" as we call it here in the Rockies; but I have found several of their winter sleeping-places, and from my own observation I find that Bruin makes preparation for his, or her, three or four months' siesta, about in this fashion: A spot is chosen, generally below the timber line, and always on the north or east of a slope that is sheltered on the upper side by thick-growing pines or the densest 'buck-brush.' A bear never goes into the rock-piles or slides, as they have a way of shifting their positions suddenly. Instead of trusting to these treacherous cavities, he proceeds to dig his own cavern, going straight down for a few feet, the entrance being barely big enough to allow him to work freely. Then he strikes upward, slantingly, and makes an apartment of sufficient size to enable him to turn around or over. At the altitude he chooses, say

9000 feet, the snow sets in at stated periods, early in November, so that he knows just when to retire; and he is generally covered with his fleecy quilt to a depth of three or four feet before we people in the valley have thought of putting up our stoves. The trees above protect him from being irretrievably covered by snow slides; and as the prevailing wind in those localities is from the south and west, he is not likely to be overspread by deep rifts.

"Madam Bruin gives birth to her twins in this dark abode; and they come forth, strong and lusty, with their lean and hungry mother, about the first of April. Now is the time when it behooves the hunter to look ahead and think twice before attempting to catch one of these cute little animals. The mother is never far away, and the faintest whine from one of the babes brings her with the speed of the race horse and the fury of a demon to the rescue. In such a case, the hunter must have what we of the West call "sand," and the rifle must not fail, or there will be a very dead and disfigured man in a few seconds.

"All of the varieties I have mentioned are easily trapped. Unlike the coyote, who will sit on his tail and starve to death in sight of the most delicious morsel if there is any semblance of a snare about it, Bruin will step in and investigate any sort of a pen, whether baited or not. In consequence of this trait, and the fostering of the idiotic bounty law, his capture has formed a profitable industry in Colorado. However, the law has been repealed since, and I sincerely hope that the measure will never be re-enacted."

Some of the best accounts of Grizzly hunts that have ever been published are those told by the late Colonel Roosevelt of his own experiences, and they well exemplify the coolness and daring of that most intrepid hunter of big game.

HE SLEEPS WITH THE BIRDS

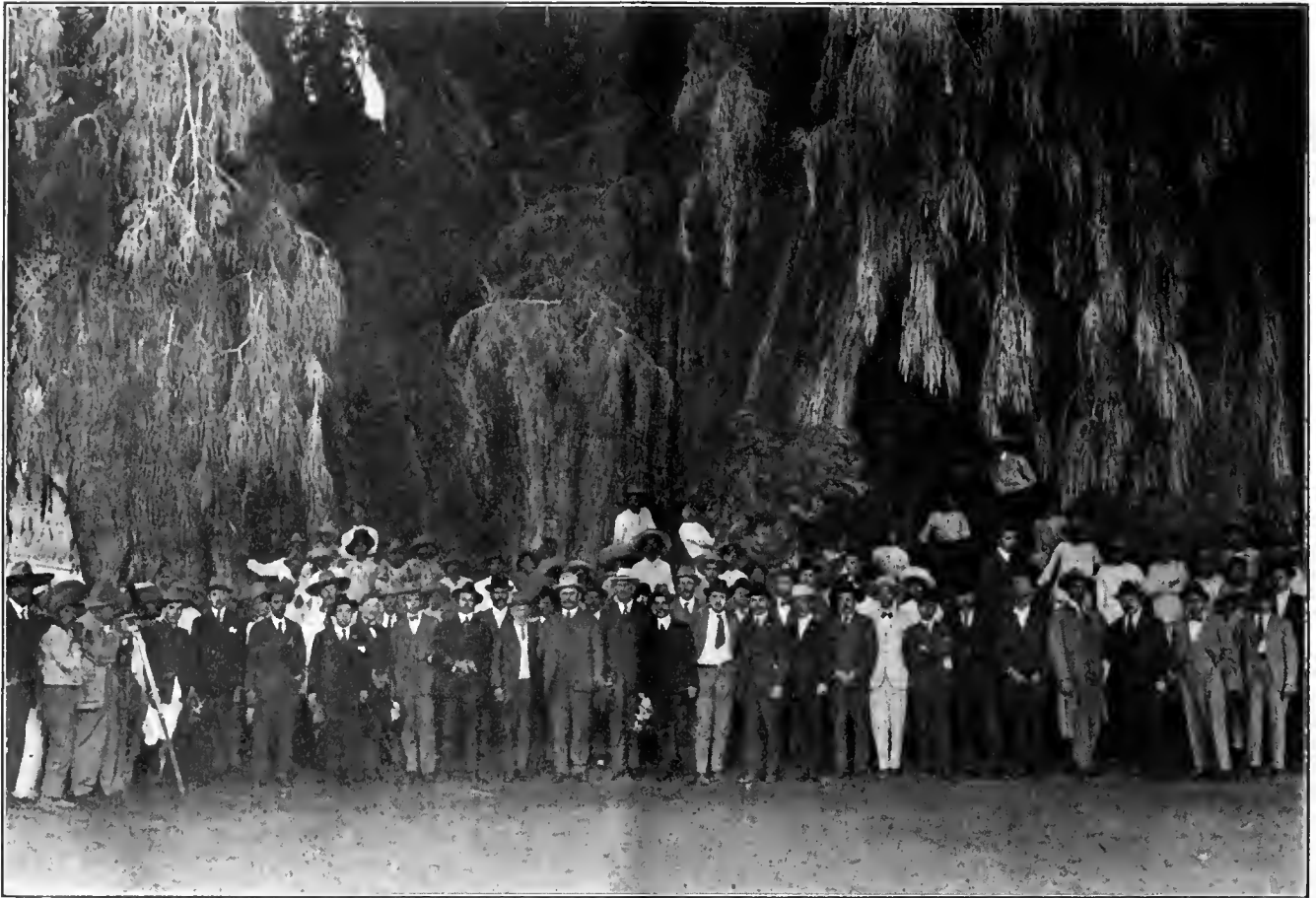
PETER PAN, you will remember, lived in the tree-tops. Well, so does Guy C. Caldwell, a naturalist and tree surgeon, of Cambridge, Massachusetts, according to the *Boston Sunday Post*. While this seems to open a rich field of possible ways to beat the profiteering landlord, Mr. Caldwell's first "flier" into the tree-tops was actuated, not by a desire to escape inflated rents, but by a very real necessity to escape pursuing mosquitoes. He says one hot evening he had slung his hammock under the trees, as the coolest spot he could find, but that soon in sheer self-defense he took to the "tall timbers" where he slung his hammock, well protected by extra ropes and a safety device of his own invention. (See contents page.) This was rather a desperate measure, for an ordinary man, but Mr. Caldwell is not an ordinary man. He is a naturalist and a real lover of trees. Each one

is to him a living thing, with character, moods and personality. He has turned his natural love for trees and his wide knowledge of them to good account in the devotion of his time to the very practical science of tree surgery. During the war Mr. Caldwell served in the Navy and his spare time was spent studying sea birds and marine flora. His navy training was undoubtedly of service to him in making easier his rapid ascensions to his aerial bed-chamber, and in fitting him to rig up quickly, almost anywhere, an outfit which will enable him to get into the tree-tops quickly in order to observe to the best advantage the intimate family life of his feathered friends, to study their habits and become even more expert than he now is in his marvelous imitation of their calls and beautiful music.

THE GIANT CYPRESS OF MEXICO

WITH full appreciation of the beauty, and recognition of the majestic size of the giant cypress of Mexico shown in the accompanying photograph, exception must be taken to the supposition that it is the "oldest tree in the world." The honor of being the "oldest living thing" belongs to the General Sherman tree in the Sequoia National Park in California. These Mexican cypresses grow to enormous size, and are believed to attain an age of 2000 years, but it must

(*T. distichum*). While the Mexican species is not, in general, believed to be extraordinarily long-lived, a few isolated trees have become famous on account of their enormous bulk and age. The tree shown in the illustration is believed to be the largest and oldest of the notable examples of this Mexican cypress. It stands in the church grounds in the center of the little village of Maria Del Tule, which is on the road from Oaxaca to Guatemala by way of Tehautepec. This tree is



(Photograph copyrighted, 1920, by the Curtis Publishing Company.)

THIS PHOTOGRAPH, BY DR. E. J. DILLON, REPRODUCED THROUGH THE COURTESY OF THE SATURDAY EVENING POST, OF PHILADELPHIA, SHOWS ALVARO OBREGON, MEXICO'S PRESIDENT, STANDING IN FRONT OF A GIANT CYPRESS IN MEXICO. THIS TREE HAS BEEN NOMINATED FOR A PLACE IN THE HALL OF FAME BY MRS. M. E. JUDD, OF DALTON, GEORGIA

be remembered that the General Sherman was "a lusty youth of fifteen hundred summers when Christ was born." Its exact age cannot be determined without counting the rings, but it is probably well in excess of thirty-five hundred years. The General Sherman, greatest of all the celebrated Sequoias, with stupendous proportions admitting of no exaggeration, stands unassailed as the largest and oldest living thing.

The Mexican Bald Cypress (*Taxodium mucronulatum Tenore*), is very closely related to our bald cypress

about 150 feet high and has a maximum diameter (measured near the ground) of 40 feet. At five feet from the ground its actual diameter is about 35 feet. The spread of the crown is 141 feet and its age is estimated to be about 2,000 years. As is the case with a good many Mexican trees, this cypress, long known and famous among the inhabitants of the country, has been known to science only since 1853, and even then it was first described from trees cultivated in Italy.

THE SANGRE DE CRISTOS

BY ARTHUR H. CARHART

THE Supervisor had staged the climax wonderfully well. We had traveled all morning in the close confines of the South and North Hardscrabble canons. The last long climb had taken the auto which carried us up to saddle land of the Greenhorn's back-bone and there as we swung around a turn stood the most majestic single peak line mountain range I have ever seen and probably ever will see, the Sangre de Cristos. The

effect was as if one had been listening to the fantastic playing of some barbaric dance on violin which had gradually diminished until the muted strains had swung to a theme of pleasant uplands and then—a crashing,

majestic full-toned triumphal march burst into full harmonic melody in the theme of the Sangre de Cristos. No orchestra, no orchestral band, no gigantic pipe organ ever equaled the majesty of the theme which fairly

thundered up on us as we swung around the hill into the view of this mountain range.

There were four of us in the party. The car was driven by Mr. A. G. Hamel, supervisor of the San Isabel National Forest,

and the man in whose care was intrusted this unmatched grand symphony of marching mountains. The trip was under his personal guideship and he had made us get on the road early this day so we might see his pet moun-

The San Isabel National Forest, in southern Colorado, is one of the most interesting of all forests. Many types of scenery are in its offerings, but none are more beautiful than the Sangre de Cristo range. It is nearly 100 miles long, extending from the Arkansas river to near the southern boundary of the State. It is pronounced by many the most beautiful mountain range in the world, and this may be due to the presence of the broad valley on either side from which the range is viewed. Almost every high peak in the range reaches 13,000 feet and at least five are over 14,000 feet. It is exceptionally attractive to the mountaineer, for three of the peaks are very rarely climbed. The beauty of the range when capped with snow is almost indescribable. No master writer or painter has ever been here to record by pen or brush the dazzling splendor of these peaks. It may be that this little article will bring one such the few miles necessary from the beaten paths of the traveler to give to the world some written or painted description of this sublime range of mountains.—Arthur H. Carhart, Editor, Recreation Department.



PART OF THE BEAUTIFUL SANGRE DE CRISTO RANGE FROM THE WET MOUNTAIN VALLEY

"And then—a crashing, majestic full-toned triumphal march burst into full harmonic melody in the theme of the Sangre de Cristos. No orchestra, no orchestral band, no gigantic pipe organ ever equaled the majesty of the theme."



A SNOWBANK IN JULY

Snow can be seen in the crevices of the Sangre de Cristos any month of the year. High in the mountains it stays in patches many feet deep during the entire summer.

tain range in its happy morning mood. Three of us composing the remainder of the party, included a captain of engineers of the American Expeditionary Forces, my wife, and myself. The dusky dawn had seen us swing along a canon road, past sheer cliffs and tree covered slopes so we might get this view as the Supervisor had planned. All remembrance of early rising, of breakfast



THE SIERRA BLANCA, FROM THE TIMBERLINE

At the southern end of this magnificent range stands the fifth highest peak in the United States. Around its shoulders hang nine lakes and from its sides course many streams flecked with cascades and falls. Few peaks in the nation offer the strenuous test of mountain climbing which Blanca presents. To climb to the top of this monarch is a feat for an expert mountain climber.

eaten by lamp light, of the scary canon road, was whisked away by this flood of splendid nature harmony which confronted us.

I like to think that this morning we traversed the same route traveled by the early Spanish adventurers, who gave the name to the Sangre de Cristos. Legend tells of this christening. Years ago before white settlements had been made on our eastern shores Spanish explorers carried to the City of Mexico news of a mythical city, Quivira. In this city gold was a common metal, and gems of rare qualities were many. Adventurous spirits among the Spanish conquerors traveled through many miles of territory infested with Indian foes, trying to find this new land which to them meant a new Peru to conquest.



SANGRE DE CRISTO PEAKS AND THE QUIET VALLEY

In the valley are many peaceful ranch places where all is restful. Back of these stand the scraggy pinnacled mountains. It is perhaps this striking contrast which makes the range so regal in its display of strength.

But no man ever saw this mythical city. One band, however, glimpsed a magnificent piece of God's handiwork, never equalled in splendor by the most fanciful imaginings of adventure seeking Quivira. For this band early one morning came over a low highland of the Greenhorn range and beheld, in magnificent splendor, the high range of the Sangre de Cristos. The sunlight streamed through the upper misty levels of the plains atmosphere hundreds of miles east and produced for these dark skinned Europeans a phenomenon since viewed by many residents of the Wet Mountain Valley. Only the red rays of the sun struck the peaks and high snow covered range. Mists rolled over peak and ridge. The

luminous spectacle held these beholders breathless. The whole range seemed fusing and changing. Actually, the clouds moving down the slopes appeared like great masses of slow moving, thick, viscous fluid. All stood dumb until one, finding his tongue, whispered partly an ejaculation, but mostly in reverential awe, "Sangre de Cristo."

And thus the range called "Blood of Christ," or as the Spaniard called it, "Sangre de Cristo," received a name which has lived. This is in some measure due without doubt to the fact that when atmospheric conditions are right this blood red light floods the peaks, recalling the origin of the name. Almost of a certainty the wonderous blood red color will clothe these slopes several times each season and if perchance at-



THE GREATEST MOUNTAINS OF THE SAN ISABEL NATIONAL FOREST

Often one returns to find a dream of scenic splendor dimmed through having seen many things meanwhile—but one comes back to the Sangre de Cristo and finds the same appeal.



SANGRE DE CRISTO RANGE

No range offers so many peaks to be scaled all within easy reach of the broad valley floors which come to the foot of the single line of peaks on either side. Nor can one find a range where the base of the mountains hide so many pleasant camping and picnic spots in literally hundreds of large and small canons.

atmospheric conditions remain the same for several days, each morning within the time will witness the grandeur of this coloring.

But it was not our good fortune to witness this play of freakish sun rays. Instead the line of peaks in front of us stood in clear brilliant whiteness so far as the eye could see to the north and to the south. Each looked like some mammoth conical dish of ice cream lying just beyond our reach. In truth, they were not less than thirty miles, and possibly nearer fifty, from our car when we sighted the whole range.

Through the little mining village of Querida our car sped, bearing us ever nearer the brilliant mountain range. Ever the mountains seemed just a few miles away, their

apparent distance remaining constant in spite of our having traveled not less than ten miles since first sighting their high pinnacles. Querida is a little mining



CRESTONE NEEDLES

Here is the master feat for mountain climbers! So far as known, this peak which is in the most rugged part of the backbone of the Cristos, was never climbed until July 4, 1920, when a party of four, starting at 3 A. M., reached the tip of this pinnacle, 14,233 feet high, at 4.15 in the afternoon. Three of the party were members of the Colorado Mountain Club, and the fourth was a resident of the valley. All were skilled and hardy climbers.

settlement, which seems to snuggle down into the hills, trying to forget the present in drowsy remembrances of its past. The coming of our car to the town must have been an event for several men quit work where they were wrecking some old mine buildings for the lumber to be salvaged, and one or two women peered at us out of cabin windows. These were the only souls we saw in this old settlement, which one day in the past was a famous city of Colorado, and was at one time talked of as a location for Colorado's State Capitol.

But past glories and activities of man and the shroud of romance of the past which, today hangs over Querida, could hold our attention only so long as we were unable to gaze upon the Sangre de Cristos. A moment after we passed the last mouldering prospector's cabin, again swinging around the side of the hill, we came into the presence of the mountain range masterpiece of the San Isabel. From there on, mile after mile, we traveled towards the range with its lofty peak tops ever in vision. Did we travel a foot towards these craggy heads they came no nearer. If we covered a mile on the road they seemed as far away as ever.

The whole Wet Mountain Valley spread before us as a great landscape unit as we came to the foothills of the Green-horns. Two small groups of white and colored dots were pointed out as the houses of the towns of Silvercliffe and Westcliffe. We knew that the latter was where we were to board a train and it seemed almost ludicrous that we should expect to find an engine and cars there, so tiny did the wee town seem, dwarfed as it was by the breath taking sweep of range and valley.

Skimming along over a road that climbed down into the valley the Supervisor pointed out to us the different peaks of the range. He told of lakes hidden under frowning cliffs that stood hundreds of feet above the water surface. Some of these cliffs we saw from the car, but the distance and the massive uplifts of which they

were but small parts, made them seem like mere ripples on the earth's surface. He told of lost gold mines in the range, of great forested areas, of rugged creeks cut by ancient glaciers, and with every new fact told, and with every look at the range, we all knew that some day we would return again to this valley, and on that visit, before we bade good-bye to the peaks and the valley, we would have trod the slopes of the range, sniffed the spicy airs of the forest, and scaled the heights of some of these peaks which we now had to pass without getting an intimate touch.

So finally we came to Westcliffe and the end of the railway. And there we did find a town and a train. After a very hasty lunch and a parting word with our host, the Supervisor, we boarded the train with regret, and then left the valley and its sentinel peaks.

But I knew that no matter where I went, or what mountains I might view, some day, as soon as I could, I would return. And I feel sure that while the other two visitors to the valley spoke no resolve that they too knew that they would return, for that is the way you feel when in the presence of the Sangre de Cristos.

Of the three of us that left the valley on the train that day, so far, I, alone have gone back. Four months later I came to the valley over the same twisty railroad with the same snorting, little engine pulling the mixed train of passenger coaches and freight cars into the valley. Often you return to find your dream of scenic splendor dimmed, through having seen many things meanwhile. But although I had viewed the country of the Shoshone, had visited Yellowstone Park, and had viewed many other things known as superlative scenery, I came back to the Sangre de Cristos and there found the same appeal, the same majestic qualities I had met on that morning when the Supervisor had said, "Now meet my pet mountain range, the Sangre de Cristos."

OUR NATIONAL TREE

WHAT should be our national tree? Thousands of grownups and thousands of school children, at the suggestion of the American Forestry Association, are now voting on this question. The number of candidates is really surprising. There is black walnut, and hickory, and elm, and ash, and oak, and white pine, and spruce, and longleaf pine, and Douglas fir, and redwood, and a host of others. Hardly a tree can be mentioned that does not have its own particular champions, and every one of them has its own peculiar claims for consideration. Perhaps it will turn out that to do impartial justice we shall have to have several national trees!

However that may be, it is certain that the present friendly competition between the various trees and their admirers has an important educational value. Classes of public school students are being interested in the trees in a way they never were before. They are learning to

tell the different kinds of trees apart in summer and in winter, and to call them by their common names or by their more dignified Latin titles, as occasion may require. They are learning how trees grow and reproduce, and what kind of a climate and what sort of a soil each one likes. And above all, they are learning what the different trees are good for, what part they play in the life of the community and of the Nation, and how important it is that we should take steps to assure ourselves permanently of an ample supply of trees and forests. Grownups, too, are learning these same things and are getting to know the trees in the familiar sort of way which will make them more appreciative of their true value. Who knows how much new and effective support the national tree contest, indirect as the connection may seem, may bring to the national forestry movement.

FOREST ODDITIES—THE BIGHORNS OF OURAY

BY ARTHUR H. CARHART

MAYBE the fact that wild mountain sheep will come into the main street of a town is not an oddity. Maybe the Creator planned for all living things to be at peace so wild things could travel in Man's lands without fear. But with the present general dread

waterfalls in the state, a famous canon is but a moment's walk from town, and there are hot springs and other attractions to be visited but unless the traveler gets the opportunity to see the sheep of Ouray his visit there is not quite complete. These sheep are at home in town. They roam the mountains wholly unhampered but have adapted themselves to urban conditions as well. It would be hard to conceive a more striking contrast to usual conditions than that shown in the pictures, where these sheep are raiding hay stores in a railway car within a few feet of a depot and in the heart of town. One old buck, whose horns show he is many summers old, has used his crag-climbing skill to get into the car and seems as much at home there as on a mountain top.

That there are bighorn sheep around Ouray is not strange for the country is their natural habitat. That the people of the town are interested in these sheep is not an uncommon thing. But the fact that these wild things

are so much at home in town and that the people have shown real action and results arising from interest they have for their wild neighbors is altogether an unusual combination. Ouray may well be proud of its odd



(Photograph by Christopher.)

INVESTIGATING THE POSSIBILITIES OF GETTING A GOOD DINNER

in wild animals of all that is man-made it is unusual that a bighorn sheep would come to the main thoroughfare of a town and pay his respects to the business houses.

But with all of the unusual features of such a situation there is one place where it happens. The little city of Ouray, Colorado, nestles in a vast amphitheatre of rugged mountain sides and within the boundary of one of the most scenic of all National Forests, the Uncompahgre. From these rugged slopes each winter come bands of bighorns to accept the hospitality of Ouray. For the town is host to these wild neighbors giving them feed of good hay, helping them in wintering through.

And the sheep reciprocate by remaining around the town all through the year and forming one of the greatest attractions to the tourists who happen to visit this scenic area. There are here some of the most spectacular



(Photograph by Christopher.)

HAVING DISCOVERED THE HAY IN THE CAR, THEY PROCEED TO GET ABOARD AND ENJOY IT

FORESTERS MEET MONTHLY

THE Foresters located in and about New York City are meeting regularly on the first Thursday of each month at 1 P. M., at the Yale Club for luncheon. This offers a fine opportunity to talk things over and some very interesting discussions have already developed through the meeting of Messrs. J. E. Rothery, Barrington Moore, Ernest A. Sterling, Hugh P. Baker, Nelson C. Brown, and R. S. Kellogg. All Foresters who happened to be in New York the first Thursday of each month are cordially invited to join the company. It is only necessary to notify or telephone Nelson Brown, at 506 Hudson Terminal, 30 Church Street, New York (Cortlandt 1556).

CENTRAL PARK UTILIZES DEAD TREES



PARK COMMISSINER FRANCIS D. GALLATIN DEMONSTRATING THE SMALL SAWMILL RECENTLY INSTALLED IN CENTRAL PARK

THE Department of Parks of the City of New York is doing a splendid thing in the utilization of the dead trees in Central Park. "We have installed a portable drag saw," writes J. S. Kaplan, Forester of the Department, "which first bucks the tree up into logs, then a wood mill which saws the log into stove wood length, and a splitting machine which splits these bolts into stove wood size. In addition to this, the saw mill shown in the photograph for making rough lumber out of red oak, ash and other trees from which we can get at least a twelve-foot length. The stove wood is distributed to the poor during the winter at distribution stations established throughout the city. During last winter, at times, we were able to help out the Department of Education, who used it almost exclusively for fuel in various school buildings."



(Photograph by T. J. Watkins.)

THESE SHEEP ARE WITHOUT FEAR FOR THEY KNOW THEY WILL NOT BE HARMED

winter citizens, the band of wild bighorn sheep which makes that little city headquarters during the months of snow.



ART AND SERVICE

In Phoenix, Arizona, the owners of an automobile service station at one of the down-town corners built their mission-style structure around a great palm tree, rather than cut it down to make room for their place of business. They have aptly given the name, Palm Service Station, to their establishment.

MYSTERY OF AN ABANDONED ORCHARD

BY J. OTIS SWIFT, AUTHOR OF "WOODLAND MAGIC"

THIS winter morning while the eves of the house here in the Manor at Hastings-on-Hudson are adrip with melting snow that fell during the night, I want to take you over through the soft yellow sunshine to the Grassy Sprain Valley and the old abandoned orchards on the hillside above the Yonkers reservoir. Though the ground is not frozen we have found a thin veil of snow over the dun brown grass, like a heavy frost, on many mornings lately. It will have evaporated before the sun is well up. We go over through the woods at Hudson Heights and cross the mystic little Nepperhan River, that Washington Irving mentions, on the stepping stones where the lady beeches lean lovingly over. I wonder how many generations of lovers, American, Colonial English, old Dutch, and Algonquin, have crossed over these smooth worn footstones? I don't know why, but steppingstones in a brook always make me think of lovers—and one who has not forgotten how lovers feel is a fit novice to go out into the forests for a day's ramble with that oldest lover in the world, Dame Nature.

Back in that romantic age before Christianity, when nearly all the known world worshipped Cybele, the goddess of Nature, who, under many names, held sway over the hearts and minds of men from the shores of the Mediterranean bowl eastward across Asia Minor, they used to picture the sweet girl goddess as sleeping the long winters through guarded by the lions in her mountain caverns. But I think we have learned a few things in these latter centuries. For the forests never seem to me so redolent of her entrancing personality as in the sleepy winter time when the great tulips, sycamores, oaks, black birches and red elms, their feet wrapped in warm leaves and snow drifts, all the little baby shrubs tucked snugly in like cherubs in their cradles, stand whispering and gossiping and laughing together far and wide through the forest.

Then in the Spring, when patches of clean washed dead brown leaves appear between the deep woodland

snows, and Cybele, her tawny hair flying over her girlish bare shoulders, her light filmy robes drifting about her lissom figure, comes dancing and laughing through the forest calling all her little plant and big tree folk to awake, we can see where her pink toes have touched the brown sward lightly, have stirred the still green Christmas ferns, by the trailing arbutus breaking into pink, the hepaticas into delicate blue, and the spring beauties into pinkish white.

But by now we have passed the *pro bono publico*, spring in the edge of the wood and have torn our way through the smilax, raspberry, button-bush and snapwood of the Sprain Brook bog and out into the old field across which is the State road. It is called the Sprain Road and is bordered by a crumbling stone wall, eloquent of backaches long forgotten. Poison ivy covered with waxen gray berries, woodbine knitting the lichen-painted stones together, blackcap raspberries, blackberries on either side, bright red dashes of color where the black alder—our local holly—lightens up the tangle, and crawling grapevines clamber over walls, fence-rails and cedar bars. Sometime before the Civil War—and how long ago that seems now since we have seen our boys come back from the heroic fields of France—this was a prosperous farming community. In the jungle

of half-grown sassafras, locust, black walnut and sumachs, the larger walnuts were neatly tagged during the war by the Yonkers Boy Scouts, there are old cellars overgrown with weeds, raspberries, wild roses and catbriar.

As we step into one of them through the gaping Southern wall all the romance, melancholy and guessed-at tragedy of uncovered Pompeii and Herculaneum sweep over us. Who lived here? When did the creeping, inexorable front trenches of the forest advance across the brook and cultivated fields, and why? As we stand here guessing, we stoop to scoop up a handful of the crumbling mortar and ashes on the cellar floor—and come upon the economy of Mother Nature who



THE MYSTIC LITTLE NEPPERHAN RIVER WITH THE LADY BEECHES LEANING OVER

begins, as soon as man has given up the fight and retreated from some homely, hideous spot of earth, to cover it with verdure and make it beautiful—for the mass is full of the nubby roots of the blue violet, green



WE HAVE TORN OUR WAY THROUGH THE SPRAIN BROOK BOG

where the sunlight has reached them, and the chubby red roots of the bloodroot, *Sanguinaria Canadensis*, the sharp sprouts already pointing upward for next spring's delicate white blossoms.

We have broken a root in digging it up, and it bleeds like a cut finger. We are sorry that we disturbed it, for isn't there some distant cousinship between this little red-blooded haunter of the waste places and ourselves? Are they talking to us, the Little People, who surely must live in the chinks of the old cellar stones; the familiar spirits, the little Trilbys who stole the cat's milk from the ingleside and frisked before the buxom young housewife on the hearth from their hiding place in the chimney corner of this one-time home? Are they peeping out of nook and cranny with angry little eyes because we have dared dig up the wild garden they have planted to cover the tragedy of a forgotten heart?

"Who do you think gathered the shiny seeds of the bloodroot and the wild ginger from the sidehills and planted them here to make a lovesome spot of this old ruin?" they are asking us. "Do you think we did it just for idle saunterers to dig them up and destroy them? Away with you, before we turn you into dried sticks or withered mushrooms for the wind to blow about!" It is our old, old inner minds that hear these things, not

our this-generation intellects, and that's why our conscience pricks a little, and why our intellects hurry to tell us that it is all right, and no harm done, and that there are no Little People, anyway. Nevertheless, we

put the bloodroot back and carefully bury it so it will grow next spring. We wonder, as we go up over the hill to the Grassy Sprain forest, just why we replaced the roots.

There is no place more entrancingly mystic and suggestive, so legended, so interesting, as an old abandoned orchard returned years ago to pastureland and grown up to a tangle of young forest trees. One looks furtively about among the woodpecker embroidered trunks half expecting to see the hairy shanks and little sharp black horns of Pan and to hear the piping of his reeds as he dodges our search. Here we come suddenly into such a sanctuary. It would take me all day to tell you of the surprises, the bits of human history half revealed, in this old orchard. It is haunted with black-and-white and brown garbed chewinks and reddish-brown tailed hermit thrushes with speckled vests, in summer; with rabbits, coons and foxes in winter. Snuggling about the gray old ledges worn smooth on the

western side by the glaciers that ground off the tops of the Palisades which we can just see over the hills to the west, are delicate little ebony ferns, tall, slim, lance-like

blades of green that seem to prosper rankly on the worn-out soil of this old orchard, but dwindle, once their poverty is replaced by the rich environment of a cultivated garden. In



WHEN THE GREAT TULIPS AND SYCAMORES WHISPER TOGETHER



AN OLD ORCHARD RETURNED TO PASTURE LAND

the crack of a ledge, full of black loam, we come upon the dried stalks of the blackberry

lily with the shiny black seeds still clustering at the ends of the flower stalks like luscious blackberries ripening in January. It is an escape from some old garden—but where was the garden, one wonders? Maybe the birds

brought the seeds here originally, or perhaps the Belamcanda, an East Indian name of the species, has outlived every vestige of some old Dutch cottage garden that once bloomed in this ancient orchard of Grassy Sprain.

All through the tangle of wild appletrees, young thorny locusts, cockspur thorns, and dense clumps of pink azalea and candleberry bushes are fine big sassafras trees. There are large black-heart cherry trees that seem to have gone wild in this locality but bear wonderfully in season. Clambering among the tops of the twenty-foot locusts are masses of black frost grapes which the birds come twice a day from the woods to feast on, even in these thawing mid-winter days. There is still so much to eat in mid-winter in the forests that I have wondered whether a naturalist would starve, if he had a hatchet, trowel and pocketknife with him. There are paths wandering among the candleberry clumps—the bayberry, two or three of whose leaves thrown into a soup certainly improve the flavor, and whose waxen berries, ash-gray, our grandmothers used to gather to make into candles that, burning, filled the house with such mystic fragrance that to this day we like to have them at Christmas time to remind us of the old-time romance of the American Colonial Yule-tide. The paths wander here and there among the appletrees and junipers—Gypsy paths I think they must be, for who but the Romany people are there, among the sons of men in towns, who would leave their money-grubbing nowadays to make them and keep them worn and clean swept? Of course there are the tales of the old herb-gatherers about what they have

paths of leaves and brushwood—well, they somehow make us sensible people nervous after sunset!

The forest that crowns the top of the hill and sweeps down to the lake shore—the Grassy Sprain reservoir of the City of Yonkers—is of hard wood, giant old



THE LITTLE PEOPLE SURELY MUST LIVE IN THE CHINKS OF THE OLD CELLAR STONES!

white and red oaks, lady beeches, black walnut and hickories. It is a sanctuary for birds and small animals, as well as for some of our most valuable timber trees. There are interesting things about the forest of Grassy Sprain to the botanist, though it is only a woodlot compared with the Adirondacks, the North Woods of Maine, and our Western forests. In the tangled underbrush of deep ravines grow the showy orchid, the pepper-root, maidenhair fern, moonwort, jack-in-the-pulpit, white baneberry, the pungent wild ginger, and many other rare and beautiful denizens that show that this wood, a part of it at least, was never cleared. We start home through the gathering dusk, glancing curiously between the dead brakes and candleberry, lest we shall see—but, Good Gracious! Suppose we *should* see? After all, why worry lest we come suddenly upon a little old man knee-high-to-a-grasshopper, a bearded little old dwarf in a leather jerkin and frog-skin leggins, sweeping the paths with a birchen broom? Aren't we secretly hoping that we *shall* be startled in just such a way as a sort of climax to our day of following the fleeting notes of Pan's pipes through the Grassy Sprain woods?

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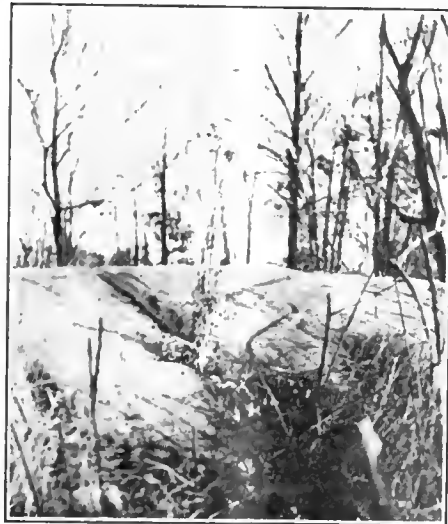
jerkin and frog-skin leggins, sweeping the paths with a birchen broom? Aren't we secretly hoping that we *shall* be startled in just such a way as a sort of climax to our day of following the fleeting notes of Pan's pipes through the Grassy Sprain woods?

*"There is no rhyme that is half so sweet
As the song of the wind in the rippling wheat.
There is no meter that's half so fine
As the lilt of the brook under rock and vine,
And the loveliest lyric I ever heard
Was the wild-wood strain of a forest bird."*

—Carwein



BIG SASSAFRAS TREES AMONG THE TANGLE



IN THE CRACK OF A LEDGE—THE DRIED STALKS OF THE BLACKBERRY LILY

seen in the gloaming, in the treacherous light between sunset and moonrise when returning through these

byways from the spearmint beds over by Grassy Sprain Lake. They are always seeing things that no one else sees in the forest—these old herb-gatherers—and their tales of brownies, and wood-gnomes, sweeping the forest

"HALL OF FAME" FOR TREES

From the original report published in 1845 is reproduced a picture of the spot of the location of the Kit Carson Tree, nominated for a place in the Hall of Fame by F. N. Fletcher, of Carson City, Nevada. This sketch was made by Mr. Preuss, the artist who accompanied the Fremont expedition.

The Kit Carson Tree is at the summit of the Carson Pass over the Sierra Nevada Mountains in Alpine County, California. On this tree Kit Carson, famous hunter, guide and Indian fighter, cut his name on February 20, 1844. He was then guide and hunter for Colonel Fremont, who was engaged in the desperate endeavor of crossing the Sierra Mountains in the dead of winter in order to reach Sutter's Fort on the Sacramento River. The Fremont Expedition had left Kansas City in May, 1843, and had reached tide-

searching for the mythical river of which the Indians had told the Spaniards two hundred years before. Striking the east fork of the Walker, which he two years later named for Joseph Walker, he followed it up to its headwaters and then crossing the divide to the west he came to the west fork of the same stream which he followed down for several days, thus in a measure doubling back on his course. Finding no west-flowing stream and being nearly destitute of supplies he turned directly west across the southern end of Carson Valley and essayed the well-nigh impassible task of crossing the snow-covered Sierras in winter. On February 20 the expedition came to the summit of the mountains at a point about sixteen miles south of Lake Tahoe. On one side of this pass they found that the waters flowed to the east, and on the other to the west. Leaving his party



LOCATION OF THE FAMOUS KIT CARSON TREE

water on the Columbia River in November. After securing supplies from the Hudson's Bay Company at old Fort Vancouver Fremont set out on his return to the States, but he left the Columbia and went up the Falls, or Deschutes River, in order to cross the Great Basin and locate, as he says, "the reputed Bueneventura River, which has had a place on so many maps, and countenances the belief of the existence of a great river flowing from the Rocky Mountains to the Bay of San Francisco." This river had been proven a myth by Jedediah Smith in 1827, and by Joseph Walker in 1833, as Fremont should have known. The desert country into which the expedition fell after leaving the Deschutes River and the mountains, seemed to render hopeless the route to the States at that season of the year, so the leader changed his objective to California, by way of the Bueneventura if he could find it. Coming down to Pyramid Lake in Nevada, which he named, he skirted the Sierra Mountains along their eastern foothills

in charge of Carson, Fremont with one man had pushed ahead to reconnoitre and had satisfied himself that he had "struck the stream on which Mr. Sutter lived." Incidentally he had discovered Lake Tahoe, "a beautiful view of a mountain lake at our feet." Returning to his party he found it occupied in making a road (for the horses) and bringing up the baggage; and "on the afternoon of the next day, February 20, 1844, we encamped with the animals and all the material of the camp, on the summit of the Pass in the dividing ridge, 1000 miles by our travelled road from the Dalles of the Columbia." Some years later a pine tree growing at the pass was found bearing the inscription: "Kit Carson, 1844." In order to preserve it from decay and possible vandalism, the tree was cut down in 1888 by William Thornburgh and J. F. O'Gorman and the section bearing the name was sent to Sutter's Fort, where among other interesting historic relics it may now be seen. Another

"HALL OF FAME" FOR TREES

most interesting relic of this expedition, the 12-pound brass howitzer which had been mounted on wheels and dragged all the way from Kansas City until it had been regretfully abandoned in the snows on the west fork of the Walker, now stands under a pine at Tahoe City overlooking the lake. The expedition suffered almost incredible hardships on its journey from the summit to Sutter's Fort, but finally

arrived there without the loss of a man. Kit Carson had been in California twelve years before, but he had entered the State from the south on a trapping expedition from the Colorado River. His only other known visit to the State was in 1853, when he drove a large band of sheep from his home in Taos, New Mexico, across the Great Basin and the Sierras and sold them in "one of the frontier camps."



THE BEAUTIFUL HILGARD CHESTNUT

Named for the first dean of the College of Agriculture at the University of California the Hilgard Chestnut is submitted for the Hall of Fame by M. B. Pratt, the deputy state forester of California. The State Board of Forestry of California has the picture in its collection and the description is furnished by Professor Woodbridge Metcalf, of the division of forestry of the University of California. The tree stands in front of Agricultural Hall near the north fork of Strawberry Creek on the University of California campus at Berkeley. It has always grown in the open without interference from other trees and is therefore low-branched with a wide-spreading rounded, symmetrical crown. It is now 41 inches in diameter at one foot from the ground but at about four feet the trunk divides into eight spreading branches. These being so near the ground make climbing easy and the tree

is, therefore, a favorite roosting place for children living about the campus. The crown has reached a height of 35 feet in its 35 years and its branches spread over a circle about 50 feet in diameter. Dr. Hilgard was the first dean of the College of Agriculture, foremost soil expert of his generation and one of the pioneers of agricultural education in the United States. This fine old tree was planted in 1885 by Waldemar G. Klee, a Danish gardener, who, at that time was superintendent of the gardens and orchards of the College of Agriculture, under Dr. Hilgard; it is only since the death of the latter in 1915 that the tree has been given his name in appreciation of his work for California agriculture. The tree is the Italian variety (*Castanea sativa*).

MONEY FROM MAPLES

MANY thousands of American farmers throughout a region comprising more than a score of States are overlooking opportunities to secure delicious maple sugar and sirup for home use, as well as for sale, at very little cost.

This statement, of peculiar interest because of the present sugar shortage, and the approach of "sugar weather," is based on data compiled by experts of the United States Department of Agriculture who have made a special study of the maple-sugar industry. While Americans commonly think of this industry as being confined largely to circumscribed areas in New England and New York, there are, as a matter of fact, many potential "sugar bushes" throughout eastern and north-eastern United States; in other words, throughout a region extending south to include North Carolina and Minnesota. There are also a considerable number in Tennessee and west to include northern Missouri and Iowa of maple trees of a sugar-yielding species, as well in Washington and Oregon.

While some experience is necessary to boil the sap down to sirup and sugar properly, the process is not complicated and may be learned readily. A United States Department of Agriculture bulletin, "Production of Maple Sirup and Sugar," gives the necessary information, and will be sent free to any person addressing the Department at Washington.

A clump of 10 to 15 trees usually will yield enough sirup for family use to make tapping worth while, and in many cases will afford a surplus which can be sold at a remunerative price. The flow of sap depends upon the age, condition, and habit of growth of the trees, also upon the character of the weather and condition of the soil during the sap-flowing season. In a good season a tree 15 inches in diameter will yield sufficient sap to make from 1 to 6 quarts of sirup, which in turn can be concentrated into 2 to 10 pounds of sugar. Larger trees under the same conditions will produce correspondingly large yields of sirup and sugar. All hard maple trees, 8 inches or more in diameter, may be safely and profitably tapped for sirup and sugar production.

Recently an investigator of the United States Department of Agriculture in North Carolina discovered many groves of sugar maples that were not being utilized for sirup and sugar production. One of these groves is probably larger than any now to be found in New England. The owners, not being aware of the value of these trees from the maple-sugar standpoint, had begun cutting them down for lumber at an average return of less than \$1 a tree. At the suggestion of the Federal representative the groves were spared further cutting in many instances and the owners last year began tapping the trees and making sirup that sold for \$4 a gallon. This revelation of the potential value of these groves has induced the owners to plan more extensive operations for this coming spring, so that instead of destroying the groves they will become a source of permanent and larger in-

come. It is expected that the flow of sap will be even more satisfactory than last year, since the warm weather of last winter was not favorable to producing the best grade nor the highest yield of sugar and sirup.

The maple sirup and sugar industry is distinctively American and offers good commercial opportunities for those who engage in it systematically. No countries besides the United States and Canada produce this much-prized product on a commercial scale, which is at once a delicacy and a highly nutritious article of diet. The demand for both sirup and sugar is far beyond the supply.

Because the sugar content of the sap varies from time to time, uniformity of quality can not be secured throughout a season. Warm days and cool nights are essential to a satisfactory flow, and the sugar content may vary considerably from day to day. However, this is not a feature that materially affects the success of one's operations.

Tapping of sugar trees if done properly in no way injures the tree. Trees have been tapped for more than 100 years and are still in good condition.

It is a good policy to tap early in the season to obtain the earlier runs, which are generally the sweetest, and therefore the best producers. Makers have lost half and even more of their crops by not being prepared for the first run. In general, it may be said that the season is ready to open during the first or middle of February in the southern section and later in the northern regions when days are becoming warm—when the temperature goes above freezing during the day and at night below freezing. If the days are very bright, warm, and sunny the sap will start with a rush but soon slacken, or if a high wind starts the flow is checked. Protracted warm weather or a heavy freeze with nights and days of even temperature stops the flow altogether, to start again when weather conditions are right.

Considerable difference of opinion exists as to the best method of tapping a tree. A thirteen thirty-seconds of an inch ($13/32$ -inch) bit is often used. Its direction should be slightly upward into the tree, the slant allowing the hole to drain readily. With an ordinary tree the hole should not be over $1\frac{1}{2}$ to 2 inches deep at best.

The equipment required for sirup and sugar making does not necessarily represent a large outlay. A number of sap spouts, either wooden or metal, are needed. The sirup is usually gathered in buckets and, if the grove covers a considerable area, a wagon or sled is used to carry barrels into which the buckets are emptied. For a small grove a big iron kettle, such as most farmers possess, is ample for boiling the sap over an out-door fire. For large production a more elaborate equipment, such as a pair of pans set over a brick framework of various patent evaporators may be employed. Where a sirup is made as a side issue or in small quantities it is customary to make the extra concentration essential to producing sugar in pots over the kitchen stove, but where

made on a large scale home-made or factory-made apparatus can be employed.

While the possibilities of immediate returns from maple trees now standing are of chief interest at this time, the United States Department of Agriculture experts call attention to the large commercial possibilities in maple-sirup production which could be developed in a comparatively few years by extensive planting. There are large numbers of tracts now unfruited and considered almost worthless but well suited to growing maple trees. These tracts are to be found throughout the regions referred to above, and could be planted to sugar maples at small cost.

VALUE OF SHADE TREES

BY C. F. BLEY

MR. T. E. Snyder, of the office of Forest Entomology, United States Department of Agriculture, is at present conducting an investigation to ascertain the number and value of shade trees throughout the country, according to an announcement in the September issue of *AMERICAN FORESTRY*.

Mr. Lanham, of the City Park Department of Washington, writes that the value of a shade tree is difficult to determine, but adds that, "often five hundred to a thousand dollars more is charged for a real estate lot with, than for an adjacent lot without, trees."

All observing, intelligent persons have—though they cannot express it in dollars and cents—an abstract conception of the value of a shade tree.

A plan is under way, and is receiving the hearty endorsement of highest authorities in the country, to plant systematically to forest—shade—trees, all the roadsides in the United States.

The trees so planted, 50 feet apart on either side of the 246,000 approximate miles of public roads, outside of incorporated towns and cities, would, when grown or matured, equal or represent a forest limit of more than 9½ million acres, based on a calculation of 55 trees 10 inches in diameter per acre of virgin forest.

From a standpoint of climatic influence alone then the consummation of such a project would be of inestimable value. But add to the climatic effect the aesthetic or landscape beauty and the comfort-giving features, and we can picture results that are beyond human calculation.

Our ancestors, the pioneers of the country, planted forest or shade trees when there was scarcely an argument for their planting—when they were hemmed in and surrounded by virgin forest. Today we are enjoying the fruits of their devotion, wisdom and forethought. Shall we do less—when there is so much more need—for the rising generations and for those yet unborn?

Not every husbandman has appreciated the value of shade trees, witness the ruthless cutting down and making into cord wood of whole lines of noble, stalwart sugar maples!

A legal enactment in every state providing that every tree now or hereafter standing within the legal road

boundary shall be considered public property suggests immediate steps to so legislate.

THE State of Massachusetts, under its new Forest Act, will acquire 100,000 acres of forest land for state forest purposes. The new act is a substitute for one presented by the Massachusetts Forestry Association which was based on an initiative petition signed by over 31,000 voters.

A LIGHTNING fire on August 4 of this year started over 230 fires in the National Forests of California. Lightning fires have probably occurred in greater number throughout the Northwest than in any previous year of record. More adequate fire protection is urgently needed.

SERBIAN TREES DEMANDED FOR FUEL



This photograph of a group of Serbian farms shows the curious and inartistic method of conservation practiced by the farmers of that country. In order to make the most of their scanty wood supply, the peasants yearly denude each fuel-bearing tree of every branch and twig. The rigors of the past winter caused the shortage to be acutely felt, and sent many patients this spring to the American Red Cross hospitals established throughout Serbia.

"He that planteth a tree is the servant of God.
He provideth a kindness for many generations,
And faces that he hath not seen shall bless him."

—Henry Van Dyke.

HIGH PRAISE GIVEN ASSOCIATION

PUBLIC opinion as mirrored in the editorial columns of the press of the country is solidly behind the campaign for a national forest policy and for better fire protection of the forests. The editors, following the statement of the Association that the next President will be a newspaper publisher, commented widely on that fact. Now the editorial comment continues from one end of the country to the other. The *Chicago Tribune* editorial, which was used on the front cover in November, has been reprinted by scores of papers. Warren G. Harding, the President-elect, has voiced his approval of the need of a national forest policy and his speech on this subject prompted additional editorial comment.

A resume of this expression of opinion, which extends from coast to coast follows:

Clinton (Ia.) Advertiser: The American Forestry Association deserves high praise for its efforts to arouse Congress and the American people to the importance of a national forest policy.

Statistics show we are consuming lumber three times as fast as we are producing it, and it is predicted our saw log lumber will have disappeared in fifty years.

The bulk of the original supplies of yellow pine in the South will be gone in ten years and within seven years 3,000 manufacturing plants will go out of existence. White pine in the Lake States is nearing exhaustion and these States are paying \$6,000,000 a year in freight bills to import timber. New England, self-supporting in lumber twenty years ago, now has to import one-third of the amount used. It has \$300,000,000 invested in wood and forest industries, employing over 90,000 wage earners. Fire destroys over \$20,000,000 worth of timber every year and kills the reproduction upon thousands of acres of forest lands. Within fifty years our present timber shortage will have become a blighting timber famine.

There is a remedy. Forests may be protected from fire, regrowth can be encouraged, conservation can be practiced, reforestation can be accomplished, though it takes from 50 to 100 years to mature a timber crop.

Forests devastation must be stopped, and lands now in forests must be kept continuously productive. Forest lands now devastated and idle must be put to work.

The American Forestry Association, pioneer in the national movement for rehabilitation, is working successfully to these ends.

Anaconda Standard: While several forest fires are raging in Idaho and Montana, the question of lumber stocks and lumber prices jumps into the front row of leading

ANOTHER REASON FOR HIGH LUMBER COSTS

First reports of an analysis of American freight traffic on railroads, begun this year by the Interstate Commerce Commission show that during the first quarter of 1920 railroads moved 80,087,435 carloads of freight, aggregating 275,931,603 tons. Statistics were presented to show the quantity of each of 69 separate commodities entering into the composite total of merchandise moved in less than carload lots.

Bituminous coal, of which 1,866,632 cars were moved, was by far the leader in the list of bulk commodities reported. Forest products were next in utilizing railroad facilities, with 452,559 carloads of lumber and timber and 341,687 cars of logs, poles and cordwood.—Olympia (Wash.) Recorder.

topics. The American Forestry Association calls upon the people to urge the promulgation of a national forest policy and the *FORESTRY Magazine* discusses lumber from

A LAUGH FROM "LIFE"

The American Forestry Association has asked the people of the United States to select, by popular vote, a suitable national tree.

We venture to suggest that some of the votes will be cast as follows:

The Bolshevik will vote for the redwood.

The amateur distiller for the juniper.

The severe school teacher for the birch.

The chronic Brooklynite for the rubber plant.

The bathing girl for the beech.

The baseball player for the willow.

The lady of fashion for the fir.

The susceptible youth for the peach.

The poker player for the pear.

The bellboy for the palm.

The railroad employe for the plum.

The professional humorist for the chestnut.—Life (N. Y.).

the viewpoint of the manufacturer. Prices have been soaring and timber resources dwindling. It is a serious condition, according to this authority.

Newark Star: There are more than 50,000 wood-using plants in the United States having an invested capital of over a billion dollars and employing more than a million persons. All alike are suffering from the diminishing supply of timber, yet

obvious remedies, such as reforestation, conservation of existing supplies and fire prevention are not applied.

Sumpter (S. C.) Item: The American Paper and Wood Pulp Association, at its recent convention in New York, adopted a comprehensive program for replenishing the paper mills' raw material supply. It is a scheme of reforestation, to be made into a national policy and put through by the federal government, with the co-operation of the States.

There would be fixed sums appropriated annually for forest surveys, the purchase of timbered land and land suitable for timber, and for planting new trees. The process would go on until the national forests aggregated 200,000,000 acres. The States would be expected to provide better protection for forest lands. Private forestation would be encouraged, and farm loans would be made available to promote timber-growing.

These recommendations are no doubt good ones, deserving careful consideration by Congress and the State legislatures. They need not be allowed, however, to divert attention from an important fact emphasized at the convention by George W. Sisson, president of the Association. He admitted frankly that the present paper shortage, which is of such vital concern to every publisher in America, and indirectly to every citizen, is due directly to the prodigal methods used in American forests and paper mills.

Toledo Blade: Paper mills are no longer close to supplies of wood pulp. Lumber comes over the rails now to practically every mill and the haul is constantly getting longer.

The New England and Great Lake States, once self-supporting in a lumber way, import material to keep their wood-using industries alive, and the South's supply of virgin pine will be exhausted in fifteen years, it is estimated. The center of the lumber industry is moving rapidly to the Pacific Coast and this means longer hauls, higher freight charges and consequently higher prices for articles made of wood. In the face of these facts timber wastage in the United States by preventable fires is estimated at \$28,000,000 a year and reforestation is carried on only haphazardly.

Tacoma Daily Ledger: So often has this story of forest depletion been told, and retold, that the public is gradually recognizing the economic danger in our disappearing forests and considering the need of conservation and of a constant replenishment of the supply of timber. The awaken-

FOR CAMPAIGN FOR FOREST POLICY

ing is belated. Even under the best forestry it takes from 50 to 100 years to mature a timber crop. If the American people half a century ago had recognized the need of conservation and replenishment as they do now, and had united in forwarding an efficient plan constantly to provide new timber, there would now be no cause to fear a prospective lumber and paper famine in the nation.

But the country did not look ahead. The consumption of lumber is more than three times its growth, advises the American Forestry Association. The prediction is that saw lumber will be gone in 50 years except out here in the Northwest. Only one-fifth of the nation's original forests remain. The bulk of that is in the Pacific Northwest.

According to compilations announced this week by the District Forest Service at Portland there is left 30,475,000 acres of commercial timber in the private and national forests of Washington and Oregon. It is estimated that Washington State alone is cutting between 5,000,000,000 and 6,000,000,000 feet annually. Of the total area of standing timber in the two States, 15,047,000 acres is under private ownership and 15,428,000 acres under federal control. This stand of merchantable timber represents 745,000,000,000 feet. The original forest area of both States was 48,000,000 acres, with 4,330,000 acres having been logged-off and 7,500,000 acres destroyed by fire. The annual area being cut over at present is estimated at 260,000 acres. The American Forestry Association is urging federal and State legislation and the co-operation of timber owners, wood-using industries and individuals to assure ample timber land in the future. The economic welfare of the nation requires better protection of our forests and the reforestation of devastated timber land.

Spokane Spokesman-Review: American forests are destroyed four times faster than new forests are grown. This is not the statement of an alarmist or amateur. It is the measured declaration of that responsible and official organization known as the Forest Service of the United States. Nor is that statement the worst feature of the timber situation. The foresters add that saw timber, the most needed and most

valuable part of the standing timber, is cut five and a half times as rapidly as it grows. The price of lumber, therefore, has risen far out of proportion to the general increase of prices; and yet this increase has itself been enormous.

The situation has come home to every American. The manufacturer, the farmer and the builder feel the shortage and expensiveness of lumber. The shortage of houses throughout the country is mainly owing to the scarceness and the extreme cost of lumber, laths and shingles. The scantness in the supply of woodpulp is felt in the price of books, periodicals, paper

to supply the nation for centuries. Foresight and care will finally cause lumber to become a comparatively cheap article again. But waste lands must be planted and tended scientifically. Private owners must be made to understand that their forests are not bonanzas to be exploited and abandoned, but properties that can and should be made to yield yearly dividends forever.

The great forests that are gone can not be replaced. But conservation of those that exist and planting forests on undeveloped areas can assure us of a permanent if restricted supply in the future.

SEEMINGLY UNIMPORTANT, BUT DANGEROUS ENEMIES



Portland Telegram.

wrappers and cardboard containers. Lumber, instead of becoming cheaper, is likely to cost yet more in the future. The price of every product made from wood is destined, unless drastic measures be taken to correct the ratio between cutting and the growth of timber, to advance still more sharply.

Our predicament does not result from lack of resources. Outside of private forests and of public reserves where timbering is prohibited there exist 80,000,000 acres available for reforestation. An even larger area is partly productive, but is devastated annually by fire. The areas capable of yielding timber are abundant enough, if only forestry and conservation be practiced,

Marinette Eagle-Star: With smoke from nearby forest fires blowing across the country and enveloping everything like a heavy fog, we are brought face to face with the realization that the protection against destruction of the timber which is still standing, is far from adequate.

Much of the timber is owned by large companies which can better afford to stand the annual losses from fire, than could the individual who occasionally suffers losses from this source, yet with every foot of timber that is destroyed, comes an additional cost to that which is manufactured into lumber for various purposes, and the ultimate consumer, as in all other cases, is the one who pays for that waste which should have been avoided by adequate fire protection to our forests.

And not only does the burned timber add to the cost of lumber which is bought by the ultimate consumer, but this same waste causes an additional amount to be counted in with the total through the law of supply and demand. Each year, our forests are hacked and burned away, many times faster than they are being grown. With little thought of the future, this process continues year after year.

Reforestation and timber conservation are subjects discussed to some extent but never acted upon. It would seem that eventually some definite line of action looking to the accomplishment of these purposes would be adopted by the government. We still have time to prevent a timber famine, although we are many years behind in the work. It is high time to outline a policy of reforestation and timber conservation.

FORESTRY IN INDIANA

INDIANA, once possessed of many million acres of native hardwood forests unsurpassed in size, quality, fineness of grain and so abundant that the state for years was the scene of great timber exploitation, today is paying the penalty for an era of extreme disregard of the future, while this generation finds itself confronted by an inadequate timber supply, according to Richard Lieber, Director of Conservation in the Hoosier State. Mr. Lieber is directing a survey of the natural resources of Indiana to be presented to the State Legislature at its meeting in January when his department will seek legislation to reforest the state. The Department's program will ask the state to purchase thousands of acres of waste and eroded hill land and plant them to forests.

Reckless despoilation and extravagant waste of one of our greatest native assets is causing conservationists to look with apprehension on the lack of timber for present and future needs, Mr. Lieber says. Generations to come, when they learn of our reckless prodigality of this great resource, will criticise us severely for such indifference.

It was but natural that the civilization of a hundred years ago should make war upon the primeval forests of Indiana along with its inhabitants, the Indian and wild animals. That this civilization has dominated is seen on every hand. But the forces of nature have self-asserting laws that can not be evaded or reversed by man. We have been profligate with one of nature's greatest blessings—our forests, and today we are paying the penalty. Our atonement and restitution must come through a concerted policy of replacing as far as our means will permit, this natural heritage that is in grave danger of complete extinction.

Since time was reckoned forests have served different races of people in different periods in different and varying measures. History tells us that forests gave our aboreal ancestor all his food and practically all his shelter. The American Indian is the first race of man of whose mode of living we have an accurate knowledge. The forests directly or indirectly gave the Indian within the Territory of Indiana his sanctuary and sustenance.

The profound influence of the forest on this race of people is seen in their idea of immortality. Their conception of the Great Beyond was a well stocked forest which they called "The Happy Hunting Ground."

When the European came to Indiana he found heavy, luxuriant and gigantic forest trees. It was necessary for him to have cleared fields; so he deadened great forest areas, which as soon as they were dry enough to burn, were felled and destroyed. The forests provided timber for block houses, stockade, log stable, rails for his fences and his fuel, but these requirements had no appreciable effect in diminishing the forest area. It was when the first railroads were extended into Indiana from the East, that a new epoch of forest destruction began. The rail arteries opened a new field of enterprise—the marketing of timber in Eastern states and in European

countries, and shortly Indiana's wonderful forest resources become known to the world.

Lumber companies, inspired only by enthusiasm and too often greed which knew no bounds, attacked the primeval forests, each in a mad race to strip its territory and market its timber first; then to move forward and continue the destruction. Much of that which escaped the timber crews fell victim to forest fires which denuded and left bleak, barren and blackened, thousands of scorched acres, and swept away in flame and smoke, millions of dollars' worth of property.

So attacked on one side by commercial interests inflamed to frenzy in an effort to produce more and ever more board feet of lumber, and on the other side by conflagrations often directly due to carelessness, the once great hardwood forests of Indiana, which gave the state the proud position of a leader in timber production in the Union, have dwindled until today there remains but a remnant of the former formidable possessions.

Today there are thousands of acres of cleared land in Southern Indiana which are not now farmed because they have washed or eroded so that they cannot be farmed or are too unprofitable for agriculture. They are growing up in poverty grass, weeds, briars, sassafras, persimmon, etc. The State Forester tells us that all such land will not grow a permanent and profitable agricultural crop, that it is essential forest land and should never have been used for any other purpose than growing trees.

Among the forest influences which should be considered are the effects of the removal of forest cover in causing irregularity of stream flow due to the drying up of streams and springs, together with the resultant destructive floods. Some eminent authorities say the stopping of floods is an engineering problem but that forests can be depended upon to render the flow of water throughout the year more uniform. Another marked result of deforestation is the lowering of the water table as a result of drying up of springs and streams. Ground water has been lowered from two to twelve feet below its former level in some sections of Indiana as a result of deforestation.

Forestry is a new science in America and nowhere in this country is there greater need of adoption of its teachings than in Indiana. Nowhere are the conditions for a broad forest policy more favorable. In Wisconsin for instance, where depleted forest conditions are similar to the era of destruction prevalent in Indiana, the Wisconsin Legislature appointed a Conservation Board whose labor is characterized by a continuous, constant and progressive forest policy. Not only were adequate powers given this board by statute, but ample appropriations were made to insure their successful exercise.

When it is once thoroughly understood that scientific forestry does not mean the withholding of valuable agricultural soil, but only the retention for timber of such lands as are less profitable for other purposes, it is logical to believe that a concerted effort will be made in the United States to replenish a great natural resource that is nearly exhausted because of reckless squandering and the theory that forest products were illimitable.

FOREST SCHOOL NOTES

UNIVERSITY OF CALIFORNIA

THE Forestry Division has entertained several interesting visiting foresters during recent weeks. Mr. A. Helms, of the New South Wales, Australia Forest Service, is in this country in search of a satisfactory conifer for planting in Australia where softwoods are very scarce and expensive. He plans to experiment with western yellow pine, Douglas fir and possibly one or two of the southern pines, and emphasizes the need for care in getting seed from a locality whose climatic characteristics are as nearly like those of the proposed planting area as possible. Professor P. Leslie, head of the forest school at Aberdeen University, Scotland, stopped. He came here through Canada and down the Coast, stopping at Seattle and Portland and talked entertainingly of his trip and impressions. Two distinguished Japanese foresters have also visited in Berkeley recently. Dr. Hisachi Mochizuki, For-

est Expert of the Bureau of Forestry, Japan, is making a study of American lumber and forest products, while Dr. Ichiro Sonobe, who teaches forest administration and economics at Tokyo Imperial University is making a six months' trip in the United States to study logging conditions and important Pacific Coast timber species such as redwood, sugar and western yellow pines, and Douglas fir. He said that their forest school owns and administers school forests to the extent of 160,000 hectares, requiring an administrative force of eighty supervisors and rangers and producing an annual gross revenue of about \$150,000. Some of our American Forest School forests seem pretty small in comparison. He stated that white pine, northern white cedar and Douglas fir make the best growth of any American timber species under Japanese conditions.

Professor Donald Bruce attended the Pacific Logging Congress meetings in Spo-

kane the first week in December, as did Professor D. T. Mason, who is to resume his duties at Berkeley in January, after an absence in Washington of nearly two years.

UNIVERSITY OF IDAHO FOREST RANGER COURSE

THE Ranger Course in Forestry offered by the School of Forestry of the University of Idaho opened for the first term of the 1920-1921 season on November 1 with a registration twenty-five per cent larger than the previous record. The popularity of this course is indicated by the fact that students were drawn from many of the far eastern and lake states as well as from the west, there being representatives from New York, New Jersey, Pennsylvania, Illinois, Minnesota and California, as well as Idaho.

The practical work of this course is well under way, as in addition to the lecture and

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laboratory work, several trips for practical field demonstration have been made to the forest on Moscow Mountain. The work is so arranged that new students who are unable to attend the full five months over which the course extends may enter for the second term which opens on January 3, and get three months of profitable instruction.

MADISON OFFERS COURSE IN BOXING AND CRATING

THERE is a daily loss to shippers and manufacturers conservatively estimated at \$500,000 due to poor packing and expensive and improperly designed containers for all classes of domestic and foreign shipments, says a bulletin from the United States Forest Products Laboratory.

An efficient container must deliver its contents in a satisfactory condition at a minimum cost. Commercial research and mechanical tests at the Forest Products Laboratory on better containers began in 1915 in co-operation with the National Association of Box Manufacturers, and the National Cannery and National Wholesale Grocers' Associations. In this work methods and testing equipment which have become standard for the box industry were developed.

The War Department prepared general specifications for overseas shipments from the data accumulated by the laboratory.

The laboratory has co-operated with associations and companies in improving the packing of widely varying types of commodities. These tests and studies, in many cases, resulted in the redesign of the container. The new design gave increased strength and often decreased the amount of material used in its manufacture; gave security against pilfering; decreased the cubic contents; reduced the labor and cost of manufacture; made possible more rapid production of packages; decreased cost of ocean freight, and permitted improved methods of handling freight. This work is of value to all manufacturers, shippers and dealers, and to the public at large, which is vitally concerned in receiving its necessary commodities in satisfactory and economical containers.

The demand upon the laboratory for information suggested a series of co-operative training classes for men from various industries. The course lasts five and one-half working days. Reference material and condensed notes are given out and it is necessary for those attending to devote a portion of each evening to study. A series of lectures on kiln drying, glues, fibre board and box woods is given. One subject is studied each day.

The object of this course is to demonstrate for manufacturers and packers the principles that underlie proper box and crate construction and develop economical containers that will deliver the contents to its destination in a satisfactory condition at a minimum cost.

The course is given in the most com-

pletely equipped box laboratory in the country. For a long time this box testing laboratory was the only one in the world, but within the last year the laboratory has aided in planning several commercial laboratories.

Dates for the next three courses are: January 10-15, 1921; March 7-12, 1921; May 2-7, 1921.

All correspondence should be addressed to the Director, Forest Products Laboratory, Madison, Wisconsin.

MICHIGAN AGRICULTURAL COLLEGE

THE Forestry Department has completed a set of volume tables for sugar maple in the northern part of the State. These tables are the result of many years' work and much data collected by the students at the forestry summer school which has been held in various places in northern Michigan. Volume tables on basswood, beech, elm and hemlock are in course of preparation as also growth tables for second growth sugar maple.

A fire caused by a locomotive burned over about ten acres in one of the College woodlots this fall. It necessitated trenching to confine it. The woods were very dry this year. During these dry weeks the College maintained a day and night patrol of the woods in the forest nursery. The College forest in Iosco and Alcona counties containing fifty thousand acres of Jack pine plains escaped fire. This land adjoins the Michigan National Forests and it contains scattered stands of Jack pine and oak.

The Forestry Club held its annual camp-fire on November 3; about sixty students being present. The Forestry Club is one of the strongest technical clubs at the College.

NEW YORK STATE COLLEGE OF FORESTRY

NOTABLE forestry demonstration projects for 1921 under the supervision of the New York State College of Forestry at Syracuse are already under way, and more demonstrations are being added each month as part of the 1921 program. The policy of the college of educating the State through practical demonstration plantings will be continued next year on an even larger scale than last spring, when nineteen demonstration plantings were made in nine counties, with a total planting of 300,000 trees. Among the important tasks already being laid out are the following:

The reforestation of the city water reservoir region at Yonkers.

The preservation of the watershed at Peekskill, from which the city derives its water supply.

Planting of probably 50,000 trees at least, for the Broome County Sportsmen's club, which plans to establish a great forfized system in the southern New York hills.

The extension of the Dozen Dads Forest at Cooperstown into other parts of Otsego County.

Additional municipal forest plantings in northern New York, including more planting at Malone, where the college supervised the planting of 45,000 trees last spring.

Many planting jobs on a smaller scale are being projected, and present indications, months in advance of any possible planting, indicate that all records will be broken for the year's work.

ENGLAND NEEDS FOREST SCHOOL

A NOTABLE authority on empire forestry and a delegate to the British Empire Forestry Conference, Mr. H. MacKay, has recently left England on his return journey to Australia which country he represented with Mr. Lane Poole, says the *Christian Science Monitor*. Mr. MacKay has served on many Parliamentary Committees and Royal Commissions, and was associated with the Australian delegation at Ottawa in 1894, the first conference on preferential trade between Great Britain, Canada and Australia. He prepared all reports, and framed all forestry legislation for the Victorian Parliament from 1907 to 1919 in which year he was appointed commissioner of forests for Victoria.

In expressing his views upon education in forestry Mr. MacKay said that at present there is no great forest school worthy of the name in the empire, such as those established for the training of foresters at Nancy in France and at Munich, Tharandt and Eberswalde in Germany.

There is indeed a useful school for intermediate training at Detira Dure in northern India, and also schools for the lower grades of the forest service in Australia, South Africa and Canada, but hitherto no school has been founded fit to impart a thorough practical and theoretical training to students to fit them for the higher executive posts in any part of the empire. The training now given at Oxford, Cambridge and Edinburgh Universities to candidates for the Indian forest service is adapted to the needs of that empire alone, and in any case students in the past have had to get an insight into practical work in the forests of France and Germany.

It is high time that this reproach should be removed, and the recent conference, in deciding to urge that a forestry training institution, well equipped from the beginning and properly staffed with a corps of competent teachers should be established without delay in England, believe that the project will command whole-hearted support throughout the empire. In any case such an institution is essential to meet the needs of forestry in the United Kingdom and British India, but most of the self-governing colonies are sadly in need of properly trained young men to take up executive work in their forests, and this central training school if properly organized will enable them to send to England for training the brightest and most promising pupils from their own elementary schools.

BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

FOREST VALUATION—Fillbert Roth.....	\$1.50
FOREST REGULATION—Fillbert Roth.....	2.00
PRACTICAL TREE REPAIR—By Elbert Peets.....	2.35
LUMBER MANUFACTURING ACCOUNTS—By Arthur F. Jones.....	2.10
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GETTING ACQUAINTED WITH THE TREES—J. Horace McFarland.....	1.75
HANDBOOK OF TIMBER PRESERVATION—Samuel M. Rowe.....	5.00
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* This, of course, is not a complete list, but we shall be glad to add to it any books on forestry or related subjects upon request.—EDITOR.

CALIFORNIA AIRPLANE FIRE PATROL SUCCEEDS

THIRTY-THREE per cent of the 196 forest fires discovered and reported by that part of the Ninth Aero Squadron operating out of Mather Field this year were accurately located, according to word sent out by the Forest Service.

"And 'accurately' in this case means that these locations, given us by the Airplane Fire Patrol, were all within one-fourth mile of the exact location as later determined by actual surveys on the ground," says District Forester Paul G. Redington.

"This record, when supplemented by the further facts that an additional 19 per cent of the fires discovered were reported within one-half mile of their actual locations; that 10 per cent of the total number were discovered by the Air Patrol before the rangers knew they existed, even; and that 42 per cent, or 83, of the fires were reported by radio while the ships were in flight, demonstrates beyond doubt that Airplane Fire Patrol in California has been successful," he continued.

Besides acting as lookouts to detect and report fires, airplanes were used this year to direct fire fighting operations, and to patrol fire lines which had been built but which needed watching to see that the flames did not get beyond control, according to forest officers. The case of the Mill Creek forest fire on the Lassen National Forest, where 25,000 acres were burned over, is cited as an example. "Here," according to the statement issued, "a special reconnaissance plane, equipped with radio and with a forest officer for observer hovered over the fire and actually directed the movements of bodies of fire fighters by wireless messages received right on the fire line. In addition, this plane patrolled, twice each day, some 14 miles of completed fire-line from which all men had been removed. If reports from the air showed the line to be clear, the fire fighters were kept at work elsewhere; but if the observer wirelessly in that the fire had broken away, then a force of men was rushed to the spot and the fire corralled again."

Since June first, two planes have been operating on fire patrol daily from Mather Field, two from Fresno, two from March Field, and three from Red Bluff. The air patrol has been in addition to the regular Forest Service lookouts maintained each summer for the last ten years on nearly 100 of the higher peaks in the National Forests.

ON ACCOUNT OF THE UNUSUAL DEMAND FOR THE EARLY ISSUES OF THIS YEAR'S MAGAZINE, YOUR ASSOCIATION WOULD APPRECIATE BACK COPIES OF 1920 NUMBERS FOR PURPOSES OF BINDING AND REFERENCE USE. PLEASE SEND THEM TO 1214 SIXTEENTH STREET, NORTHWEST, WASHINGTON, D. C.



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**SUPPLYING THE NATION WITH
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THE United States uses annually between four and five million Christmas trees, according to the estimate of the Forest Service, United States Department of Agriculture. This equals approximately the combined consumption of England, Scotland, and Wales and is about 25 per cent greater than that of Germany. The Christmas tree bears practically the same fruit the country over, but the variety of the tree itself varies according to locality. The fir is undoubtedly the Christmas tree par excellence, especially in the Northeastern and Lake States, on account of its long horizontal spreading, springy branches, and deep-green, fragrant foliage which persists longer than that of any other evergreen.

On the Great Lakes "the Christmas tree ship" bringing greenery from the upper peninsula of Michigan to Chicago or Detroit is usually one of the latest events in navigation each winter. In the North eastern and Lake States Balsam fir furnishes the bulk of the Christmas tree trade. In the South the Fraser fir is the favorite. In Colorado and other Rocky Mountain States, fir, though abundant, is difficult of access and the lodge pole pine and occasionally the Douglas fir and Englemann spruce are used. On the Pacific Coast the Christmas tree is often the white fir. Spruces vie with firs in popularity as Christmas trees, but as a rule in the South

and West they occur at high altitudes which makes them difficult to get.

New York and the New England States consume 1,500,000 trees. Black and red spruce are very commonly seen in New England Christmas celebrations and in New York and Philadelphia. Throughout Illinois and Ohio nurserymen partly supply the local demand with nursery-grown Norway spruce. Pines are in great demand for Christmas trees when fir and spruce are not available. Throughout Maryland, Virginia, and in Washington, D. C., the scrub pine finds a way into many homes, while in southern Wyoming the lodge pole pine is almost the only species available.

Hemlock is often used but only in the absence of other varieties. Its slender, springy branches are better adapted to the manufacture of so-called fancy greens. Occasionally a few arborvitae are shipped among firs and spruces to New York and Philadelphia. Red cedar is not despised where better trees can not be had as in the treeless States and often in Tennessee and Pennsylvania. In California red cedar and incense cedar are not uncommon.

Maine, New Hampshire, Vermont, the Berkshire Hills in Massachusetts, and the Adirondacks and Catskills in New York are the sources of supply for New York, Philadelphia, and Boston, and even for Baltimore and Washington. The swamps of Michigan, Wisconsin, and Minnesota furnish the markets of Chicago, St. Paul, Minneapolis, and the cities of the Plains States.

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FIRE WARDENS MEET

THE meeting of Pennsylvania Fire Wardens at Moshannon Bridge, as the guests of the Central Pennsylvania Forest Fire Protective Association, was by far the best meeting ever held in that section of the state and was attended by more than fifty wardens, besides others interested in forest fire work, and from the interest displayed it is clear that a greater interest is being taken in this much neglected work.

Talks were given by a great many of those present, including foresters, wardens and others on methods of forest fire control, and how to best get the support of communities in the work.

There were veterans of three wars at the meeting, but a remarkable incident was the presence of two Civil War veterans, both members of the 45th Pennsylvania Volunteer Regiment and both active volunteers in forest fire work: Captain C. T. Fryberger and Mr. David Litz, of Philipsburg and Houtzdale.

The greatest single contribution to the success of the meeting, was the dinner served by Mr. R. D. Tonkin, Forester of the Clearfield Bituminous Coal Corporation, at their lumber camp. The dinner was served in lumber camp style, quality and quantity.

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TEXAS SHOULD PRACTICE FORESTRY

WE have now in mind the future health, wealth and climate of Texas, as affected by their woodland. The wooded area of Texas exceeded that of any other State, but has now shrunken to a mere outline, says W. Goodrich Jones, president of the Texas Forestry Association. The average citizen will not read an appeal for the conservation of our trees and has sublime faith in his ignorance. Many proclaim, with the utmost faith, that the Lord will provide a future timber crop when the present stand of trees is gone.

It is slowly dawning on some people of this State that there is no perpetual regeneration among our birds, fish and wild game. Nearly every State in the Union has hatcheries for fish. We should have no Columbia River salmon, no lobsters, no oysters, no mountain river trout, but for protection. All Europe and Asia show that droughts, floods and famine follow the destruction of the timber land.

Even today Texas is suffering from droughts, floods, mud-choked rivers, overflowed bottoms, bars and shallowing harbors, and the best lands on the farms washing away. Ten million acres once in pine and another 10,000,000 in other woods. Gone is the mesquite, cedar, and going into smoke are the hard woods in our river bottoms. Gone to Kansas and Nebraska and other States, as well as to Europe, is a large part of the pine product of Texas, until today we barely have left 2,500,000 acres of virgin pine.

On 6,000,000 acres of cut-over timber land in Texas, ill fitted for first-class farming, while best fitted for another timber crop, less than 1,000,000 acres are struggling with a new growth of pine. Why are the other 5,000,000 acres idle? The answer is, fire, hogs and lack of seed. Will not this 1,000,000 acres supply our needs for a future lumber supply? Decidedly no.

The virgin forests have taken 100 years to grow. It will take at least 6,000,000 acres of new forests and fifty years to supply Texas with its future lumber needs, even then exercising great economy. This means no waste and no growth in population. We can not defer our planting another ten years, when we shall have reached the brink. If we do, we may then be compelled to build our homes of Mexican adobe mud and poles. Lumber is high enough now. Think what it will be when brought from the Pacific Coast with added freight. Even now the shipment of Oregon lumber has begun to compete with Texas pine. Do not look for relief to Louisiana and other Southern States. They, too, are singing the swan song to their forests. We here in Texas need home-building lumber, bridge timber, fuel, fence posts, ties, paper stock and a thousand other uses for timber.

The war could not have been won without the artificially planted forests of France. There is no harm in cutting the timber if another crop is grown, but to cut and waste the trees, fire annually the fallow soil and young tree growth, is the work of fools or mad men.

The present timber land owner can not afford to and will not grow a future timber crop for Texas. This problem lies with the citizenship of the State. Louisiana has found a solution for this question and has started on the remedy. We want our Legislature to adopt it for Texas also.

REFORESTATION IN MAINE

TREES require only one-quarter the salts and other chemicals which garden crops require and they can be grown on steep slopes otherwise difficult to till, says a member of the Faculty of Forestry at Bates College, Maine. Therefore he believes that Maine has a wonderful opportunity to develop her forests, for the land is naturally hilly and rocky in many places and on such lands lumber would net larger returns than the meager crops which could be raised. Practical work in forestry in the several thousand acres in York County held by Bates College will be offered students for preparation for graduate schools for forestry, and to fit them to take positions in the lumber industry, or in the state forestry service.

PAPER COMPANY SETS GOOD EXAMPLE

THE following is taken from a letter from a member of the American Forestry Association, Mr. John Weeks, of Watertown, New York:

"I am vice-president of the Diana Paper Company which has its own nursery and has planted trees for the last twelve years. With the timber lands purchased fourteen years ago in the Adirondacks on which we have never cut a tree, we will be able in a few years to be self-sustaining. This may be news to the Association. Last year, on account of the difficulties of getting labor, we were unable to set out our usual allotment, but our trees are doing fine and we have already many twenty feet high." This is a practical policy greatly to be commended on the part of the paper company.

AMAWALK NURSERY

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These trees are particularly fine specimens of Maples, Oaks, Elms and Lindens from 15 to 25 feet high.

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SEEDLINGS *Write for prices on large quantities* TRANSPLANTS
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PLANT MEMORIAL TREES

101,000,000 FEET National Forest Timber FOR SALE

Location and Amount—All the merchantable dead timber standing or down and all the live timber marked or designated for cutting on the Lava Bed Logging Chance, embracing about 6,400 acres in Townships 41 and 42 N., R. 3 E., M. D. M., Shasta National Forest, California, estimated to be 80,000,000 feet B. M. of yellow pine, 9,000,000 feet B. M. of sugar pine, 10,400,000 feet B. M. of white and Douglas fir, and 1,800,000 feet B. M. of incense cedar, a total of 101,200,000 feet B. M. of saw timber, more or less. The chance also embraces the timber on about 800 acres in Townships 41 and 42 N., R. 3 E., M. D. M., estimated to be 12,000,000 feet B. M., more or less, all species, the cutting of all or any part of which will be at the option of the purchaser, subject to the approval of the forest supervisor.

Stumpage Prices—Lowest rates considered, \$4.00 per M ft. B. M. for yellow pine, \$1.50 per M ft. B. M. for sugar pine, \$1.25 per M ft. B. M. for white and Douglas fir and incense cedar, and for material unmerchantable under the terms of the contract, to be removed at the option of the purchaser, for which payment is required by the Forest Service, \$0.50 per M ft. B. M. Rates to be readjusted July 1, 1924.

Deposit—Ten thousand (\$10,000.00) dollars must be deposited with each bid to be applied to the purchase price, refunded, or retained in part as liquidated damages, according to conditions of sale.

Final Date for Bids—Sealed bids will be received by the District forester, San Francisco, California, up to and including March 1, 1921. The right to reject any and all bids is reserved. Before bids are submitted, full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, San Francisco, California, or the Forest Supervisor, Sisson, California.

STATE NEWS

CALIFORNIA

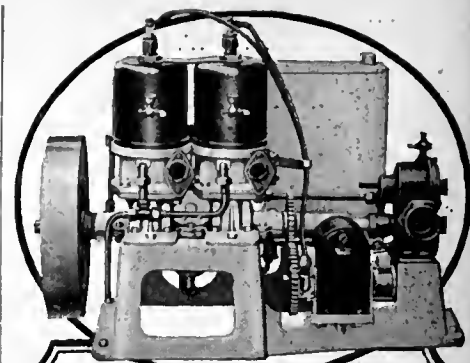
THE State Board of Forestry of California has asked the timbermen and lumbermen of that State to assist the board in carrying out a constructive forest policy and the latter have responded "we will."

As provided in the law adopted in 1919 the Board consists of four persons appointed by the governor—

"One of whom shall be familiar with the timber industry, one with the live stock industry, one with the grain and hay industry, and one at large, who, together with the State Forester, shall constitute the State Board of Forestry, which shall supervise and direct all matters of State forest policy, management and protection."

The Board met with the timbermen and lumbermen in San Francisco on Friday, November 5, and the President, former Governor George C. Pardee, in opening the meeting, stated that the Board has two particular objects—to protect and utilize the present forests to the greatest advantage and to provide forests for the future. In working to secure these objects the essential things are fire prevention and suppression and reforestation. He said that the first thing to be done is to provide for effective slash disposal as a means of preventing destructive fires, and asked the timber owners and operators present to pledge themselves to dispose of their slash in the most effective and practical way, according to the different conditions with which they have to deal. Everyone present agreed to do this and to keep the Board informed as to the best methods and the lessons learned by experience. From this it is planned to formulate a set of rules for slash disposal that will make it general and effective, and Dr. Pardee made it clear that the Board wishes these rules to come from the operators, arising out of their experience and observation, and formulated by the Board in co-operation with the Ways and means for fighting forest fires and for reforesting cut-over lands will be worked out, the timbermen and lumbermen taking the initiative and co-operating in every particular with the State Board of Forestry.

Such hearty good will and confidential understanding assure perpetuation of the redwood and pine forests of California. The Board recognizes that the timber owners and lumber manufacturers are interested primarily in the present forests; and the timbermen and lumbermen, as expressed by several of those present, recognizes that the State is charged with duty of perpetuating the forests for the use and benefit of future generations. This mutual recognition of objects and interests will surely result in constructive plans of forestry that can be put into practice with-



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For Fire Fighting*

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out friction and with continual improvement from experience and observation.

As a further evidence of the spirit of mutual confidence and trust the timber owners and lumbermen voted unanimously to support the Board in its request to the next legislature for an appropriation of \$83,000 for fire fighting and \$150,000 for the purchase of cut-over lands. This will enable the Board to do its part in protecting the present forests and to start a system of state forests that will initiate both features of forest perpetuation in California.

NEW JERSEY

AN act of the Legislature of 1920 making mandatory the teaching of fire prevention one hour a month in all schools of New Jersey has made a new and valuable opening for forest fire propaganda. The text-book selected is the Fire Prevention Manual for the School Children of America, prepared by the National Board of Fire Underwriters, and the New Jersey edition has been supplemented by a chapter on Forest Fires, by State Firewarden C. P. Wilber.

The publication "Fighting Forest Fires" illustrated by photographs and diagrams, treating upon the forest fire situation in New Jersey and the remedy of the menace has met with such a popular demand that the first edition of 3000 copies was ex-

SOUTHERN PINE LUMBER INDUSTRY

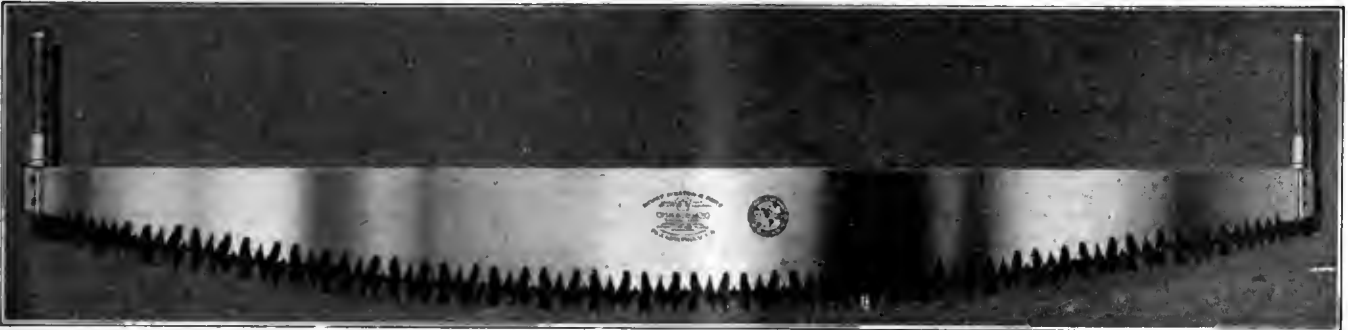
Do You Know That:

Fully a third of the people of the Southern States are directly or indirectly engaged in the production of Southern Pine lumber.

Five hundred thriving prosperous communities are maintained entirely by the sawmills producing Southern Pine lumber.



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hausted almost as soon as it came from the press.

Carl V. Raupach, a 1917 graduate of the New York State College of Forestry, at Syracuse University, has been appointed as an Assistant Forester in the New Jersey Department of Conservation and Development.

Because of the scarcity and high price of coal, State Forester Alfred Gaskill, of New Jersey, is urging farmers, woodlot owners and rural inhabitants to use cordwood when practicable. The many advantages of producing a home supply are pointed out; the saving of from \$5 to \$3 of the cost of a ton of coal, the profitable employment of farm hands and teams during slack time, the improvement of woodland by removing and utilizing inferior and crowded trees, the particular adaptability of wood as a fuel where a quick hot fire is wanted, as in cooking, and the value of wood ash as a potash fertilizer. It is estimated that at least 500,000 cords of wood could now be cut from New Jersey's two million acres of forest to the benefit of the woodland and to its greater security from fire. The utilization thereafter of an annual crop of approximately 200,000 cords of wood is urged and sought by proving to the rural inhabitants the advantages of cordwood over coal.

OHIO

MORE than 100 bushels of black walnuts are being gathered by the Department of Forestry at the Ohio Experiment Station at Wooster for planting in forestry nurseries this fall. This is the beginning of reforestation work by the State in growing black walnut.

Because of the heavy crop of walnuts this year, many land owners are advised to begin growing the valuable timber. The nuts may be planted any time before the ground freezes. They may be planted with husk on or hulled, as there is little difference in germination either way.

A peculiar characteristic of black walnut is that it is extremely intolerant and will not thrive in the shade of other trees.

A bulletin on growing black walnut is sent free to residents of Ohio on request.

WISCONSIN

P. C. CHRISTIANSEN, of Trout Lake, has been appointed Chief Ranger of the State Forestry Department to succeed E. M. Weaver, who was lately assigned to a position in the conservation department. The appointment was made by the Wisconsin Conservation Commission. For several years Mr. Christiansen has been in supervision of the Forestry Department's nursery at Trout Lake and is thoroughly familiar with the duties of Chief Ranger. Trout Lake will continue to be his headquarters.

FOREST FIRES AND LIGHTNING

OF a total of 102 fires handled so far this season in Seattle, Washington, 40 were caused by lightning. Losses of timber and logs aggregated about \$12,500 and logging equipment loss has been slightly more than this, says "The Forest Patrolman" of Portland. In the territory covered by the Potlatch Timber Protective Association, Idaho, out of 23 fires the last half of July, 20 were caused by lightning, and during the same period 30 out of 31 fires reported by the Clearwater Association, Idaho, were lightning fires. There have been no serious fires so far this season in Oregon.

The average annual loss in the United States from forest fires is about \$28,000,000.

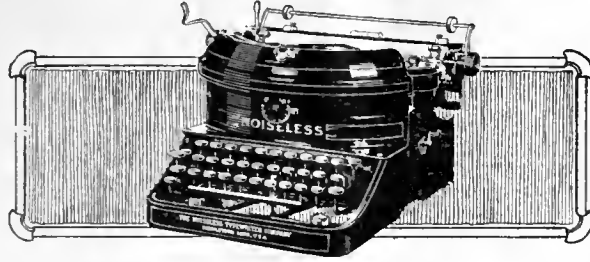
Oregon, with one-fifth of the timber in the United States and the third State in lumber production, expends \$27,000 to maintain a State Forester and his assistants and carry on protection in the field; Washington, the leading State in lumber production, spends only \$40,000; while Maine, most of whose forests have been cut over several times, expends more than \$100,000 yearly for forest protection, and Minnesota about \$125,000.

ROTARIANS TO PRESERVE
FORESTS

IMPRESSED by the startling figures presented them by forestry officials, the Colorado Springs Rotary Club has launched a nation-wide campaign to secure a constructive program of reforestation and federal appropriations sufficient to continue the necessary work, with special reference to forest experiment stations. A very interesting talk was made by A. S. Peck, District Forester of Denver, who is in charge of thirty forests in the Rocky Mountains. Mr. Peck said that less than one-half of the original stand of timber, here when the country was discovered, remains today, and only 30 per cent of that is virgin growth. The present production is 26,000,000,000 feet of timber a year, which is four times the annual growth. Four large areas of timber have been practically denuded, Mr. Peck pointed out, the present center of the industry being on the Pacific Coast—far from the big markets for the finished product. His statement that it took the product of 75 acres of forest to print the Sunday edition of a metropolitan newspaper excited considerable comment, as did the fact that in 1880 the per capita consumption of newspaper was three pounds a year while in 1919 it was 33 pounds—just 11 times as much.

Inspired by the message in the lines of "Forest Fires," by John D. Guthrie, S. Walter Krebs, the prominent young American pianist and composer, has set the poem to music and dedicated the song to the American Forestry Association. He first wrote it as a solo, but later arranged it as a quartette for male voices.

Four Reasons Why You Should Buy The Noiseless Typewriter



- 1—*It is durable* -- -- --
- 2—*It is speedy* -- -- --
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- 4—*It is noiseless* -- --

THREE of the four reasons given above might be called common to any good typewriter. But the fourth is exclusively a Noiseless feature.

It is the feature that sets this wonder machine above and apart from any other and makes it indeed "The Typewriter Plus." After all, in these days of progress, why should any one buy a noisy typewriter?

Sometimes a business man will say that he realizes the value of The Noiseless Typewriter but his only question is—"Will it stand up"?

In answer, we need but point to the thousands of machines that have been in constant daily use for four, five and six years! And to the list of users!

Reasons No. 2 and No. 3 are quite easily demonstrated. As a matter of

fact, stenographers who use The Noiseless Typewriter will tell you that they can do more work and better work on it than on any other machine they have ever used.

The Noiseless Typewriter brings you all the speed and efficiency of the ordinary typewriter and something more—the blessedness of quiet.

And it is on exactly that basis that we commend it to your attention.

As we have frequently stated, a fifteen-minute demonstration will tell you more about its value to you—to your nerves—to your stenographer—and to your business, than we could write in ten pages.

Our representatives stand ready to make that demonstration at any time that suits your convenience.

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WOOD PRESERVATIVE OUTPUT MAKES LARGE GAIN

INVESTIGATION by the Forest Service of the United States Department of Agriculture shows that the use of wood preservative has increased to a large extent in the United States. Valuable work on wood preservation has been done at the Forest Products Laboratory of the department at Madison, Wisconsin.

In 1919, there were 65,556,247 gallons of creosote, 2,412,592 gallons of paving oil, 102,011 gallons of miscellaneous preservatives used in the United States, in addition to 43,483,000 pounds of zinc chloride, the largest quantity of this preservative ever reported by the industry. Of the creosote, 6,493,000 gallons were imported.

Prior to 1917 the plants of this country depended upon foreign manufacturers for approximately 50 per cent of the creosote consumed. Most of this oil came from Germany and England. During the war, however, this supply was cut off, and the plants looked to domestic producers for their supply. Nearly all of the importations in 1919 were from England and Canada.

The material treated consisted of cross-ties, poles, wood blocks, crossarms, construction timbers, and miscellaneous materials, largely for railroads, mines, and telegraph and telephone companies. The total amount of wood subjected to preservative treatment by the 108 plants that were active during 1919 was 139,878,584 cubic feet, or 17,265,694 more than the previous year. About 80 per cent of this wood consisted of railroad cross-ties.

TIMBER-GROWING IN THE NORTH- WEST

IN the Northwest growing timber requires mainly two things: fire protection and revision of tax laws, says C. S. Chapman, of the Western Forestry and Conservation Association, in the *Oregon Voter*. Given these, continues Mr. Chapman, our lumber industry will be permanent, not vanishing.

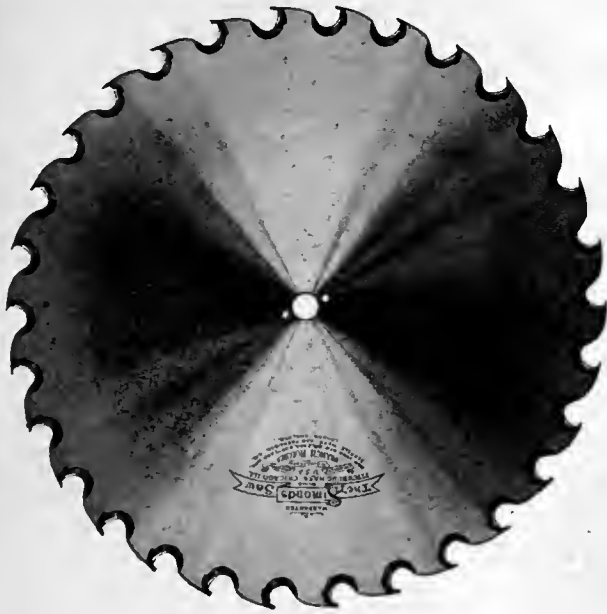
In no section of the country have private owners of timber put forward such effort and expended such sums to prevent forest fires as in the Northwest. The states have not been similarly progressive. States such as Maine, New York and Pennsylvania, once great lumber-producing sections, spend far more now to protect their meager forests than do northwestern states to protect their vast forest wealth.

In 1919 timber owners in the states of Montana, Idaho, Washington and Oregon expended over \$1,000,000 to protect their properties. The states expended less than \$100,000 other than in protection of state-owned lands, and the Federal Government's expense outside National Forests was under \$25,000.

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Inserted Tooth

S A W S



In every part of this broad land where mills demand the best in equipment, there you will find Simonds Saws of all kinds. For heavy work the Simonds Inserted Tooth saw leads all others because it is fast cutting, holds its tension and is most economical in the long run. When necessary the teeth can be easily removed and new ones inserted. It is a safe saw with a backing of Simonds finest saw steel, made in the Simonds Steel Mills.

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FOR PENNSYLVANIA FORESTS

AT an enthusiastic meeting of the Centre County, Pennsylvania, Conservation Association, at State College, Pennsylvania, recently remarks were made by Ralph A. Smith, of Sandy Ridge, the president, and by Colonel W. F. Reynolds, of Bellefonte; Colonel Theodore Boal, of Boalsburg, and Dean R. L. Watts, of State College, vice-presidents of the Association, and by a number of directors and members. Major R. Y. Stuart, Deputy Forestry Commissioner of the State, spoke of the present and future plans of the State Forestry Department, of the necessity of securing an appropriation of \$1,000,000 from the next State Legislature for protecting the forests from fire for the next two years, and of the plan for bonding the State for \$25,000,000 for extending the State ownership of forest lands. Believing that forestry is the foundation of the conservation problem in Centre County, it was the sentiment of the Association that every effort should be put forth to encourage the reforestation of denuded forest lands and their protection against fire, the planting up of farm woodlots, and the planting of trees around schools and churches and along the highways, and that all the various activities of the Association be encouraged. Resolutions were passed endorsing the forestry policy of the State Forestry Department, and agreeing to lend

every effort to the securing of an appropriation of money from the next Legislature that will adequately protect the forests from destruction by fire; and endorsing the plan to bond the State for \$25,000,000 for the extension of State ownership of forest land.

PINE BEETLE INFLECTS BIG DAMAGE TO SOUTHERN TREES

APPROXIMATELY \$20,000,000 damage was inflicted by the southern pine beetle in its attack on southern timber forests during two decades, according to investigations made by the United States Department of Agriculture concerning destruction caused by insect forest pests. Added to this damage is that of the black and the red turpentine beetle.

The hickory-bark beetle is found to be doing extensive damage in the northern tier of States from Wisconsin to Vermont and southward through the Atlantic States to central Georgia.

The department has issued three bulletins of particular interest to farmers who have hickory or pine trees on their lands. They are: "The Dying Hickory Trees, Cause and Remedy," Bureau of Entomology Circular 144; "The Dying Pine Trees, Cause and Remedy," Farmer's Bulletin 474; and "The Black Turpentine Beetle and Red Turpentine Beetle," reprint from Bulletin 83, Part I, Bureau of Entomology.

The department is urging farmers who use the slack time of late fall and early winter in getting in firewood to select trees that have been infested with insect pests.

FORESTS OF FRENCH GUIANA

IN spite of the enormous extent of the tropical forests of French Guiana, which cover an area equal to one-sixth of the surface of France, and in spite of the great variety of precious species of trees, the exploitation of the Guiana woods has been developed only to a very small extent, says "Fortnightly Survey of French Economic Conditions," published in New York by the French Commission in the United States.

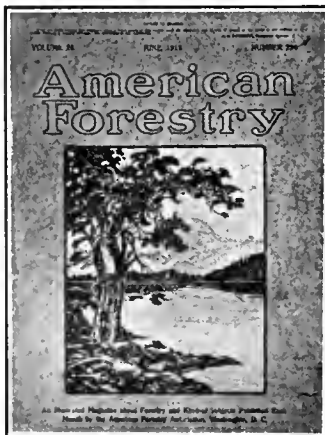
French Guiana is intersected by 22 rivers so that the problem of transportation may be easily solved, labor is abundant and cheap and in the marketing of forest products, the demand will always exceed the supply. The vast virgin forest of Guiana with its straight, high, enormously-trunked trees of mahogany, rosewood, tulipwood, ebony, cedar, satinwood, and more than 70 other species, is not only in itself a source of great wealth but the clearing of the forests will open the way to development of gold deposits whose value cannot yet be estimated.

Merchants and manufacturers of France are now organizing for serious enterprises in this new country.

BECOME A MEMBER

Any person may become a member of the American Forestry Association upon application and payment of dues.

PLANT TREES
PROTECT FORESTS
USE FORESTS



This is the only Popular National Magazine devoted to trees and forests and the use of wood.

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FACTS ABOUT ALASKA

ALASKA has nearly as many varieties of climate as can be found in the Eastern and Middle Western States.

Manufacturers of pulp and paper in British Columbia and Alaska have little to fear from each other and much to gain in the common development of the Pacific coast region.

The permanent snow fields of Alaska only cluster round the crest lines of the highest mountain ranges, as they do in the Swiss Alps, and are less than one per cent of Alaska's total area.

The demand of the pulp industry is for an assured permanent supply of timber and properly allocated water power under stable tenure; both of these can be found in the Tongass National Forest, in south-eastern Alaska.

Southeastern Alaska is favored with numerous deep water harbors open the year round with comparatively smooth waters in straits and passages. It is advantageously located with reference to shipments by rail and water to the United States and water shipments to the Orient, South America and Australasia.

"With her enormous forests of rapidly growing species suitable for pulp, her water power, and her tidewater shipment of manufactured products, Alaska will undoubtedly become one of the principal paper resources of the United States," says Secretary of Agriculture Meredith.

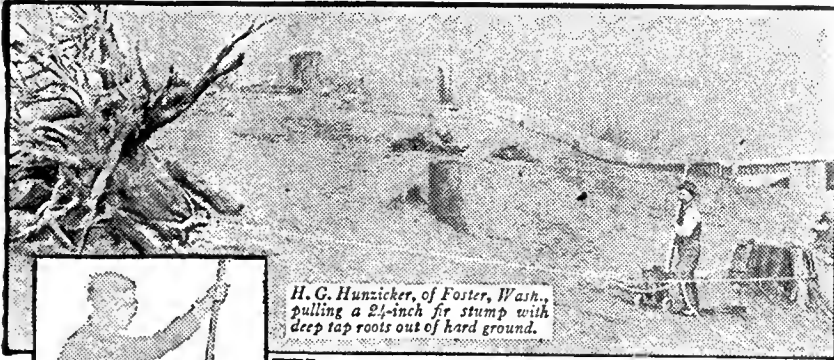
Aside from fuel, the more important operating supplies for pulp mills in general are lime or limestones, sulphur, soda ash, salt cake, grindstones, bleaching agents, and repair materials. Alaska has numerous known deposits of lime rock that would furnish very high grades of lime.

According to Government agriculture experts in Alaska, "it is possible to grow magnificent vegetables in all parts of Alaska, except on the tundras and mountains. To Alaskans they are no novelty, but to strangers unacquainted with the country they are a constant surprise."

LUMBER COMPARATIVELY CHEAP NOW

CALVIN FENTRESS, a member of a prominent firm of investment bankers of Chicago, has returned from a 9000-mile trip through the lumber manufacturing districts of the Pacific Coast, the Northwest, and South, where he has been in close personal contact with the industry. Mr. Fentress says, "It is greatly to the advantage of home builders, real estate operators, building contractors to buy lumber now. Hundreds of the smaller manufacturers throughout the country, no two

Big Money In Stump Land



H. G. Hunzicker, of Foster, Wash., pulling a 24-inch fir stump with deep tap roots out of hard ground.



Showing easy lever operation

This man made \$35 Land Worth \$200 an acre Pulling Big stumps by hand

CLEAR your stump land cheaply—no digging, no expense for teams or powder. Your own right arm on the lever of the "K" Stump Puller can rip out any stump that can be pulled with the best inch steel cable. I guarantee it. I refer you to U. S. Government officials. I give highest banking references.

HAND POWER K Stump Puller



One man with a "K" can outpull 16 horses. Works by leverage—same principle as a jack. 100 lbs. pull on the lever gives a 48-ton pull on the stump. Made of best steel—guaranteed against breakage. Has two speeds—60 ft. per minute for hauling in cable or for small stumps—slow speed for heavy pulls. Works equally well on hillsides or marshes where horses cannot go.

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Weight, without cable, 171 pounds

No Stump Too Big For The K

of whom are working under the same conditions, have dumped their lumber at prices which would bring them the quickest cash return, the natural result of the credit strain prevailing in every line of industry.

"The present mill prices for lumber are bargain counter prices but it must be remembered only for the present stock of lumber on hand, as it is a certainty that the mill operators who have closed down will not resume operations to sell lumber at the present levels which are at or below the cost of production."

"Mill prices are 50 per cent lower than a year ago, meanwhile, under such conditions, a reaction in prices can be expected. The retail market for lumber will not reach the pre-war levels until wages and the cost of production are again on the same relative basis."

CANADIAN PARKS

CANADA'S magnificent scenery comprises one of her proudest possessions. While such a possession should not be appraised purely from a commercial standpoint, it is, nevertheless, a conservation policy of the most practical character to take steps to assure that this natural resource be administered as an economic asset. In so doing, the Dominion Parks Branch merits recognition as a very substantial factor assisting to maintain the solidity of Canada's financial standing. It is, in addition, a foremost agency in providing sanctuaries, in administering game laws and in otherwise contributing to the practical program essential to prevent the depletion of our wild life resources.—Conservation



further WAR DEPARTMENT

Corned Beef

No.1 Cans **15¢**

AT this unprecedented low price there will be a tremendous demand from coast to coast, for this GUARANTEED PURE, wholesome canned corned beef.

Millions of people realize the GENUINE SAVINGS resulting from the purchase of this delicious, nourishing meat, and want more—AND STILL MORE!

Where Can They Get It?

That is the query that is received in every mail, from people who have followed the Government's extensive advertising in local papers everywhere.

The War Department has arranged to have dealers display in their windows colored posters picturing Uncle Sam attacking the high cost of living to guide these millions of buyers. Will YOU be one of the DEALERS who will profit by this publicity?

This poster and other advertising material, including newspaper advertising, will be sent on request.



CHIEF, SURPLUS PROPERTY BRANCH

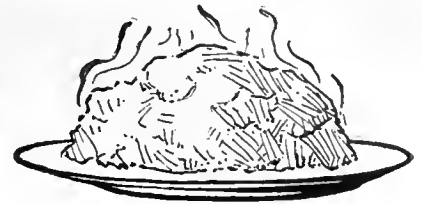
Office of the Quartermaster General
Munitions Building, Washington, D. C.



BUY WAR DEPARTMENT

Buy it by the Carload—Freight prepaid

reductions CANNED MEATS



**BUY THESE MEATS
AND TELL YOUR CUSTOMERS YOU HAVE THEM**

This is a great opportunity to dealers. If you haven't already bought some of these meats buy them now. If you have bought them, buy more. Tell your customers of this unusual opportunity for them to save on their living cost.

NOTE THE NEW LOW PRICES. MINIMUM ORDER ACCEPTED \$250

CORNED BEEF:		CORNED BEEF HASH:	
No. 1 cans.....	15c. per can	1 lb. cans.....	15c. per can
No. 2 cans.....	27c. per can	2 lb. cans.....	30c. per can
1 lb. cans.....	18c. per can		
6 lb. cans.....	\$1.00 per can		

TABLE OF DISCOUNTS

Discounts to apply on all purchases of surplus canned meats on and after November 15 are as follows:

\$ 250.00 to \$1,000.....	Net
1,001.00 to 2,500.....	5%
2,501.00 to 4,000.....	10%
4,001.00 and over.....	20%

If value of full carload (shipped at Government expense) is less than \$4,001 then 20% discount will be allowed on the value of the carload.

CUMULATIVE PURCHASES COUNT

To stimulate purchases of carload lots and to promote sales in large quantities, further discounts as follows are authorized to customers ordering or re-ordering in carload lots. The value of all purchases of canned meats made on or after November 15, 1920, only, to be considered in connection with this scale of discounts.

When purchases reach \$ 50,001.....	24% net to prevail
When purchases reach 100,001.....	28% net to prevail
When purchases reach 500,001.....	32% net to prevail
When purchases reach 1,000,001 and over.....	35% net to prevail

The foregoing means that the total purchase by a customer in carload lots from time to time will be taken into consideration and the proper discount applied on the sum of all the purchases, including the first carload lot.

CREDIT SALES

Depot Quartermasters are authorized to sell surplus canned meats for cash, bankers' acceptance, or on not to exceed ninety (90) days straight credit in the commercial sense. Credit will be extended only to those individuals, firms or charitable organizations which can establish a satisfactory credit rating (Dunn's, Bradstreet's or Bank's), or to Municipalities having a bona fide purchasing organization. The credit risk in each case is left to the decision of the Depot Quartermaster.

FREIGHT PREPAID

Shipments of not less than carload lots will be made at government expense to any point in the United States outside a radius of 20 miles of the point of storage from which shipment is made. The Government will not be liable for any demurrage or switching charges that may accrue after goods are loaded for shipment. Prices quoted are in all cases f. o. b. storage point, with freight prepaid, as above specified on carload lots.

SAMPLES ON REQUEST:

Depot Quartermaster in your district, will, on receipt of price of samples wanted and postage costs, be glad to send same to prospective purchasers in their respective zones.

GUARANTEED CONDITION:

The Government guarantees to deliver all meats in perfect condition. The most rigid inspection will be made of each shipment before it leaves point of storage, thus insuring full protection of all purchasers.

ORDER NOW

Send Orders to Nearest DEPOT QUARTERMASTER at the following addresses:

Brooklyn, 59th St. and First Ave.	Atlanta, Ga., Transportation Bldg.
Boston, Mass., Army supply Base.	San Antonio, Tex.
Chicago, Ill., 1819 West 39th St.	San Francisco, Calif.

Surplus Property Branch

Office of the

Quartermaster General,

Munitions Building - - - Washington, D. C.

CANNED MEATS

Buy it by the Carload-Freight prepaid

FORESTERS ATTENTION

AMERICAN FORESTRY will gladly print free of charge in this column advertisements of foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

POSITIONS WANTED

WANTED—Position as Forester and Land Agent. Technically trained forester, 35 years old. Practical experience along all lines included under the duties of the above positions. Former Captain, Field Artillery. Address Box 840, care American Forestry, Washington, D. C.

A FORESTRY graduate with several years experience in forest work and at present employed along technical and administrative lines desires responsible position with private concern operating in and outside the United States. Address Box 870, care of American Forestry Magazine, Washington, D. C.

RECENTLY discharged from U. S. Army, young man wants position with a firm who has use for a lumber tallyman and inspector. Has a good education, 11 years' practical experience in lumber and can furnish good references. Address Box 880, care of American Forestry Magazine, Washington, D. C.

GRADUATE of the Ranger Course of the Lincoln Memorial University, Harrogate, Tennessee, wishes to secure work as a forest ranger or guard. Twenty-four years old. Address Box 965, care American Forestry, Washington, D. C. (11-1-21)

POSITIONS OPEN

WANTED an Assistant City Forester, must have had some technical training and sufficient practical experience to direct the work in a city of 150,000. Answering give all information necessary for immediate consideration of application. Box 970, American Forestry Magazine.

WANTED—Two technically trained foresters. One as Assistant Forester for technical work with headquarters at Trenton, New Jersey, and one as Division Firewarden with headquarters in northern part of State. Firewarden to own and operate automobile for which liberal mileage charge is paid. Salary to start \$1,500 and field expenses. If unwilling to apply at this figure submit applications stating minimum salary. Address Department of Conservation and Development, C. P. Wilber, State Firewarden, State House, Trenton, New Jersey.

POSITION OPEN in one of the fastest growing cities of the South West for a trained City Forester. State age, salary expected. Answer in own handwriting. Box 3000, American Forestry Magazine.

WANTED—An assistant forester. Good place offered for a recent graduate who would like to get in business for himself in an excellent location. Address Box 920, AMERICAN FORESTRY MAGAZINE. (8-10/20)

WANTED: A married man with small family, with technical forestry training and practical experience, also having some knowledge and experience in farming and with farm machinery, to act as forester and superintendent of private forest estate of 500 acres in eastern Connecticut. House provided with modern conveniences. A good position for a good man. Address, Box 975, Care AMERICAN FORESTRY

School of Forestry

UNIVERSITY OF IDAHO

Four Year Course, with opportunity to specialize in General Forestry, Logging Engineering, and Forest Grazing.

Forest Ranger Course of high school grade, covering three years of five months each.

Special Short Course covering twelve weeks designed for those who cannot take the time for the fuller courses.

Correspondence Course in Lumber and Its Uses. No tuition, and otherwise expenses are the lowest.

For Further Particulars Address

Dean, School of Forestry
University of Idaho
Moscow, Idaho

WANTED

A capable man experienced in tree surgery, forest conservation and light lumbering, on a large estate in Bath County, Virginia. Salary to start \$1,500, room and board.

Address, CHIEF ENGINEER
Box 99 HOT SPRINGS, VA.

THE ANNUAL MEETING

THE annual meeting of the American Forestry Association will be held in Washington, D. C., on January 24, 1921, in accordance with the by-laws, and will be adjourned to reconvene on February 25, at which time the committee on revision of the by-laws will be ready to report.

By order of the Board of Directors,
P. S. RIDSDALE,
Secretary.

DIRIGIBLE BALLOONS FOR FOREST FIRE FIGHTING

MILLIONS of dollars' worth of valuable timber has been saved the Government during the season just closed, by the use of airplanes in forest fire fighting, says a San Francisco dispatch. Fires can be so accurately plotted by wireless from the planes that fire fighters can be directed to within a quarter of a mile of the exact location. Plans are now being made for the enlargement of the airplane patrol service for next season. It is also proposed to employ navy dirigible balloons for trans-

porting fire fighters from the fire control stations to the fire. Men, with all equipment, will be loaded into the dirigible, taken directly to the scene and dropped by means of a long rope ladder. Aside from the saving of millions of dollars to the nation, the service is training, for future emergency, scores of army flyers.

NEW FOREST SERVICE DISTRICT IN ALASKA

THE establishment of a new field district comprising the Chugach and Tongass National Forests in Alaska, with headquarters at Juneau, is announced by the Forest Service, to take effect January 1, 1921. The new district will be in charge of District Forester Charles H. Flory, who is at present Superintendent of National Forests in Alaska. The establishment of the new district was decided upon in order to facilitate the transaction of the growing business of the two Alaskan National Forests, and is in line with the policy of decentralized administration of the Forest Service. Nearly all of the business of the Alaskan forests will be transacted in the future on the ground by the district forester and the local forest officers, the officials of the Forest Service state.

FOREST ASSISTANT EXAMINATION

THE United States Civil Service Commission announces an open competitive examination for Forest Assistant on January 5 and 6, 1921. Vacancies in the Indian Service at \$1,100 to \$1,200 a year, and in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interests of the Service to fill any vacancy by reinstatement, transfer or promotion.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the Secretary of the United States Civil Service Board, Forest Assistant, Indian Service.

PRACTICAL INFORMATION FOR WOODLAND OWNERS

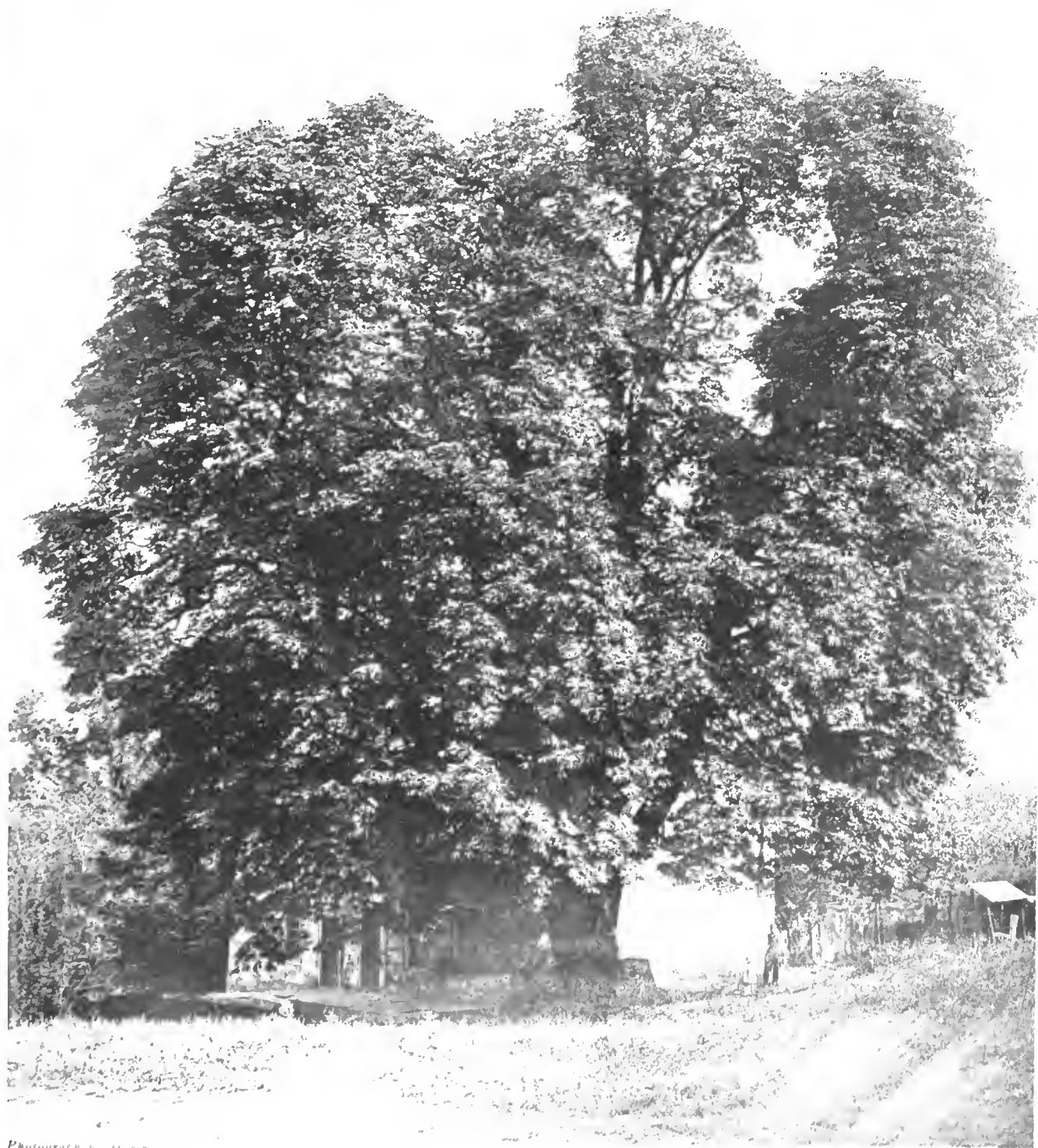
IN response to a widespread demand for fundamental and practical information on forestry presented in untechnical language, the United States Department of Agriculture has just published Department Bulletin 863, "Forestry Lessons on Home Woodlands."

This bulletin is in the form of lessons for school use; but it contains a wealth of up-to-date information on the principles and practice of forestry that will meet also the requirements of the farmer and the general public. The farmers of the United States own more timberland than all other private timberland owners put together and the proper handling of their woodlands will go a long way toward checking the shrinkage in our timber supply.

REC'D MAR 17 1922

UNIV. OF TORONTO

American Forestry



Photograph by H. H. H. H.

THE WASHINGTON HORSE-CHESTNUT AT BATH, PENNSYLVANIA, TRANSPLANTED FROM MT. VERNON



Carbosoted sheathing in place at left, and disintegrating cement ceiling at right.

General view of polishing room of large plate glass works. Carbosoted sheathing being placed at left.



Combating Roof-Deck Failures—

THE economy of creosoted wood for roof deck construction wherever abnormal humidities prevail, is strikingly shown by the recent experience of a large plate glass manufacturer.

The roof-deck of the glass factory was reinforced concrete. Shortly after operations were begun in the plant, it was discovered that humidity was causing the cement ceiling to disintegrate. Chips of cement fell from the ceiling of the polishing room, doing serious damage to glass undergoing the finishing process.

To cure this condition it was necessary to sheath the roof-deck—an area of over 200,000 square feet. The sheathing (1" x 6" boards) and the stringers (2" x 4" scantling) were cut to size, treated with Carbosota Liquid Creosote Oil, assembled into sections and the sections bolted to the trusses. This has proved a very satisfactory solution of the difficulty.



Creosoting sheathing by the Open Tank process with Carbosota Liquid Creosote Oil.



But if, in the first place, the roof-deck had been built of carbosoted lumber of proper thickness, much of the construction cost would have been saved, and the loss in the polishing room caused by falling cement, would have been entirely avoided.

As wood causes minimum condensation, it is the most satisfactory structural material wherever excessive humidities exist. When the lumber is protected from decay by preservative treatment, it becomes also the *most durable* and *most economical* material that can be used. This applies with special emphasis to paper, textile, starch and copper stamp mills.

Carbosota Liquid Creosote Oil is the standard wood preservative for all non-pressure treatments.

If you will write for Special Folder No. 408, entitled "Preserving Wood Roof Decks With Carbosota," copy will be sent free of charge.

(Green wood cannot be effectively creosoted by non-pressure processes. It should be seasoned. All framing, drilling of bolt holes, etc. should be completed before treatment. If this is impossible, two brush coats of Carbosota should be applied to all untreated surfaces exposed by subsequent cutting or drilling.)

The Barrett Company

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FEBRUARY, 1921

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CHANGE OF ADDRESS

A request for change of address must reach us at least thirty days before the date of the issue with which it is to take effect. Be sure to give your old address as well as the new one.

Publication Office, 522 East Street, Baltimore, Md.

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THE AGE-OLD OAKS

WHENCE have they come for assemblage, the age-old oaks? It may be that they have stepped out from the Hall of Fame trees of the American Forestry Association. It may be that they have some secret modes of communication, a language not audible, yet built up through the centuries in potency. There they are, the oaks that have sheltered armies, in their victorious marches for the changing of human destiny, the oaks that have nourished the heroes of the world's fame and fortune, the oaks that have stood by and witnessed the march of human progress and the rise and fall of dynasties, the evolution and extinction of types of civilization. They come from many lands weighted with years. They are the

are in caucus to pass upon the tyranny of force over forest, of industry over natural existence, of the factory over the forest. They are there to tell the story of Olympus, and to recite the glories of a Hellenic age. They are there to tell of the symbolized sculptures of the Greeks and the far-faring ships of the Phoenicians. They are there in assemblage to plead for what, to plead for the rights of all trees, for the dignity of age and ornament against vulgar use; to plead for the streams dried up through the slaughter of the cloud-wooding trees; to plead for the mountains left bare by the double-edged axes of the wood choppers; to plead for the rights of the soil, that it shall not be made bare and waste and desolate; to plead for



Before Basking Ridge took its place in the world this Oak stood there. The people of this New Jersey town can trace the tree's history for four hundred years, but the church is only two hundred years old. It has just celebrated that event. Miss Margaret S. Hitchcock, of Morristown, and Mrs. William D. Baneker, of Basking Ridge, nominate the tree for a place in the Hall of Fame which the American Forestry Association is compiling of trees with a history. The tree has a circumference of fifteen and a half feet six feet above the ground, and what a history it could tell could it but speak of the people who have come and gone from that old church it guards so well.

oaks of a thousand years ago. They are styled oaks, for the concreteness of the title, but in the assembly of the giant oaks are found the cedars of Lebanon and those mighty trees of California that have stood where they now are amid earthquake and shock for ages, unaffected. There are the oaks of the Druids from the morass of Ely. There is the old Charter Oak and oh, so many others, wedded to the rich facts of history. They are the oaks that have been twined with mistletoe for ages past, amid whose branches the orchids have found sheltering, to flaunt their gaudy blossoms to the high winds.

The assembly of the age-old oaks, what does it mean? Peruse the program upon the smooth birch bark—they

climate against material conquest; to plead for the preservation and expansion of the mighty arboreal reaches in which so many veterans have held their undisputed sway through ages past.

The age-old oaks are aroused and protesting. Let the iconoclast beware, for as sure as day follows night, so does desolation follow in the wake of desecration. So do there come to pass the conditions of dearth and decay, with material benefits languishing, when nature is violated and the mighty forests stripped and the lands given over to the fabrication instead of fruition. Let the oaks be heard and their protests heeded!—Reprinted from the Baltimore American.

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EDITORIAL

FOREST PROGRAM REACHES CONGRESS

ON December 22, 1920, Congressman Snell, of New York, introduced in the House of Representatives a bill (H. R. 15, 327) "to provide through co-operation between the Federal Government, the States, and owners of timberlands for adequate protection against forest fires, for reforestation of denuded lands, for obtaining essential information in regard to timber and timberlands, for extension of the National Forests, and for other purposes, all essential to continuous forest production on lands entirely suitable therefor." This bill aims to put into effect the so-called "coalition forest program" agreed upon last fall by representatives of the American Forestry Association, lumber and wood-using industries, and others, and more recently endorsed by the Western Forestry and Conservation Association and the California White and Sugar Pine Association.

Congressman Snell's bill aims at two main objects,—the development with Federal co-operation and financial assistance of adequate forest fire protection and forest renewal in the various States, and the material extension of Federal forest ownership and production. In order to secure the first of these objects the Secretary of Agriculture is authorized and directed to recommend for each forest region the requirements essential for the protection and continuous production of timber on timbered and cut-over lands, to co-operate with the various States in bringing such requirements into effect, and to make a survey of the forest resources of the United States. The sum of \$2,000,000 is provided for these purposes of which not less than \$1,000,000 is to be used exclusively for forest protection and renewal in co-operation with the States. Such co-operation is to be contingent on at least equal expenditures by the States and the Secretary of Agriculture is authorized to withhold co-operation

from any State which does not comply in legislation or administrative practice with the requirements which he may determine to be essential.

As a means of achieving the second object, the acquisition by the Federal Government of lands chiefly suitable for forest production, irrespective of whether or not they are on the watersheds of navigable rivers, is provided for, with an appropriation of \$10,000,000 a year for five years. Provision is also made for the extension of the National Forests by the acquirement of forest lands not now owned by the Federal Government in exchange for equal values of National Forest land or timber or assignable certificates for timber; and \$250,000 a year is proposed for the classification of all federally owned lands not now embraced in the National Forests or National Parks, with a view to the inclusion of those chiefly valuable for timber production or watershed protection within the National Forests. Finally, provision is made for forest research of all kinds, including the establishment of experiment stations, by an appropriation of \$1,000,000 a year, and a similar amount is provided for the establishment of forest nurseries and the sowing and planting of denuded lands within the National Forests.

A comprehensive forest program representing the views of a wide variety of interests has thus reached the stage of pending legislation. A National Forestry Program Committee has been organized to push the measure and every effort will be made to secure favorable action at the earliest possible date. The passage of the proposed legislation would mark a tremendous advance in the handling of our forest problems. It deserves and should receive the active support of every citizen sincerely interested in the perpetuation of our forest resources.

TWENTY YEARS OF SERVICE

AN event of more than usual significance in the forestry world was the recent celebration by the alumni of the Yale Forest School of the twentieth anniversary of the founding of the School. The meeting was unique in two important respects—it commemorated twenty years of service on the part of the oldest forest school in continuous operation in this country, and it brought together more professional foresters than have ever before been assembled in one place. Nearly 100 alumni, or approximately 20 per cent of the total number, returned to

New Haven to renew old friendships, to learn first hand of the progress made by their alma mater during the decade since the last reunion, and to pledge their support in helping the School to realize its plans for a still greater future.

The importance to the country as a whole of a body of professional foresters such as that represented at the Yale reunion is difficult to overestimate. Americans as a class have been slow to realize the benefits of professional training for public service and to take ade-

quate steps to secure thoroughly trained men. So far as our forest resources are concerned, however, the public is awakening to the necessity of stopping the present forest destruction and waste which affect the welfare and comfort of every citizen in the land. The average man knows that something must be done about it but gropes in the dark when it comes to mapping out and executing an adequate policy for correcting these conditions and restoring our forests. The trained forester knows what to do and has repeatedly proved his ability to do it. Upon him depends in large measure the future of our forests—National, State, and private. The success or failure of America in the next two decades to solve the problem of its vanishing timber supplies will be determined by the extent to which professionally trained foresters are given the opportunities to work out our forest problems on the ground in direct contact with the forces of nature.

The Yale Forest School has set an enviable record in the character and ability of the alumni whom it has sent

forth. Of the 518 men who have received professional training at the School, nearly 400 have received the degree of Master of Forestry, this represents approximately two-thirds of the total number of such degrees granted by all the forest schools in the country. These men have risen to positions of leadership in National, State, and private forestry, and, perhaps, more conspicuously still in forest education. Their devotion to public service in all of its many aspects has been most pronounced and their influence has been widely felt.

This record of past service rendered carries with it an obligation and a responsibility for the future. It is safe to say that the Yale School of Forestry enters on its third decade with a full realization of the work to be done and of its opportunity for further service. All those interested in the progress of forestry will share the hope that it may continue to prosper and to maintain the high standards set during the first twenty years of its existence.

A VOICE FROM NEW ENGLAND

IN view of New England's traditional reputation for conservatism the following extract from the latest annual report of the Commissioner of Forestry of Rhode Island is of particular interest:

"I am in favor of states rights, and private rights and interests, so long as these are consonant with natural equity and the general welfare. I naturally disfavor a mandatory program in forestry. Nevertheless, some form of governmental control of privately-owned forest lands may eventually prove to be a matter of dire necessity, unless private owners soon take an active part in forest conservation. Indifference, ignorance, inaction, and long delay spell the destruction and wasteful exploitation of our valuable natural resources. The time is

come when destructive lumbering should cease. Timber lands should no longer be cut-over without any reference to future reproduction. As a man has no business to maintain a common nuisance, no more has he a right to handle his forest property to the detriment of his neighbors and of the town and State."

This is the case in a nutshell. The logic of events points irresistibly to the absolute necessity for the conservation of one of our most valuable natural resources. If private owners do not take the initiative, the States and the nation will. The ideal solution lies in the adoption of a constructive program based on the harmonious cooperation of all three agencies.

PULP AND PAPER INDUSTRY TALKS FORESTRY

EVIDENCE from several different sources bears striking testimony to the steadily increasing desire on the part of the pulp and paper industry to take such steps as may be necessary to assure an indefinite supply of raw material. This is true both in the United States and Canada, although it must be admitted that at present our Canadian friends are somewhat in the lead. This was rather strikingly brought out at the meeting of the Woodlands Section of the Canadian Paper and Pulp Association in Toronto in December. At this meeting, which was widely attended by timberland owners, woods operators, and pulp and paper manufacturers, the practice of forestry was the chief topic of discussion. It is safe to say that no two-day session of the representatives of any wood-using industry was ever before held on this continent which was devoted almost exclusively to the earnest and even enthusiastic consideration of technical forest problems.

No one attending this meeting could fail to be impressed by the very evident desire on the part of those

present to handle their forests in such a way as to secure the maximum utilization of pulp wood with a minimum of waste, and at the same time to insure the perpetuation of the forest. Such strictly technical subjects as the best silvicultural systems to use under various forest conditions, the rate of growth and yield of even and uneven-aged stands, and the loss of trees through suppression and decay, were discussed not only intelligently but even in the vernacular of the forester. Natural reproduction versus planting as the best method of securing a new stand was taken up at considerable length, with reference not only to costs but to the final results secured. The meeting brought out the fact that practically all of the companies represented are carrying on independent investigations in an attempt to secure information of value to them. These experiments are for the most part on a big scale, often including thousands of acres, and show that the Canadians are really in earnest in their attempt to save their timber supply before it is too late.

In the United States the pulp and paper industry has

also been among the first of the wood-users to recognize the fact that a permanent and adequate supply of raw material for the maintenance of the industry can be secured only by the practice of forestry. More technically trained foresters have probably been employed in the pulp and paper industry than in any other phase of private forest work, and the industry has, as is well known, been active in urging the adoption by the Nation of a comprehensive forest policy. At the annual meeting of the American Paper and Pulp Association, in November, arrangements were made for the organization of a woodlands section similar to the section already in existence in the Canadian Association. It is to be hoped that this new section will be as aggressive and effective as its Canadian counterpart, and that it will be successful in arousing an equally keen and intelligent interest in the entire problem of forest management. That this is likely to be the case is indicated by the vision expressed by many of those at the November meeting of the American Association of the day when their pulp mills will be in the midst of well-forested areas

so handled as to produce a sustained annual yield.

One of the reasons for the early recognition by the pulp and paper industry of its dependence upon a perpetual supply of timber has been its heavy capital investment in manufacturing plants. These must obviously be kept supplied with raw material if the owners are not to suffer heavy loss. It must not be overlooked, however, that this same situation exists, although in many instances to a lesser extent, in the case of other wood-using industries. All of these have made a larger or smaller investment which can be safeguarded and on which heavy depreciation charges can be avoided only by continuous operation. And from the broader standpoint of the community as a whole the continuation of the wood-using industries and of the opportunities for the employment of labor and capital which they offer is essential to their economic welfare. Let us hope that it will not be long before these facts are more widely recognized and before the interest in the forest problem now manifested by the pulp and paper industry becomes general.

TRIBUTE TO A GREAT LEADER

A WELL-DESERVED tribute to one of the great leaders of forestry in America was paid by the Second National Conference on Education in Forestry and by the Society of American Foresters at their meetings the latter part of December. Both organizations sent to Dr. B. E. Fernow telegrams regretting his absence from their deliberations and expressing their affection for him as a man and their appreciation of his services as the dean of forest education and the nestor of forestry in North America. No man is more worthy of such recognition.

For forty years Dr. Fernow has rendered marked service to forestry in America as organizer, administrator, and educator. From the very beginning he has been a pioneer and a trail-breaker. As far back as 1882 he was one of the organizers of the American Forestry Association. A few years later he organized the Division of Forestry

in the United States Department of Agriculture, which he left in 1898 to organize the first professional forest school in the country—the New York State College of Forestry, Cornell University. Nine years later, in 1907, he organized the first forest school in the Dominion of Canada at the University of Toronto. In practically every part of the broad field of forestry his leadership has been conspicuous and effective.

Few men have either the opportunity or the ability to render such conspicuous service as has fallen to Dr. Fernow's lot. All those who have the true interests of forestry at heart will echo the hope of the Society of American Foresters that he "will continue for many years to come to be the inspiration and leading spirit as you have been in the past for the profession of forestry in America."

INEFFICIENT ECONOMY

THE action so far taken by Congress on the various appropriation bills indicates that early reports as to its determination to cut all appropriation estimates to the bone were well founded. It is to be hoped that this zeal to economize in governmental expenditures may be tempered by some degree of judgment and that discrimination will be exercised in making such cuts as appear unavoidable where they will do the least harm. In the case of the Forest Service, for example, the increased appropriation of approximately \$2,700,000 requested by the Secretary of Agriculture is absolutely essential for its effective functioning. For Congress to materially reduce the amount asked for would seriously cripple some of the most important activities of the Service and in the long run would prove the most inefficient kind of economy.

Most important of all is the readjustment of the present statutory roll and the provision of sufficient funds for the miscellaneous roll to make possible the payment of reasonably adequate salaries. Under present conditions it is impossible for the Service to retain its trained personnel, and the resulting turnover is demoralizing.

In addition to provision for adequate salaries, funds are also much needed for the extension of important Forest Service activities. Largely increased amounts are urgently needed for the protection of the National Forests from fire. The appropriation of a million dollars which the Secretary of Agriculture has requested in a supplemental estimate, with the approval of the President, for co-operation with the States in forest fire protection and other phases of forest management, would be one of the best paying investments that the country could make.

THE TIMBER SUPPLY AND WHAT TO DO ABOUT IT

BY ROY HEADLEY

THE average citizen remembers that there was a good deal said about conservation a few years ago, and he has a hazy idea that there are National Forests somewhere in the West. He sees an occasional magazine article describing recreational features of the National Forests, and occasionally reads about forest fires being fought. These impressions leave Mr. Average Citizen with the idea that the timber supply of the country has been pretty well provided for.

He is more willing to let it go at that because it has always been something of an effort for him to whip his mind into a state of real concern over the threatened timber shortage about which the foresters have always talked so much. Try as he would, he could never feel sure that the approaching timber shortage meant much to him personally, or that it laid on him any particular obligation for action.

Why is it that Mr. Average Citizen takes this rather complaisant attitude in the face of the steady flow of information and argument designed to make clear to the general public the oncoming national timber shortage, which is so well known to lumbermen and foresters?

As a nation we have just emerged from the period when timber was a good deal of a nuisance—an obstacle in the road to progress and prosperity for the settler, the road builder, and the stock grower. It has been but a few years since, in certain parts of the country, trees were still killed by girdling in order that virgin timber land might be turned into cultivated fields. Log rollings, at which beautiful, straight, clean logs were heaped in giant piles and burned, have been familiar sights to men not yet old. In the good old days when walnut, or pine, or oak was cut and burned at a great expenditure of labor in order that the land might be cleared and farmed, there was no market for the timber on the land, even though it was composed of the choicest species and grades. The only course left open to the aggressive settler was to cut and burn and destroy.

After thinking for generations that timber exists in inexhaustible quantities and must often be destroyed in order that agriculture and home building may go on, the average man has been asked to revolutionize his point of view and think of timber as a natural resource which is rapidly vanishing to the great detriment of our individual and national prosperity and comfort. He simply has to have time for this reconstruction of opinion. He has not, as yet, quite recognized that we have completed the transition from the days of too much timber to the days of too little timber.

It is less than twenty years ago that shrewd, hard-headed lumbermen, who had actually seen the successive exhaustion of timber supply of the western and middle western states, refused an opportunity to invest in the splendid stands of western white pine in Idaho. Their reason was that the present and future lumber

markets were too far distant to make the manufacture in quantity of this lumber a profitable enterprise. These men had seen the lumber industry migrate from Maine to Pennsylvania, thence to Michigan and Wisconsin, and they knew it would be only a matter of time until the corporations then doing a flourishing business in Minnesota would be forced to seek fresh stands of virgin timber; but even with the advantage of all this significant experience they could not believe that the lumber supply lying east of the plains region would ever fall far enough short of the demand to make it possible for Idaho lumber, with its handicap of high freight charges, to compete seriously for the markets of the west and middle west.

Where majestic forests of western white pine stood when these lumbermen rejected what later proved to be a golden business opportunity is now to be found an increasing area of blackened waste left in the rear of lumbering operations that have prospered by shipping to those identical markets east of the Rockies. Idaho timber was required to meet the growing demand for lumber in the middle west and east, and its manufacture and export has given rise to a flourishing lumber industry.

If shrewd lumbermen with the advantage of life-long familiarity with the process of progressive timber depletion guessed so far wrong on the speed with which timber then inaccessible would be reached in the devastating march of the lumber industry from the east to the west, it is little wonder that the average man, with his lack of expert information, should fail to recognize that the days of plenty of timber have passed and the days of shortage are upon us.

The tragedy of the situation is, that by the time public opinion becomes fully aware of the fact of timber depletion, many golden opportunities to prevent depletion by easy and natural means will have been lost.

Michigan is beginning to realize the meaning of the ten million acres in that state that have been made a desert by unwise lumbering and fire, and many people are convinced at last that these wastes can not be made into farms; they recognize that the humus has been burned out of the soil and that only the burned sand is left. They recognize what an asset these millions of acres might now be to the state if they had been given proper care, but it is too late; such seed trees as were left after the land had been logged have gone down before repeated fires; the soil fertility has been terribly wasted even for tree growth, which is not as exacting as cultivated crops. In many localities tree growth can only be restored by costly artificial planting, and because of the carelessness with fire which has become so habitual, artificial planting is a hazardous venture—too hazardous for private owners who are unwilling to plant a crop which for decades must run the gauntlet of fire in

(Continued on page 116)



A PANORAMA OF THE FINEST TYPE OF SCENIC LAND SURROUNDS FOX LAKE ON THE BEARTOOTH

FOREST RECREATION DEPARTMENT

ARTHUR H. CARHART, EDITOR

THE LAND OF THE BEARTOOTH

BY FOREST OFFICERS OF THE BEARTOOTH NATIONAL FOREST

LITTLE imagination is necessary to conjure up the scene which probably surrounded the christening of Beartooth Mountain. The Crow tribe was moving into new hunting grounds. The white men had allotted them a last place to inhabit which after a fashion they could call their own. Picture the incident occurring on a bright fall morning when crisp frost made leaves rustle under horse hoof; or if you prefer think of the day as misty with only a glimpse of the mountains coming when between great soft clouds the wind tore rifts in the moist blanket, which hung on slope and crag. Perhaps as one such rent in the misty curtain

occurred the sun flashed brightly on the top of a great peak lifting its head far above the clouds at its foot. It was this first glimpse of the great mountain which so resembled a gigantic tooth of a bear that gave it the name. For the Crow Indians named the peak when they first came to this forest region and from the peak the range

and the National Forest get the name "Beartooth." No fame is broadcast which brings to all the knowledge that the Beartooth is a great national playground. Perhaps to this moment but few know of its existence, but those who have visited the delightful areas within this great scenic forest know it to be one of the most pic-

turesque, one of the most leasing of places to get a real outdoor vacation.

So, Mr. Citizen, meet your Beartooth National Forest.

The Beartooth is not a place for those who will take their vacation time listening to jazz bands every night. There are no bright lights in luxurious hotel lobbies nor

dress suit to struggle with. The music that is there is of the wind skooting around snaggy rock-topped mountains or sifting through the tops of giant needle-clad trees. And the bright lights are from God's stars which shine like lustrous gems set in dark blue. And the suit that is proper dress is of flannel and khaki and leather,



LIKE MYSTIC SHIPS THESE TINY ISLANDS SPRING FROM THE SURFACE OF ROCK ISLAND LAKE IN THE BEARTOOTH



PILOT AND INDEX MOUNTAINS LIFT LOFTY CROWNS ABOVE A LAND OF EXQUISITE BEAUTY, LOOKING ACROSS KERSEY LAKE INTO THIS WONDERLAND OF PEAKS AND LAKES

for here is a magnificent world of outdoor vacation country for the fellow who really wants to get into the open and see the real mountains and scenery which is untainted with man's so-called improvement.

Chronic travelers and amateur vacationists follow beaten paths. No better illustration can be found than the Beartooth country. A great stream of tourists annually goes into the Yellowstone country and passes on, but never in their visit to the region do these visitors learn of the Beartooth. Still this unusually interesting region is contiguous to the National Park. The traveler enroute westward, enters eastern Montana and going towards Billings, his first view of snow-capped mountains is of the Beartooth range. It is located south of the Yellowstone river and wholly in Montana and there awaits the most pleasing of vacations for one who will forsake beaten travel paths but a few miles and really taste of the outdoor life in an unspoiled country.

Not alone does this Forest serve as a place where the joy of play in the mountains may be had. It produces great economic values too, for each year 50,000 sheep range the meadows of the Forest and 5,000 cattle fatten from the forage picked in the tree-bordered parks. Annually 2,000 feet board measure of timber which goes into mining stulls, props and railroad ties are harvested from the Forest. And all of this use return and other uses are in addition to it being one of the ideal places of the west for a vacation. To really see the Beartooth one must go on pack trips. This means that

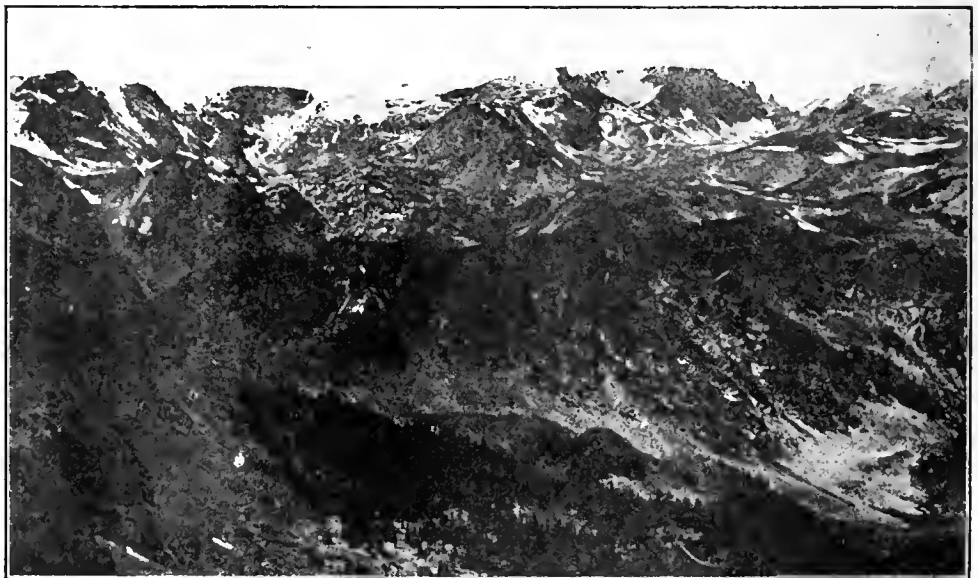
there is hard traveling and it may be that it will keep many from viewing the scenic splendor within the borders of the Forest. But there are other places where one may go with an automobile or wagon and still get the opportunity to enjoy some of the recreation found here.

Just a few miles out from Red Lodge, Montana, on the West Fork of Rock Creek, there are some excellent camp sites. Here, too, is Camp Senia, a well organized resort prepared to take care of the traveler. Compared to a long trip with pack outfit, this trip is easy, but for eight miles from Red Lodge the way is over a wagon road and the last four miles of the trip to the

camp site must be taken on a saddle horse.

Established at this camp, the scenic features of the immediate neighborhood can be reached and ten days is little enough time to spend here. Trips can be made to Silver Run Mountain, to Bow Back Mountain, to Red Lodge Creek Plateau, to Timberline Lake, and to Sentinel Falls. Fishing is of the finest, and the angler will find many opportunities for dropping a fly into some froth-covered pool and instantly be rewarded by a strike full of snap and fight.

An auto will take you to East Rosebud Lake and resort approximately twelve miles from Roscoe, Montana. The lake is a mile long and half that wide, and is at an elevation of 6,500 feet above sea level. Fishing is good in the lake, and the streams offer equal sport. The region surrounding this area is replete with scenic detail. Here are the lower cascades of the East Rosebud. The gorge



SMASHING PEAKS, LAKES SET FAR DOWN IN CHASM-LIKE BASINS AND DIZZY HEIGHTS OFFER REAL "ROUGH STUFF" TO THE VISITOR TO THE BEARTOOTH

of the East Rosebud is worthy of a visit and a trip to Elk and Reed Lakes offer interesting day's outings full of keen appreciation of the life of out-of-doors. Snow Falls is another objective for a tramp while hanging high amidst rocks and timber is Shadow Lake where are mirrored reflections of mountain and sky. From this point too, one may try the ambitious climb to the top of Mount Shepherd, to Snow Lakes or to the high Snow Fields of the East Rosebud.



ONE OF THE WORLD'S MOST REMARKABLE ICE-FORMATIONS—THE GRASSHOPPER GLACIER OF THE BEARTOOTH NATIONAL FOREST

A few miles west from the east branch of the Rosebud is the West Rosebud canyon. A good trail connects the two and a visit of any time to this area will be in the nature of a camp trip. A passable wagon road reaches Emerald Lake on West Rosebud. It is a lake which deserves to be popular, for here nature made a place which is naturally attractive. The scenic values are excellent, the fishing is good, and around the lake luscious mountain huckleberries grow in profusion. Who could ask for more than a natural bed of delicious wild berries at hand, good trout fishing in lake and stream and scenery which will satisfy the most exacting soul? But sad to relate, there is one horrible scar on the landscape here which was caused by those very people who came to enjoy that which they destroyed. Careless campers left a fire one day and now the timber on the northern shore of this gem-like mountain lake is charred and blackened. Years will pass before healing timber growth will cover the marring tracks of the fire demon. Someone, careless, ruined a beauty spot to which

you have equal right with him, and the sad part of the whole situation is that it could have been avoided with reasonable care. Do *not* thou go and do likewise.

Emerald Lake is the largest of a chain of three. Less than a mile from these, and reached by a good trail is the West Rosebud cascade, a water feature that possesses striking beauty. Two miles farther, following the stream and trail brings one to Mystic Falls, where the entire West Rosebud leaps madly over a granite cliff. The trail here stops abruptly where the leaping water, in more than a hundred feet sheer fall, splashes from the higher bench.

For those who will climb on foot and clamber up the rugged granite wall there is a scenic treat, rich in offerings. From the crest of the cliff up which the foot path leads, spreads out a large broad valley. In the immediate foreground is Mystic Lake, the largest body of water in all the Beartooth. It is two and a half miles long, three-quarters of a mile wide and covers about nine hundred acres. Other lakes lie back of this body of water, but can be reached only on foot and one must pack his entire outfit and supplies to their shores by his own strength.

On the west of the Rosebud country is the Stillwater River, the largest stream in the Forest and among the most picturesque. An auto road reaches Wood's ranch from Columbus and here one may stay and outfit for pack trips that will take several or many days to complete. From the ranch the Stillwater trail leads up stream by fishing spots and camp grounds which invite one to linger. The trail passes Woodbine Falls, where the water



SHADOW LAKE RICHLY DESERVES THE NAME, FOR THERE ARE MIRRORED TREES, CLIFFS AND CLOUDS WHICH FLEE AT THE MEREST FLICKER OF A BREEZE

drops several hundred feet within view of the traveler on the trail. Through the Devil's Half-acre the trail is blown out of solid rock. Beyond this is the Washboard, where huge rock slides from both sides of the stream have almost closed the valley and have formed a series of rock ter-

aces over which the water foams and splashes. A little beyond this point the river widens into Sioux Lake, in which is a large island where there is a good camp spot with wood, water and horse feed handy.

The Meadows on the Stillwater, above Sioux Lake offer a wide panorama of the mountains that parallel the stream and here is the best fishing grounds of the river. Big Park Ranger Station is the first point where virgin green timber stands and from here on the Stillwater trail passes through country that is wild and rugged. Horseshoe creek is crossed. From its source to its mouth it is almost a continuous cataract. This creek drains the Lake-of-the-Woods and makes one of the features accompanying a side trip which can be taken to the lake. Up and on the trail leads until Daisy Pass is reached, and here one stops to drink in the magnificent outlook on mountain fastnesses. South are Pilot and Index Mountains, Wyoming's two highest peaks. To the southwest one looks down upon Soda Butte Creek and Cooke City and the northeastern portion of the Yellowstone Park. Standing in Daisy Pass the traveler is at the threshold of some of the most interesting wonderlands of the Beartooth. Per-



WATER FEATURES OF THE BEARTOOTH MAKE MANY OF THE MOST STRIKING OF ALL THE MANY LANDSCAPE DETAILS FOUND THERE

haps the most curious glacier in the world is found here. Indeed it can claim distinction on its unique feature which would make it an unusual scenic value among many glaciers. It is the Grasshopper Glacier and in its ice it carries thousands of grasshoppers preserved in freezing condition for many many years and of a species that is now extinct. The grasshoppers that have been preserved in this curious manner are of a species that were migratory in habit. It is believed that centuries ago, before white men came to this continent a vast horde of these insects were flying over the mountains at a high altitude when they encountered a severely cold air current. The low temperature killed the grasshoppers or drove them to an alighting place and they were caught in the ice and snow of the glacier. The glacier with three smaller ones lies in a huge semi-circle extending from the north and east edge of Sawtooth Peak to Granite Peak, making a continuous stretch of ice over three miles in length. The best time to visit the glacier is late in August, just before the new snow begins to fall, for at that time the snow of the preceding winter has melted away, exposing the caverns and crevices where

many ice formations can be seen. Granite Peak, within the Beartooth is the highest mountain in all Montana, and is 12,950 feet above the sea. Other high peaks of the area are Mt. Wood, 12,900 feet elevation; Mystic Mountain, 12,646 feet; Mt. Hogue, 12,600, and Mt. Villa, 12,700. Mount



RICH GREEN TIMBER CLOTHES THE SHORES OF ROCK ISLAND LAKE AND LILIES REST ON THE SURFACE. BEARTOOTH NATIONAL FOREST.

Bald, Sawtooth, Beartooth, Castle Rock, Dewey Mountain, Snow Peak and many other high points in the range are near 12,000 feet above sea level. Plenty of opportunity to do hard climbs is offered those who are keen to reach the tops of peaks that mean hard hiking.

All of the principle streams of the Beartooth head within a comparatively few miles of each other in this rugged region of peculiar glaciers, snow fields and lakes. It well may be believed that the scenic values found in this neighborhood are great and that one seeking the wildest and roughest mountain lands will find them here.

Lakes abound in alpine locations. Goose, Burke, Rock Island, Round, Lady-of-the-Lake, Kersey, Wide-water, Russell and Farley Lakes are but a few of the many that nestle in settings of spruce and fir on the sides of majestic mountains. Fish taken from these high lakes have the snap and vim to put up a good fight and the flesh is especially delicious. Good camp grounds are found at most of these lakes and the whole region is one of the most striking vacation grounds to be found in the west.

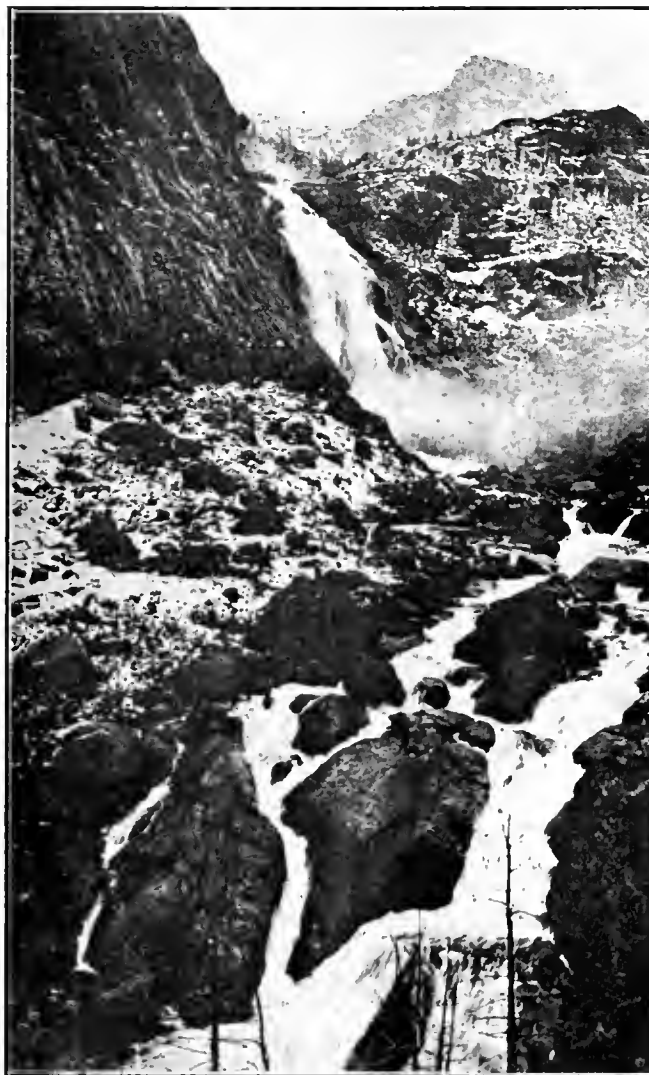
Only a few of the many beautiful and interesting features of the Beartooth can be told here. More than three-quarters of a million acres are within the boundary of this Forest and each acre has some new interesting thing to offer the visitor. Most interesting of all, this whole vast playground is open to recreational use by all of the citizens of the United States. Perhaps an urgent invitation to visit the Beartooth should be extended only to good citizens, for good citizens do not take chances with forest fires, and clean their camps when they leave.

But you are all welcome to come and play in the Beartooth National Forest. It is one of the hundred and fifty-three great play areas found within the National Forests which you own equally with the next citizen. Its streams, peaks, canyons and unusual glaciers belong to the public. One of the most potent services which a forest

can render to its owners, Uncle Sam's nephews and nieces, is the opportunity for play out of doors. So it is but following the general policy of the entire Forest Service when the Beartooth invites you to come out in the wilds next summer and get personally acquainted with the Grasshopper Glacier or the Mystic Falls or climb the craggy head of Granite or Beartooth Mountains.

Do you long for a country where towering mountains look on glassy lakes, where trails lead past never ceasing

beauty, where the meadows are flecked with nodding flower blooms and a dashing cascade or murmuring stream calls welcome? Do you plan your vacation next summer to visit hotels or do you think of waking in the morning to the chatter of a pine squirrel or pinon jay, where the shelter you have lodged in during the night is a tent carried during the day on the back of horse or your own shoulders, where the only bed you may know for days is a spruce or fir bough mattress and your dining room is the whole top of a mountain range? If you have the desire to step off the beaten paths of travel, to camp on the bank of some clear stream or mirror-like lake, to see great uncommercialized recreation country of rugged National Forest play areas you can make no mistake in picking on the Beartooth National Forest as your next vacation land. For there beauty is as wild as the breezes that sing in the spruce boughs and God's handiwork, in all its untrammelled magnitude, en-



MYSTIC FALLS, A SUPERB SCENIC VALUE IN THE MOST SCENIC OF THE BEARTOOTH REGIONS

dows a vacation country of unsurpassed appeal.

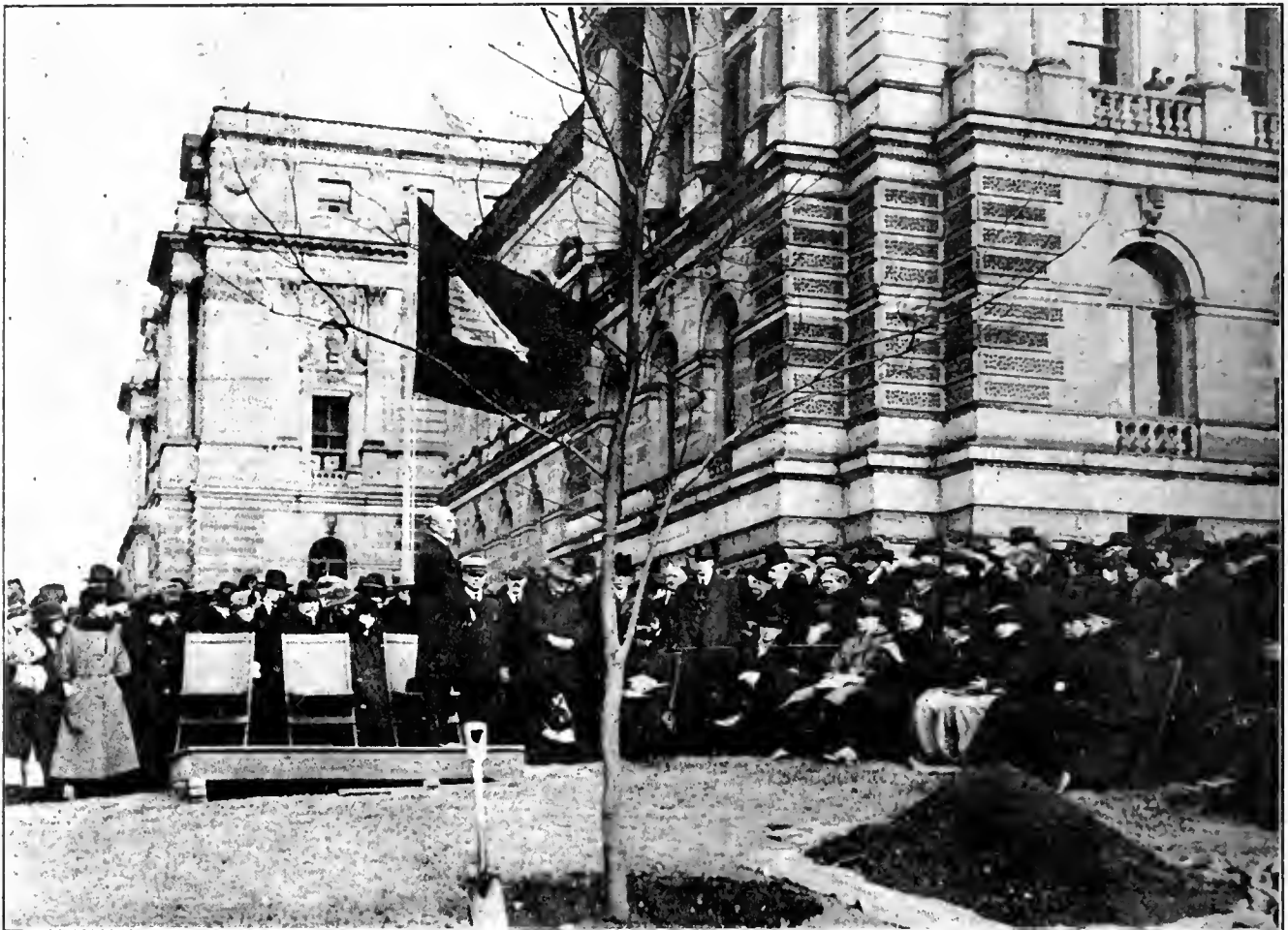
This is your introduction to the Beartooth National Forest. Making its acquaintance requires your presence there. That is up to you; so if your next vacation is going to be off paths that are over-well trodden and in the land of the Stillwater River or Rosebud Creeks or anywhere in the Beartooth, write the District Forester, Missoula, Montana, or to the Forest Supervisor, Beartooth National Forest, Billings, Montana, and ask where to go, how to get there, and what to see, in more detail than is possible here

LIBRARY OF CONGRESS HONORS MEMORY OF HEROES

AN impressive ceremony attended the planting of a Japanese elm tree on the grounds of the Congressional Library, December 7, placed in honor of the four men from the Library who gave their lives in the World War. The men were Corporal Charles Edwin Chambers, Company C, 312th Machine Gun Battalion, 79th Division; Lieutenant Edward Theodore Comegys, 11th Aero Squadron; Corporal Frank Edward Dunkin, Company I, 54th United States Infantry, and Corporal John Woodbury Wheeler, Company B, 104th Field Signal Battalion, 29th Division.

The Librarian, Dr. Putnam, presided at the exercises and paid high tribute to the character of the men, saying

four men, but also of the cause which they served. It should be with us a living thing, a growing thing. It should have within it a power to serve. It should refresh and invigorate us in times of peace; it should steady us and give us faith in times of stress. And it should endure—to the lasting profit of the community we serve, and of that everlasting cause which, though wars may cease, will always, in some form, require of us the sacrifice of self." Appropriate remarks were also made by Representative Julius Kahn, Chairman of the House Committee on Military Affairs; by Colonel E. Lester Jones, Director of the Coast and Geodetic Survey, and by Captain



Underwood and Underwood.

MEMORIAL TREE PLANTING AT THE CONGRESSIONAL LIBRARY

As a tribute to four employees who died in the World War, the staff of the Library of Congress planted a memorial tree on the Library grounds. The librarian, Dr. Herbert Putman, who presided at the ceremonies, is shown standing on the platform.

that the memorial placed for them there on the Library grounds was most fitting and that "of all forms of memorial a tree is the most symbolic. It is a living thing. It is unselfish; the elements that it draws to itself—warmth of the sun, moisture of earth and air—it gives forth again in beauty and in protection. We plant it, not to bury it, but to enlarge its life and opportunity. It is to grow,—in stature, in vigor, in beauty, in service. It is to endure,—not merely in its own generation, but in the later generations which will be its offspring. So the memory which it holds for us: the memory of these

Garland Powell, who commanded the Aero Squadron in which Lieutenant Comegys first served. A section of the Marine Band furnished the music and through the courtesy of the commanding officer of Bolling Field, a group of airplanes flew over the audience during the exercises. Dr. Putman put the first shovel full of earth about the rocks of the tree, and he was followed by Captain Averill, Superintendent of the Library Building and Grounds, and members of the staff and relatives of the four men. The tree has been registered on the Honor Roll of the American Forestry Association by Mr. J. Bentley Mulford.

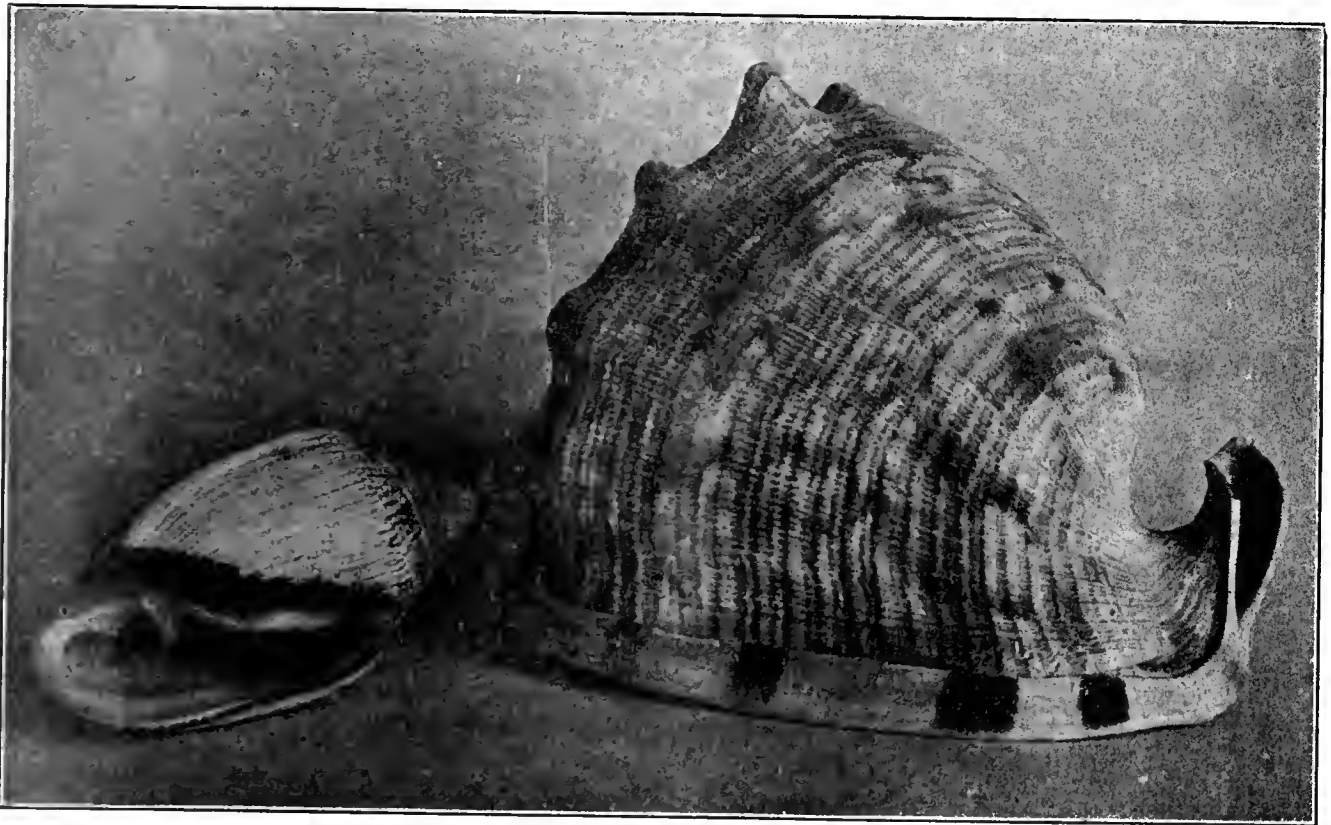
NATURE PHOTOGRAPHY

BY R. W. SHUFELDT

(WITH PHOTOGRAPHS BY THE AUTHOR)

NOT long ago the writer was in conversation with a vigorous young man who had traveled very extensively in South Africa and other parts of the world; his record achievement lay in the fact that he had twice walked from Cape Town to the mouth of the Nile. He had gathered a mass of anthropological notes upon the natives he had come in contact with—which, indeed, had been his main object; but beyond this he had made no attempt to bring back any results obtained by his camera, shedding light on what is to be found along

Apart from such instances as might be furnished by world travelers of other countries, no end could be supplied from the records of our own people—the members of the American Forestry Association forming no exception; indeed, such records are annually increasing since the extensive introduction of the automobile into home and foreign travel. Many of these travelers command unlimited pecuniary means, together with all sorts of facilities; yet it never seems to occur to them what a mass of information they might gather, which, if turned



THE PHOTOGRAPHY OF SHELLS

Figure 1. The larger shell is a fine example of the Sardonix Helmet (*Cassis tuberosa*), which is found on our Atlantic Coast, from North Carolina southward. This is a Key West specimen.

other lines in the wonderful countries he had tramped over. Especially was this true with respect to the fields of zoology and botany. This is but a single example, chosen to illustrate untold thousands of others similar to it in all respects. One young man of the writer's own family had passed over hundreds upon hundreds of miles in the Orient—in Japan and the East Indies, in the heart of Africa, and across an utterly unknown part of the continental island of Madagascar; but not a photograph had he made of any of the rare and unknown plants and animals he met with in these extensive travels, nor any notes upon their habits. His Madagascar collection consisted of the tail of a common lemur!

over to scientific descriptionists on their return, would prove not only of inestimable value to various departments of science, but would greatly redound to the credit of our country, and stimulate the advancement of civilization at large. Many people of this class have justly earned the name of "globe-trotters,"—and, indeed, they have no ambition beyond it. They travel but to unload their purses, for the sake of saying that they have been here or there—and thus have something attached to themselves not experienced by others. Very frequently these others have failed of such advantages through lack of funds and opportunities; though had they enjoyed them, they would have given something to the world

worth the while. Still another class is represented by people more or less intelligent, with eyes, and, up to a certain point, observing. When such return to their homes, be it in New York, Chicago, Washington, or some other city, after spending months in the unknown parts of Thibet, or Borneo, or up the great rivers of South America; after scrambling through the forests of Java and the jungles of India, or rambling along the shores of Formosa, Java, or Timor—in recounting the incidents of their explorations, ever and anon they will tell of some remarkable butterfly they saw in swarms on the edge of such and such a forest; a marvelous shell they discovered on such and such a beach; or a most wonderful bird they saw, the male of which, when the female had laid her single egg in the hollow of a tree, sealed her up in the cavity with mud, feeding her through a hole purposely left in it, until the young one was ready to leave the nest. At this point in the tale, in these days, someone present naturally asks: "Did you have your camera with you?" Upon being answered in the affirmative—backed by a "why?"—the interrogator will have very good reason for inquiring why no negatives were made of all these things, when it was possible to do so. Usually comes the answer: "Yes, I could have taken no end of such photographs; but of what use would they have been to anyone? Naturalists must be familiar with all such things by this time."

This is far—very far—from the truth in many, many instances. And, while naturalists may possess the fact or facts in regard to the *habits* of this or of that—bird, bat, or butterfly—they only too frequently have no photographic pictures illustrating its appearance in its natural habitat, and the character, in some instances, of its actual environment. Intelligent travelers who have availed themselves of every possible opportunity their various journeyings have offered them, turn from such people with a deep sense of disappointment, not to men-

tion envy, associated with the feeling that these opportunities, so barren of final results, could not have fallen to them.

Omitting, perhaps, one or two subclasses of such travelers, we finally meet with representatives of a limited group that are worth the while—the group for which this article has been written. Such a representative is of an inquiring mind; fearless to the point of recklessness; an intelligent observer—indeed, he possesses all those mental and physical requirements and traits of character, found in explorers of little-known parts of the world, that make for success and achievements, and that finally materialize in the form of results bringing the most good to the greatest number of people. When such a person, armed with the proper equipment for taking serviceable photographic pictures, meets with some interesting flower, plant, or tree, in the far-off wilds in the least traveled parts of the world, he sees to it that he secures a negative of it, as good a one as he could possibly make under the circumstances attending the discovery of the specimen.

Travelers of this class are often of a receptive order, and more than desirous of acquiring the kind of knowledge of field photography which will enable them to make negatives, prints from which will constitute positive contributions to science, to popular literature for the instruction of the average reader, or for authoritative textbooks, to be used in the class-rooms of schools and colleges. Now, there are

a great many points that the photographer of plant and animal life in the field must know and master before he can command a class of pictures that will be of value and use in the quarters above enumerated.

Perhaps the least successful person in work of this class is he who believes he possesses a complete knowledge of all that is required; who thinks that all one has to do to get a picture is to point one's camera at the



JACK-IN-THE-PULPIT AS IT GROWS

Figure 2. Often it is difficult to obtain a photograph of a flower growing in the shady woods. In this picture is shown the exact appearance of a plant taken in such a situation.

animal to be taken, then to focus and touch the button. This is the class that goes "snap-shooting" through the jungles and forests, under the impression that a "snap-shot" is the whole thing and the best that any one can do. This idea is very wide of the mark, as will be shown further on. To be sure, now and then—perhaps one in thirty—a scientist or scientific illustrator may be able to use such a result, but rarely oftener. Our "snap-shot" photographer, in a little-known country, may, on some occasion, meet with a gorgeous butterfly resting on a rare and beautiful flower, a good photograph of either of which would constitute a positive contribution to pictorial biology. He levels his camera at it, focuses, presses the button, and takes up his way again, flattering himself that he has a picture that will cause science to sit up and take notice. Well, he may have, or he may not; the chances are, if he has had no instruction in such matters, that the photograph he will get on his return to base



BUMBLE-BEES AND HORSE MINT

Figure 3. A District of Columbia specimen of Horse Mint, and an exceptionally fine one. Photography does not do it full justice, as it is an extremely showy plant.

within the realm of civilization will not be worth the paper it is printed on.

Very frequently an unsuitable camera and accessories are selected by the traveler for such work; but this is a subject which the limitations of space will allow of but scant treatment. If circumstances admit of it, it is best to be provided with *two* cameras, and both must be the best of their kind to be found in the market; in fact, one should be supplied with only the best of everything, in order to secure results at all worth while. Material for

instantaneous work is absolutely essential. One camera may be a very small one, to be used for a class of subjects that will bear enlargement, while the other should be at least six and a half by eight and a half for sub-

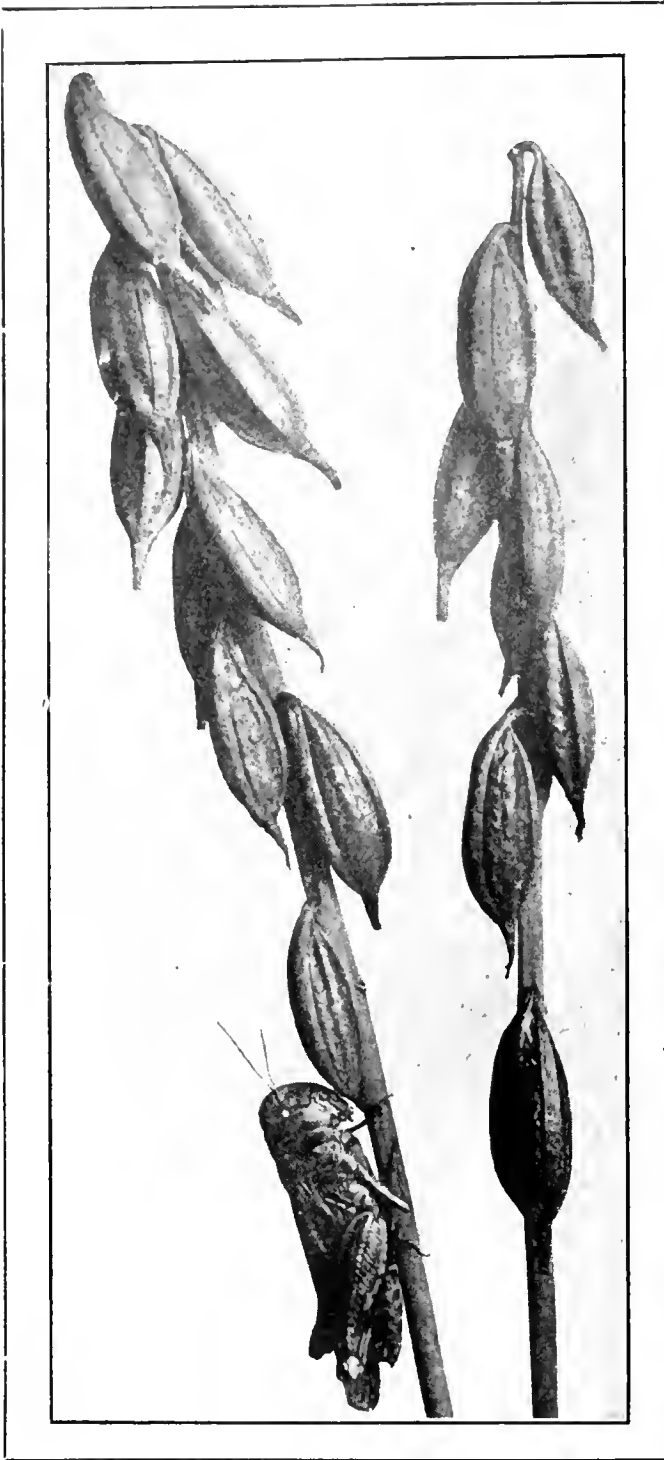


BLOSSOM OF THE POPLAR TREE

Figure 4. This flower has been posed so as to exhibit almost its entire structure. Large tropical orchids and other showy flowers can readily be shown in this way. A small piece of pure white cardboard answers for a background.

jects demanding a sharp negative of a larger size, where enlargement is undesirable or fatal to the requirements. For the traveler, films are far and away ahead of dry plates, as the latter are very likely to be broken; besides, films weigh much less, and take up far less room.

Now let us suppose that our world traveler is passing through the forests, or over the open country of some little-known part of the globe. He may be on foot; he may be transported through the aid of native conveyances; or fortune may have helped him to command a serviceable automobile. Then the questions present themselves to him: What is it that you want me to photograph for you, and how am I to go about it? Do you want people? No; leave that to the ethnologist and to the student of races. Moreover, the field has been pretty thoroughly worked, and science is in possession of an



AN ORCHID THAT LACKS A SPUR

Figure 5. These are the seed pods of the plant known as Adam and Eve (*Aplectrum hycmale*), its tuberous roots growing in pairs. It grows in the woods of the Middle Atlantic States.

enormous number of photographic pictures along such lines. Views? Villages and cities, customs, industries, and all such things? No; none of these. You will have no time for such work; and every bit of material you have with you will be needed to serve the purposes of what has been pointed out in previous paragraphs, which is to obtain photographs, of an up-to-date sort, of all botanical and biological subjects, such as will be welcomed by science; such as can be employed in literature, and

used in school and college text-books for the instruction of our students of all ages and classes.

The botanical subjects will consist of scientifically photographed trees and shrubs *as they grow*, singly, and in forests; flowers and their parts—as leaves, roots, and fruits; in fact, anything that falls within the realm of botany, as that science is now restricted. Brief instructions as to how best to do this will be given further on. In the plant and animal worlds there are a great many minute forms that the traveler could also obtain; but we must pass by such as these on the present occasion. However, should he possess any special knowledge in those fields, good photographs of forms he may meet with



FLOWERS, LEAVES AND ROOT

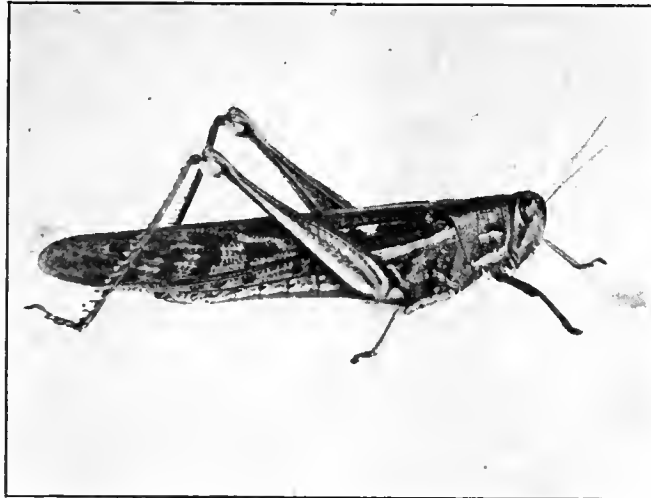
Figure 6. Roots of plants may only be studied satisfactorily by pulling them up and carefully washing them. When possible, it is very desirable to include them in the photograph of the plant to which they belong.

will, of a certainty, be most welcome, especially if accompanied by reliable notes and dates; indeed, *full notes* should be made to accompany every photograph obtained, be the subject what it may. These notes should aim to be of the greatest accuracy and made in black lead pencil,

in a serviceable blank book of a kind best able to withstand the effects of climate and traveling; they cannot be too full, and must be legible to a fault. Exact dates, time of day, and localities, are essential; form and color in life or thereafter must invariably be recorded. This not only refers to flowers and other parts of plants and trees, but to the fleshy parts of mammals, eyes, bills, feet, hair, and similar structures. If weights can be obtained, make records of these likewise, while full measurements (in the metric system) must be taken down in all instances.

In the case of animals of various kinds, brief notes on *habits* are also important and add value to your photographs. All such data can be closed by a few paragraphs of "Remarks," in which may be written out points not covered by any of the above requirements—as the number of negatives secured, rarity or abundance of the subject photographed, if specimens were obtained, and so on.

In matters of *form* and *color*, many marvelous shells are to be found in various countries, especially in the East Indies, and in the tropics of other parts of the world. Unless the traveler is devoting himself to the collecting of these, their weight becomes a very serious thing to be considered, and it does not take long to fill many trunks with them. Hence it will be appreciated that good photographs of rare or undescribed shells become both valuable and interesting material for the explorer to obtain. These can be photographed either indoors or out. Any white material will make a background for them, and they may be taken natural size. If photographed out-of-doors, it is well to use



ONE OF OUR BIGGEST GRASSHOPPERS

Figure 7. Pictures like this one can only be secured by using a white background and selecting a perfectly sound and healthy insect.

an artistic and pleasing result. The two shells here shown in Figure 1 will illustrate these two points; they were photographed natural size; lighted as suggested above, and their essential characters made distinctly evident. Had an expert conchologist never seen either of

these shells, upon seeing this photograph of them, he could instantly tell what the parts *not in view* were like. This is a great secret, and it requires not a little experience to carry out successfully in any particular instance. The record for these two shells might be completed by a photograph of the place where they were collected.

Many of the principles applying to the photography of shells hold true in the case of flowers. With them, however, it is far more important to secure the specimens *in situ* in nature, and this will frequently require all the experience and skill the traveler commands. A fairly good result is shown in Figure 2, it being the photograph of a Jack-in-the-Pulpit, taken in a swamp, on a gray day, with but little light to help out. Considering the conditions under which it was obtained, it is a good picture. Were it a rare orchid, photographed in an



LEAVES OF THE WILD GRAPE-VINE

Figure 8. A fine "six-spot beetle" is resting on the upper leaf of this grape-vine found in the Eastern United States. It is an insect very partial to this vine. It is also called the Spotted Pelidnota (*Pelidnota punctata*).

unknown part of the world, what a prize the traveler would have to bring home, and what interest it would excite among botanists!

In photographing delicate flowers like the Horse-mint (Fig. 3), we apply the same principles set forth in the



THE SPINY LIZARD OF AUSTRALIA

Figure 9. Many curious animals are found in Australia, and this is one of them. It is also known as the Moloch or Mountain Devil. One would hardly suspect this of being a dead specimen, and it is a good example of what may be done with such material by the aid of the camera.

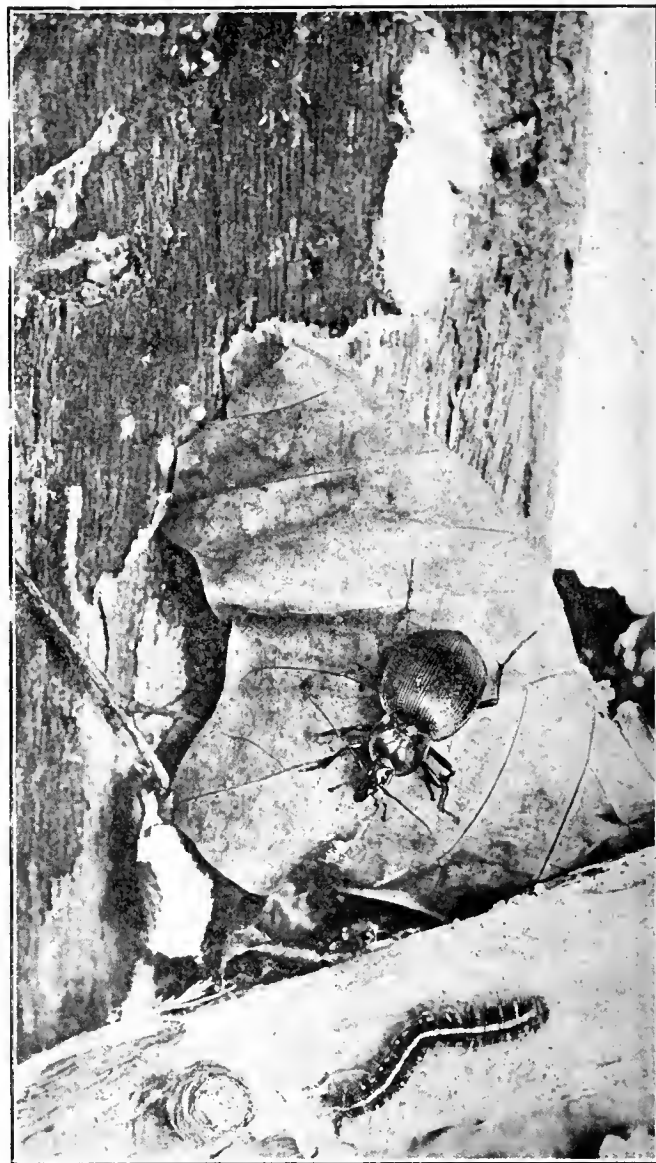
case of the shells, although flowers constitute far more difficult subjects to deal with, as many of them wilt as soon as gathered. To obtain the correct point of view demands long study and experience; and the traveler must be familiar with the use of the color-screen, in as much as he is not likely to have orthochromatic plates with him.

When properly taken, large and showy flowers are beautiful photographs for the traveler to bring back with him; and when they are rare or unknown, he will be surprised at the amount of interest they will excite in many quarters. They may be so photographed as to exhibit nearly all the peculiarities of their structure, as in the case of the one here shown in Figure 4, which is a blossom of our Poplar Tree, so familiar to most of us in the Eastern States.

In the case of some plants, it is highly desirable to show the *roots* when possible, and to pose at least one leaf, in that its form may be shown, as in the case of the Aquatic Joint Weed in Figure 6; this is exceedingly important, and should ever be borne in mind. Often, when pictures are taken from the wrong point of view, they are not only useless and inartistic, but of little value to

students and botanists. AMERICAN FORESTRY has published many an excellent example of how to obtain successful photographs of plants growing in their natural habitat. Such pictures are frequently of great value; and the more the traveler secures, the better—the subjects representing intelligent results. And think for an instant what one hundred such as is here shown in Figure 4 would mean, obtained in the heart of New Guinea!

As a rule, all sorts of insects are far more difficult



A GREAT INSECT PEST

Figure 10. Here we have a good view of one of the greatest insect pests in the United States, the tent caterpillar, full-grown, with three of the white cocoons this species makes. The beetle is one of the "searchers," and preys on caterpillars.

subjects to secure good photographs of than are flowers, while they are equally interesting and valuable. The difficulties are due chiefly to the fact that it is not easy to pose them properly in order to get the best scientific photographs. Then their being generally alive, their movements are often difficult to deal with, and those movements are of so many kinds. Often caterpillars will not remain quiet for an instant; grass-

hoppers eternally move their antennæ to and fro; large moths and some butterflies vibrate their wings for as much as twenty minutes at a time, and beetles "walk out of the picture" without so much as asking your permission. Still, with patience and practice you will often obtain fine results, and command prizes which it surely will be a great satisfaction to have secured.

Occasionally you may "kill two birds with one stone" and get a photograph giving an excellent picture of some desirable insect, resting on a plant, or on part of one, of equal value to science. A good example of this is here shown in Figure 5. Note how a direct lateral view of the grasshopper was obtained, and that it shows not the slightest movement, especially in the delicate antennæ that projects from between the eyes. The negative from which this illustration was made gives this insect the size of life. Should the plant be one



A DIFFICULT SUBJECT

Figure 11. The Blue-tailed Skink is one of our American Lizards, an extremely difficult species to photograph when alive on account of the lightning rapidity of its movements.

upon which the insect feeds, so much the better, for this adds greatly to its value. Figure 8 offers an excellent example of this, where we note our common grapevine beetle—the six-spot *Pelidnota*—on the leaf of a grape-vine, and we are all familiar with this combination. With the proper requirements at hand, and with patience and skill, the same result could have been attained in the heart of a Brazilian forest—and the beetle and plant, upon a leaf of which the insect is resting, might both have been totally new to science.



STELLION LIZARD

Figure 12. These big, sluggish lizards offer easy subjects for the experienced photographer, but their pictures are none the less valuable on that account. This is a fine specimen of the Stellion of Arabia (*Agama stellio*). These lizards are extremely susceptible to the effects of cold.

The uninformed traveler has passed by thousands of such subjects in the tangled jungles of but little-known lands.

By using a small piece of white paper, or, indeed, any light colored material, an insect may be photographed "in the clear," as is here shown in Figure 7, which is an excellent photograph of the female of our well-known



THE SPARROW HAWK

Figure 13. This species of one of the handsomest of the smaller American falcons is readily tamed, and makes a very gentle and interesting pet. The writer had this specimen for quite a long time.

American Locust, taken shortly after its capture, and perfect in the matters of health and structure.

From such results as these, and through the advantage gained by actual experience, the traveler may soon acquire the skill necessary to obtain photographs of insects in their natural habitats. A good example of such work is also shown in Figure 10, which is of a common beetle and a caterpillar.

When we come to fish—or, in fact, to any forms that live under water, including such forms as the lobster and its kind—the portable aquarium is a very desirable accessory. A small treatise might be written on the photography of living fishes in their natural element—in fact, the writer was the first in this country to succeed in such experiments (United States Fish Com-

mission, 1898), and he has contributed to magazines and scientific journals quite a number of articles on this subject. Should the explorer or all-around traveler fail in the use of the small, portable aquarium, photographs of dead fish, when properly taken against light-colored backgrounds, are very acceptable. One must be careful to spread the tail and fins in a normal manner, in that their form and structure may be readily appreciated. Full notes ought invariably to be made on fishes, especially in the matter of habitat, size, colors, sex (if possible), and weight.

With respect to turtles, and to more or less similarly formed creatures, it is quite necessary, whenever possible, to make two photographs of the animal, for the reason that the views from above and below are so utterly different. There are some wonderful turtles in



BIRDS' NESTS ARE EXCELLENT SUBJECTS

Figure 14. Our Redwing Blackbird often builds its nest as here shown, and when this is the case it may be seen in nature a considerable distance away. The eggs are very beautiful, being a pale blue, with curious, irregular and eccentric line-markings in black. Such a picture is as good as having the nest at hand, as every detail of its structure is shown.

tropical and subtropical countries, only a few of which have been photographed in life—particularly in their native haunts.

Lizards constitute another class of which we stand much in need of good photographs—of living specimens preferably, but of rare, dead ones in the event of live ones being unobtainable. A little while ago, Mr. Dudley

Le Souef, Director of the Zoological Gardens of Melbourne, sent the writer a dried specimen of that most remarkable lizard of Australia known as the Moloch or Mountain Devil. It had been dried in a most natural attitude, after having been taken out of the alcohol wherein it had been kept for many years. So natural was its pose, that the making of a photograph was at once suggested, and it is here reproduced in Figure 9 as an admirable example of what can be done with a dried specimen of an interesting lizard from far-off Australia. Of course, living lizards make much better pictures, but some of them are by no means easy subjects to photograph. When sluggish and gentle, as the foreign specimen here shown in Figure 12, the difficulties to be encountered are by no means great; and after one becomes

distinguished traveler who spent three years in unexplored Africa. He had upwards of 300 exposed films of localities, natives, animals, etc., when he returned to Berlin, where the custom officers, although implored to desist, opened them all in a light room "to make sure that there was no smuggling going on!"

In Figure 11 is presented a photograph of a living lizard; it is taken in a very natural pose on a light-



A GROUND SQUIRREL

Figure 15. We have here a photograph of a dead animal of no great size. Had the specimen been a rare one or an undescribed species, such a photograph would be of the greatest use and value to science. It exhibits nearly all the external characters of the animal—as pelage, tail, feet and general form, together with the type of head and its general parts.

a little expert, the making of a negative is but a matter of fifteen or twenty minutes. Some travelers prefer to pack their exposed films in a suitable box, and develop them on their return to civilization; but this, however, is frequently a dangerous practice, and reminds one of a



SOUTH AMERICAN MARMOSET

Figure 16. Dead animals may often be photographed in such attitudes as to simulate the living species. Here is a good example of such a feat. The Marmoset is one of a group of small mammals related to the monkeys.

colored rock, and distinctly shows nearly all of its characters, particularly the form, markings, feet and proportions. As a rule, such pictures can only be secured indoors under favorable conditions, as these lizards are very timid, easily startled, and extremely difficult to recover if they once get away. Other forms, like some of the iguanas, are quite the reverse of all this, and offer no special difficulty to the explorer.

When we come to birds, the chances are that the world traveler will not secure many photographs of them, although an attempt should be made to do so whenever a good opportunity presents itself. Many sea-fowl are readily photographed, as they exhibit but little fear of man in countries rarely visited. And it must be remembered that excellent enlargements are easily made

from negatives of very small size. Good photographs of birds' nests are often of great interest and prized by the ornithologist. Care should be taken that the correct point of view is selected from which to photograph them, not only to give the form of the nest, but what is in it, be it the eggs or the young of the builder. Figure 14 is the nest of the Redwing Blackbird, and demonstrates the above points very well; it was secured in Virginia by the writer. All sorts of nests are constructed by birds, and a collection of good photographs of them are well worth the while. There are communal nests, where many individuals build and occupy it in common; large nests built entirely of mud, as by some of the birds of Australia; while others make no nest at all, but lay their eggs right on the ground or sand.

When birds are captured and become more or less tame, beautiful photographs may be obtained of them indoors, and some of the writer's best results have been secured in this way, as may be appreciated by referring to Figure 13, which offers a picture of our handsome little Sparrow-hawk of Eastern United States. In little-frequented countries it will often be seen that the natives have captured various species of birds found in them, and keep them about their habitations. As a rule, no trouble is experienced in obtaining photographs of these, especially if one has the faculty of easily cultivating the friendship of the natives and getting them interested. When the writer was in Zuni a number of years ago, he noticed that those Indians had captive eagles, and there

was no trouble at all in getting photographs of them, as they were kept in the open and very tame.

Should the explorer be detained for any length of time among little-known natives, in a country of which scarcely anything is known, it is not a difficult matter to have some obliging member of the tribe, for the gift of a very trifling object, go and capture some of the birds for him. The eminent traveler and naturalist, the late Alfred Russel Wallace, often succeeded in obtaining the beautiful birds of paradise in this way, and his account of it in his charming work on the Malay Archipelago gives vivid description of how he accomplished it.

Passing to *mammals*, the rules and aims already pointed out above are found to be equably applicable to them. The chances are, however, that one will see a far greater number of these dead, than is the case with some other forms. Still, if properly photographed, pictures of dead mammals, particularly should they be rare species, are of value to science. The little ground squirrel here shown in Figure 15 shows very well how to pose a small dead mammal in such a way as to exhibit the majority of its external characters and general appearance. Any mammalogist could identify this species from such a picture, if the traveler's notes give the locality where it occurred, the color, size, and so on. In Figure 16 we have a dead Marmoset, a photograph which the writer made of one of these interesting little monkeys that died in captivity. It was taken in that the curious form of its ear might be studied.

FOREST EXPERIMENT STATIONS

THAT there is a growing realization of the need for adequately manned and thoroughly equipped forest experiment stations in the important forest regions of the country is shown conclusively by the fact that the following bills providing for such stations are now pending in Congress:

For a Northeastern Forest Experiment Station, S. 3822 and H. R. 12,188, introduced by Senator Keyes and Mr. Wason, respectively.

For an Appalachian Station, S. 3558 and H. R. 11,336, introduced by Senator Overman and Mr. Weaver.

For a Southern Station, S. 3946 and S. 4611, introduced by Senator Fletcher and Senator Ransdell.

For a Lake States Station, S. 3640 and H. R. 11,717, introduced by Senator Nelson and Mr. Carss.

For a Colorado Station, S. 4676 and H. R. 14,477, introduced by Senator Phipps and Mr. Timberlake.

For an Arizona Experiment Station, S. 4776, introduced by Senator Ashurst.

For a California Station, S. 3741 and H. R. 12,483, introduced by Senator Johnson and Mr. Osborne.

For a Pacific Northwest Station, S. 4703, introduced by Senator McNary.

Of these bills, those for the Colorado, Arizona, and Pacific Northwest Stations and Senator Ransdell's bill for a Southern Experiment Station have been introduced since the opening of the present session of Congress. In addition to these specific bills the Secretary

of Agriculture, in his appropriation estimates for the next fiscal year, has requested an increase of \$105,000 in the appropriation for forest investigations, a large part of which would be available for experiment station work, although the total amount requested would fall far short of financing adequately a station in each of the important forest regions of the country. The Secretary of Agriculture, in his annual report for 1920, has also emphasized very strongly the need for thorough-going investigations as a basis for forest management. His statement on this point is as follows:

"Full productiveness of our forests can not be secured without full information regarding the means of controlling their growth. Unfortunately, at a time when better knowledge is particularly urgent, the machinery for obtaining it has been seriously curtailed as the result of decreased appropriations. One consequence of this has been the virtual abandonment of the forest experiment stations in the West, at which many of the most important investigations were centered. The number of these stations should be increased, not reduced. They are as necessary to forestry as the agricultural experiment stations are to progress in agriculture, and there should be at least one Station in each of the main forest regions of the country. Economic studies dealing with the prospective requirements of the various industries, and, in general, with the demands which the forests of the country should be prepared to meet, also are essential.

WINTER WALKS IN THE WOODS

SLEEPY HOLLOW AT TARRYTOWN, NEW YORK

BY J. OTIS SWIFT

(WITH PHOTOGRAPHS BY THE AUTHOR)

THERE is no spot in the lower Hudson River Valley having greater fascination to the well-read American than Sleep Hollow, just above Tarrytown. It is also full of interest to the naturalist and the lover of out-of-doors things. Almost every tree, shrub and plant to be found in this section grows in the forest of the mystic Hollow. It is frequented by nature-lovers, pedestrians and travelers, who reach it easily from New York by train, automobile, or a-foot. Every inch of its story—haunted farm land, woods and field is historic, and its very atmosphere is suggestive of dreams.

Come with me this winter morning along the old Albany Post road from Hastings-on-Hudson, and we will explore it. As we go down into the Hollow from Tarrytown, the first thing that attracts is the Headless Horseman Bridge where, the morning after Ichabod

Crane's famous ride, as told by Washington Irving, his horse was found without saddle, the bridle under his feet, and the hat of the unfortunate Ichabod beside a shattered pumpkin. The old wooden bridge has been replaced with a beautiful memorial structure, a gift of William Rockefeller, who lives in the neighborhood. To

the west of the bridge, which is crossed by the Post Road, or Broadway, is Philipse Castle, erected as early as 1683, on the banks of the Pocantico Brook by Frederick Philipse, the early Dutch settler, who acquired all the land lying between Spuyten Duyvel and Croton Point,



FOLLOWING THE BROOK THROUGH MORE LAUREL HAUNTED WOODS WE COME TO THE SHORE OF ITS SOURCE—POCANTICO LAKE



SILVERY BEECHES GUARD THE PATH WHERE POOR ICHABOD CRANE WALKED AND DREAMED OF THE LOVELY KATRINA

erected Flypse Manor, and became its first lord. Opposite Flypse-his-Castle and above the point where the limped Pocantico Brook glides under the Headless Horseman bridge stands an old Dutch church with the low mounds and crumbling head stones marking the last resting place of the friends and neighbors of Brom Bones, Baltas Van Tassel, and the beautiful Katrina Van Tassel. The little stone church is in keeping with the monuments with their Dutch legends. Farther up the hillside in Sleepy Hollow Cemetery, among the tombs of latter day residents and millionaires of the section, is the grave of Washington Irving himself.

Down through the hidden ravine on the east line of the cemetery Pocantico Brook tumbles, laughs and gurgles over the dam beside which Ichabod used to walk and dream of Katrina, and where stood the old mill



OVER SUCH A QUAIN OLD FASHIONED WOODEN BRIDGE AS THIS IRVING'S "HEADLESS HORSEMAN" GALLOPED HIS WAY INTO AMERICAN LITERATURE

that Irving speaks of in the Legend of Sleepy Hollow. In the bottom of the ruined raceway lie the grist mill stones, broken, among a tangle of jewelweed, blackberry, ailanthus, raspberry, and tall wild lettuce. From here the brook, with a forest in which are many hemlocks and oaks on one side, and the well kept spaces and walks of the cemetery on the other, tumbles down over many small cataracts, from the open farmlands and forests above. It really is but a short walk up the brookside from park-like Broadway to the deep woods and ancient fields where the noisy brook, now still,



"FLYPSE-HIS CASTLE," ON THE BANKS OF POCANTICO BROOK, ERECTED BY FREDERICK PHILPSE, ONE OF THE RICH OLD DUTCH SETTLERS, AS EARLY AS 1683



THE LITTLE OLD STONE CHURCH IS IN KEEPING WITH THE MONUMENTS AND THEIR DUTCH LEGENDS. WASHINGTON IRVING'S GRAVE IS FURTHER UP THE HILLSIDE

glides under smooth black ice or openly past frozen castles, where fairies may dance on moonlighted nights. Great old red and white oaks, their mighty arms stripped of leaves and stark in the winter sunshine, guard the banks where Irving loved to linger and dream. Many ancient beeches, their bark silvery white, cut with deep initials and lovers' hearts, keep guard over the smooth path among the Christmas ferns and bayberry. Skunk cabbages stick their awl-like shoots up through the black loam just as they have for thousands of years, ready to blossom among the snowbanks of early

spring. We find oyster shells where the bank of the brook has fallen away—remains, no doubt, of the camping sites of the Wequaesqueek Indians, from whom the white men acquired the mystic valley. We hunt over the shell heaps for possible arrowheads and flint hatchets, but find none, for many curious hunters have gone before us in the almost three hundred years since a powerful savage tribe inhabited this hollow. In the deep recesses of the wood-lots the green moss above the roots of giant hemlocks is festooned with the lacework of partridgeberry vines, and on the gray ledges under the

coverlet of brown leaves our fingers, delving in cracks and crannies, uncover the sprouting roots of Dutchmen's breeches, Indian turnips, wind-flowers, and dogtooth violets, all ready to start growing again, the moment warm spring sunshine peeps down through the tree tops and stirs the cradles in which these babies of the wild sleep the winter away. Only the brown leaf coverlet is dead. All else seems pregnant with life. In the black loam are hundreds of tiny bulbs, corms, and seeds, each with its spark of life and energy. We feel like burglars who have disturbed a nursery at midnight. There is very little sign of death



POCANTICO BROOK TUMBLES AND LAUGHS DOWN THROUGH THE HIDDEN RAVINE, BY THE PATH OF THE EARLY DUTCH LOVERS



IN THE WORNOUT FIELDS BLIGHT KILLED CHESTNUTS IN THE "HOLLOW" RAISE WHITE ARMS PATHETICALLY TO THE SKY

All the chestnuts in the Hollow died of the blight a few years ago, but this old monarch has lain here for forty years, and chipmunks dodge into its crevices. In the wornout fields around, growing up now to junipers and cedars, are the skeletons of chestnuts that died of the blight, their naked white arms stretching pathetically skyward, but their trunks, nude of bark, still standing, through their great resistance to decay.

Downy woodpeckers, flitting from mossy tree trunk to decaying stump in the jungles; blackcap and Hudsonian chickadees hunting for food among the aro-

about. Even the pungent odor of the loam suggests reincarnation rather than death. What a whispering and laughing of babies when all these infants start growing in the spring! What joy and merriment in the underbrush as baby after baby kicks off the bedspread of dry leaves with its pink toes!

As we go on, breaking through the dry stalks of moth-mullin, pig-weed, golden-rod and milkweed by the brookside we come to where the brook tinkle-tankles over stones, and across from shore to shore lies the great trunk of a dead chestnut, a foot-bridge for lovers and fishermen.



ACROSS FROM SHORE TO SHORE OF THE BROOKSIDE LIES THE GREAT TRUNK OF A FALLEN CHESTNUT, AN IDEAL BRIDGE FOR FISHERMEN

mantic budded cherry birches; white breasted nuthatches running head-downward along the bark of great tulips and maples; dozens of slate-colored juncos flitting along the path ahead of us, each displaying the two white feathers in the tail as they dance through the sunlight—suggesting glimpses of lace ruffles flashing among the feet of lovers at a harvest ball; and now and then a fluffy tailed gray squirrel leaping from bendind limb to sagging bough, remind us that there is still much life left in the winter woods, in spite of pot-hunters.

Where a country lane meanders down the hill from quaint Dutch farm houses between lichened stone walls, an old fashioned wooden bridge, such as the first Headless Horseman bridge was, crosses the brook. The hands that laid up the stone walls and the bridgeheads have been dust, perhaps, for two hundred and more years, but the thoroughness of their work still testifies to backaches suffered in the clearing and subduing of the land. Under the bridge, on a beam, we find the house of one of the later dwellers, a last summer Phoebe, who reared her brood here while barefoot boys and red-cheeked girls trudged past overhead to school.

By one of the roads that cross the Hollow from Ossining to Tarrytown we find the ruined cellar of a Colonial farm house that must have stood here the night that Major Andre came down through the Hollow to the enormous tulip tree, hard by, to his capture and undoing by three American patriots. In the story of Ichabod Crane's ride you will remember the tulip tree stood in the center of the road, "towering like a monarch above all the other trees of the region, a landmark seen for miles around, its gnarled, fantastic limbs curling down to the ground and rising again in the air." Perhaps tulip trees did those things then. Perhaps it was because the tree was known to the Yankee school teacher as the Major Andre tree that his frightened imagination made the great limbs, large enough for the trunks of other trees, contort in memory of the capture and sad fate of the British officer. There is such another tulip standing by the stone wall in front of the old cellar we are looking at. We pause to wonder who built this ancient manse, the stones in the cellar wall of which are

laid up with such fine precision. Is the family that once dwelt in peace and happiness here now extinct, or is it listed among the distinguished in the blue book of the metropolis? The chimney has fallen about the great fireplace in the living room. Perhaps Washington shared the family circle in front of the glowing andirons in this room, years ago. The fire that destroyed the house made a clean sweep of barns and outbuildings—even the well-sweep and the old oaken bucket. We lean down into the narrow, deep well, falling away into darkness. It is so deep the water never freezes in winter, and ten feet below us the mossy stones are chinked with masses of ferns still green and alive because of the warmth of the water and earth below. With an old rake tied to a stick we bring up one of the fronds and find it to be the narrow, sword-like blade of the ebony fern—now extinct in the neighborhood, but growing here year after

year and generation after generation in this old storehouse of Nature's refreshing drink. One wonders whether 'twas the fascinating Katrina Van Tassel who, wandering here with her two lovers so long ago, on a return from the upper reaches of the witching Hollow, dropped into the well from her



GREAT OLD OAKS, THEIR MIGHTY ARMS STRIPPED OF LEAVES, HELP THE YOUNG GROWTH OF JUNIPER AND CEDAR GUARD THE ANCIENT FIELDS, WHERE IRVING'S IMAGINATION PICTURED THE FAIRIES DANCING ON MOONLIGHT NIGHTS

basket of wild plants gathered for the garden of Castle Philipse, one tiny and delicate frond of the fern as Brom Bones or Ichabod poised the oaken bucket on the rim of the well for her red lips to drink from. Or else why, through the years and generations, while lovers succeeded lovers in the romances of the mystic Hollow, did the delicate and persistent fern continue to grow and spread among the damp rocks in the old well while it became extinct elsewhere?

We follow the brook through more laurel and pipsis-siwa-haunted woods to the shore of Pocantico Lake where the brook rises, and from which the towns below now get their drinking water. Over the center of the lake fish-hawks, that have come up in a few moments from the wide stretches of the Tappan Zee, opposite Tarrytown, are wheeling and circling. How like airplanes they are! We wish, now that so much chill oxygen is in our systems from the long walk, that we were either fish-hawks or had an airplane, that we might be back home quickly.

THE LURE AND FASCINATION OF OLD BOXWOOD

BY A. A. LEWIS

THERE is no other plant which has such a lure, fascination, and romantic atmosphere about it as old boxwood. This plant has often been called the aristocrat of shrubs, for age lends it an air of dignity that no similar plant enjoys. At the mere mention of its name, the imagination paints pictures of stately old Colonial mansions, beautiful gardens, lovely women, and courtly gentlemen.

From the time the Druids of old England made long pilgrimages to the temple on the Hill of Box in the South of England and carried back with them a little sprig of the shrub which grew so luxuriantly there, to be planted at their own home shrine, down through centuries of garden progress in England, through many romantic and historic periods to our own times, there has never been a shrub so popular for its romantic association. The peculiar odor of sun drenched box seems to carry one back to other years and to people the scenes

before us with the characters of by-gone romances.

Boxwood had been known for many years in England as an edging plant, for hedges, and to be carved into grotesque forms of topiary work. In fact, it formed one of the most important factors in the English gardens and so in view of this, it is little wonder that this is among the cherished possessions of the early colonists. The little sprigs were planted and carefully nursed, perhaps they were watered by the teardrops of the gentle housewife who longed for her pleasant home in England. Some of these little sprigs grew and prospered. This is especially true of those planted by the settlers in New Amsterdam and Virginia for here the winter conditions were not as severe as those of the Massachusetts Colony.

Along the Potomac and Delaware Rivers where there are so many of the old homes, in the remains of former gardens, now long forgotten, are found great masses of



THE BEAUTIFUL GARDEN ON THE PRATT ESTATE AT GLEN COVE, LONG ISLAND. THE QUIET BEAUTY AND RESTFULNESS OF THE SPOT IS ATTAINED THROUGH THE SHADOWS CAST BY THE LARGE TREES, THE POOL, AND THE HALO OF ROMANCE AND WITCHERY WHICH SURROUNDS THE OLD BOX USED BY THE LANDSCAPE ARTIST TO MAKE THE PICTURE PERFECT. IT WOULD HAVE TAKEN YEARS AND YEARS TO SECURE THIS EFFECT OF AGE IF YOUNG PLANTING STOCK HAD BEEN USED



THE BEAUTIFUL NEW FORMAL GARDEN OF THE LUCKENBACH PLACE AT PORT WASHINGTON, LONG ISLAND. HERE IS FOUND A SECTION OF THE PRICELESS BONAPARTE HEDGE. IT WILL BE REMEMBERED THAT THIS IS THE HEDGE PLANTED BY JEROME BONAPARTE AT HIS STately COLONIAL MANSION "BOXWOOD," NEAR BALTIMORE, IN 1790, WHERE ONE OF THE MOST FAMOUS ROMANCES IN EARLY AMERICAN HISTORY WAS STAGED

box and sections of gnarled and knotted hedges; the story of the early glory of the ancient garden, now but a shadow of its former beauty. A few old fashioned flowers, an unkept garden walk, and a broken seat—beneath the cedar, are left to tell the tale.

In Salem, Massachusetts, which is the farthest point north where boxwood will grow, is a garden in which some noble specimens of boxwood still survive. These plants were originally part of the precious cargo of the "Mayflower," and were planted and cherished by these early settlers who laid their gardens out on the established plan of England with hedges and parterre beds. Of these little twigs, brought over by the sturdy colonists in New England, most of them were winter killed. The

heavy gales and winter snowdrifts played havoc with them, although now and then one comes across a fine specimen which has survived the rigors of time.

The life of boxwood is from one hundred to three hundred years, and during the centuries which it takes for a plant to mature, some mishap often befalls it which spoils it as a perfect specimen. Because of this, much of the old box cannot be used and a large quantity must be looked over before the proper selection can be made. Nevertheless, the boxwood supply has been, to date, sufficient to provide most of the large estates in the North.

Mr. Fred Lewis, of Lewis & Valentine Company, Roslyn, Long Island, Landscape Contractors, who spe-



A VERY INTERESTING ARRANGEMENT AND USE OF BOXWOOD IN THE GARDEN OF DR. PRESTON P. SATTERWHITE, AT GREAT NECK, LONG ISLAND. HERE ALSO WAS USED SOME OF THE HISTORIC OLD BONAPARTE HEDGE, AND OTHER BOX BROUGHT FROM THE HOME OF BARBARA FRITCHE, THE INTREPID UNION PATRIOT, AT FREDERICK, MARYLAND, WHOSE BRAVE DEFIANCE OF THE CONFEDERATE FORCES HAS LONG BEEN TOLD IN SONG AND STORY



BOXWOOD—THE HOME OF CAPTAIN FRANCIS R. MAYER, OF HEWLETT, LONG ISLAND. HERE AGAIN ARE FOUND CLUSTERS OF THE FAMOUS OLD BONAPARTE HEDGE, LENDING A DELIGHTFULLY OLD-TIMEY LOOK TO THE BEAUTIFUL GROUNDS

cialize in supplying many of the box gardens of the North, stated that owing to the demand for this, the favorite of all hardy shrubs, fully seventy per cent of the old plants of the South have been brought up and transplanted in the North, and that practically all of that which grew on Long Island and in New Jersey, has been collected and transplanted to other gardens where it lends its beauty and old-fashioned charm. This company of landscape contractors has at its nursery some wonderful specimens and one of the largest collection of box in the country. Recently one of the beautiful old historic gardens of the South has given up a boxwood hedge which has been sent north to enhance, with its beauty, some of the large Long Island estates. A recent writer has given us the story of the romance which clings about this famous hedge. It is the tragic story of Betty Patterson, of Baltimore, and Jerome Bonaparte, the handsome and dashing brother of the great Napoleon. Together they planned and planted their garden with its boxwood hedges about the charming spot where they spent their honeymoon. Now the old residence is a thing of by-gone days for it has been made a part of Johns Hopkins College, but the old boxwood hedge still retains its identity although ruthlessly torn from its place, and is known as the Bonaparte hedge. The tragic story of this old love affair has

faded from most minds, but when the evening shadows creep across the Sound, the ghosts of the old days, it is said, steal out into the lengthening shadows from the depths of the old hedges and relive the days when the happy bride and her dark eyed husband planted and cared for their sturdy box hedges, little thinking that they were planting a memorial to their love.

The largest share of the old Bonaparte hedge was taken to the country estate of Edgar F. Luckenbach, Elm Court, on the North Shore of Long Island; while the other parts of it embellish and lend charm to the gardens of Mrs. Henry Phipps, W. R. Coe, E. T. Stotesbury, in Philadelphia; Mrs. Robert Lowe

Bacon, Dr. E. R. Campbell, and at "Boxwood," the Long Island home of Captain Francis R. Mayer, at Hewlett.

Not all boxwood boasts such a romantic history, but most of it is steeped in the charm and folklore of other days, and for this reason boxwood demands enormous prices. Three thousand dollars has been paid by one land owner for a few box bushes of historic value.

Another charming story of boxwood is told of an old colored man near Harper's Ferry. "Near this historic spot in the Civil War, we found a beautiful lot of box



A GARDEN ON THE ESTATE OF E. T. STOTESBURY, AT CHESTNUT HILL, PENNSYLVANIA. SHOWING WHAT MAY BE ACCOMPLISHED BY THE USE OF MATURE TREES AND SHRUBBERY IN READILY SECURING AN APPARENTLY LONG-ESTABLISHED PLANTING

in front of an old log cabin. The father of the old negro who lived in it had been a slave on a large plantation in the neighborhood and after emancipation had bought a small piece of land, built his cabin and started life over again. It was very primitive but the one touch of nature was the boxwood which he had been accustomed to see from a boy and which the old man had not forgotten to plant in memory of that up at the big house.

"The plants were particularly fine specimens and had evidently been unusually well cared for by people in their circumstances so I questioned the old man about it. He told



THE FASCINATION OF OLD BOX IS A VERY TANGIBLE ONE. LIKE THE LURE OF THE ANTIQUE TO THE COLLECTOR, AND VAST SUMS ARE PAID FOR IT. THIS IS A FINE OLD BOXWOOD PLANT READY TO BE SHIPPED FROM THE LEWIS AND VALENTINE NURSERIES AT ROSLYN, TO BE PLANTED ON THE RUPPERT ESTATE AT GARRISON, NEW YORK

me he valued that plant more than anything else, for old associations' sake and he meant never to part with it. When I suggested buying it he was insulted, but, after persuasion and when I agreed to pay for it more than the whole house and grounds were worth, he softened and finally agreed.

"But the day we hauled it away the old man and his wife and children, his fourteen grandchildren and the whole neighborhood beside lined up along the road watching us take their old boxwood plant away. It was more like a funeral than anything else and I was mighty glad when we could see them no more."

TREE SURGERY DESERVES MORE ATTENTION

AT present tree-repair work has not received the recognition and approval from tree owners that it deserves. This may be due at times to unfavorable experiences with dishonest or ignorant tree surgeons, at other times to the reluctance of the owners to spend much money in preserving their trees, or from their ignorance of the benefits that may result when tree-repair work is properly done.

Reliable tree surgeons are doing much in a practical way to educate the public as to the benefits of tree-repair work. A few States have laws regulating tree-repair work on a commercial basis.

The United States Department of Agriculture invites correspondence concerning methods of tree-repair work and is prepared to advise for or against any particular method so far as experience and the results of experiments permit. Farmers' Bulletin 1178, on tree surgery, will be sent free on application.

Tree owners are urged to remember that the necessity

for tree repair work 10 or 20 years hence may be reduced materially by promptly attending to the fresh injuries of today.

Most persons can at least with a very little preliminary practice on the simpler types of work, undertake ordinary tree surgery provided they are familiar with the use of a gouge and mallet, a saw and a paint brush. A steady head and ability to climb will be necessary for work in the top of the tree.

A badly diseased or injured tree should be removed and replaced by a healthy one unless there is some very special reason for trying to preserve the tree.

Two axioms of tree-repair work that should be borne in mind constantly are: that prompt treatment of freshly made wounds is the surest and most economical method of preventing disease and decay in the future, and that all wounds made in tree surgery should be cleaned, sterilized and protected from infection just as thoroughly as in animal surgery, and for the same reasons.

PAGAN

BY McLANDBURGH WILSON

I would be young as the trees are young,
Open to glimpses of stars blue hung.

I would have prime as the trees have prime,
Wrapped in myself from the winds of time.

I would grow old as the trees grow old,
All in a glory of red and gold.

Then I would fall as the trees will fall,
Showing how straight I have lived and tall.

LEHIGH UNIVERSITY TREE PLANTING

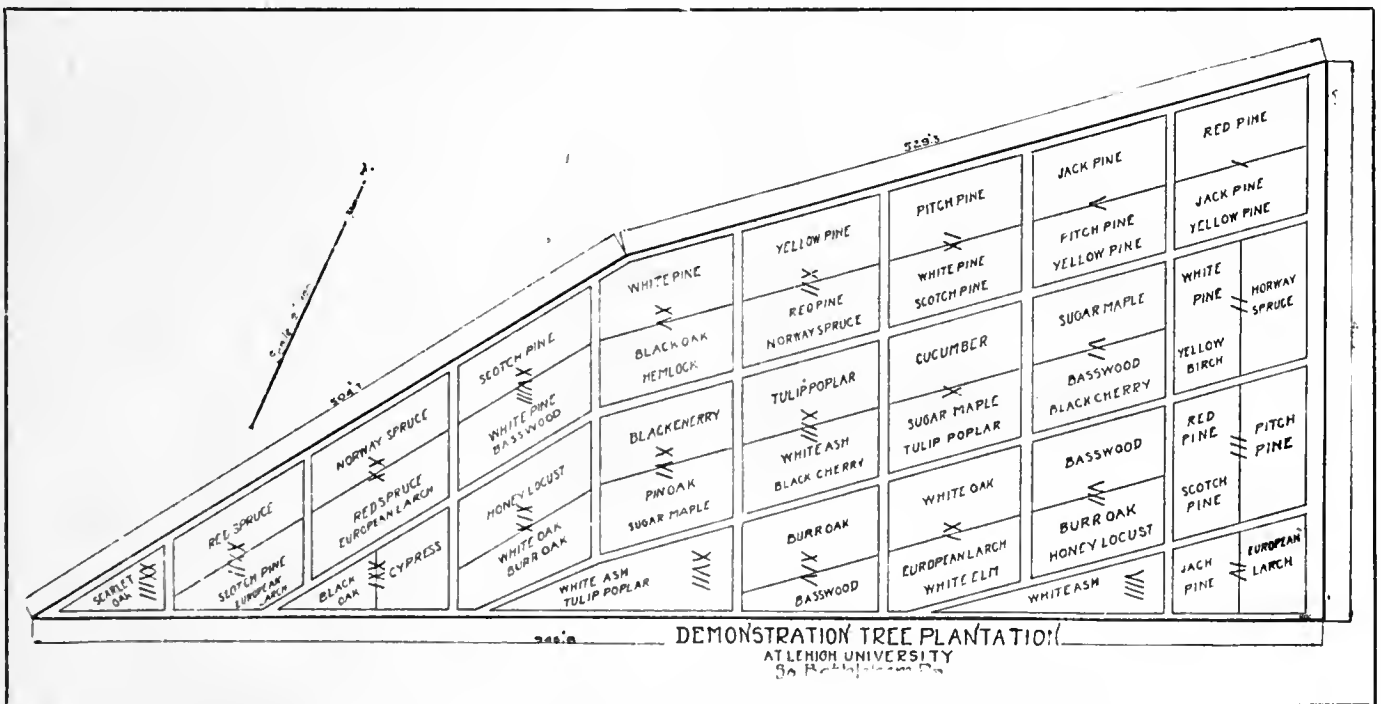
IN the spring of 1915 Lehigh University started an experiment in tree planting for the purpose of showing the development of different species of trees best suited for forestry in Eastern Pennsylvania. A tract of land, five and a half acres in extent, on a hill back of the University campus was used for the planting, the details of which were described by Dr. N. M. Emery, vice-president of the University to members of the Pennsylvania Forestry Association at Foxburg, Pennsylvania, in June, 1915.

In order to have the most expert advice obtainable in developing this project President Henry S. Drinker, of the University, conferred with two men who had for years given unstintingly of their time and energy to the consideration of problems affecting forestry conditions in Pennsylvania and throughout our country, men

tree plantation is located on a gently sloping mountain side of approximately 900 feet elevation; at places the soil is good, at other places it is thin or rocky. The land is entirely unsuitable for agricultural or even grazing purposes, and is typical of thousands of acres of Pennsylvania mountain land waiting to be reclaimed by scientific reforestation.

All of these features, together with the prevailing winds and the relative position of the highway, were taken into account by Dr. Rothrock and Mr. Elliott in making their plan.

The following trees were planted: 500 jack pine, 400 scotch pine, 500 white pine, 500 pitch pine, 400 red (or Norway) pine, 400 western yellow (or bull) pine, 400 European larch, 500 Norway spruce, 100 red spruce, 100 hemlock, 100 yellow birch, 400 bur-oak, 300 black



of international reputation of whom all foresters are fittingly proud—Dr. J. T. Rothrock, of West Chester, first Commissioner of Forestry of Pennsylvania, and the late Hon. S. B. Elliott, of Reynoldsville, of the Forestry Reservation Commission, the Nestor of the foresters of the State. These two men cheerfully and enthusiastically undertook the task of determining how this tract could best be laid out for the desired purpose.

First of all a careful survey was made, the tract was cleared of the scrub growth, and a mesh wire fence erected around the entire property except the side immediately adjoining the University's Arboretum, the posts being obtained from the scattered trees which had to be removed in order to put the plan into operation. Incidentally it is interesting that enough was realized from the sale of cordwood to meet the expense of clearing the ground, and of planting the new trees.

The land which was set aside for this experimental

oak, 100 pin oak, 300 white oak, 400 sugar maple, 600 tulip poplar, 600 basswood, 700 white ash, 300 wild black cherry, 100 elm, and 300 honey locust, a total of 8,000.

In order to make the experiment scientifically valuable, seedlings of the same age were secured, most of them being furnished by the State nurseries. This experimental tree plantation was the beginning of a practical scientific experiment, so far unique in this country, which is bound in ten, twenty and fifty years to be productive of information of great value to the forestry interests of Pennsylvania and of the country at large.

Mr. S. B. Elliott said of the work: "The main cause which led me to recommend the establishment of a Demonstration Plantation of trees that are of economic importance for the production of needful forest products was, that thus far, in this country, we have been without practical knowledge of forest growth, and the adaptation of species to locations and environments; and hence,

all has been largely, if not wholly guess-work. Another reason was that if a plantation of that kind were established where it could be seen by the public at large, and where the several species of our timber trees could be seen in proximity to each other, deductions could be drawn without having to investigate forests remote from each other, and where climatic and local conditions might vary, and it would have a great educational power. Besides all this there was present in my mind the great advantage to foresters of the future who could see what those of the present day were unable to ascertain—the adaptability of certain species to certain soils, location, and environment—and thus have set before them an object lesson of great value.

“As there exists a difference of opinion among educated foresters as to whether pure or mingled stands are best, Dr. Rothrock and I arranged the planting so that one-half of each compartment should be of one species only, and the other half of the same compartment of mingled species of various kinds, so that the forester of the future can see which is best in like situations. It is but proper to state that we fully agreed on all details, and if there should prove to be a failure we two, alone, are responsible.

“For this good work, this painstaking, generous, patriotic, financially unremunerative work, we are indebted to the farseeing wisdom of the donor of the necessary funds to carry it on—a donor who stands unknown to the public which is benefited by that wisdom and liberality.”

Dr. J. T. Rothrock, following Mr. Elliott's comment said that, in his opinion, “it was a most important educational move, not simply because of its association with a great educational institution, but because also of its relation to the whole forestry problem of the State and Nation.

“The soil upon which this plantation is made represents fairly the character of the millions of acres upon which Pennsylvania's future forests are to grow, if grown at all. It is non-agricultural land, upon which timber has once grown. Whatever is possible there is possible elsewhere in our State. Furthermore, this same plantation, it is hoped, will help to solve for our region the relative merits of different methods in forestry procedure, for we may safely assume that they will be fully ‘tried out.’

“Our hope is that Lehigh University will enlarge the area devoted to this productive line of work, because there is an assurance that a well-considered plan will be followed to its natural results; an assurance which, unfortunately, cannot be positively counted upon for any State operation.”

This gives the account of the start five years ago, in 1915, of this experimental plantation. Now at the end of 1920, Dr. Rothrock was called on by the University to make a report on the development of the plantation which has had, during the five years, the unremitting and careful oversight and attention of the University Superintendent of Grounds, J. C. Cranmer, a forester of experience and good judgment.

The following is a copy of Dr. Rothrock's report: “For the purpose indicated the land on which the trees

were planted is in many respects ideal, because poor and unpromising as it is, it fairly represents vast areas which the State of Pennsylvania must, in self-protection, cover with such forests as it can produce, or allow it to remain an open, corroding ulcer on the surface of the Commonwealth. There is no choice beyond these alternatives. The State is now, for the first time, seriously contemplating the magnitude and the importance of the problem presented. By use of artificial fertilizer, and by weeding out or cutting back all undesirable, competing growth, a much more vigorous growth of the desired species could have been obtained, but it would have vitiated and rendered the experiment devoid of any great practical purpose. No seedling planted was more than six inches high. When it was put into the ground, it was allowed to take its chance of life in competition with whatever else grew there. That any of it survived and outgrew and overtopped the competitors, was a test of fitness for such land.

“There is one special fact that merits full consideration. The year 1919 was a locust year. In the absence of living chestnut, the weight of the attack fell upon the hardwoods. The oaks suffered most severely. Among the conifers, the European larch was probably the most injured, though the damage done to it was comparatively small.

“There were twenty-two species of trees planted. Looked at from the light of five years' experience, it is evident that a better selection of trees could have been made. There were certain trees, we felt, had a fair chance. There were others about which we were in doubt, but the very purpose of the experiment was to remove the doubt, and to ascertain what was possible under the conditions.

“The following brief paragraphs will give the essential facts concerning each species planted.

1. The jack pine (*Pinus Banksiana*) is vigorous, and has made an average growth of at least six feet.

2. Scotch pine (*Pinus sylvestris*) vigorous. Made growth of six feet. When planted in combination with white pine, it overtopped the latter. Tract partly burned over.

3. White pine (*Pinus Strobus*) badly burned. Shows now on the fire ground a growth of three feet. It may recover.

4. Pitch pine (*Pinus rigida*). In good, satisfactory condition. Average growth five feet.

5. Red or Norway pine (*Pinus resinosa*). Vigorous, but has made only three feet of growth. Usually it is a more rapid grower.

6. Western yellow or bull pine (*Pinus ponderosa*). Has made slow growth; hardly more than one and a half feet. Success doubtful.

7. European larch (*Larix Europaea*). This tree has probably the best showing on the ground, making, in open spaces, a growth of seven feet, though somewhat suppressed in places by chestnut and sumac sprouts.

8. Norway spruce (*Picea Abies*). Growth but twenty inches to two feet. Seems to be healthy, and may possibly do better, but present rate of growth is unsatisfactory.

9. Red spruce (*Picea rubra*). Growth one foot (“growing more slowly in cultivation than any other spruce tree”—Sargent), seems to be healthy.

“The above all are cone-bearing trees. They seem, on the whole, to have been doing better than the “hardwood” and broad-leaved kinds which follow, and which have suf-

ferred severely from invasion of locusts in 1919 and fire in 1918, which facts must be carried in mind when deciding on the degree of success of each particular species.

10. Hemlock (*Tsuga Canadensis*). The seedlings sent were in bad condition when delivered. They were planted and a few came up, but were all destroyed later by fire.

11. Yellow birch (*Betula lutea*) has made an average growth of four or five feet, in spite of the fact that it was badly cut by the locusts. The black or sweet birch grows naturally into tree size on the ground.

12. Bur-oak (*Quercus macrocarpa*). Badly burned and badly scarred by locusts, but has made a growth of three feet. Under normal conditions it promises to be a fair success.

13. Black oak (*Quercus velutina*). Grows naturally on the ground and its condition is about the same as the bur-oak. Badly scarred by locusts.

14. Pin oak (*Quercus palustris*). Seems to have been somewhat less successful than the above named oaks in the contest with fire and locusts.

15. White oak (*Quercus alba*). Has made a poor showing. So far as I could see, it has been blotted out by fire and locusts.

16. Sugar maple (*Acer saccharum*). Made an average growth of two to three feet in spite of the fact that it was badly cut by the locusts.

17. Tulip poplar (*Liriodendron Tulipifera*). Practically suppressed by fire and locusts, though a few straggling specimens remain.

18. Basswood (*Tilia Americana*). Some small specimens surviving. The best mixed in with wild black cherry. Success doubtful, though fire and locusts responsible, in part at least, for failure.

19. White ash (*Fraxinus Americana*). Generally growing. Three or four feet high, in spite of fire. At present, its worst foe is the sweet birch, with which it is competing.

20. Wild black cherry (*Prunus serotina*). Grows naturally to tree size on the ground.

21. Elm (*Ulmus Americana*). No note of it. Apparently wiped out by fire.

22. Honey locust (*Gleditschia triacanthos*). Destroyed by fire. No seedling of short-leaved pine, cucumber, or bald cypress, originally contemplated for the plantation, could be obtained and no scarlet oak was planted.

"Of the twenty-two species planted, there are six species of cone-bearing trees which may be considered as having made good, and four species which remain in doubt.

"Among the broad-leaved, or hardwood, trees, we know definitely that there are four that can be depended upon as suitable for planting on sites similar to the one we are considering; namely, black and rock oak, sweet birch and wild black cherry.

"There remain among the hardwood species listed, eight absolutely in doubt, because in two successive years, visitations (fire and locusts), either one of which frequently kills or seriously hinders the trees in question, came upon them. The chances are that some, at least, of these doubtful forms would have risen above and overtopped the brush with which they were contending.

"In view of the facts, it may be safely said that all of the species planted could have made successful growth if treated with special care, but that would hardly have been a forestry test, because it is not applicable over extensive areas. The object of this experiment is to determine just what species can grow in such soil in competition with other less desirable species, and overtop them."

"The interest of Lehigh University in the pressing

problem of a future supply of timber for the needs of Pennsylvania is earnest and practical, as shown by the fact that in addition to the demonstration area, the University, under the judicious suggestion of the President, Dr. H. S. Drinker, purchased an adjoining tract of six acres for an Arboretum for the growth and exhibition of desirable timber trees. There are now growing in that tract thousands of seedlings of pines, larch, spruce, firs, arborvitae, oaks, tulip-poplar, ash, birches, beech, magnolias, dogwood, elm and others. Also a large number of trees of various ages.

"In the clearing up of the forest tract, known as Sayre Park, the University has planted on its ground upwards of sixty-five thousand forest trees.

"The University Campus and Park, Arboretum, and Demonstration Plot, cover about 175 acres. The clean, healthful condition of the trees is evidence of judicious treatment by their caretaker, Mr. J. C. Cranmer.

"The Demonstration Plot was purchased, then laid out and planted under the direction of the Hon. Simon B. Elliott and myself in 1915; since which time five years have elapsed. The average observer may think the growth shown is insufficient, but it is to be remembered that the largest seedlings planted were six inches high; the majority were less. In addition, the locusts and the fire have done their destructive work. As a forestry proposition of especially important character, it should be continued as a testing ground to discover what species of trees may most surely be depended upon to grow on the vast, abandoned areas of like soils in this State. It is an open question for those in charge to decide, whether it should be continued in the strictest sense as a testing ground, upon which seedlings from three to five years old should be set out and take their chance of growth in competition with other established native trees; or whether the seedlings should be more tenderly cared for and favored in their life struggle. The latter method, no doubt, can be made to render more striking, immediate results. The former method, if rigorously conducted, will win no applause as an illustration of neat, or clean forestry; but in the long run, it may save much labor and much money if the individual foresters over the State know just what species of trees can best be depended upon to force their way up above the underbrush and become marketable timber. No institution in Pennsylvania can more appropriately than Lehigh University conduct and continue this practical work which it has commenced."

It is the intention of the Lehigh University authorities to continue this demonstration plot as a testing ground of timber growth under purely natural conditions, and to plant new seedlings to replace those destroyed by locusts or fire, or by causes other than those properly and ordinarily pertaining to the plant struggle for life among competing natural growths. Those planted to supply the places of those eliminated since the original planting in 1915 are of course being carefully catalogued, and their history chronicled to the end that this Demonstration Plot may serve as a continuing study of survival of our trees under natural conditions.

THE FORESTRY BILL IN CONGRESS

CONGRESSMAN B. H. SNELL, of New York State, has introduced the National Forestry Program Committee bill in Congress, and the first hearing on it took place on January 26 before the Agricultural Committee of the House. Bill H. R. 15327 is supported, as has already been told in AMERICAN FORESTRY, by practically every organization interested commercially or otherwise in the forests, including conservation associations, lumbermen, timberland owners, chambers of commerce, pulp and paper manufacturers, the newspapers, wood-using industries, etc., and is approved and endorsed by the American Forestry Association.

A hearing before the Subcommittee on Appropriations, Representative Anderson, chairman, on January 7, was attended by many supporters of the Snell bill, on account of the presentation of arguments for the \$1,000,000 item for fire protection and the \$10,000,000 item for forest acquisition, under the Weeks Law, which are somewhat similar in policy to those in the Snell bill.

Col. W. B. Greeley, making the introductory statement on behalf of the United States Forest Service said that the problem of fire prevention was the first step toward the reforestation of the nation's idle acres, for a large portion of the forest land would be naturally reforested if it were given protection against fire. The need for fire prevention was shown to be of the utmost importance, not only because of the protection of the growing forests, but because of the manner in which the timber of the country is now being cut four times as fast as new timber is being grown. The forest fire losses annually, Colonel Greeley said, were an inexcusable waste, and every dollar expended in preventing fire was an important element in the production of the nation's future timber supply. This he said was most important in the regions where there was not now much work being done by the States on their own account. Colonel Greeley

pointed out that the bill proposes to allot money only to those States which are protecting their own forest areas, and that no money be expended in excess of the amount of money expended by the States receiving Federal aid.

Alfred Gaskill, State Forester of New Jersey, speaking for twenty-one State Foresters who have formally declared themselves in favor of the program for fire prevention, said that others were known to be in favor of the item who had not been included in the list reached by the State Foresters Association Committee. J. S. Holmes, State Forester of North Carolina, and other State Foresters declared in favor of the measure.

E. T. Allen, representing the Western Forestry and Conservation Association, the National Lumber Manufacturer's Association, and with credentials from the Governor of Oregon, spoke on how co-operation with the Federal Government is effected in the western districts, adding that the private owners in the west spend annually over half a million dollars protecting their own and adjoining land from fire, with much heavier expenditures in bad years. He said that Federal aid would also assist in taking more effective measures to prevent fires throughout all the regions affected, and would increase, not decrease the amount of attention paid to their holdings by private owners. He said that in some States patrol of forest land was required by law, and that the owners believed that fire protection should be by co-operative measures of Federal and State Governments and private owners, and not be handled through separate measures which might overlap.

A strong statement on behalf of the National Forestry Program Committee, which includes the nation's paper industry, lumber manufacturers and wholesalers, newspaper publishers, wood-using industries, forestry associations and technical foresters was made by R. S. Kellogg, chairman of the committee, when he said: "The Na-



Harris & Ewing

REPRESENTATIVE BERTRAND H. SNELL, FATHER OF THE FORESTRY BILL

tional Forestry Program Committee, while organized to secure a comprehensive forest policy for the nation, wishes to declare its position as being for this appropriation bill, as being one of the important items of its own program."

D. L. Goodwillie, of Chicago, who appeared for the National Box Manufacturers' Association, and for the Chicago Association of Commerce, told how they are interested in protection of the nation's lumber resources, as a general economic necessity.

Philip W. Ayres, of the Society for Protection of New Hampshire Forests, spoke on behalf of State Forestry Associations, and P. S. Ridsdale, Secretary of the American Forestry Association, declared that the public in general demanded a national forestry policy, of which fire prevention was an essential item, because of the manner in which the entire nation is dependent upon the

product of the forests, for every type of home and business necessity, not forgetting the houses in which they live. Attention was called to the fact that the timber comes from the sparsely settled States, and is consumed by the centers of population, thus making the problem national, not local.

Other speakers were Harris Reynolds, of the National Fire protection Association; Harvey N. Shepherd, president of the Massachusetts Forestry Association, Don Hapgood, of the Springfield, Massachusetts Chamber of Commerce; C. W. Whittlesey, of the New Haven, Connecticut Chamber of Commerce; Major W. M. Jacoby, of the Pittsburgh Flood Commission; Major W. L. Hall, of Chicago; W. A. Babbitt and John Foley, of the Association of Wood-Using Industries, and Carlisle P. Winslow of the Forest Products Laboratory.

YIELDS OF ALCOHOL FROM WOOD WASTE

SOFTWOOD lumber mill waste can be made to yield twenty gallons or more of 95 per cent alcohol per ton, and hardwood waste about half as much, says the United States Forest Service. Some actual yields obtained by the Forest Products Laboratory, Madison, Wisconsin, from the waste of various woods are given in the following table:

SOFTWOOD WASTE

Kind of wood	Percentage of wood convertible into sugars	Percentage of sugars fermentable	Gallons of 95% alcohol from 1 ton of wood
White Spruce.....	23	71	25.8
Longleaf Pine.....	23	72	25.1
Red Spruce.....	22	72	24.0
Norway Pine.....	25	66	23.4
Idaho White Pine.....	21	74	23.4
Western Hemlock.....	21	77	23.0
Montana White Pine.....	20	75	22.0
Lodgepole Pine.....	21	67	21.8
Sugar Pine.....	20	66	21.5
Douglas Fir.....	21	67	20.7

HARDWOOD WASTE

Silver Maple.....	20	47	14.1
Birch.....	20	46	12.9
White Oak.....	17	50	12.4
Red Gum.....	20	38	11.0
Sycamore.....	18	38	9.7
Hard Maple.....	18	34	9.1
Red Oak.....	19	30	8.1
Cottonwood.....	18	30	7.2
Slippery Elm.....	16	26	6.0

The manufacture of industrial alcohol is at present about the only feasible method of utilizing lumber mill refuse on a large scale. An alcohol plant with a daily supply of 180 tons of wood can produce 3,600 gallons of alcohol at a cost, under present conditions, of approximately 25 cents a gallon. The success of plants now in operation justifies a serious consideration of this process by mills having a large quantity of waste. A descriptive pamphlet including estimates of plant requirements and recent cost data on the manufacture of alcohol from wood is obtainable from the Forest Products Laboratory on request.



A HUGE WHITE PINE TREE

A few years ago the Central Pennsylvania Lumber Company, Sheffield, Pennsylvania, felled this large white pine for lumber. The base of the tree measured 26 feet 10 inches in circumference. There were four large prongs and one small one. When felled, the logs scaled in excess of 15,000 feet board measure. The tree was cut on what is known as Warrant No. 2034, Highland Township, Elk County, Pennsylvania.

IN 1850 New York ranked first among the States in lumber cut. It now contributes only one per cent of the total. That's what comes of emptying the bucket but never filling it up.

FOREST GUIDES DEPARTMENT

SOLAN L. PARKES, EDITOR

The Boy Scouts of the United States are rapidly enrolling as Forest Guides. In a short time it is expected every troop will be a member. The Editor of this department, now Chief Forest Guide for Pennsylvania, will furnish in "American Forestry" Magazine each month information, advice and instruction to the Forest Guides, and hopes that this department will soon be read by every Boy Scout in the United States.

FOREST GUIDES can do no more important work than prevent forest fires, extinguish them and report to the authorities the names of people starting forest fires.

In many of the States the spring and the fall are the periods when most forest fires occur, and this month is the time for Forest Guides to learn the cost of forest fires and how to guard against them.

No better instruction in these respects can be given than that of C. P. Wilber, state firewarden of New Jersey, who says:

Fire not only destroys our homes and buildings, but burns up, in our forests, timber, which would make thousands of homes, wasting it before it has been made into lumber, or into paper and the multitude of other things for which we use wood in our daily lives. It has been said truthfully that every year there is more lumber burned up in forest fires than all of America's sawmills manufacture in a year.

Besides this awful waste, these fires cost many human lives, cause untold suffering and do millions of dollars damage by destroying crops, and homes and even whole towns. They likewise kill multitudes of birds and wild animals and drive away those which escape by ruining their homes and feeding grounds. Also the blackened wrecks of woods drive away and keep away all sorts of people; the woods worker, the home seeker, and the pleasure seeker. They leave the countryside a deserted waste, idle and unproductive, and worst of all, it must stay so for years. The ruins of the biggest fires in our cities are replaced by new buildings in a few months or at longest in a year or two, but it takes from 30 years to 150 years to rebuild a ruined forest.

Too many people believe that the little fires crawling among the leaves or burning quietly in the underbrush are harmless. And yet they in-

jure even the larger trees and kill the young growth and seedlings from which the next forest must come, they also rob the forest of nature's sponge for holding moisture and her fertilizer for feeding the trees, by burning up the humus. No fire is so small that it is insignificant or harmless. A few moments spent by some "good citizen" who finds one will certainly prevent some damage. It will often avert a big conflagration, for any such fire, if left untended, is more than likely to be caught by some sudden gust of wind or to reach more inflammable cover and become a roaring furnace.

Like other fires, nearly all forest fires come from someone's carelessness or ignorance. Here are two examples from actual occurrences which show two of the main causes of fires and how easily they may make trouble.

A fire recently burned up more than 2,000 acres of fine woodland. When the man who was responsible for it was found this was his story: "It was an absolutely quiet morning and I had just a few weeds and briars to get rid of after cleaning up the garden, so I lighted them and watched the fire carefully. When it was almost burned out, there came a sudden whirl of wind and the fire seemed to scatter and start up everywhere at once, so that I could not put it out before it got to the woods and got too big for me." This man had never heard that it is always unsafe to start a fire for any purpose near the woods or fields when things are dry, and especially so in the spring and fall. He didn't know that it is always more dangerous to build a fire in the morning than in the evening. He'd never learn that even on the quietest day, a little fire may start the air to move or that the wind will often suddenly change direction or grow stronger. He had neglected to have water or a shovel or even something to beat out fire handy in case the unexpected did happen. He didn't realize that, for even the smallest fires, grass and leaves should be raked back so that there is a big ring of soil around the fire. He

had never been told that there were cheap and safe "rubbish burners to be had for just such purposes. Because he was so ignorant he had done what hundreds of others do every year with bonfires, campfires or even when "cleaning up," he had made a graveyard full of blackened tombstones where a forest had stood. Remember the mistakes he made when you have anything to do with such fires.

A good sportsman, used to the woods all his life and very careful in every way, said: "I was out after rabbits last fall with a new dog and while waiting a moment for him to jump something, I lit my pipe. Just then he let out a yelp and I went on to see what he had started. He'd found a deer trail and gone off on it and I couldn't call him back, so I turned homeward, and right where I'd lighted my pipe, found a little fire getting under way. It was quiet so that I got it out in a short time, but that taught me a lesson, for I've always thought I was as careful as a man could be." If this man's dog had jumped a rabbit instead of finding the fresh deer track, there would have been all the destruction of forest and game which forest fire does, and no one, least of all the man who started it, could have told how it happened. This man's accidental

fire is similar to thousands set each year by smokers who throw away lighted matches, cigarettes, cigars or pipe tobacco from car windows or automobiles or as they tramp the woods and roads. Don't guess, but always know that match is out before you drop it anywhere. Don't ever be in such a hurry that you fail to tramp discarded "smokes" into the mineral soil before you leave, if there is any heat in them. Remember, dry grass or leaves are even more inflammable than papers in a waste-basket.

Most States now have firewardens or some similar organization for putting out forest fires.

People living near the woods or traveling through them should know who these men are and how to reach them just as in a city they should know where the nearest fire alarm box is and how to use it. Do you know who your local forest firewarden is?

Many States also require every one, setting fire for any purpose near the woods, to secure a permit from a firewarden before doing so. Those who plan to build fires should know whether such permits are needed and get one if they are, to avoid needless unpleasantness because of unlawful fires.

HAVE YOU?

BY ORVILLE LEONARD

Have you ever seen the smoke clouds from a forest fire burning? Have you ever lived for hours in that crackling, bright inferno? Have you had your shoe soles burned off by those dead looking white ashes? Have you seen men shouting wildly, though you could not hear their voices for the roar and hiss of leaping flames and the fierce wind they engendered? Have you ever looked down a line all hedged with living fire and wondered if you'd ever live to feel the cool wind blowing? Have you ever seen a rancher driven from his fired homestead, while years of labor on his fields were wiped out in an hour? Have you ever seen a country where the furred and feathered wild things have been burned up, every one? And have you seen that country when the fire fiend has finished—the blackened stumps of noble trees, the white ashes, burned bare rocks, no living thing—black, deathlike desolation brooding over all?

If you have, you'll see that your match is out and look where you throw your cigarette.

SAFETY RULES FOR FOREST FIRES

To Prevent Them

1. Never drop lighted matches or smoking materials in the woods or fields or along the roads without putting out the match absolutely or stamping the "smoke" into the mineral soil.

2. Never build an open fire for any purpose near the woods or fields when the woods are dry.

3. Never leave any fire until it is entirely out. Drench it with water or cover it completely with mineral soil.

To Control Them

1. Never pass even the smallest fire unnoticed. Put it out yourself or see that a fire warden, the owner or some responsible resident starts for it before you leave.

2. Fire travels with the wind always. Stop its front first and put out the sides and rear later. Sand or soil will smother it, beating will kill it, but water is always best. Flirt water or soil along the line, do not dump it in one place. Beat toward the fire to avoid spreading it.

3. Always work slowly and deliberately in fighting fire so that every motion counts and your energy is not wasted.

HALL OF FAME FOR TREES

The old Fremont Oak in Alameda, California, has been nominated for a place in the Hall of Fame for Trees of the American Forestry Association. Three-quarters of a century after it had taken its share in the making of California history by providing shelter for Captain John C. Fremont, the old Fremont Oak, Alameda's historical landmark, received under its sheltering boughs another band

cause of its many large and beautiful oak trees, Encina being the Spanish name for the California black oak.

Al C. Benton, superintendent of parks in Alameda, estimates that the age of the tree is five hundred years, says the Oakland "Tribune." Its trunk is more than ten feet in circumference, and gnarled and twisted with age and almost hollowed out.



Photograph by Oakland Tribune.

BOY SCOUTS IN CAMP BENEATH FAMOUS FREMONT OAK, NEAR ALAMEDA, CALIFORNIA

of uniformed guests. This time, instead of being buckskin clad frontiersmen armed with the long barreled squirrel rifle of 75 years ago, it was a trimly-dressed band of Alameda Boy Scouts who were the old oak's guests. The boys were under the leadership of E. Harry Levy.

The old Fremont Oak is located on the Cohn estate, in the east end of Alameda, and in what was formerly the town of Encinal, so named be-

The first white possessor of the oak was the famous Peralta family. The Cohn family came into possession in the early '50's.

When Captain Fremont camped under its spreading boughs with his force of 62 men, including five Delaware Indians and the redoubtable Kit Carson, the United States and Mexico were on the verge of a war in which California was to pass out of the hands of the latter forever.

THE WASHINGTON HORSE-CHESTNUT AND A LOWELL LETTER

THE Washington Horse-Chestnut, near Bath Pennsylvania, pictured on the cover of this magazine, is nominated for a place in the Hall of Fame for trees by Asa K. McIlhaney, of Bath, Pennsylvania, because the tree came from Mt. Vernon. General Washington presented it to General Brown, of Revolutionary fame, and General Brown planted it in front of his old home where the picture shows it today. The base circumference of the tree, Mr. McIlhaney informs the American Forestry Association, is 27 feet and seven inches, while six feet from the ground the girth is 17 feet.

The horse-chestnut at Bath is the property of the Bath Portland Cement Company, and Mr. F. B. Franks, the vice-president, has presented this picture to the American Forestry Association.

Mr. McIlhaney has a letter from James Russell Lowell, the poet, who was also born on February 22, the birth date of George Washington. The letter was written in regard

to the value of tree planting. It was written thirty years ago in April by the poet and former Ambassador to Great Britain, just four months before he died. The letter follows:

Elmwood, Cambridge, April 5, 1891.

DEAR SIR:

I sympathize warmly with the gracious object for the furtherance of which Arbor Day was instituted. I have planted many trees, and every summer they repay me with an abundant gratitude. There is not a leaf on them but whispers benediction. I often think of the Scottish farmer's words quoted by Scott: "Be aye stickin' in a tree, Jock, 'twill be growin' while ye're sleepin'." In my childhood I put a nut into the earth, from which sprang a horse-chestnut tree, whose trunk has now a girth of eight feet, and sustains a vast dome of verdure, the haunt of birds and bees and of thoughts as cheery as they. In planting a tree we lay the foundation of a structure of which the seasons (without care of ours) shall be the builders and which shall be a joy to others when we are gone.

I need not say how great a pleasure it is to me that my young friends should decorate my memory with a tree of their planting. I wish I could be with them to throw the first shovelful of earth upon its roots.

Faithfully yours,

To Asa K. McIlhaney, (Signed) J. R. LOWELL,
Principal of Schools, Bath, Pennsylvania.



Underwood and Underwood.

CHILDREN OF THE DISTRICT OF COLUMBIA STUDY TREE LIFE AT FIRST HAND

Directed by Susan S. Alburts, the nature study department of the schools of the District of Columbia has been studying the values of various trees, preparatory to taking a vote in the American Forestry Association's national referendum as to what should be the national tree of the country. Here the pupils are studying the elms on New Hampshire Avenue, near the Force School. The schools are taking up this educational campaign in many parts of the country, and the Association asks its members to push the work in their own towns. The newspapers are now printing series of lessons on trees and ballots for voting.

PROBLEMS IN FOREST EDUCATION

THE Second National Conference on Education in Forestry, held at New Haven, was well attended both by educators and employers of foresters, and furnished much food for thought. Two entire days were devoted to the presentation and discussion of committee reports on the more important problems in forest education now before the country. Several points stand out rather prominently as a result of these discussions.

It was the practically unanimous opinion of those present at the conference that five years of college work are essential for the preparation of a thoroughly trained professional forester, irrespective of the particular field of forestry in which he may later specialize. It was recognized, however, that not all prospective foresters can be induced to spend five years in preparing themselves for their work, and that it is therefore necessary to formulate courses which will crowd as many as possible of the more fundamental and essential subjects into four years. On the other hand, many foresters from the West Coast, who were prevented by distance from being present at the conference, expressed themselves by letter as believing that four years is ample time for the preparation of fully trained technical men. This divergence of opinion is perhaps due to differences in local conditions and opportunities for employment in the East and in the West. From a general educational standpoint it seems certain that five years is none too much to give a man a thorough grounding in such cultural subjects as literature, history, economics, and philosophy, in addition to his more strictly professional work, and that in general the best equipped man is one whose professional training follows a four-year course in the liberal arts. With the increasing complexity of civilization there is a constant tendency to turn for leaders to men whose training embraces more than the narrow field of their own specialty, and there is no reason why this tendency should not apply to forestry as well as to other professions.

Another point of interest brought out by the conference was the constantly broadening scope of the field of forestry. Until rather recently there has been a tendency on the part of the forest schools to turn out men trained primarily in the art of forest production, in silviculture

and forest management. The development of men to harvest the forest crop, and to serve as logging engineers, is now receiving increasing attention, particularly on the West Coast. The next step will undoubtedly be to prepare men who are specialists in forest products for the utilization of the forest crop. Other fields which are gradually being developed include forest entomology, forest pathology, city forestry, forest recreation, forest zoology, etc. Looking at forestry in the broad sense as co-ordinate with agriculture, there is no question but that all of these various branches are a legitimate part of the field and that men to handle them should be prepared by the forest schools. In our judgment there is no question but that the next ten years will witness a marked development away from the training of all foresters according to a single pattern, and toward the training of specialists in the various branches of the work.

The desirability of having forestry more generally taught as a cultural and educational subject in the high schools and colleges of the country was strongly emphasized. There appears to be a growing recognition of the fact that some knowledge of our forest resources and their place in the life of the Nation should be included in the education of the great majority of our citizens. It is to be hoped that some practical means may be found for a marked development along this line. Other subjects emphasized included vocational training in forestry for such positions as guards and rangers, the development of extension work with timberland owners and wood-users, and the prosecution of forest research as a regular part of the work of the forest schools of the country. Throughout the discussions the public service aspect of forestry was constantly mentioned and the need for imparting the public service point of view to the forester while at college accentuated.

Altogether it is safe to say that those who attended the conference went away with a broader vision which will not only aid them materially in their own work, but will react favorably on the education and general character of future generations of foresters. It is to be hoped that conferences of this sort will become a permanent feature of forest education in this country.

FOREST CONSERVATION IN TEXAS

THE long fight the Texas Forestry Association has waged for a more adequate forest policy for this State is beginning to show positive results. Governor Hobby has named 50 prominent men and women as a committee to draft bills, to be presented to the legislature, for dealing with the forest problem, an action that insures the careful attention of the next legislature to this important matter.

The appointment of this committee signalizes the beginning of a new era of forest preservation and renewal in the State. The legislature doubtless will not be able to accomplish everything that is desired or necessary at this

time, but a long forward step is certain to be taken, which will relieve Texas of the menace of an early timber shortage.

Lack of a constructive forest policy is threatening the destruction of the magnificent long-leaf, short-leaf and loblolly pine forests of East Texas. At the present rate of annual lumber cut, amounting to about 1,500,000,000 feet, by far the larger part of the virgin timber will have disappeared in ten to fifteen years unless an efficient and liberal reforestation policy is adopted. Originally there were 30,000 square miles of short-leaf pine in Texas, 7,000 square miles of loblolly and 5,000 square miles of

long-leaf pine forest. Out of this total of about 10,000,000 acres of virgin forest only 2,500,000 acres remain. Some of the large lumber mills have a sufficient supply of timber in sight to continue operations for fifteen years, but fully 80 per cent of all the mills will be without commercial timber in eight years or thereabouts.

Careful estimates prepared by the Texas State Department of Forestry show that out of 6,000,000 acres of cut-over pine lands in East Texas, known as non-agricultural lands because of the very deep sand which covers this area and makes it unsuited to farming, only 850,000, or 14 per cent, are supporting a second growth of timber from which the mills may hope to obtain a supply. Without sufficient funds to safeguard the standing trees against forest fires or to promote their planting and care, the East Texas forests face ultimate and speedy destruction unless steps are taken to correct existing evils.

A practical forest program, as outlined by S. O. Siecke, State Forester, provides for a practical policy of reforestation comprising more than 5,000,000 acres and yielding approximately 300 board feet per acre per annum, thus taking care of the demands made upon the timber stand by the 400 sawmills in East Texas. It will be plain to every thinking reader that there is no time to be lost to put into effect a consistent forestry policy in Texas, and safeguard one of the most important industries of the country.

Consistent progress in the work of reforestation has not been possible by the State Forestry Department because of lack of adequate funds. The sum of \$12,000 a year appropriated by the State is insufficient to meet the demands of controlling an area of 7,500,000 acres, with nine patrolmen employed by the State and two by the United States Forest Service. The Federal Government contributed the sum of \$4,250 this year toward forest protection in Texas.

It is not with an abstract matter that the legislature will be called upon to deal, but with a problem on which there are statistics and an abundance of authentic information which the committee will be able to present in support of their recommendations, and as a guide for their action.

VOCATIONAL TRAINING IN THE LUMBER INDUSTRY

PURSUANT to the plan of Melvin S. Lewis, State Director of Vocational Education, to introduce vocational training under the Smith-Hughes Act into the lumber industry in co-operation with the School of Forestry of the University of Idaho, Mr. C. E. Knouf, of the United States Forest Service, was engaged to study the situation in the mills and camps of Idaho and make definite plans for the organization of classes this winter. Following this preliminary investigation by Mr. Knouf, a class in lumber grading was organized at the plant of the Rutledge Timber Company, at Coeur d'Alene, and Mr. L. R. McCoy, sales manager of the company, engaged as instructor. At the first meeting 43 men reported for the course, including several men from the local office of the United States Forest Service. This was more than three times the most optimistic previous esti-

mate of the number of men who would desire to take the course, but after the outline of the work presented at the first exercise, it was still further increased when 60 men reported at the second meeting. This augurs well for the success of the vocational training plan in the lumber industry.

The course is outlined to include a history of lumber grading, characteristics of different woods and their identification from gross features, classes of defects, their cause and relative importance, grading rules and actual grading of the different species of the region starting with white fir of which only two grades are recognized and ending with white pine, the grading of which is most complex; then shop grades and finally the characteristics of the trees and methods of sawing to get the maximum proportion of high grade material.

Mr. Knouf is now investigating the logging end of the business in a similar way and it is planned to organize a class in scaling the first part of the year.

FOREST SERVICE RECEIPTS FOR 1920

IN spite of the fact that a depleted and over-burdened personnel made it necessary for the Forest Service to refuse at some places to take on new business, the receipts from the National Forests in the fiscal year 1920 exceeded those of 1919 by \$435,067.42 and set a new high mark of \$4,793,482, according to the annual report of Chief Forester W. B. Greeley. The year was also marked by one of the severest and most protracted fire seasons ever known, which necessitated the expenditure of considerable sums for the protection of the National Forests and required a deficiency appropriation of \$2,950,000 in addition to the regular funds provided for the purpose.

"The increase in receipts from timber sales," says the report, "reflects the increasing demand being made upon the National Forests as privately owned timber is exhausted and the forest industries move westward. If funds are provided for the examination and sale of National Forest timber now in demand, the receipts from timber sales may be expected to increase still more rapidly until the cut reaches the limit that must be imposed to maintain a continuous yield from the forests and give stability to the industries and communities dependent upon them."

In addition to the actual revenue, according to the report, there is an enormous return to the public through the protection of the 500 odd billion feet of timber for future use, the protection of the headwaters of innumerable feeders of navigation, irrigation and hydroelectric power, and the recreational facilities made available to hundreds of thousands of people. "There will always be national resources not measurable in dollars which in public benefit exceed the receipts paid into the Treasury," the report says.

During the fiscal year about one million acres in the Thunder Mountain Region of Idaho were added to the Idaho and Payette Forests. More than 654,000 acres in the Eastern States purchased under the Weeks Law were also proclaimed as National Forests.

YALE FOREST SCHOOL REUNION

THE Yale Forest School celebrated its second decennial reunion and the twentieth anniversary of its founding in December. Over one hundred alumni and students, or approximately 20 per cent of those who have received professional instruction at the school, attended the reunion. Old friendships were renewed, new friendships formed, the progress and present position of the school thoroughly discussed, and plans laid for the cooperation of the alumni in assuring it of a still more successful future. Perhaps the most important concrete step taken by the alumni at the reunion was the reorganization of the Yale Forest School Alumni Association on a more substantial and aggressive basis. It is anticipated that in its new form the Association will prove most effective in affording a medium of expression for the alumni and in bringing them into more intimate and helpful relations with the school.

The Yale Forest School first opened its doors for the training of professional foresters in September, 1900, and is the oldest forest school in continuous operation in this country. It is difficult now to realize that up to the beginning of the twentieth century the profession of forestry, centuries old in Europe, was unknown in the New World. Our forests, instead of receiving the careful treatment accorded a growing crop had, during the previous century, been cut, burned and abused on an unprecedented scale so that millions of acres were rendered barren for years to come. Valiant efforts had been made by a small group of far-sighted men, acting largely through the American Forestry Association, to stem the tide of destruction and ruin. They wasted no time on idle theories but struck hard for the one measure which seemed to promise immediate results,—the reservation and retention under public ownership of the National Forests so that the timber on these lands could be protected and managed as an object lesson to the public and as a permanent source of lumber after private holdings were gone. This object was attained in 1891, but for many years these lands were administered under the old political system then in force. There were no foresters in this country to furnish the trained executives needed if this new and promising innovation in Government activities was to succeed.

Under these conditions the Yale Forest School was founded by the Pinchot family primarily to provide trained foresters for the public service. At that time and for five years thereafter these forests were in the hands of the Interior Department. In 1905 however, they were transferred to the Department of Agriculture and their administration was taken over by the Forest Service, which at that time was under the leadership of Gifford Pinchot and was recruited in large part from the men trained at Yale. On Mr. Pinchot's retirement in 1910 he was succeeded by Henry S. Graves, under whom the Yale School had been built up. When Mr. Graves resigned in 1919 his successor was William B. Greeley, one of the older graduates of the Yale School. From

the very beginning, therefore, men connected with Yale have had an important part in shaping and administering Forest Service policies and activities.

Today, out of the five hundred and eighteen men who have received professional training at the Yale School, ninety-seven are employed by the Forest Service. Of these, twelve are engaged in research and eighty-five in administration. Thirty-eight, or nearly half of these men, are now in the office at Washington or in the eight district offices into which the National Forest Administration is divided, and have direct charge of the general policies of the Service in those districts. Twenty-six are supervisors, each in charge of a National Forest whose area averages over a million acres. In addition, there are thirteen men in other branches of the Government service.

Largely through the initiative, clear understanding, and devotion possessed by these trained men from Yale and other schools, a task was performed which would have been declared impossible in 1890. The hostile, independent, virile elements comprising the miners, stockmen, and farmers of the West learned within the short period of ten years between 1905 and 1915 that Government service could be made efficient, that regulation of timber cutting and of grazing for the common good was better than a mad destructive scramble to see who could get the most while it lasted, and that forest fires were not necessary but could be controlled and extinguished.

While the establishment and management of the National Forests came first in importance it was by no means the whole of forestry in America. The States were also developing an interest in forestry which was just as much in need of trained guidance. Today, foresters trained at Yale are in charge of the State Departments of Forestry in New Hampshire, Connecticut, Illinois, Maryland, Virginia, North Carolina, Tennessee, Louisiana, and Colorado, while nineteen others are employed as assistant foresters in these States and in Pennsylvania, New Jersey, California, Minnesota, New York, Texas, and Vermont. Only ten other States have practical forestry departments, and of these but four have employed trained foresters. These foresters have in every instance been active in building up efficient State systems of fire protection, and in developing public sentiment and knowledge of forestry, which in some States has led to considerable progress in the acquisition of forest lands by the States.

But perhaps the greatest service of the Yale Forest School is as the parent school from which forest education has spread throughout the country. Of the twelve leading forest schools ten are under the direction of Yale men, and eleven have Yale graduates in their faculties. In addition, forestry is taught as a subject at four other institutions by Yale graduates. In all, forty-three men from this institution are engaged in training professional foresters in America.

The number of graduates engaged in forestry on pri-

vately owned lands is steadily increasing, with the awakening interest of land owners in their woods as a source of possible permanent income instead of a tax-ridden incumbrance. Paper and pulp companies show the greatest interest in forestry of any class of woodland owners, and are now employing fourteen Yale graduates. Others are working for manufacturing concerns dependent on wood supplies for their raw materials, including some owners of forest estates. A few fortunate ones are themselves forest owners and are putting into practice the principles learned at the School. In all, forty-three foresters are so employed. Six graduates are now in the tropics, Brazil, Dutch East Indies, and elsewhere, in private employ.

Yale has extended her influence widely. At present the Canadian Forest Service employs five of its graduates; South Africa, three; China, two; India, two, and New Zealand, one. The work in China is of special interest and the field enormous. Four Chinese have graduated from the School, to return to take up this work, and four more are now in attendance. Those in China report a great awakening of interest in forestry and many active measures under way for its establishment.

Fifty-five alumni of the School are engaged in lumbering and fourteen others are connected with various wood-using industries, from airplanes to tanning extracts. Another small group of ten men is working in connection with parks and city forestry. All told, seventy-nine men are connected with these industries allied to forestry.

The remaining men who have taken up other pursuits have apparently found that forestry gives a broad basis for success in many lines, for there are few of these ex-students who are not acquitting themselves creditably in their chosen lines. A group of sixty-three is engaged in dealing with the soil and its products, of which agriculture and horticulture claim fifty-five and geology eleven. Public service other than forestry claims twelve men. Commercial pursuits have absorbed seventy, of whom twenty-seven are in mercantile lines, thirteen in manufacturing, ten in finance, seven in insurance, five in real estate, and eight in miscellaneous trades. The professions include thirty-two, the largest group, twelve, being engaged in teaching, and the next, six, in engineering. Science claims three, law and medicine two each, and miscellaneous professions seven.

To summarize, sixty-one per cent of the alumni of the Yale Forest School are now engaged in forestry, or closely allied work. Thirty per cent are in direct public service, eight per cent each in forest education and private forestry, and fifteen per cent in forest or wood utilization and park or city forestry. These men are scattered to the four corners of the earth where they are doing their share to put into practice the principles and the ideals which they were taught at Yale.

THE Lake States now pay \$6,000,000 yearly in freight bills to import lumber for their needs.

THE LIBERTY TREE

SOIL from every State in the Union, from each of the Allied Countries and from other foreign places was placed about the roots of a maple tree planted by the Daughters of the American Revolution at Arkadelphia, Arkansas. The tree is a memorial to the soldiers and sailors of that city who answered their country's call. It has been nominated for a place in the Hall of Fame by Mrs. Thomas Sloan, historian of the Arkadelphia Chapter of the Daughters of the American Revolution, and it is pictured on the contents page of this magazine.

With an impressive ceremony soil from Izabella, at Santo Domingo, West India, the oldest settlement in the New World, as well as soil from the famous Sakakawea Statue on the Capitol Grounds of Bismark, North Dakota, which honors the "Bird Woman" who directed the Lewis and Clark Expedition, along with soil from under the old North Bridge at Concord as well as soil from Tilloloy, France, thirty-five miles from Paris that was destroyed during the war, were placed about the roots of this tree.

The tree is planted on the lawn of the Court House and is in a thriving condition. Every year, on Washington's birthday, the Daughters of the American Revolution will place a laurel wreath on this Liberty Tree.

BIRD AND TREE CLUB APPROVES

PLACING itself on record in favor of proposed forestry legislation, the New York Bird and Tree Club passed the following resolutions at its meeting on December 10, 1920:

WHEREAS, The forest resources of the United States are being consumed about four times faster than they are being replaced, and serious shortage already affects some industries and threatens others;

WHEREAS, Vast areas of timber lands, unsuited to agriculture, but capable of producing valuable forests, are being cut with reckless disregard of the future and being left as unproductive wastes which constitute a heavy and unnecessary loss affecting the welfare of the entire country;

WHEREAS, A supply of wood material is essential to prosperity in time of peace, and vital to the national defense in time of war, be it

Resolved, That Congress of the United States is urged to pass such legislation as will give the Federal Government ample power to check forest devastation, and to make sure that, while the interests of the forest owners are safeguarded, the forests are maintained in a productive condition.

ELECTRIC wires which touch trees can easily kill the most beautiful shade tree. This may be due partly to the work of the electric current, or to the wearing through the growing surface of the tree by the wire, which deprives the tree of its sustenance.

NATIONAL FORESTRY PROGRAM INDORSED

NORTH DAKOTA is not much on forests we gather from the Devil's Lake (N. D.) *Journal*, but North Dakota has no copyright on that situation, the American Forestry Association can announce without fear of contradiction. On this point the Devil's Lake *Journal* says: "The American Forestry Association at Washington, D. C., may be long on forestry but it is short on geography. Yesterday we received a circular from it urging us 'to save the forests now.' Will somebody kindly pass the forests." Why not start something in the way of tree growing in such States? At one time Indiana had the finest hardwood forests in the world. Out of an area of something more than 22,000,000 acres there are now about one and a half million acres in timberland. Thus North Dakota is not alone in these matters, Indiana being much the worse example because she at least had forests once. The editors of the land are awake to the need of a national forest policy. They have been carrying columns on this subject from the American Forestry Association. The Chicago *Tribune* is devoting a page a day to the methods it has been forced to use to get pulpwood from its own lands far back in Canada. *The Editor and Publisher* is hammering away at a weekly feature, "What are you doing for Forestry?" In this campaign editors have taken up every phase of the subject particularly since the formation of the National Forestry Program Committee which is directing united action for the bill introduced in Congress by Representative B. H. Snell, of New York State. Some of this comment follows:

New York Evening Post: "The greatest forward step in forestry in many years," as it is termed by AMERICAN FORESTRY, has been taken in this city. Years of agitation have culminated in a definite proposal for a national forest policy. Representatives of the most important lumber and paper industries, of the wholesale lumber distributors, newspaper organizations, wood-using industries and the general public met and reached a unanimous agreement. The purpose of the program is twofold: to

obtain a considerable extension of direct Federal activity in forest ownership and production and to further by Federal aid the development of a proper forest policy in the various States. It looks as if we were at last awake.

St. Louis Globe-Democrat: Only of late, it would seem, has the public mind been thoroughly aroused as to the imminence of

FORESTRY ASSOCIATION'S WORK

Springfield, Illinois, Journal: Work of the American Forestry Association is bearing fruit in the awakening of public interest in the subject of forest preservation and the planting of trees for the future. A recent compilation of editorial comment, published in the American Forestry Magazine, indicates how widespread this interest has become.

Owing to the fact that President-elect Harding has long favored a definite and constructive national policy for ending the timber waste and encouraging the growth of trees, it is taken for granted that the incoming administration will take action along this line. The new Congress has in it a large number of men who are in harmony with Senator Harding's ideas respecting the importance of this subject, and he will have able legislative help in the creation of a workable policy.

America has never been unfriendly to proposals for saving the trees, but it has been woefully indifferent. Until recently its people have not fully appreciated what is involved in denuding the forests and permitting so much land, suitable for little other than the production of trees, to remain idle. Now, however, they realize how necessary it is that the nation begin to repair the destruction and provide against a treeless future.

President Harding and Congress are assured that they will be heartily commended with the public's gratitude if they save the trees. What they do towards this will be appreciated and applauded.

the danger of forest depletion. We are steadily losing more than we are gaining or putting ourselves in a position to regain. For we are not putting back into the ground, in reforestation, what we are steadily losing by deforestation. And deforestation is an increasing and not a diminishing evil.

Dearborn Independent: The American forestry Association is performing a public service by persistently calling the attention of this nation to the need for a constructive national forestry policy. The depletion

of our forests is a matter of great concern, the significance of which has as yet been only partially grasped by the public. The high price of lumber and the scarcity of wood pulp for print paper are only indications of the price we will eventually pay if we refuse to heed the warning signals.

Mobile Register: The statistician can, and does, give us figures showing that if we do not adopt a policy of reforestation we shall, within a stated and remarkably short period, find ourselves without lumber. With the facts before us, we should be more than hospitable to the plan of the American Forestry Association, of which Charles Lathrop Pack is president, to give us a really national policy of forest protection and conservation, even though that plan calls for appropriation at a time when economy in national expenditures is our principal desire. Perhaps that is because we understand that there can be no economy in waste. There are few better ways to spend eleven million dollars than in the preservation and enrichment of our forests.

Troy Record: The rapid exhaustion of American forests furnishes a striking example of the ultimate results of wastefulness. Not many years ago our lumber supply was considered practically limitless. Our awakening is much belated.

Atlanta Journal: If American progresses as her needs require, the time will come when she will raise crops of timber as regularly as she now produces corn or apples or pecans.

Rochester Post-Express: Forest fires are burning up a vast lot of the wood we so much need. This ought to get special attention for the plea which Charles Lathrop Pack, president of the American Forestry Association, makes for protection of timber areas against fire.

Detroit News: The fact that forests are being leveled for the mills in this country at five times the rate at which the forests reproduce themselves has stirred the whole country. The plain consequence of events is to be a timber famine heaped upon the existing condition of shortage and high prices. This, unless nature be assisted in the work of replacement of timber trees.

Greenville (S. C.) News: The solution is to set all this idle forest land to work growing new timber. It is a task which calls for the united efforts of the Federal and State Governments as well as of the smaller communities and the individual owners of forest land.

BY EDITORS FROM COAST TO COAST

Indianapolis Star: It has dawned on the tree owners that there is such a thing as killing the goose that lays the golden egg; or, to be more specific, totally to destroy forests to provide paper for market. Even if the paper supply is short and its price high, the fact is realized that the time should not be hastened when there will be no wood pulp and no paper from that source. The Canadians of Quebec province have undertaken to plant two trees for every one that is cut down and to do it as soon as possible after the cutting. Last year 3,000,000 spruce trees and as many pines were planted. The two-to-one system universally applied would soon solve the reforestation problem.

Thomasville (Ga.) Times-Enterprise: A careful analysis of conditions presents the conclusion that lumber in this country is being used up at a rate of about four times that at which it is being produced. The commercial association and other organizations might take up this problem along with its agriculture and hogs and make permanent forests while it is making permanent pastures.

Salt Lake City News: Among the important measures presented to Congress is a bill outlining a comprehensive national forest program, including better fire protection for the forests. Provisions of the bill have been worked out by a committee widely representative of those directly interested in the welfare of the forests, including the general public. According to Charles Lathrop Pack, president of the American Forestry Association, it is really the first united move in this direction in the history of the country. Endeavors have long since been put forth for preservation and control of the forests, but not in the comprehensive and far-reaching proportions that the proposed new law contemplates. The bill calls for national appropriations of not less than \$11,000,000 a year. Not until the comparatively recent past has the seriousness of the deforestation of this country been brought home to the people. And even now there are many who do not realize how much the condition of the forests means to American industry and welfare, nor the need for strenuous efforts to prevent complete destruction of the forest resources.

Milwaukee Journal: The national government is asked to appropriate \$10,000,000 a year for five years to increase the nation's forest reserves, to reforest its own denuded lands and make forest lands continuously productive, and to spend \$1,000,000 a year in assisting the States to protect forests

not owned by the national government. These proposals are features of a program that is sponsored by the American Newspaper Publishers' Association, the American Pulp and Paper Association, the National Lumbermen's Association, the Association of Wood Using Industries and

size have been wasted. A national program is not sufficient. All the timber States should engage extensively in acquiring large tracts of non-agricultural land, adding to them from year to year, and in reforesting them.

A CANADIAN VIEW

The American Forestry Association calls the attention of the country to the view Canada takes of her forest resources as reflected in the *Montreal Daily Star*. The editorial follows:

PRESERVE OUR FORESTS

"If what is lost in forest fires could be evaded the entire debt of the Province would be paid off in fifteen years."—Premier Taschereau.

Montreal Daily Star: One of the greatest assets of this Province is the forest, and it is shameful that fire should work such havoc with it. Our forest areas, the envy of other countries, are being depleted not so much by the woodman's ax as by negligence and lack of closer forest supervision

In his address before the Board of Trade, Mr. James White, deputy head of the Commission of Conservation, also earnestly warned that our forest reserves were not inexhaustible and that more effective efforts would have to be put forth to protect forests from fires and insect pests. The interesting statement was made by Mr. White that the depletion of timber in the United States had been responsible for the phenomenal development of Canada's pulp and paper industry, where exports of newsprint had grown from twenty-five thousand tons in 1910 to seven hundred thousand tons in 1920.

The potentialities of forest wealth are becoming more and more apparent with the passing years. The preservation of the forests is a matter of national concern, and too much care cannot be exercised in protecting them from fires.

the National Wholesale Lumber Dealers' Association. The program is modest, if anything too conservative. For the amount that Congress is asked to appropriate for reforestation falls far below the country's needs. Thirty or forty years ago it would have been sufficient. Conditions are worse now, timber is scarce and costly, and not only would more radical measures be wise, but they are called for by the logic of the situation. Nevertheless since the program provides for the inauguration of national reforestation, Congress should not hesitate to adopt this plan or similar plans. Nor should it delay. Already years that would permit planted trees to grow to marketable

New York Commercial and Financial Chronicle: The gospel of forestry and reforestation is not a matter of times and seasons; it is for all times and all seasons. Let us all resolve here and now to strive more vigorously than ever to save the forests we love so well, the forests that have sheltered us from the heat in our vacations, and given us some of the greatest pleasures of our lives. A program with this end in view has been outlined in the form of demands for action by national and State legislatures.

Madison (Wis.) Democrat: The American Forestry Association has taken up betimes a renewed campaign for promotion of a policy for forest preservation with a view of congressional legislation. United States Forester William B. Greeley has expressed his approval of the plan, and practically all interests are united thereon, including the government authorities, publishers, lumber manufacturers, paper and pulp manufacturers, wood-using industries and forest conservation associations. The rapid approach of an impending wood and paper famine is commanding the most serious consideration.

Washington Herald: The Forest Industries Program Committee has reached a definite and very practical program of forest preservation. This committee represents a combination of all the various bodies interested in or based upon timber protection; the Forestry Association, lumber interests, paper users, paper manufacturers, and others.

Plattsburg Press: Everybody agrees that we are running short of wood, though but few appreciate the actual situation. What we need as much as anything else in this connection is a real National Forest Policy. Thank Heaven a bill will be introduced in the coming session of Congress providing for just this and may it find ready response among our lawmakers in Washington. It is everybody's business today to shout for forest protection. Indiana has an area of twenty-two million and a half acres and at one time the State was covered with one of the best hardwood forests in the world, says the American Forestry Association in pointing out the need of action for a national forestry policy.

NATIONAL HONOR ROLL, MEMORIAL TREES

Trees have been planted for the following and registered with the American Forestry Association, which desires to register each Memorial Tree planted in the United States. A certificate of registration will be sent to each person, corporation, club or community reporting the planting of a Memorial Tree to the Association.

QUARTZSITE, ARIZ.

By Mary I. Pease: Robert S. Skinner.

DECATUR GA.

By Agnes Lee Chapter, Daughters of the Confederacy: Lt. Harold Byrd, Boys who went from De Kalb County, Ga., Boys from other States in 82d Division at Camp Gordon, Ga.

FORT VALLEY, GA.

By History Club: Sgt. John Frederick Withoft.

QUITMAN, GA.

Hannah Clarke Chapter, D. A. R.: Arthur Griffin, Henry Sapp, Hiram Treadaway, Our Heroes.

MUNCIE, IND.

By Delaware Post No. 19, American Legion and Delaware County Chapter War Mothers: Harry Deems, Thomas DeWitt, Edward William Elliott, Herbert David Fortner, Joseph Riley Feely, Manson Harrington, Lester Beno Harmon, Ora D. Hazelbaker, Frank B. Hukill, Cleo Clifford Heuchan, Ralph Hiatt, Carl Conrad Herdering, Omar Albert Huntsinger, Kenneth Ilawik, William Kent, Vernon Kidd, William Paul Lewis, Paul Thomas Leatherman, Marcus Ward Minor, Harry Mutch, Newton Moppin, John Patterson Newell, Leonard Nichles, Francis O'Connell, Charles N. Parker, Burl Pittenger, Horace Mann Pickerill, William O'Leary Quirk, Earl Retherford, George Franklin Reed, Charles S. Randall, John Erskine Reynolds, Paul Richardson, Howard Ira Smith, Earl C. Spencer, Guy Shelton, Alonzo Gerry, William M. Thomas, Austin Clyde Wilson, Anthony Albino, Fred Baker, John Bobo, Frederick C. Breen, Fred Bicknell, Homer Brock, Clarence Barddull, Clarence Clouse, Ernest Conner, Oren Clark, Noah R. Cord, Orville Cook, George Carmichael, Sharon Danford, Gray Davis, Frank Dillon, Clyde Wychoff, Frank E. Worrell, John H. Worrell, Glen Shipley, Lowell Mikody, William Taylor.

ANN ARBOR, MICH.

By Saline Woman's Club: Saline Boys Killed in War.

DETROIT, MICH.

By Conservation Committee of Twentieth Century Club: Major Hartwick, (5). Progressive Study Club: Dead Soldiers.

IONIA, MICH.

By Church and School of S. S. Peter and Paul: Charles E. Kelley, John Lesky, Isaac Boursou.

UTICA, MICH.

By Tuesday Club: Corp. Victor L. Rieck, William C. Landerschier, Jesse Moore, Jesse F. Parrott, Raymond Gaudy.

FREDERICK, MD.

Mrs. Victor L. Baughman: Capt. Charles D. Sigsbee, Commodore George Dewey, Lt.

R. P. Hobson, Rear-Admiral W. T. Sampson, Commodore Winfield Scott Schley.

HAMILTON, MASS.

By Mothers Club: Maj. Augustus P. Gardner, Lt. Samuel P. Mandell, Sgt. Maj. Wm. J. Collins, Corp. Wm. L. Taylor, Reginald Young, Lester D. Hodgson.

SHREWSBURY, MASS.

By Shrewsbury Women's Club: Theodore Roosevelt.

COOK, MINN.

By Daniel Gustafson Post No. 387: Charles Daniels, Alfred J. Gustafson, William H. Lahti, Clarence R. McDonald.

INTERNATIONAL FALLS, MINN.

By Junior High School: Class of 1920.

HUNTSVILLE, MO.

By Chautauqua Literary Scientific Circle: Our Returned Soldiers and Sailors, Huntsville Men Who Died in Service.

FERNLEY, NEV.

By Fernley Improvement Club: August Vienne, Frank Madelena.

BINGHAMPTON, N. Y.

By Civic Club: Gilbert M. Darling, Raymond Jobson, Everett Monroe Reside, Leo Dandlinger, Charles Finnan, Corp. Harold E. Robertson, Charles Edward Lasher.

FLUSHING, N. Y.

By Broadway Country Club: Capt. John M. Foote.

HEMPSTEAD, N. Y.

By Mrs. Helen E. Bloom: Ernest Stratton Bloom.

NEW YORK CITY

By American Legion: David W. Gentle, Metropolitan Post No. 385, American Legion; John R. Ahern, Lt. Thomas F. Collins. John Conefry, James J. Sheehan, Harold H. Gaskell, Daniel Hanley, Valentine N. Kessel, Alfred Lendrum, Sgt. Irving Olstrum, Walter C. Powell, William A. Riegel, Sgt.-Maj. Augustus Sharretts, Company D, 307th Infantry, 77th Division: Capt. Thomas W. Hastings, Lt. Wallace McL. Woody, Sgt. James H. Ames, Sgt. Archie J. Elliott, Sgt. John J. Reehlin, Corp. Sebastino Corenza, Corp. Frederick J. Dondero, Corp. Edward Goonan, Corp. William M. Muhling, Corp. Anders Rosenvold, Corp. Frederick Schwenke, Corp. Charles R. Seitzberg, Harry Abramowitz, Byron E. Belknap, Joseph Bertany, John Blundell, Ernest J. Campbell, William De Carnis, Edward M. Wynne, John W. Williams, Andrew Vento, Salvatore Di Miceli, Edward Duffy, Nile Eckhoff, Thomas J. Haley, H. L. Havens, William F. Hartnett, Walter Hayward, Thomas A. Jones, Hyman Klein, John W. Kohler, Harry Kupsick, John D. Mundie, John J. Murphy, Frank O'Laughlin, Arend Oelkers, Samuel Packer, George R. Pfahl, Harry Phanco, Julius Sand,

Jeremiah Saxe, Samuel Schambaum, Ralph Schurr, John H. Stender, Alfred Stengel, Isadore Swirsky, Thomas Tangney, Andrew J. Tedesco.

TONAWANDA, N. Y.

By Women's Relief Corps: Benjamin Hoffmeister, Walter S. Jones, Elmer Kaufman, John W. Kenbrick, Fred Liebes, George Martin, Edward J. Meyers, J. Donald Mundie, Dr. Martin F. Nolan, Peter Piotrouic, William Pohlman, George Rathgeber, James Rogers, John Roth, John Rubbert, Elmer Runge, Edward Anmerman, John Badrow, William Barrow, Leon J. Beaulac, Charles Braeker, Joseph Brozostowicz, Albert Burrow, Nick Evans, William P. Exner, Chester Fitzgerald, Harry Gombert, Otto Gottshalk, Arthur Hartman, Sanger Hathaway, Ernest Hauser, Louis Herman, Charles F. Scott, Walter Sharts, Sylvester E. Shaw, Frank Summer, Ferdinand Sterz, Edward D. Strough, Frank Wark, Norman A. Watershat, Ernest T. Wendt, Peter Balling, Herman John Boehnke, Herbert Brider, Daniel P. Dahl, Frank Gillie, Leo A. Gurvin, Clarence Harder, Hiram J. Haskins, John Heider, Chester Hoffman, Daniel Horan, Robert L. Koch, John K. Kohler, Otto H. Liebeck, William H. McAlister, Russell J. Martin, John F. Ott, George Roeder.

YONKERS, N. Y.

By Yonkers Overseas Veterans, Crusaders' Post 353, Veterans of Foreign Wars and Valley Social Club: Harold John Wakefield, Michael J. Conners, John L. Allan, Sidney Comes, Frank V. Palmer, William Hermance Prime, Arthur A. Greene, Michael J. Jackson, Randolph Lamb, John J. Morris, Henry J. Brink, Stephen J. McCall, William J. Goff, William H. Whalen, Edward Lamont.

MORGANTOWN, N. C.

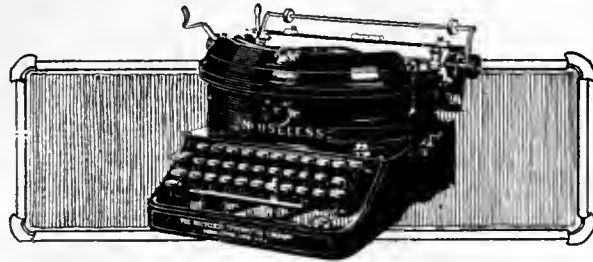
By Mrs. Arthur M. Ingold: Joyce Kilmer.

CANTON, OHIO

By Lincoln Highway Memorial Association of Stark County: Fallen Soldiers of Stark County, Corp. Floyd A. Hughes, Sgt. Emmet H. Weller. By Mr. and Mrs. T. D. Vogelgesang: Karl W. Vogelgesang. By Friendship Club of Canton High School: Sgt. Wilford Quayle Holwick; By Madison-McKinley Chapter, National U. S. Daughters of 1812: Roscoe W. Hyatt. By Betsy Ross Tent, Daughters of Veterans: Civil War Veterans, 1860-1865. By Canton Auxiliary No. 5, United Spanish War Veterans: United Spanish War Veterans, 1898. By Lincoln Highway Memorial Association of Stark County: Corp. Erving Jones. By Invincible Review, Woman Benevolent Association of Macabees: August S. Schadler. By Mr. and Mrs. E. E. Miller: Sgt. Roscoe Conkling Miller. By Mrs. Jennie S. Reed: Karl Wilbur Reed. By Evangelical Sunday School: Corp. Charles A. Kell. By Madison-McKinley Chapter, National Society U. S. Daughters of 1812: Capt. Urban S. Wetzel.

ON ACCOUNT OF THE UNUSUAL DEMAND FOR THE EARLY ISSUES OF LAST YEAR'S MAGAZINE, YOUR ASSOCIATION WOULD APPRECIATE BACK COPIES OF 1920 NUMBERS FOR PURPOSES OF BINDING AND REFERENCE USE. PLEASE SEND THEM TO 1214 SIXTEENTH STREET, NORTHWEST, WASHINGTON, D. C.

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CANADIAN NOTES



AT the Imperial Forestry Conference, held during the past summer at London, England, stress was laid upon the urgent necessity for a comprehensive scheme of forest research, to serve as a basis for the intelligent handling of the forest with a view to its perpetuation by wise use. It is recognized by those familiar with conditions, that lack of intelligent direction in the method of forest exploitation results usually in the deterioration of the quality and quantity of the succeeding forest, if, indeed, the forest is not entirely destroyed and the land rendered wholly unproductive.

The effects of repeated forest fires in bringing about forest devastation are now quite generally recognized, and object lessons may be seen in all parts of the country. The serious effect upon the composition of the forest brought about by the lack of intelligent regulation of the methods of carrying on cutting operations, are, however, less recognized. For example, white pine, formerly the premier timber tree of Canada, has largely disappeared from great areas where it was formerly plentiful and where it formed the foundation for the early prosperity of the timber industry of Eastern Canada. The methods of cutting were such as to favor the increasing preponderance of the less valuable species.—(Conservation.)

NOT many years ago spruce was considered the only wood that could be used in the manufacture of newsprint, says R. D. Craig, in "Conservation." Gradually, and with much opposition, balsam was admitted in mixture with spruce, until now it is accepted in practically unlimited quantities.

We now find the despised jack pine suggested as a substitute for spruce, and the research departments of several of the progressive pulp and paper organizations of Canada have established the fact that it is quite feasible to use jack pine in either the sulphite or groundwood processes of pulp manufacture.

The fibres of jack pine are longer than the fibres of spruce, and the amount of fats, resins and waxes, hitherto assumed to be prejudicial, is not sufficient to preclude its use as sulphite pulp. It appears to require,

however, a stronger acid and a longer cooking than other species, and must, therefore, be manufactured separately. In the mechanical or groundwood process, it is claimed that it will make just as good, if not better, pulp than any on the market.

The use of jack pine for this purpose will materially prolong the productive life of the pulp and paper industry in Canada. Though there is as yet very little reliable information on which to base an estimate of the amount of jack pine in Eastern Canada, it is thought that it would probably furnish not less than 60,000,000 cords of pulpwood. In the Prairie Provinces, there is perhaps twice the amount, and, in British Columbia, there is over 20,000,000 cords of lodgepole pine, which is closely related to the jack pine of the east. In addition, there are large areas covered with young jack pine and lodgepole pine, which will reach merchantable size in a comparatively short time. Much of this wood, no doubt, will be used for ties and lumber, but there will still remain a very considerable amount for pulp. The utilization of the jack pine as pulpwood will facilitate the exploitation of the spruce and other species in places where there is not sufficient of the latter alone to warrant logging operations, and it should greatly reduce the waste at present incident to the production of hewn ties.

Jack pine possesses many qualities which recommend it as a continuous forest crop. It is extremely hardy and will grow on the poorest soils, if not too wet, and it is usually sound. It reproduces more prolifically than any other conifer in Eastern Canada, as is evidenced by the way it has replaced the original stands of white pine or spruce in many places, following cutting or fire. It grows rapidly and under natural conditions will attain pulpwood size in a shorter time than spruce or balsam.

Many other kinds of wood, including poplar, birch and hemlock, can be used in the pulp and paper industry, and it is hoped that further research will result in their more general utilization for this purpose.

THE Laurentide Pulp and Paper Company is cutting a thousand cords of hardwood to be used in the manufacture of ground woodpulp. The species being cut are poplar, white birch, yellow birch and

maple. The two first will be floated and the two latter will be transported to the mill on barges.

THE appreciation of the Quebec Government of the necessity for the practice of forestry on its non-agricultural lands, and of the need for thoroughly trained foresters to make its program effective, has recently been further evidenced. Four of the employes of the Provincial Forest Service—graduates of the Forest School at Laval University—have recently been sent to Europe by the Provincial Government, to spend a period of six months in making advanced studies of forestry practice and forest utilization in France, Belgium, Switzerland and Germany. One of the men will extend his studies to cover a period in Sweden. Among the lines of investigation to which particular attention will be paid by these men will be methods of lumbering, sawmilling, silvicultural practice, reforestation, aerial photography, forest research, wood technology, and wood utilization, including the development of markets for hardwood species through small wood using industries.

While forestry conditions in Europe are widely different from those in Canada, the general principles of the science of forestry are the same the world over, though it is of course necessary to adapt the practice to local conditions in every case. In Europe, the practice of intensive methods of forestry—the systematic growing of wood crops—has been a matter of development through centuries, and foresters from other countries can learn much of direct value to them in a study of methods and conditions there. A period of study in the forests of Continental Europe is, for example, a regular part of the curriculum of English and Scottish forest schools which prepare men for the practice of forestry in the United Kingdom.

THE planting of 5,000,000 trees a year is the plan of the Laurentide Paper and Pulp Company of Canada. The Canadians are facing a replanting problem on the lands of the company in Quebec, where pulpwood is being cut. Similar plans of reforestation by other paper manufacturers would do much to relieve the probable paper shortage of the future.

SERVICE TO MEMBERS

Members of the American Forestry Association are entitled to a ten per cent discount on the publishers' price of all books and magazines if order is placed direct with the American Forestry Association.

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FORESTERS ATTENTION

AMERICAN FORESTRY will gladly print free of charge in this column advertisements of foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

POSITIONS WANTED

WANTED—Position as City Forester. Technically trained and experienced forester. 30 years old. Have had 5 years experience in city forestry, tree surgery, landscape work. Box 2010, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-5-21)

GRADUATE of a recognized forestry school having had several years practical experience in all phases of forestry, both public and private, and experienced in portable logging operations, desires to make a change. Will consider any proposition in any part of United States or Canada. Box 2030, care American Forestry Magazine, Washington, D. C. (2-4-21)

TECHNICAL FORESTRY GRADUATE, B. S. 1908, M. S. 1914, desires position as City Forester. Twelve years practical experience in tree surgery, planting, transplanting, spraying, orchard care, improvement cuttings and landscaping, including making and execution of plans. Employed at present. References if desired. Married, age 41. Box 2020, care American Forestry, Washington, D. C. (2-4-21)

YOUNG MAN, 30 single, technical training and experienced in forestry and engineering, also first-class knowledge and experience in accounting and office work, desires position offering opportunity for the future. Address Box 2000, care AMERICAN FORESTRY. (2-4)

BUSINESS MAN with technical forestry training and experience, a specialist in aerial mapping and patrol, experienced in protection, cruising and administration, desires responsible position. Now engaged in economic study of paper industry. Address Box 980, care AMERICAN FORESTRY, Washington, D. C. (2-4)

YOUNG MAN WITH WOODS EXPERIENCE and college and military training, desires position in connection with management of forest lands on large estate. Address Box 990, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4)

GRADUATE of the Ranger Course of the Lincoln Memorial University, Harrogate, Tennessee, wishes to secure work as a forest ranger or guard. Twenty-four years old. Address Box 965, care American Forestry, Washington, D. C. (11-1-21)

POSITIONS OPEN

WANTED—An assistant forester. Good place offered for a recent graduate who would like to get in business for himself in an excellent location. Address Box 920, AMERICAN FORESTRY MAGAZINE (8-10/20)

WANTED: A married man with small family, with technical forestry training and practical experience, also having some knowledge and experience in farming and with farm machinery, to act as forester and superintendent of private forest estate of 500 acres in eastern Connecticut. House provided with modern conveniences. A good position for a good man. Address, Box 975, Care AMERICAN FORESTRY.



STATE NEWS



IDAHO

WHEN the Idaho State Legislature meets in January it will be approached with a bill to authorize a survey of the forest resources of the State to be made by the School of Forestry of the University of Idaho. This survey will be to determine the quantity and availability of existing stands containing raw material suitable for pulp mills, wood-working and by-products industries and the probable future supply of such material from young growth coming in on cut-over or burned-over areas. The object of making a survey of this character is to have definite statistics available to attract capital from other sections to this State by showing the possibilities of establishing pulp mills, wood-working and by-products industries here. The bill calls for an appropriation to cover the expenses of this survey and it is believed that the expenditure of this sum will be more than repaid in a very few years by the industrial development which it will attract to the State. It appears that not only eastern paper mills, but many other industries manufacturing wood products or by-products are canvassing the western situation to determine the possibility of re-establishing themselves in a new region because of the exhaustion of the nearby supplies of their raw material and the State which can furnish these industries with concrete information as to the opportunities for permanent establishment within its borders is the State which will attract this development.

The plan of distributing forest and shade trees at cost to the people of the State is growing in favor from year to year as is shown by the fact that the business has nearly trebled the past biennium. Approximately one hundred and seventy-five thousand trees were distributed in this period. There is an increasing demand for black locust for fence post production.

A meeting was held in Boise which was called together by the State Land Board for the purpose of being enlightened on forest problems, particularly fire patrol and protection. While no definite action resulted from the meeting the opinion was expressed by many present that strides had been made in bridging the gap between private and State interests in the forests of the State. The main issue, on which both sides agreed, was that forests which are under the supervision of the United States Forest Service should be patrolled with the fire protection feature most in mind. Cruising and classification of the forests should also be done.

ILLINOIS

REMARKABLE developments in forestry in Illinois are confidently looked for this season. The Constitutional Convention, sitting recently at Springfield, passed the following section: "That the General Assembly shall pass laws for the encouragement of forestry and may classify for taxation areas devoted to forests and forest culture." It is hoped that the delegates will stand solidly behind this action and that as a consequence legislation favorable to forestry will be introduced into the next constitution.

LOUISIANA

A PROJECT to encourage the boys of the State to reforest Louisiana, put idle lands to work, and incidentally teach the youth the importance of conservation and thrift, was the dominant note struck at the first meeting of the General Forestry Advisory Board, appointed recently by Governor Parker. The Forestry Board was created by Act of the last General Assembly, its principal function being to advise with the commissioner of conservation on all matters pertaining to forestry in the State and to approve expenditures of the Forestry Division of the State Department of Conservation.

Methods will be worked out to promote a statewide movement that it is thought may result in the reforestation of hundreds of thousands of acres, the actual work being performed by boys under the supervision of the Superintendent of Forestry, R. D. Forbes. Briefly the plan is to induce farmers, who may have strips of land not well adapted to agriculture, to give such land to their boys, and to enter into a contract with the State, the farmer as trustee for his son, to set aside such strips for a term of years exclusively for the growing of trees. As the boy grows to manhood the trees grow with him, and upon arriving at maturity the boy will find himself in possession of a well timbered tract of second growth, which will be an asset to his purse and an asset to the State itself.

The plan is similar to that which was inaugurated by Henry E. Hardtner, at Urania, several years ago, which has worked out so successfully that it has attracted international attention. In the latter case the boy will look out for reforestation, protecting his wood lot from fire and hogs, fencing it, etc. Upon reaching manhood's estate he will have a fine stand of timber ready for the ax and saw.

It was the opinion of the members of the board that the movement, if encouraged, would prove as far-reaching and beneficial as the Boy Scout plan. Thousands of

USUALLY BEARS FIRST YEAR PLANTED

Always the
Second Year

Breaks Records
The Third Year

Do you ask stronger evidence,
read this:

403 Perfect peaches on 4 year
old tree.

Mr. C. E. Strawbridge, of Lima, Ohio,
writes us under date of August 25, 1920,
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"On April 10, 1916, I set out one of
your new picked 5 peaches from it, each
averaging the size of an average tea cup.
**THIS YEAR WE HAVE PICKED EX-
ACTLY 403 LARGE PEACHES FROM
THIS ONE TREE.** Many people have
seen this tree, and can hardly believe
their own eyes. One of its admirers was
Postmaster J. E. Sullivan, who wants
me to put him in touch with the "**FEL-
LWS WHO HAVE SUCH TREES
FOR SALE.**"



Yellow
Free-
Stone

Ripe
in
August

**ROCHESTER
PEACH**

TREES planted in Spring, 1918, bore 150 to 200 peaches past summer.

THE EARLIEST YELLOW FREESTONE PEACH KNOWN

"Rochester is greatest money making peach in the world"—Statement by
large orchardist.

Originated in Rochester, New York, tree is a strong, upright grower, has stood
sixteen degrees below zero and produced a full crop, while the Elberta and
Crawford, under the same conditions in the same orchard, produced no blossoms
and consequently no fruit.

Mr. Yarker, Grecco, New York, who has an orchard of 500 trees, reports 17
peaches picked in August from a tree planted the previous spring.

Mr. C. M. Thomas, 215 West 40th Street, Savannah, Georgia, purchased a
Rochester Peach from us last February, and picked the first fruit in July.

We are headquarters for genuine Rochester Peach.

Price, Medium size, 3-4 feet, \$1.00 each; \$10 per 12. Extra size 4-6 feet, \$1.50
each; \$15.00 per 12.

CATALOGUE—For descriptions and prices of a complete list of Glenwood prod-
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pass the mass of pink flowers which it shows all season.
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Blooms in 3 to 4 months.
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**OUR TREES, HOW TO KNOW
THEM**

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son, and a Guide to their Recognition by
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This is a new and revised edition of Emerson
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form as a whole, and its foliage, bloom, and
fruit in detail. The new introductory material
tells the characteristics of the different
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tumn, Winter, and Spring, why they drop
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leaf buds for new growth. It explains how
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scribes the rarer trees imported for landscape
gardening. Directions are given for aiding
trees to thrive and look their best. 149 illus-
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cloth.....\$3.50 Net

farmers have strips now lying fallow that
could be utilized in growing a crop of
Southern pine. If generally adopted it
would have wide influence on the future of
the lumber industry in Louisiana.

By lowering taxation on such lands to
an irreducible minimum the State will en-
courage the plan and the Forestry Depart-
ment will teach the boys how the work is
to be done.

The first official act of the new board,
which met in the offices of Commissioner
M. L. Alexander, was to approve the ex-
penditure of one-half the annual appropri-
ation for forestry purposes for forest patrol
and fire protection. This will approximate
\$30,000, the estimated income of that divi-
sion of conservation annually being \$60,000.

NEW YORK

WHITELACE Mountain, one of the
most imposing and famous peaks of
the Adirondack region, is to be added to
the State Forest Preserve. This announce-
ment was made by Conservation Commis-
sioner George D. Pratt at a meeting of the
Commission recently.

The purchase contains nearly 4,500 acres
of land, much of which is covered with
the original stand of virgin spruce for-
ests. Two years ago extensive lumbering
operations were commenced on the north-
ern side of the mountain with the result-
ant "slash," which constituted a serious
fire hazard. Acquisition of this property
by the State will prevent further lumbering
and insure the preservation of the White-
face forests. Not only will the scenic
beauty of this conspicuous peak, which
dominates the Lake Placid region, remain
unmarred as the result of its purchase by
the State, but the whole area will be thrown
open to the people for public recreation
purposes as in the case of other parts of
the Forest Preserve.

OREGON

OREGON has the largest amount of
standing timber of any State in the
Union. Over one-fifth of the nation's sup-
ply is within the boundaries of the State.
To safeguard this great asset, laws have
been enacted by the legislature which are
recognized as progressive and which place
Oregon among the few States having a
well thought out forest code.

For nearly 10 years the State Board of
Forestry, which through its personnel, re-
presents alike the public producer and con-
sumer, has confined its activities very large-
ly to fire prevention. This will continue to
be its principal task. The Board, however,
believes the time has arrived to outline a
definite policy looking to the future well-
being of the State and aimed at keeping
productive and bringing to a state of pro-
ductiveness vast areas best fitted for the
growing of successive forest crops. In
doing this the Board recognizes that it
should be concerned not alone with those

things which the State may do independently, but also with those which should be done by the Federal Government independently and in co-operation with the State and private owners. Responsibility of private owners in this whole program is not overlooked nor is the need for public action to make possible practice of forestry by such private owners.

Ordinarily we think the vast area of Government owned timber land held and managed as National Forests is sufficient safeguard for our future supplies. As a matter of fact but one-fifth of the present available standing timber of this nation is in Government ownership, the other four-fifths being privately owned. Economists, foresters and lumbermen have realized for a long time that as a nation we are drifting toward a future shortage of raw material to keep alive the lumber industry and many others dependent upon it. The situation is not alarming. A shortage will not be apparent for many years, but it should be realized that we are dealing with a crop which requires from 75 to 150 years to mature.

PENNSYLVANIA

REPLACING chestnut trees ruined by the blight with commercial, quick growing young trees is attracting nationwide attention in the experiments being carried on at the Sheerlund forest plantation near Reading, Pennsylvania. The Japanese larch, it is thought, will be a good substitute for the chestnut.

There are now about 2,000,000 pines and spruces on the plantation, and 500,000 more young trees in the nursery. Scotch and Austrian pines also have been included in the experiment, but have not done as well as the red, southern and white pines, although the white pine also is attacked by insects and fungi. The pines take from 45 to 50 years to mature. The spruce and Japanese larch will reach commercial size in 35 years and are virtually immune from pests.

The replacement seems to be working successfully and if it proves so, the plan no doubt will be followed all over the country.

NEW ALASKA FOREST DISTRICT

IN order to get the administration nearer to the ground, Secretary Meredith, of the Department of Agriculture, has just approved the establishment on January 1 of a new National Forest District for Alaska. This will be known as the Alaska District, with headquarters at Juneau, and will be in charge of Charles H. Flory, as District Forester. Mr. Flory has been Superintendent of Alaska National Forests for the past two years, with headquarters at Ketchikan. The new District headquarters will remain at Ketchikan until July 1.



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Before Planting The Right Tree in The Right Place it is necessary to consider the soil conditions, exposure to winds or sheltered locations, and whether the trees will have full or partial sunlight, and its effect upon the variety to be planted.

Norway Maples	16 to 35 ft.	Col. Blue Spruce	9 to 16 ft.
Pin Oaks	16 to 35 ft.	Hemlocks	10 to 16 ft.
European Beech	11 to 25 ft.	Austrian Pine	10 to 21 ft.
Lindens	12 to 26 ft.	Arborvitae	6 to 11 ft.

Send for our catalogue which contains considerable information in regard to Planting The Right Tree in The Right Place. We would be glad to furnish you with any information at our command concerning silviculture.

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SEEDLINGS *Write for prices on large quantities* TRANSPLANTS

THE NORTH-EASTERN FORESTRY CO.
CHESHIRE, CONN.

THE TIMBER SUPPLY AND WHAT TO DO ABOUT IT

(Continued from page 70)

a region where public opinion is not yet wholly convinced that adequate measures should be taken to prevent and suppress fires.

Recognition of the facts of timber depletion and idle lands suited to the production of timber, is hastened by the pinch of actual timber shortage which is handicapping the industrial life of the region. Woodpulp is soaring in price, and it can not always be had. The oak for Grand Rapids furniture is being cut in Louisiana and Tennessee. The hickory for the wheels of Michigan automobiles is shipped from Arkansas and Mississippi. Michigan does not even supply itself with enough telephone poles and railroad ties, but pays freight on poles from Idaho and ties from Virginia.

This has happened in the State of Michigan, which for over twenty years produced more lumber than any other state and which, as late as 1899, held second place in total cut of lumber.

If, as in Ohio, the removal of forests had been regularly followed by agriculture, there would be little cause for regret. But this has not been true of Michigan. Out of the 36 million land acres of the state, 18 million are reported as included in farms with less than one-half of this area cultivated. Of the remaining 18 million acres not included in farms, at least 10 million

Selected beautiful species of small and large Evergreens, Deciduous trees, Fruit trees, Shrubs and all other Nursery stock at money-saving prices.

Brighten your home with Beautiful Dwarf Evergreens.

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New Rochelle, N. Y.

are believed to be permanently unsuited for agriculture and chiefly valuable for timber production. The state pays a freight bill of around \$2,000,000 annually for imported lumber which, with the exception of certain special classes of material, might be grown on this 10 million acres of waste which is reverting to the state for non-payment of taxes at the rate of 3,000 acres a month.

But Michigan, while a classic example of the bad effects from misuse of forest land, is not alone in her neglect to keep her acres productive. Aside from the greater prevalence in Michigan of a certain type of sandy soil which is particularly subject to damage by repeated fires, the story of timber depletion and non-productive land in Michigan has been or is being repeated in numerous other states. The State of Massachusetts, for example, contains denuded forest lands within a stone's throw of her dense population and highly developed industries which have been estimated at a total of one million acres, and which are largely idle so far as growing wood of economic value is concerned. In its report on a Senate resolution introduced by Senator Arthur Capper, the National Forest Service states:

"Three-fifths of our primeval forests are gone; the timber remaining is being consumed four times faster than it is being replaced. With the successive exhaustion of our principal forest regions in the northeastern states, the Alleghenies, the Lake States and the Atlantic seaboard, and the imminent exhaustion of the Gulf States pineries, the cost of transporting forest products to the average consumer is steadily rising.

"The effects of forest depletion include all the elements of higher freight costs, more restrictive competition, dependence upon the efficiency of transportation, dependence upon climatic or labor conditions in restricted regions, and innumerable difficulties in getting needed materials of the right kind and at the right time. If all the timber in the United States were cut and our needs supplied by imports from South America and Siberia, the situation would differ from that which we are now rapidly approaching only in degree. The effect of original timber exhaustion may be compared with what would happen if the orchards and truck farms in the eastern and central states disappeared and the housewife had to obtain the daily necessities for her table from Florida and California.

"The kernel of the problem lies in the enormous areas of forest land which are not producing the timber crops that they should. There are 326 million acres of cut-over timber lands in the United States. Their condition ranges from complete devastation through various stages of partial restocking, or restocking with trees of inferior quality to limited areas which are producing timber at or near their full

Old Friends and New

is a catalogue of helpful ways of arranging plants to express your ideas. It illustrates in color some of Long Island's beautiful gardens designed by foremost landscape architects, as Olmsted Bros., Brookline, Mass., and Miss Ellen Shipman, New York. A copy of this booklet will be mailed promptly on receipt of your request.

Hicks Nurseries

Hicks Nurseries are ready to help you with plants that will immediately make your landscape what you want it to be. Shade trees and evergreens 25 feet high shipped 1000 miles and satisfactory growth guaranteed. They save you 15 years. Hundreds of carloads of these time-saving trees have been shipped; they are economical in time and money. Time-saving fruit trees three years older than usual have been transplanted and pruned for good results in your orchard.

A group of Evergreens to shut out the busy street, or form a background for the flower garden and separate it from the service court, is one of the things Hicks Nurseries can supply you to perfection. Here are thousands of evergreens, root-pruned, transplanted wide apart and pruned to uniform shape and dug with big solid balls of earth held by platforms and canvas.

New and rare trees, shrubs and flowers from the Arnold Arboretum, Highland Park, Rochester and elsewhere will delight garden lovers.

Cover plants to creep over the ground and give pleasure with berries and evergreen foliage are a new feature of the Hicks Nurseries. Azaleas, red flowering Dogwood, Canadian Yew, Silver Bell and many other plants are suitable for decorating the woodland.

Pruned lindens and hornbeams for pleached alleys are just the thing for entrance court or terrace. For seashore or dry, acid hills, Hicks Nurseries have large trees and also small trees at low rates. You are entitled to the best and the newest plants approved by garden experts and landscape architects. You will find such plants at Hicks Nurseries.

Box F Westbury, L. I., New York

capacity. On 81 million acres there is practically no forest growth."

This is the larger picture of depletion, non-production, and dislocation of industries, of which the story of timber in Michigan is merely a fairly typical part.

When these facts make themselves at home in the consciousness of Mr. Average Citizen, he will be convinced at last that timber depletion and attendant evils are realities—not creations of the imaginations of foresters. If there remains any lingering doubt in his mind it will be dispelled when he proceeds to build that home he has been planning for and saving for through so many years. He will find that if both the average value of all commodities and the average price of softwood lumber in the year 1860 are taken as the index figure 100, then the present average value of all commodities would be represented in the year 1920 by the index figures 294; but the average price of softwood lumber in 1920 is represented by the index figure 540. The increase of softwood values since 1915 has been over twice as great as the average increase of all commodity prices. This proportion of increase in the price of lumber is not entirely due to timber depletion, but when Mr. Average Citizen finds that the sum he has painfully accumulated for his new home is not sufficient to build the house in 1920, he and Mrs. Average Citizen will do some pointed thinking as they again postpone the construction of the house they had set their hearts upon. They will no longer harbor any doubt that timber depletion means something to them personally—means a blow at their personal happiness and comfort.

Again, we have before us the tragedy that the aroused public opinion which Mr. Average Citizen generates will be too late—too late, that is, to save that 81 million acres on which there is practically no tree growth. A region larger than the great States of Iowa and Missouri has been cut-over and is now idle because public opinion remained passive too long. By demanding a slightly different treatment of this land, public opinion could have kept the 81 million acres continuously productive. To bring it back to productiveness will be a far more difficult and more expensive matter.

But it is not too late to stop the remainder of our 326 million acres of cut-over land from reverting to a condition of idleness. The area of idle or largely idle land is being increased by from 3 to 4 million acres annually as the cutting and burning of forests continue. The area of forest land not required for any other economic use is estimated at 463 million acres, and this would provide an ample supply of wood for all our needs if kept productive. Depletion of our timber supply has resulted not from using our timber resources but from failure to use our timber growing land, and by far the greater

part of our forest land may still be kept continuously producing timber if Mr. Average Citizen definitely decides that we have left the period of plenty of timber and crossed over into the period of insufficient timber.

ECONOMY IN LUMBER PRODUCTION

THE Committee on Conservation and Standardization recently appointed by the newly organized Association of Wood Using Industries has already begun to function, as might have been expected from the fact that W. A. Babbitt, Secretary of the National Association of Wood Turner's, is its chairman. It is difficult to estimate the importance of this work, not only to a great variety of manufacturers, but to the country as a whole, because of the economies which it will make possible in wood utilization. Under a practice which grew up when stumpage prices were insignificant, says Austin F. Hawes, Field Secretary and Forester of the National Association of Wood Turners, we are still wasting the greater portion of every tree which grows in the forest. By a proper co-ordination of the needs of the different industries it will be possible to saw the tree when it is felled into more economical lengths; and to saw each log into the dimensions for which it is best adapted.

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NATIONAL FORESTS IN THE EAST

THE National Forest Reservation Commission, which authorizes the purchase of lands for Eastern National Forests, at a recent meeting recommended to Congress a continuation of Government purchases of forest land and the appropriation of adequate funds to carry on the work. A large number of business and civic organizations have already gone on record in favor of enlarging the National Forest lands in the East. The great importance of the work has been made evident through the report on the Capper resolution submitted to Congress last spring, which showed 81,000,000 acres of denuded and unproductive timber lands in the United States, while the cut-over area is increasing at the rate of 4,000,000 acres a year.

The commission authorized the extension of the purchase work to Pennsylvania and New York, and the location of a purchase unit on the headwaters of the Allegheny River, with a view to lessening the danger from river floods at Pittsburgh and at other places located below Pittsburgh on the Ohio River.

The commission has authorized the purchase of 11,098 acres of land in the White Mountains and the Southern Appalachians at an average price of \$5.04 per acre. The lands approved for purchase lie in New Hampshire, Virginia, North Carolina, Alabama and Arkansas. Purchase of 7,000,000 feet of spruce timber at \$3 per thousand feet was also authorized by the commission. This timber is in the White Mountain National Forest, New Hampshire, but was reserved from sale at the time the land was purchased. This acquisition will enable the Government to control cutting operations upon approximately 1,500 acres of land, thus securing proper forest management and consideration of public interests.

NEW ENGLAND TO HELP IN FIGHT FOR NATIONAL PARKS

THROUGH the formation of the New England Conference for Protection of National Parks fresh impetus has been given the fight against the invasion of the National Parks by commerce and their exploitation by private interests. In summing up the question, the New England Conference says: "The purpose of the National Parks is to preserve forever, in their primitive condition, certain few, widely separated examples of the American wilderness; of the original works and processes of nature; of our native wild animals and birds and plants, living natural lives in the homes of their ancestors. They are

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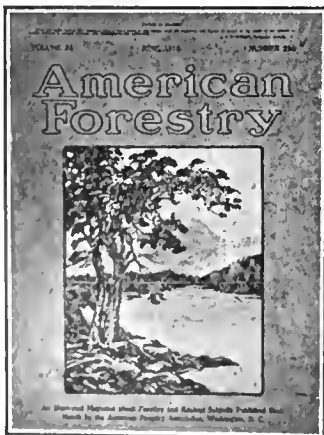
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ravens into which our people can hope now and then to escape. * * * The theory on which National Parks in this real sense must be based is that the people of the United States, who have set them apart, can afford to keep and want to keep this minute fraction of their total land area positively and definitely as the one and only reserve where these non-economic purposes may be attained in perfection and without compromise.

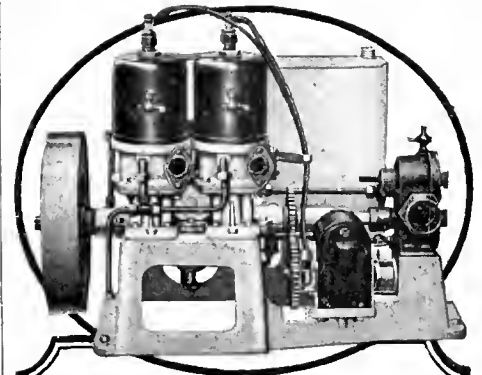
"Unless we follow consistently this policy of 'Hands off the National Parks,' with a clear perception of the principle behind it; unless we exclude from the parks every commercial development which by any possibility can impair their quality as exhibits of Native America and as places for the unadulterated enjoyment of natural scenery, we cannot avoid the gradual and progressive diversion of the National Parks from their proper purpose to those economic purposes which elsewhere rule unchallenged in the use of land by man."

PULP RESOURCES IN INDIA

EXCEPT in the annual waste growths of tropical and sub-tropical forests, the cellulose Expert to the Government of India as quoted in the *World's Paper Trade Review*, states he has concluded that no permanent settlement of the papermakers's oft-recurring difficulties of supplies can be

found. He has come to this conclusion after 24 years' work on this problem in various parts of the world. For many years this expert has been doing exploration and experimental work in bamboo pulp; for the last ten years in the service of the Government of India. After an exhaustive exploration of the coastal belt of Burma, he asserts that there is sufficient bamboo in sight, with the Savannah grasses of Assam, to produce 14,000,000 tons of dry pulp yearly. Bamboo being a grass, its pulp has many qualities in common with esparto and it can be used for all grades of paper. For newsprint while it does not exactly take the place of strong sulphite, bamboo can be advantageously used to the extent of half the present percentage of sulphite and if mechanical pulp continues to maintain anything like its present value it can be so cheaply produced that it can take the place entirely of mechanical pulp. The total cost of production will not exceed one-half of the present cost of wood pulp.

A plant is being established by the Forest Research Institute of India for further experimental work in investigating new sources of paper making material and for assisting the development of bamboo pulp enterprises. The Indian Government is favoring schemes which are being developed for the production yearly of about 70,000 tons of bamboo pulp.



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Stumpage Prices—Lowest rates considered, \$1.00 per M for green white pine and green spruce, \$.50 per M for green timber of other species and dead timber of all species.

Deposit—Two Thousand Dollars must be deposited with each bid to be applied on the purchase price, refunded or retained in part as liquidated damages according to conditions of sale.

Final Date for Bids—Sealed bids will be received by the District Forester, Missoula, Montana, up to and including March 15, 1921.

The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, Missoula, Montana, or the Forest Supervisor, Kalispel, Montana.

NATIONAL PARKS AND NATIONAL FORESTS

A CLEAR distinction of fields exists between National Forests and National Parks, says Secretary of Agriculture Meredith, in discussing the value of the National Forests as recreation grounds in his annual report to the President. "Areas of scenic grandeur or natural wonders which are exceptional in character should be incorporated in National Parks." But the National Forests "must be administered with definite provision for recreational use along with the development and use of their material resources."

The National Parks must be protected against any form of commercialization, declares Mr. Meredith. Unless they are limited to areas in which the beauties and wonders of nature are in reality so dominating that they justify prohibition of conflicting forms of use, it will not be possible to deny demands which will be made for the use of water power for irrigation and even for timber and forage. "Nor should we build up under the name of National Parks public properties which are open to various forms of commercial exploitation and which are in fact merely National Forests under a different designation," the Secretary says. "Above all, the national conception of our great parks as areas so fine and wonderful that they belong to the whole country should not be cheapened by making them simply a means for local development or advertisement.

"Areas whose dominant public values are economic do not belong in the parks," the Secretary asserts. "They should remain or be placed in the National Forests if they serve the primary function of the forests—the production of timber or the protection of watersheds. On the other hand, the economic service rendered by the forests should be no bar to the administration of small areas at many points within them for public recreational purposes or for the protection of their natural beauty." In fact, Mr. Meredith says, for every one of the National Parks there are literally hundreds of areas in the National Forests whose highest public use requires development of their recreational value, though it would not justify their administration as National Parks.

THE ANNUAL MEETING

THE adjourned annual meeting of the American Forestry Association will be held at the Willard Hotel, Washington, D. C., at 2 P. M., Friday, February 25, 1921. Members will vote upon proposed amendments to the by-laws providing:

For increasing the subscribing membership dues from \$3.00 to \$4.00 a year.

For a Board of Directors consisting of fifteen members, seven of whom—W. R. Brown, H. H. Chapman, Dr. Henry S. Drinker, C. W. Lyman, Charles Lathrop Pack, C. F. Quincy and E. A. Sterling—shall be permanent members, and eight

others, four being elected annually to serve terms of two years.

For the nomination by the Board of Directors of elective candidates for the Board.

For the election of the elective directors by vote of members present at the annual meeting and by the mail vote of those not present.

For the election of the president, vice-presidents, treasurer and secretary by the Board of Directors.

For the amendment of the by-laws, except as to the selection of directors, either by the Board of Directors or by the members.

For annulment of membership of members in arrears in dues for one year.

By order of the Board of Directors,
P. S. RIDSDALE,
Secretary.

BULLETIN ON BIRD LIFE

THE National Park Service of the Department of the Interior announces the publication of "Birds of the Papago Saguaro National Monument and the Neighboring Region, Arizona." The pamphlet is by H. S. Swarth, Curator of Birds in the Museum of Vertebrate Zoology in the University of California and a leading authority on the birds of Arizona. It contains a very interesting account of the bird life on the Papago Saguaro National Monument, near Phoenix and Tempe, Arizona, and on the Sierra Ancha, north of the Roosevelt Reservoir. Travelers over the Apache Trail should provide themselves with a copy, as an understanding of the bird life of the region will add much to the pleasure of their trip.

FARM WOODLANDS IN THE UNITED STATES

ABOUT one-third of all the forest land of the United States is on farms, says W. R. Mattoon, in a recent bulletin on "Forestry and Farm Income," issued by the Department of Agriculture. According to the latest census, the farm woodlands amounted to about 190,000,000 acres. In the eastern United States—east of the Plains—the total woodlands on farms amounted to about 178,000,000 acres. This is equivalent roughly to the aggregate area of the states of Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Kentucky and Tennessee.

Farm woodlands in the eastern United States form an area nearly eight times as large as the entire forest lands of France, which furnished practically all the timber required during the war by the armies of France, Great Britain, Belgium and the United States.

The present yearly income from farm woodlands in the South is estimated at about \$150,000,000. From the 53,000,000 acres of farm woodlands in the North, Mr. Mattoon estimates that the income to farms from timber products is \$162,000,000 annually.

INDIA TO EXPLOIT HER FORESTS

INDIA, with an almost untouched timber reserve, is preparing to exploit her forests. For the purpose of studying the most modern methods of logging, Mr. Charles Gilbert Rogers, Director of Forests of India for the British Government, is in the United States with a corps of seventeen engineers. These engineers are at present at work in logging camps in the Appalachian Mountains, and will gradually work toward the Northwest, then down the Pacific Coast, and will conclude their studies in the Southern Pine territory in February, 1921. They will take in every section of the country wherein a distinct method of handling logs is in operation, and will spend a month with each type of work.

Mr. Rogers called on Mr. J. E. Rhodes, Secretary-Manager of the Southern Pine Association, at New Orleans, to consult with him as to the program to be pursued to obtain the best results and while in the Association offices told something of the resources and plans of the British Government in approaching their problem of lumber production.

India is a little less than half the size of the United States, and possesses untold timber wealth. In only one section have there been in operation any mills sawing lumber, that being the Province of Burma, while in every other portion of the vast country all lumber is whipsawed by hand

out of the tree in the place the tree is dropped.

The topography of India is rough, with every problem in logging that is met with in the United States to confront them with the exception of the snow hauling of the North. In place of the snow there is always the heat to contend with, in some places a dry heat, in others a moist heat. At the coast line there will in some places be necessary the "pull-boats" and other logging apparatus and methods of the cypress swamps of the United States, while in the interior the problem will be to get the logs down the sides of the mountains.

Teak is now the wood mostly used in producing lumber, because teak is the only wood that will resist the attacks of the white ants of India. Teak grows along the coast lines, and there is today in the Province of Burma alone, where, as stated, the only milling has been done, nearly thirty million acres of untouched timber lands.

The timber of India will be operated upon a gigantic system of conservation. None but the large timber will be cut at any time, and the methods of logging will be selected that will insure the least damage to the smaller trees. This is possible in that country, as it has never been possible in America, owing to the title to the timber being vested in the State and the operations can therefore be conducted by the State on one national system, which will insure a perpetual

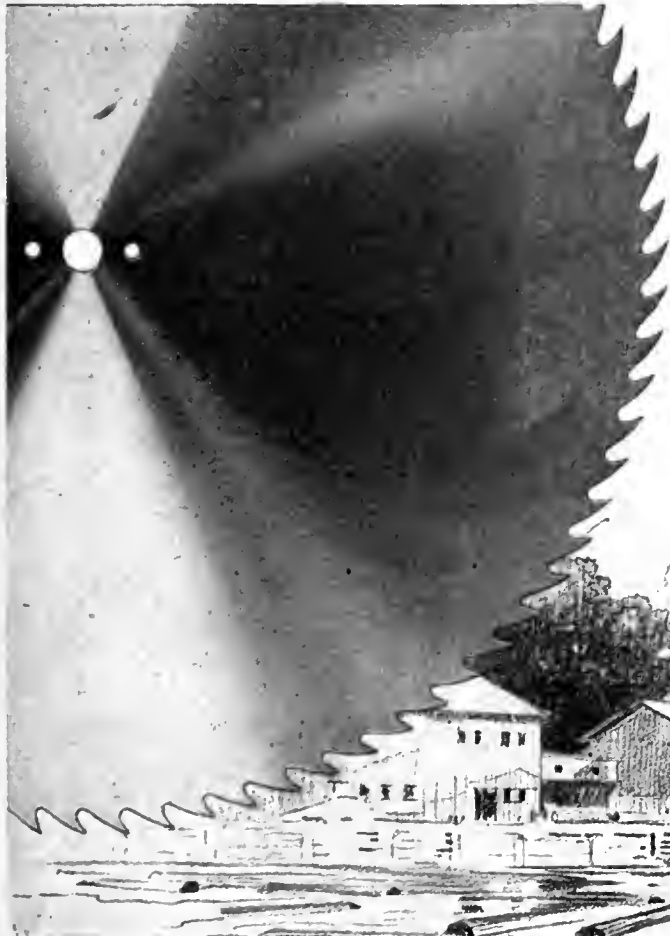
source of revenue from the forest wealth.

The men who are studying the American logging methods are all veterans of the World War, and are civil and mechanical engineers. When their studies have been completed here they will return to India to work under two American logging experts who are now there studying the conditions necessary for proper logging methods. Two experts from the United States Forest Products Laboratory at Madison, Wisconsin, are en route to India to advise as to kiln drying methods.

BOXING AND CRATING

WITH an enrollment of eleven officials of box factories and box-using concerns, the fourth commercial course in boxing and crating at the Forest Products Laboratory ended recently. The object of the course was to demonstrate for manufacturers and shippers the principles that underlie proper box and crate construction and the development of economical containers that will deliver their contents to their destination in a satisfactory condition at a minimum cost.

RECOVERIES by the Government, during the last fiscal year, for trespasses on the National Forests amounted to \$87,082 in damages and \$3,225 in fines. These included grazing, timber, fire, game, and occupancy.

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BOOK REVIEWS

"Heart of Hemlock," Clay Perry, (Bobbs-Merrill), 1920, pp. 288.

Stewart Edward White wrote stories of the Michigan lumber woods of which "The Blazed Trail" was particularly memorable. Clay Perry is less ambitious and contents himself with a readable novel centering about the activities of a pulp and paper mill in Wisconsin. With respect to the pulp and paper industry, the novel is not particularly informative. In fact, it is to be doubted whether the author has more than a casual acquaintance with a paper mill and with the woods operations incidental thereto. But he has absorbed in some measure the spirit of the industry and reflects its growing worry about future supplies of wood. Thus: "On every sheet of paper that leaves the mill there is superimposed on the invisible watermark of the flowing stream and the falling tree, the magic word 'enlightenment.' I had rather be making paper than making laws."

And again, this bit of conversation between Holt, the hero, and his employer, President Thorpe of the paper company: "Diminishing raw material. That means but one thing to me—reforestation. Why, you've been slaughtering the goose that lays your golden egg!"

"I know it!" cried Thorpe. "But that involves the man problem, again. It will take time and—"

"Yes, time and money and men and patience," cut in Holt quickly, leaning forward in his chair. "You've got the money, Mr. Thorpe. You've got to take time, have patience, find the men. I know where I can get men—a dozen foresters just out of khaki, looking for the main chance. I don't mean timber cruisers, tree killers; I mean real foresters."

The story itself concerns the doings of one Gary Holt who returns from the Army to his home in the mill town where his father rose from the ranks of river drivers. He is in love with Helen Edwards, just graduated from college, but already chief chemist of the paper company (!). Discontented with his routine job in the mill, Holt goes up the river on the drive where he encounters and overcomes the enmity of John Rod, the boss of the drive. There also he "finds himself," and by a test of personal courage, downs John Rod and gets his job,—and, of course, Helen Edwards.

The book is readable albeit almost too obviously dramatic in places. The dialogue is lively and the interest sustained.

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descriptive writing, but he is apparently more concerned with direct narrative. The author has missed opportunities for Finally, the question remains—why the frontispiece, which is not related to the story, and why the title "Heart of Hemlock," when hemlock is notoriously apt to be shaky and unsound at the heart.—A. B. R.

Text-Book of Physics. By Louis Bevier Spinney. (Macmillan.)

This is a valuable test book for university and college students. The author has emphasized the practical aspects of the science, illustrating the laws of physics as far as possible by reference to familiar phenomena and exemplifying principles by discussing their applications. The subject of mechanics is stressed. The book will be very valuable as a basis for class-room work, to be supplemented by a course of experimentally illustrated lectures and suitable laboratory exercises.

Broken Shackles. By John Gordon. (Dorance.)

This novel, by John Gordon, will be widely read. An unusual, vital story—that is true, it grips and bears one on from the silent strength of forest places to black, belching factory stacks, from the peace of an old and maple-shaded town to the world outside, with its snarled-up web of fashionables, politics and driving, smashing industry. It is a story of many men and a few women—all real. A worker rises from the rest, and a woman—the one woman, comes to meet him. It is a story of today, filled with the breath of the woods, the smoke of the mills; work, and the wages of work are told. The plot is carved from life, and there is fascination in the telling.

Two very interesting leaflets have recently been issued by the Barrett Company, one treating specifically of the preservation of wood roof decks with carbosota and the other covering quite generally the subject of longer life for mine timbers through proper preservative treatment. They tell just what to do and how to do it, and are full of valuable information.

Recognition is being generally given to the place of forest fire propaganda in the national campaign being conducted for fire prevention, as evidenced by the last chapter in the reprint of "The Teaching of Fire Prevention" put out by the State of New Jersey, which is entitled "Forest Fires" and was written by C. P. Wilber, State Firewarden of New Jersey. The subject is thoroughly, clearly and convincingly covered.

Inspired by the message in the lines of "Forest Fires," by John D. Guthrie, S. Walter Krebs, the prominent young American pianist and composer, has set the poem to music and dedicated the song to the American Forestry Association. He first wrote it as a solo, but later arranged it as a quartette for male voices.

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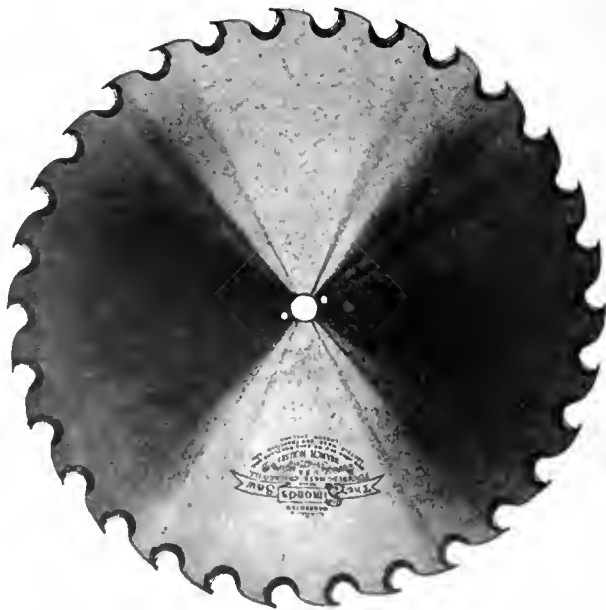


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THE ASSOCIATION OF WOOD-USING INDUSTRIES

A BIG step forward in forest conservation was taken in the organization and formal launching of an association of the various wood-using industries of America. The importance and size of these combined industries assures the power of accomplishment of the organization in the field of forestry, as it is their declared intention to urge a permanent policy of reforestation before the National Congress, to work out practical plans for conserving the present limited sources of wood supply, and to establish standardization of sizes used in the various industries in order to aid the lumber industry to secure a greater number of feet out of the logs, etc. This official federation of the wood-using industries also offers a splendid opportunity for the collection and dissemination of much needed information. The proper use of wood is one of the most vital questions of the day and the new organization, in its one capacity of acting as a general clearing-house in this field alone will perform a very valuable service.

The industries taking part in the organization were the Hickory Products Association, Automotive Wood Wheel Manufacturers' Association, Hickory Handle Manufacturers' Association, Associated Wooden Ware Manufacturers, The Four Ones, National Association of Egg Case and Egg Case Filler Manufacturers, National Association of Box Manufacturers, National Basket and Fruit Package Association, Central Bureau of Dining Table Manufacturers, Ply Wood Manufacturers' Association, National Implement and Vehicle Association, National Council of Furniture Associations, National Association of Chair Manufacturers, National Association of Wood Turners, American Paper and Pulp Association, Pulp Manufacturers' Association, Tissue Paper Manufacturers' Association, Writing Paper Manufacturers' Association, Cover Paper Manufacturers' Association, and the American Railway Engineering Association.

The officers are: President, Mr. E. E. Parsonage, representing the implement and vehicle interests; vice-president, Hugh P. Baker, representing the paper and pulp interests; secretary, William B. Baker, representing the furniture industry; treasurer and directors, F. A. Vogel, representing miscellaneous wood-using industries; W. A. Babbitt, wood turners; John Foley, wood preservatives, and W. Harry Davis, representing the wooden containers interests.

FIRE AND RAZOR-BACK HOGS PLAY HAVOC WITH YOUNG LONG-LEAF PINE

HOW the struggle for existence of young long-leaf pine on cut-over lands in the South is handicapped by hog grazing and recurrent fires has been brought out by a six-year experiment in Louisiana.

Millions of long-leaf seedlings sprang up over the South in the fall of 1913, resulting from a very heavy seed crop and favorable weather conditions. At the request of Henry E. Hardtner, of Urania, Louisiana, the Forest Service of the United States Department of Agriculture, in co-operation with the Louisiana Department of Conservation, laid out a series of permanent experimental plots. They were established at Urania in January, 1914, the aim being to secure reliable information regarding natural reproduction of long-leaf pine.

Four sample tracts of one-quarter of an acre each were selected of about the same character and about equally well-stocked with one-year-old long-leaf pine seedlings. Two of these plots were fenced against cattle and hogs and two left unprotected. Further, one plot in each of these two series has since been burned over yearly (or nearly every year), and the other two protected against fires.

A remeasurement of the sample areas was made in the winter of 1919-1920. The unfenced tracts were each found to contain only two long-leaf pine saplings. Since they originally had 734 and 813 seedlings, respectively, this was a loss of 99.6 and 99.7 per cent of the trees. The fenced tracts, on the other hand, were found to contain full stands numbering 1,513 and 1,707, respectively, of little long-leaf trees. This is the equivalent of 6,052 and 6,826 trees per acre under protection as compared with 8 per acre unprotected against hogs. This difference is practically accounted for, it is definitely known, by the fondness of the "razor-back" hogs for the thick succulent bark on long-leaf pine tap-roots. Although present in widely varying numbers, this famous southern forager usually occurs in sufficient numbers to destroy during the course of the first two or three seasons, and even during periods of extraordinary reproduction, the majority of all young long-leaf pines. It should be remarked that, so far as known, no damage of this sort has been reported from blooded hogs.

The effect of yearly controlled burnings is shown in a decided check in the growth of long-leaf and the killing out of practically all of the short-leaf and loblolly pines, which are not particularly resistant

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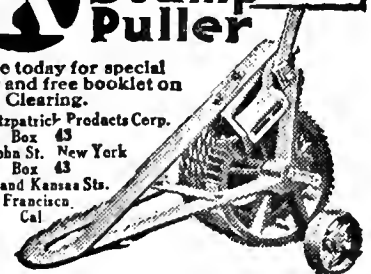


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to fires.

On the tract burned over yearly, only three-tenths of one per cent of the long-leaf saplings were over 2 feet in height and the tallest was 2.8 feet, while on the protected tract 16.3 per cent were over 2 feet and the tallest measured 7 feet. The effect of burning on a very small tract of this size, whether controlled or not, is probably considerably less severe and injurious than that resulting from a fire over a large area where there occurs a preliminary period of heating and drying by the wave of hot air preceding the arrival of the blazing fire front.

NATIONAL FOREST GRAZING FEES

GRAZING at the present is the principal source of money return to the Government from the National Forests, states Secretary of Agriculture E. T. Meredith in his annual report to the President. Since 1915, adds the Secretary, the grazing fees have been doubled, with the view of making them commensurate with current rental rates for neighboring private lands of the same character. When the existing rates were established, the users of the range understood that they would remain in effect

for five years, and many of the grazing permits were issued for this period. The value of the grazing privilege on many ranges subsequently advanced.

With reference to the increased rates for use of the range, no policy has been laid down by Congress for the guidance of the Department in the exercise of the administrative discretion, with which it has for fifteen years been vested, to determine the conditions under which the use of the range should be permitted. If Congress desires to prescribe such a policy, says Secretary Meredith, it should not take effect until after 1923, when the existing leases will expire.

BOOK PAPER FROM SOUTHERN PINE AND RED GUM

THE possibility of using southern pine and red gum for the production of high grade book and magazine paper has been demonstrated in recent trials at the United States Forest Products Laboratory, Madison, Wisconsin. Book paper requires for its manufacture two kinds of woods—a long-fibered wood, such as spruce, to impart strength, and some short-fibered hardwood to give the formation, finish, opacity, and other printing qualities. The southern

pinus are long-fibered woods, excellently suited for the manufacture of wrapping paper and fiber board, but their pitch content and the difficulty of bleaching them have heretofore been obstacles in the way of their use for white paper. These obstacles, it has been shown, can be overcome in a large measure by proper cooking conditions and improved bleaching methods. Red gum is typical of many southern hardwoods that might be used with the pines in the manufacture of the better grades of printing paper

Additional information and samples of the paper made in the trial runs of pine and red gum may be obtained from the Forest Products Laboratory on request.

CLUB ENDORSES NATIONAL FORESTRY PROGRAM

AT a regular meeting of the Natural History Club of New York City, held in December, 1920, the club voted unanimously to endorse the National Forestry Program formulated at the meeting of the Wood Using Industries and the American Forestry Association on October 15, 1920, a printed copy of the Program being read to the club.

The Whole Country Is Now Voting For A National Tree

in the American Forestry Association's campaign of education. Every school is taking this up. Will you help the cause of Forestry by putting the magazine in one or more schools in your town? The teachers and the pupils need the magazine. Will you put it in their hands?

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CLOSE FOREST UTILIZATION

A GROSS return of approximately \$500 per acre of forest land, compared with a return of less than \$300 an acre, had the timber thereon been cut for lumber alone, is given as an illustration of the results of close forest utilization by Howard F. Weiss, of the C. F. Burgess Laboratories, Madison, Wisconsin, in the last issue of the *Journal of Forestry*. Mr. Weiss bases his figures upon a survey made several years ago in the Pennsylvania forests. He says that the return to the lumber company cutting hemlock logs was \$288 per acre. \$45 per acre came from gathering four and one-half cords of hemlock bark; \$20 per acre or \$4 per cord was the return from using hemlock tops and culls for pulp; the mill waste was sold for both kindling and pulp with a return of \$25 per acre; the hardwoods on the tract were manufactured into staves at \$6 a thousand for the 13,000 per acre obtained, or \$78, and about \$48 per acre came from cutting the small and defective hardwood waste into "chemical wood" at a return of \$4 per cord.

FARM BUREAU ORGANIZES FORESTRY DEPARTMENT

THE Michigan State Farm Bureau at Lansing, Michigan, has made a unique move in organizing a forestry department as one of the eleven departments in the development of its educational work for the benefit of the 98,000 farmers of Michigan. Some of the more important phases to be extended to the farmers of the State who produce wood products are the conduct of State wide marketing pools of farm timber products, such as fence posts, fuel, retort wood, etc., the marketing of maple syrup for Michigan makers, the stimulation of the use and improvement of the marketing and of forest tree nuts and seeds. A cruising service is also to be extended to small woodland owners, together with working plans for the encouragement of the "annual crop" idea, the timber thus remaining in the ownership of the farmer.

LUMBER FOR SEWING MACHINES

TABOUT 60 million feet of lumber are used annually in the manufacture of sewing machines. Oak and red gum each supply nearly one-third of this lumber, and yellow poplar and black walnut each a little more than one-eighth, the balance being made up of tupelo, chestnut, cottonwood, maple, basswood, birch, sycamore, mahogany, yellow pine and redwood. Tops of sewing machines are usually made of hardwood veneers such as oak or walnut, or of other woods stained to imitate mahogany. The sewing machine industry is centered largely in Indiana and Illinois.

FOREST SCHOOL NOTES**UNIVERSITY OF LOUISIANA
SUMMER FOREST SCHOOL**

PROFESSOR J. G. LEE, of the chair of forestry at the State University, and a member of the board, fathered the inauguration of a Summer School of Forestry for advanced pupils at the university and others, with the advantage of practical experience in the woods at Urania in La Salle County, and at Bogalusa, where is located the world's largest lumber mill. This school will be conducted in conjunction with the State University School of Forestry.

The idea of the boys' forestry clubs so appealed to Colonel W. H. Sullivan, of the Great Southern Lumber Company, that he agreed to offer prizes next year of \$500 for the best results and demonstrations in forestry achieved by boys. The suggestion was heartily endorsed by Commissioner Alexander.

**UNIVERSITY OF IDAHO
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THIS year the Idaho School of Forestry is offering a special vocational course to meet the needs of disabled soldiers receiving federal training under the Rehabilitation Act. The curriculum is divided into quarterly units and the work is arranged so that each unit is practically independent, thus permitting students to enter at the beginning of any quarter and take up the work without being dependent upon the previous units. In order to facilitate the instruction, these units are so arranged that the terms of the Ranger Course correspond with the units of the Vocational Course, thus making it possible to handle the two classes together.

**COMPULSORY FIRE PREVENTION
EDUCATION**

THE Forest Service of the United States Department of Agriculture is preparing to give active co-operation to a measure undertaken by the Fire Marshals' Association of North America to bring about legislation for compulsory fire prevention education in the States whose legislatures convene this winter, according to a bulletin sent out by the National Board of Fire Underwriters. This is a highly important development in the educational field and should receive the hearty support of public-spirited people everywhere, as it not only concerns the public safety, but is intimately connected with the preservation of our forests from destruction by fire.

BOX MAKING IN NEW ENGLAND

NOT less than \$50,000,000 worth of wooden boxes are manufactured in New England each year by the 210 establishments engaged in the business. The lumber used by the box factories amounts to 670,000,000 feet. About 6,000 men are employed in the factories.

At present paper manufacturers are offering prices for lumber that makes it difficult for box manufacturers to secure material. The sawmills of northern New England are closing because the paper manufacturers will pay more for the logs in the water than can be obtained for the sawed boards.

The box business is one which touches all other industries and upon which nearly all are more or less dependent. New England was first in the field and has always done a lion's share of box manufacturing, drawing upon the forests of Maine, New Hampshire and Massachusetts for the lumber and looking to the neighboring manufacturers for a market. The manufacture of boxes is as old as civilization. The Egyptians made mummy cases of wood smeared with bitumen. Some of these gruesome cases, 6000 years old, are still in existence.

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For further information write to Franklin Moon, Dean, New York State College of Forestry at Syracuse, New York.

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PERCIVAL SHELDON RIDSDALE, Editor

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MARCH, 1921

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AMERICAN FORESTRY

VOL. 27

MARCH, 1921

NO. 327

EDITORIAL

HOUSE COMMITTEE CONSIDERS FORESTRY PROGRAM

THE underlying principles of the forest program incorporated in the so-called Snell forestry bill (H. R. 15327) received thorough airing before the House of Representatives Committee on Agriculture the latter part of January. Lack of time unfortunately prevented the presentation of oral arguments covering the entire bill, but briefs on all of the various sections were filed with the Committee for incorporation in the printed report. In the hearing itself only the first two sections, providing for co-operation between the Federal Government and the States in forest fire protection and forest renewal, were covered.

The two fundamental points brought out in the arguments presented were that there is urgent need for the immediate adoption of a comprehensive forest policy, and that the problem is a national one in the solution of which the Federal Government must take the leading part. Colonel Greeley, speaking in behalf of the

Forest Service, pointed out convincingly that the devastation of the forests has now reached a point where the future of our timber supplies can not be left entirely to the action of the private owner, whose guiding motive is naturally financial gain, and where some degree of public control over fire protection and methods of cutting is essential for the public welfare. The Snell bill proposes leaving such public control to the individual States, working in co-operation with and assisted by the Federal Government. Now that the Committee to which the bill has been referred has heard both the pros and cons of this proposal it is to be hoped that rapid progress can be made in agreeing upon a practical program of legislation. Certainly one of the first things which the special session of Congress should take up is the consideration of measures to safeguard the future timber supply of the country.

THE REDWOODS A NATIONAL POSSESSION

NEXT in instant need to the saving of our National Parks and Monuments from the determined effort to invade them which commercial interests are now making in Congress is that of holding back from the busy ax examples of the remnants still remaining of the magnificent redwood forests of the Pacific Coast. Both National Parks and redwood forests are unique in the whole world of nature. Both are necessary to the record which it is this nation's great privilege to hand down to the world's posterity. Both have extreme importance to the science of today and especially of tomorrow. Both are items of first importance in this nation's unique exhibit to civilization. Already the practical results of American nature conservation are the envy and the model of sister nations in two hemispheres.

The purpose of this editorial is to proclaim the fact that the California redwoods are Californian only in location and name. Essentially they are a priceless national possession, as national as Yellowstone Lake, the Washington Monument, the Grand Canyon or the National Capitol. The movement to save them must be as national as that mighty protest which is rolling up from every State in these United States against the violation of our National Parks.

There is this important difference between the im-

perilled situations of the National Parks and of the remaining fragments of the redwood forests, that the National Parks already are the possession of the nation and the redwood forests are owned by lumber interests which even now are wielding the ax and saw with the utmost vigor. The one is a defensive movement, the other aggressive; these forests must be acquired by private and public purchase.

Some day, for one thing, we must have a Redwoods National Park. Director Stephen T. Mather, of the National Park Service, has greatly helped to establish the national character of the movement by his determined work and personal contributions. So have such influential easterners as Madison Grant, president of the New York Zoological Society, and Henry Fairfield Osborn, president of the American Museum of Natural History. Nearly every State is furnishing its earnest workers. In the far west men like William Kent, who gave the Muir Woods to the nation, himself a lumberman, are giving freely of their time and money. Mr. Kent's personal contribution, like Mr. Mather's, was \$15,000.

But it is not proposed that private individuals should contribute all the money needed for these purchases, which may require a million or more before enough of these lands are acquired. Californian counties adjoining

these forests and the State itself are expected to help, and the National Government, it is earnestly hoped, may acquire its own National Park.

The great need now, however, is the awakening of the people to the emergency, and the wide expression of

their sympathy. In that cause every practitioner and student of forestry may find a nationally useful and a congenial field of work, one where his influence will count manifold because of his personal interest in forestry and his knowledge of trees.

BOYS, GIRLS, AND FIRE

REDUCING fire loss by means of fire prevention education for the boys and girls in public, private, and parochial schools throughout the country is the latest and should prove one of the most effective methods of fighting the fire evil. The stand taken by the Fire Marshals' Association of North America in favor of the passage by all State legislatures of laws for the compulsory teaching of fire prevention in the schools of their respective States is assuredly a move in the right direction. Not only can the importance of fire prevention be impressed on children more readily than on grown-ups, but the grown-ups themselves can be reached most effectively through the children.

The Fire Marshals' Association has proposed a model law empowering the State Fire Marshal and Commissioner of Education in each State jointly to provide a course of study in fire prevention and requiring each teacher in public, private, and parochial schools to devote not less than one hour during each month of the school year to the instruction of the pupils in the prevention of loss and damage to lives and property through preventable fires. New Jersey has already enacted legislation along these lines, and assurance that the proposition will receive respective hearing in other States is given by the fact that in addition to the Fire Marshals' Association the movement has the support of the National Board of Fire Underwriters, the National Association of Credit Men,

the United States Bureau of Education, and the Forest Service.

The part that a movement of this sort may play in reducing losses from forest fires, which now aggregate nearly \$20,000,000 a year, is difficult to overestimate. In teaching the children ways and means of preventing forest fire losses it is also important that they should be taught the reasons why such protection is essential and one of the prime duties of all good citizens. They should be taught in a general way, for instance, the place which forests and forest products play in the life of the Nation and that the protection of the forests, including both virgin timber and cut-over lands, is essential for their perpetuation. If these facts are brought home to them there will be no question as to their readiness to do their share in increasing our forest protection by reducing to a minimum the number of man-caused fires and the damage done by them. Co-operation of the children of the country, both now and after they cease to be children, will be one of the important factors in making really effective any comprehensive forest policy. The movement to secure this co-operation through forest fire prevention education throughout the schools is deserving of the heartiest support from educators, newspapers, commercial organizations, timberland owners, foresters, and the public generally.

AN UNTENABLE POSITION

DURING the winter the Washington State Board of Forestry has issued a detailed statement of forest policy which is in the main a reiteration of the principles outlined by it last March. While this statement of policy contains many excellent features, such as emphasis on fire protection, land classification, study of forest taxation, research in forest production and the utilization of forest products, and acquisition of State forests, it is marred by its opposition to the National Forests. This is an unfortunate and untenable position for any State to take.

As Colonel Greeley stated in commenting on the declaration of the board last spring, "The problem of supplying this country with newsprint, lumber, and other forest products is not a State problem or a local problem; it is just as much a national problem as our railroad transportation system and our merchant marine. . . . With so much idle forest land, with all the difficulties which are making private owners slow to take up the business of growing timber, I do not see how there can be any question that the Federal Government, as well as the State Governments, should go into this enterprise on the

largest scale of which they are capable. I therefore feel that the policy of extending federal forest holdings, both by purchase and by land exchanges, particularly with a view to acquiring cut-over land capable of growing timber, is absolutely sound and will commend itself to the great majority of people in the West."

In the 16 years that the National Forests have been under the administration of the Forest Service the policy underlying their creation has found ample justification. In its handling of them the Forest Service has proved that publicly owned forest lands can not only be administered efficiently, but in such a way as to retain their productivity and to contribute to the stability and permanence of local communities dependent in whole or in part on lumbering and other wood-using industries. Thanks to the creation of the National Forests, the country has a large body of forest lands under public ownership which will become increasingly valuable as a reserve for supplying the needs of the country as the timber in private ownership becomes more and more exhausted. Furthermore, they furnish the most conclusive

kind of demonstration as to the feasibility and advantages of practicing forestry.

It is of the utmost importance that the present area of National Forests should not be diminished but should be enlarged as rapidly as possible. The appropriation of a million dollars which Congress will apparently provide this year for the purchase of additional lands is altogether inadequate and should be increased to at least ten million dollars a year at the earliest opportunity. In this connection it is interesting to note that Washington's sister State, Oregon, which contains the largest area of

standing timber in the United States, "recognizes the desirability of maintaining the present National Forests under Federal control and believes in the blocking out, with certain limitations, of federal forest areas by purchase or otherwise of absolute forest land in the interest of more efficient and economical management of existing forests." Increased acquisition of forest lands by the Federal Government, particularly in the eastern United States, is sound public policy and should be pushed vigorously and without delay.

INDIANA CONSIDERS NEW FORESTRY LEGISLATION

THE General Assembly of Indiana now has before it two measures drawn by the Department of Conservation and aimed at protecting and increasing the forest resources of the State. The adoption of the first of these measures, dealing with the protection of farm and forest lands from fire, would constitute a marked advance over present practice. In brief, the bill proposes to centralize fire protection under the State Fire Marshal, acting *ex officio* as chief farm and forest fire warden, with the assistance of township wardens appointed by the county commissioners but subject to his approval. The State Forester is created *ex officio* assistant farm and forest fire warden and is given jurisdiction over all State forests, with authority to appoint as many assistant wardens as in his judgment are necessary to protect the State Forests and State Parks from fire. Inasmuch as Indiana's State Forests and State Parks are not at present extensive, the great bulk of the fire protective work is thus placed in the hands of the State Fire Marshal. This proposal constitutes a distinct departure from the practice in most other States, where fire protection for all classes of forest land, both public and private, is ordinarily centered in the State Forester. There are, however, certain advantages in relieving the State Forester of this burden, and the practical working out of the Indiana plan will doubtless be watched with much interest by other States should it be adopted.

Several sections of the bill are designed to put sufficient "teeth" in it to make it really effective. Thus, all wardens are given authority to summon all male residents of the State between 18 and 50 years of age to assist in extinguishing fires, and to arrest without warrant violators of the law. Heavy penalties are provided for maliciously setting fires on either public or private land, and for letting fire escape from one's own land with consequent damage to another's property. Penalties are also provided for kindling fires on public land or along State highways without permission of the appropriate authority. This provision might well be applied to kindling fires on any lands within the dangerous season without a permit. Other slight modifications might also be suggested, but these do not affect the main features of the law, which is decidedly worthy of enactment.

The other measure proposes to encourage timber production by granting a virtual subsidy through the reduc-

tion of taxes. Owners of "forest plantations" and "native forest lands," which are defined in great detail, are permitted to have them classified and assessed at the uniform rate of \$1.00 per acre. This assessment can apparently be continued indefinitely, provided the management of the lands is satisfactory to the State Forester, and no provision is made for the collection of any products tax at time of cutting. An interesting and commendable feature of the bill is the proposal, when any land is withdrawn from classification, for the State to appropriate in the form of an unearned increment tax any appreciation that may have taken place in the value of the bare land during the period while it was under classification.

The present measure covers much the same ground as a somewhat similar law permitting the assessment of forest land at \$1.00 per acre which was passed in 1889, but was repealed after four years because it was so loosely drawn. There is perhaps some question as to whether the provisions of the new bill, in attempting to remedy these defects do not go to the other extreme and may not prove so cumbersome as to be unworkable. It would, for example, seem to be much easier and fully as effective to leave it to the State Forester to decide whether a given tract is sufficiently well stocked as to come within the terms of the law, rather than to prescribe a fixed minimum number of trees at each age, to credit trees of a given diameter as occupying so many square feet of ground, and to provide that "if a tree dies or is removed the vacancy shall be filled by planting seed or seedlings therein." It is also questionable whether it is either necessary or justifiable to grant timber growers so large a subsidy as is represented by a tax on a purely nominal land valuation and by complete exemption from any cutting tax. In most other States the tendency in forest taxation reform appears to be toward assessing the bare land at its fair market value, and collecting a products tax from the mature timber at time of cutting.

Fire protection and forest taxation constitute two of the important problems which must be solved in the development of any adequate State forest policy. It is to be hoped that the General Assembly of Indiana will not adjourn without taking advantage of the opportunity presented by these bills to take constructive action in this direction.

FIRST ROAD OF REMEMBRANCE DEDICATED

THE first Road of Remembrance has been dedicated at Tampa, Florida, to "Hillsborough County's 106." The memorial highway is fifteen miles long and the undertaking was handled by the Rotary Club of Tampa. A fine shaft, marking the start of the road, was designed by Rotarian Ralph D. Martin. The speakers were E. D. Lambright and the Rev. E. C. Patillo, rector of St. Andrew's Episcopal Church, both Rotarians. The invocation was by the Rev. L. M. Broyles, of the Hyde Park Methodist Church. Secretary L. P. Dickie read the honor roll of those for whom trees have been planted as registered on the honor roll of memorial trees by the American Forestry Association. Commander J. B. Gay, of the Gunboat *Asheville*, spoke on behalf of the Navy. Lieutenant R. C. McDonald was in command of the planes from Carlstrom Field that patrolled the highway during the ceremony. A telegram from the American Forestry Association to the Rotarians said: "May those trees you dedicate on the first Road of Remembrance in the United States live as long as the memory of the '106' you so finely honor." Sergeant H. L. Smith, of Fort Dade, and Chief Gunner's Mate F. J. Burrows, of the Gunboat *Asheville*, pulled the ropes that freed the American Flag about the shaft. Hillsborough's Gold Star Mothers witnessed the ceremony, on January 2. President T. F. Alexander, of the Rotary Club, presided, and Rotarian J. G. Yates has the honor of being the first to suggest the Road of Remembrance plan to the Rotary Club.

This is an example of the plans afoot in many places.

The Lincoln Highway Memorial Association has large visioned tree planting plans going. The American Forestry Association's suggestion that the Roosevelt Memorial Highway be made a Road of Remembrance met with instant response. In Ohio Mrs. William D. Caldwell and Mrs. Edith F. March, of Canton, have worked out plans for memorial tree planting by the General Federation of Women's Clubs in that State. They have registered many of the trees in Stark County on the Association's honor roll. The Lincoln Highway has been projected for some years but the vision of the parked environs which had been developed by Jens Jensen took vital hold of and dominated the minds of the group of Canton women and they resolved to help make it materialize. In 1919 they banded together to carry forward the work. Twenty-six clubs were represented in the new one, under Mrs. Caldwell's leadership, and the name chosen was the Lincoln Highway Memorial Association of Stark County, Ohio. The general aim is to follow the Jensen suggestions and to promote planting the ground on both sides of the Lincoln Way along the thirty-five miles of its extent through Stark County. Professor R. B. Cruickshank, of the Horticultural Department of the Ohio State University, and Mr. Secrest, of the Government Experimental Station, at Wooster, Ohio, lent co-operation and in less than a year a thousand memberships were taken by men, women, and children; blue prints were made; thirty trees planted, and markers placed.



Photograph by Burgert Brothers.

IMPRESSIVE CEREMONIES ATTENDED THE DEDICATION BY THE ROTARY CLUB OF TAMPA OF THE MEMORIAL HIGHWAY, FIFTEEN MILES LONG—THE FIRST "ROAD OF REMEMBRANCE," AT TAMPA, FLORIDA

SPAIN AND HER SCANTY FORESTS

BY NELSON COURTLANDT BROWN

(PHOTOGRAPHS BY THE AUTHOR)

THE casual traveler from this country in Spain is at once impressed with the bold and barren character of the landscape as presented to him at every turn,

and which immediately strikes one as being almost forbidding in its exceeding austerity and barrenness, especially to one accustomed to seeing the landscape clothed, at least in part, with a wooded cover. The treelessness of a large portion of the country is perhaps the most outstanding feature of the visitor's first impression of the "land of the Don." From the viewpoint of topography, Spain, next to Switzerland, is probably the most mountainous country in all Europe, and consists largely of high plateaux about 2000 feet or more in elevation, interspersed with high mountain ranges which also surround the plateaux on all sides, and which drop off with striking abruptness to the sea. It should, therefore, under normal circumstances, be one of the most heavily

forested countries in Europe, whereas it is probably one of the most scantily covered sections to be found anywhere, with the possible exception of China and Greece. One naturally associates forests with mountains, and the effect upon one accustomed to well forested mountain slopes is most impressive. In many parts of Spain one can frequently travel for many miles through the mountainous districts without seeing any trees at all.

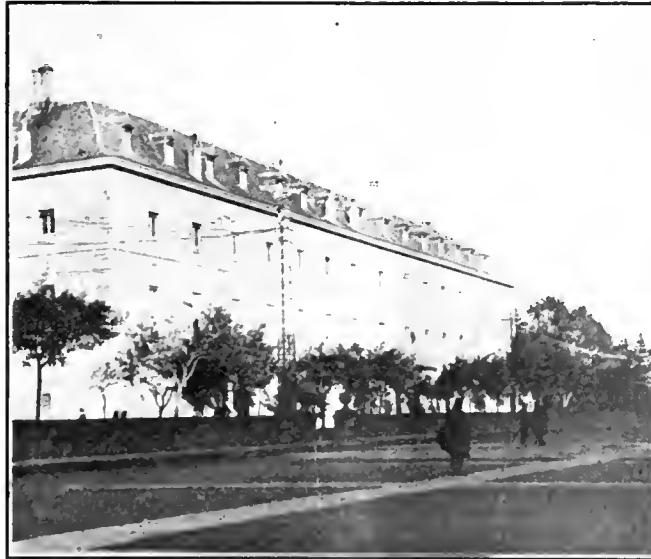
It is very likely that this condition has not always been the case in Spain, for there are

evidences that the mountainous sections, at least, were well forested at one time. It is very probable, however, that ever since the time

the stalwart Roman legions conquered the country before the time of Caesar, the whole Iberian peninsula has gradually lost most of its forests through continuous warfare, political dissensions, and internal strife. After the Romans conquered the country, it was variously visited by the Frankish, the Ostrogothic and many other hordes from the north and the Moors from the south. After the expulsion of the Moors had been completed by Ferdinand and Isabella, just prior to the discovery of this country by Columbus in 1492, Spain rose to its highest ascendancy in the sixteenth century under the powerful regimes of Charles V and his successor, Henry II, but from that time on gradually diminished in its international influence and has neglected many of its most important internal problems

and resources. Well forested mountains once covered with trees were frequently left to burn over from time to time after cutting and now serve only as inferior pasture land.

It was not until April 30, 1835, that any material progress was made in favor of the preservation and the extension of the Spanish forests. Spanish forestry really dates from that time. A special forestry bureau was established by the king then, and a few years later, in 1848, there was inaugurated a special Royal School of Forestry, called in



SPANISH COLLEGE OF FORESTRY

The Royal Spanish Forestry College at El Escorial, in the Guadarrama Mountains, overlooking the high Castilian plateau. This is entirely supported by the government and has been in existence for over 50 years. It is now used for a summer headquarters, the principal part of the college year being offered in Madrid.



A SPANISH FOREST

A view in a Spanish forest. Although some of the stands are much better than shown here, this probably represents a typical forest of pine. Owing to the serious fuel problem many immature and young growing forests have been cut for fuel wood. With the importation of normal lumber supplies nearly eliminated almost every native forest has been cut over in an effort to compensate for this shortage. Spain has even sent cross ties and lumber to France for the allied armies during the war.

Spanish, "La Escuela Especial de Ingenieros de Montes," which was established at Villaviciosa de Odon. This school is still in operation, but was moved to San Lorenzo del Escorial in the Guadarrama Mountains, north of Madrid. The credit for the establishment of a well organized forest service, and the creation of a greater interest of both a public and private character in the future of Spanish forests belongs to King Alfonso XII, father of the present King, who reigned from 1873 to 1885, and who made forestry his particular avocation. He studied and followed the profession to considerable length when in Austria. He named the technical staff



CUTTING BRANCHES FOR FUEL

Trimming limb wood from maritime pine trees on the outskirts of the city of Sabria in the vicinity of Barcelona. Although these trees were not cut, their limbs were almost completely stripped off, so urgent was the demand for fuel wood. Many industries formerly using coal were compelled to resort to fuel wood during the war.

and personnel to scientifically manage the Spanish forests of Balsain, the ancient hereditary domain belonging to the Spanish crown for the past several centuries. This was located in the extensive pine forests on the north slope of the Guadarrama Mountains, near Segovia—one of the few bright spots in a region of brown and barren mountains. The Forest of Balsain is now visited frequently by those interested in Spanish forestry practice, and it has more recently become the center of production of some of the very best Spanish timber. During the recent war, the most extensive timber operations in Spain were conducted on this ancient crown forest, and it helped very materially to supply a part of the deficiency of material owing to the lack of imports of forest products during the war. During the year 1918, this forest produced about 700,000 board feet—a large operation for Spain, but an extremely small one for this country.

Forestry in Spain probably follows more along aesthetic lines than that of any other country, a good share of the professional interest being devoted to the

proper care of and attention to shade trees along the city streets and country highways, as well as the development and maintenance of beautiful parks, some of which are very famous. Splendid evidence of this phase of Spanish forestry is everywhere present in the excellent care given to the shade trees along the city streets and parkways, particularly in such well known boulevards as the Prado in Madrid, the Paseo de Gracia in Barcelona, and the Paseo and Parkway in Seville.

Owing to torrential rains common in the high mountains and the consequent destruction resulting from erosion, the Spanish forestry officials have also devoted a considerable part of their attention to the erosion problem. As in the Vosges region of France, and in Switzerland the first efforts have been in the construction of dams to impede the runoff. This is followed in so far as funds are available by reforestation on the mountain slopes most susceptible to erosion. Some excellent results have already been obtained in the Pyrenees Mountains.

A great deal of attention is also given to fish and game culture along with their forestry practice. This



TREES STRIPPED OF BRANCHES FOR FUEL

This illustrates in a forcible way the need for fuel wood in Spain. All of these maritime pine trees have been stripped of their branches nearly to the tops to provide fuel. Spain produces practically no coal and with the importation shut off, prices for fuel wood have risen from 100 per cent to 200 per cent or more above the pre-war price level.

was initiated in 1886 when the Madrid Government leased the monastery of Piedra and established there the first fish hatchery.

The Spanish forests consist very largely of pine and oak. These are found chiefly in the Pyrenees and the Cantabrian Range, which is a western continuation of the Pyrenees and which borders closely the northern coast of Spain. In the south, are the highest mountains of the whole country, the Sierra Nevadas, near Granada, which attain an elevation of 11,400 feet, and are snow capped a good portion of the year. On the very highest

parts of these mountains may be seen a little silver fir, but the oak and pine constitute a large share of the forest wherever it is present. Most of the best pine is found in the province of Galicia and consists of the same maritime pine which is found in the Landes region of southwestern France. From the Galician forests come considerable quantities of pit props, which are exported in normal times in considerable quantities to England in return for the much needed coal on which Spain is almost entirely dependent. In Catalonia, above Barcelona, and in Andalusia, of Southern Spain—the real Spain of the story books—are found the extensive cork oak forests which produce a good share of the world's supply of cork.

In order to promote the best interests of the forests of Spain, a Spanish Forestry Association was formed many years ago, and is very active. An excellent monthly publication is issued at the headquarters in Madrid, entitled *Espana Forestal*. It is very attractively printed and beautifully illustrated and contains interesting articles on all phases of the subject, but it is noticed that many articles are designed to encourage greater government support of the forestry program, and to encourage the



SYCAMORES IN SPAIN

Method of trimming street trees employed in the city of Sarria in the Province of Catalonia. These are sycamore trees which are the principal street trees of Spain. The European linden is also used to some extent.

appropriation of larger funds for the purpose. Many articles are also devoted to commercial information, particularly with regard to the kinds and prices of lumber and other forest products from the different sections of the country. Since Spain is the home of the cork oak, considerable interest is evinced in the proper care and protection of these forests. They are an important source of income to the country at large, and many of the largest estates are dependent for their income upon the extensive cork oak forests which have been largely held within the same families and been operated along similar lines for the past several centuries.

In traveling about Spain, one is immediately impressed by the large number of trees indigenous to this country which have been planted successfully in nearly all parts of the Spanish peninsula. The California redwoods are to be seen growing in public parks in all parts of the country; they are used at railway stations and about country villas and private estates. In the grounds of the palace of the old Spanish kings at El Escorial are several redwoods about 65 years old which are from three to four feet in diameter and they apparently grow as well as in their native habitat in California. Eucalyptus trees are also found planted throughout Spain, and they are as



TAGUS BORDERED BY TREES

A view down the well-known Tagus River which flows from the high interior plateau of Central Spain, westward past the old historic city of Toledo, and across Portugal to the Atlantic, at the port of Lisbon. The island shown on the right is an old Roman fortress which is still in an excellent state of preservation. Almost along its entire course, the river is bordered by the picturesque pine or cork oak forests and occasional olive groves and vineyards.

common a sight in the landscape in and about the large cities as they are in southern California.

For reforestation, the European poplar is used extensively in the lower valleys, where this tree has been widely planted for the purpose of producing pulp wood. Along the railway lines between Barcelona and the Spanish frontier at Cerbere are to be seen extensive plantations of poplars which are apparently doing splendidly. For plantations in the mountains, the maritime pine is a favorite. Eucalyptus trees are planted for decorative purposes, for windbreaks, and for cordwood and timbers. Some of the prominent mines near Huelva plant them for mine props and cross-ties and report very successful results.

The total area of forests of all kinds in Spain amount to about 62,000,000 acres. According to the officials of the Government Forestry Service at Madrid, this includes, however, a large area of low brush wood and mountain pasture land which we should scarcely classify



STREET TREE PLANTING IN SPAIN

A view on one of the principal streets of Barcelona showing the well-trimmed character of their shade trees, which in this case are of sycamore. The two-wheeled carts shown in this picture are a characteristic sight on all Spanish highways.

as forests in this country. It is not likely that Spain contains over 12,000,000 acres of forest which we should classify as such in this country. Of this total area practically three-fourths belong to private interests, and only a little less than one-fourth belongs to municipal forests, the remainder amounting to a little over 600,000 acres, are owned and controlled by the central government at Madrid. State forestry is under the jurisdiction of the Ministry of Development and is directly under the



LOADS OF WOOD FOR FUEL

A common sight on the streets of Seville in southern Spain. Great quantities of branches and fuel wood were brought in from surrounding forests for use not only for domestic purposes, but for industrial plants as well. Wood is even used in many of the locomotives and was the principal fuel used for heating throughout Spain during the war, owing to the scarcity of imported coal which normally comes from England.

Director General of Agriculture, Mines and Forests. The faculty of the Royal Forestry College also acts as officers of the Forest Service. A few forests, amounting to about 15,000 acres belong to the church and to individual monasteries and to other secular interests.

There is a strong movement under way to encourage the appropriation of more funds with which to extend the areas of the National Forests, for only in this way can forestry be encouraged and developed on any comprehensive scale. Forestry officials at Madrid estimate that instead of having only about 10 per cent of the area of the country included in real forests as at present, at least 30 per cent should be well forested.

Some privately owned forests are managed on conservative forestry principles and receive careful protection, but a large majority of them have suffered from over-cutting, and later deteriorated through ravages of



PRIMITIVE WOOD-SAWING METHODS

Primitive methods of sawing are still occasionally employed in Spain. Many features of the lumber industry are still in a very elementary and primitive stage of development as compared with conditions in this country. Manual labor is resorted to in most of the wood-working establishments to a much greater extent than is commonly found in this country.

fires and the intensive grazing of herds of sheep and goats. Another serious menace to the development of forests in Spain is the severe cutting for charcoal and fuel wood before the trees have attained a fair size. The curling smoke rising from charcoal pits is a common sight in all Spanish forested mountain districts. Frequently trees which have attained a diameter of from five to eight inches are cut and used for charcoal, whereas they should be left to reach a much larger size. The recent world's war has even intensified the situation, because Spain is practically without coal, and therefore largely dependent upon England for her imports. It naturally follows, therefore, that Spain was compelled to resort to her native forests to compensate for the shortage of imported coal for a period of over four years.

Instead of coal selling for from \$10 to \$15 per ton, which was the normal price before the war, it finally reached the extremely high price of from \$80 to \$180 per ton, according to quality. This has meant that only certain specialized industries and some of the railways could afford to use coal. Most of the industries, as well as homes were dependent upon firewood or charcoal for their fuel, with the resultant heavy cutting of all the most accessible and available forests. It was a common sight to see fuel wood selling for from \$20 to \$30 per cord or more in many Spanish cities. Even branches and the smallest brush and twigs were collected and utilized for fuel.

Spain has always been a very important importer of lumber and forest products, but with the outbreak of the war there was insufficient tonnage to bring material to Spain, and its local forests were compelled to supply at least a portion of the serious shortage. As a result, the already neglected forests have been most seriously sacrificed for fuelwood as well as lumber and have

ment in Spain was pronouncedly pro-German. This feeling was no doubt due to the active work of the German propagandists. The movement of civilians across the frontier to and from France was constantly watched with the most painstaking scrutiny. In January, 1918, about \$50,000 worth of materials were purchased for the American army in Spain. It was considered a good sized shipment from Spain, but by September, 1918, over \$10,000,000 worth was being purchased for the support and maintenance of our army alone in France. Over



REDWOODS IN SPAIN

California redwoods about 36 inches in diameter at the base, growing in the gardens of the old royal palace of the Spanish kings at El Escorial in the Guadarrama Mountains north of Madrid. California redwoods are commonly found planted throughout Spain and there are many trees from two to three feet in diameter, indicating that these trees were planted from 50 to 80 years ago or more. They grow splendidly under the climatic and soil conditions afforded in Spain.

received a set-back from which they will require from fifteen to thirty years or more to recover. Although an important importer of wood, Spain was, however, called upon to supply cross-ties and other forest products for the American and French armies in France. In spite of a virulent and wide spread propaganda carried on by 100,000 Germans who had drifted to Spain from various countries at the outbreak of the war, Spain contributed many materials that were of real assistance to the allied armies in France. Although officially neutral, the senti-



CORDWOOD AT \$30 A CORD

A familiar sight on the streets of Barcelona when fuelwood was in great demand, owing to the lack of normal supplies from England. Cordwood brought as high as \$20 to \$30 per cord or more, delivered in Barcelona, and coal was selling at the prohibitively high price of between \$80 and \$160 per ton.

400,000 cross-ties were contracted for, and had the war continued, preparations were being made for the purchase of many more cross-ties, lumber and other materials. Pine and oak cross-ties were from \$2.00 to \$2.50 apiece, depending upon quality and size.

With the heavy purchase of food, forest products, and other materials for the allied armies, Spain prospered as seldom before, and now it is believed that Spain will engage in many larger policies of national welfare and developments of her important and largely latent agricultural and mining resources. In this wave of better things—a rebirth of the old Spanish position in world's affairs, the friends and supporters of forestry in Spain are hopeful of a better and more comprehensive plan of forest conservation which will insure the future of the Spanish forests. A notable forward step was taken in June, 1913, when the Royal Spanish Society of the Friends of the Forest was established under the royal patronage of His Majesty King Alfonso XIII and the Queen Mother Victoria Eugenia. This organization has been recognized by royal decree as being of great general public welfare.

FOREST RECREATION DEPARTMENT

NATURE—STONE-MASON AND ARCHITECT

ARTHUR H. CARHART, EDITOR

SCENIC ODDITIES IN AND NEAR LA SAL NATIONAL FOREST

BY CHARLES DEMOISY, JR., SUPERVISOR OF LA SAL NATIONAL FOREST

TO the tourist, recreationist, geologist, or student in archæology, an excellent opportunity for viewing and studying some of the most sublime and grotesque scenic and geologic wonders of the United States, is offered in the region of the La Sal National Forest and the Natural Bridges National Monument in San Juan County, Utah. This area, heretofore visited by comparatively few, mostly local ranchers and stockmen and pioneer geologists and archaeologists, also offers opportunity to the adventurous for exploring a wild, undeveloped country showing, as yet, little evidence of man's dominion.

In the extreme southeastern part of the State, the native sand rock has been carved by the great sculptural



THE EDWIN NATURAL BRIDGE

At once sublime and grotesque the natural bridge presents both beauty and engrossing problems in geology. The magnitude of the arch is well shown here in contrast to the human figures standing on top of it. Nature, by wind and water action has here builded a monument to her forces equal to many man-made structures of the same type and by far more graceful than most bridges.

refer; the picturesque "Ship Rock," near where four State corners meet, standing out like an ancient sailing vessel on the ocean horizon; the Bear's Ears, freakish shaped mountains and famous landmarks, and, by far the most interesting scenic attractions of the entire section,

forces of wind and stream erosion into strange, fantastic shapes leaving a myriad of benches, canyons, peaks and pinnacles, cliffs and chasms, in perfect miniature of that wonder of wonders in scenic interest, the Grand Canyon of the Colorado, to which the drainage of this country is tributary.

Outstanding instances of this strange work of Nature are "Big Indian," "Church Rock," "Looking Glass" rock, typifying in minutest detail the objects to which their names

If all our National Forests could be heard from, few could offer more unusual scenic attractions than those found in and near the La Sal. Mr. Demoisy graphically tells of a few of the unusual bits of landscape to be found there. And yet, if we could only get like information from nearly any National Forest we would find that in each can be found some striking thing worth seeing.

To know your National Forests is to become familiar with the greater values of scenic America. The 150,000,000 acres of National Forest territory are not all replete with scenic wonders and yet every one of them carries some charm. The aggregate scenic wealth within these Forests is one of the greatest aesthetic heritages ever owned by a nation.

Knowing the La Sal you know but one of the more than one hundred and fifty National Forests. But in thus meeting the La Sal National Forest as here presented you become familiar with one more of the scenic wonderlands of the Forests and thus may come so much closer to knowing the majority of these stupendous lands of scenic surprises and unexcelled vacation lands.—Arthur H. Carhart, Editor, Recreation Department.



BALANCED ROCK

At the head of Nigger Bill Canyon, Northern Division of the La Sal National Forest, is this queer member of the Balanced Rock Family. As a background is seen one of the multitude of wind-fretted rock cliffs of the region.

the Natural Bridges, three of them within a short distance of each other, being included in a National Monument.

These three natural bridges, and the great Rainbow Bridge, several miles to the westward, are easily the largest yet discovered in the United States. The first three are within a distance of five miles and are called "Edwin," "Caroline" and "Augusta," in the order in which they are usually approached. Later names assigned to them by officials of the United States Land Office, but not generally used, are, respectively, Owachomo, Kachina and Sipapu—Hopi Indian names.

Sloping as the country does, from the higher peaks of the Blue Mountains, where 12,000 feet elevation is attained, to the low level of the Colorado River, it is not hard to imagine the cutting and polishing forces of the currents of mountain waters as they rushed through the irregular cracks and crevices in surging eddies. In this manner sharp corners were rounded off, deep caverns and recesses were dug out of the cliffs, and soft places in the yielding sandstone were

sought out. This process continued so long that a series of perfectly formed buttresses and arches is left, having particularly graceful curves and pleasing proportions.

The "Edwin" bridge is a slender and delicately proportioned structure, particularly pleasing to the eye. It has a span of 194 feet and a height of 108 feet. The long arch is only ten feet thick in the center and thirty feet wide across the top.

Approximately three miles down the canyon near the junction of White and Armstrong Canyons, is found the "Caroline," having a more massive and less well finished arch than the former, but none the less imposing. So large are the parts of this bridge and so close the surrounding walls and cliffs that the successful photographing of it presents a difficult problem. Its span is 186 feet from side to side and 98 feet high in the center. The total height of the bridge is 205 feet with a width on top of 49 feet. Beneath this great structure is a cool, clear spring of water, inviting the traveler to refresh himself and rest in the majestic splendor of the situation.

Proceeding up White Canyon, whose lofty cliffs, domes and caverns become more and more impressive, one approaches the great "Augusta" bridge, the span of which is 157 feet high and 261 feet long. The total height is 222 feet and the width at the top is 28 feet. It is a fitting climax to this series of natural wonders, combining massiveness with gracefulness of proportions in an unbelievable manner.

The crowning glory of the scenic attractions is their coloring. The rock formation is a sandstone of rich red



MRS. UTE SQUAW AND FAMILY

While along the sides of the many canyons of this land of mystery are ruins of pre-historic cliff-dwellers, in other places may be seen members of Indian tribes whose reservations are nearby. These later Americans are not a bit less interesting than the ruins which speak mutely of a very early civilization.

or brown color with the top or exposed portions white or gray due to the weathering influences. Between these two are found every shade or tint in striking combinations that do not seem real. This picturesque effect delightfully breaks up the usual monotony of the desert and canyon types of scenery. Such plants as cacti, yucca, greasewood, and sagebrush abound in the lower levels. Above these are found immense bodies of Pinon and Juniper, topped with tall pine and spruce timber, interspersed with cool aspen groves and crystal springs, as the mountain tops are approached.

In the many natural caves and sheltered ledges of the cliffs within the National Monument and along the trail en route, are found the ruins of cliff dwellers' houses. There are also on the massive side walls ancient paintings and hieroglyphics—mute evidence of a civilization

which is lost to history. The exploration of these rewards the visitor bounteously in adventure, and information.

From Monticello or Blanding, Utah, which is easily reached by auto from southern Colorado or central and eastern Utah points, the only means of transportation today is by saddle-horse and pack outfit. To anyone used to active outdoor recreation, the 40 to 50 mile trip is not a strenuous one, if taken any time during or between the months of May and November. Its length can be broken by any number of camps en route, rich in scenic attractions and unusual interest. During most

of the winter months the Bridges are also accessible but the temperature at that time is a little too low for comfort. Plans are under way for the construction of a good auto road to the region, but, owing to the cost and difficulty of providing sufficient funds, it will undoubtedly be two or three years before this becomes a reality.

Parties contemplating one of these trips should be accompanied by a guide as a knowledge of desirable camping places near good water is essential and a stranger might easily and hopelessly be lost in the maze of box canyons and ridges with precipitous slopes. Competent guides and good outfits can be readily arranged for in the towns of Blanding and Monticello. To avoid delay these arrangements should ordinarily be completed in advance.

Recently a commercial aircraft company has been investigating possi-

ble landing and camping places near the Bridges with a view of making air excursions thereto from railroad points and surrounding centers of population. It is confidently predicted that this mode of transportation will become popular within a few years with many visitors.

In the meantime those who are interested need not wait for better facilities of travel to be perfected and lose the exhilaration and satisfaction that this trip affords now, as well as the distinction of being among the first to explore this wild and comparatively little known region.



THE AUGUSTA NATURAL BRIDGE

Carving and coloring, done by the master hand of nature and softened by years and years of exposure to the weather make these natural bridges more than freaks of nature. They are things of beauty.

HISTORIC OAK DESTROYED

ONE of Talbot County's historical trees was destroyed recently by a storm, says an Easton, Maryland, dispatch to the Baltimore Star. The mammoth white oak in the rear of the brick meeting-house of the Society of Friends, known as Third Haven Meeting-house, fell with a crash and made kindling wood of 50 feet of shedding, where the members were wont to hitch their horses and teams when attending service. This tree was one of the original grove under which William Penn

preached when touring Maryland and where Lord Baltimore at one time worshipped. During the last 40 years a half dozen of these monsters have gone. The stumps of two of them disclosed more than 400 rings. The monarch of the group still stands. Under this group of trees Indians took shelter in Colonial days. A place of worship was selected among them because of their protection, and the spot being a sanctuary in turn protected the trees.

LANDSCAPE ARCHITECTURE IN THE FORESTS

BY FRANK A. WAUGH

THE biggest problems which the profession of landscape architecture ever faced in the world are those which present themselves now in the National Parks and National Forests of North America, meaning the United States and Canada. Here we have given into our keeping the greatest stretches of the finest landscape ever made. Any suggestion for planting a tree here or a bush there or grading down a little hillock is so ridiculous that persons who think this to be the sole business of the landscape architect are inclined to laugh him out of court.

However, if the landscape architect is a real man and really understands his business he must know something more than the ordinary man knows about the landscape. Whatever special training he has and whatever extra development of taste or feeling, he ought to be able to apply these to some effect in dealing with the big landscapes which are so passionately loved by all Americans.

As a matter of fact the landscape architect has a very definite program in his mind with reference to these very problems. We may say briefly and positively that the business of the professional landscape architect with reference to these major landscapes is—

1. To preserve them in perpetuity.
2. To make them accessible to human beings.
3. To interpret the landscape to human understanding and feeling.

Now the work of conservation is sufficiently obvious. In setting aside national parks and national monuments the sole intention has usually been to preserve extraordinary landscape features for general enjoyment.

While this idea of landscape conservation has never been put forward in connection with the National Forests, the result of establishing such forests has been the conservation of much noble landscape on a very large scale. In state parks and state forests the same sort of conservation is going on, and this movement is progressing more rapidly than most persons imagine.

It is rather interesting to note therefore that the great conservation movement which received so much public attention a few years ago has almost unconsciously included an enormously extended and enormously valuable conservation of natural landscape.

The problems of making this landscape accessible are primarily those of technical landscape architecture. It is the regular business of the professional landscape architect to provide "circulation,"—the road paths and other methods of getting through and into the scenery.

This problem of circulation is much more difficult than has commonly been supposed. Thus far it has been approached mainly from the engineering standpoint. It must be clear, however, that if the problem is to develop the landscape to its best effect one must first of all have a very clear idea of the rela-

tive values of different parts of the landscape and of the artistic relation of part to part. The different features in the landscape must be presented in a coherent manner and in a logical order. Just for example, one frequently finds that circulation has been arranged in a manner to provide an artistic anti-climax.

Only the most meager hints can here be given regarding the character of these artistic problems, but it must



SNOWMASS PEAK AND LAKE

We may say positively that the business of the professional landscape architect with reference to these major landscapes is (1) to preserve them in perpetuity, (2) to make them accessible to human beings and (3) to interpret the landscape to human understanding and feeling.



A FOREST TRAIL ADMITTING OF FINE DEVELOPMENT

This trail at this point presents a problem in the art of landscape design. The question is, should there be a vista opened on the right to some point in the valley or is the mountain side in front the proper theme for this outlook.



IN THE WHITE RIVER NATIONAL FOREST, NEAR TRAPPERS LAKE

It is rather interesting to note that the great conservation movement which received so much public attention a few years ago has almost unconsciously included an extended and enormously valuable conservation of natural landscape.

More and better planning is needed in landscape development of National, State and County parks, monuments, forests and other like public lands. Too often the landscape development of such areas is either incidental work for some man already busy in other lines or is given into the hands of some one incompetent and incapable of developing the greatest art values in these regions. Public laws govern the practice of medicine, of law and other professions. It is as criminal to allow malpractice in the field of landscape work as in these other fields, and yet, because it does not touch pocket-book or health, the public does not demand swift condemnation of quackery so often foisted on the public as landscape gardening.

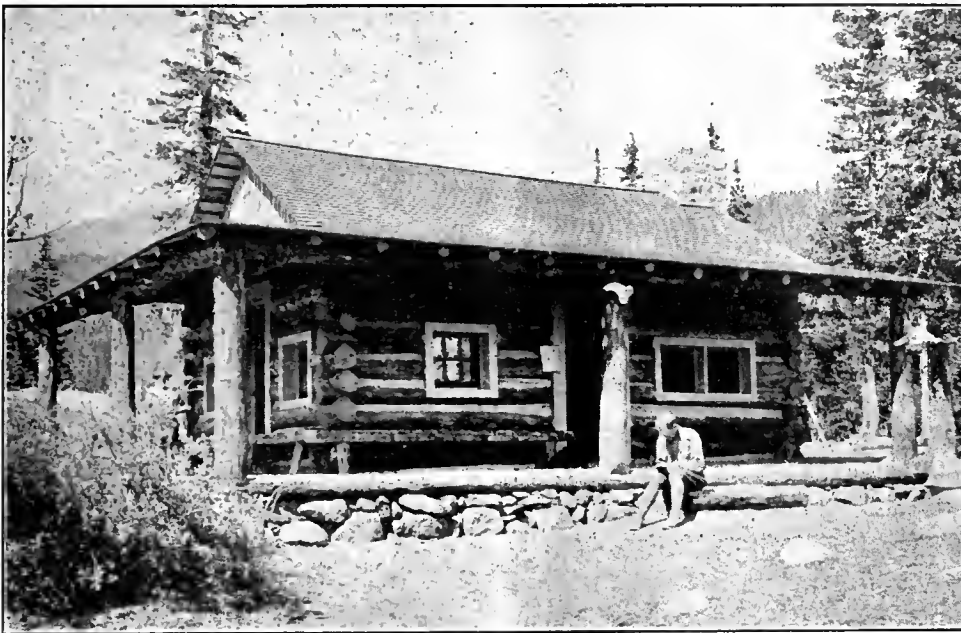
Landscape architects in charge of landscape design in our National, State and County playgrounds will give to the Nation through proper preservation and presentation of natural features present beauty values greater than can otherwise be realized. They will insure a working, living scheme which will have in it no lost motion due to ill-advised plans, and they will in this one item, in the long run, save the original cost of securing proper services. There will be no building of so-called rustic developments which are often merely grotesque or of monumental concrete structures in rural settings where they are not only out of taste, but represent a waste of valuable funds on inappropriate developments. Every step will be towards a unified composition and every part of the scheme will function as well (or perhaps better) fifty years hence as it will the day completed.

Landscape architecture is a fine art. In the field of greater landscape designing, so ably presented by Mr. Waugh in this article, that art can return to the people the greatest scenic wealth of the Nation, enhanced and protected, and furthermore, artistically and sympathetically presented to the public. What foolish economy it is to put money in on plans made by other than competent artists. What chances even those people who attempt to do landscape planning and are not properly trained or experienced, take in ruining some exquisite bit of natural beauty with ill-advised developments. Condemnation of such practice and the institution of a demand from everyone for the best treatment of the best American scenery should come at once. We owe it to ourselves, our neighbors and posterity. The article by Mr. Waugh but points the way to some of the greater possibilities in this work and where it will lead. It means if properly trained landscape architects be placed in this work there will be preservation, protection and artistic development of our great National play areas so that the country will be a land of enhanced natural beauty and not one of desecrated and dissipated scenic values lost because of ill-founded, over-zealous maltreatment of these values by someone serene in the belief that he is a "natural-born" landscape designer and artist. Such heaven-gifted spirits do no more grow spontaneously than do so originate great surgeons. Mr. Waugh has blazed the way and when that path is followed, the future is secure.—Arthur H. Carhart, Editor, Recreation Department.

be emphasized that up to the present moment the artistic possibilities of development in the natural landscape have been almost wholly neglected. Whenever some really effective development comes it must be expected at the hands of the men who know what landscape is and who, through rigorous training and experience have acquired the technical knowledge necessary for the solution of

such problems. Circulation is of course only one of the technical problems in landscape development, but it is typical of the sort of work which the professional landscape architect ought to be doing in all the territories now being conserved for human enjoyment.

Every artist of every sort has not only problems of structural design, but if he is a real artist he must also be capable of offering a spiritual interpretation of his work or of the work of other artists. Interpretation is entirely clear to us in many of the fine arts. We remember that Hamlet is a very different person when interpreted by Robert Mantell from the Hamlet of Salvini or Otis Skinner. Musical interpretation is a high form of musical art and even Beethoven's Fifth Symphony is by



UNITED STATES FOREST SERVICE REST CABIN—PIKE NATIONAL FOREST

Circulation is not the only problem for the landscape architect in the human use of the Forests. The housing problem or camp development is present too. Here at Timberline on Mount Evans the Service has built a tastily designed and serviceable house where one is welcome to stay over night. Inside are beds made of rough lumber, cooking utensils and tools bought and placed there by the Colorado Mountain Club, and by the door hangs a Service Traveler's register where each visitor is supposed to put down his name so the total visitors coming here in the season may be counted and added to the total for the Forest, State, or District.

sons of less training or insight. Quite obviously we are touching here on a matter of extreme difficulty. Yet landscape interpretation ought to be no more difficult than musical or dramatic interpretation. The main difficulty is that the idea is entirely new. It will take us some time yet to produce trained landscape interpreters and for them to find the most effective technique for this branch of the art of landscape architecture. To



ON TRAPPERS LAKE

Any suggestion for planting a tree here or a bush there or grading down a little hillock is ridiculous. The landscape architect has a very definite program in his mind with reference to these larger problems

no means the same when rendered under Stokowski's baton or Damrosch's. Quite the same way the big native landscape requires interpretation. A thoroughly trained and sympathetic landscape artist can see more in the landscape than the common person, and he ought to be capable in some way to

communicate his deeper feeling or his broader vision to other persons. Quite obviously we are touching here on a matter of extreme difficulty. Yet landscape interpretation ought to be no more difficult than musical or dramatic interpretation. The main difficulty is that the idea is entirely new. It will take us some time yet to produce trained landscape interpreters and for them to find the most effective technique for this branch of the art of landscape architecture. To some extent, however, the way has already been shown. John Burroughs has long been the unofficial interpreting naturalist of this country. The details of landscape—trees, flowers, birds—he has made seem more vivid, more human and more worth while. John Muir was the prophet of the larger phases of the land-

scape. He made us love the mountains, the glaciers and the forests.

It might be suggested that these men were not landscape architects. It may be answered simply that the landscape architects ought to do that sort of thing also and do it better than anybody else. Any one who is at all acquainted with Mr. Jens Jensen, for instance, living and active landscape architect, president of his own



AUTO ROAD IN THE COLORADO NATIONAL FOREST

Traffic lines are either so developed as to tell the story of the country or they are monotonous. The aim of the landscape architect is to have a traffic line function not only as a line of travel, but tell a story in a pleasing way at the same time.

society of "Friends of Our Native Landscape," knows him as pre-eminently an interpreter. Moreover his interpretation is different, entirely characteristic, quite as individual as Stokowski's interpretation of Brahms. It may easily be described as a poetic mystical and symbolic interpretation.

Now these are large words in the field of landscape art, and I have not time now to explain or justify them. I only wish to point out that high, spiritual interpretations of the landscape are not so far away as we might think at first mention.

[Mr. Waugh is an authority on this subject. He has for two seasons studied recreation problems in the National Forests and playgrounds of the West, and has done so with sympathetic and first-hand knowledge of this subject, based not alone by the study of theory but by the practical application of landscape design to these problems of national recreation territory.]

Most of all I want to emphasize the theorem with which I started, viz., that the landscape architect has a very definite work to perform in dealing with the big features of the native landscape, and that this work covers the whole field of conservation, technical development and interpretation.

THE SILVER BIRCH

Back from the highway, my lady of dreams
Murmurs a roundelay tender;
Silence and fragrance, and flowers and streams,
These do you sing of, my lady of dreams,
Standing so stately and slender.

Silvery white where the lone shadows brood,
White where the starlight is streaming,
Silvery white through your virginal snood,
Silvery white through your veil and your blood—
You, with your singing and dreaming!

You, with a cloak of the loveliest green
Draping your warm whiteness over!
You, with the breath of the forest, I ween,
Mosses and briers with lilies between—
Haunts of the poet and lover!

Back from the highway, my lady of dreams
Murmurs a roundelay tender;
Silence and fragrance, and flowers and streams
These do you sing of, my lady of dreams,
Standing so white and so slender!

—Jean Blewett, in London, Ontario, Advertiser.

BELGIAN GOVERNMENT ACKNOWLEDGES TREE SEED

FOLLOWING the shipment of seed sent to Belgium by the American Forestry Association for the replanting of areas devastated by the war, the Association has received the following letter from the Hon. N. P. Crahay, Director General of the Ministry of Agriculture of Belgium:

"I have the honor to advise you of the receipt of your letter of the 23rd of December announcing the shipment of the Douglas fir seed.

"The gift of your society is particularly valuable to us just at this time for the reforestation of the large area of denuded lands and because of the difficulty that we are experiencing in securing the seed of American species, of which the green variety of Douglas fir from Oregon is of the greatest interest from the point of view of Belgian silviculture.

"Please express my keen appreciation of the gift to the members of the American Forestry Association, and accept the assurance of my high consideration."

WOODCHUCKS AND PORCUPINES

BY R. W. SHUFELDT

(PHOTOGRAPHS BY THE AUTHOR AND OTHERS)

THE woodchucks we have in this country not only vary considerably in appearance and color, but their habits are likewise dissimilar owing to the difference in the environments in which they exist. I have had but little acquaintance with the northern and western forms of these animals, but abundant opportunity to study the eastern species in different sections of the New England and Middle States. Many years ago, during my boyhood days, which were mostly spent in

woodchuck at first descends obliquely into the earth; it then passes nearly horizontally for several feet, rises moderately for the last half of its length, to terminate in quite a spacious and round chamber which constitutes the "living-room" of the entire family. Here the female brings forth her litter, and here the young remain until they pair off and dig their own homes elsewhere. Such a burrow may be at least thirty feet in length—so long that one never dreams of digging a woodchuck out; but I have seen farmers bring up two or three barrels of water on a cart, and drown the occupants of this subterranean establishment at short notice, rejoicing most heartily if, in addition to the pair, seven or eight quarter-grown young were caught at the same time. I have often captured them in steel traps set at the mouth of the burrow, taking the precaution of covering it carefully with fine dirt. One old woodchuck had constructed his burrow almost in the exact center of a twenty-acre clover lot, and every attempt to

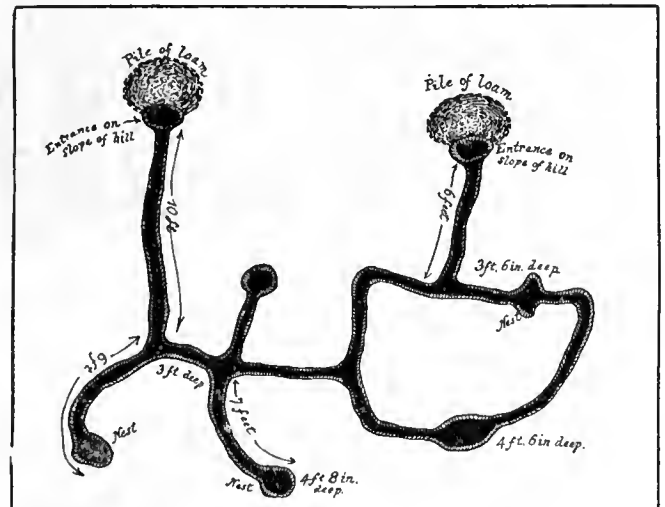


SOME CALL THIS THE GROUND HOG

Figure 1. An excellent picture of an old Woodchuck in a characteristic attitude. By the author from a drawing by Leon L. Pray, illustrating "The Mammals of Illinois and Wisconsin" by Charles B. Cory.

happy old New England, I did my share of both trapping and shooting woodchucks—even helping to eat a roasted one on occasions. But I did more than this, as I had them as pets several times, and closely studied their habits in nature and in confinement. In those days, in some parts of the State of Connecticut, it would be hard to pick out a clover field of any size that did not have a woodchuck burrow in some part of it. Sometimes the animal would choose a site somewhere under a stone wall surrounding a field; or, if there were a large rock anywhere about the middle of the field, he would burrow under this as a very choice location. Finally, the roots of an old apple or other tree would often be chosen for his stronghold, the burrow being dug down among them, as though its owner seemed to realize that no one would dream of attempting to dislodge him from such quarters.

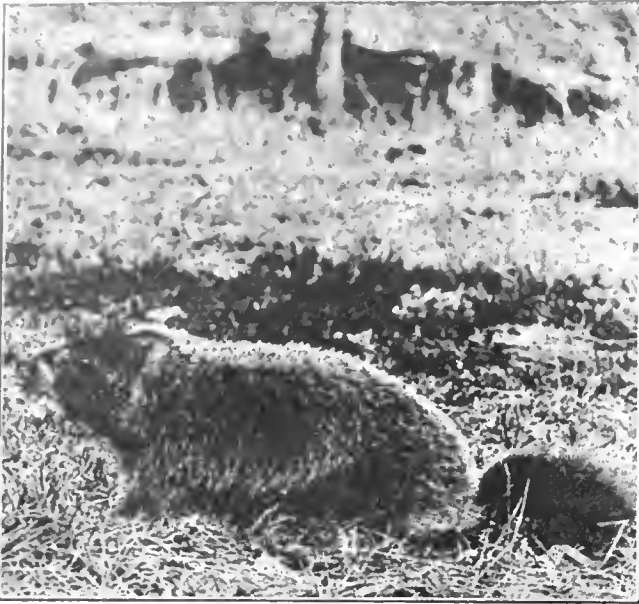
As is the case with excavations made for their habitation by most fossorial mammals, the burrow of a



PLAN OF A WOODCHUCK'S BURROW

Figure 2. No existing quadruped can excel the Woodchuck in scientifically carrying out the scheme of a burrow; it fulfils all the necessary ends of an underground habitation.

capture him had utterly failed. It was the rarest thing to even catch him standing at the entrance to his burrow during the day, but just his head and shoulders might be frequently seen out of it. I must have fired at him twenty or thirty times from the other side of the stone wall that surrounded the field, and that with a heavy, old-fashioned, muzzle-loading Kentucky rifle, which, at seventy-five or hundred yards, was good nearly every time for small game. But every shot had failed. A cloud of dust would puff up at the very entrance to the burrow each time, and I would walk confidently over to pick him up; but no. Next day, at noon,



Courtesy of the United States Biological Survey.

THE YELLOW-BELLIED MARMOT

Figure 3. In this species the fur of the under parts is of a rich, golden yellow; and withal it is a very handsome animal. It is found in western Texas, New Mexico, Arizona, and northward.

there he was again, looking out as saucy as ever. I finally captured him by tying a Colt's revolver to a stout stake driven in the ground within a few feet of the burrow, and training the aim down the entrance. Then, attaching a long string to the trigger, I waited behind the wall till he again showed himself, when the success of the device sealed his doom. I found, upon examination, that he had been "barked" in several places by rifle balls, which included a long graze across one shoulder;



Courtesy of the New York Zoological Society.

AN EASTERN WOODCHUCK

Figure 5. Here again the Woodchuck investigates. This time he cannot see his shadow, and his attitude indicates that he catches the gentle air of settled spring time. He may now safely commence the work of the season.

the tip of his chin was gone, and his hair was parted along the top of his cranium.

Their heads make difficult shots at seventy-five yards owing to their color being so much like the earth about the burrow; and I have always believed that they succeed in dodging just a little bit at the flash. But this would probably be out of the question with the best of small calibre rifle nowadays. This woodchuck measured from tip to tip twenty-two inches, and was the largest specimen I ever examined; it was very dark in color, and, as a matter of fact, they vary a great deal in that way; I have shot some very light colored individuals—notably so for their under parts. The animal is never taken for its fur, though I have heard that its hide, in former times,



Courtesy of the New York Zoological Society.

EASTERN WOODCHUCK, THE "GROUND HOG"

Figure 4. If this be his first appearance above ground in the spring, he will surely have to go back into his burrow for another six weeks, as there is no question but that he can plainly "see his shadow." So much for myth-lore and rural tradition.

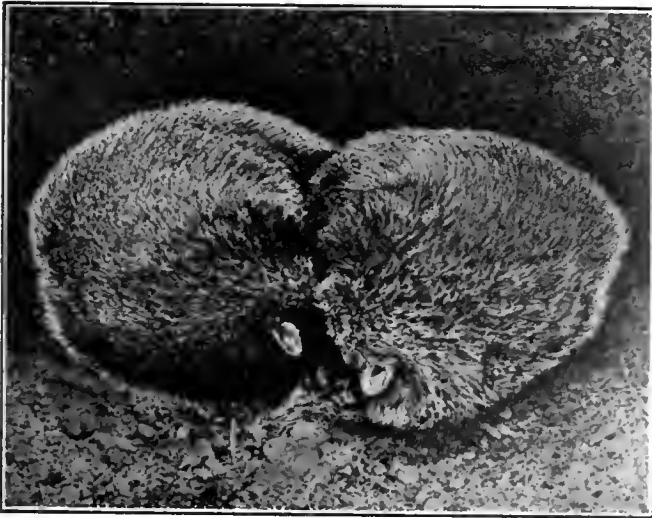
used to be cured for whip-lashes; but personally I have not known of their having been collected with the view of thus utilizing them.

Woodchucks are very prone to sit up on their haunches after the fashion of prairie marmots and spermophiles, and to eat with their fore feet while in this attitude. Farmers have, from the farmer's point of view, a good right to be their enemies, as not only do they eat up quantities of their clover, but tramp it down besides to no little extent. Then, during their foraging excursions at night—when they really venture away from their burrows for any distance—they consume and destroy quantities of young green corn and melons.

These animals become enormously fat during October in the Northern States, and take to the ground soon thereafter for a period of six months, during which time they enter into profound hibernation. They show no disposition whatever to live in companies like the marmots of the Western prairies; though, if I remember

correctly, their northwestern relatives, the hoary marmots, thus congregate—sometimes as many as thirty or forty being found in the same community. Woodchucks, when pressed, are very good runners, their squat appearance reminding one somewhat of a badger, and, like that animal, they will bite severely if captured by the hand. If cornered in a wall they will chatter and grunt, occasionally giving vent to a loud and peculiar whistle-like squeal, from which they get the name bestowed upon them by the Canadian French of *Siffleur*—the whistler. Upon several occasions I have seen woodchucks climb a tree, and if they can by so doing reach a large, horizontal limb, they will stretch themselves out upon it for a noon-day sun-bath.

Woodchucks are not nearly as numerous as they formerly were; though, notwithstanding the persistent war-



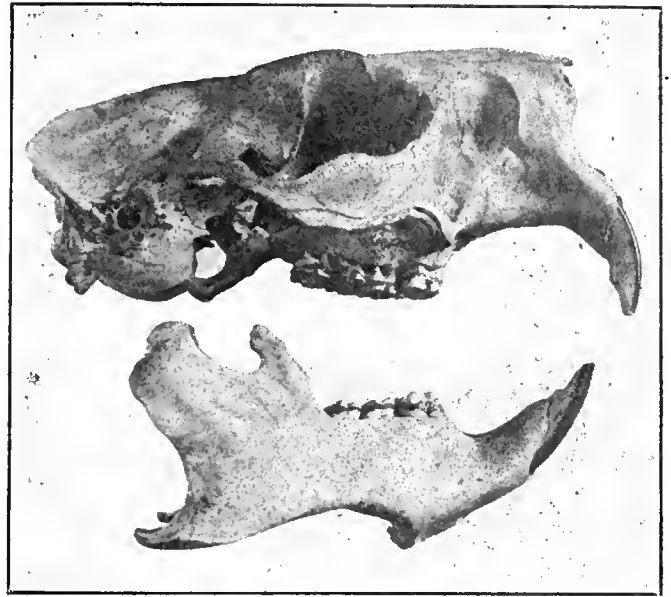
Courtesy of The University Society, Inc.

AS SNUG AS TWO BUGS IN A RUG

Figure 6. It is a well-known fact that the eastern Woodchuck occasionally hibernates in pairs. This remarkable photograph from life by S. A. Lottridge proves it.

fare against them by farmers and others, there seems to be no immediate danger of their total extermination. However, in some regions they have been entirely shot out.

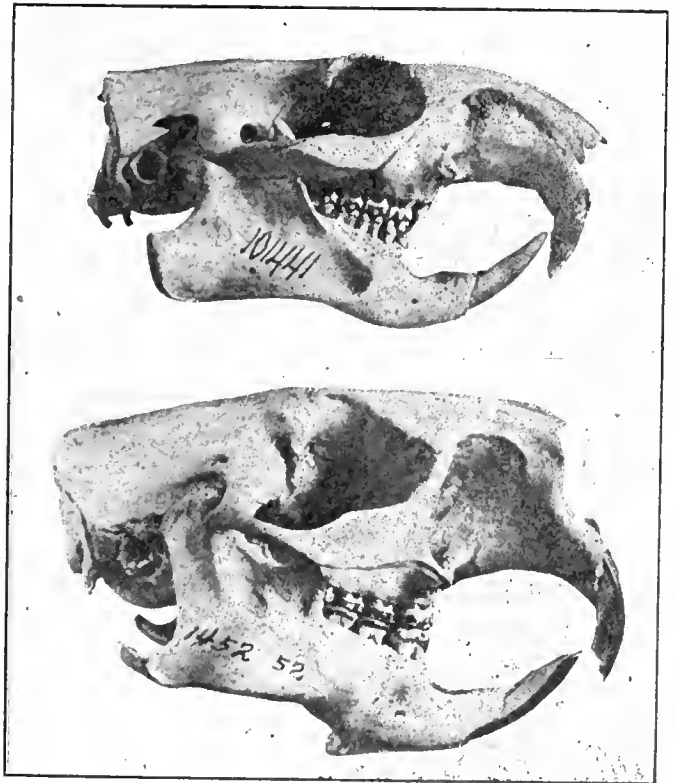
Although it is an established fact that woodchucks will climb trees for various purposes, it will not come altogether amiss, I think, to offer some testimony here on this point. From this, as well as from my personal observation, I am convinced that these animals climb trees from a certain sciurine or squirrel propensity that at times impels them to do it; they climb trees for the pleasure of securing an elevated and unusual position in which to enjoy a sun-bath; they climb to obtain food, such as ripe peaches, of which they are very fond, and they will climb a tree when hotly pursued and badly frightened by an enemy, especially if the tree is convenient—one within their ability to ascend—and they have been cut off from reaching their burrows. I have never known a woodchuck to run up a tree in order to gain a higher point of observation than the ground



THE SKULL OF A PORCUPINE

Figure 7. Photograph by the author of a specimen loaned him by the United States National Museum. Jaw dissociated. Carefully compare with the skulls shown in Figure 8. Note the powerful incisor teeth, two in each jaw.

afforded him, when the approach of an enemy has been or is suspected, as squirrels so often do. A correspondent of Friendship, New York, wrote me a letter on the subject, in which he stated that "woodchucks do climb



SKULLS OF WOODCHUCK (upper) AND PORCUPINE COMPARED

Figure 8. Photographs by the author of specimens loaned by the United States National Museum. Dr. S. E. Hall collected the Woodchuck in New York State in 1856, and Mr. H. L. Barber the Porcupine in Fosterville, Wisconsin, in 1907. The teeth of these animals will bear careful study; note the functionless, disappearing anterior tooth in the upper jaw of the woodchuck.

trees, but only in rare instances; in over forty years' experience with them I have known of but two or three climbers. The first was discovered by several boys and myself, and this was up in a solitary, hard maple, about fifteen feet from the ground. This tree was in an open field, and at least one hundred yards from the nearest hole in the ground. It was about 12.30 P. M. of a chilly September day, when one would expect these animals to be safely under ground. It could not have been in the tree for a sun-bath, and we concluded that the woodchuck, which was a young one, was without a home of its own, and that we had surprised it in its wanderings, causing it to take refuge in the tree before we saw it. The other, a full-grown woodchuck, was treed by a dog—or at least found by the dog—in a large, soft maple tree, and at least twenty feet above the ground. The lower limbs, where the animal was found, were of small size, and so nearly vertical that the animal had to hang on for its life. I stoned it out of the tree, and noted that it seemed a afraid to climb higher to get out of the way, and that it was very handy with its paws, grasping the limb as a coon does without using its claws. It must, however, have used its claws in climbing the tree."

Another correspondent, of Passaic, New Jersey, wrote me as follows: "One day, when I was a boy, my father told me that a neighbor's dog had a woodchuck treed in a small patch of woods, so I took my gun and shot it. It had climbed a straight hickory tree to the first branch, about eighteen feet from the ground. This tree was about eight inches in diameter at the butt, and stood perpendicular. The woodchuck was of medium size and not fat."

From Moosup, Connecticut, came another letter, and my correspondent stated in part: "In the year 1892 I shot 250 woodchucks. Of this number I got one from the top of quite a large apple tree that leaned about

45 degrees from the perpendicular. In an experience of more than thirty years, that is the only one I ever saw in a tree."

Stone and Cram, in their "American Animals," say: "The woodchuck is, perhaps, the least industrious animal in existence, except when engaged in digging his hole, when he works away at a tremendous rate until it is finished; but once it is completed, he seldom attempts to enlarge or remodel it in any way, but spends his days in luxurious ease, coming out to get his breakfast soon after sunrise, while the dew is still on the grass, at which time he makes his most substantial meal, though he

may occasionally be seen feeding at any time of the day. At noon, he is pretty sure to make his appearance above ground for luncheon, but apparently spends more time in sunning himself than in eating. Late in the afternoon he again shows up, and feeds until nearly sunset, when he descends into his burrow for the night. It is not often he is obliged to go many steps from his doorway in order to fill himself, and by autumn he has usually reached a perfectly ludicrous state of obesity. There are generally several openings to his burrow, connected with well-beaten paths; similar paths radiate off into the grass in all direc-

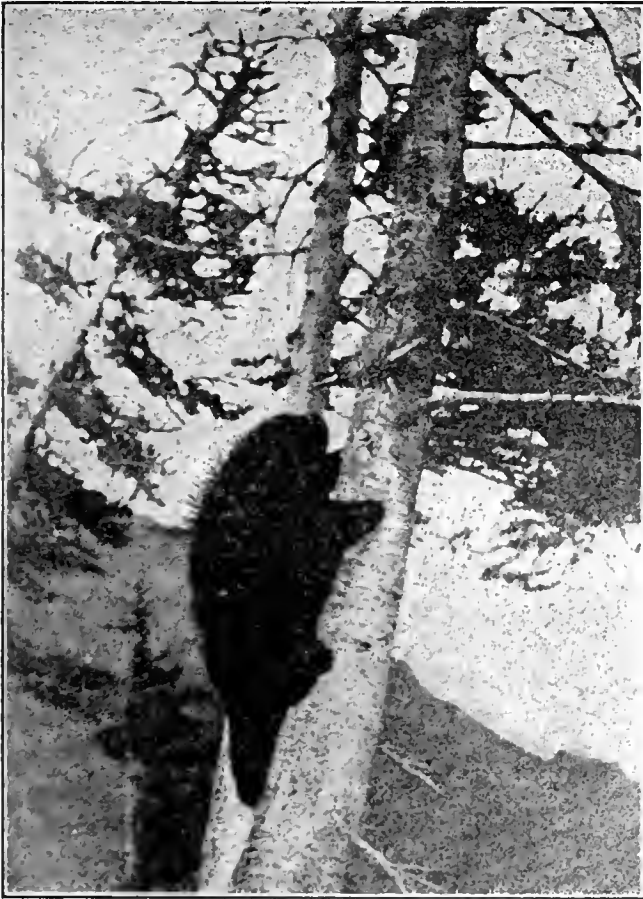


THE YELLOW-HAIRED PORCUPINE

Figure 9. Porcupines can be readily overtaken in their native wilds and killed without the use of gun or pistol. They are eaten with relish by the Indians, and their squaws use the quills in their fancy work. In the mountains they have been found at very high altitudes, 12,400 feet in Colorado. Copied by the author from "Mammals of America," The University Society, Incorporated.

tions, from one clump of clover to the next, and only too often to the bean-patch or the garden, where it pleases him to eat out the tender inside of several cabbage heads in a single night." Then, after giving it as their opinion that a woodchuck will consume everything that grows in the garden, or in the orchard, in the way of vegetables, fruits, and leaves, these interesting authors proceed to say that "his attitude toward his enemies is apt to be one of obstinate defiance. Other wild animals of his size prefer, almost without exception, when in the proximity of houses, to remain in hiding during the day, only venturing out under cover of darkness. But the woodchuck often digs his hole within a few rods of a farm-house,

and swaggers boldly about the garden at midday, helping himself to whatever appeals most strongly to his appetite. When pursued, he scrambles in frantic haste for his burrow, his black heels twinkling in the sunshine as he goes; but on reaching safety, he is likely to turn about and thrust out his nose to chuckle defiance at his pursuers. If cornered, he is always ready to fight anything or anybody, and a dog lacking experience in such



OUR PORCUPINES CLIMB TREES

Figure 10. If occasion demands, the porcupine in this picture shows what the animal resorts to in his usual deliberate way. Courtesy of The University Society, Incorporated. From "Mammals of America."

matters is likely to get the worst of it, for a woodchuck's incisors are weapons not to be despised. If their den is dug out, the woodchucks often manage to escape by burrowing off through the soil after the manner of moles, filling up the holes behind them as they move along, and evidently not coming to the surface until sufficient time has elapsed to ensure their safety; though how they manage to avoid suffocation in the meantime is a question difficult to answer."

What I take to be a probable explanation of this remarkable habit of the woodchuck is, that in all old burrows made by the animal there may be one or more *blind passages* leading from the central living-space in one direction or another, but which in no instance come quite to the surface at their further ends. Now when a woodchuck that has constructed its burrow in this manner finds that somebody is trying to dig him out, and is coming uncomfortably close to making a success of it,

all he has to do is to run into one of these blind alleys of his, and quickly seal up the entrance to it with earth. The diggers pass this point as they follow what they take to be the main passage of the burrow, leaving the woodchuck behind them in the branch-burrow, now closed at both ends, but containing an ample amount of air to permit him to breathe until his would-be captors give up the pursuit; then the prisoner may either back out into the main burrow, or dig to the surface at the other end. I have often noticed, where attempts have been made to dig woodchucks out—especially old fellows—that, when not taken, there is next day another burrow which did not exist before, and which was opened from within, outwards. This is the way I explain to myself how the thing happens. Farmers often use a hard, close-shooting shotgun, with coarse shot and good powder, to



Photograph by A. R. Dugmore.

CANADA PORCUPINE

Figure 11. As the animal appears when its quills are thrown forward in a defensive attitude. Two at a birth, once a year, is the rule with these rodents; they are ugly, prickly little things.

kill woodchucks, and in this way destroy quite a number. Many others are caught in steel traps, but from these the animal often escapes by gnawing off its own leg as near the jaws of the trap as possible. Sometimes a woodchuck will pull the trap down a burrow as far as he can do so, and seal himself in; it then becomes quite a task to unearth him and pull him out, for he hangs on like an armadillo in a similar predicament.

The habits of woodchucks are formed and very much influenced by their environment in nature, by which I mean the character of the place selected by them for their homes. Where one makes his burrow in the middle of an extensive clover or other pasture, where there are no walls, trees, rocks, buildings, or, in fact, anything about the place for a considerable distance, that animal meets with a very different experience in life, as compared with other individuals of the species that live their lives under vastly different conditions. Such a woodchuck may never know what it means to climb a tree, or to lie on a big boulder and sun itself; or what garden fruits and vegetables taste like; or a number of other things that come into the lives of woodchucks living in orchards or in close proximity to kitchen-gardens.

Again, the woodchuck that makes its abode in the forest is another animal, in some respects, digging its burrow among great rocks, with the perpetual shade of trees overhead instead of the broad expanse of sky. Such an individual knows not what a pasture or a garden looks like; its life is spent among the surroundings which the woods bring to it—perhaps nearness to a little brook, or dense undergrowth, masses of rock, or trees that have fallen, or old, moss-covered tree-trunks, and so on. The life of

such an animal may be easily imagined. He becomes familiar with many kinds of birds and mammals living under the same conditions, and he lives upon very much the same kind of food, which may become scarce at times and reduced to a meagre supply of berries, mushrooms, buds, plants, and roots, and, when hunger presses, the bark of trees and shrubs. Very rarely does he become fat and corpulent as do his brethren of the pastures and gardens; he grows sleek and more agile when his means of livelihood are at their best, but decrepit and thin when they fail him. When in the heyday of his existence, he may "frequently be seen," say Stone and Cram, "of a summer afternoon stretched in the sun along some half prostrate log, evidently glad to take advantage of whatever of the sun's rays manage to penetrate among the

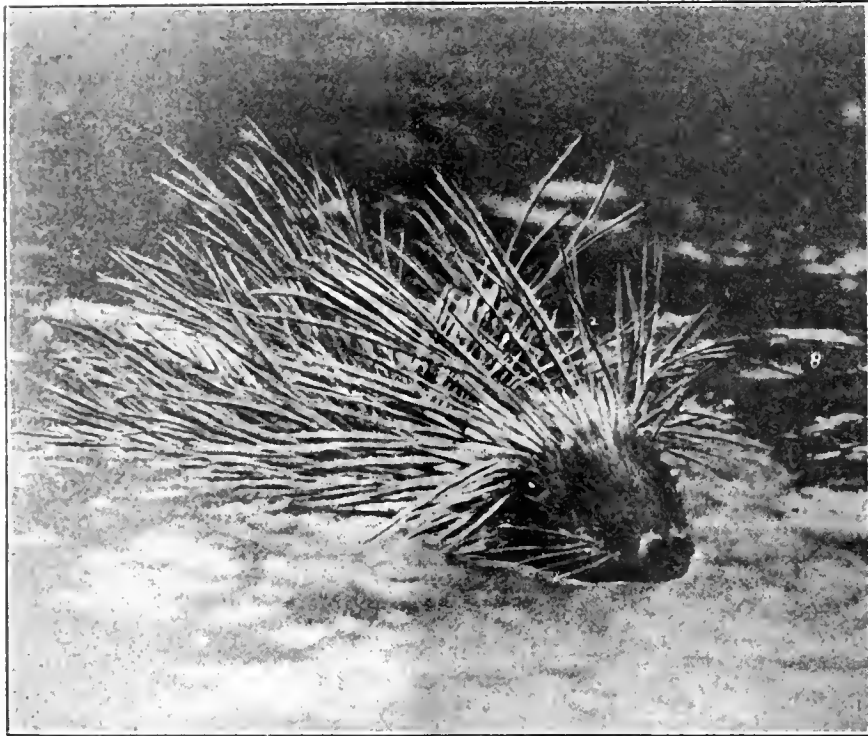
shadows of his retreat. Enjoying as he does comparative immunity from the attacks of men and dogs, and having at the present day very few enemies to avoid, he should—and in all probability often does—live out his allotted time; and it is no uncommon thing to find the bones of these animals in hollow logs and similar places, showing no signs of having suffered a violent death. A careful observer of nature once told me that he had seen a woodchuck apparently very old and feeble, laboriously digging a shallow hole in the soft earth, and that on returning, some hours later, he had discovered him curled up at the bottom of the hole quite dead, undoubtedly having died of old age after digging his own grave and crawling into it. He believed this to be a regular custom with them, and said that he had met with a number

of people who asserted the same thing."

Foxes are great enemies of the woodchuck in regions where both are found, while some of the larger hawks feed upon the young when they first come out of the parental burrow and sun themselves about its entrance. The old ones are not especially solicitous of the safety of their progeny, but instances might be given where the reverse is the case. There is no especial difficulty experienced in raising one of these little fellows for as they grow, they be-

come as tame as can be, though they never seem to develop any genuine affection for their master. Many a baby woodchuck has been reared by the farmer boys of New England, and it is safe to say that many more will be reared by them in the future.

During the time I was post surgeon at Fort Wingate and writing about the animals of the region, I made the following brief notes: "Of the hoary marmot I have never seen a specimen, and I have no good account of the animal at hand. My knowledge of the Rocky Mountain marmot stands pretty much in the same case, although several years ago I shot a specimen of this species in the Medicine Bow Range of the Rocky Mountains of Wyoming; but he fell in a position where it was impossible to recover my prize. A number of them were

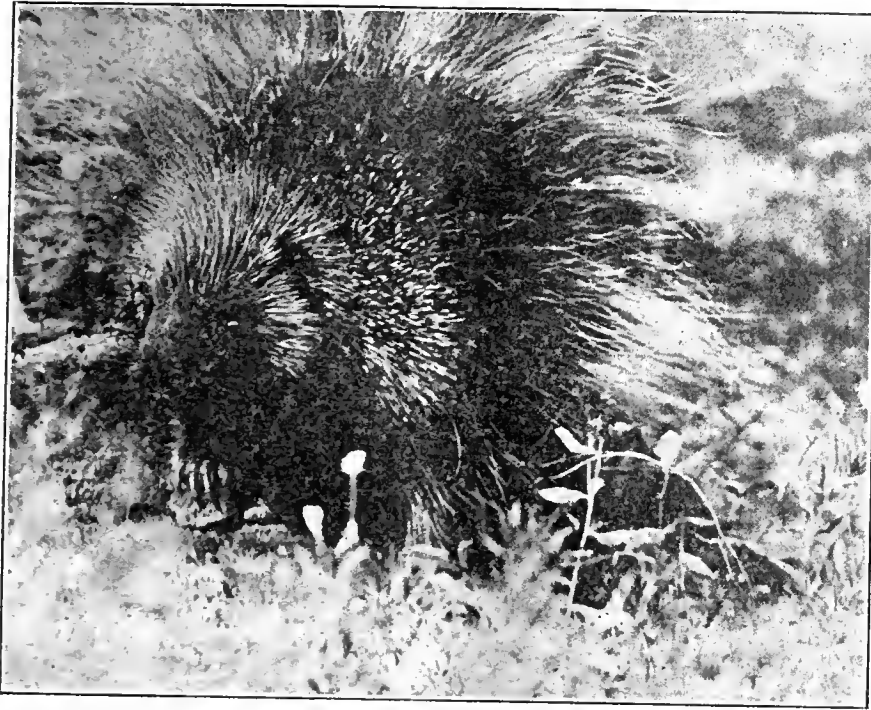


PORCUPINE SWIMMING

Figure 12. This is another remarkable photograph by Mr. A. R. Dugmore, and shows how the animal looks when it is in the water. Note how the quills always project when the animal is swimming.

out together, standing near their burrows; every once in a while one of the party would give vent to a rather prolonged and peculiar whistle, whereupon some of them would sit up on their haunches, and others take to their burrows with all possible speed." As to the Rocky Mountain marmot, I am not positive that I have ever seen the species alive, as it was not common in any locality where I happened to be in the West.

The habits of the two species we have in this country—the Canada porcupine and the yellow-haired one of the West—are much the same; in fact, the animals are close-

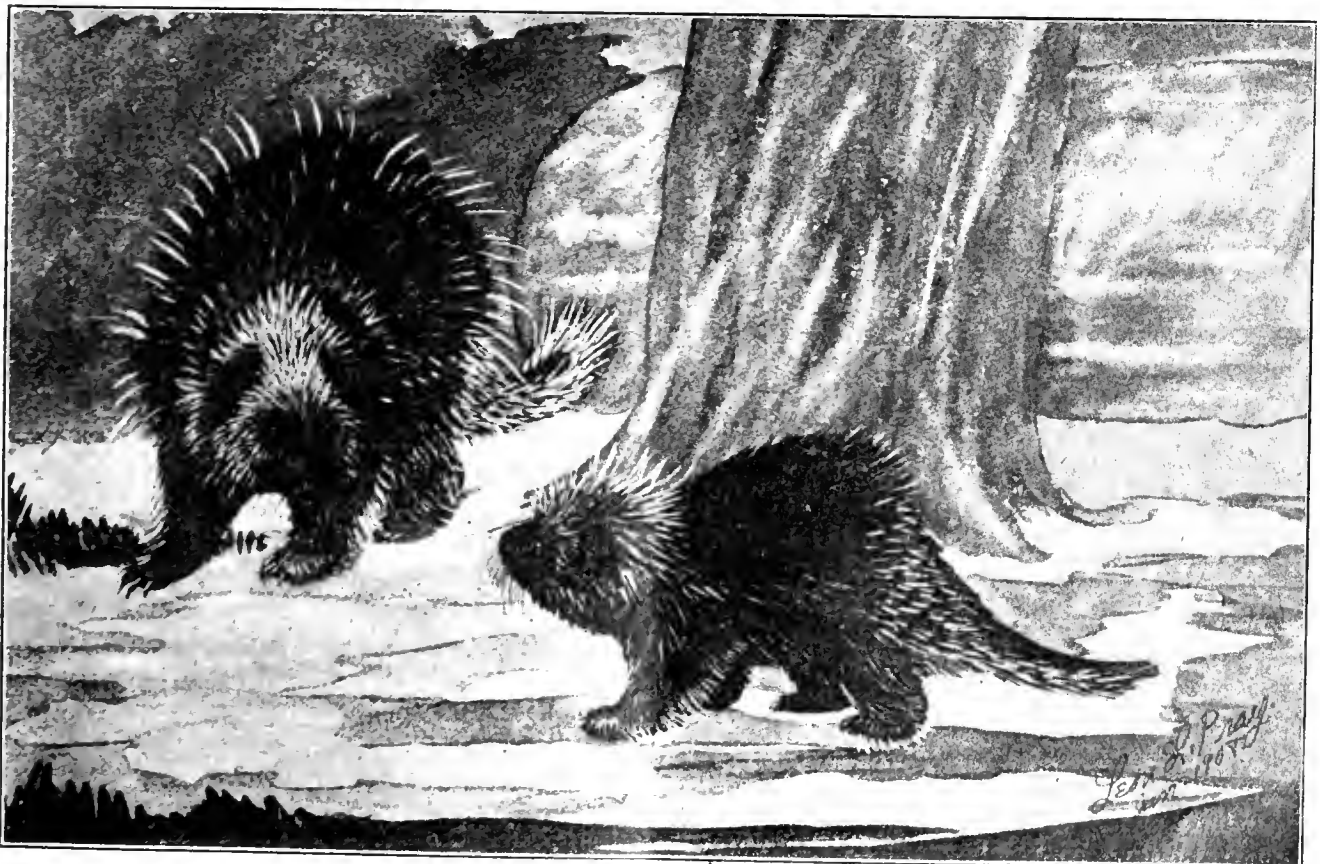


Courtesy of The University Society, Incorporated.

WESTERN OR YELLOW-HAIRED PORCUPINE

Figure 13. Among American rodents, this Porcupine is only exceeded in size by the beaver. In some parts of the country the porcupine is called the "quill-pig," but why a "pig" is not apparent.

ly related. Personally I am better acquainted with the latter form, as the porcupines were very common in Wyoming in the pine forests. I remember very well the first one I ever saw. It was a big fellow; and, seeing it at a distance in a cotton-wood tree, I took it to be a bear cub and behaved accordingly. That same afternoon, Lieutenant Rufus Brown (of the 4th United States Infantry) shot one and brought it into Fort Laramie. He had a fine setter dog at the time, and when the porcupine lay on the ground in front of his quarters, this dog ran out in high glee to meet his master. Dash-



FEMALE PORCUPINE AND HER YOUNG

Figure 14. Young porcupines are not one whit handsomer than their mothers, and they in no way attract us as pets. It is said that old ones sometimes attain a weight of forty pounds.

ing up to the porcupine, he ran his nose into its fur, evidently with the intention of ascertaining what kind of game his master had been killing; but he withdrew his muzzle very much quicker than he had inserted it, and as he did so, it was seen to be most elegantly ornamented with a fine bouquet of spines or quills, some of which were three or four inches long. A howl followed this exploit, and the lieutenant spent the best part of an hour in extracting the vicious spines from the poor dog's snout.

Cougars, when hungry, will sometimes tackle a porcupine for a meal, and always with the result of sticking



AMERICAN PORCUPINE

Figure 15. This is one of Mr. Elwin R. Sanborn's best animal pictures, and is here published by his permission through the courtesy of the New York Zoological Society

the mucous membrane of the mouth full of quills, from the wounds of which death is almost sure to ensue. When I was with an expedition in the Big Horn Mountains, a fine mountain lion was found dead; upon examination it was soon ascertained that it had been the victim of an experience of this kind. The same thing has happened to wolves, coyotes, and semi-domesticated dogs about Indian camps in the Northwest; for this reason the Indians of that region detest the animal, and it is likely that many a one has been killed by them through sheer revenge. It has also been reported that lynxes have met with a similar fate; getting their mouth cavities stuck full of quills, they have died in consequence,

due in part, to the inflammation set up, and also to the fact that owing to the structure of a quill, it will work its way through the flesh until it, in time, punctures some one of the main arterial vessels of the neck, when death follows. Why these slender, cylindrical little quills behave in this manner after they get into the flesh is easily perceived, as each one is reversely barbed along its farthest extremity, so that, once favorably implanted in the flesh, the victim is quite unable to extract it. Through the involuntary muscles of the part it is caused to work deeper and deeper, eventually terminating as just stated.

The Fisher, however, very frequently gets away with a porcupine; this is done by attacking it at the throat, where the fur is short and soft, and the quills practically absent. But even the Fisher in his eagerness to kill sometimes makes a mistake, and in the mix-up the porcupine may get a chance to whack him in the face with his heavy, spiny tail, driving home a score or two of good, big quills. These produce the usual amount of intense pain, and may later terminate the career of the incautious musteline.

Porcupines have five toes on the hinder pair of feet, all armed with long, curved claws, while the front pair, similarly provided, has but four toes each. Their ears are small and quite concealed in the surrounding fur; the tail is moderately short, and the eyes comparatively small and lacking in animation. Late in the spring the female gives birth to her two young, breeding, as a rule, but once during the year. A hollow tree is commonly selected for her nest, though other situations are occasionally chosen. A well-known writer states that they are "hardly fit for food; and as in all vegetable feeders among wild game, are not infrequently infested with intestinal worms. Much of their time during the day is spent in sleep; but when abroad they feed upon the bark of a number of varieties of trees, often denuding, in the case of a single animal, as many as a hundred trees during a season. In this way it is very destructive; and when once it attacks a tree, it usually never leaves it, except to repair at night to its nest, until every vestige of bark has been eaten off."

In most eastern districts porcupines are now becoming quite rare; and while they are fully capable of becoming domesticated, they are not, upon the whole, very engaging pets. It is said that the animal, during the night, often gives vent to a low and peculiar cry, which, once heard, is not easily forgotten; its well-known growl when teased is quite characteristic.

When feeding, these animals will often sit up like a "prairie dog," and use their forepaws to hold their food while they gnaw it; they are fond of green corn, fruit of most kinds, and almost any of the garden vegetables. They will gnaw the prongs of the skulls of antelopes found on the plains, or the antlers of dead deer, or the horns of cattle that have died or been killed near their haunts. Indeed, porcupines will chew and eat

(Continued on page 180)

ON THE MURMAN COAST

BY JOHN D. GUTHRIE

(FORMERLY CAPTAIN, 310th ENGINEERS, U. S. A., A. E. F., NORTH RUSSIA)

FROM the northernmost point in Europe, known as North Cape, two peninsulas stretch out. A large one, toward the southwest, is the Scandinavian; the other, much smaller, to the southeast, is called the Kola Peninsula. If you follow down the coast from North Cape, you will find an indentation, marked Kola Bay. This long stretch of coast from North Cape to the White Sea is known as the Murman (Norman) Coast. It was the writer's good fortune to spend some time on the Murman Coast, in Russian Lapland, in April, 1919.

We had left Harwich, called by all good Englishmen, "Horridge," on the east coast of England in early April on board the U. S. S. "Galveston," en route from France to Archangel, Russia. After a day or two up along the east coast of Scotland and past the Shetlands and the Orkneys, we swung northeast for North Cape and the coast of Norway, where wonderful views were had of the magnificent fjords. We then crossed the Arctic Circle and shortly after passed within plain view of North Cape, a bold, snow-clad promontory jutting out from Europe into the Arctic Ocean. A rugged shore, snow-covered, rising precipitously out of the sea for thousands of feet, with no sign of life ashore, one realized that none but a hardy race could survive in that region.

Shortly after passing Varanger Fjord we steamed into Kola Bay, and thence up the narrow Kola Inlet for some thirty miles, mostly through floating ice, dropping anchor off the town of Murmansk. We had on board some twenty-five British officers and soldiers and several hundred American Army officers and enlisted men, bound

for the American Expeditionary Force, North Russia. Even the snow-clad hills and the reindeer looked inviting after some five days of the Arctic Ocean. On account of the necessity of trans-shipping at Murmansk to a Russian boat, we waited in the harbor for some ten days, going ashore each day and seeing the town and the surrounding country. Murmansk and the outlying coun-

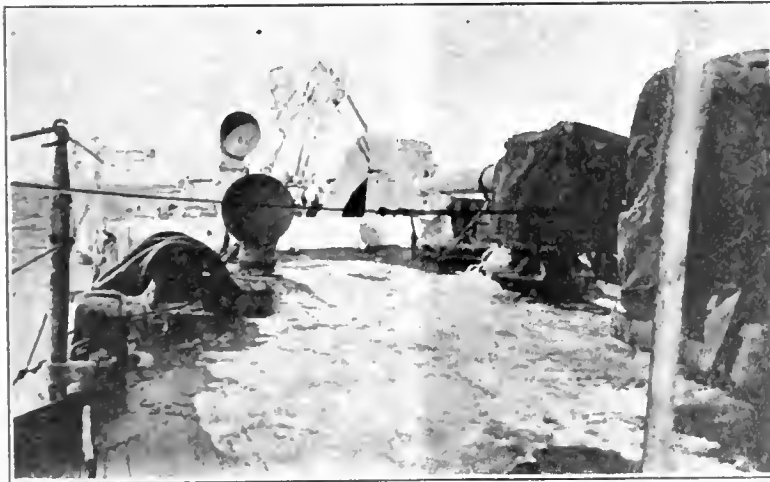
try proved to be an intensely interesting locality, and a great surprise in many ways. The town, which is in latitude about 69° North (about the same latitude as southern Greenland, or 2° north of the northernmost point of Iceland), well inside the Arctic Circle, dates only from 1916. It sprang into being upon the construction of the railroad from Zvanka (on the Petrograd-Siberian Railway) to Kola Bay, a gigantic undertaking of 660 miles, put through by the Russian Government while the war was in progress. Murmansk is Russia's only ice-free port on the north; the strategical importance of such a railroad during a world war can readily be appreciated. The construction of this railroad, through frozen marsh and tundra, and through a country of innumerable lakes, would make a fascinat-

ing story, built as it was during the long Arctic winter, and largely by German prison labor. Kola Inlet runs in south from the Arctic Ocean for some forty-six miles being rather narrow and protected on both sides by high hills covered on the slopes with a scattering stand of Scotch pine, birch and willow. The harbor of Murmansk is almost ideal for a large port, and the prediction is made that some day Murmansk will be one of the important ports of northern Europe. While the



BOATS AT THE DOCKS AT MURMANSK

The hills in the background have a scattered growth of Scotch pine and birch.



INSIDE THE ARCTIC CIRCLE

Snow and ice on the decks of the ship on its way to Murmansk.

town of Murmansk is new, the little towns nearby are old. Kola, which is some six miles south of Murmansk, is mentioned in Russian history as far back as 1264, and it is not known at what time this region came under the rule of the Slavs of Novgorod. Kandalaksha and other small settlements along Kola Inlet were founded during the fifteenth century. The natives adopted Christianity



RUSSIAN LOG HOUSE AT MURMANSK

The author and another American officer having their photographs taken. In the background a flag is flying in front of the Italian Consulate.

about 1533 and a monastery was started at Pachenga. Russian merchants from Novgorod were the first to come in and soon trade became important. The general character of the country is what one might expect from such a latitude, but the presence of pine and spruce trees, even if rather scrubby, was most unexpected. On west slopes of the hills and ridges about Murmansk and Kola there were fair stands of Scotch pine and some spruce, and birch and willow were abundant. On the western part of the Kola Peninsula, owing to effects of the Gulf Stream, pine and spruce are found within twenty to twenty-five miles of the Arctic Ocean, while in the eastern part of the Peninsula, timber is not found until you are from sixty to seventy miles from the coast. Throughout all this country, however, birch and willow are most abundant along stream and lake shores while the berries found in extreme northern latitudes are present. Kola Peninsula is on the whole a vast wilderness almost entirely devoid of roads and settlements. It is rather broken, and yet swamps and peat bogs are everywhere, even on side hills and on the tops of ridges. The soil is for the most part stony near the coast while inland it is composed more of turf or decayed tundra. Glacial boulders are abundant. Everywhere are lakes and swamps, linked together, with the drainage northerly into the Arctic Ocean. Near the central part of Kola Peninsula the country rises into a sort of highland, reaching an elevation of some 4,000 feet, and these highlands are known as the Chibinsky Mountains, and here the Lapps take their reindeer during the summer months for pasture. Bare rock and sparse

vegetation are characteristic, except on west slopes where there is some tree growth. Further south, along the Murman Railroad there are better stands of pine and about forty miles south of Murmansk the timber is fairly heavy, while ninety miles south, at Imandra, is located a sawmill, others being located still further south along the railroad. The fauna of the Peninsula is similar to that of far northern latitudes. Fox, otter, marten, bear, deer and hare are said to abound, and while the writer saw none of these animals alive the skins of most of these were seen frequently in Murmansk, at the market or being worn by the natives. Bird life includes partridges, willow grouse, capercaillie, black cock, geese, loons, eiders, and such smaller birds as larks and snow bunting. At the Chinese market in Murmansk beautiful black cock and capercaillie were seen (frozen solid, and unplucked) on sale, as well as hare. Along the coast numerous aquatic birds visit in hundreds of thousands for breeding.

Reindeer were abundant as the only beast of burden, carrying passengers and supplies between the little settlements, being driven tandem and with no reins at all so far as seen. There are said to have been only two horses in the town of Kola before the railroad came in 1916. Fish of many kinds are found in the many lakes and along the inlets and the coast. Salmon seemed to be the most often on sale although there were herring and cod. Fish constitutes a large part of the food supply of the people. In the Murman region alone some 4,500 men are engaged in



BLEAK AND BARE AND COLD

The ice-covered Kola River, with scattered forest growth on shore. Ice was constantly floating down during our stay.

the fishing industry. As is to be expected, agriculture plays a very small part in the industrial life of most of the Kola Peninsula. A small quantity of potatoes is grown by the Lapps just south of Murmansk, and some hay is raised, the total crop for this entire region in 1914 is said to have been only 2,700 tons. Further south, along the west coast of the White Sea crops of rye, barley, potatoes and oats are grown. Fish and lumber are the principal products of the Kola Peninsula as a

whole. There are sawmills at Imandra, Kem, Soroka, and several other points along the railroad south from Murmansk. Sawed lumber was fairly abundant at Murmansk though most of the buildings there were constructed of logs, even two or three stories in height. The Russian workman is an artisan when it comes to working with wood, and about all he has to work with is an ax (that looks as if it might have come down from Peter the Great!) and a saw. One hardly expects to find the Gulf Stream in Northern Russia, but its influence is most marked and makes that country habitable, and is responsible for Murmansk being Russia's only ice-free northern port. The winds from the north and northwest are the mild ones; the south and southeast winds coming from the land are cold. The climate is in general therefore milder than at Petrograd, which is some 1,000 miles further south. Winter lasts from the middle of November until the middle of April. The snowfall is naturally heavy, 15 to 20 feet, and houses in Alexandrovsk near Murmansk, are said to be often entirely covered over night; there was some three feet of well-packed snow on the ground at Murmansk when we were there in April. The long winter is followed by a rainy season, hardly to be called spring, for with the coming of the rains the whole country seems to shed its snow and ice at once, and summer comes with high temperatures and twenty-four hours of sunlight, and innumerable mosquitoes. The rainfall is less than one might expect. In Northern Norway it reaches 69 inches, while going southeast along the Kola

borealis, however, this long night is not as dismal as it might seem. While at Murmansk we witnessed almost every night the most brilliant displays of the aurora, bright enough at times to read by, or almost bright enough to take photographs. There is a government meteorological station some 25 miles north of Murmansk where records have been kept for many years. The



WHEN HEAT WAS NEEDED

Russian peasant women getting fuel wood from a pile of mill-ends brought to Murmansk by train from the sawmills at Kem.

mean temperatures are given as 14° F. in winter and 55° F. for summer, by the government records. On the White Sea coast however the temperatures go down as low as -35° F. The Polar ice has never been known to reach the Murman Coast. Off the coast the sea never freezes and steam vessels can traverse the bays and gulfs at all seasons. In the inlets, back from the coast, ice forms, and if the inlets are fairly narrow they are apt to freeze to a depth of 8 to 10 inches. Ice was floating down the Kola River all the time that we were there. The severest climate of the entire Murman Coast is said to be in the immediate region of Varanger Fjord, on the extreme western point of the Murman Coast.

The shortness of the summer season, the lack of drainage and the great depth to which the soil freezes, are the determining causes of the relatively scant vegetative cover of most of the Kola Peninsula. As mentioned previously, however, due to the influence of the Gulf Stream, these factors are mitigated to such an extent that the climate and the consequent flora constitute a distinct surprise, as compared to areas hundreds of miles further south but unrelieved by the influences of a warm ocean current. The

flora of the Arctic Region of Kola Peninsula is said to be much more akin to that of northern Siberia and North America than it is to that of Central Europe.

Kola Peninsula covers some 57,000 square miles, or is about the size of the State of Michigan. Before the building of the Murman Railroad the population was given as 14,300, consisting of Russians, Lapps, Finns and Norwegians. The present population (1919) was



A RUSSIAN TEAMSTER

Hauling a Scotch pine log at Murmansk. The Russian ponies are small, look weak, but are wonderfully tough. Combination Russian passenger and freight train in background.

Peninsula it decreases rapidly to a mean maximum of 14 inches, mean minimum of 1.7, with a mean average of 7.17 inches—based on government records covering a period of eleven years. This figure does not include the snowfall; as this is very heavy, the total precipitation is therefore much greater than the above figures would indicate. The Polar night lasts from November 26 until January 22. With the frequent displays of the aurora



AFTER A FOOTBALL GAME

Football at Murmansk in four feet of snow in April seems rather out of place, but the American and two British officers are returning from such a game played by British soldiers.

estimated to be about 25,000, mostly Russians brought in by the railroad. This population is mainly along the coast. In the interior about the only inhabitants are the Lapps, a pastoral people, who live for the most part on their reindeer and on fish. They live mostly in sod-covered huts, near the lakes while fishing, and in the bark and brush "wickie-ups" (much resembling those of the Apache Indians of Arizona) while in the highlands herding their reindeer. The Finns have somewhat different modes of livelihood, being principally engaged in hunting, some farming, lumbering and packing.



A SEAL ON WHITE SEA ICE

Down on a seal from the deck of the "Galveston," in the White Sea.

Murmansk, when the writer was there, was a very cosmopolitan place. There were English, Canadian, Scottish, French, Polish, Serbian, Italian, Russian, and American officers and men, and a civilian population of Lapps, Finns, Russians and Chinese. He recalls a boxing match one night there, between American sailors and British sailors, in a Y hut. Verily, it seemed as if the ends of the earth were met. Each announcement during the match had to be made in three languages, Russian, English and French—and then it is doubtful if half of the audience understood. The matches were refereed by a British Admiral whose decisions were short, sharp, just, and admitted of no argument. Following the British



RUSSIAN PEASANTS NEAR MURMANSK

The "Sacha" is trying to give the American salute. The forest growth is indicated by the scrubby birch in the background.

custom, and much to the disgust of the Americans present, no cheering nor "heckling" whatever was allowed except *between* rounds.

Murmansk, being a new town, was laid out in a most sensible manner, and evidently with the expectation that it would be a large and important port. The city was planned to have a port district, naval base, market, labor, service, and administration districts, but the revolution of course put an end to further development. The town in April, 1919, consisted of some 300 buildings, all of logs, and mostly one-story in height. There were extensive railroad sidings and yards, shops, large warehouses and barracks, a fire department, church, a Y. M. C. A., wireless station, and several foreign consulates. Most of the buildings were used as barracks or

storehouses as large quantities of war supplies were still stored here. Some of the foreign troops and many of the native Russians were living in railroad cars.

At Murmansk, Kola Inlet is one and one-half miles wide, 32 feet deep near the docks and 70 feet deep in the middle, with a tide of eleven feet. On both sides of the Inlet the hills rise 300 to 400 feet above the water and are so located that not only do they protect the harbor from storms but also from submarines. Due to the curved shores and the currents a submarine is compelled to come to the surface several times in approaching the

harbor and thus could be readily fired on from guns located on either side of the narrow channel. After spending some time at Murmansk we trans-shipped to a Russian ship, the "Kanada," and set out for Archangel.

The "Kanada" was an ice-breaker, of fine construction, and was originally built for use on the St. Lawrence River, for Earl Grey while he was Governor-General of Canada. Later it was sold to the Russian Government and rechristened the "Kanada." Thus ended for the winter a brief but intensely interesting stay on the Murman Coast, well inside the Arctic Circle.



A GROUP OF OFFICERS

British and American Army and Navy officers on board the U. S. S. Galveston.

STARTING TREES FROM SEED

PERHAPS the cheapest and frequently the best way to start a forest plantation is to collect seed from hardwood trees and grow seedlings. The collected seed will be fresh and the seedlings grown from it should be thoroughly acclimated so far as climate is concerned, say the forest specialists of the Department of Agriculture.

Seed should not be collected before they are ripe, and this means for most kinds of seed that the work should be done during autumn, usually after frost. Collecting may be extended into the winter for such species as ash, catalpa, honey locust, sycamore, and others which retain the seed on the trees until that time. A few varieties of seed, such as elm, silver maple, red maple, willow and poplar ripen during the spring or summer and should be gathered promptly before they are scattered.

Middle-aged trees growing in the open, where they have been permitted to develop broad, spreading crowns, ordinarily produce seed in greater abundance than trees growing in a dense forest. The fruit of some hardwood trees requires special treatment to separate the seed from the fleshy covering, pod or hull before they are planted.

The best time to sow seed, either in the nursery or in the permanent planting site, is soon after it is ripe, but when this is not possible the seed must be stored until

spring. If this is done, the seed must not be allowed to dry out excessively, because this impairs its power to germinate. Seed should be stored in a cold place.

When the seed are to be planted, a good, well-drained, preferably loamy soil should be selected. Proximity to the farm dwelling is desirable, because rodents are less likely to be abundant. Preparation of the seed bed should be similar to that of getting the soil ready for a vegetable crop. Except on commercial plantings where the seed are sometimes sown broadcast, it is best to plant with a drill in rows sufficiently far apart to permit horse cultivation. With small, or thin seeds, such as that of birch, elm, or sycamore, best results will be obtained by sowing broadcast rather thickly over the beds, pressing the seed into the loose soil with a board and covering it very lightly with soil and a light mulch of leaves or straw. When the seedlings are 10 or more inches in height, they are large enough to be transplanted to the field. Most of them reach this size in one growing season. In digging them, care should be taken to injure the roots as little as possible. Injured portions of the roots should be cut off with a sharp knife. The seedlings should not be dug until the time for planting them in their permanent location, for exposure of the roots to the air for any length of time will kill them.

A VISITOR back from a short trip to Southern California says that the mountains in that region show the activities of the Forest Service everywhere you go. Along all the trails are innumerable familiar looking signs and fire lines, sign boards, etc., which show the activity of the Rangers in that region even though they themselves kept well hidden in some distant Ranger Station.

THE monthly meeting of foresters located in and near New York, at the Yale Club for luncheon, to which all visiting foresters are cordially invited, as announced on page 38 of the January issue of AMERICAN FORESTRY, will be held in future on the first Tuesday of each month instead of the first Thursday. The last meeting was attended by Messrs. Sterling, Baker, Murchie, Cronk, Moore, Rothery, Porter and Nelson Brown.

FOREST GUIDES DEPARTMENT

SOLAN L. PARKES, EDITOR

Boy Scouts who are enrolled as Forest Guides may write to this department and ask questions about trees, woodlands, forests, or anything relating to them, and they will be quickly answered. Every Forest Guide troop in the United States should have this magazine.

FOREST GUIDES should be able to identify every shade tree or forest tree that they see and also to tell its characteristics and uses. It is not difficult to acquire such knowledge, but at the same time when the suggestion is made, the Guide will very likely ask himself the question, why should I make an effort to become acquainted with trees? Are they not commonplace things? Does not everybody know what they are?

These questions are very well answered by Joseph S. Illick, one of the leading experts on tree identification in the United States. He says: "At first the Forest Guide cannot satisfy himself that the study of trees is important, but as he revolves the question in his mind he begins to see what a wide and practical application to everyday life this subject has, and that trees ever since the creation have been among man's best friends and most useful helpers, and as time goes on and wood becomes scarcer they will play an even more important role in satisfying his needs.

"Suppose we pause just long enough to think about a few of the ways in which trees have been our friends and helpers. We cannot begin to take an itemized census of all the different benefits derived from them for we would soon have a list as long as our arms and only half finished, but in order that we may not overlook entirely some of their good points a list of the most important of them follows:

1. Trees decorate the landscape. A treeless place is indeed cheerless.
2. Trees supply us with shade and shelter, and protect our houses and other buildings against storms.
3. Trees beautify our homes, highways, and byways.
4. Trees give shelter to and serve as a refuge for birds and other wild animals.
5. Trees supply shade and shelter to domestic animals when in the open.

6. Trees help make, fix, and improve the soil.
7. Trees protect steep mountain slopes against erosion, and bind the soil along the banks of streams.
8. Trees increase the run-off of water during periods of drought.
9. Trees help purify the atmosphere.
10. Trees decrease the run-off of water during periods of flood.
11. Trees help maintain and improve the health and efficiency of our citizens.
12. Trees help raise the moral standard and social worth of our boys and girls.
13. Trees furnish the raw material for many of our most important industries.
14. Trees supply us with some of our most necessary products of life. They supply us with the wood with which to build, furnish and warm our homes. They are the main source of the raw material from which the paper upon which we write is made.
15. Every Forest Guide should become acquainted with our trees so that he can recognize the difference between the important timber trees and the inferior (weed) species.

HOW TO BECOME ACQUAINTED WITH TREES

"There is more than one way for Forest Guides to become acquainted with our common trees. Some Guides are so fortunate as to have a teacher available who knows the trees and is willing to point out their distinctive features and peculiar habits. Other Guides are less fortunate in that they do not have a teacher familiar with the trees, but they do have available for use a good supply of helpful tree leaflets and manuals. But there is a third group of Guides, and this includes by far the largest number, who have neither a good teacher nor satisfactory literature available to pursue a course of tree study. It is primarily for this third class of Forest Guides that the material on the following pages has been prepared.

"One of the first things which a Forest Guide should know about tree study is the fact that to attempt to learn to know all the trees is a big and long job. It may be well in this connection to remember the old adage, 'Do not attempt too much for fear of accomplishing too little.' Much better results will be attained by selecting a

small group of trees, or a certain number of representative species and learn to know them well, rather than attempt to master all of them and later on find that you have acquired only a superficial smattering of most of them and know none real intimately.

PLANTING TREES

"Every Forest Guide should be a tree planter. It is a helpful and wholesome kind of work. In order that each Guide may know some of the good points of tree planting, a list of the benefits which may be derived therefrom follows:

1. Planted trees will help supply the constantly growing demand for wood. They are a credit to us who set them out, and will be a blessing to future generations. Cheap wood is gone forever in Pennsylvania.

2. Planted trees afford excellent protection to our water supplies and prevent erosion on steep slopes.

3. Planted trees beautify and protect homes and make our landscape cheerful.

4. Planted trees utilize the energies of nature which might otherwise be wasted.

5. Planted trees beautify and improve highways, waterways, and byways.

6. Tree planting will make worthless land productive and yield useful forest crops.

7. Tree planting will help fill up the storehouse of needed wealth.

8. The planted forests of France helped win the war.

"There is great need for forest tree planting. It is not hard to find places upon which trees should be planted. Bare hillsides and poorly stocked mountain land is common, idle corners are present everywhere, and eroding slopes and gullies are doing enormous damage in every community.

OTHER THINGS TO DO

"Stopping of forest fires will do much to rebuild our devastated forests, but there are other things which must also be done in order to place them in a satisfactory condition. These important tasks should go hand in hand with or follow right after protection. Some of these essential things are:

1. Securing a new growth of valuable trees as quickly as possible on every acre of devastated land within the State. We cannot afford to leave so many acres of mountain land remain idle. It does not pay to delay. Right now is the time to see to it that all unproductive areas of forest land are so stocked with trees that they will begin to produce a valuable forest crop.

2. Another thing to do is to give preference to the important forest trees and eliminate as rapidly as possible the undesirable kinds. Nature does not show any preference for the important timber trees in the early stage of reforestation. As a rule, many

different kind of trees come up after fires and lumbering operations, and in the struggle for an existence the inferior ones often win out. If the job of restocking our forest land is left to nature entirely a great deal of ground will be occupied by worthless trees. It is our business, therefore, to learn to know the best trees, and then help them overcome inferior ones such as scrub oak, fire cherry, trembling aspen, sumachs and other similar weed trees. While in camp the Forest Guides should show their appreciation to the land owner by helping him improve the composition of his forest by cutting out the inferior trees and thus help those of better quality.

3. A third thing which is essential to rebuilding our forests properly is the removal from the forests of all trees of poor quality and undesirable form, as well as all dead, dying and damaged specimens. In almost every forest there are wolf trees, that is, trees which are unattractive, have a wide-spreading crown, and a twisted and hollow trunk. Such trees grow very little in size and are continuously decreasing in value. They should be removed from the forests for they possess no future promise, and are suppressing and even killing many young and thrifty trees beneath them. Their days of usefulness and service are past, and the way should be opened up for a younger generation of trees by removing their suppressors.

Forest Guides should make it a rule to use for camping and other essential purposes only such material as will help improve the forests, and thus assist in rebuilding them and making them even more productive and more valuable than the original forests.

4. Another important thing to do is to stock completely all forest land so that it will begin producing forest products of value. Our forests are now full of gaps and openings in which nothing of value is now being produced. Many of these areas are small in size, while some of them cover large areas. The loss from a single blank area may not be great, but when all of them are added together, the loss is enormous.

"Let us give nature a chance to establish forests of baby trees on all these areas, but if she does not succeed, the thing to do is to go out upon these barren areas and plant upon them selected trees, which are well-known, sure to grow, and will produce a valuable crop of timber. We must not compete with nature or try to outdo her in places where she is doing good work, but our aim should be to fill in all fall places. The Forest Guides can be of great service in this work for there is a big tree planting job before all of us. It will be a creditable piece of work for the young and brave men of every State to go out among the hills and start to reclothe them with the best kind of trees which are now available."

THE FINDING OF THE HAWKS' EYRIE

BY AINSLEE B. ALLEN

It is not very often that one is favored with an opportunity to look upon the home affairs of a Red Shouldered Hawk, for they usually build too high for a human being to climb safely. However, this opportunity came to me and I took advantage of it by securing a few photographs. Red Shouldered Hawks are not very plentiful in my section of the country and so I consider myself lucky. It was while taking my usual Sunday after-

noon walk that I discovered the nest. It was towards the end of April and the leaves had not yet come out. My companion is as enthusiastic about birds as I am and we had noticed on previous walks that the hawks had mated but never dreamed of discovering their eyrie. On this particular Sunday I was alone, and by chance I happened to see the female leave the nest while I was still some two hundred feet away. If she had not flown, probably the nest would not have been found. It had been built by crows the year before and had she not exposed herself, I would have thought the nest old and deserted. I was much pleased with the discovery, and, after telling my friend, brought him to the spot. Together we made plans to ascend, for the nest was sixty feet from the ground and there was not a single limb between the nest and ground. It was impossible to tell how many eggs there were or how old they were. We longed for a pair of telegraph lineman's spurs, and a friend promised to lend us a pair. After waiting for more than a week and not receiving the spurs, we grew impatient for we feared that the eggs would be hatched before we could photograph them.

Not to be discouraged and upon my friend's suggestion, we made a crude pair of spurs ourselves. He had a pair of stilts which we cut off short, once just below the foot rest and again two feet higher. In school, a pair of steel spurs were forged and these were fastened to the stilts by strong screws. The stilts



THE REWARD OF THE CLIMBER TO THE HAWKS' EYRIE

The nest and eggs of the Red Shouldered Hawk which were found in the tree sixty feet above the ground.

noon walk that I discovered the nest. It was towards the end of April and the leaves had not yet come out. My companion is as enthusiastic about birds as I am and we had noticed on previous walks that the hawks had mated but never dreamed of discovering their eyrie. On this particular Sunday I was alone, and by chance I happened to see the female leave the nest while I was still some two hundred feet away. If she had not flown, probably the nest would not have been found. It had been built by crows the year before and had she not exposed herself, I would have thought the nest old and deserted. I was much pleased with the discovery, and, after telling my friend, brought him to the spot. Together we



BABY HAWKS—NOT CHICKS

Covered with soft fluffy down like chicks, these young Red Shouldered Hawks, at four days old, are making a tour of investigation of the nest.

were fastened to the inside of our legs by straps in such a position as to bring the spurs on the inside and the foot blocks on the outside.

After school, one clear day, not long after we finished our climbers, we set out with our cameras and portrait attachments. The portrait attachment gave us the power

to take a picture at a distance of three feet. While we were still a good distance from the nesting tree, the female left the nest and soared off without the least sign of a care. My friend was very eager to climb

in the nest. I also climbed but neither of us took any pictures.

Four days later, another ascension was made and two downy white baby hawks, about the size of baby chickens, greeted us. Between them was an unhatched egg but this was not disturbed as we thought it might hatch in a day or so. These little fellows had the honor of having their picture taken when they were only four days old. They had never seen anything like us before and seemed much amused. We were welcomed to their home of sticks mixed with feathers and lice. They showed us that they had nothing to offer us to eat but they said that their father and mother were off getting something to eat and would like us to wait until they came. But we did not stay long, and, as we left, they came to the edge and, sticking out their little fuzzy heads, watched us climb down.



GROWING LARGER AND MORE INDEPENDENT

Here they are seventeen days later, very much interested in everything that is going on.

first and I did not make many objections as I did not trust the spurs wholly, and I also feared an attack from the parent birds. We both had Brownie box cameras and these proved to be a hindrance in climbing. We either had to carry them on our belt or take hold of the handle with our teeth. My companion climbed slowly and I agreed to warn him if I saw the parent birds returning. He held tight with both arms the trunk of the tree. Now and then he would stop for a rest and make such remarks as, "Gee, this is great! I wonder if these spurs are going to hold? They pinch my feet something fierce. Where's the old birds? Don't forget to tell me if you see them coming this way."

At last he reached the nest and informed me that there were three eggs in the nest as large as hen's eggs. He took a couple of pictures and then started down. The downward journey proved as difficult as the upward.

It was now my turn and before many minutes, I was on my way. It seemed ages before I reached the top and when I looked down I realized that a fall would be disastrous. I therefore held on with one hand while I took the pictures and then hastened down, partly because I thought it safer on the ground and partly because the hawk had been kept off her nest for half an hour.

Our next journey to the nest was a week later. My friend climbed and announced that the eggs were not yet hatched but that the shells each had a small hole pecked in them. This was a great surprise because the peepings of the young ones could be heard at the base of the tree and we fully expected to find young ones



A HIGH AND DIFFICULT CLIMB

It proved well worth the effort, however, when we finally reached the nest of the Red Shouldered Hawk sixty feet above the ground.

Our nest visit was about two weeks later when we found them no longer little white fuzzy birds with an interest in human beings. They were now about twice the size of baby chicks, dirty and the possessors of a few quills. One was distinctly larger and stronger than the other and both showed great fear of us. Now and then they uttered a cry as they closely watched every move we made. A hand extended toward them only drove them to the outermost stick of the nest and if our hands came too close, they would



THE BABY HAWKS AT TWENTY DAYS OLD

Still of an investigative turn of mind and growing more inquisitive each day as they grow stronger.

peck furiously at them. The lone egg was still unhatched so we removed it from the nest and, upon blowing it, found it not fertile. On this day, the remains of a



FACING THE BIG WORLD

The weaker of the two hawks, at thirty days old, and just as he is ready to leave the nest and brave the dangers ahead. The stronger one has already left the nest.

mouse and a three-inch yellow feather, probably belonging to a flicker or meadow lark, were found in the nest.

At the end of another two weeks, we visited again. We found but one bird in the nest, full grown but unable to fly. It has been a mystery to me what ever became of the other bird. Either this was the weaker of the



ALL READY TO TAKE A FLIER

Filled with fear, he is at the edge of the nest with wings spread to keep his balance. This shows how well the wings are developed before an attempt at flying is made.

two with the other one already flown or else this was the stronger of the two while the weaker may have been killed by its parent or brother. We believe in the former

theory however, for we found no dead bird near by nor any trace of one.

A few days later found the nest deserted, but with little trouble the last of the birds to leave the nest was located quietly perched in a nearby tree. That was the last we saw of the hawks.

While we enjoyed watching this family of hawks in their daily life, we did not take their pictures without risk. We were attacked but once by the old birds and this was not alarming as only a single strike was made. The tree was an oak and it was difficult to sink the spurs. Many a time the spur slipped from the bark and the only thing that saved us was our two arms which clasped the trunk. There was also the constant danger of falling while taking pictures or being attacked by the old birds, for we could not hold on while using our cameras. The tree did not sway back and forth in the breeze but swayed in a semicircle.

I hope that if the readers of this article find a Red Shouldered Hawk's nest they will not molest it or shoot the birds with anything but a camera. Even this should not be done if it is going to cause desertion. Though they may steal a fowl occasionally, it has been proven that hawks feed upon mice and other harmful rodents. Too many people are eager to use their gun and it is alarming to notice the steady decrease of our valuable birds. If this keeps up many more years, every food crop will have many enemies, all of which should be the food of plentiful birds. Birds are one of man's best friends, if he but knew it, so think before you use your gun, and do not harm any bird without just cause.

GIRL SCOUTS PUT OUT FIRE

EXPRESSING her appreciation of the Forest Guides Department in AMERICAN FORESTRY, Miss Vera Laurence, an active and enthusiastic member of the Girl Scout organization, writes as follows:

"I particularly appreciate the Forest Guides. This is a wonderful plan and I feel assured my girls will be anxious to become members of the American Forestry Association and help support your good cause.

"I should like to mention the fact that on Friday last seven of my girls and myself had occasion to put our knowledge of fire-fighting into practice. Not so far from my home we discovered a fire which was burning in a patch of underbrush, weeds and tall grass. It had already burned over quite an acre, so arming ourselves with pine branches (cut from lower limbs of trees) we got to work, after first dipping our branches in a small stream nearby. We checked the progress of the fire, putting out a horizontal length of no less than two hundred feet of fire. A part beyond our reach which had traveled fast and high through a densely covered ravine, was later put out by some people in the vicinity. The girls worked very hard and really did good work."

THE annual growth is 0.65 cord per acre. 115 by 0.65 equals 75 cords (mostly poplar). The farmer usually cuts an annual crop of 75 cords. His profit is \$4.86 per cord. 75 by \$4.86 equals \$364.50.

MAN'S SECOND FALL

BY JOHN PRATT WHITMAN

"Oh, what a fall there was, my countrymen;
Then you and I, and all the world fell down."

—Julius Caesar.

ONE large full grown tragedy facing America is the destruction of her forests. A leading publisher and consumer of white paper has stated that fifty years will see the end of these proud emblems of American freedom.

"I love thy woods and templed hills." How much do we love them? That is the question. From a study of the public's affection in this direction it would appear that the dollars which the lumber brings are dearer than any sentimental emotion aroused. Here we are singing our delight in the trees, while lumbermen and pulp manufacturers are sawing off the limb on which we are depending. Presently the bough will break and down comes the cradle of liberty and all.

"Of all the dear old pictures that hang on memory's wall the one of the grand old forest seemeth the best of all," wrote Phoebe Cary. The time is not far distant when we shall be compelled to go to memory's wall as the only place where any view of the grand old forest can be seen.

A terrible dilemma confronts newspaper and magazine publishers as well as poets, advertisers, and creators of the funny supplement. We are all wildly trying to build up circulation and to be read. We give prizes, make rates, push sales in every possible way. In consequence the United States uses half of the world's white paper, and makes enough paper pulp to create a pile four feet wide and eight feet high forty-five hundred miles long yearly, a mushy path from Boston to Honolulu, and then some. No less than thirty billion feet of lumber go into paper while seventy billion feet are used up for other purposes, and the newsboy shouts with all the energy of his practiced lungs, "ex-tree! ex-tree!"

To people who live in cities, and most Americans do, this forest question is remote, and is often looked upon

as sentimental. They can grumble about high rents and the difficulty of procuring lumber, without connecting such shortage with actual growing trees. The difficulty of impressing urbanites, therefore, with the seriousness of a timber shortage is large for those who feel personally and keenly the approaching forest disaster.

If it were possible for public libraries and theatres to post signs stating that it is now impossible for Shakespeare's "As You Like It," with its scenes in the forest of Arden, to be produced or printed because of the lack

of white paper depending upon trees for its manufacture, or that "A Midsummer Night's Dream" could be seen or read no more owing to the destruction of the American paper producing spruce and pine trees, the ease-loving pleasure-seeking citizen in the large metropolis would perhaps take notice. "We are sorry," might announce one large publisher, "but all stories dealing with Robin Hood and the merry greenwood tree have been taken from our list of publications because the merry greenwood tree has been reduced to a stump, and the sylvan dells to parched fields and unmossed rocks." Indeed such an announcement would be a piece of inspirational dynamite sufficient

to jolt the easy optimists out of their chairs with horrified faces turning toward the forestry situation.

There are those who say there is to be a second fall of man. The first great descent came, we are informed, when human beings, then represented by Adam and Eve, were driven out of the forest, bag and baggage. We have ever since been struggling to win back some portion of the bliss enjoyed by those first parents in their honeymoon days spent in the Garden of Eden. Now the time has come, say experienced theologians, when forests are to be driven out from the abodes of men. It is prophesied that woes upon woes will follow, and the human being's burden doubled with the loss of the Garden. "And it came to pass, that in those days the Lord warned His people lest they destroy the great



forests of spruce, pine, maple, walnut, and other godgiven natural resources in the form of timber land, but they heeded not and went forth with ax and saw and laid low the sapling and mighty cedar until mountains became sandhills and the valleys desert lands without springs of water." Thus will run the new version of the fall of man to be read by future generations with moanings of grief and despondency. And it might be added that when those who dwelled upon the earth went forth to eat of the tree of knowledge, lo, the lumbermen had been before them, and the tree with its branches had been cut and sawed into commercial lumber at so much a foot, or made into blank sheets of paper to wait generations for worthy inscriptions by people devoid of wisdom and original thoughts.

Any day notice may appear in the headlines of some good old conservative newspaper—you and I might mention—circulating among New England descendants, with the following horrible announcement:

"Due to the shortage of lumber, shares are now on sale in the latest incorporated timber company preparing to cut and saw into usable and practicable lengths the large forest of family trees rooted in the old hulk of the Mayflower. A large part of the newly acquired lumber has already been contracted for by furniture firms

for the purpose of repairing several shiploads of cradles, chairs, beds, teads, etc., which 'came over' in the Mayflower."

Picture the consternation and panic that would be caused by such an announcement, and imagine the number of societies which would immediately spring up for the conser-

vation and preservation of American forests. The forest with its mystery and its beauty, its cool shade, its murmuring of innumerable leaves has always been the abode of idealism; and when men think of getting back to innocence, and elemental purity, it is to the forest they go. The tired business man as the heat of summer approaches finds himself breaking loose and fishing the cold streams, or clambering to the top of some noble wood-covered mountain there to breathe new life and to prepare for another winter of monotonous grind.

What would childhood be like without the forest Think back to your own boyhood or girlhood and try to picture your youthful years without Little Red Riding Hood, the Three Bears, Hansel and Gretel, Hop 'o My Thumb, Peter Pan, and a host of others including the Babes in the Woods, Sleeping Beauty, etc. Let us strike all trees and woods from literature until the public has a proper realization of what the tall timber means to civilization.

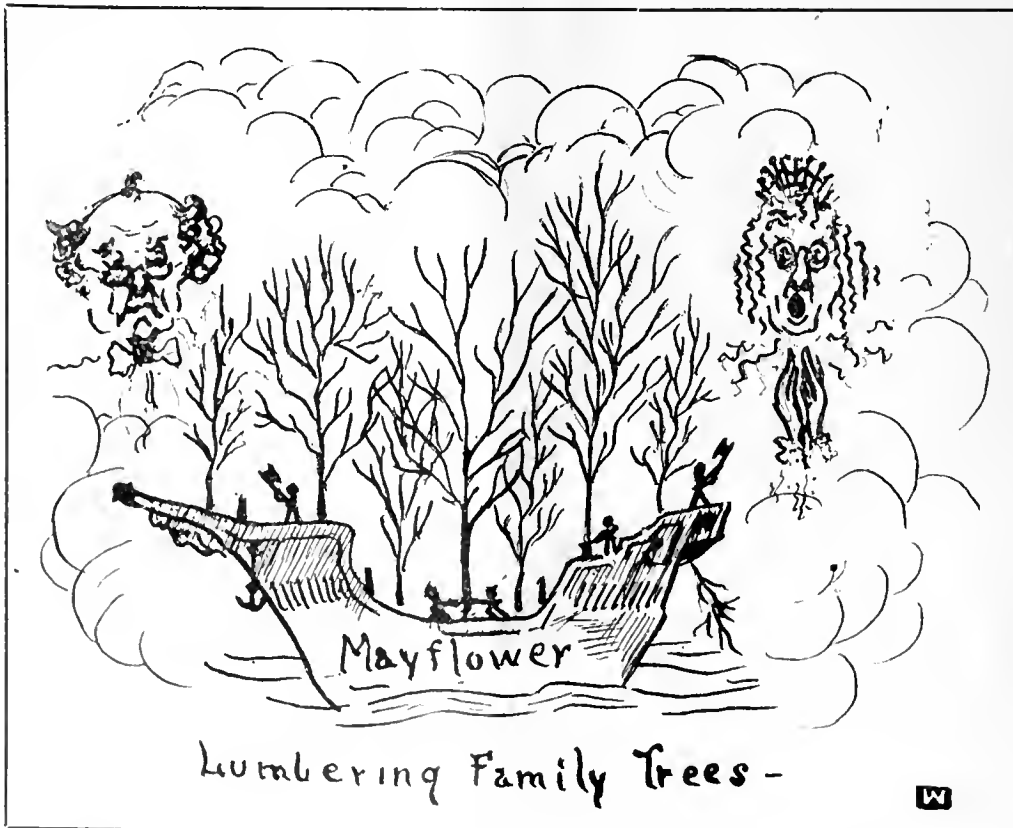
If it is more effective to appeal to the practical than to the sentimental, we have not far to go. Walk down Fifth Avenue, New York City, on a frosty morning and take note of what you see. There will meet your eye a veritable circus procession of the creatures of the wood. The otter, rabbit, fox, wolf,

bear, coon, squirrel, mink, sable, beaver, leopard, and a host of smaller creatures, all unconscious so far as their wearers are concerned, that not one would be there were it not for the forest home where they live in den and dingle.

Fur-bearing animals will surely disappear with the wholesale destruction



UNKNOWINGLY, THE NEWSBOY CRIES THE STORY OF THE DEPARTED TREES



of the large forests. Already the hunter and trapper must go farther and farther from the abode of civilization to procure skins to keep my lady from the chill blasts of winter, and we have witnessed the price of fur coats run as high as three and four hundred dollars. For the sake of the animals themselves the forests should be replanted. If any there are who plead for the conservation of forests above others they are the dumb creatures of mountain and jungle who depend upon deep seclusion for reproduction and for protection to themselves and their young. One magnificent mountain range in New Hampshire is now being clipped of its trees as close as a school-boy's head is barbered at the approach of summer. Reverberations from explosions of dynamite heard morning, noon and evening awake the surrounding countryside with a knowledge of the nearby devastation. Herds of deer which frequent these mountains, upon hearing the horrible blasts and upon feeling the very foundations of the hills shake under them, fled wildly to northern slopes only to find another lumber company there before them. Where they are now is a mystery, but that they will become extinct if they cannot reproduce in quiet and security is a certainty.

It is one of the inconsistencies of man that he will make laws to protect the deer, surround the partridge with game regulations, compel the fisherman to respect the small fish, and yet allow the ruthless destruction of the home in which these wild things live.

Surrounding one lumber camp in a New England forest instead of deer, rabbit, and fox, there is a herd of forty fat wallowing hogs, some of them too fat to walk with ease. No comparison is here intended between these pigs and the lumber interests sweeping the hills of all that grows, but it is to be noted that the porkers where they root and forage leave no sprout or green thing. It must be said for them that they are ignorant of what they do.

There are other practical sides to the denuding of the mountains that may perhaps best be illustrated by a

personal experience. My wife and I have long desired to visit the source of Cold River, the beautiful mountain stream which runs by our New Hampshire summer home. We have watched it for years go gurgling by, sending cool breezes through our groves, welcoming to its arms our own incomparable trout brook; and many and many an evening as we have sat under the grand old pine tree which canopies and carpets the entire front lawn of our cottage we have listened to the music of rushing waters as the river danced on its way to Bear Camp Water in the region made immortal by the poet Whittier, who spent his vacations here.

Of late we have imagined a new note in that music, a troubled murmur, a complaint as of some hurt thing crying from its wounds: the ripply laughter seemed less gay, and the happy gushing labored and full of pain.

"Let us climb to its source," exclaimed my wife one evening as we listened to the cry of the river which was surely growing faint from lack of volume. "Let us find the very beginning and learn what is going on in those upper secluded regions where clouds and mountains meet four thousand feet above sea level."

Plans were quickly made, and the next morning with knapsacks packed for a several days' trip we two, as in the fairy tale, started to find where the river began.

And then came the tragedy of our adventure. Where had been the most wonderful spruce forest known to New Hampshire we found the trail had disappeared beneath huge piles of tree tops and underbrush, ready for some careless cigarette or axman's match; then there came a blast, followed by another and another until the mountain rang and reverberated, booming from one hill to another like a general artillery engagement. We knew then why trout were scarce in the river, and why we had seen no wild creature as in past excursions. Vast areas of this Eden we found stripped of its leafy denizens, the carcasses of which were rolled high on platforms waiting the mountain cars to carry them to a mill fifteen miles down the mountain. One stump we



STUMPS WHICH TELL A SAD TALE OF RECKLESS WASTE IN LUMBERING

examined gave a record of three hundred years' growth. Its life had been parallel with the white race in America, and proudly it had watched the progress of a great democracy. But soon it would no doubt, make flooring for some jazz-hall where careless youth "shimmied" and "pivoted" in bacchanalian glee. Surely a fall of spruce if not of man!

The higher we climbed that mountain the more distressing grew the sight. The forest was being lumbered clean, because, as the lumberman explained, the hillsides were so steep that the only practical method of getting out logs was by rolling them down the mountain.

Poor spruce, I knew them, Horatio, the glories of America, and now "to this favor have they come;" to be knocked about by axes and kicked down the granite steeps. Immortal trees, dead and sent to mill, may make a page to hold some grocer's bill.

Soon we had an answer to the river's mournful song. One of the upper tributaries came plunging down to the mother brook as though pursued by some terrible and unnameable thing. In the place of cold pure mountain water the flow was muddy with filth and pollution from a lumber camp above, where a hundred and fifty men made the cataract their sewer. Another branch we discovered flowing through a quarter of a mile of open timberland which had been logged, and where the sun's pitiless rays had dried moss and roots to parching. The stream was almost dry in its bed. It was here we saw with our own eyes the doom of Cold River and its many tributaries. It was not difficult to picture the stagnant mill-wheels, and to understand what the destruction of the forests will mean to the entire country, with its millions of white-coal horse power dead.

On the noble shoulders of the mountain no new garment is being thrown. Of all the cloth woven in the

merry mills where looms take their power from rivers with their sources in the mountains, not one yard can be spared to protect the father of the waters from the heat of sun, and the tempests of winter. Reforestation has hardly entered the heads of those great mill corporations distributing millions of dollars among their stockholders who depend for their living on Cold River and other streams like it. One tree stands above all others as valuable for this conservation of water.

It is well known to those who read and think that the spruce produces a network of roots with many small fibers which act as a sponge for all moisture. It is due to the spruce forests that streams rising in the mountains keep fairly even throughout the season, but with the spruce gone, we may expect parched river-beds through the dry season, and to find them filled to overflowing with torrents immediately after a heavy rain or a season of melting snow.

Why a government allows all this ruthless destruction with no laws and regulations for replanting as in older countries is the present mystery of a prosperous country. There are European critics who maintain that America with all its intelligence, its public schools, and its high average of literacy, is, after all, too ignorant and too shortsighted to conserve natural resources, and use intelligently such products as nature has

furnished abundantly free of cost.

Macbeth was told by the witches he need not fear for his life until he should see Burnham Wood approaching. Shakespeare, were he still mighty with his pen, could easily predict for the United States unparalleled prosperity until that day when the last of the forests should be sighted on its way to the city! Then, indeed, disaster awaits us with our "rocks and rills, our woods and templed hills."



FATTENING AT THE EXPENSE OF THE YOUNG FOREST

ENGLAND ACKNOWLEDGES GIFT OF SEED

THE following letter has just been received from Lord Lovat, on behalf of the English Government, following the arrival of the forest tree seed recently sent to England by the American Forestry Association:

"It was with great pleasure that we received your letter of December 23, which accompanied the generous gift of Douglas fir seed presented to us by your Association.

"It was very good of you to remember that we especially desired the green Douglas fir, and we shall certainly be able to put the seed to good use in our nurseries. The

trees which we shall hope to obtain from our sowing will undoubtedly assist us materially in restocking areas which were so largely cut over during the war.

"It is particularly gratifying that the good feeling expressed by your Association should take such an appropriate and practical form. I assure you that your good wishes are most heartily reciprocated, and that the trees which result from your gift will long remain as a reminder of the cordial relations which exist between the two countries."

WASHINGTON SCHOOLS VOTE FOR THE OAK AS THE NATIONAL TREE

FOLLOWING an educational campaign of three months by the Nature Study Department of the Washington, D. C., public schools, in which the Washington Evening *Star* co-operated, the grade pupils voted by a big majority for the oak as the national tree in the referendum which the American Forestry Association is taking throughout the country.

A tree work exhibition closed the educational campaign. This was put on at the Wilson Normal School, under the direction of Susan S. Alburdis, of the Nature Study Department, and was attended by such crowds for a week that it was continued for three days more.

GOOD WORK, SAYS REED

I wish to congratulate the American Forestry Association on the interest that is being aroused among the school children of the country in forest trees. I see frequent reference in the papers to the vote for a national tree now being taken. I had the pleasure of hearing a dozen or so speeches by eighth grade students at the Wilson Normal School in behalf of their favorite trees, and I was very much interested in the tree exhibits in the upper rooms which were then open to the public. Some most excellent work is surely being done.—C. A. Reed, Bureau of Plant Industry, United States Department of Agriculture.

Dr. F. W. Ballou, the superintendent of schools, then ordered the exhibition to be held intact until more than a thousand school superintendents came to Washington from a convention at Atlantic City to see the work of the pupils.

Too much praise cannot be given Mrs. Alburdis for her work

in co-operation with the Association and to the Evening *Star* for keeping the news of the campaign before the people of Washington and also for printing the official ballot. Mrs. Cary T. Grayson, wife of Admiral Grayson, the physician to President Wilson; Mrs. Newton D. Baker, Congressman B. H. Snell and Dr. R. W. Shufeldt were on the committee that visited the exhibit on behalf



National Photo.

COUNTING THE BALLOTS CAST FOR A NATIONAL TREE BY THE CHILDREN OF THE DISTRICT OF COLUMBIA

Nature study teachers of the schools counting 18,000 ballots from the Washington *Star* which were cast for the choice for a national tree in the referendum being taken throughout the country by the American Forestry Association. Mrs. Susan S. Alburdis is directing the count. At the right is Mrs. E. K. Peebles, who brought in a satchel of ballots from various schools. The tree work exhibition at Wilson Normal School was open for ten days and nights because of the big crowds. Dr. F. W. Ballou, the new superintendent of schools, has ordered the exhibition held on display for a thousand visiting school teachers from various parts of the country who are coming to Washington.

AMERICAN FORESTRY

of the Association. With the tree voting was incorporated bird house building, and for the best bird houses the American Forestry Association awarded blue ribbons.

The voting, which was canvassed by the teachers of



National Photo.

TWO BLUE RIBBON BIRD HOUSES

Jack and Perry Baker, who with Mrs. Newton D. Baker, attended the tree work exhibition at Wilson Normal School in Washington, pick out the bird houses that suit their fancy. Jack entered a feeding station in the competition, which was awarded a blue ribbon.

the Nature Study Department before being turned over to the Association follows:

Oak	7075	Hickory	1099
Elm	3892	Dogwood.....	676
Pine.....	1935	Tulip.....	332
Maple.....	1411	Walnut.....	273
Apple.....	1176	Sycamore.....	108
Scattering.....	36		

In this campaign, which is being used as a model in many parts of the country, the pupils studied the values of the trees and "four-minute" speakers were assigned by each class to speak for their favorite trees in the different schools. Tree characteristics, uses, diseases and habits were taken up in detail and discussed and argued by the various classes before the vote was taken.

At the exhibition could be found in miniature samples of hundreds of things made of wood. An oak shelf of books with six "volumes" and each "volume" containing something from history or literature in regard to the oak had been made by a class of girls. Each volume was handwritten and the shelf brought much favorable comment. Telegraph poles, an electric lighting system and wooden fences along a road was the exhibit of two boys while another had made a model to scale of an ocean liner. Farm tools in miniature, made from hickory, complete another exhibit and there were dining room

sets, bedroom furniture and models for boats made from various kinds of wood.

The campaign in the Washington schools resulted in the newspapers publishing many articles about it and this in turn resulted in many editorials. The *Portland Oregonian*, in a column, argues on behalf of the Douglas fir for a national tree, while the *Cleveland Plain Dealer* nominates the hickory. The *Baltimore American* pleads for the oak. The *Indianapolis Star* says, "If the choice of a national tree should result in a new and more general interest in our forest growths, then it should be



National Photo.

PLACING A WINNER

One of the first bird houses awarded the blue ribbon by the American Forestry Association was presented to the Association and placed in a tree in front of its new headquarters, 1214 Sixteenth Street, Northwest, in Washington.

worth while," which, of course, is exactly what the Association is aiming at with the coming generations.

One of the interesting developments of the campaign was a letter from President Woodrow Wilson saying that because of the "richness and infinite variety of America's forests" he was unable to make a choice of a national tree, and this resulted in editorials from such



National Photo.

SOME OF THE BLUE RIBBON WINNERS

Mrs. Cary T. Grayson, a member of the Association, and wife of Admiral Grayson, physician to President Wilson, pinned some of the blue ribbons on the boys who built the best bird houses. Mrs. Grayson spent two hours at the show and visited every exhibit.



National Photo.

FATHER OF THE FORESTRY BILL AWARDS BLUE RIBBONS

Bertrand H. Snell, Congressman from New York State, who introduced the Snell Forestry Bill in Congress, awarded some of the blue ribbons for bird house building by the pupils of the Nature Study Department of the schools of Washington. As the picture shows, girls are just as good home makers for the birds as the boys, and many of them were in line for the blue ribbons.

papers as the *Brooklyn Eagle*, the *New York Evening World* and the *Newark Star-Eagle*.

The *Columbus Dispatch* comments on the campaign and calls attention to the fact that the "hickory is spotless in its Americanism." The *Boston Post* has leanings for the elm. The *Philadelphia Press* points to the educational possibilities of such a campaign as the Association is conducting and adds that the yellow pine or the Douglas fir should win on strict practicality. The *Rochester Democrat and Chronicle*, which is co-operating with the



National Photo.

LEARNING THE SECRETS OF BIRDLAND

"That's where the bird comes out," said one of the youngsters who visited the "bird corner" in the tree work exhibition of one of the Washington schools. The exhibition closed a three months educational campaign in which the children voted for a national tree.

Association in a campaign in Rochester, says "there is real merit in this movement for a national tree even if it did no more than make a large number of people study trees." The *Public Ledger* of Philadelphia points out that "the American Forestry Association will give real service if it will advise what not to select so as to eliminate a foolish catalogue of unmeaning shrubbery and trees." The *Public Ledger* then goes on to take up the values of the elm, pine, hickory and several other trees.

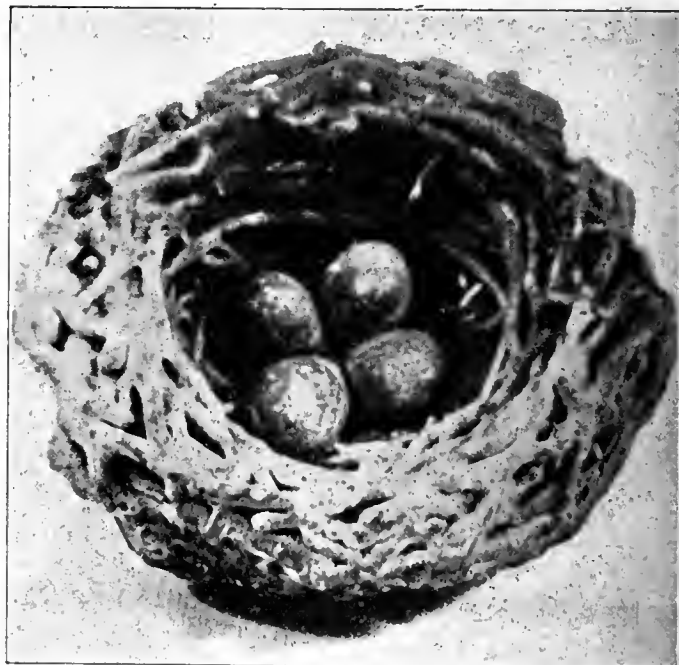
Thus it will be seen that the school pupils of Washington through their Nature Study Department have put the subject right before the editors of the country and that of course means putting it before the people of the country. The American Forestry Association wants to

congratulate everybody connected with the campaign and to thank every pupil who worked so hard in digging out facts for "four-minute" speeches or in preparing their part of the wonderful exhibits that thousands saw and that hundreds of teachers from afar have examined.

THE MEMORIAL TREE

The living monument is Light,
True emblem of our Liberty;
'Tis Faith and Hope and Charity;
'Tis ever Youth, gay, strong and bright;
'Tis heartbeats, Death's decree despite;
O'er Death it is a Victory;
The life of man is called a tree
In Holy Writ; and when its flight
A soul has taken to its rest,
And when a form is but a clod,
That monumental tree is best
Whose great limbs shower on the sod
Its fruit, as would good deeds attest,
To feed the little lambs of God.

—Marta Scott Conser.



PETRIFIED BIRD'S NEST

PETRIFIED BIRD'S EGGS HAVE BEEN FOUND ON SEVERAL OCCASIONS, BUT, SO FAR AS CAN BE ASCERTAINED, IT REMAINED FOR A WASHINGTON STATESMAN TO FIND A BIRD'S NEST AND EGGS PETRIFIED, IN THE GRAND CANYON OF THE COLORADO, IN ARIZONA, 550 FEET FROM THE BASE OF THE CANYON. IT WAS IMBEDDED IN A ROCK FORMATION IN A SORT OF CLIFF. IT IS EVIDENTLY THE NEST OF SOME BIRD ABOUT THE SIZE OF A ROBIN. THE UNIVERSITY OF WASHINGTON PRO-NOUNCES IT THE FINEST SPECIMEN OF PETRIFIED FORMATION THEY HAVE EVER SEEN. THE DARKER PORTION OF THE NEST WAS THE SIDE EXPOSED TO THE AIR.

CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PRESIDENT CANADIAN SOCIETY OF FOREST ENGINEERS

THE outlook for further progress in the utilization of forest resources in Canada and for better fire protection is bright. The public consciousness is becoming awakened to what Mr. Lane-Poole, Chief Forester for West Australia, calls the slogan of the "Sustained Yield." The public in Canada are asking what is being done to see that their forests shall be kept in a productive condition for all time and that the extremely important industries which are dependent on them, shall be assured of a sufficient supply of raw material for all time to come. The pulp and paper industry has reached very large proportions in Eastern Canada and is rapidly developing in the West. Located, as the mills are, far away from other centers of population and often in the wilderness, they must make their own towns, and many of these from 2000 to 8000 in population have grown up and are thriving. They are all dependent upon sustained yield from our forests and we must see that these towns are protected and will not be abandoned in from 35 to 60 years by the burning or over-cutting of the woodlands. Fire protection has improved very markedly in the last five years but is far from satisfactory as yet. On the Dominion Forest Reserves it is good, in British Columbia it is fair, in Ontario there is much need for improvement, in Quebec it is good, in New Brunswick good and in Nova Scotia poor. One of the worst things with which Canada has to contend is the situation on the Canadian National Railway lines which are operated by the government. Those sections which do not come under the jurisdiction of the Dominion Railway Commission continue to set fires from year to year and appeals to the Department of Railways have not met with the response which one would expect from officials whose duty it is to look after the interests of government property. Thousands of cords of pulpwood which should have supplied these roads with tonnage for years have been carelessly burnt and the time has come when the public must force some action looking to the removal of this menace.

Little definite information is as yet at hand about the location and condition of the forests. The areas are so large and so difficult of access that very little even of reconnaissance has been done and accurate maps are almost lacking. The use of the aerial photography has been demonstrated to be practical and sufficiently accurate for determining areas in timber, areas burnt, drainage, areas cut over, etc., and the Dominion Forest Branch, the

Commission of Conservation, the Provinces of Quebec, British Columbia and Ontario, are all going to do this work in co-operation with the Air Board next season. Three private paper companies will also carry on this work and inside of a very few years we shall be able to state with considerable accuracy where our timber is located, and the areas and conditions of stocking, with much other valuable information. Once the question of supplies, that is the amount of our forest capital, is determined we will be able to say definitely how long our timber will last and we can then make definite plans for proper management. To go on longer with the present fire loss and the absolutely planless method of timber exploitation is little short of criminal.

At a meeting held recently with the Premier of Quebec by the Quebec Limit Holders' Association, the question of a diameter limit cutting regulation was discussed. For years Quebec has been requiring a diameter limit in its cutting regulations but it was uniform over the whole Province which, when we consider that the Province extends from latitude 45 to latitude 56, is absurd. The diameter limit was imposed under the theory that small trees were necessarily young trees and if left in the woods would grow up and form the next crop. This has been demonstrated to be absolutely untrue, as most of the smaller trees are suppressed and in reality older than the larger ones and with the large ones removed they do not recover but only cumber the ground and more often than not blow down. The diameter limit has made us feel secure and still gives a false sense of security. Over many large areas, if the government diameter limits are strictly observed, practically no timber can be cut. The government has decided that where permission is asked government forest inspectors will look over the ground and if, in their judgment, cutting undersize would not be harmful, permission is given. While good in theory this method can easily lead to trouble. It opens the door to graft, there are not sufficient inspectors to do the work properly or to see that their orders are properly carried out. It would seem as if the only way to handle this until the government has sufficient trained men for the work, would be to establish a system of zone diameter limits which would be fixed according to the size of the timber. Under the system of permits to cut under size the inspectors often lack sufficient experience or judgment to decide such ques-

tions and sometimes do not know the difference between white and black or red spruce which have different regulations for cutting. It seems as if the best way to handle the matter would be by some system of clear cutting in strips or areas small enough to be seeded in from the sides.

However, the greatest menace at present to the future of Quebec's forests is the way the cutting is done and the fire danger from the slash left in the woods. For the most part the areas to be cut are chosen from year to year by men who are not familiar with the ground and who lack technical knowledge. Their only idea is "Where can the logs be cut and delivered the cheapest?" The jobber system has been responsible for enormous wastes, but owing to the high prices asked by jobbers and the realization of how their lands have been butchered this will gradually disappear and cutting will be done by company camps. Heretofore the cuttings have been in the best timber and only the best and most accessible of that has been taken, so that year by year hauls have become longer, costs of operation higher and the areas still to be cut poorer. It is high time that intelligent plans were made for logging, not for one year ahead but for the next ten years.

The debris from cutting is a serious fire hazard. When areas cut over each year were small and scattered this did not matter so much, but with the large increase in the number of pulp and paper mills and the increased demands on the forests, the cut-over areas are assuming large proportions and are getting nearer together. Experience has shown that nearly all the serious fires are on cut-over or burnt-over lands and such fires are always the most difficult to extinguish and do the most damage. Should a very dry season with high winds come some disastrous fires might occur destroying large areas of valuable timber. The only insurance we can have against fires of this character is to dispose of the debris at the time of cutting by burning. Two objections have been raised to this method—the first that of cost and the second that such burning would kill a lot of the young growth. The first objection is not valid if all operators are compelled to so dispose of their debris, as the burden would fall on the customer. It is also said that if one Province imposed such a restriction it would put operators in that section at a disadvantage with their competitors in

(Continued on page 177)

EDITORIAL REVIEW IN WHICH WE HAVE

IN the opinion of the editor of the *Lumber World Review* the American Forestry Association "clutters up the public mind" with its tree voting campaign in which the public is asked to name a national tree. Since he stands alone we quote from that paper: "Which is the most popular tree? No, the above is not our question. The autumn Indian Summer is not our silly season. The American Forestry Association it is that has started a national tree voting campaign to elect some one tree as the national tree for the entire country. Now, as a matter of fact, anyone who is intimately acquainted with trees has never selected any one tree as his exclusive favorite, unless it was the Irishman who had been sentenced to be hanged and was given an opportunity to state what species of tree he preferred for the ascension ceremony. He promptly chose a gooseberry tree for that purpose,—and probably for a sounder reason than any of the people will have for their choice, who cast votes in this contest. This is merely one of the popular 'stunts' which clutter up the public mind and prevent it doing needed serious thinking upon really important subjects."

The *Lumber World Review* has missed the point entirely, our question not being what he says it is. The question is as to a national tree. A campaign of education as to tree values to the commercial life of the country is

on throughout the schools of the land. The District of Columbia schools have just finished a three months' study of the tree values after which thousands of votes were cast. Orators stood forth in the schools and spoke for votes just as for candidates

in a political campaign. What hoots it if the entire thought of the nation can be turned toward the value of forests to our commercial life at this time? Campaigns of the American Forestry Association are calling forth editorial comment on the beautiful things in life. The editor of the *Baltimore American* has just written "The Age Old Oaks," which will rank as a classic with "Yes, Virginia, There Is a Santa Claus" which appeared in the *New York Sun* years ago. The Hall of Fame for Trees with a history, and Roads of Remembrance are having their part in drawing the attention of the public to tree values. At least so the editors think and write. As to the way we have "cluttered up" the editorial minds we again quote:

Rochester Democrat Chronicle: Latest of the numerous methods employed by the American Forestry Association in its aggressive and highly commendable campaign for forest conservation is a proposed vote on a national tree. This vote is not to be confined to adults, nor is it to be limited to school children, but all are asked to take a part in it. Just now the particular attention of the children is invited, for the school year is opening and this is a good thought for them to take up in connection with their other studies.

There is a real merit in this movement for a national tree. Even if it did no more than make

THE GOOD OF IT

Boston Globe—A shoemaker naturally thinks there is nothing like leather, but a bright idea is a bright idea, no matter who fathers it.

The President of the American Forestry Association suggests that memorial trees be planted along the highway from Sagamore Hill, Long Island to Chicago, in honor of Theodore Roosevelt. The trees could be planted by towns, associations and private citizens, and might be of whatever variety was best suited to the region.

The plan has a good deal of merit. It would be useful—a living, growing memorial. It would be an echo of the conservation policies sponsored by Mr. Roosevelt, and of which the country still stands sorely in need. And—if such a suggestion carries any weight—such a memorial would be beautiful.

Whether it is carried out for the Roosevelt highway or not, the idea is worth remembering for humbler occasions and resources. The expense is not great, and the rewards are cumulative. There is as much difference between a road with a fine shade-row lining both sides and one without as there is between a flat lowland and a splendid mountain landscape. The shade-row is a mercy to man and beast, and such cathedral naves of elm and maple are the glory of our finest New England towns.

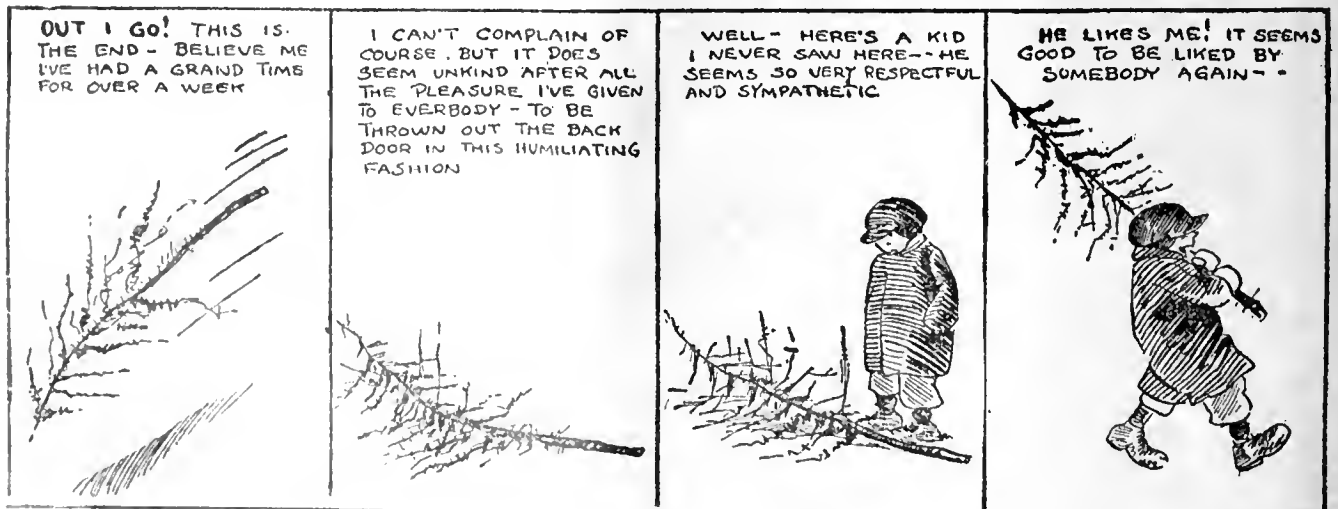
An old farmer, past his 80th year, was setting out a long row of maples by the road which passed his meadows.

"What are you doing that for?" asked a neighbor. "You'll never get any of the good of it."

"That's not my idea," replied the old man quietly.

There the trees stand to this day, taller and more beautiful each year that passes, and the pride of the town. The enjoyment of the passers-by is a living monument to the planter. That is the good of it.

"WONDER WHAT A DISCARDED TREE THINKS ABOUT," ASKS



"CLUTTERED UP" THE MINDS OF SOME EDITORS

a large number of people study trees, their natures and range of growth geographically, it would be of inestimable benefit. And if, in addition to this, they should learn that the forests of the country are in danger of rapid extinction the value of the study would be doubled.

Study of the subject will be demanded of those who enter this voting contest, for they are expected to give reasons in writing for voting for their particular trees. Naturally the selection of a tree that will appropriately represent the American spirit as far as a tree can will be no small task.

Portland Oregonian: The American Forestry Association's attempt to "elect" a national tree evokes thoughts of the difficulties attending the task. Yet if it fulfills no other purpose than to inspire study of the value of trees and the part they play in our natural economics, it may be worth while. To choose a tree that will represent all parts of America would be a practically impossible task.

The editor of the *Oregonian* then "clutters up" the mind of his readers with the history and value of the Douglas fir suggesting that tree be the candidate of the Northwest.

Philadelphia Public Ledger: It is to be hoped the American Forestry Association will get better results out of its very commendable effort to get the country to select a national tree than other associations got in the past in trying to select a national flower. If the analogies represented in the selection of state flowers be followed in the voting on a national tree, one sees all kinds of breakers ahead, since, with a few excep-

tions, wherein indigenous and characteristic flowers have been selected which have size, color and design as well as popularity, many of the states have chosen flowers that are absolutely meaningless or childish in the extreme.

With these untoward precedents in mind, the American Forestry Association will give real service, therefore, if it will advise what not to select, so as to eliminate a foolish catalogue of unmeaning shrubbery and trees. There is, however, no trouble about the splendor and beauty of tree life peculiar to and belonging to the United States, though by reason of climatic and topographic necessity not all these new world species have a universal range. Hence it would be out of the question, perhaps, to accept the redwood or the sequoias as our national emblem, though they are the most magnificent trees in the world and absolutely our own. The various magnolias are indubitably American and have a large, though not universal, habitat over here, and so would naturally be ruled out. The hickory, also one of our most characteristic trees and native to the very bark and leaf, might well come in for selection. The common elm will occur to many as a proper emblem, although our own elm belongs to a widespread genera not confined to the New World. It is, however, wholly different from the English elm, and its loose, pendulous characteristics, with the graceful soar and spread of the limbs in a fan-like manner, combined with its endurance and its strength and size in the finest examples, are quite American and in marked contrast to the stockiness and sturdiness of the English elm which is sometimes seen growing near the American

elm in formal gardens and parks, yielding the palm to its American congener so far as a shapely symmetry of outline goes. No one who has ever seen a characteristic tulip-poplar in bloom in June in all its glory of fresh foliage can forget the supreme impression of vigor and beauty that makes it easily an appropriate emblem of a great people.

Clinton (Ia.) Advertiser: It is to be hoped that this appeal for an expression of opinion in the matter of a national tree will meet a ready and general response. Every citizen should be interested in the matter and take the time to make an intelligent decision, and then express it. What tree, in your opinion, best expresses the spirit of America, and in what manner does it do this? Tell the American Forestry Association.

Philadelphia Press: To the practical-minded, the American Forestry Association's attempt to "elect" a national tree, as a symbol of these United States, may seem like a specious and insignificant gesture. "What is the use of bothering busy people with such questions?" might be the natural query. But the contemplated drive for votes, inclusive of citizens of voting age and of school children, has a point that should not be overlooked. Its achievement will be fully worth the incidental trouble.

If a test of strict practicality were applied to the "election," no decorative trees would win. Instead, we might get the useful and wealth-producing yellow pine, which in recent years has been the leader in lumber production, or the almost equally productive Douglas fir of the Northwest. But

MR. BRIGGS, THE FAMOUS CARTOONIST OF THE NEW YORK TRIBUNE



these trees, like the rest, represent only sections of the country. What is wanted is a concrete type of American aborigiculture, inclusive of Maine, and Yellowstone Park, as well as California and Florida. Probably the nearest approach to such a type is one of the conifers. At all events, the "election" promises to be interesting and variegated.

The *Plain Dealer* of Cleveland nominates the hickory as the real American tree and then "clutters up" the minds of his readers with a double column editorial on the hickory's virtues of which this is a part:

Cleveland Plain Dealer: Shall America adopt a national tree? The American Forestry Association says it shall, and is conducting a plebiscite to determine the selection. Schools, civic organizations and other bodies interested in Americanism and in conservation have been asked to vote, and already the balloting has become spirited.

The *Plain Dealer* nominates the hickory. This is a distinctively American genus. It is indigenous nowhere but in North America, but it is found in almost every section of the United States. There are many species, some with edible fruit, and some, otherwise equally desirable, which bear nuts unfit for human food. The hickory is sturdy, and not ungraceful. Its flowers are inconspicuous, but the opening of its immense leaf buds in the spring presents a mock-floral display more gaudy and colorful than even the tulips, or liriodendron. Hickory wood is noted for its toughness and elasticity. And what wood-farer does not cherish memories of the

fragrance and merry crackling of a fire of hickory bark?

The hickory! Let the sturdy aborigine, the shaggy monarch, the "artist" tree, the tree of uniquely American qualities, be chosen as America's arboreal emblem!

A column editorial "clutters up" the *Salt Lake Tribune* with a review and opinions of other editors and then concludes:

Salt Lake Tribune: Whether or not the Forestry Association succeeds in obtaining so decisive a vote in favor of one or another tree as to make it the pronounced choice of the American people, the effort undoubtedly possesses much of merit. This merit lies not altogether in achieving the aim of the undertaking—the selection of a national tree—but also in its educational value in creating an interest in our woods on the part of school children. This is certainly worth taking into consideration. The same may be said for various clubs, whose adult members probably have, for the most part, never learned much about America's trees, and those of them who learned anything at all about them in their youth have forgotten that little.

Denver Times: Selecting a national tree is as difficult as choosing a national flower, at which all attempts have thus far failed. So many noble trees grow in this country that it is doubtful if a majority of voters will settle on any one. The interest that the contest is arousing in our forests and the problems connected therewith will be of considerable benefit, however, even though no tree is elected. Encouragement of school children to take an interest in the matter and discuss trees and forestry in

general is an excellent idea. The next generation will be thoroughly grounded in the principles of conservation and development.

The tree that is selected should be emblematic of the American nation—strong; straight, staunch, enduring—and should grow in most, if not all, of the States. To vote intelligently will take considerable study and thought.

Watertown Standard: What is your favorite tree? The American Forestry Association is taking a vote to find which variety is most popular and to call that the national tree. So far returns are incomplete and the voting remains open to anyone interested enough to write his choice on a piece of paper and mail it to the Association.

Late reports show that the walnut is leading in the vote up to date. This may be like some straw votes in political campaigns, but it evidently does show a stronger trend in the direction of that tree than might have been anticipated. Possibly one reason for this is the wide advertisement given to the fact that the walnut came close to the danger line of extinction during the war. It will be remembered that there was urgent demand for walnut timber for military use, and as a result information was spread showing how little was left when the hunt began. What must have happened to the small stock when the ruthless demands of war had been satisfied may be imagined with ease. For this reason it would not be a bad idea to center interest on this valuable tree during the vote, even if in the end the choice should be some other variety.

Financial Statement of the American Forestry Association for 1920

EXPENSES	INCOME
Publication of Magazine.....	Membership and Circulation.....
\$ 31,344.87	\$ 55,490.44
Membership Solicitation.....	Advertising
23,834.15	11,076.23
Editorial and Business Office Expenses,	Books and Premiums.....
Salaries, Supplies, etc.....	438.90
33,573.39	Donations for Educational and Scientific
Educational and Scientific Publicity.....	Work
8,539.86	19,689.09
Meetings and Legislative Activities.....	Bequests.
1,325.11	5,613.51
Equipment, etc.....	Interest
1,687.50	1,512.21
\$100,304.88	Sale of Equipment.....
	275.00
	\$ 94,095.38
	Excess of Expenses over Income.....
	\$ 6,209.50
	\$100,304.88

CANADIAN DEPARTMENT

(Continued from page 173)

another Province. This also is not so as at present the stumpage dues in the different Provinces are different but this does not seem to affect trade. The objection that too much young growth would be killed is not true, as for three years one company has been burning all brush in thinning and clear cutting operations and the amount of young stuff killed is entirely negligible. The method employed is to start a small fire and then have a man with each two cutting gangs who take the branches and tops as fast as they are cut and lays them on the fire. The area covered by the fires is usually about eight feet in diameter and here the burn is down to the mineral soil and after two years these burnt spots are covered with tree seedlings. The damage done to young growth is far less by burning the slash in piles than when it is left to rot on the ground.

The annual week of meetings of the Canadian Pulp and Paper Association was held in Montreal at the Windsor and Ritz-Carlton Hotels. On the 18th the Canadian Society of Forest Engineers held an all day meeting; on the 19th the Quebec Protective Association and the Woodlands Section held a joint meeting; on the 20th the Canadian Forestry Association held the annual all day meeting and on the 21st the joint meeting of the various sections of the Canadian Pulp and Paper Association was held, with the annual banquet in the evening. This was a week of thoroughly practical and very interesting meetings, and the fact that George Chahoon, Jr., is president of the Canadian Pulp and Paper Association insured a very interesting and enjoyable banquet. The program of the Canadian Society of Forest Engineers was a most interesting one.

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You Leave
A Camp Fire
Be Sure It's Out."

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1921
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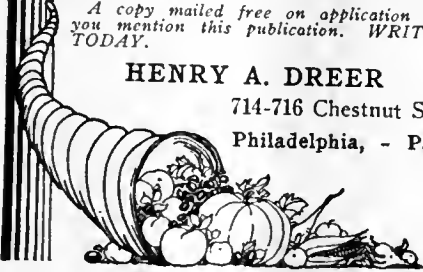
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It is the best Garden Book we have ever published and offers the choicest Vegetable and Flower Seeds, Lawn Grass and Agricultural Seeds, Plants of all kinds, including the newest Roses, Dahlias, Hardy Perennials, etc., besides all the old standards.

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PINE :: SPRUCE

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2 to 2½ feet \$2.50 each
3 to 4 feet 4.50 each

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Our catalog, which we would gladly mail upon request, contains an infinitely greater variety of evergreens, also an extensive listing of shrubs, trees and perennials of almost endless selection.

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our book for home-owners, gives plans and suggestions for unusual groupings of trees, shrubs, and plants on small home grounds and large estates. Sent free on request.

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THE BILL MUST PASS BECAUSE IT WILL PROVIDE PROTECTION OF FORESTS FROM FIRE, FOR REFORESTING OF VAST AREAS OF CUTOVER LANDS FOR DEVELOPMENT OF WASTE LANDS SUITABLE ONLY FOR THE GROWING OF TREES, AND

BECAUSE THESE AND THE OTHER MEASURES IT PROPOSES WILL RESULT IN SUFFICIENT FORESTS TO PROVIDE OUR NATION WITH AMPLE LUMBER, PULPWOOD AND OTHER PRODUCTS OF THE FORESTS.

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FOR THE FORESTRY BILL

of Bill H. R. 15327 for a National Forest policy which will provide forest products for our future needs

THE FORESTRY BILL IS APPROVED AND SUPPORTED BY THE NATIONAL LUMBER MANUFACTURERS' ASSOCIATION, NATIONAL WHOLESALE LUMBER DEALERS' ASSOCIATION, AMERICAN PAPER AND PULP ASSOCIATION, AMERICAN NEWSPAPER PUBLISHERS' ASSOCIATION, ASSOCIATION OF WOOD USING INDUSTRIES, WESTERN FORESTRY AND CONSERVATION ASSOCIATION, CHAMBER OF COMMERCE OF THE UNITED STATES, THE UNITED STATES FOREST SERVICE AND THE AMERICAN FORESTRY ASSOCIATION, AND OTHER FORESTRY AND CONSERVATION ASSOCIATIONS, WOMEN'S CLUBS AND A LARGE NUMBER OF OTHER ORGANIZATIONS.

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SECOND GROWTH STANDS OF TIMBER SUCH AS THIS ARE POSSIBLE ON MILLIONS OF NOW IDLE ACRES. A SANE FOREST POLICY AS ADVOCATED BY THE SNELL BILL WILL INSURE US A CONTINUED SUPPLY OF THE FOREST PRODUCTS NOW RAPIDLY DECREASING.

CUT-OVER LANDS SUCH AS THESE SHOULD BE PROTECTED FROM FIRE AND REFORESTED. UNDER THE PROPER METHODS OF FORESTRY THERE WILL BE A CONTINUOUS SOURCE OF FOREST PRODUCTS AT VERY LOW COST.



WOODCHUCKS AND PORCUPINES

(Continued from page 154)

anything that comes their way; so, of all the animals of the forest, they run the least risk of dying from starvation; in fact, a good, healthy porcupine probably never knows what hunger means.

Young porcupines are not any handsomer than their parents; and all round, there seems to be but little affection among them. When an old one goes to sleep in its nest—be it in a hollow tree or log—it has a way of effectively closing the entrance by literally backing up against it. The quills on that part of its body being the largest and strongest, it is not likely to be molested by anything living while in that position. Notwithstanding their general clumsiness, they are excellent climbers, and it is remarkable to see how rapidly a porcupine can get up into a rough-barked tree, in a minute or so he will reach a height of some seventy-five or eighty feet from the ground.

The most marked peculiarity of the porcupine are the quills, which are simply thickened hairs—gradations between ordinary hairs and the thickest and longest spines exist to prove this assertion. Occasionally the spines end in a peculiar, cup-shaped extremity. The armature of spines is of the greatest value to the animal, though its use is entirely for defensive purposes. As a usual thing, the western porcupine does not attain a large size. West of the great Rocky Mountains these animals are met with in great numbers in certain regions, and in some localities in Wyoming the porcupine is very numerous. A gentleman who lived one summer in that State said: "I saw, in a week's time in Wyoming, more porcupines than I ever saw before in all my life. During the month of July a party of eight or ten men went out camping; I was along, and our camp was not far from a chain of high, wooded hills. The sides and summits were densely clad with pine, and there was very little underbrush; the trees were all of large size. The entire woods along the base of these hills fairly swarmed with porcupines; they seemed to subsist entirely on the bark of the pines—not the rough, exterior portions, but the soft, juicy parts next to the wood. We found the trunks of the smaller trees and also the limbs stripped clean; all the bark had been peeled off and devoured by these animals. In traversing the woods we saw hundreds, yes, thousands of the creatures, and in most cases we found them busily engaged in stripping off the pine bark; they were not wild, and made no attempt to get out of our sight, nor did they offer to molest us. As there was an army of them, they could have made it interesting for us. We had several dogs along which at first imagined that they had a picnic, and made a general attack on the unoffending porcupines; the latter did not put up much of a fight with teeth and

claws, but let their coat-of-mail do the work. The poor dogs quickly found out their mistake, and dropped the fight in a moment, their mouths being stuck full of quills, the points of which were as sharp as cambric needles, which we had a tedious job in picking out. For several days the dogs could not eat on account of their mouths being sore. Some of the men shot several of the porcupines, and those which were wounded uttered piteous, plaintive cries and moans, almost human in tone. The men desisted at once from the cruel sport. The porcupine seems to have a peculiar taste; if not disturbed it will destroy harness and saddles. One porcupine can

Stone and Cram seem to believe that the sight of the American porcupine is greatly lacking in power; they say, in regard to the Canada species: "He lacks beauty either of form, motion, or color, as well as softness of fur; his eyes are little and dull, with never a glimmer of thought behind them, serving little better purpose than to direct him from one tree to another, and to distinguish between daytime and night." This sounds almost like a description of the eyes of some of the lower semi-sightless invertebrates.

The powerful incisor teeth of the American porcupine are fashioned after the plans of other rodents of the kind. If an accident happens to one or more of them, the sound teeth grow on till they may cause the death of the sufferer. They are bright yellow on their anterior surfaces, and become very conspicuous when the animal grins in anger. Before making an attack, the animal has a way of chattering with them, as though hoping to intimidate its enemy or assailant. On the whole, American porcupines are curious creatures, and we have by no means learned all there is to be known about them.

masticate all the leather on an ordinary saddle in a single night."

When stripped of its long quills, the animal is quite small, though sometimes porcupines are found which are very large for the average size of the species.

BETLES AND PAPER SHORTAGE

A GRAY-GREEN beetle has something to do with the present shortage of paper. The beetle is the adult form of the aspen borer, a grub which often destroys whole plantations of the trees that are so essential to the pulp industry. The beetle gnaws a slot in the bark and deposits one or two eggs therein. From these eggs come the trouble-making grubs that gnaw into the heart and sapwood and so riddle the tree that the first strong wind snaps the weakened timber. Poplar and aspen—both very fast growing trees, and for this reason very valuable to manufacturers—are the objects of the borer's attacks. The imported Lombardy poplar and the commercial cottonwood of the Mississippi Valley are very seldom injured, but all other native varieties are damaged by the grub.

In some areas where poplar and aspen predominate, the standing dead, fallen, and dying trees exceed 50 per cent of the total stand.

The Department of Agriculture experts find that the insect can be controlled, if not entirely eliminated by destroying the insect by cutting the brood trees, and a man with an ax can cut and pile 50 such trees in a day, or by another method, not practical in the forest, but applicable to shade trees, the application of creosote or carbolineum to the egg scars. This should be done in October after the adults have deposited their eggs.

ALASKA DISTRICT

BECAUSE of its increasing importance as a source of paper pulp material, as well as in order to secure quicker administrative results, Alaska has been designed by Secretary Meredith, of the Department of Agriculture as a new National Forest District. Mr. Charles H. Flory, who has been Superintendent of the Alaska National Forests for the past two years, has received appointment as the first District Forester to the Alaska District, as it is now known. Mr. Flory will retain Ketchikan as his headquarters until July next, when he will move to the permanent headquarters at Juneau.

According to the Forest Service there are two National Forests in Alaska, the Tongass, in the southeastern part, and the Chugach, in the Prince William Sound country. These two forests have heretofore been included within the North Pacific District, but now, under District Forester Flory's direction, matters which formerly were referred to the Forest Service office in Portland, Oregon, will be handled within Alaska itself. The establishment of this new District is in accordance with recommendations made to Secretary Meredith by Colonel W. B. Greeley, Chief Forester of the Forest Service, who became convinced last summer that efficient administration as well as the proper development of Alaska's forest resources required the establishment of such a district with its accompanying local administration.

REFORESTATION IN PENNSYLVANIA

A SINGLE application for 240,000 seedling trees has been received by W. R. Ludwig, District Forester in Pennsylvania, in a campaign to have a half million young forest trees planted in his district this spring. This is more than the total number of seedlings applied for last spring. Forester Ludwig also reported that the enrollment of Boy Scouts as Forest Guides is going forward rapidly in his territory. A fire patrol of boys mounted on bicycles for prompt response to fires is another form of boys' organization which is proving successful.

Saving Our Forests

The nation-wide movement to conserve the forest wealth of the country, which is concretely expressed in the Snell Bill, recently introduced in the House, was inaugurated by the paper and pulp interests of the United States.

United in its support are more of the forest engineers, lumbermen, users of forest products and timberland owners than have ever before reached an agreement on a similar policy.

It is backed by the press of the country and the support of the public is looked upon as a foregone conclusion.

It is noteworthy that this concerted and vigorous movement to stay the destruction of the forests, and, by natural or artificial reforestation, to restore the ideal balance between annual growth and annual cut, had its inception in the industry least responsible for the disappearance of our woodlands.

Of the ninety-one billion feet of timber annually cut in the United States, the entire pulp and paper industry of the nation can be charged with only three per cent, and, included in that small proportion, the newsprint paper industry is responsible for a scant one per cent.

Six times as much wood is consumed in making boxes and packing cases each year as is used in all the newsprint paper manufactured in the country.

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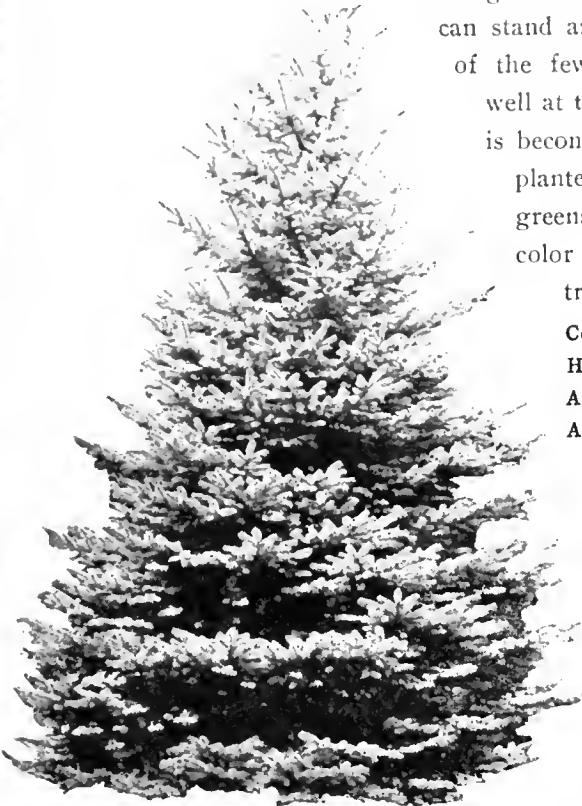
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makes it one of the most desirable evergreens for general planting. It can stand any exposure and is one of the few evergreens that does well at the sea shore. This tree is becoming very popular when planted among other evergreens where its striking color forms a pleasing contrast.

Col. Blue Spruce	6 to 19 ft.
Hemlocks	10 to 16 ft.
Austrian Pine	10 to 21 ft.
Arborvitae	6 to 11 ft.

Send for our catalogue which contains considerable information in regard to Planting The Right Tree in The Right Place. We would be glad to furnish you with any information at our command concerning silviculture.



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Brighten your home with Beautiful Dwarf Evergreens.

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PLANT JAPANESE WALNUT

THE Japanese walnut offers possibilities for landowners who are seeking to plant nut trees for shade or other purposes, say specialists of the United States Department of Agriculture. It is nearly as hardy as the black walnut and is by no means uncommon in Northern and Eastern States, where it is especially appropriate for farm and door-yard planting. For the present, seedling trees will have to be relied upon almost entirely, as very few budded or grafted trees are available.

This nut has been confused with the Persian or so-called English walnut, although the two are quite unlike. The Japanese is a dwarfish species, with dull green rough leaflets, often as many as 15 or 17 to the leaf, and bears nuts in racemes of a dozen or more.

The shells are thinner than those of the black walnut, but thicker than those of the Persian walnuts. The flavor of the kernels is much like that of the American butternut.

INSECTS ATTACK WESTERN PINE

OF the 10,700,000 feet of yellow pine in private ownership in Klamath and Lake Counties, Oregon, fully 8 per cent has been killed during the past five or six years, or is now infested by beetles, says the Forest Entomologist of the Oregon Experiment Station. The average annual loss has been about 150 million board feet, worth at least \$250,000, or 300 times as much as the average annual fire loss in the two counties.

The principal enemy in the western pine forests is the western pine dark brown beetle which bores through the bark of the tree and excavates long, winding galleries in the soft formative tissue next to the bark. The effect of these hundreds of insect galleries is to girdle the tree, thus cutting off its supply of food and water, and causing death. When the beetles become abundant and kill large numbers of trees, the infestation is known as an epidemic. These epidemic infestations usually run in cycles of from four to six years. The amount of timber killed on a given area while the insects are passing through this cycle may be as low as 6 per cent or as high as 80 per cent.

PLANT CHESTNUT TREES

FIFTEEN years ago an Illinois farmer selected a piece of steep hillside land, unsuitable for regular cultivation, and set out a grove of young chestnut trees. The trees are now giving him as good an income as some farming land, and practically without attention. Chestnut blight, which has destroyed most of the native chestnut trees in the East, has not yet done material damage to chestnut land plantings west of the natural distribution of the American chestnut. Blight resistant varieties are now being developed by the United States Department of Agriculture and by associations of nut growers.

UTILIZATION OF BLACK WALNUT

BLACK walnut, which in the latter part of the nineteenth century was displaced by oak as a favorite cabinet wood, has returned to popularity. This beautiful wood, with its wonderful figured effects, is especially adapted to the dignified designs used in the lighter and more attractive finishes now in common use.

Besides its appearance, black walnut has other qualities which make it particularly good for furniture manufacture, according to the Forest Service, United States Department of Agriculture. These qualities are set forth in Bulletin 909, by Warren D. Brush, which deals with the utilization of black walnut, its properties, supply, demand, methods of marketing, adaptability for the making of veneer, and other uses.

The wood is described as heavy, hard, strong and stiff. Good "shock-absorbing ability" is specified as one of its valuable qualities for such purposes as furniture.

In 1918, about 100,000,000 board feet of black walnut was turned out by the sawmills. During the war, a tremendous demand for black walnut was created by requirements for gun stocks and airplane material.

As a result of this stimulus to production, large stocks were left on hand at the close of the war, and so, temporarily, the market for black walnut has been somewhat depressed by the accumulated supply.

Black walnut trees grow naturally over a large area, extending from southwestern New England to central Nebraska, Kansas, Oklahoma, and Texas. Some regions in this area are unfavorable for its growth, for black walnut thrives best on soil that is rich, moist, and deep, but not wet.

SAVE THE REDWOODS

THE scenic beauty of the California State Highway through the redwood region of Humboldt County is in immediate danger of destruction, according to the report just issued by the Save the Redwoods League. Unless action is taken by the State to save these redwoods along the Highway, league officials declare that before another year has passed the lumbering operations now contemplated will result in the almost complete devastation of one of the great scenic highways of the world. Support is given by the League to the bill now before the California State Legislature to protect these trees.

The annual report of the Save the Redwoods League, now being sent to members, outlines the comprehensive program followed in 1920 to save representative areas of sequoia sempervirens, or redwood, the giant trees of the Northern California coast which are rapidly being destroyed.



ENGLISH WALNUTS
ROCHESTER GROWN

APRIL 25th IS ENGLISH WALNUT DAY
Plant some English Walnut Trees
this Spring - Order now.

Here in the north, thousands of English Walnut trees are thriving and bearing delicious nuts—you are safe in planting our hardy northern grown trees in localities where the winter temperatures are not too severe for peach trees—in almost every locality, north, east, south or west, you will find bearing English Walnut trees—wherever peach trees will grow, our hardy English Walnut trees will succeed.

We offer small trees as low as \$1.00 each, but send for our beautiful catalog, which describes the different varieties, the different sizes with prices, also a multitude of other hardy nut trees, fruit and ornamental trees, roses, shrubs, evergreens, hedge plants, etc., for while we have the largest assortment, and the largest stock of northern grown nut trees in America, we are also growers and have been for more than half a century, of a general line of hardy dependable nursery stock.

If you intend to plant an orchard—If you intend to beautify your grounds—no matter how much or how little you intend to plant, start with "Glenwood Grown" trees. Send for that catalog today—it's our only salesman.

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BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

FOREST VALUATION—Fillbert Roth.....	\$1.50
FOREST REGULATION—Fillbert Roth.....	2.00
PRACTICAL TREE REPAIR—By Elbert Peets.....	2.35
LUMBER MANUFACTURING ACCOUNTS—By Arthur F. Jones.....	2.10
FOREST VALUATION—By H. H. Chapman.....	3.10
CHEMISTRY OF PULP AND PAPER MAKING—By Edwin Sutermeister.....	6.10
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GETTING ACQUAINTED WITH THE TREES—J. Horace McFarland.....	1.75
HANDBOOK OF TIMBER PRESERVATION—Samuel M. Rowe.....	5.00
TREES OF NEW ENGLAND—L. L. Dame and Henry Brooks.....	1.50
TREES, SHRUBS AND VINES OF THE NORTHEASTERN UNITED STATES—H. E. Parkhurst.....	1.66
TREES—H. Marshall Ward.....	1.56
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BOOK REVIEWS

"Studies in French Forestry," by Theodore S. Woolsey, Jr. (John Wiley & Sons, Inc.) 1920.

Perhaps the chief value of this book lies in the fact that the wealth of detailed information which it contains is presented from the American point of view. Whether the subject under discussion has to do with natural regeneration, artificial reforestation, control of erosion, regulation of the cut, forest law, forest policy, or forest economics, the author is obviously trying not only to present a complete and accurate picture of French practice, but to stress those points of particular interest and value to American readers. Among the many interesting points brought out by the book the most striking is the success achieved by the French in making forest conservation a truly national policy, approved of and participated in by the great bulk of the people. As a result it has been possible for France to effect the regeneration of immense areas of forest lands formerly devastated by years of war and other abuse. Other important achievements include the reforestation of eroded mountain lands, including the control of torrents, and the reclamation of the sand barrens of Gascony and the Landes. The story of how these latter were converted by draining and the planting of maritime pine from a fever-ridden, bankrupt waste to one of the most progressive and prosperous regions in France is of absorbing interest.

One of the most striking features of forest conservation in France is the recognition of the forest as a resource standing apart from other resources in its need for extraordinary care and protection. This has led to the adoption of a special penal code for the forests and to the enactment of legislation forbidding the denudation of privately owned forest lands, which constitute 70 per cent of the total forest area of the country. The public forests are in general better managed, produce a higher quality of timber, and by demonstrating good forestry have had a marked effect in raising standards generally.

The first and last chapters of the book "Impressions of French Forestry," and "The American Forest Engineers in France," are contributed by W. B. Greeley, who pays his respect in no uncertain terms to the French people and foresters. He emphasizes particularly the fact that "we may learn much in seeing how a nation just as democratic and individualistic as our own has met a forest situation similar in some respects to that which America is approaching." His account of the activities of the forest engineers in France is a fascinating tale of achievement in the face of apparently insuperable obstacles.

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The National Forests of the eastern United States, purchased by the Government for the protection of watersheds of navigable streams, and administered by the Forest Service, United States Department of Agriculture, yielded a gross revenue of \$110,250 in the fiscal year ending June 30, 1920, as against less than \$72,000 the previous year, according to the annual report of the National Forest Reservation Commission. Since 1917 the receipts have

increased by \$88,000, and it is believed that within five years the revenue from these areas will exceed \$300,000.

Of the seven million acres included within the originally located areas in the southern Appalachians and White Mountains, the purchase of 1,796,788 acres has been authorized to date by the Commission at a cost of about 10½ million dollars. The average price paid the owners per acre for forested and cutover lands was \$5.31. The estimated net balance of purchases funds from the original appropriation of \$11,600,000 made for this work by Congress in 1911, is \$445,429.

This year Congress has been asked to make a lump sum appropriation of \$10,000,000 to enable the Commission to continue its purchase program. There is urgent reason for expediting this work. Land values are increasing and, due to the high cost of lumber, cutting is being done much more closely than heretofore, with the resultant increase of fire hazard from the large amount of brush and slash left after logging.

The development of the timber resources and the protection of the forests from fire are the leading administrative considerations in the eastern National Forests. There has also been a remarkable increase in the use of these forests as recreational grounds. To meet this growing demand the Forest Service is providing camping grounds furnished with woods' fireplaces, shelter houses, clean springs and sanitary improvements for the comfort and convenience of visitors. The chief importance of the forests, however, aside from their protection features, is their use as demonstration areas where lumbermen and others interested in wood-using industries can actually see the profits that may accrue from the scientific handling of forest areas.

CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces open competitive examinations for the positions listed as follows:

Engineer in forest products, \$2,400 to \$3,600 a year; associate engineer in forest products, \$2,160 to \$2,340 a year; assistant engineer in forest products, \$1,500 to \$2,100 a year; chemist in forest products, \$2,400 to \$3,600 a year; associate chemist in forest products, \$2,160 to \$2,340 a year; assistant chemist in forest products, \$1,500 to \$2,100 a year; wood technologist, \$2,400 to \$3,600 a year; associate wood technologist, \$2,160 to \$2,340 a year; assistant wood technologist, \$1,500 to \$2,100 a year.

Applications will be rated as received until May 3, 1921.

Vacancies in the Forest Products Laboratory of the Forest Service, Department of Agriculture, Madison, Wisconsin, or elsewhere, at the salaries indicated, and in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from these examinations, unless it is found in the interest of the Service to fill any vacancy by reinstatement, transfer, or promotion.

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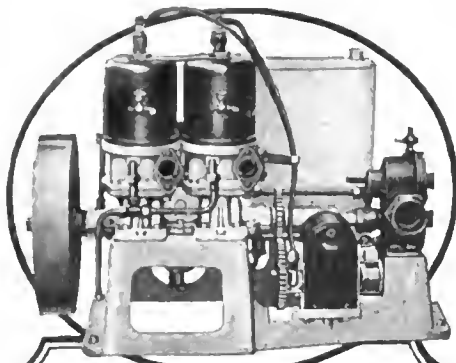
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MICE AND CHIPMUNKS HELP RE STOCK FORESTS

MICE and chipmunks are helping to re-establish the forests of Oregon and Washington, state officials of the Forest Service. Studies made by J. V. Hoffman, Director of the Wind River Forest Experiment Station, Stabler, Washington, have shown that a large part of the young fir growth coming in on burned or logged areas in these States is not due to seeding by occasional trees which are left, but rather from seed buried beneath the duff of the forest floor.

"In the Douglas fir region," states Mr. Hoffman, "the forests produce a heavy seed crop every two or three years. Rodents collect the seed from the cones in large quantities and bury them just beneath the surface of the soil. Part of the seed thus stored away is eaten, but snow and soil movement often covers many of the hordes so that they are never found. When logging operations open up the stand, these seed germinate and produce a new stand of little trees."

The Wind River Experiment Station is but one of several establishments maintained by the Government in the National Forests for the solving of forestry problems. In this particular case many thousands of dollars have been saved annually to western lumbermen through the assist-

ance of rodents in restocking cutover lands. This is one example of the value of the experiments being carried on by these stations, which are so important to the perpetuation of our forests and dependent industries.

The appropriation for these important investigations, which are the backbone of all standard forest practice, although already insufficient, was cut last year by over one-third by Congress. In the Pacific Northwest, \$50,000 annually is needed for this work, and only through adequate funds can much needed results be secured.

ASSOCIATION OF MICHIGAN FORESTERS

A RECENT event of considerable significance in the development of State forestry in this country is the organization of the Association of Michigan Foresters by the technically trained foresters of the State. The first meeting of the newly formed association, which was called by the Michigan State Farm Bureau, went on record in connection with a number of important points including particularly fire protection, reforestation, forest taxation, and the reorganization of the conservation work of the State.

The association emphasized the importance of forest fire protection and urged that sufficient appropriation for a highly efficient fire-fighting organization should be provided by the legislature. It commended the work being done by the various State agencies in the reforestation of state forests and farm woodlands, and the initiation of roadside planting on State highways. In the field of forest taxation it favored substituting for the present method a land tax to be collected annually at the local tax rate on the value of bare land and a deferred yield tax on timber when cut, and appointed a committee to draft more equitable taxation laws. It also favored an immediate soil and economic survey of all lands in Michigan to determine which are better suited for farming than for forestry purposes. In the matter of organization it recommended the formation of a Conservation Department, in charge of a Director of Conservation, to be appointed by the Governor, such a department to include bureaus of natural resources, of State forests and parks, and of wild life. Finally, as a means of crystallizing sentiment and expediting action the Governor was requested to call a meeting of all citizens interested in the conservation of the State's resources and the utilization of State lands, as well as of prominent foresters and others interested from without the State, to consider plans relative to the administration, protection, and utilization of forest lands.

This program, while not complete, contains many important items which should be enacted into legislation at the earliest opportunity. About 20 years ago, when State and National forestry received a

distinct impetus from the work of Roosevelt and Pinchot, Michigan, like others of the Lake States, started out in promising fashion to solve its forest problems. As a result of this movement, Michigan established the policy of reserving State lands and placing them in State forests; organized departments of forestry in the State University and the State Agricultural College, and placed a fairly satisfactory fire law on the statute books. Yet, in spite of this promising start, progress has not been all that could have been wished.

AMERICAN FORESTRY congratulates the Association of Michigan Foresters on having taken an important step toward the advancement of forestry in the State. It is to be hoped that its efforts will be successful in hastening the adoption of a comprehensive and constructive forest policy. In addition to the other fields covered it is also hoped that the association will turn its attention in the near future to devising methods for preventing the denudation of the areas of merchantable timber still left within the State by seeing to it that they are cut in such a way as to secure natural reproduction. One of the cardinal points in the National Forestry program endorsed by the American Forestry Association and now before Congress is maintenance by the States in co-operation with the Federal Government of the productivity of virgin forests and other areas of merchantable timber.

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FOREST SCHOOL NOTES

UNIVERSITY OF CALIFORNIA

PROFESSOR David T. Mason is back again after a long absence with the Treasury Department. His course in the Lumber Industry has a large enrollment of students from the College of Commerce and those majoring in Economics as well as the senior foresters.

All the boys are looking forward with much pleasure to the convention of the Intercollegiate Association of Forestry Clubs, which will be held in Berkeley, Tom Oliver, as president of the association, has a number of committees actively engaged in making ready for the big event. It is hoped that there will be a representative present from each of the clubs. One of the features planned for the occasion is the District V, United States Forest Service exhibit, which will be installed in Hilgard Hall. This exhibit is largely the result of the artistic work of Mr. Paul G. Fair, who will be in charge. The Air Service will have on display one of its airplane fire patrol engines and the wireless outfit used for reporting the location of fires.

During the convention trips will be taken to Muir Woods and Redwood Canyon in order that the delegates may see the California redwood in its native haunts. Several of the wood-using industries on San Francisco Bay will also be visited.

Mr. Ansel F. Hall, California, '16, who is now in charge of information at Yosemite National Park has been at Berkeley for the last two months, working on a large scale relief map of the Yosemite Valley. The map, which will be installed in the exhibit building at the park, will be nearly enough completed at the time of the convention to give the delegates a splendid idea of the conformation of California's most scenic valleys.

Professors Bruce and Metcalf are assisting the Union Lumber Company at Fort Bragg in the preparation of a comprehensive plan of management for redwood cut-over lands.

IDAHO SCHOOL OF FORESTRY

MR. J. B. TAYLOR, United States Forest Examiner, Gallatin National Forest, Montana, has been given temporary leave of absence from the United States Forest Service in order to take the newly created position of Instructor in Forestry for the winter term at the School of Forestry of the University of Idaho, at Moscow, Idaho. Mr. Taylor will handle courses in grazing, silviculture and topographic surveying and his experience with the United States Forest Service and the United States Army Engineers in France fits him unusually well to present these subjects to the students in the most practical way.

ROTARIANS ENDORSE FORESTRY

STRONG resolutions were recently passed by the Rotary Club of Helena, Montana, endorsing and supporting the proposal to secure an appropriation for establishing a forest experiment station in northeastern Montana and urging its representatives at Washington to use their influence in its behalf. The resolutions are based on the constant need of reforestation in the great forested areas of Montana, western Washington and central and southern Idaho due to loss by fire and other damage, and the great importance of the efforts of the American Forestry Association to secure the establishment of the station covering the States of Montana, western Washington and central and northern Idaho were commended in the resolutions

RESOLUTIONS BY NEW YORK ASSOCIATION

THE New York State Forestry Association at its Ninth Annual Meeting, held in January, passed resolutions vigorously endorsing the proposed legislation to provide an adequate basis for forest taxation and the proper handling of our forest lands, and expressing their interest and support of the constructive work being carried on by the several State agencies concerned with administration of State forests and the education of the people of the State in forestry, as well as the extension of fire protective work to include all the forest lands of the State. In a final resolution the Association favors the granting of increased appropriations by the Congress of the United States for fire protection and the acquisition of forest lands under the Weeks Law.

USE OF WOOD BY THE FARMER

"AGRICULTURE is the greatest wood using industry of the United States," said Colonel W. B. Greeley, Chief of the United States Forest Service. "Forty-six per cent of all the wood which the country consumes annually is used on its farms. The yearly lumber bill for farm structures and improvements aggregates six and three-quarters billion board feet! Farm requirements for boxes, barrels, and other articles manufactured from wood call for nearly four billion board feet additional each year. Add to these requirements the eighty million cords of fuel wood consumed annually by farmers and over a billion cubic feet of fencing material and it is easily seen that farmers have a greater interest in an assured supply of timber at reasonable prices than any other class of American citizens.

"The farmer is the most independent of anyone in the nation when it comes to food. He might be equally independent in the matter of timber. He owns, in the aggregate, more forest land than the lumbermen and all other private owners com-

bined. Farm woodlots, or woodlands, reach the enormous total of one hundred and ninety-one million acres and comprise two-fifths of the forest area of the United States. East of the Mississippi River they cover one hundred and fifty-three million acres, or forty-five per cent of all the forests. A rough estimate places the timber standing in the farm woodlots of the Eastern States at three hundred and forty billion feet, or forty per cent of the timber in this region. And this quantity includes over half of our remaining hardwoods."

PENNSYLVANIA DISTRIBUTES FREE TREES

THE Pennsylvania Department of Forestry will distribute free this spring about 3,500,000 forest tree seedlings to private land owners in the State, according to a statement issued by Gifford Pinchot, the Chief State Forester. Last year 2,748,120 seedlings were given without cost to 792 private planters.

Since 1903, when the State nurseries began producing young trees, the total output has been 45,909,309 seedlings. About 34,000,000 of them have been planted by the Department of Forestry on State forest lands, and the remainder have been planted by individual land owners. Some of the largest plantations have been established by coal mining, water and lumber companies. Scores of farmers, however, have planted thousands of seedlings on waste and idle land that is not suited for growing agricultural crops.

The Department's supply of black walnut, white ash and Jack pine seedlings is completely exhausted. The output of Norway spruce and honey locust is being applied for in such quantities that it soon will be gone. There is available for future applicants, however, a large supply of white pine and pitch pine seedlings.

GOVERNOR FAVORS OPENING NEW YORK FOREST PRESERVE

THE Empire State Forest Products Association has sent out a ballot to its membership to learn the concensus of opinion regarding the proposed opening of the forest preserve, which was advocated by Governor Miller in his message to the New York State Legislature in January, when he said:

"I invite attention to the question whether the time has not arrived for the State really to conserve some of its natural resources. Valuable timber is annually going to waste in the forest preserve. It seems to me that a plan ought to be devised to utilize such timber in a way to protect and improve the forest preserve and at the same time produce a substantial revenue and prevent waste of valuable timber, which is greatly needed. Of course that will require a constitutional amendment. I recommend the subject to your careful consideration."

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Decayed post of coal chute foundation.



Decayed intermediate sills and flooring of freight cars.



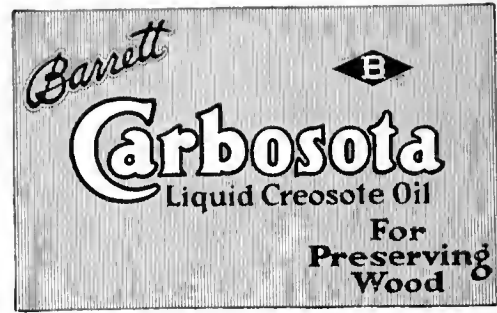
Decay is the greatest enemy of poles. Creosoting protects poles effectively.



Removing decayed roof boards over textile mill — the penalty for neglecting to protect the lumber against decay before erection. (Courtesy F. J. Hoxie, Eng. Assoc. Factory Mutual Fire Ins. Co., Boston, Mass.)



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EDITORIAL

THE ASSOCIATION'S PROGRESS IN FORESTRY ASSURED

RAPID development in the ability of the American Forestry Association to further promote the cause of forestry is assured by important action taken at the Annual Meeting of the Association on February 25. This was the adoption of amendments to the by-laws which remove the danger of the Association ever passing under the control of special interests, a condition threatened on several occasions, and which assure for all time its policy of truly representing and creating public opinion.

The amendments make seven of the directors—including President Charles Lathrop Pack, permanent directors. All these men have been directors for the past ten years or more. They represent forestry, conservation, lumbering, paper manufacturing, banking, general business and education—interests so diversified that these men are particularly representative of the general public. The other eight directors will be elected by the members, who are now entitled to vote by mail or in person. This permits all to have a direct voice in the affairs of the Association, a much more democratic arrangement than that previously in effect, of allowing only those present at the annual meetings to vote. Rarely did more than 150 to 175 members attend these meetings. This is about one per cent of the membership.

Adoption of these provisions assuring a continued public service and public spirited policy also permit much better financial support of the Association than in the past. Certainty that the Association is removed from danger of control by special interests is an assurance to those who desire to aid in its work through substantial financial support that their money is contributing directly to the public good. This condition having been met, the Association will now proceed in its endeavor to secure a substantial endowment for educational work. It has already been assured funds for a national publicity campaign for forestry and for many improvements in its magazine and other publication. It is also to acquire a fine, commodious building on Sixteenth Street, Washington, D. C., as a permanent home, a gift to the Association from President Charles Lathrop Pack.

The Association is therefore now in a position to do more to promote forestry than ever before. It will continue, unhampered, its policy of truly representing the public. It will further its educational work to the limit of its resources. It will strive to greatly increase its membership, to extend its influence, to secure greater prestige, and to advance the whole cause of forestry in every way its capacity permits.

COUNTY CONSERVATION ASSOCIATIONS

CENTER County, Pennsylvania, has taken the lead in organizing an association of all those interested in promoting the conservation of the natural resources of the county. The plan of organization contemplates dividing the county into nine conservation districts, each of which has a series of seven committees dealing with the subjects of forestry, fish, game, wild flowers, song and insectivorous birds, recreation, and education. The Committee on Forestry, for example, is expected to interest itself in the general forestry movement, to encourage the planting of waste and idle lands, the proper care and development of farm woodlands and forests, and their protection from fire and other destructive agencies. It is also interested in promoting the planting

of shade trees along highways and in towns and cities and about schools and churches. Similar committees handle matters relating to the county as a whole.

The movement is of particular interest for two reasons; first, because by its organization in such small units it can enlist the interest and co-operation of practically the entire population of the county, and secondly, because it brings strength to each of the different phases of conservation by pooling the support of those interested in these various phases. A neighboring county is already organizing along the same lines and four other counties are considering doing so. Those responsible for inaugurating the plan in Center County are hopeful that it will eventually develop into a State organization, and it is not un-

reasonable to anticipate its extension to other States. Any plan that will bring together for united effort the great host of people who are interested in one or more

of the various aspects of conservation of our natural resources certainly has merit and should receive all possible encouragement.

"A LOOK FORWARD, NOT BACKWARD"

ONE of the noteworthy events of February in the forestry world was the celebration by the Society for the Protection of New Hampshire Forests of the twentieth anniversary of its founding. Twenty years is a relatively long period in the forestry movement in this country, and the Society has the distinction of being one of the pioneers in the work. In local affairs it has done much to encourage forest conservation by its unflinching support of progressive measures, and the acquirement of Crawford Notch by the State was chiefly due to its efforts. In the national field it may justly claim credit for having contributed materially to the passage of the Weeks Law providing for Federal acquisition of forest lands on the watersheds of navigable streams and for

the protection of such watersheds from fire in co-operation with the States.

The Society very wisely, however, refused to allow its two-day birthday party to dwell too exclusively on past achievements. The motto for the occasion, "A Look Forward, Not Backward," furnished the keynote for most of the talks. Colonel Greeley, who also addressed the New Hampshire Legislature and the Massachusetts House of Representatives, spoke on "A National Forest Policy," in his advocacy of which he is warmly supported by the Society. Altogether the celebration constituted a worthy celebration of twenty years of public service. AMERICAN FORESTRY hopes that the future of the Society will be even more prosperous than its past, and that both its record and its watchword may serve as an inspiration to others.

CONSERVATION BY WOOD USING INDUSTRIES

THE youthful Association of Wood-Using Industries, organized last summer, has ambitious plans. Its purpose "is to establish unity of aim and effort among all industries using wood with reference to their principal basic raw material, and to mobilize the influence and resources of these industries to protect and conserve the sources and utilization of this fast diminishing supply." One of its first activities was to assist in formulating the Snell Bill for a national forest policy. Now it is endeavoring to reduce waste in the utilization of wood through a Committee on Conservation and Standardization.

The primary object of this committee is to reduce so far as possible the enormous waste that now exists in the use of dimension stock. Just how enormous this waste may be is indicated by the statement of a prominent wood turner that it sometimes requires two tons of lumber to produce 400 pounds of handles. Much of the loss in this and other industries is due to the fact that practically all dimension stock is manufactured from plank rather than direct from the log. High costs of lumber and of transportation have so far failed to stop this tremendously

wasteful practice, which persists largely because there are no official standardized lists of dimension stock.

The standardization committee of the Association of Wood Using Industries has undertaken to remedy this situation. It hopes to do so both by securing the general adoption of standard sizes for the principal dimension requirements and by bringing about more careful and efficient methods of manufacturing. This is a far-reaching program of great significance. Industries using small dimension stock now consume some five or six billion board feet each year, or at least a sixth of the total lumber cut. It is probable that there is not one of these industries in which an equally good product could not be turned out with from 10 to 20 per cent less material, and some have even gone so far as to predict the possibility of meeting all requirements for small dimension stock from timber now wasted. Could a more effective means of promoting forest conservation be imagined? We hope that the efforts of the committee to bring order out of chaos, efficiency out of inefficiency, will be aided by the hearty co-operation of the wood-using industries in general.

WIDESPREAD INTEREST IN STATE FORESTRY

STATE forestry is on the eve of a remarkable development if one can judge from the interest being manifested throughout the country in various phases of State

forest legislation. Most of the legislatures are now in session, and in practically all of the timbered States, forestry bills already have been or are expected to be introduced.

Thus in the Northeast Maine is considering the regulation of cutting on private lands through the establishment of auxiliary State Forests. The New Hampshire legislature has before it bills providing for the leaving of seed trees on pine lands, for compulsory forest fire patrol, and for the disposal of slashings. Massachusetts is planning to continue its purchases of State forests and to acquire the picturesque Mohawk Trail. Connecticut is proposing to modify the present system of forest taxation and to enlarge the State Park Commission into the State Park and Forest Commission.

In the Central States, Indiana is endeavoring to improve its present fire protective system and to encourage timber production through tax exemptions. In the South, and reforestation, and also the adoption of a severance

tax similar to that already in force in Louisiana. In the Texas is considering the adoption of a comprehensive forest policy with particular emphasis on fire protection far West, California has established a State nursery, is co-operating with timberland owners in slash disposal, is planning greatly increased expenditures for fire protection and a revision of its present system of forest taxation, and is looking forward to the establishment of State forests.

These are but samples of the widespread interest which the States generally are manifesting in the protection and perpetuation of their forest resources. It is to be hoped that the movement will bear fruit in the enactment of a considerable number of progressive and effective forestry measures.

FOREST TAXATION IN CALIFORNIA

THAT California is alive to the desirability of some change in its present methods of forest taxation is indicated by the proposed amendment of its Constitution to enable the taxation separately of forest land and of the timber on such land. The specific resolution now before the legislature provides that "the legislature shall have power to provide by general and uniform laws for the taxation of land on which there is standing young timber or mature timber separately from the timber, and for the taxation of timber at the time it is cut or otherwise utilized only."

This is a long step in advance of present practice, which requires the taxation annually of both land and timber. In other words, the owner of a stand of young

growth which will not mature for a hundred years must pay taxes on it one hundred times before it is ready for cutting. What would the farmers think if a similar procedure were applied to them whereby a crop that requires one hundred days to mature were taxed one hundred times before it were harvested? The comparison is by no means far-fetched, for the forest is nothing more nor less than a long-time crop, the production of which takes years instead of days as is the case with most farm crops.

If forest production is to be put on a business basis, as of course it must be, it is imperative that the crop character of forests be recognized and their taxation arranged accordingly. In attempting to do this the pro-

FRUIT BOXES AND FORESTRY

HOW many lovers of oranges, apples, peaches, and other fruits realize that their supply of these delicacies is dependent on the practice of forestry as well as of horticulture? Nevertheless this is actually the case, and the explanation is simple. Fruits are almost universally shipped in wooden containers. Wood comes only from trees. And we are rapidly approaching the point where trees will no longer be available in sufficient numbers to meet even our present needs unless we practice forestry.

Boxes now absorb 15 per cent of the total lumber cut of the country. In Florida alone the growers of oranges and grapefruit already require more than 12,000,000 boxes a year to get their crop to market. If production continues to increase at the same rate that it has in recent years, by 1930 they will require 40,000,000 boxes, or some 220,000,000 board feet of lumber. In addition the truck-growers of the State require 13,000,000 boxes an-

nually and their demands are also increasing. These are but samples of the box requirements of farmers throughout the country.

Where is the lumber to build the boxes to come from? Florida fruit growers are already becoming alarmed at the steadily waning supply of southern yellow pine and are considering ways and means of meeting the situation. The answer is simple—to assure a permanent supply of timber by practising forestry. This involves the harvesting of present stands in such a way as to secure the renewal of the forest, the reforestation of lands now denuded, and the regulation of the cut so that the amount removed from the forest each year will equal approximately the amount grown. Producers and consumers alike are vitally interested in seeing that a definite and comprehensive program along these lines is put into effect without delay.

WHAT IS WRONG WITH ALASKA

BY W. B. GREELEY

FORESTER, U. S. FOREST SERVICE

THE development of Alaska is again a mooted question. It is one of many angles and, though much discussed, will still bear illumination. The situation of Alaska should be thoroughly and sympathetically understood by the people of the United States. The development of the Territory is a public responsibility, aside from reasons of general national interest, because 99 per cent of its area is public land and its resources are largely administered by Federal agencies. The problem of Alaska is fundamentally the application of common sense and efficiency to public business.

Alaska is pictured frequently as an empire whose growth has been arrested and whose resources have been put under lock and key by conservation theories. We are told that this young country, bursting with natural wealth, is beridden and shackled by the regulations of thirty-odd Federal bureaus, by conflicting or overlapping jurisdiction, by bureaucratic methods and delays, by long-range administration and red tape. For Alaska is de-

manded home rule, control of all her natural resources or a local administration of public property and interests which will replace the existing Federal agencies. Such assertions, often repeated, have created a common impression that Alaska is an intolerable muddle of Federal mismanagement. This conception of Alaskan affairs is wide of the mark but still contains enough truth to demand an unbiased and constructive inquiry.

After 53 years of American ownership, Alaska contains an estimated population of only 36,000 whites and 25,000 natives scattered over an area of 590,000 square miles. Alaska is passing through a slump. She lost ground during the war. Men left the Territory to enter the military service or munition plants offering high wages. The production of gold in Alaska dropped nearly 45 per cent between 1916 and 1919, and the labor employed in all forms of mining was cut in half. The number of men employed in placer mining dropped from 4,000 to 2,000 during the same period. Aside



ALONG THE COPPER RIVER, ALASKA

Heavy timber, rugged mountains, precipitous slopes, great glaciers, are all a part and parcel of the trip inland along the Copper River on which every turn brings to view a new scene which holds the eye.



Photograph by H. C. Fassett, U. S. F. C., Steamer Albatross.

HUBBARD GLACIER, YAKUTAT BAY, ALASKA

This great glacier along the glorious coast is but one of the many scenic wonders which await the traveler to our great northwestern territory.

from an increased production of copper, there were no war industries to make good these losses.

Considerable parts of Alaska are passing through the stage of the deserted mining camp. Ninety per cent of the population of Nome at her highest have left that great placer camp. The jest goes that the Government railroad reached Fairbanks just in time to bring the people out. Low returns or actual losses in mining low-grade gold ore threaten a further slump. Even the great salmon packing industry has become more and more precarious and less profitable owing apparently to a depleted stock of salmon.

The white population of Alaska seems to have dropped nearly one-third between 1915 and 1919. Yet it is generally agreed that the primary need of the Territory is not people. The Alaska Advisory Committee, appointed by the Secretary of the Interior, says in its report of June 11, 1920: "Under present industrial conditions it is undesirable to make special efforts to attract men without capital to Alaska. It would be a mistake to draw to Alaska a greater number of men than can be absorbed by the existing industrial development. What Alaska needs is the development of industries to give employment to labor."

In other words, Alaska needs capital first. With the exception of the prospector for minerals, Alaska is not yet a region which can be developed by the individual pioneer after the manner of our Western States. The Territory must have capital, first and foremost, to expand her forest, fish, and mineral industries. A demand for labor, a market for home-grown farm crops,

and better transportation service will follow in its train.

Let it first be said and reiterated that there is no resource in Alaska which is not open to exploration and use. The 20 million acres of National Forest have, since their creation, furnished every sawmill on the Alaskan Coast with logs, many fish canneries with their packing cases, and many mines with their timbers. They are the source of high-grade spruce lumber which is being shipped in growing quantities to the Central and Eastern States. They have been used freely by salmon canneries, fertilizer plants, fur farms—any form of industrial enterprise afoot—and for settlements and communities. Wood pulp plants are now being established in them on the strength of the supply of timber assured for long periods and at reasonable terms. The Alaskan coal fields have been open to development since the passage of the coal leasing law in 1914, and the oil deposits since the enactment of the oil leasing law, tardily indeed, in 1920. A number of water powers have been developed on National Forests and on other public lands in Alaska under old public land laws, notwithstanding their inadequacy. The water power act of 1920 provides a fair and adequate plan for the development of these resources on a par with coal, oil, and timber.

Has Alaska been over-conserved? Yes and no. The use of her coal and oil deposits was blocked for several years in each instance after the withdrawal of these resources from appropriation. Powerful interests did their best to kill the coal and oil leasing bills because they wished to kill the whole conservation program. Just as

15 years were required to enact an adequate water power bill, so was it impossible for a long period to overcome the opposition to any form of public ownership of coal and oil deposits so as to carry out the original plan of President Roosevelt for their use under Federal lease, in Alaska as elsewhere.

It is not necessary to return to old battlefields where the fight for the public interest was won. This chapter in the history of our natural resources happily is ended. What are the facts of today? Run over the imposing list of Alaska's resources—fish, metals, timber, marble, coal, petroleum, water power, fur, agricultural land—each of them is open to use, available to men of energy and capital. Additional laws are desirable, it is true, but on details not essentials. There is no handicap of any consequence upon men who are prepared to put their money into a real enterprise for developing any one of Alaska's resources. Let us dismiss once and for all the absurd notion that Alaska is padlocked.

What then has held back the development of the Territory? Primarily the stern facts of geography and trade—her situation on the farthest corner of the continent, the cost of transporting her products to possible markets, the value of gold and copper, the price of lumber and paper, the cost of labor, machinery and supplies. These are the things which hold in their grasp the economic development of Alaska—not Federal laws or regulations. Hundreds of thousands of potential farms in

the Yukon Valley are still uncleared and untilled, not because of administrative red tape, but because the returns from agriculture, primarily on account of the difficulty in reaching a market, do not attract homesteaders. The Forest Service tried for years to interest capital in paper manufacture in Alaska. The going value of paper before the war, the opportunities for obtaining raw material in well-developed regions elsewhere, and Alaska's handicap of distance turned the scales against her enormous pulpwood forests. Conservative business men regarded the venture as too hazardous; yet governmental red tape is still a popular explanation of the lack of a paper industry in the Territory. Changes in the paper market during the last three years have brought Alaska's pulpwood into demand, and the extension of the paper industry to her coastal forests is now assured.

Similarly with metal products. When the prices of gold and copper drop or remain stationary while costs of production rise, the mines operating low-grade ore must shut down. Labor is left without employment and towns without an industry. This is an important factor in the present ebb tide of Alaskan prosperity. Obvious as it is, the fact must be emphasized that the barometer of Alaskan development reflects and always will reflect primarily the world's demands for her products.

Many Alaskans are half blind to this basic fact. Alaska is impatient for immediate prosperity. The spirit of



OVER TWENTY THOUSAND FEET HIGH

A close up view of famous Mount McKinley, Alaska, taken from Chultina Pass near Mile 281 on the Government Railroad. Many Alaskans say this railroad reached Fairbanks just in time to bring the people out.

the gold strike is still on the land. The feeling that "something is going to happen" is common, some industrial revolution, some new law that will work magic. The Territory is often called the "land of surprises." Her history is filled with the spirit of adventure, of large risks for big stakes. Men either went broke or made their fortunes. This state of mind is too restless and impatient to wait willingly for gradual economic development or to recognize the factors in world-wide commerce which determine its progress. Something must be wrong; something must be blocking the tracks. And that something is found in the way Alaska is governed from Washington. Hence the demand to "free" Alaska

necessary to prevent the early exhaustion of this great resource. Fortune-making from gold placers worked in the old one-man fashion must be given a very uncertain place in the future development of Alaska. There may still be undiscovered Klondikes, but at best they will contribute little to the enduring prosperity of the Territory.

Alaska has reached bedrock and must build up with stable and permanent industries. In this she must have the intelligent help of the nation. But both Alaska and the nation must get down to bedrock in their conception of the factors which control the development of the Territory. "Votes are not bread," in the words of President Taft; and empires are not built by passing a law or two.



DORR LAKE, REVILLAGIGEDO ISLAND, ALASKA

Note the well-timbered slopes which are common along the streams and lakes of Alaska, and which are so convenient in lumbering operations as the logs can be taken out by water.

from long-range regulation and restraint. Give Alaska local self-government. Give her the public resources within her own domains. "Permit Alaska to develop."

This point of view is fostered by the unending discussion of Alaskan affairs, by the reiterated public statements that Alaska is fettered, and by the frequent proposal of legislative panaceas which will bring prosperity over night. It is heightened by the slump through which Alaska is now passing.

By and large, much of the cream has been skimmed from Alaska. The days of quick and enormous profits from a small investment in a salmon cannery are probably over and restrictions upon the salmon catch are

The development of Alaska is bound to be a gradual process controlled by fundamental economic facts. The Territory has the resources. For the rest, hard work, patience, co-operation, and an enlightened and localized administration of Federal affairs are essential.

To what extent is Federal administration in Alaska muddled?

Not through the locking up of resources. This was true of coal and oil during the periods before it was possible to get leasing laws through Congress. It is true of no resource today.

Not through mere multiplicity of Federal bureaus, although certain of them having corresponding functions,

like the road building organizations, might well be combined. The range in Alaska's resources is enormous. When work was to be done, it was logical and necessary that the best equipped Federal agency should do it. A majority of the Federal bureaus, like the Agricultural Experiment Stations, the Weather Bureau, and the Coast and Geodetic Survey, having purely or largely investigative functions, have little or no bearing upon the administration of Alaskan affairs.

The greatest evil is long range administration. There is too much centralization of administrative authority

practically every step in the entry, survey, and acquisition of public lands must be referred to Washington for authoritative action. An entry cannot be officially allowed, proof of compliance with the law accepted, survey of the land approved, or patent issued by the officers of the General Land Office in Alaska although the whole process may involve less than five acres of the public domain. Every one of these steps requires separate and distinct reference to the Commissioner of the General Land Office and action by him. Many matters, indeed, after having been submitted to Washington by the Re-



MILES GLACIER, COPPER RIVER, ALASKA

The massiveness of this river of ice, ages old, must be seen to be appreciated, for no photograph and no pen can convey an adequate description of it to the reader.

in Washington, too many delays in getting things done. And Alaska is subject to too many inflexible regulations or cut and dried rules which are unnecessary or unadapted to her conditions.

To illustrate, the law may be cited which requires the advertising of any National Forest timber worth over \$100 in advance of its sale, desirable enough under other circumstances to promote competition. But in the hundreds of little timber sales along the Alaskan coast there is no opportunity for competition, the timber is invariably bid in by the original applicant at the price put upon it by the Forest officers, and the advertising requirement is simply an irksome delay and an unnecessary piece of red tape. This law should be changed. Again, under the highly centralized organization of the General Land Office as required by the Federal law,

ceiver of the Land Office in Alaska, are referred back to another officer in the same town for examination and report before final action can be taken. Is there any fundamental reason why public lands in Alaska should not be entered, surveyed, and patented under the authority of a representative of the General Land Office in the or cut and dried rules which are unnecessary or unadapted to her conditions.

Under long standing interpretations of various instructions and decisions dealing with the survey of homestead entries, but recently modified, the presence of a single salmon at spawning time in a stream fordable by a child debarred the homesteader from including both banks in his entry. More than one homesteader has given up a well-improved claim in disgust when he found that this requirement would limit the land which he might enter to



RAILS PIERCE THE WILDS OF ALASKA

Along the banks of the winding Copper River run the tracks of the Copper River and Northwestern Railroad, a trip along which is filled with scenic wonderments,



IT IS POSSIBLE TO SEE THIS BY RAILROAD

It will not be long before Alaska is so well opened up by rail, and river and road, that tourists will be able to see with ease and comfort much of its wonderful scenery.

one bank of an insignificant brook. Much of the agricultural land in southeastern Alaska is limited to narrow valleys along streams where this rule has been a great discourager of settlement.

The Forest Service, having the advantage of a young organization with few details of procedure fixed by statute, has been able to decentralize the administration of the National Forests in Alaska as elsewhere. Ninety per cent of the National Forest work in Alaska is handled finally by the resident District Forester and Supervisors, including practically all uses of National Forest lands and all ordinary sales of timber. With the exception of matters dealing with land titles, where the centralized administration of the General Land Office compels reference to Washington, only the most important transactions like large pulp sales or power projects require approval by Washington authority.

Aside from long range administration, the worst difficulty in the administration of Federal affairs in Alaska, there are cases of conflicting or incomplete jurisdiction which have not yet been ironed out. The Forest Service, for example, is in charge of 20 million acres of National Forests along the coast, including the best commercial timber of the Territory; yet it has no duties in

relation to over 50 million acres of forest land in the interior of Alaska where the fire hazard is much more serious and actual fire losses are large. Fur farming, one of the young but promising industries of the Territory, may be conducted on National Forests under a very simple form of permit obtained from the local Supervisor at a nominal charge. On the open public lands of Alaska there is no law which permits leases of this character and fur farming is not undertaken at all or is conducted in trespass with no protection against eviction. In some matters also, recognized elsewhere as under the jurisdiction of the States, powers have been retained by Congress or the Federal Departments which might better be given to the Territory of Alaska.

Such administrative conditions are illogical, unnecessary, vexatious, and at times unjust. By all means should they be corrected. But the sum total of their effect upon the development of Alaska is secondary and unimportant. They have not held back the exploration and use of any of her resources. Let us give them due weight, but not lose our perspective. The development of Alaska is determined by business facts. The full development and use of her resources will come about only as fast as economic conditions warrant. Administrative methods



WHITE WATER BAY, ADMIRALTY, ALASKA

A boom of logs cut from the steep mountain side typical of much of the Alaskan Coast. Here the timber and pulpwood supply will add to the amount needed in Canada and the United States.

and conditions may aid or retard, but cannot solve the economic destiny of Alaska.

A common sense public policy toward Alaska would seem to require action along three lines. First, we should anticipate that sooner or later Alaska will be qualified for Statehood and, as rapidly as practicable, we should give her control of the local affairs which in our system of government come under State jurisdiction.

In the second place, the national interests in Alaska should be administered by a field staff in the Territory itself. Each bureau or department having functions in Alaska should place them in charge of a resident officer,

given adequate authority and discretion by his own department, to the investigation of special needs or problems of the Territory with joint recommendations to Washington on Federal policy or legislation. Thus can the evils of long range administration be overcome, but without impairing fundamental national policies for the conservation of basic resources and without shutting Alaska off from the effective help of each Federal Department in developing resources in which that department represents the organized experience and technical skill of the country. And finally, the people of the United States should be freed from the direct adjustment of administrative duties,



SAWMILL AND LOG POND, KILLISNOO

The sawmills, pulp and paper mills, fish canneries, and the mines in Alaska all draw their lumber from the National Forests.

endowed with the maximum authority possible to act on the ground and with large discretion in applying Federal statutes to Alaskan conditions. Only transactions of the highest importance, the larger questions of policy, and appeals from local decisions should come to Washington. Then let these responsible Federal officers, together with the Governor of the Territory and two or more citizens representing her commercial interests, form a sort of Alaskan Cabinet, charged with the duty of tying together the different Federal activities, ironing out conflicts, overlaps, or omissions, and working out the best measures for the all-round development of Alaska. The functions of such a council would range which would be possible in many cases if each member is

States should recognize that Alaska is their greatest undeveloped physical asset, that they owe it to Alaska and to themselves to develop her resources adequately, and that while her economic progress will be governed primarily by business factors no practicable or reasonable form of Federal aid should be withheld.

This calls especially for liberal aid in developing transportation, the lack of which is one of the greatest present handicaps of the Territory. Adequate marine transportation for Alaska is a knotty problem which only an aggressive Federal policy can solve. The completion of the government railroad and its administration as a developing rather than cost paying enterprise are of obvious necessity. To complete the needed groundwork

transportation, provision should be made for a comprehensive plan of highways constructed under Federal appropriations. The Federal government should also appropriate liberally for investigating the various resources of Alaska, assembling the facts needed for their exploitation, and bringing these facts before business interests by whom commercial development may be brought about. This applies particularly to mineral resources, hydroelectric power, pulp woods, deep sea fishing, agricultural lands and stock raising, including reindeer. And finally the requirements governing the commercial development of Alaska's resources, like her coal, oil, and timber, which have been withheld from private appropriation, must be reasonable and adapt-

ed to the conditions in the Territory. It is entirely practicable to encourage private enterprise in developing the resources of Alaska to the extent that the present-day commerce of the world demands, without sacrificing public interests.

An effort is now being made to create for Alaska a local Commission, or Development Board, which would take over the duties and authority of the various Federal executives together with the administration of all public resources in Alaska, working solely under the direction of the Secretary of the

Interior. This proposal may well be challenged. After all, the national interests in Alaska are paramount. Alaska represents, in her marine fisheries, her enormous agricultural areas, and her resources for growing meat pro-



SPIRIT MOUNTAIN AND COPPER RIVER ALASKA

There is considerable untouched forest along the sloping shores of the Copper River. In the distance is seen the towering peak of Spirit Mountain.



RUGGED SCENERY IS TYPICAL OF ALASKA

Great mountains, big glaciers, fine waterfalls, wonderful rivers and lakes, a wonderful sea line all aid in making Alaska a land of scenic thrills to every visitor whether on pleasure or business bent.

ducing animals, one of the great food sources of the United States. In her vast forests lies a practical solution of our paper shortage. The United States has painstakingly, by many years of effort, built up national policies for the use of publicly owned timber, publicly owned sources of food, coal and oil resources, water power, and migratory birds, from the standpoint of public welfare in the long run. It has built up specialized organizations handling these varied resources with the best technical experience and skill the country affords. Should it now, by one stroke, cut off a vast region containing one-sixth of our total area from the uniform and consistent application of these

sary because the same results can be accomplished by a decentralized administration of national affairs in Alaska. It is dangerous because it means a partial breaking up of the effective and uniform execution of vital public policies for dealing with natural resources. Let us rather develop Alaska in harmony with American policy at all points. Make her a State as soon as she is qualified. Give her as rapidly as may be the local powers that go with Statehood. At the same time handle permanent national interests in Alaska as they are handled elsewhere, both during her territorial apprenticeship and after she becomes a State, preserving the same policies and uni-



A SCENE ALONG THE ALASKAN COAST LINE

The ocean trip to Alaska is one of constantly changing scene and there is so much worth seeing that one begrudges the hours of darkness and of sleep. This bit of scenic wonderland is on the southern coast of the territory.

public policies by the specialized organizations created for the very purpose of their accomplishment? I think not. And from the standpoint of Alaska herself, in order to bring about the most effective development of her resources, it would be unwise to cut her off from the direct application of the energies and from the technical and financial resources of several great Federal organizations which are experts in doing the very things that Alaska needs to have done.

The Development Board plan for Alaska is unneces-

form direction but with localized administrative machinery adapted to Alaska's isolation. Let us not cut Alaska off from the broad national effort to make the best use of natural sources of wealth, by introducing a separate scheme which inevitably will be out of harmony with the public policies toward these resources as a whole. Nor is there, in this issue, any real conflict between the interests of Alaska and of the American public. A simple and obvious course is open which will meet the needs of both.



SAN JOAQUIN VALLEY ELK



NORTHERN BLACK-TAIL DEER

ANIMAL HABITAT GROUPS

BY BARTON WARREN EVERMANN

DIRECTOR OF THE MUSEUM OF THE CALIFORNIA ACADEMY OF SCIENCES

THE modern natural history museum has come to regard itself, and to be regarded by the public, as an educational institution, working in co-operation with the public and private schools, for the good of all the children, as well as adults, who can be brought within its influence. To justify its existence, a public museum must be of real service not only to investigators but to the general public as well.

The investigator's needs are met by furnishing facilities for research which will result in the advancement of knowledge and its diffusion among men.

The other function of the public museum is that of usefulness to the public in educational ways. This function has not always been realized or received attention; indeed, there are museums here and there that are no more in touch with the world of today than are the fossils, whether dead or living, which they contain. Not until recently has this function been appreciated or received much attention; but this obligation to the public is now the dominant and controlling thought in many museums, great and small. Perhaps the greatest advance in recent years in making museums really educational has been in the installation of exhibits of animals and plants or other natural objects.

In the first place, the buildings and their included exhibition halls are designed and constructed with special reference to the most effective display of the particular kinds of exhibits to be installed. The problem of proper lighting has, apparently, received but scant consideration in the past. The exhibition halls in the old type of museum building were lighted by means of numerous large windows on two or more sides; the exhibits were placed in cases with glass fronts and ends, placed against the walls between the windows, or in rectangular cases with glass on all four sides arranged with mathematical precision in rows across the hall. The light outside the cases being stronger than that in them, very annoying reflections resulted. All sorts of objects elsewhere in the room, particularly those white or light in color, and, of course, the visitor himself, could be seen reflected from the case and were seen quite as plainly as the objects in the case; all of which was very confusing. This difficulty has been met in the modern natural history museum by doing away entirely with windows; all the lighting is by means of skylights, those over the exhibits letting in more light than those over the visitor, with the result that annoying reflection is reduced to a minimum; and by slightly tilting the plate-glass fronts of the exhibition cases, the reflection is entirely avoided. Artificial lighting is also provided for in the same way, so that the exhibits can be lighted at night and on dark days.

The next important advance is in the type of exhibit. The improvement has been especially marked with habitat or ecological groups. Wonderful strides have been made in recent years in the art of taxidermy and museum installation. Formerly, the birds, mammals or other animals to be shown were, as Director Lucas of the American Museum of Natural History has well said, most literally stuffed, then fastened to flat boards or perches of the jig-saw period of architecture, after which they were placed in long rows in glass cases in which, as already stated, the visitor saw himself quite as distinctly as he saw the animals meant to be shown. There were no rocks, plants, shrubs or other accessories to indicate in any way the natural environment in which the animals might be found when alive. Now, if the object to be exhibited is some animal, the species is shown as a group or family, a pair of adults, male and female, the usual number of young, and perhaps some additional young of different ages; the nest, if a bird, or perhaps the den if a mammal,

and the whole group set down among real trees and shrubs, annual plants, grass, rocks and sand, and other objects which together make up a bit of just such landscape as one would find the animals in should he seek them alive and in the wild. Of course, only a limited amount or number of units of the actual environment can be shown by means of real objects; but the setting is made more complete by means of a painted background which joins the real in such a way as to make it difficult, if not impossible, to tell where the real ends and the painting begins.

Of institutions that have attained remarkable success in the installation of habitat groups of mammals and birds, the California Academy of Sciences merits special mention. The new Museum of the Academy is located in Golden Gate Park, which Superintendent John McLaren, with his wonderful genius for landscape gardening and ability to combine wild nature with artistic beauty, has made what foresters and others regard as perhaps the most beautiful park in all the world. The first unit of this Museum was recently completed and opened to the public. Two important parts of this building are the California Mammal Hall and the California Bird Hall. The former is 180 feet long by 60 feet wide; the latter 140 feet long and 60 feet wide. In the mammal hall provision is made for 15 large mammal groups, four groups of intermediate size and 22 small panel groups. The cases are built in the wall on the opposite sides of the long hall. The large ones are each 25 feet long, 13 feet deep, front to back, and 18 feet to the ceiling glass. The back of the case is curved, its length being 40 feet.

The taxidermist in nearly every instance went to the place where the animals were collected, studied the environment and collected the accessory materials such as rocks, sand, shrubs, flowers, etc., needed in the composition of the group. The artist accompanied the taxidermist and he too, studied the scenery and made his field studies or sketches for guidance in painting the finished background. Through co-operation in this way and exchange of views, in other words, by means of team work between the taxidermists, artist and director of the Museum, really remarkable results have been attained. My aim, as director, has been to make these groups as true to nature, realistic and educationally valuable as possible. Not only has scientific accuracy and value been kept in mind, but the popular educational purpose of the exhibits has been kept constantly in view. Nor has the esthetic and artistic value of the exhibits been forgotten. And still another important consideration has not been forgotten, and that is the preservation and conservation of our wild life. In the selection of species to be exhibited and in the descriptive labels this question has been constantly kept in mind.

It is not possible to convey by means of photographs an adequate conception of the beauty of these groups, but the reproductions in this issue of AMERICAN FORESTRY will give some idea of their character.

That these exhibits are appreciated by the public is evidenced by the comments of the visitors of whom there have been more than a million since the Museum opened.

The mammal groups were prepared under the immediate direction of Mr. John Rowley, assisted by Mr. Paul J. Fair and Mr. Joseph P. Herring; the bird groups by Mr. Fair, assisted by Mr. Arthur L. Reed and Miss Olive E. Cutter. The backgrounds of these remarkable groups were painted by several different artists—Charles Abel Corwin, Charles Bradford Hudson, Maurice G. Logan, and Worth Ryder. All the work was done under the supervision of the Director of the Museum.

DESCRIPTION OF THE BIRD AND ANIMAL GROUPS

San Joaquin Valley Elk.—This beautiful animal, sometimes known as the Tule Elk or Dwarf Elk, formerly ranged in vast numbers through the San Joaquin-Sacramento Valley. Only a few hundred now remain. That the species is not entirely extinct is due to the foresight and interest of the late Henry Miller, founder of the great cattle company of Miller and Lux. In the early 70's, when only a few individuals were left, the herd made its last stand on the Kern County ranch of Miller and Lux. Mr. Miller instructed his cattle men not to disturb the elk in any way. His instructions were carried out and now the herd is in a very prosperous condition.

Northern Black-tail Deer.—This is the deer which is found chiefly in the chaparral or more open forests of the Coast Ranges north of San Francisco. The animals shown in the exhibit were obtained in Mendocino County, California, where the species is still abundant in spite of the ravages made upon it by the mountain lion, its worst enemy. The bucks and does are not usually found together in summer, but for exhibition purposes the young and both sexes are shown in the group.

Farallon Islands Bird Group.—The Farallons are a group of small rocky islands lying thirty miles off the Golden Gate. Thousands of sea birds resort to these islands to lay their eggs and rear their young. In the habitat group is shown one of the bird rookeries at the breeding season.

Desert Bird Group.—The desert is by no means devoid of attractions. After the winter rains the few shrubs put forth a profusion of beautiful flowers and a multitude of annual plants spring up. Then many species of birds, some of them being among the most brilliantly colored birds in the United States, build their nests in the palo verdes, yuccas, mesquites, cacti, and ocatillas. A number of desert species are shown in the exhibit, the scene representing a bit of the Colorado desert near the Salton Sea.

San Joaquin Valley Water-fowl Group.—About sixty-three species of ducks, geese and swans have been recorded as occurring in North America. More than forty of these have been taken in California; several, however, are mere stragglers and are rarely seen. The San Joaquin Valley has long been known as one of the most famous of these winter resorts of water-fowl. Late in August or early in September the flocks begin to arrive. By December most of the species have appeared, some of them in enormous numbers. Among the most abundant are the Sprig, Shoveller, Green-winged Teal, and the Snow, White-fronted, Hutchins, and Cackling geese. As many as 20,000 of some of these birds may be seen at one time. In the exhibit twenty-five species of ducks, six of geese, one swan, one coot and one crane are represented. The time is in February and the hour just as the sun is setting beyond the Coast Ranges at Pacheco Pass. Various species of water-fowl are shown in the foreground under natural surroundings, and a flock of white-fronted geese is just arriving.

Northwestern Black Bear.—Until recently only three or four species of bears were recognized in America, but now Dr. C. Hart Merriam, the greatest living authority on the subject, has described no fewer than forty-nine new species of grizzly and brown bears; and there are doubtless more to follow. In California, as elsewhere, the black bear may be either black or brown, or even cinnamon. Young of two color may occur in the same litter, and the parents may be both black, both brown, or one black and the other brown.

California Condor; California Vulture.—It is only in the wildest, most inaccessible regions of the rugged coast ranges that Condors may be seen, except occasionally when they descend to the canyons and valley in search of food. A hole or cave in some high cliff is selected for a nest. Only one egg is laid. The

young does not reach maturity until two or three years old. The California Condor is the largest flying bird in America, if not in the world; it is even larger than the great Condor of the Andes. It may be readily distinguished by its immense size and the large white patch which shows under each wing as the bird soars overhead. It is a scavenger, feeding on dead animals of various kinds such as cattle, horses, hogs and sheep. So useful a bird is it that the law imposes a severe penalty upon anyone who kills any Condor or destroys its nest or eggs.

California Mountain Lion.—The mountain lion, panther, "painter," cougar, or puma, as it is variously called in different parts of its habitat, is still quite abundant in the mountainous districts of California, particularly in the Coast Ranges north of San Francisco. It is the largest of the North American cats, and is very destructive to deer, elk, and various domestic animals. It has been estimated that each lion in California destroys annually on an average one deer a week. Assuming that there are 1000 lions in the State, doubtless an under-estimate, this means the destruction of at least 52,000 deer annually.

Northern Mule Deer.—The exhibit shows a group of the mule deer as they appear in winter in the northern coast mountains of California, where they frequent the spruce forests. The northern mule deer is one of the largest of the family and is, withal, a beautiful animal. The artist, Charles Abel Corwin, has done remarkably well in blending the background with the real objects in front. Can you find the line of union?

White Pelican Group.—On Anaho Island in Pyramid Lake, Nevada, is a breeding colony of about 10,000 of these interesting birds. This scene represents a small portion of the colony as it appeared in June, 1917. There are similar breeding grounds at Buena Vista Lake in Kern County, at Eagle Lake in Lassen County, and at the Klamath Lakes, California. The White Pelican usually nests on the ground, while the Brown Pelican often nests in bushes or low trees. The number of eggs is usually two or three, sometimes four or five. The eggs hatch in about twenty-nine days. Note how helpless the newly hatched young appear; also the way the young are fed. Note also the "centerboard" on the bills of some of the adults; this drops off soon after the breeding season begins.

Desert Mountain Sheep.—In the desert mountains and their included canyons and small valleys is found in southern California this interesting sheep or big horn. The animals shown in this group came from near San Jacinto Peak in southern California, where the species is still fairly common. In a region where vegetation and water are so scarce, the resident animals have learned to make the most of the situation and feed upon almost any sort of plant they may find. The barrel cactus is, to them, one of the most useful plants, the pulpy interior furnishing them with both food and drink.

Antelope or Pronghorn.—The Pronghorn or Antelope formerly ranged in immense numbers over the plains and valleys of North America west of the Mississippi River from Mexico to Canada. In California great herds ranged throughout the Sacramento and San Joaquin valleys and in other valleys to the north, east and south. As a result of persistent persecution and slaughter for their hides and meat, these animals have, in most parts of their range, been entirely wiped out. In southeastern Oregon and northwestern Nevada they are still fairly common. In California isolated bands, each consisting of a few individuals, are still left. The Pronghorn is the only member of the hollow-horned animals which annually sheds its horns. In the Pronghorn, however, only the outer shell or sheath is shed, and not the entire horn, as the deer and elk. The Pronghorn is also unique in not possessing dew claws or accessory hoofs on the backs of the feet, as in deer.



FARALLON ISLANDS BIRD GROUP



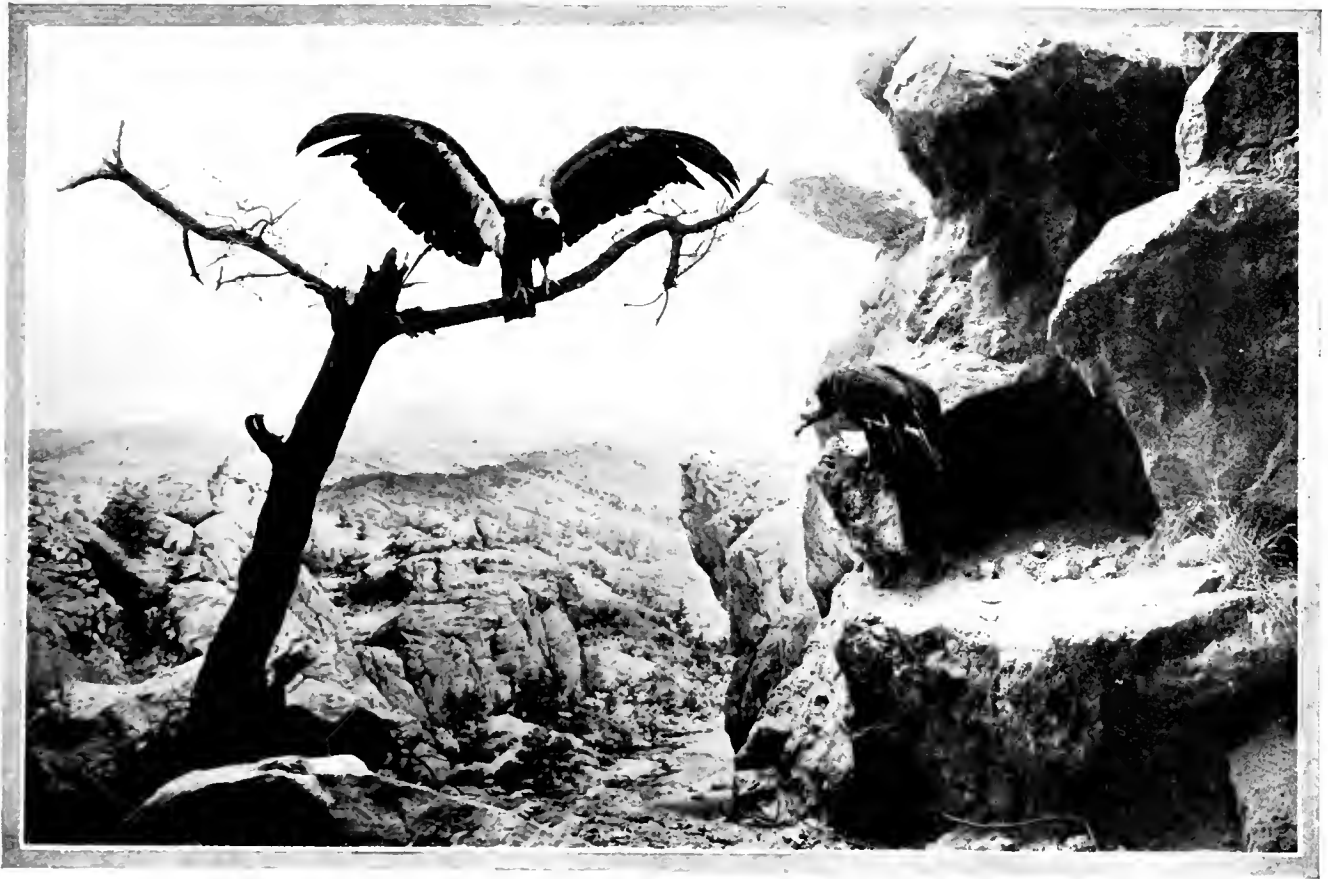
DESERT BIRD GROUP



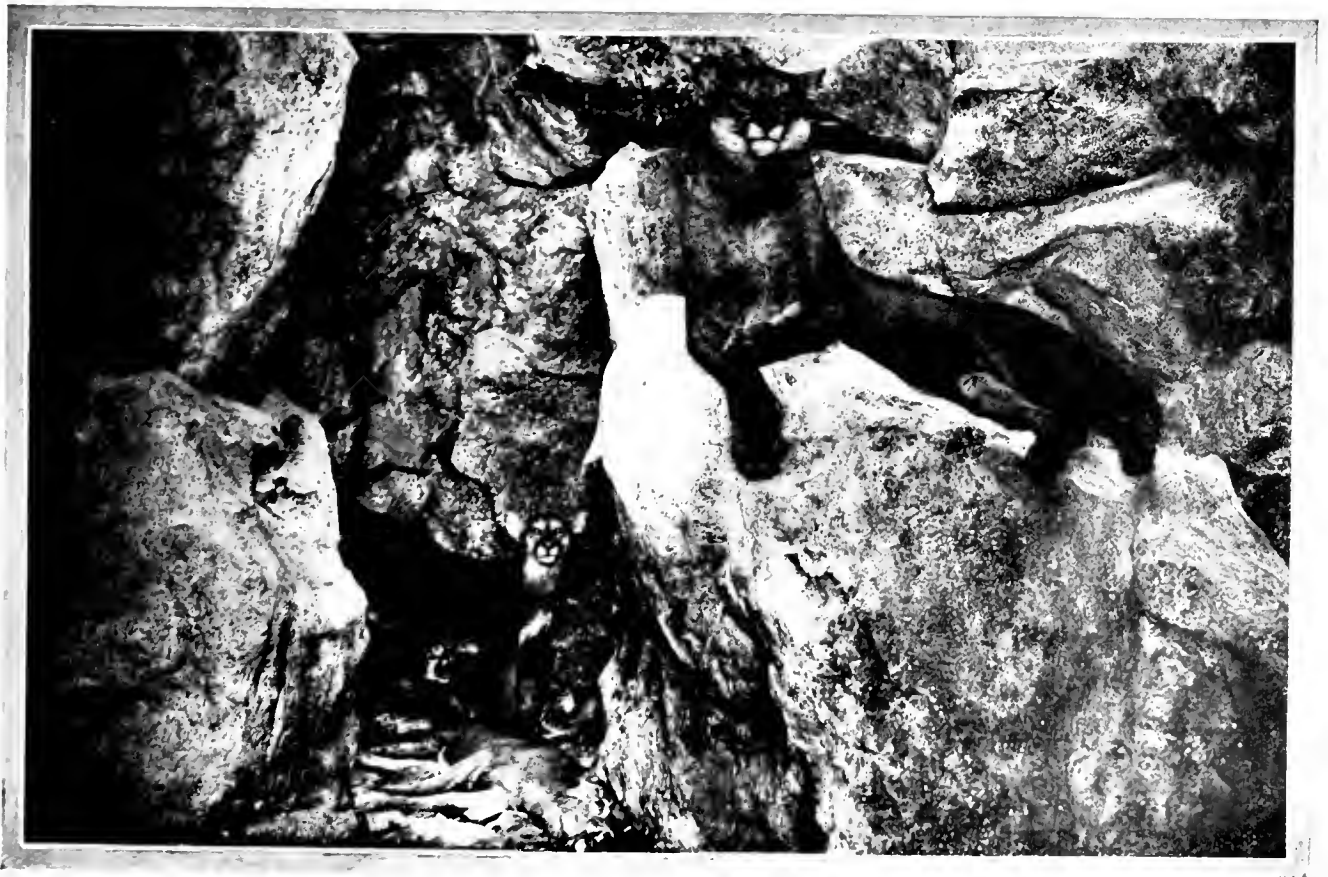
SAN JOAQUIN VALLEY WATER-FOWL GROUP



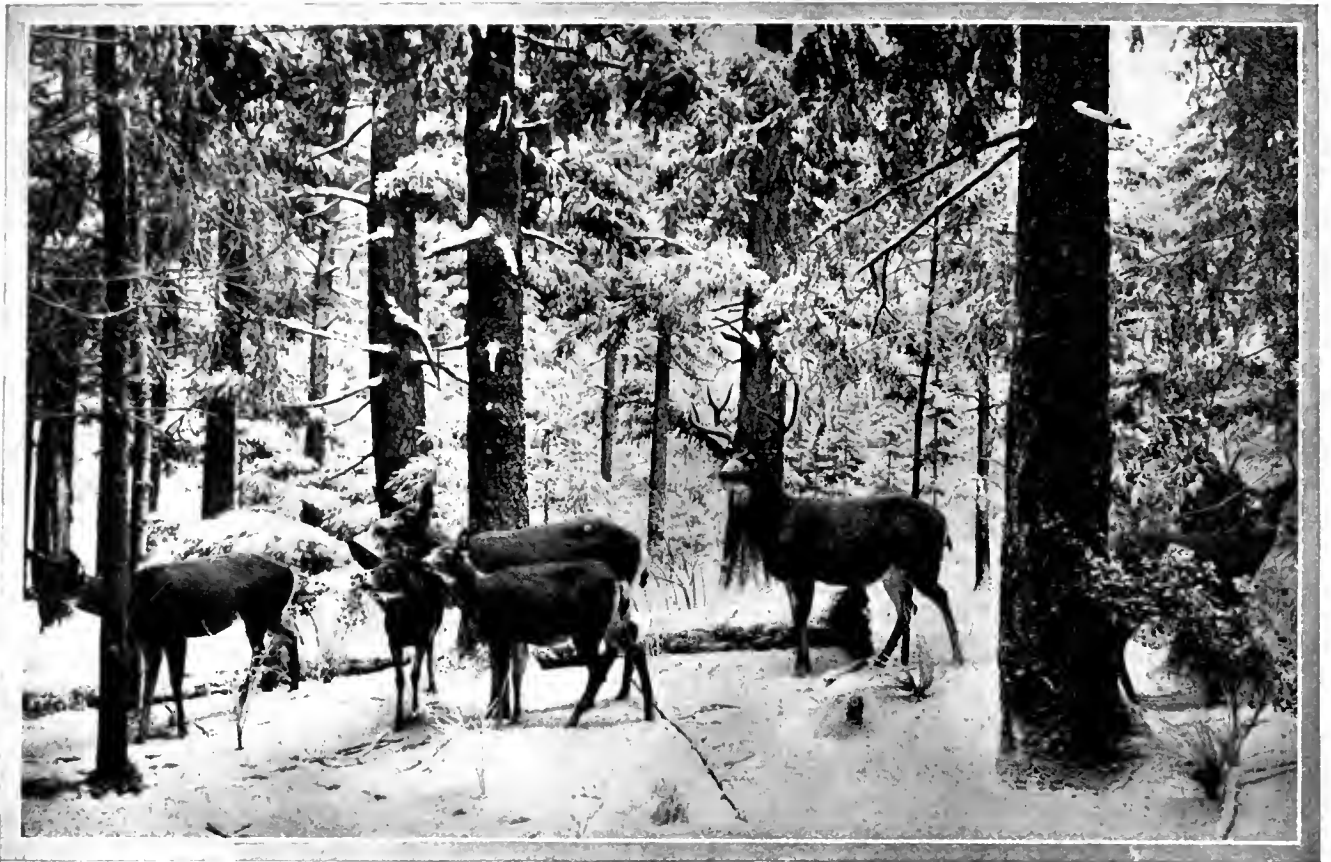
NORTHWESTERN BLACK BEAR



CALIFORNIA CONDOR; CALIFORNIA VULTURE



CALIFORNIA MOUNTAIN LION



NORTHERN MULE DEER



WHITE PELICAN GROUP



DESERT MOUNTAIN SHEEP

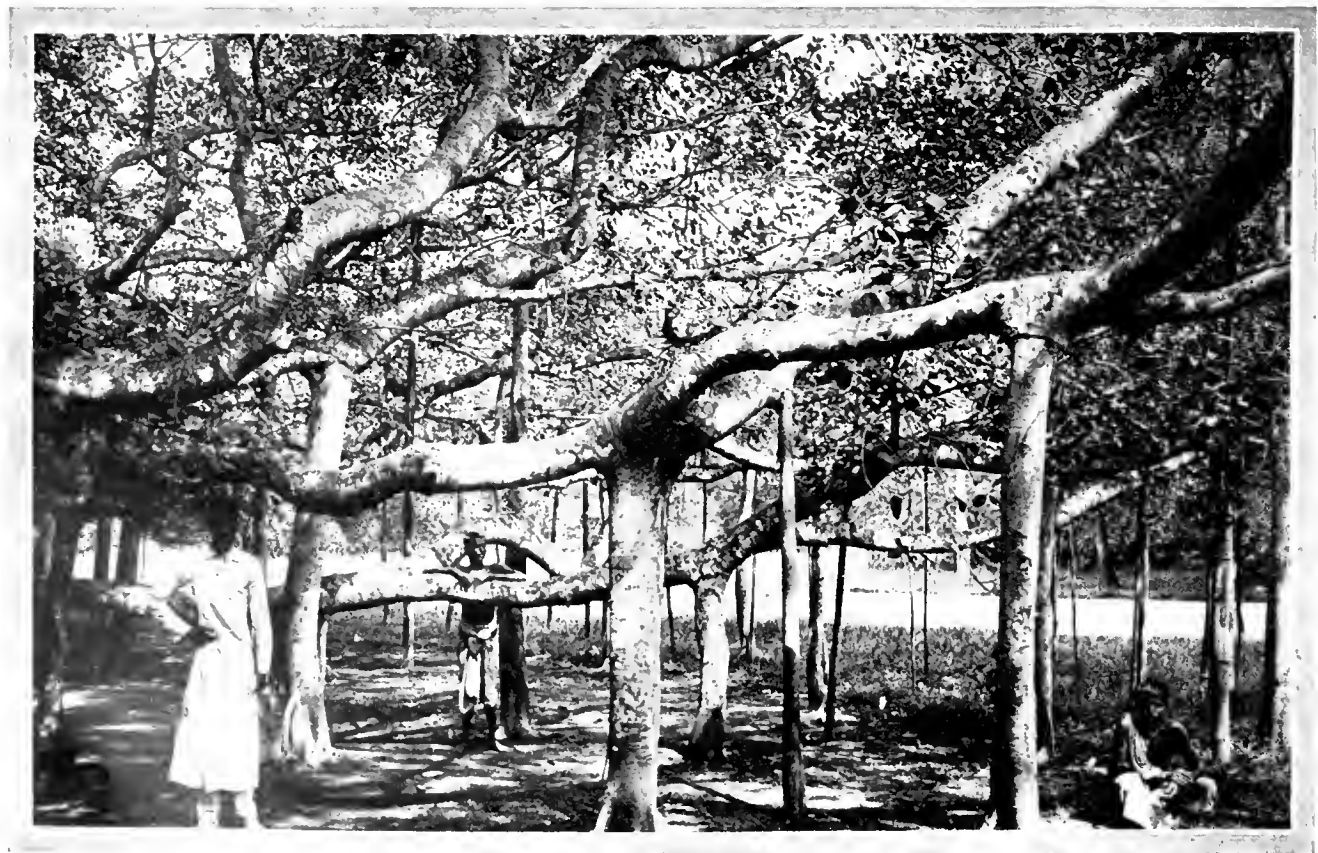


ANTELOPE OR PRONGHORN



THE BANYAN TREE AT SINGAPORE

This shows the main trunk of the tree only. On an island in the Nurrubudda River is a larger tree with 350 large trunks and 3000 small ones under which an army of 7000 soldiers has encamped.



THE AERIAL TRUNKS OF THE GREAT BANYAN TREE AT CALCUTTA, INDIA

This is undoubtedly the world's record for size. It has a central trunk fifty feet in circumference and about two hundred progressive trunks. The Hindus have a great reverence for the banyan tree, and because of its overshadowing beneficence, it is regarded as a symbol of the Deity.

FAMOUS AND INTERESTING TREES

BY JAMES RICALTON

(WITH PHOTOGRAPHS BY THE AUTHOR)

THE BANYAN TREE

THE banyan tree (*Ficus religiosa* or *Ficus Indica*) in its scientific name signifies sacred fig or Indian fig. It is known most widely on account of the peculiar form of its growth, its multiple trunks extending latterly until it covers great areas of ground. Unlike other trees, it not only sends out roots from roots, but roots are sent out from the branches downward until they reach the ground. These aerial roots become trunks and send out lateral branches and this progression is continued for almost endless periods of time.

This ever-continuing renewal of trunk brings a constant supply of fresh young sap and nutriment to all parts of the tree. On account of this unending reproduction of itself, the tree is exempt from decay, and its duration may be counted in milleniums. Extending its branches outward and not upward, it is not a high tree, yet it is a forest in itself, the haunt of birds and monkeys, who feed on its fruit, a sort of small bastard red fig the size of a cherry.

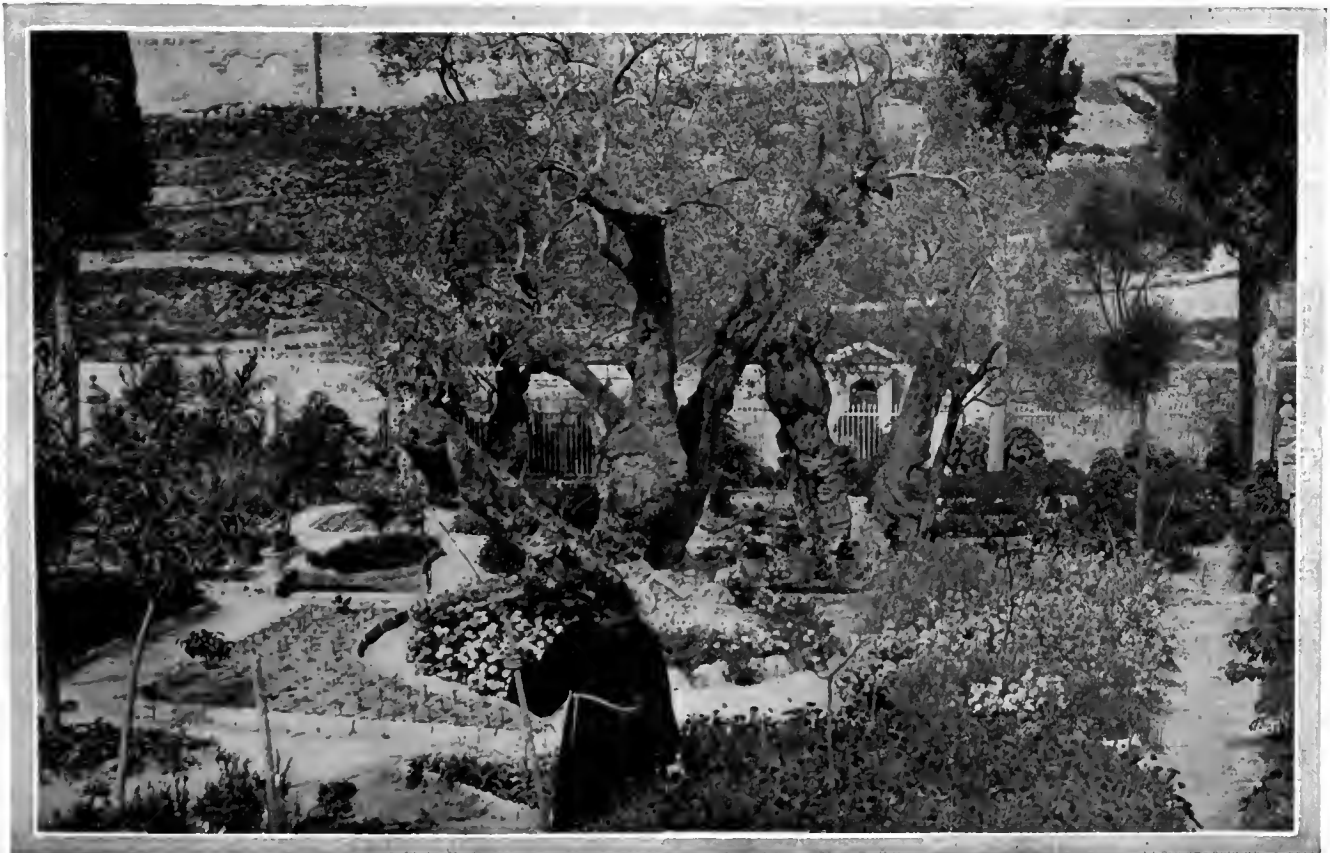
The rays of the tropical sun cannot penetrate its thick foliage. Fakirs and anchorets often seek religious solitude in its deep and grateful shade. Temples and pagodas are built in the neighborhood of this sacred tree.

A remarkable tree of this kind is to be seen on a small island in the Nurbudda River in Western India; even after much of it

has been washed away by river torrents it still measures 2000 feet in the circumference of its manifold trunks.

An army of 7000 soldiers has encamped under it. It has 350 large trunks and 3000 smaller ones. Solemn festivals are held under it when thousands of votaries gather from every part of the vast empire. English gentlemen often camp for weeks under this delightful pavilion. At times when not inhabited by human devotees it is the rendezvous of peacocks, wood-pigeons, and multitudes of feathered songsters, and families of monkeys, also flying-foxes or bats that measure six feet from tip to tip. This wonderful arboreal growth not only furnishes shelter but sustenance to these denizens of the jungle. Another great banyan tree claiming a world record for size, may be seen in the botanical gardens at Calcutta. It has a central trunk over 50 feet in circumference and about 200 progressive trunks. The ground beneath is kept clean, and its umbrageous shelter is a halting place for visitors and a paradise for picnickers.

The Hindus have a great reverence for the banyan tree, and because of its long endurance, its outstretched arms, its overshadowing beneficence, it is regarded as a symbol of the Deity. Seated under the wide-spreading canopy of this marvelous tree one can look in every direction through vistas of graceful trunks and contemplate nature's vegetable plan of endless renewals and eternal youth.



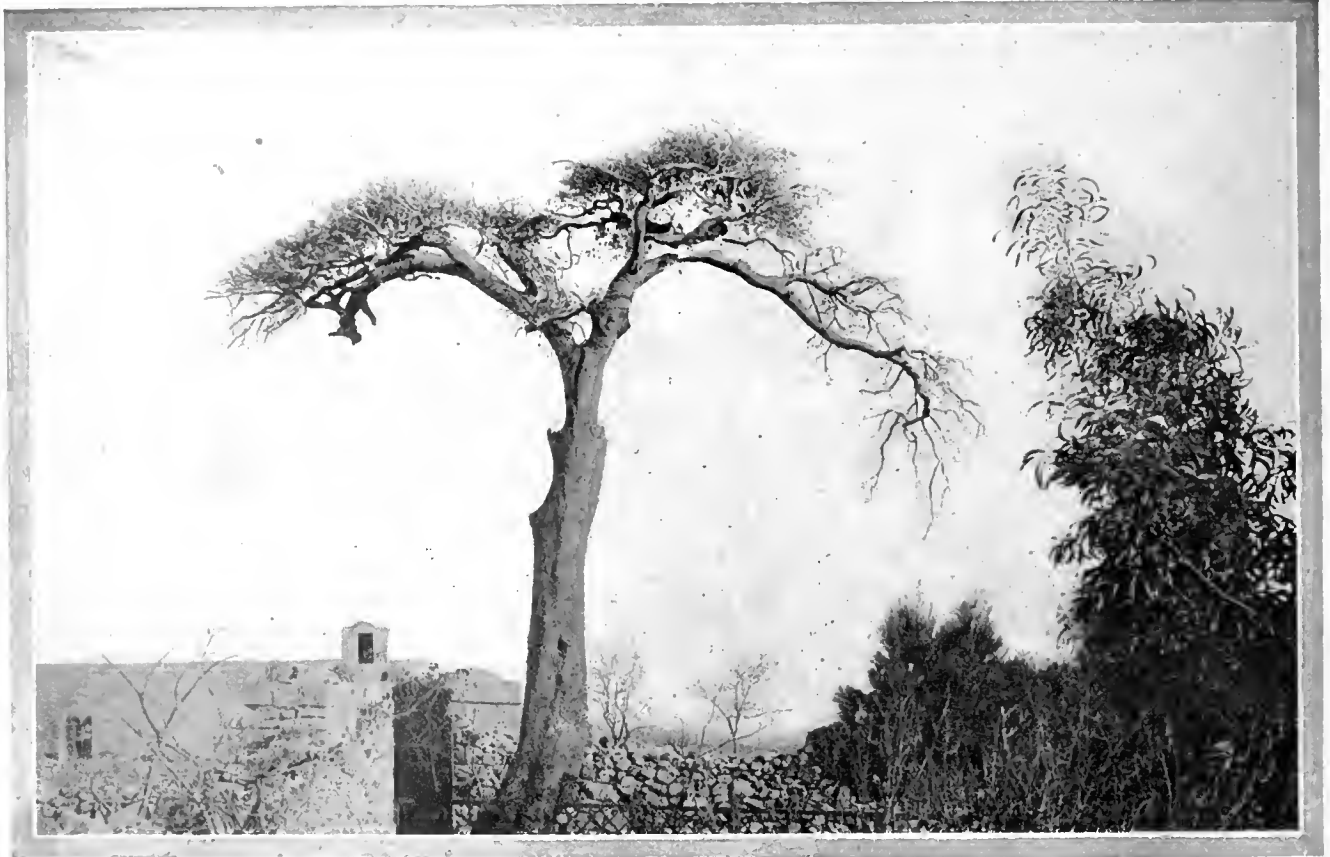
OLIVE TREES IN THE GARDEN OF GETHESEMANE

It is claimed that these are descendents of the very trees under which Christ walked and that they are close to the spot where Judas gave Christ the kiss of betrayal.

OLD OLIVE TREES IN THE GARDEN OF GETHSEMANE

THE illustration for this subject affords a peep into the Garden of Gethsemane, and in the picture is seen the golden gate in the East wall of Jerusalem, a hundred feet or so above the bottom of the valley in which once flowed Wady Sitty Maryam. The gnarled, venerable olive trees in the middle of the garden still clinging to a hoary remnant of enfeebled life, enlist attention. This Garden of Gethsemane can be nothing more than a folk-lore affair, because the exact locality of the real garden was never recorded, and these frail trunks common about Jerusalem may claim an antiquity of one or two hundred years. Nothing short of a stupid credulity would ever credit them with eighteen or nineteen hundred, yet some guide books declare they

come to this walled in, sanctified ground, and whether or not this garden may be the real or traditional spot, it is in the real valley of the Agony and sufficiently near for devotional impression. These trees have been solemnized not only by years, but by the kisses of devout lips, as have been most things connected with the sacred bit of ground. Twenty thousand people visited Palestine annually; fifteen thousand of these were Russian pilgrims. The Russian Government assisted the pilgrims to reach the Holy Land, and when they reached it no shrine real or traditional escaped them; the sincerity of their devotion was pathetic and impressive. They were given to expressing their devout feelings by kissing the objects which



TREE ON WHICH JUDAS IS SAID TO HAVE HANGED HIMSELF

This story may impress the tourist who does not know that the tree is at most only a few score years old—but that fact does not prevent the guides at Jerusalem from calmly declaring that it is the original tree on which Judas hanged himself.

have sprung from successive growths extending back to the time of Christ. The olive tree, like the apple tree, has not the renovating growth of the banyan, or the persistency of the bo-tree, and trees of warm latitudes. The garden is in control of Franciscan monks, who point out the place of the Agony, where the disciples slept, and the place where Judas gave the kiss of betrayal.

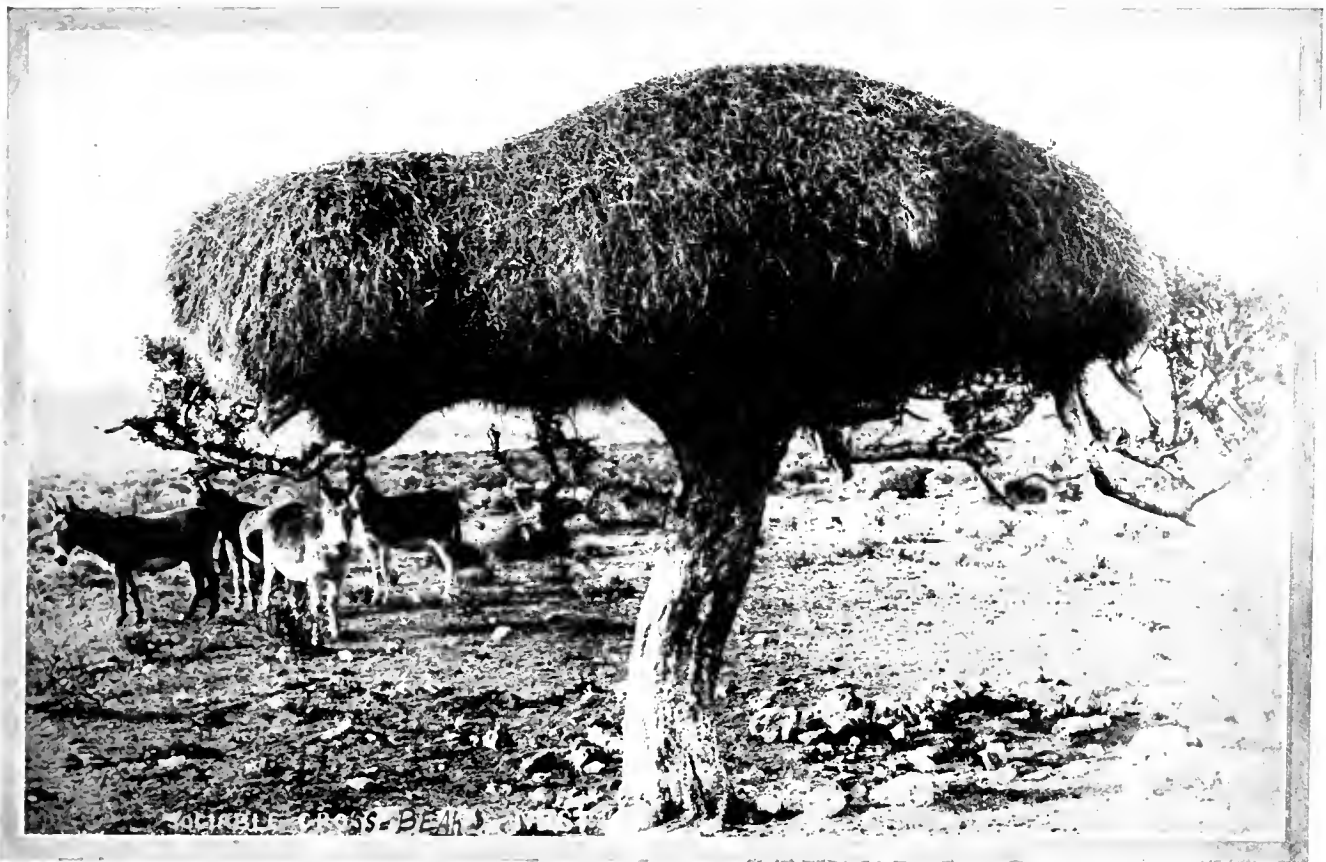
Whether the ancestors of these decrepit trees were contemporaneous with Christ or not, they are very old; they are bible trees; they have seen many generations of devoted pilgrims

awaken these feelings. The so-called tomb of Christ in the Church of the Holy Sepulchre is worn into cavities by the kisses of their pious lips. They kissed the seven stations on the Via Dolorosa through which Christ walked on the way to Calvary; they purchased pilgrim stocks and went afoot to Jericho and the Jordan. On the way to Jericho they kissed the spot where the wayfarer was "held up" by thieves; they kissed the ruins at Jericho; they kissed the Jordan River and the Dead Sea; and these old olive trees in the Garden of Gethsemane have endured a goodly apportionment of Russian osculation.

THE TREE ON WHICH JUDAS HANGED HIMSELF

THIS is not offered as an historic but as a traditional tree, and to show how many and how ridiculous are the myths and traditions presented to the credulity of pilgrims visiting the city of the great King. So much tradition, and so little historic fact—there is the traditional place where the tree grew from which the cross was made, the traditional place of crucifixion, the traditional Garden of Gethsemane, the traditional tomb of Christ, in short the well-nigh traditional everything save the

geographical features of the city's site and surroundings. The feeblest and most modern of all the traditions offered by tradition mongers, is that giving, as the tree on which Judas hanged himself, a recent growth of perhaps a few score years. Some sense has been displayed, however, in the choice of a likely tree; for it is located a little South of the city, conveniently near Aeldama; besides, it has a fantastic, lop-sided branching which offers a free suspension. It is also of a convenient height for the attachment and manipulation of the beneficent hemp.



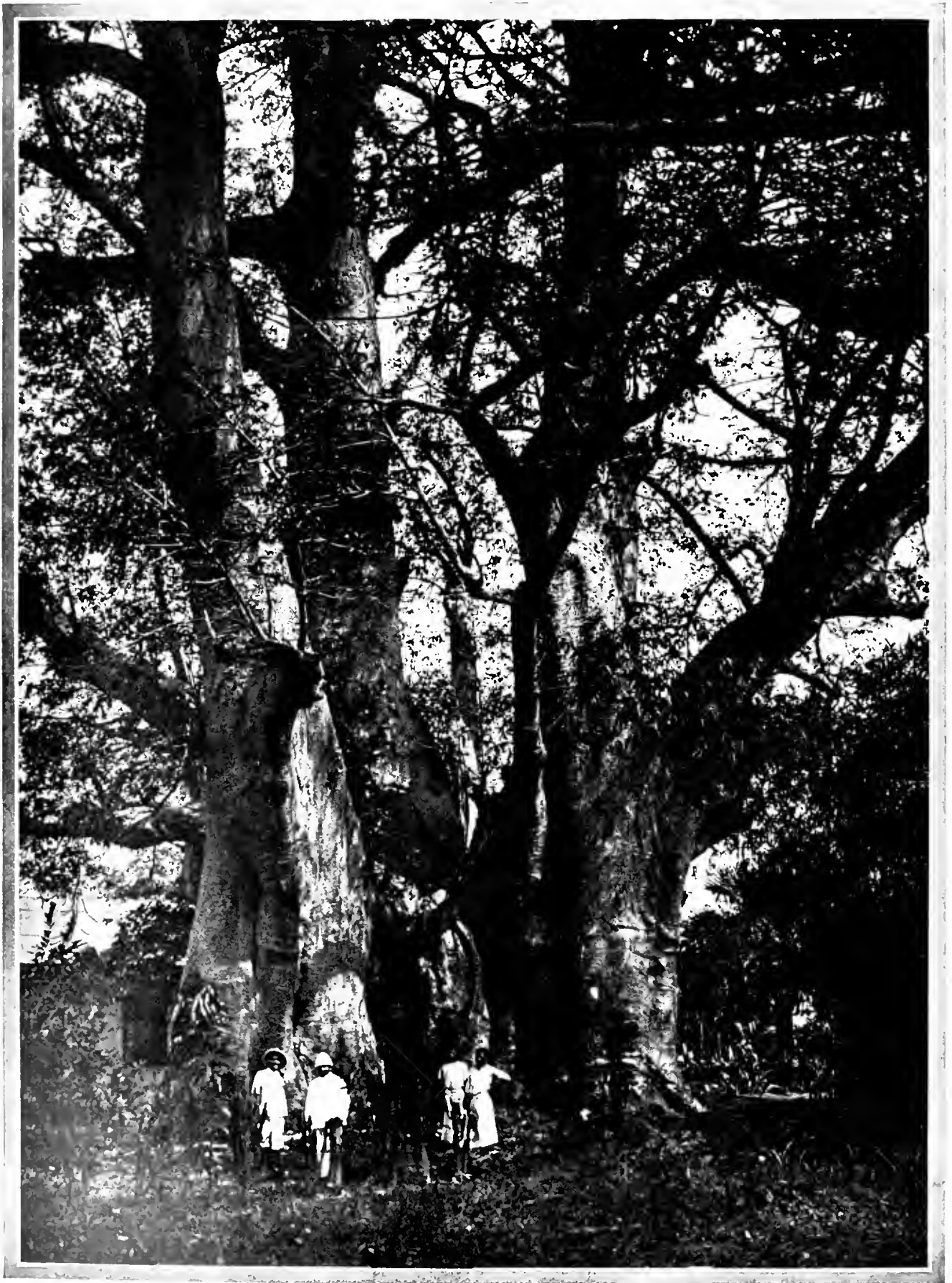
THE NESTING TREE OF THE SOCIABLE GROSSBEAK

This entire tree is one huge nesting place with about one thousand nests all neatly built along streets. The material used is fine grass. Often the nests become so heavy that the trees on which they are built are broken by the weight. The birds and the trees are natives of South Africa.



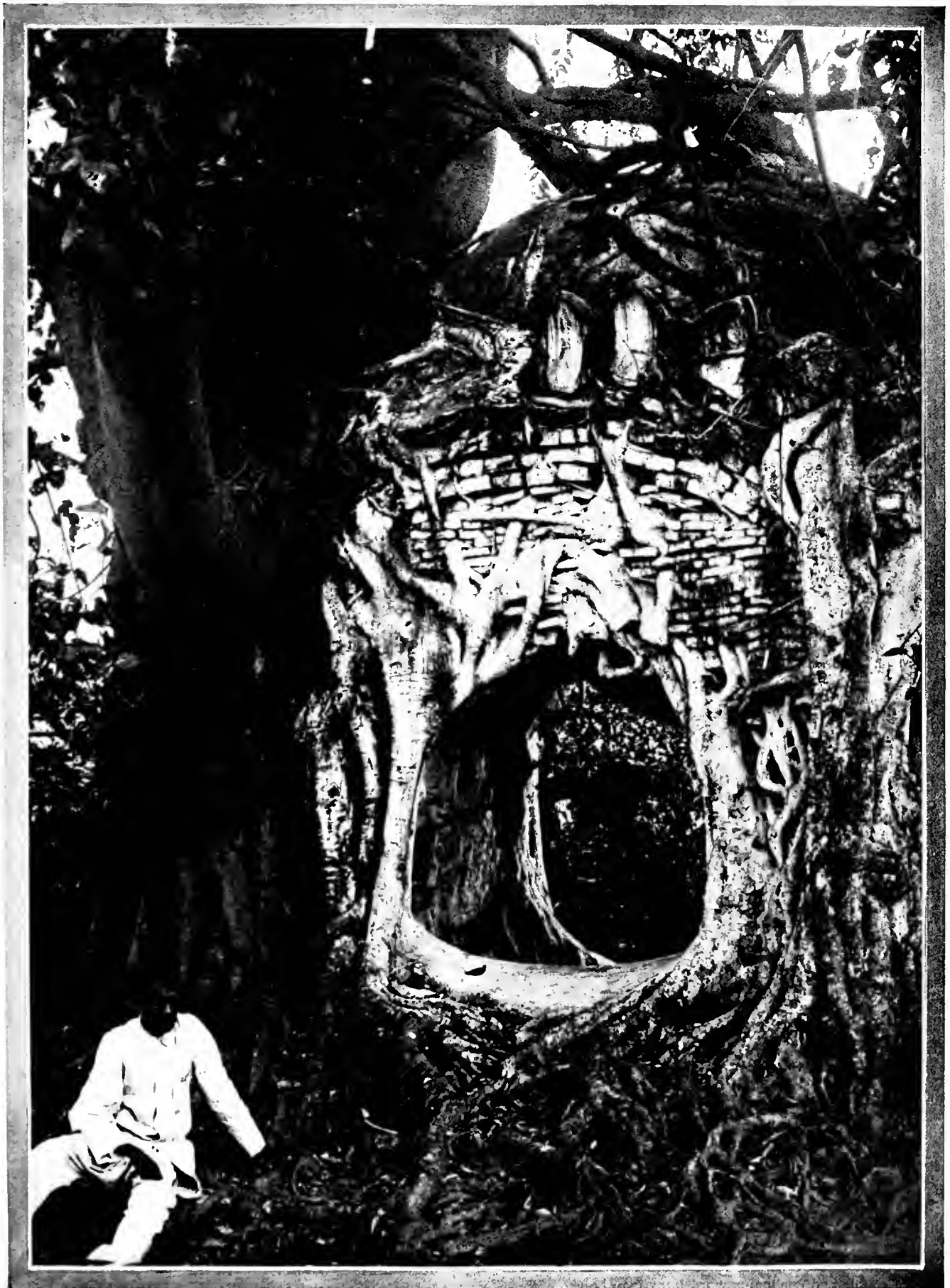
THE SAUSAGE TREE AND VICTORIA REGIA WATER LILY

The sausage tree, sometimes called the candle tree, is of the calabash order, but has no edible or commercial value. The Victoria Regia is recognized as the largest water lily in the world; its leaves have a spread of from six to ten feet with a rim five inches deep and will support the weight of a man; the huge white blossom often exceeds twenty inches in diameter. This queen of water plants is common on the warm, still waters of northeastern South America.



AN EXHIBIT OF THE CONGO

The great *Adansonia digitata*, Baobab or Calabash tree of Citrus, the Congo, Africa. The baobab or calabash is not even a sixty-fifth cousin to the vine that produces the calabashes from which pipes are made. It bears a fruit that resembles breadfruit, and the wood is used in making fine furniture.



Underwood and Underwood

THE FAMOUS TREE PAGODA

This is situated at Calcutta, India. Long before the tree sprouted an old pagoda stood on the spot. Then grew the tree, with all the rapidity and size of many tropical growths, winding its roots and branches around the old stone pagoda until the pagoda became practically part of the tree itself.

A NESTING-TREE OF THE SOCIABLE GROSBEAK

THIS tree in itself is not wonderful, but curious and interesting in its transformation; the tree is a member of the mimosa family, a leguminous tree common in South Africa. It is the tree usually chosen by the Sociable Grosbeak for a breeding colony of his kin-folk. The grosbeak is a small bird represented by the cardinal bird and the bullfinch; it is also in the sub-family of the weaver birds. This tree, therefore, is interesting because it supports a nidamental city which has transformed the entire spray of the tree into a bird tenement.

The birds continue to build in the same tree from year to year and with the increase of the families there must be a corresponding increase in nest-making, until the tree falls from its burden of nests. The building material is fine grass. The entrances are below and these entrances are not to single nests,

but to streets along both sides of which are nests about two inches apart. The work required for such an accumulation of material, straw by straw, is incredible, almost rivaling that of King Cheops and his great pyramid. Man is a social being; many birds and animals are also gregarious. There are still aboriginal tribes who build their homes in the trees, as the Vedas of Ceylon. Home-making in the trees, on the part of man, may be an inherited instinct from our Simian ancestry. These Nesting trees of the Sociable Grosbeak often represent in the single tree from eight hundred to one thousand birds. In the museum of Capetown an entire tree, similar to that shown in the illustration, may be seen. Surely this little finch we call the Sociable Grosbeak exemplified the advantage of co-operative labor thousands of years before it has been widely adopted by man.



LIKE GREAT SNAKES ARE THESE ROOTS OF THE RUBBER TREE

Rubber trees of different varieties and yielding various grades of rubber are found in most tropical countries. The annual yield from young trees is from two to three pounds, while from the large old trees it may exceed forty pounds.

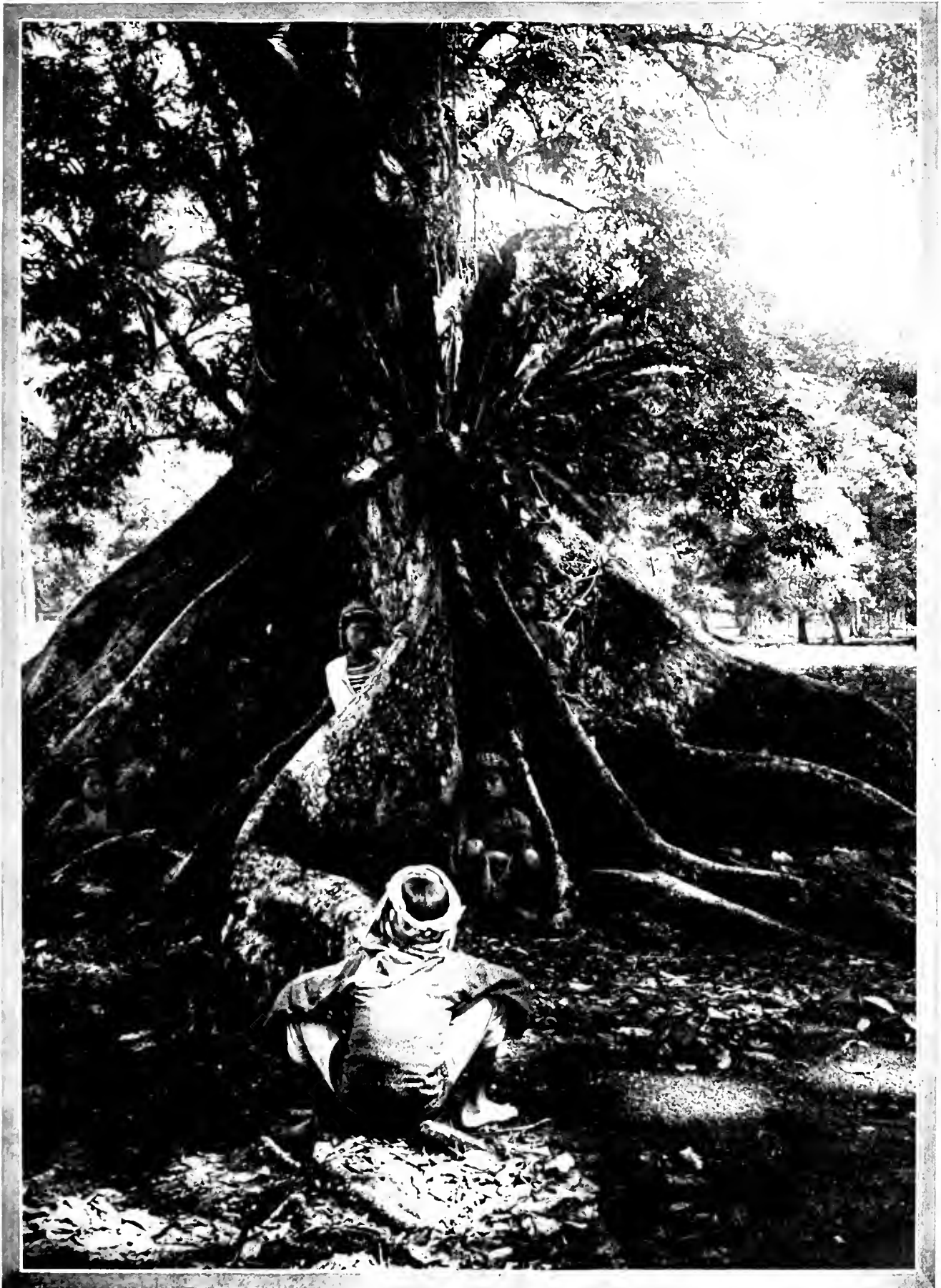
THE RUBBER TREE AND THEIR PRODUCT

THAT wonderfully useful tree-product familiarly known as India rubber was first discovered during the second voyage of Columbus to the New World, wherein it was recorded that the natives in Haiti were found playing with balls of this amusingly resilient substance, and on account of this quality it was called elastic gum. In 1770 one Priestly, a chemist, finding this gum effective in rubbing out pencil marks gave it the name India rubber. In Peru and Ecuador where certain species of the rubber-tree are indigenous, both the tree and its product are called Cahucha, or Caucho, hence the origin of the modernized term Caoutchouc (Koo-chook), for the milky juice of the rubber trees; but this name is so unspellable and unpronounceable that the more simple and euphonious word latex may be used.

There are several species of trees and vines which yield this valuable substance, latex, and which must not be confounded with the vital nourishing sap of the tree. The latex exudes

from sacs in the inner bark of the tree and chemically, is essentially a hydrocarbon. It seems in no way necessary to the nourishment of the tree, and its real function is not well understood.

This lactescent juice produces 20 per cent and upwards of rubber. Of the several species of rubber producing trees and vines, those producing what is commercially known as Para rubber are the most widely cultivated, Para rubber being the standard by which the different grades are rated in the markets of the world. Para rubber is the product of a tree known as *Hevea Brasiliensis*, a native of the Amazon Valley. Another rubber tree indigenous to Brazil yields what is known as Ceara rubber. These two species of rubber trees are now well represented in the plantations of the East. Another species, *Ficus elastica* (Fig elastic), yielding the rubber called "Rombong" in the market, is a native of Assam. *Ficus elastica* is often cultivated as a garden and house plant in Europe and America, and



Underwood and Underwood.

THE BUTTRESSED ROOTS OF THE RUBBER TREE

This octopus-like rubber tree is a native of Buitensorg, Java, and is one of the great attractions for tourists there. This tree is of the species called the fig elastic and yields a rubber known to the trade as Rombong.

when it becomes a large tree it is remarkable for a fantastic development of deep buttressed roots. From tropical Africa comes rubber obtained from various creepers and called Congo rubber, and Madagascar rubber. Rubber is found in a solid state in the fibers of certain plants. The annual yield from young trees is two and three pounds each, while from large old trees it may exceed 40 pounds. Old trees also give a better quality.

The tapping of trees is an important matter in the rubber industry; in the early days trees were cut down to obtain the latex; even after tapping was substituted for cutting down, millions of trees were destroyed by reckless and destructive tapping. In South American rubber lands tapping has long been done by making vertical gashes in a tree with a hatchet. At the base of every gash a small earthen cup is made to adhere by an application of wet clay so that the latex enters the cup. Several of such taps extend around the tree. The latex is collected and another ring of taps is made daily. The gash in the bark must not reach the wood of the tree or a kind of insect will enter the wood at the tap and in a few years utterly destroy the tree. In this way the careless, marauding hand of native tappers devastated vast areas of valuable rubber territory in Brazil and other countries in South America; finally increasing value and decreasing product brought about government protection. In the rubber jungles of the Amazon latex is generally collected in calabashes, and then placed in a large vessel and allowed to simmer over a slow heat to expel water and promote coagulation into marketable forms. Another method of preparing the latex for the market is to dip a paddle-shaped wooden instrument into the latex and then hold the coated blade over a smoking fire made of a certain kind of palm-nuts; this gives a smoky color to the latex and hastens coagulation. This process is repeated until a cake of required thickness is made; this is slit from the blade in the form of a round cake or chuse and is ready for the market. Scrap or refuse is pressed by hand into black balls called nigger-head rubber and is sold as second-grade.

In the rubber plantations of Oriental countries there are several methods of tapping the trees. There is the V tap—a number of incisions in the form of the letter V with receptacles at the apexes of the V's. The herring-bone tap is much the same as the spiral tap. These several taps begin about six feet from the ground. The spiral groves are increased in width downward from day to day in order to reach fresh-bark surface, and when all the interspace has been covered the tree is allowed from one to two years in which to recuperate its benevolent cortex. This apparent girdling does not destroy the tree because the tapping does not extend through the inner bark. Trees are tapped at sunrise as it is supposed the latex flows more freely in the early part of the day. Plantation rubber is now often coagulated with acetic acid, and trees will continue to yield copiously for 30 to 40 years if properly treated. Formerly the world's

supply of rubber was from South American countries. In 1915, 60,000 tons came to the United States, one-half of which was plantation rubber from the Orient. Again, in the rubber-tree, we have another generous friend among our tree-folk.

PHILIPPINE WOODS

THE director of Forestry of the Philippine Islands writes that many inquiries are received at his office from people in the United States who wish to know where they can get supplies of Philippine woods, and in order to facilitate handling such inquiries, requests that all importers, dealers and users of Philippine woods in the States supply his office with their addresses, together with information as to the character of their business, whether importers, wholesalers, retailers or users of any kind of Philippine woods. This will enable him to put inquirers into direct communication with the best sources of supply in the States. All communications should be addressed to the Director of Forestry, Manila, Philippine Islands.

SHADE trees may be destroyed by leaky gas mains, which poison the roots, making it impossible for the tree to secure nourishment from the ground. Gas killed trees are often thought to have been killed by insects, and weakened trees are often completely killed by borers or by fungi, which watchfulness and care would save.

SPRING

The pussywillow's blooming,
The fresh turned earth is brown;
And blooms in apple orchards
Are softly fluttering down.

The violets in the meadow
Are blooming in the sun,
And dandelions so yellow
Like bright gold newly spun.

The happy birds are seeking
Homes in each meadow nook;
With phoebe by the old bridge,
And black birds near the brook.

The robins' calls at morning,
In cheerful greetings rise;
At noon the bright spring sunshine,
Greets myriad butterflies.

And many fresh green tokens
Show happy spring is here;
With promise of warm weather,
And summer's blithesome cheer.

—J. Leland Fowler.

YOUNG BIRDS AND BIRDS' EGGS

BY R. W. SHUFELDT

(PHOTOGRAPHS BY THE AUTHOR)

WHEN one comes to trace back the life histories of our American naturalists to the days they made their first juvenile collections, it will be discovered that they were started with birds' eggs in a large percentage of cases. If they lived in the country, the eggs of the wild birds of the locality were the first ones brought together, and generally arrayed in a modest little cabinet, all being duly labeled with their English names. As such boys come to manhood; pass through college, and enter upon the active work of life, nineteen out of twenty of them forget their little cabinet of eggs, and the nature-taste gradually dies out. In one of the twenty, however, the "bent" is too strong to be so lightly cast aside, and

ample, a song sparrow's egg is a common egg, and specimens of it can be purchased in the open market for a few cents each. Upon the other hand, the egg of the extinct Great Auk is a very rare egg, and a few years ago one sold, at auction, in London, for one thousand dollars. Between these two extremes, the eggs of wild birds the world over fetch all sorts of prices. But to return to our point—the matter of percentages of owners or keepers of large collections of eggs—how few there are that have given attention to all there is to be known about such specimens; and the same may be said of nestlings or young birds generally. It may be noted here, however, that some, indeed many, of the problems of



THREE BIRDLINGS, BUT NONE OF A KIND

Figure 1. As one would naturally expect, young birds of different species and groups vary greatly in appearance and form; this is well shown here where there is to the left, a young red-eyed vireo, a sparrow-hawk in the center, and a fledgling wood thrush to the right.

ornithology, or some other path in general biology, comes to be the professional one followed throughout life. Some go far afield from bird's eggs, and end in becoming palæontologists, or botanists, or in any other equally remote department; but they all look back with more or less affection to their boyhood days spent in the woods and fields, along streams and seashore, where they discovered their first nests of bluejay, killdeer, and spotted sandpiper.

The writer has met and come to know well many professional men who have made birds' eggs their life study, and some of them have accumulated collections worth all the way up to twenty thousand dollars or more—yes, twenty thousand dollars; for, as in the case of all such material, birds' eggs, like everything else of the kind, run common, not common, rare, and very rare. For ex-

scientific nidology yet remain to be solved. How few there are who can name all the parts of a fresh birds' egg—that is, an unincubated one; while there are few, very few, among us that can, off-hand, carry an incubating bird's egg all the way up from the perfectly fresh stage to hatched bird, naming all the parts as they appear and develop—the entire embryology, in fact, until it terminates in the completed process of the living birdling. From men to mice, each and all of the principal stages of embryonic development—prenatal stages—are exemplified and practically reproduced in the hatching of a humming-bird's egg. But this is only a single chapter; for there is the chemistry of the egg structure, and the questions of teratology or double and united chicks in the same egg, of which there is an endless series, all the way from a bird with three legs to an avian Siamese pro-

duction. And, why are some birds' eggs pure white and unmarked and others variously and highly colored, with all sorts of marks upon them, from minute dots to scraggly lines? How are these spots and markings produced? Then, too, the nests of birds run all the way from the female laying a single egg on the bare rock on the coast, to those laying ten or more eggs in a very elaborate nest built in very different localities. As a matter of fact, the whole study of birds' eggs is indeed a very large subject.

With such a wide variation in the eggs of various orders of birds, it is not to be wondered at that we find a similar state of things, or even more marked departures,

one who has been a close student of avian nestlings may readily distinguish the various kinds, especially should the birds belong to different genera. But to distinguish a week-old nestling of the tree sparrow from a nestling of the Western tree sparrow of the same age—the writer questions that any one, however expert, can do it.

So much for the nestlings of *average* birds—all of which are fed by their parents, and remain in the nest until they are more or less fully feathered, which may require a fortnight or more. Such birds usually possess a plumage quite different from that of their parents, both in coloration and character, in some respects; moreover, we have reason to believe that the first plumages in



HUMMING BIRD'S NESTS

Figure 2. These beautiful nests are of different species of North American humming birds which never lay more than two eggs in their dainty nests. The nests all belong in the splendid collection of Mr. Edward J. Court, of Washington, D. C., loaned the writer for the purposes of photography; they are natural size, and on the limbs or twigs chosen by their several builders.

among a large number of young birds. These latter are frequently referred to as "nestlings;" but in as much as a very large proportion of young birds have never known what a "nest" is, the term can hardly be considered appropriate as applied to all species of this group of vertebrates. What may be considered an average nest; with a pair of nestlings ready to quit it forever, is well shown in the one that our indigo bunting constructs (Fig. 8), which is built in a hemispherical form with coarse grasses, and dead leaves below. Usually it is lined with fine fibers, or more rarely with very fine grass. Many birds, in many countries, build a nest more or less like this one, while the young of such species possess many characters in common, though not so many but that

many young birds agree, to some extent, in the matter of coloration, with what the remote ancestral forms of that particular group, or even species, was. For instance, the first plumage of our young robins presents numerous strong speckles on the breast, which indicates that a remote ancestor of that species possessed a speckled breast *when adult*—the breast of an adult robin of the present day being plain and unspeckled. In the main, this law holds true for all birds, and the proof of it has long been in the hands of science.

Another curious fact to be noted is that in the case of some species of birds the plumage of the nestlings is soft, full, downy, and pure white, and this curious fact is well exemplified in the young of many birds of prey,

as hawks and falcons (Fig. 1), vultures, aningas, some waders and water birds, owls, and others. Curiously enough, in the vultures—as for example in our turkey buzzard—the pure white young, in due time, moult to the wholly black plumage of the adult bird.

Young birds of other species possess no plumage at all in the nestling stage—not even a trace of down. This is well seen in the young of the hornbill of certain islands of the East Indies. Wallace well describes them in his "Malay Archipelago," and he says that when he "returned to Palembang by water, and while staying a day at a village while a boat was being made water-tight, I had the good fortune to obtain a male, female, and young bird of one of the large hornbills. I had sent my hunters to shoot, and while I was at breakfast they returned, bringing me a fine large male, of the *Buceros bicornis*,



A YOUNG OWL

Figure 3. Taken all together, we have over a dozen species and subspecies of screech owls in this country, the one here shown being a nestling of the kind occurring in the Atlantic States. Of all fluffy young birds, the young owl is the fluffiest.

which one of them assured me he had shot while feeding the female, which was shut up in a hole in a tree. I had often read of this curious habit, and immediately returned to the place, accompanied by several of the natives. After crossing a stream and a bog, we found a large tree leaning over some water, and on its lower side, at a height of about twenty feet, appeared a small hole and

what looked like a quantity of mud, which I was assured had been used in stopping up the large hole. After a while we heard the harsh cry of a bird inside, and could see the white extremity of its beak put out. I offered a rupee to any one who would go up and get out the bird, with the egg or young one, but they all declared



A CAT BIRD'S HOME

Figure 4. The cat bird is one of the sweetest songsters we have, yet few species have been more bitterly persecuted and mercilessly destroyed. It generally builds its nest as here shown—in a bramble or in some thicket. The unspotted eggs are of a fine greenish blue, and usually four in number.

it was too difficult, and they were afraid to try. I therefore very reluctantly came away. In about an hour afterward, much to my surprise a tremendous loud hoarse screaming was heard, and the bird was brought me, together with a young one, which had been found in the hole. This was a most curious object, as large as a pigeon, but without a particle of plumage on any part of it. It was exceedingly plump and soft, and with a semi-transparent skin; so that it looked more like a bag of jelly, with head and feet stuck on, than like a real bird.

"The extraordinary habit of the male in plastering up the female with her egg, and feeding her during the whole time of incubation and till the young one is fledged, is common to several of the large hornbills, and is one of the strange facts in natural history which are 'stranger than fiction'."

In the work cited, Wallace gives an excellent cut of the female hornbill he describes, with the curious young one at her side; the latter is a most helpless appearing

creature, and so utterly different from, for example, such a nestling as the young of our quails and their allies, of which there may be upwards of twenty to the brood, and which are hatched thickly covered with a soft down,

prettily marked, and running about with the greatest alertness as soon as they are out of the eggs.

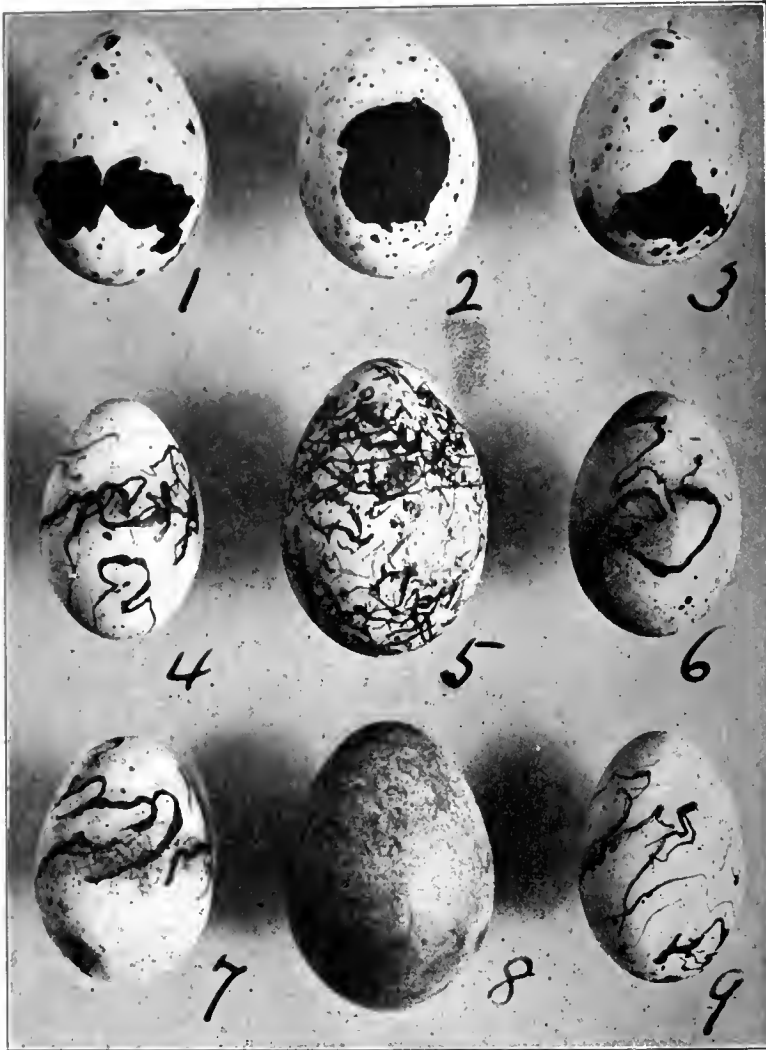
Again, this is entirely unlike the habits of the megapodes or Mound Birds of the East Indies, Australia, and other islands of the Eastern Seas. These birds do not even resort to incubation to bring forth their young, as they either bury their eggs in the ground, something after the fashion of an alligator, or else they lay them on the bare ground, and then, industriously scratching, they heap over them an enormous mound of earth, leaves, dry sticks, and fragments of rotten wood—sometimes almost as much as a cartload of such materials. Neither of the parent birds ever sees the egg or eggs again, the progress of hatching being left to the heat of the sun. But what is still more singular, when the young are born their plumage is *complete*, and they are otherwise highly developed. Off they go, as soon as they can make their way out of the mound, and none of them ever sees its parents.

On several occasions the writer has reared young humming-birds from the nest (Fig. 2); it is curious to note their *short* bills as compared with the long, slender ones of the adult birds, and, as a matter of fact, the bills of nestlings are often entirely different from what we find them to be in the adults of any particular species.

Nestlings of ducks, divers, grebes, and many other strictly aquatic birds take to the water almost as soon as they are hatched; and in the case of the young of the dabchick, it is very pretty to see how they will, to the number of two or three, sit up on the back of one of the old birds as it swims about in search of food, or paddles around among the reeds of the marsh where these birds are found.

Most herons build in trees in the marshes, or along sluggish streams in the wilder parts of the country, and they usually have several young to the brood. These nestling herons have a peculiar means of defense; for, should any one attempt to climb up to the nest, they all stand up together, in such a way as to obtain a good view of the intruder. When he comes near enough, all of them cast up the remains of their last fish dinner, and, being wonderfully skillful in the matter of landing the same on the face and clothing of the advancing enemy, one may well imagine that, unless the intruder be determined to secure the specimens, he will beat a hasty retreat.

Down on the Amazon they have a curious bird called the Hoatzin; it is about the size of a grouse, and its habits are most peculiar. This cannot be touched upon here, but it is well to note that the very young of this species have the claws and fingers of their pinions so free and so conspicuously developed, that when they get out upon the twigs of the tree where the nest rests,



CURIOSLY MARKED BIRDS' EGGS

Figure 5. In the upper row (1, 2 and 3), is seen a complete set of eggs of our Least Tern; the strong markings only occurred on one side of the egg. The four smaller eggs in the two lower rows (4, 6, 7 and 9), are specimens of the egg of the boat-tailed grackle (*Megaquiscalus major*). All of this group lay eggs with these peculiar scraggly markings, the ground color being light blue or even white. Number 5 is an egg of the regent bower bird of Australia and 8 is an egg of the red-backed magpie of Australia.



A PECULIAR DIFFERENCE

This shows the reverse side of the Least Tern's eggs (Numbers 1, 2 and 3), shown above. The difference in markings, so heavy on one side and so light on the other, is striking.

they can use their "hands" to assist them in climbing up upon or among them.

In the avifauna of this country as well as in that of the Old World, there are a few birds that lay their eggs in the nests of other birds, the latter being of entirely different species or even families. The nestlings of such species are reared by their foster parents, and never at any time see their own. The Cuckoos of the Old World have this habit; while with us it is the Cow-bird which is the guilty one. In either case only a single egg is deposited, and the young cuckoo, as it grows, manages to push the rightful occupants off the nest, being fed by their parents until it is ready to shift for itself. Young cow-birds do not behave in this way; in any particular case they are fed by the foster parents as one of their own brood, and cared for until they all leave the nest at the same time. There is an extensive literature on this extraordinary habit, the subject having been written to the limit.

"The whole process has often been watched," says Alfred Newton in his work entitled "A Dictionary of Birds," "but the reflective naturalist will pause to ask how such a state of things came about, and there is not much to satisfy his enquiry. Certain it is that some birds, whether by mistake or stupidity, do not infrequently lay their eggs in the nests of others. It is within the knowledge of many that Pheasants' eggs and Partridges' eggs are often laid in the same nest, and it is within the knowledge of the writer that Gulls' eggs have been found in the nests of Eider-Ducks, and *vice versa*; that a Redstart or a Pied Flycatcher, or the latter and a Titmouse, will lay their eggs in the same convenient hole—the forest being rather deficient in such accommodation; that an Owl and a Golden-Eye will resort to the same next-box, set up by a scheming woodsman for his own advantage, and that the Starling, which constantly dispossesses the Green Woodpecker, sometimes discovers that the rightful

heir of the domicile has to be brought up by the intruding tenant." In the case of our cow-bird, the present writer has watched the performance upon several occasions.

Not a few birds in different parts of the world practically rear their nestlings *in the dark*. Well-known examples of this are seen in sand-martins and king-fishers—birds that dig, or scrape out, long burrows in banks, and lay their eggs at the farther end of them. Prairie-owls select the deserted burrows of the "prairie-dogs;" chimney swifts construct their nests far down in dark and sooty chimneys, and woodpeckers constitute other familiar examples of this, as do a vast host of other species of birds all over the world. Upon the other hand, nestlings

of some birds are hatched out in the most exposed places, entirely unprotected from the sun, the rain, and the gales. Many years ago the present writer visited one of the Florida Cays, upon which thousands of gulls, terns, noddies, cormorants, and other species, reared their young; their eggs were deposited all over the naked rocks, to the extent of hundreds upon hundreds. In some places, clutches were



MEADOW LARK'S NEST

Figure 6 The meadow lark is a well-known bird in the country east of the Mississippi, and a general favorite; it builds a loosely-fashioned nest on the ground in a tuft of grass. This typical nest contains two young larks.

but a foot or so apart, while nowhere did they seem to be more than a yard or two. As the birds arose in the air, the afternoon sun was actually darkened by their numbers. Soon the sailors with our party collected several bushels of the eggs for the crew of the gun-boat; to which they and the writer were attached at the time—yet the supply would hardly be missed over the area where they were gathered. The distinguished British naturalist, Professor Moseley, states that the incubating albatross holds her single egg in a sort of pouch on the lower part of her abdomen; and Mr. Dudley Le Souef, Director of the Zoological Gardens of Melbourne, Australia, has made a wonderfully fine photograph of a female albatross incubating her egg, in which one-half of the egg is seen within the aforesaid pouch.



YOUNG JAYS

Figure 7. Young nestling jays possess a plumage that distinctly forecasts that of the adults; it is of a lovely blue, barred on the wings with white, with black and white on the nape, and dusky white on the lower parts. These three little beauties were carefully reared, and given their freedom when able to fly well.



YOUNG INDIGO BIRDS

Figure 8. This nest was photographed by the writer in the exact position selected for it by its builders; the background was eliminated in the usual way. At this stage even the male nestling shows but very little blue in its plumage. The birds are about ready to leave home.

It is now a well-established fact that when the female woodcock for any reason desires to remove her young from one place to another, she takes them out, one at a time, between her feet, and, holding them securely, she flies off with them to a place of safety.

From all that has been set forth above, it is clear that the study of nestling birds is a very large and a very varied subject, not to say one full of interest even to the lay student; and when these last chance to be foresters, the opportunities for study are many and of a most varied kind.

Naturalists have bestowed similar attention—and the literature is fully as extensive—upon the description of the processes of the coloring of the egg shells in the case of birds, which, as we know, vary widely in color, marking, and form. The reader's attention has already been invited in this article to the wonderful coloring and markings of the egg shells of many birds; but space



THE CARDINAL GROSBEAK

Figure 9. As shown, the birds built this nest in the shrubs and bushes overhanging a stream in southern Maryland, where the writer, with great difficulty, succeeded in photographing it in situ.

has been lacking in which to describe how all this is done. It has been most extensively studied by not a few investigators, and the subject takes into consideration the form and size of the egg; the anatomy of the parts wherein the eggs are formed and pass out of the bird's body; the physics and physiology of that passage; the character of the parts that secrete the pigments; the physiology of the onlaying of the various pigments on the egg shells as they pass through the parts to the point of exit; the chemistry of those pigments; the effect upon pigmentation owing to the age of the bird or her physical condition as to health or disease at the time of laying, and not a few other things. Yet with all this investigation extending back for more than a century, there still remains much demanding further study and experimentation before even this small chapter in scientific ornithology can be said to be, in this particular field, in any way complete.

WOODEN SHINGLES OR SUBSTITUTES

BY ARTHUR NEWTON PACK

WHAT shall I use for roofing on my house? It is a question asked several hundred times a day from Maine to California. Down in his heart every man is at least a prospective home builder, and with the great housing problem, which confronts our country, this subject assumes tremendous importance.

Fifteen or twenty years ago wooden shingles were three times out of four the choice of the home builder. The comparative expense and difficulty of procuring and laying slate put it out of the reach of most men; ready roof-

creased cost of wood shingles. Where formerly the shingles on our roofs were manufactured only a few hundred miles away at most, and shipped to the builder with but small extra charge for freight, we now secure our best grades from as far away as Louisiana, California, Washington, Oregon, and even British Columbia. Again, good shingle woods, such as white and red cedar, pine and hemlock, used to be found in comparatively flat and easily traversed country. The felled trunks were sawed up into bolts about three or four feet long, loaded on sleds—later on temporary railways—and conveyed to a point of manufacture convenient to the intended market. A visit to a typical western red cedar or California redwood logging operation of today gives a fair idea of the different topographical features now prevailing, and with it an appreciation of some of the items other than transcontinental freight charges which enter into the increased cost of production.

The modern logging railroad of the west is itself a wonderful piece of engineering, threading as it does rough mountainous country, doubling back and forth to ascend the grade to those areas where the great forests still remain, crossing a canyon on a high trestle, and



THE SHINGLE TREE

Cutting the western red cedar from which the shingles are made. This size is typical of the growth in British Columbia.

ing, the modern asbestos or asphalt, as well as tile roofing, were but little exploited; shingles made of paper, asbestos and asphalt were not widely known until 1909 or 1910. At the beginning of the European War, however, this country was producing an amount of tile, slate, metal and various kinds of patented shingle roofing almost half again as great as the total wooden shingle production of the country; but as we exported some patented roofings and imported a large amount of wooden shingles, the probable truth is that we actually used wooden shingles and substitutes in about equal proportion. Since 1914 this ratio has probably been maintained with gains in some sections for the improved types of patent shingles.

Primarily the cause of this change has been the depletion of our National Forest resources reflected in the in-



GROUP OF RED CEDAR

Close together, high and clear, the red cedar is a magnificent forest tree used mostly in the manufacture of wooden shingles.

perhaps passing through several small tunnels. From start to finish the total ascent may be over a thousand feet. When the grade is too steep for the locomotives a cableway is installed for hauling up the empty flat cars and lowering the full loads. Sometimes the large cedars grow on a slope so steep as to appear to the casual visitor well nigh perpendicular, and to reach them the men must often make their way through underbrush which is almost impassable to those unaccustomed to the woods.



GETTING OUT CEDAR LOGS

This shows one of the methods of logging with a powerful donkey engine in the heavy western forests.

The logs, twelve to sixty feet in length and averaging several feet in diameter, are dragged to the loading points by means of a donkey engine so rigged that the heavy cable passes over a pulley block one hundred and fifty feet above the ground. In this way the forward end of the log is lifted and easily over-rides stumps, rocks and other obstructions. Frequently a heavy aerial cableway is used to raise the whole log clear of the ground, thus avoiding breakage of the easily split cedar, and where the distance to the railroad is too great the logs must be rehandled by another donkey engine which hauls them along an expensively constructed skid-road built of large trunks laid in the form of a trough. Were it not for the large wood content of a single one of these logs the cost would be much greater than it is. In fact the logger actually loses money on any trees less than ten to twenty inches in diameter, and such trees are regularly left in the woods. This would be desirable, providing

thus naturally for a perpetual crop of timber, were it not for the fact that the great logs, being snaked along to the logging road by the powerful steam donkeys, continually twist and jam between the smaller trunks, and their weight striking a growing tree eight or ten inches in diameter will bring it crashing to the ground, to lie there as fuel for the next forest fire that gets into the timber.

If we had just these small trees growing on easier ground nearer the market, say in Michigan, each one might readily have a sale value just as it stands in the woods, of three or four dollars, and at that price could then be logged, manufactured and sold at a profit without raising the price of shingles.

The various kinds of paper, asbestos, asphalt and metal shingles were first manufactured to supply roofing at a cheaper initial cost than wooden shingles. At first they



FROM FOREST TO ROOF

A red cedar lumbering operation in British Columbia woods. The logs are taken to tidewater and the mill on the logging railroad.

were sold chiefly for temporary roofs, such as sheds and garages. Later, however, the manufacturers were able to improve the coloring and appearance so that very handsome effects could be obtained, supplementing their campaign of introduction with advertising on a large scale, and a guarantee of from five to nine years' life. They introduced a real improvement in the roofing trade by selling on a basis which the consumer could himself understand; namely, at so much per Square. A Square was easily explained to be one hundred square feet, and the purchaser could easily calculate for himself just how



Courtesy Clear Lake Lumber Company.

PACKING THE SHINGLES

The shingles come down the chutes to the packing machines where they are secured by bands and cross strips and conveyed on the moving chain to the kiln trucks.

much it would cost to put on a roof of a certain size. Directions for applying the substitute shingles were very carefully worked out for pitch of roof, etc. The purchaser was shown just how and where to put in the nails, and given the fullest possible co-operation by the manufacturer. He could also choose from a number of colors and shades without the labor of staining or painting himself.

Furthermore the fire resistant qualities of asbestos and metal were already well known, and the improved ready roofing materials were well received for that reason. So effectively has this feature been laid before the general public that various towns and municipalities throughout the country have made building regulations forbidding the use of wooden shingles in certain closely settled districts, and fire underwriters began in certain instances to give lower rates for buildings which did not have wood covered roofs.

At this time when we are awakening to the threat of a world-wide lumber shortage, it would be well if we could thus discover an equally good and permanent substitute roofing; but builders and dealers in building materials generally, together

with others who have made a study of the situation, agree that the knell of the wood shingle-roof has by no means been sounded.

As above stated, the argument most often employed against the use of wooden shingles is that of fire risk. A great variety of statistics has been brought forward in this connection and the lumber manufacturers have in turn introduced other figures in refutation. Although many statistics have been misquoted, figures prepared by the National Board of Fire Underwriters, covering fire losses of the United States during the year 1918, are said to give the strongest case against the use of wood shingles for dwelling house roofs. Here it is shown that only 2.36 per cent of the loss was reported as caused by "Sparks on Roofs,"

but that out of a total dwelling-house fire loss of sixty-four million dollars, four and one-half millions or 7.1 per cent was attributed to this origin. "Defective chimneys and flues" is credited with 12.4 per cent of the dwelling loss, and "Lightning" comes next with 7.5 per cent. While the evidence that one dwelling house fire



Courtesy Clear Lake Lumber Company.

WASHING THE CEDAR LOG

As the log is being hauled up to the mill it is thoroughly washed by force sprays in order to remove the dirt which would dull the saws.

out of every fourteen of known origin is caused by sparks on roofs is not damning, any reasonable man will admit that it is not a good showing, and everyone who builds or possesses a home owes it to himself and his community to co-operate for the reduction of that four and one-half million dollar loss. The question becomes one



Courtesy Clear Lake Lumber Company.

SHINGLE PACKER AT WORK

The packing is by hand and the frame is inclined and hinged so that the bundle may be easily packed and quickly removed when finished.

of ways and means. Is the remedy necessarily the elimination of the wood shingle?

In the first place the sparks very likely came from the sudden burning out of the soot in a chimney flue. If the flue had been properly built and then periodically cleaned the original mishap would not have occurred. The carelessness of the occupant is really to blame, both for his own loss and that which may have been occasioned to his neighbors. What we lack here is a little of the spirit found in Europe, where a man who has a fire is looked upon not so much as merely unfortunate, but as a public offender.

Rather than to forbid the use of wood shingles in settled communities, the enactment of simple regulative ordinances governing their use would appear effective. Fire resistant paints and stains for wood are now quite generally sold, combining with the fire retarding quality the most artistic color effects. A regulation requiring such treatment of shingles has been suggested as a result of various practical tests. In fact the special paint

is often the real basis of the fire resistive power of patented substitutes. The law might go further to control the specifications as to nails, as discussed below, for experience has shown that a properly nailed shingle will not fly off, even when ignited. A wooden shingle is the only roofing which will continue to keep out water for years after its most practical life has gone, and after it has so seriously dried and cracked that a person in the attic may see daylight through a hundred odd fissures. The temptation is to leave the old shingles on until the roof actually begins to leak, and there is where the fire risk becomes greatest. Where many houses are built close together there might well be an ordinance



Courtesy Clear Lake Lumber Company.

TYPICAL BUNDLE OF SHINGLES

Each bundle is stamped with the area of roof which it will cover so estimates of cost per roof may be easily made.

governing inspection by the fire authorities to determine when this condition really becomes a public danger.

The experience of various communities with the shingle roof problem is interesting. The great fire which destroyed so much property in Augusta, Georgia, started in the "fireproof" business section, spread to the residence section, and was stopped in a wooden dwelling. Authorities have stated that shingle roofs had nothing to do

with the rapid spread of the Salem, Massachusetts, fire. After the great fire in Houston, Texas, a city ordinance was enacted, prohibiting the use of wood shingle roofs within the city limits. Nine months later a large number of the expensive type of dwelling had been rebuilt, using slate and tile roofing. The poorest class of houses also sprang up again with roll roofing and substitutes, but the middle class home, of which the builders understood the natural beauty and lasting qualities of wood shingles lagged behind, and very little progress was made until, after just that nine months' try-out, the ordinance was repealed. Since then Dallas, Birmingham, Alabama, and Lynn, Massachusetts, have been among the communities which have learned by experience that it was not in accordance with practical

welfare to legislate against the wood shingle roof, except in their congested business districts. It is readily admitted, however, that in the very closely built sections of cities construction as nearly fire proof as possible should be demanded. Seattle, Washington, is a city of 300,000 people, and most of its dwellings are covered with cedar shingles. The fire chief once said that if shingle roofs were all he had to contend with they might as well disband the fire department.

It is not generally realized that wood is a splendid non-conductor of heat. Tests have

been made, however, showing that the properly built wood house is exceptionally warm in winter and cool in summer, and that a wood roof is superior in this respect to slate or almost any other material except tile laid with air spaces. The shingle roof also has an advantage over slate and tile in that it is light and does not require such heavy or expensive support. The wood shingle also

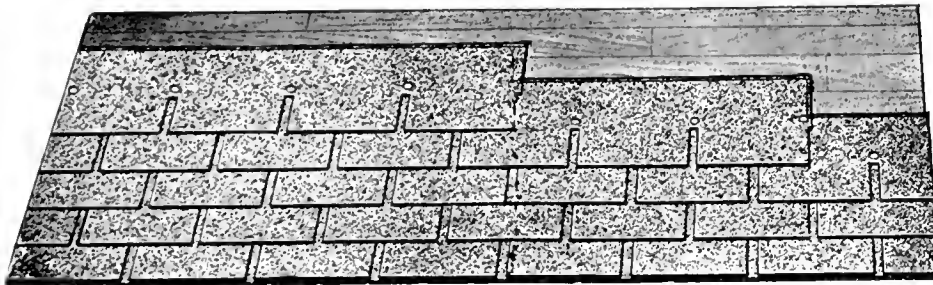


Courtesy Barber and Ross, Washington, D. C.

SHINGLES IN SHEETS

Art-craft roofing, strips of composition made to look like shingles, are now being advocated for effective and quickly laid roofing material. This shows the Rock Island Station at Beverly Hills, Illinois.

quire not only a heavier supporting construction, but their initial cost is greater than wood, and the average life is not so long, due to a tendency to break under stress. While roll roofing has always been lower priced than wood shingles the better grade of asphalt shingles became scarce during the war period when ships were



Courtesy Barber and Ross, Washington, D. C.

COMPOSITION SHINGLES LAID IN STRIPS

These Rex shingles are made in strips of four, and it is claimed save thirty-seven and a half per cent in nails used and the labor of laying.

not available for the importation of asphalt. Now, however, the initial cost has again declined and, like paper and asbestos roofing, is somewhat below that of wood shingles. The home builder who is forced to save every cent of initial cost on his house without being able to plan ahead as much as he might wish, will probably find satisfaction in some one of the better grades of patent roofing. Patent shingles are often guaranteed by the maker to give good service for from five to seven or nine years. The life of a wood shingle roof, however, when properly laid with the correct grade of material, may safely be figured

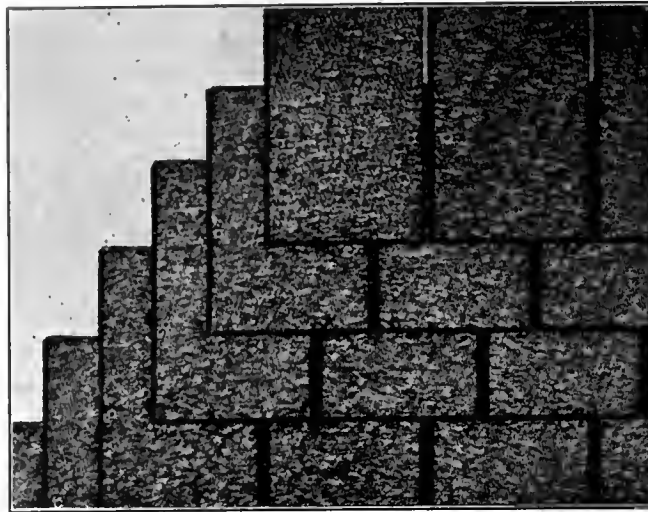
gives the minimum of noise in a rain or hail storm. Sometimes paper and asbestos shingles seem to blow up in high winds, as a well nailed wood shingle does not.

To many minds the chief objection to the substitutes is that they bear much the same relation to wooden shingles as concrete block construction does to the stone which it strives to imitate. The one has an artificial regularity never possessed by the real thing, and although both may look handsome at first sight, a large expanse of forced regularity soon begins to strike harshly on the eye and is never enjoyed to the same extent as the natural product.

Probably the feature of particular interest to the home builder is that of cost. Slate and tile have always been more expensive than other roofs, for they re-

at fifteen to twenty years and upward. The wood shingle roof on George Washington's home at Mount Vernon was repaired by him in 1785 and was not again repaired until 1860—a life of 75 years. There have been many instances found where shingle roofs have lasted satisfactorily for fifty years and even one hundred years. It is not at all unreasonable to attribute such a life time to cedar when we consider that the old sarcophagi in which some of the Egyptian kings were buried three thousand years ago are still found in fairly sound condition. One lumber dealer in Montana reported that he was willing to guarantee for twenty-five years wood shingles sold by him.

Now when we come to consider cost per annum a substantial credit balance readily appears in favor of the wood shingle, as compared with any substitute. Yet there is a very important proviso to be considered. Any wooden shingle will not do. The National Lumber Manufacturers' Association, whose office is in Washington, as well as the

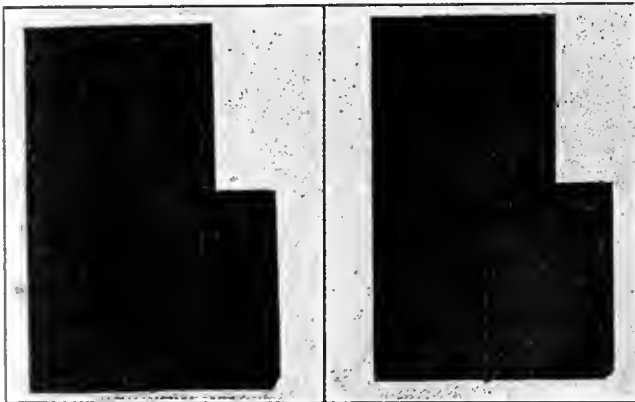


ASPHALT SHINGLES

Vulcanite Individual Asphalt Shingles are laid four inches to the weather and nailed four and one-half inches from the butt.

while on the vertical sides of houses a five inch exposure is conservative.

An equally important point is the use of a proper nail. Many builders nowadays lay a shingle roof with ordinary steel wire nails, instead of 3½ or 4d galvanized cut iron nails as recommended by these associations of manufacturers. The steel wire nails are much easier for the carpenter to hold in his mouth, as well as somewhat cheaper and more readily obtained, but they rust very quickly under the influence of

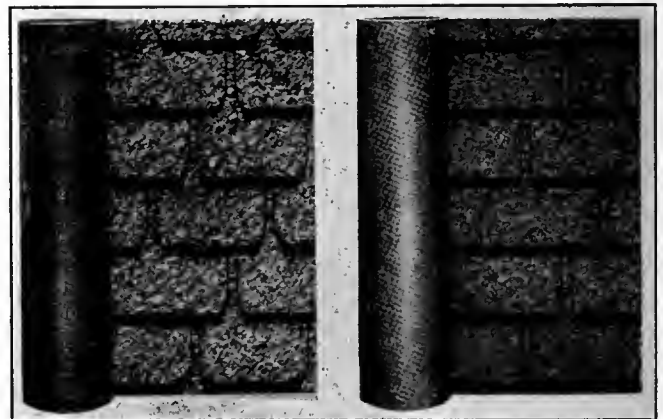


Courtesy Cortright Metal Roofing Company.

A METAL SHINGLE

At the present time wooden shingles and substitutes are used in about equal proportions.

Shingle Branch of the West Coast Lumbermen's Association in Seattle, furnish specifications for the construction of a durable shingle roof. This information is usually found in the possession of the better class of architects and builders, but may be had by any who are interested. The salient points only can be given here, but they emphasize first the use of the best grade clear shingles—not over seven inches wide and not less than five shingles to two inches in thickness measured at the butts. Forty per cent of the shingles sold throughout the country measure six shingles to two inches, and are consequently liable



Courtesy Patent Vulcanite Roofing Company.

SHINGLES IN ROLLS

Here is another form of vulcanite roofing in which the shingle effect is secured though the material is made in rolls.

the wood acids. As time passes these nails thus permit the shingle to buckle and warp, and in event of fire the loosened pieces readily fly off and become a menace to neighboring property. Why use a twenty-five year shingle and a five year nail? Scientific experiments have demonstrated that the modern cut iron galvanized nail is in no way inferior to the old cut nails used by our forefathers, many of which nails are found today in perfect condition when old Colonial buildings are demolished. When cut iron nails are not obtainable good results can often be secured with steel wire nails gal-

vanized by the so-called "Hot-dipped process," although it is difficult for the ordinary purchaser to distinguish these from the very lightly galvanized nail, the zinc coating of which is so thin as to be of little permanent value. It is a recognized fact that steel rusts more readily than iron. In no case should the heads of the nails be driven into the shingles, for this weakens the wood. Experience shows that in buying shingle nails first cost economy usually means long run extravagance and often danger. Further specifications are concerned with proper rafters, roof boards, shingle preparation, staining, joints and laying. When the importance of these matters is appreciated it is easy to realize why some roofs have not been successful and consequently why the owners have sought to discredit wooden shingles.

A recent movement undertaken by the Shingle Branch of the West Coast Lumbermen's Association is a step forward in helping the home builder to compare the cost of wood shingles with substitutes. An agreement has been reached by the members of this association whereby red cedar shingles are to be put up in a new

form of bundle, each bundle to be stamped with the area of roof which the shingles will cover. On the basis of a five inch exposure to the weather one bundle will cover twenty-five square feet of roof, or four bundles to the Square. It is easy to figure therefore that with a four inch exposure it will take five bundles to the Square. Five of these bundles are to have the same number of lineal inches as the old one thousand shingles unit. The association has also gone strongly on record against the manufacture and use of the thinner shingles requiring six butts to make two inches.

With the defects of construction overcome the final decision rests with the home builder. It is up to him to judge whether the beauty, permanence, economy and safety of a wood shingle roof do not make it superior to any other form of roofing within the amount he has to expend; and every man who thus acknowledges the permanent place of wood in home construction will become an enthusiastic recruit to the cause of forestry, through which means alone his own choice of roofing may be made continuously available for the home builders of the future.

THE OLDEST FRAME BUILDING IN AMERICA

BY WILLIAM C. POOLE

HOW long will wood last? How can it be protected from decay? What wood is best to use? These are only a few of the many questions confronting builders of today.

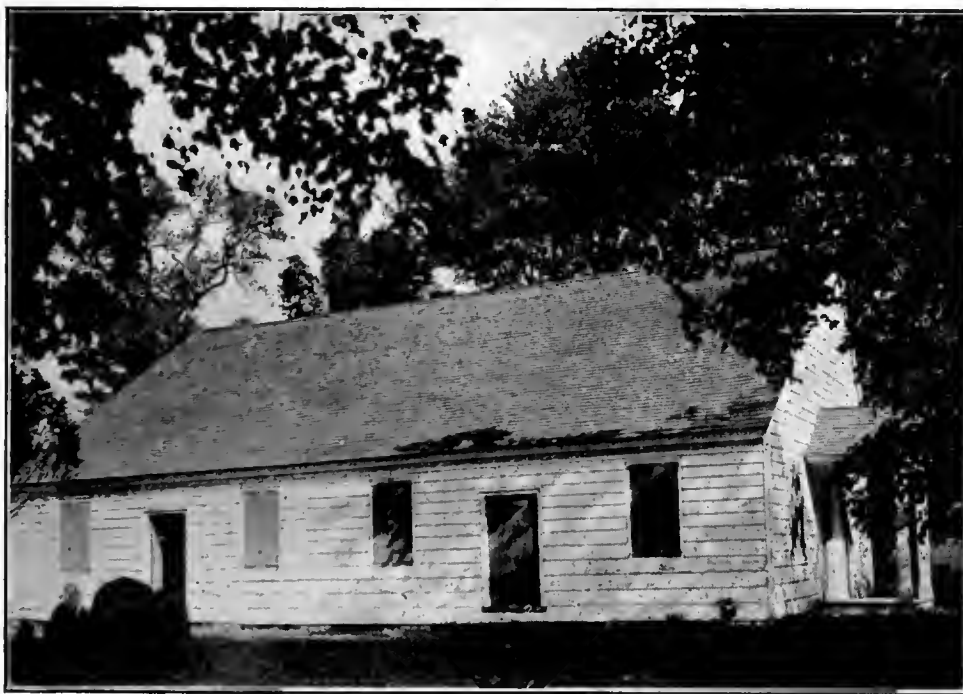
America is new as compared with other lands. The difficulty in cutting and sawing timber in early Colonial days, and the custom of using brick in England led many Colonists to build with brick and stone, so that comparatively few of the early buildings were built of wood.

The old Quaker Meeting House, in Easton, Maryland, is among the oldest, if not the oldest, frame building standing in the United States—just where it was built and as it was built without any change, ad-

ditions or subtractions, and with a perfect authentic record without a break since it was built, between 1682-4. An occasional replacing of the shingles on the roof, and replacing of some of the weather-boarding, is all the repairs it has had. Its frame, inside wood work, and some of the weather-boarding are the same as when built about the same time

time that William Penn, who visited the building, was trading with the Indians and laying out Philadelphia. The white population of the entire country then was not half as many as now live in one of its third-class cities.

The old contract for the building reads: "To agree with ye carpenters for ye building of ye said house 60 foote long and 44 foote wide, and to be strong, sub-



THE OLD FRAME MEETING HOUSE

This quaint old frame meeting house at Easton, Maryland, claims distinction as one of the oldest buildings in the United States, as it was erected in 1683. It is interesting to note that this was the first place of worship attended by Mrs. A. Mitchell Palmer, wife of the ex-Attorney General, whose parents live on the same Maryland farm where her ancestors lived when they helped to build this meeting house.

stantial framed work, with good white oak sills and small joyst, and ye upper floors to be laid with plank and ye roof to be double rafted, and good principal rafters every ten foote, and to be double studded below, and to be well braced, and windows convenient, and shutters, and good large stairs into ye chambers, which chambers are to be forty foote square at each end of ye house and twenty foote between them, and for other conveniences to be left to direction of ye aforesaid friends."

Any builder will wonder how these good folks could build two rooms forty foot square with twenty feet between them in a building sixty feet long. But the contract is clear and the building is open for inspection to see it.

The only preservative used on the wood has been old fashioned whitewash on the outside. Seven of the original plank seats and the wood work inside have had no paint whatever. White oak, white pine, cypress and Southern pine from the Maryland forests of those days were the woods used. They seem in as good condition as when first used, except the roof shingles and some of the weather-boarding which have been occasionally replaced.

If there is an older building of wood in the United

States—standing where it was built without any additions or subtractions, or changes, and with an unbroken authentic record, year by year of its entire history for twenty-four decades—I have failed to find it. Others like Paul Revere's House in Boston are restored and like the Old Ship Church at Hingham, Massachusetts, have had additions or alterations, though some of the original lumber still remains.

Certainly this plain building, in which have worshipped many of the leading people of Maryland for nearly 240 years from the days of Lord Baltimore and William Penn, down to the present time, situated on a beautiful slope in a quiet restful grove of old trees is worth the time and trouble of a visit. Although the congregation which owns it is one of the wealthiest in Maryland, they still maintain the beautiful customs of their faith—simplicity, sobriety, industry, sincerity, kindness, hospitality, and are as their forefathers who worshipped here before them, leaders in the county and State. No price could purchase or change this historic place of worship of their fathers. It remains a beautiful remnant of the Colonial days of nearly two and a half centuries ago.

REJUVENATING PECAN TREES

BY O. B. STRAYER

I RECENTLY ran across an item that I thought would be of interest to pecan and orange growers. It deals with a method in fruit and nut growing that is practically unknown to most growers.

Mrs. T. A. Banning, Robertsedale, Alabama, has conducted a pecan and satsuma orange grove for a number of years. A few years ago she became very much alarmed because the pecan trees especially began showing signs of disease. The nuts dropped off before maturing and the trees presented a general sickly appearance. She was advised that the difficulty was due to hard soil, which prevented the roots from making normal new growth into fresh feeding ground, and also prevented the free circulation of moisture in the soil. This was about the time that dynamite first began to be advocated for remedying that kind of soil condition.

Mrs. Banning decided to try it. The plan adopted was to put down a bore hole about 3 to 4 feet deep, depending on the size of the tree, and located from 3 to 5 feet

out from the trunk. Into the hole is tamped a smooth charge of low-grade dynamite. This charge ranges from one-quarter to one-half pound. The charge is fired with an ordinary cap and fuse. The next year a similar shot is set off on the opposite side of the tree. If the tree is large the shots are sometimes put down in triangular form, spaced about an equal distance apart on three sides of the tree.

Mrs. Banning says that her trees responded splendidly to this treatment. Later on, when setting out 2000 pecan trees and 500 satsuma oranges, they were planted in blasted holes in the first place. She reasoned that if the blasting helped the old trees it would give the young ones a better start and insure faster growth. She stated that this reasoning had been proven correct by the progress of the trees, because all of them set by that method did exceptionally well from the beginning.

The blasting costs very little, as the use of dynamite saves a large part of the laborer's time that would be required to dig a tree hole of proper size.

BOYS' REFORESTATION CLUBS IN LOUISIANA

WHAT is believed to be an entirely new idea in forestry, or more properly speaking in forestry education, has just been announced by the Louisiana Department of Conservation through Commissioner Alexander. This idea is the formation throughout the State of what will be known as Boys' Reforestation Clubs. These clubs will be along the same general lines as Boys' Pig Clubs, Corn Clubs, etc. The Boys' Club Agent of the State, Mr. W. C. Abbott, is co-operating with the Conservation Department, so that boys joining local clubs anywhere in the State can choose a refore-

estation project as a basis for membership in the club.

The object of the reforestation clubs was described at a recent meeting of the Forestry Advisory Board of the department by Colonel W. H. Sullivan, the originator of the plan. Colonel Sullivan is general manager of the Great Southern Lumber Company and of the Bogalusa Paper Company, at Bogalusa, Louisiana, and was recently appointed to the forestry board by Governor Parker because of the great interest which his own companies are taking in reforestation. The other members of the board as recently appointed by the Governor are M. L.

Alexander, Commissioner of Conservation, ex-officio chairman; Professor J. G. Lee, of the State University at Baton Rouge, also an ex-officio member; Henry E. Hardtner, of the Urania Lumber Company, Urania, and Colonel S. T. Woodring, of the Calcasieu Longleaf Lumber Company, Lake Charles. In addition to his interest in the lumber industry, Colonel Woodring owns a good sized farm in Calcasieu Parish, and is identified with the agricultural interests of that section of the State.

In order to be a member of a reforestation club, Colonel Sullivan proposed that a boy should either plant an area with trees, or take scientific care of a young grove already established by natural reforestation. The object of the boys' clubs will be to interest the rising generation in tree growing and bring it to an appreciation of timber as a crop. The rules of the 1921 competition, as worked out by the Forestry Division of the Department of Conservation, contemplate dividing the contestants into several classes, based on the kind of work done—whether planting, or thinning and otherwise caring for trees already established—and the age of the stand cared for. That is, there will be one class composed entirely of boys who are planting up an acre of ground with species of pine; another of boys who are planting up a like area with hardwoods or cypress; another of boys who are taking care of three acres of seedling pines; another of boys caring for three acres of saplings, etc. There is no limit on the size of the tracts which the boys may undertake to plant or to care for, so that in all probability the boys will do more than the minimum required by the rules of the contest. The prizes, however, will be awarded each year on the basis of the best plant-

ed acre and of the three acres which receive the best care.

Five hundred dollars in prizes for the 1921 competition has been donated by Colonel Sullivan in the name of the Great Southern Lumber Company, and the competition for these prizes will be state-wide. The judging will be done by the State forestry officials and will take into consideration such things as the completeness of the stands, the kinds of trees used, the volume and quality of the standing product, the general vigor of the trees, and similar considerations. One of the rules of the contest will require that the boy's parent or guardian, who provides the boy with the necessary land, will enter into a reforestation contract with the State covering the area in question. Under the Louisiana reforestation contract law taxes are kept at the same level throughout the period of the contract, which may be from 15 to 40 years, at the discretion of the Department, and governed by the desire of the owners. By this rule, the department expects to insure the permanency of the reforestation work, although there is nothing iron-clad about the reforestation contracts, which may be broken at any time by an owner who is willing to pay up the back taxes with interest. As soon as a qualified man can be found the State Department of Conservation proposes to put a farm forestry expert into the field who, among his other duties, will supervise and encourage the work of the boys in the reforestation clubs. The State will aid

also by donating a small amount of tree seed, and later probably tree seedlings, to those who wish them. Inquiries are already coming in from the country parishes, and the State Forestry officials expect great results from the clubs.



SILENT SENTINELS

BY HAZEL V. PARIS

THE poplars on Thorn Mountain in Jackson, New Hampshire, make no claim to great antiquity nor to historic associations. I don't remember that Starr King mentions them in his history of the White Mountains nor did Hawthorne weave a fanciful legend about them. They are of too recent growth to have become part of the mountain tradition. Our ideas of time are always comparative. Twenty years may not seem to you long to have known two trees; but to me who knew the poplars first as a child, those two decades have been nearly a life time. Few of my friendships are of longer standing.

If I were a poet, I should weave a song of storms and gales, light summer showers and singing birds, fleckless blue skies and carpets of spring flowers, and

mountains—mountains and two poplars—even though Joyce Kilmer does say:

“Poems are made by fools like me,

Only God can make a tree.” I'm not a poet though, so all I have been able to do was to love and photograph.

With things stately and majestic, even as the years of our friendship multiply,

our attitude never becomes familiar. The spirit of reverence is too deeply instilled within us. So with the poplars. As time after time I pass between them, on up the mountain, and look back at them, I am strangely silent. I often wonder how many can answer the password they ask through the years. And what is the password of these “Silent Sentinels?” I have never yet LEARNED it, though its meaning is always clearly felt.

ACTIVITIES OF THE AMERICAN FORESTRY ASSOCIATION FOR MARCH, 1921

Urged Governor William D. Stephens and legislature of California to pass bill appropriating \$300,000 to save the Redwoods along the State Highway in Northern California.

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Protested successfully against contemplated action by the legislature of Texas in combining the Forestry and Agricultural Departments under the Commission of Agriculture.

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Secured the endorsement of the Council of Jewish Women (Pittsburgh Section) for American Forestry magazine, the Council passing resolutions urging its adoption in the public schools.

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Completed organization of women in Tennessee as State and County Committees to co-operate with the American Forestry Association in securing State forestry legislation and forestry development.

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Aided Newark, New Jersey, Museum Association in securing information about trees and forests for use of children of that State.

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Urged the saving of the Sand Dunes of Indiana by individual donations and State appropriations amounting to two million dollars.

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Received acknowledgments from Great Britain, France, and Belgium, of receipt by each of four million Douglas fir seed sent by the American Forestry Association to aid in reforesting war devastated areas.

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Urged the Maine legislature to appropriate funds for the establishment of Mount Katahdin State Park.

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Published numerous articles in favor of the Snell forestry bill in newspapers with a combined circulation of 27,000,000.

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The Association asked every newspaper editor in the United States to protest to the Senate against the House cutting the forest fire co-operation item of the Agricultural Bill to \$125,000. The Senate thereupon increased it to \$625,000. The Association at once asked the editors to request the House to agree to the Senate's figures. The editor's responded. The House compromised, and the bill as finally passed carried an appropriation of \$400,000, a gratifying increase of \$275,000 over last year's appropriation.

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The Newspaper Enterprise Association was sent on request plans for a tree study campaign for its chain of newspapers which reach six million readers.

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The Delineator Magazine was sent on a request a feature story with pictures on the Hall of Fame for trees with a history of the movement.

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The Dayton News has started in co-operation with the Association the national tree voting and tree study campaign in every school in Montgomery County, Ohio.

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The Nashville, Tennessee, Art Association has started a campaign for tree study in every school in Tennessee and is putting the plan on with the Association's national tree voting plan.

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The Diamond Match Company used a page feature from the Association in its Diamond Bulletin.

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The American Association of Nurserymen promoted tree study in schools throughout the country with the Association's data.

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The Chamber of Commerce of Metuchen, New Jersey, put on a bird house building contest in co-operation with the Association.

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The Methodist Sunday Schools of Mount Morris, New York, received from the Association plans for an educational campaign in bird and tree values.

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The Associated Press carried five news stories from the educational section of the Association in a little less than six weeks. These news articles varied in length from one-half to two-thirds of a column, and were printed by newspapers having 22,000,000 readers.

FOREST RECREATION DEPARTMENT

ARTHUR H. CARHART, EDITOR

SHOWING HENRY SOME COUNTRY

BY K. D. SWAN

FOR two days our little party of three had waited at the Seeley Lake Ranger Station, watching for the weather to clear. The August rain, coming near the end of the month, was very welcome, for it definitely ended the drought of summer, and put our minds to rest on the question of forest fires.

Our trip had been undertaken to "show Henry the country," and was planned to lead us by the Clearwater Lakes, over the divide to the head of the Swan River, and thence across the Gordon Pass and down Gordon Creek to the South Fork of the Flathead River. Whether or not we should visit Big Salmon Lake was a matter to be decided later; for as a certain amount of leeway of itinerary lends zest to a trip, we were willing to leave much to decide as occasion demanded. The skies cleared on the

evening of the second day, and we were on the trail next morning, long before the whiteness of the early frost had disappeared from the ground. The ranger led the way, followed by two horses, whose amply rounded packs

bespoke many luxuries in the way of grub and bedding. Henry and I brought up the rear. Henry had never ridden a horse. His was to be a delightful experience. I did not envy him then; nor do I now.



HOLLAND LAKE

We reached the west shore at sunset, where from the shadowy woods, we looked across the mirror-like surface of the water to the rugged peaks. A light breeze almost imperceptibly touched the surface of the lake, blurring for an instant the reflected picture and then died out.

It was my duty to photograph the scenes along the way, and to prepare for consumption what the ranger was pleased to note as the "garbage." I admit that mine was the best job.

Our way led along the timbered shores of the Clearwater Lakes—Inez, Alva, and Rainy—by Summit Lake, near the top of the divide; and down gentle slopes,

One of the direct aims of this department of Forest Recreation is to get YOU out into your own forest playgrounds. For after you have tasted of the joy of camping in these great stretches of country you will often answer the call which will lead you into such places as this story pictures.

Do you envy Henry & Co.? Would you not have given a lot to be with them that day at Big Salmon? Cannot your mind's eye picture the camp on Gordon Creek, or the camp at Big Salmon, or the fight Henry had with the big rainbow he landed?

Well, the Flathead National Forest, all the great National Forests, are yours. You are not making the most of your opportunities if you merely wish you might take this trip to Big Salmon or any other beauty spot in a forest. A great lot of the initiative in this is in your hands. The forests will welcome you if you are a good camper. They are there to be used and yours to visit as long as you like or where you will.

So why envy Henry? He only took the opportunity which is also yours. How about it? Will you spend your next vacation in such a wilderness land as the Flathead Forest?

If you do this delightful tale of a trip in the wilderness has carried you the message I would have it bring.—Arthur H. Carhart, Editor, Recreation Department.

covered with a magnificent growth of yellow pine, to the Gordon Ranch—a little kingdom of fields and forest hidden away at the head of the Swan River. Those who have been in the Montana Hills need no introduc-

tion to that clear, brisk weather so apt to follow a rain in the latter part of August. There is no blending of mellow tints in an atmosphere devoid of haze. Each detail of the landscape holds its definition in the vivid mosaic of the whole, and as the day advances, the blue of the sky seems to become bluer above an earth of scintillating color.

Haying was in full swing at the Gordon Ranch, and as supper would be deferred until dark, we had ample time for a visit to Holland Lake. We reached the west shore at sunset, where from the shadowy woods, we looked across the mirror-like surface of the water to the rugged peaks beyond on which the last rays of sunlight were fast dying out. Their rough, scarred sides, looking very near in the clear light, were reflected perfectly by the unruffled water. A waterfall could be seen in a ravine between the peaks. A light breeze brought us the faintest murmur from this fall, almost imperceptibly touched the surface of the lake, blurring for an instant the reflected picture, and then died out. The fading light at last warned us to return to the ranch, and reluctantly we mounted and rode quietly back through the twilight woods. As we reached the open fields the western sky was rapidly flushing to rose and orange, against which the sharp blue silhouettes of the Missions rose, their outlines as sharp as if trimmed by shears from sheet metal.

Ours was untroubled sleep that night, rolled in the comfortable beds of the ranch bunk house. Reluctantly, we answered the call to a four o'clock breakfast, although we did full justice to a repast prepared for the hearty appetites of the hay hands. Free-hearted hospitality was here, augmented by an abundance of grub, and good cooking.

Morning shadows still lingered on Holland Lake as we followed our trail around the north shore, advancing towards the mountains, which, seen across the lake, had so impressed us the



Upper

HIGH COUNTRY OF THE FLATHEAD FOREST

Persuading ourselves that there would be time to spare, we climbed to this point where the grandeur of the view tempted us to loiter well into the afternoon.

Middle

BIG PRAIRIE

At last South Fork was crossed and the trail emerged on Big Prairie, a broad plain covered with grass and scattering groves of pines.

Lower

BIG SALMON LAKE AND LOCOMOTIVE ROCK

A strangely sculptured cliff, known as Locomotive Rock, juts high above the ridge on the south keeping lonely vigil over the lake.

preceding evening. The lake was soon left, and the trail started in earnest the climb to Gordon Pass, twisting and zigzagging up the steep mountain side. As each switchback was turned, wider and wider views unfolded to the westward—the snow-covered Missions, dominated by McDonald Peak whose upper slopes were dazzling white in the morning sun; while further to the right was the broad open valley of the Swan River, down which could be seen miles of heavily timbered country. We made a brief stop at a wooden tripod, marking a fire lookout station occupied during the summer. Henry, even more than the panting horses, welcomed these stops; indeed, as the day advanced, he developed a wonderful aptitude for enjoying the view—out of the saddle.

These rests were brief, however. We left the zigzags behind, and the trail hugged a steep side slope, now crossing great patches of slide rock where the horses found a precarious footing, now twisting around some giant fir, whose massive, distorted growth tells of years of struggling existence against the rigors of this exposed position. Up and up we climbed until a sudden turn and a last steep pitch brought us at last to the natural gateway at the top of the divide. This gateway is known as the "Hole in the Wall." It is more of a steep-sided cut than a hole, and makes an easy natural pathway through the rocky knife edge of the divide.

A great bank of dirty snow, solidified almost to ice, filled this cut from end to end. Joyfully, we unpacked on this snowbank, and finding a couple of cans of fruit, hastily buried them in the snow, digging them out later, cold as ice, to make a dessert for our meal.

North of this point, and easily reached by a half-hour scramble up the rocks, is one of the best view points on the Swan River divide. Persuading ourselves that there would be time to spare, we climbed to this point, where the

grandeur of the view tempted us to loiter well into the afternoon. To the east, a seemingly endless array of mountain stretches to the Continental Divide; to the south is the rugged gulf at the head of Gordon Creek



A LAKE NEAR THE TRAIL

Upper

What more enticing spot could be found for weary traveler on forest trail than the meadow near this gem-like lake. The wild beauty of these water mirrors call to all lovers of outdoors in a language more subtle than written or spoken word.

BIG SALMON COUNTRY

Middle

A land of giant forests, of timber clad slopes, of lakes of unusual charm and streams where lurk fighting rainbow trout is yours in the vacation lands of the Flathead National Forest.

BREAKING CAMP ON GORDON PASS

Lower

The little park and meadow where Henry & Co. watched the display of the Aurora, told tales beside the blazing fire and where after an early morning breakfast packs were made up and the trip down Gordon commenced.

beyond which rises Crescent Mountain and its allied peaks; while from south to north the same view that cheered our way during the morning completes the panorama—the Mission Mountains and the Swan Valley. Holland and Elbow Lakes peep out from the forest cover below, between which the fields of the Gordon Ranch are plainly seen.

On this sightly point, we indulged in the diversion of "looking at things upside down." This, as most know, is accomplished by leaning over until one looks at things upside down from between the knees. The ordinary landscape takes on a vividness of hue quite imperceptible when viewed in the ordinary way. It also made Henry dizzy.

But join our little caravan again as it slowly picked its way, slipping and sliding, down the steep slope below the Gateway. The steepest part over, we passed through several tiny Alpine meadows in which brilliant flowers were blooming. In drier spots were beds of the Mountain Heather, the delicate pink blossoms rising from clumps of deep green foliage. Here the tree growth has a better chance, the Alpine firs attaining the spire-like form which is so graceful in its symmetry.

Two small lakes were passed, the first rather desolate, with forbidding granite shores and leaden-hued water; the second below it, in a steep-sided timbered amphitheatre. Unlike the upper, the lower lake had water of a greenish hue, rippling and sparkling in the afternoon sun as we caught glimpses of it through the trees on our descent to its margin.

Camp was made in a tiny meadow at the head of this lake. Although the sunlight still lingered on this meadow, the chill of evening was in the air. Gradually the shadows of the hills we had crossed crept over our camp, and looking up, we saw that the sun had gone. We drew in closer to the supper fire, by the welcome blaze of which we appeased appetites sharpened by the cold. As the night was clear, the tent had not been pitched, our beds being spread under the open sky. The tent was drawn over all as extra bedding. The dishes washed, we heaped the fire with dry wood and basked in the warmth, telling stories until too drowsy to stay awake longer. Then, leaving the fire to die as it might, we crawled under the

frosty covers. The flickering light from the fire gradually disappeared, and as our eyes became accustomed to the darkness, we saw great wavy streamers of the Aurora extending above the northern mountain wall almost to the zenith. They added a wierd interest to the scene, their strange, moving fingers of light one moment glowing high into the heavens, and the next instant receding almost to the horizon. A slight breeze, cold as a breath from winter, drifted across the meadow, touching our faces with an icy kiss. It sighed a moment drearily among the trees on the lake shore, and then all was silent but for the occasional note from the horse bell. I remember hearing Henry remark how lonesome it seemed, and then I fell asleep.

An early breakfast in the little meadow, before the sun had risen to dispel the hoary aspect of the mountain world, preceded our long day's trip down Gordon Creek to Big Prairie.

It was another day of brilliant sunshine, warming to summer heat towards noon, and making us wonder if our shivery night in the meadow had not been a delusion.

The massive hills on either side of Gordon Creek are buttressed by precipitous bluffs of limestone whose whiteness, colored in



FIRE LOOKOUT STATION, FLATHEAD NATIONAL FOREST

We made a brief stop at a wooden tripod marking a fire lookout station occupied during the summer. Henry, even more than the panting horses, welcomed these stops.

places by streaks of mineral, and rising above the green forest, forms a dazzling contrast with the blue of a clear summer sky. As the day advanced, masses of billowing cumulus clouds, whiter by far than any cliff and yet bearing delicate shadow tones away from the sun, rose above the valley to the south, casting fleeting patches of shade which would surround us for an instant and then hurry away to leave us again in blinding sunshine.

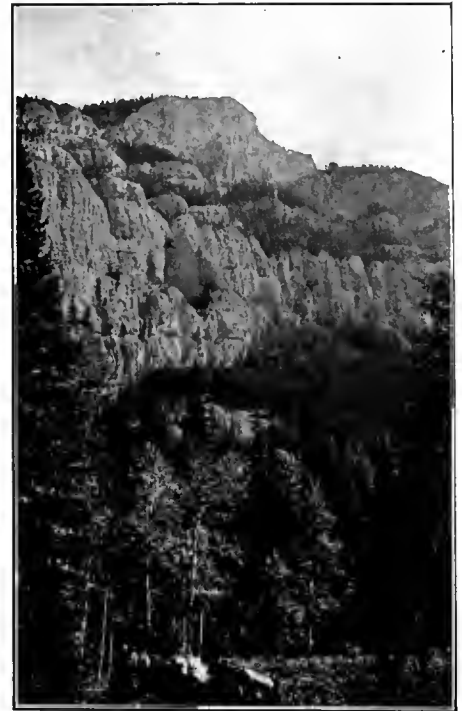
At last the South Fork was crossed, and the trail emerged on Big Prairie, a broad plain covered with grass and scattering groves of pines, through which the river finds its way, now curving in graceful meander, now foaming over stretches of noisy riffle. In every direction a mountain arrests the eye. One charm of the Prairie lies in the individuality of these surrounding hills. Each has characteristics of form unlike the others, and in majestic array, they surround the valley not near enough to oppress by their presence, but standing apart like friendly sentinels keeping watch over this sheltered domain. Chief of these is Gordon Peak, rising with

shapely bulk to the south, flanked on the east by Flatiron Mountain and on the west by the mountains which we had passed in our journey down Gordon Creek.

The trail from the point where the river is forded leads down the prairie for a mile or so, finally bringing one to the ranger station, a building constructed of logs and lumber which was whip-sawed on the spot. Sounds and smells from within indicated that supper was in progress. With the help of the ranger, our horses were quickly unpacked and turned out to graze, and we were soon installed at the table doing full justice to a substantial supper, the chief item of which consisted of fried trout, done to a brown with meal and bacon, and heaped in a milkpan of generous proportions.

In contrast to the camp of the night before, this evening was spent in the cozy kitchen of the ranger station, listening to stories told by the rangers and two of the fire guards who were returning from their summer's vigil on Gordon Mountain. As is usual in such company and under such conditions, the conversation gained in color as it

the Lake States. We of this day and age can hardly realize the tremendous scale on which these logging operations were carried on at that time by the redoubtable Paul. The enormous griddle necessary to fry hot cakes for one of his smallest camps was greased by two stout lads who slid over the surface with hams tied to their feet. Henry, at this point in the tale suggested that we go to bed, which we did. But next day, he made several surreptitious inquiries as to the further



GORDON PASS TRAIL

Each turn in the trail presents unusual pictures of wilderness beauty. Rugged cliffs, carved by water and wind and crowned by green timber make a pleasing outlook framed by nearby trees.

achievements of Paul, and by the end of the trip, he had gained a creditable familiarity with the history of this great man, and was able to recite without a smile many of the events in his remarkable career.

Twelve miles below Big Prairie, hidden in the hills west of the South Fork, lies Big Salmon Lake. Being far off the main lines of travel, comparatively few people see this beautiful sheet of water. Unspoiled by men or forest fire, it lies among the surrounding hills in wild loneliness, to be sought only by the more adventurous traveler or sportsman. By unanimous agreement our party decided to visit this secluded lake, and to idle for a day or two in its vicinity before starting on the homeward journey.

Tired by the preceding days of strenuous travel, we loitered along the trail, which below the ranger station is much better than any we had lately traversed. Little exertion was needed on our part, and we rested easily in the saddle, jogging along to the monotonous sound of the horse bell. The day grew warm as we progressed, and soon most of our extra clothing was tied behind the saddle. Whenever we stopped, numbers of flies made



NEIGHBORS AT BIG SALMON

Visitors appeared in camp that night and joined our fireside party. They shyly admitted being on their honeymoon, a fact which we had already suspected before they were brave enough to confess.

progressed and became imbued with that delicate imaginative quality which, while never deviating far from the strict truth, yet leads the listeners into the realm of the romantic and

fantastic. The culminating gem of the evening was a tale told for the edification of Henry, and the authenticity of which was solemnly vouched for by at least two members present. It dealt with certain logging operations carried on by an individual, Paul Bunyan, lineal descendent of the great moralist. Paul, it seems, had an eye to timber, and managed extensive projects in the white pine woods of



ON GORDON CREEK, FLATHEAD NATIONAL FOREST

Glacier, peak, timber and cliff tell their own story of rugged alpine scenery and many a man besides Henry, the man of this story who sought the wilderness in company with his friends, would welcome the need of roughing it a bit to reach such mountain fastnesses.

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life miserable for the horses. At last the South Fork was forded at a point near the mouth of Salmon Creek, the outlet of the lake, which lies about three miles from the main river at this point. A camp spot was selected on a bluff overlooking the South Fork.

A more ideal camp would be hard to find. The top of the bluff was level, carpeted with a growth of clean, soft grass and shaded by an open growth of pine. Plenty of wood was within easy reach, and it was only a few steps down to a pebbly beach, from which by leaning out ever so slightly, one could dip up a kettleful of the clear, rushing stream. Not far below the camp a giant granite boulder caught part of the swift current, turned it aside in a seething swirl of foam, and left it to regain its poise

in a deep pool of pelucid green water, close under the bank. Henry had as yet evidenced no desire to fish, but one look into this pool sent his jaded legs scurrying back to camp for rod and line. Here we left him, agreeing to call him in time for lunch.

Preparations for dinner were somewhat elaborate. Unlike the hurried noon lunches of the preceding days, this was to be a sumptuous and leisurely meal. The packs were rifled for treasured delicacies, which had been discreetly hidden until now. Preparations lasted until well into the afternoon, each of us taking satisfaction in doing things with a certain preciseness omitted when lack of time or fatigue causes one to overlook many little niceties of culinary technique.

At last a shot was fired as a signal for Henry to bring his catch. Five minutes later he appeared, bringing a string of fish that would have done credit to a far more experienced sportsman, and which, I think, lent color in Henry's mind to the fish stories which had formed a considerable part of the preceding evening's entertainment. With a beaming smile he held up his fish, weighing in the neighborhood of two and a half pounds. He insisted on dressing and cooking it himself—the first and only attempt at cooking that he made on the trip. That it was highly successful, we all admitted.

We finished the meal and lay comfortably stretched on the ground, happily oblivious of the array of dirty dishes scattered about. The talk rambled idly from one subject to another, the general lassitude hardly inspiring much conversational effort. Henry thought he "might try his luck again before dark," which brought forth some remark about washing dishes. At this propitious time visitors appeared in camp. A man and his wife were camping no great distance away and had been notified of our presence by the shot fired before dinner.

I suspect they had been spying on our festivities, an innocent enough pleasure to which they were welcome. They had been in this secluded locality for ten days, had seen no one but two fire guards who were camping on the lake; and last but not least, had run short of many essential articles of food, being at present reduced to the necessity of living largely from fish, lard and flour. They shyly admitted being on their honeymoon, a fact which we had already suspected. The remains of our sumptuous meal excited their wonder, the label of each empty can being examined with surprise, and possibly a touch of secret derision. In an effort at hospitality, we unearthed a can of fruit from our dwindling store, which our visitors admitted was a welcome treat.

The talk lasted far into the evening, the dishes still happily forgotten. Plans were made for a trip on the morrow to the top of one of the mountains near by under the guidance of our new friends.

At last a spot light was improvised with the empty fruit can and a piece of candle, and after gracious offers to wash the dishes (which we as graciously refused), they lit their tiny light with a splinter from the fire, and left to pick out the shadowy trail to their tent. A shot fired a few minutes later told us that they had reached home. Then we washed the dishes.

The hot summer day was well advanced, when, after a late breakfast, we started on our way to the top of the ridge north of the lake. The first part of the ascent was in heavy timber, but this was soon left behind, and we entered a straggling growth of fir with many open spots from which were had easterly vistas of the mountains lying along the Continental Divide. In great pro-

cession they march along, massively piled against the sky with here and there a cliff glancing in the sun, and vying in whiteness with patches of snow which have persistently defied the heat of summer. Impressive in bulk and fantastic in shape, they certainly give fitting grandeur to the backbone of the continent.

The crest of the ridge was reached at last, and followed over minor dips and rises, brought us to a point on the west end, rocky and precipitous, from which we gained our first view of Big Salmon. Possibly three miles long, it lies in a broad "U"-shaped valley, surrounded by timbered slopes unscarred by forest fires. A strangely sculptured cliff, known as Locomotive Rock, juts high above the ridge on the south, keeping, as it were, lonely vigil over the lake. To the west, at the head of the valley, rise mountains on whose sides hang remnants of the glaciers which in some remote time gouged



THIRTY MINUTES OF ANGLING

A shot was fired as a signal for Henry to bring in his catch. Five minutes later he appeared bringing a string of fish that would have done credit to a far more experienced sportsman.

out the great trough now occupied by lake and stream.

Pictures taken, and lunch eaten, a rough scramble down the rocks brought us again into shady woods, a grateful change from the hot afternoon sunshine. We entered a small draw, which soon deepened and was bridged in places by windfalls, causing us to either bend low and crawl under, or with much exertion to hoist ourselves over. Here, where the moisture gathers and is conserved, grow ferns, lichens, and delicate mosses, with here and there the Solmon's Seal, its row of conspicuous red berries drooping from the nodding stem, and the leaves already yellow from the early frosts. We found cool water oozing out of the damp ground in a tiny pool; trickling away and disappearing, only to reappear in more volume farther down the draw. After scooping out a basin with our hands, we sat and waited for it to clear; resting long in the spot after our thirst was quenched.

It was late afternoon when we reached the lake, for the beauty of these woods invites one to take a leisurely pace, forgetting that anything is more important than to enjoy their loveliness. They are, however, but a fitting introduction to the wonder of the scene which meets the eye as one emerges from their shadowy tranquility to the lake shore. Beautiful as seen from above, embosomed as a jewel in its setting of timber clad slopes, the lake is yet more beautiful from the shoreline, flooded by the golden sunshine of late afternoon, the light glancing and darting from myriads of little waves which

come dancing on to break with a gentle lap, lap, against the pebbly shore. The air, sky—everything, seemed saturated with the splendor of light. But across the lake the blue shadows began to gather under Locomotive Rock, and delicate pencils of shade were cast by the taller trees on the timbered slopes, above the further shore; all being softened by a veil of golden haze.

We lingered in this enchanted spot until sunset, and then, leaving the lake to falling darkness, hurried back to camp. Each of us felt that the climax was passed and that nothing more could add much to the success of the trip. Certainly nothing can spoil our memories of it. Two hours later, seated about the fire, musing more than talking, Henry expressed the secret feeling of all in one sentence: "Let's hit the home trail tomorrow!"

Thus our trip in the Flathead Forest drew to a close. Our journey out was uneventful, leading by a series of forced marches (for when one starts homeward, his zeal to go is bounded only by fatigue), over the Monture trail to Ovando. Two more camps were made along the way, each occupying its niche in the history of the trip. On the last evening we reviewed it all with no little satisfaction. For the time being our "wanderlust" was satisfied, but we nevertheless speculated on a return some day to Big Salmon Lake where, if anywhere in Uncle Sam's forest domain, one may find God's unmarred wilderness.

[NOTE—Supervisor's Headquarters, Flathead National Forest, are at Kalispell, Montana.]

GEMS OF RUBY MOUNTAIN

BY AUGUST ROHWER

FOREST RANGER, HUMBOLDT NATIONAL FOREST

AT the head of a small valley where the elevation is near 9,000 feet and where the Ruby Mountains tower over the stretches of the Humboldt National Forest, are Robison and Soldier Lakes. Like many beautiful recreation grounds in National Forests, this country has no National renown. But for one who wishes to get away from the mad rush of modern life in the city or town the place is ideal. Although only a half mile apart at their sources in the lakes, the streams draining these bodies of water travel far apart only to join again after traveling on different sides of a mountain range for miles. Robison Creek originates in Robison Lake, flows rather hurriedly for a half mile to the edge of the mountain and then plunges madly down a thousand feet.

This is its entrance into Ruby Valley where it joins the Franklin River.

Soldier Lake, a half mile north of Robison Lake drains into Soldier Creek which flows west past Old

Fort Halleck and later joins the Humboldt River. Waters from the same cloud passing over these lakes starting on different courses are widely separated because of the interesting

Often the jewels of outdoor scenery are just the other side of a wall you pass. Or a hedge may rob you of a view magnificent in robes of seasonal colorings. Or you may miss some scene of beauty because your path leads straight ahead and you will not hesitate to explore the byway. Ranger Rohwer here tells of an interesting vacation country in all its pristine wildness which is just a few miles from two great railways and a national auto road. What an opportunity this offers to step aside from over-worn travel lines for even a few brief days and visit this little known but extremely interesting bit of forest wilderness.—Arthur H. Carhart, Editor, Recreation Department.

topographic features here. Other lakes are found here. Deep Lake immediately draws the attention of a traveler. The east shore is a large dam covered with pine and aspen trees. This dam has all the appearances of being artificially constructed. Old settlers, who always cherish tales of the past, say the soldiers at Fort Halleck once tried to sound the depths of this curiously formed

lake but found no bottom.

Camping places are many near these lakes. Meadows dotted with pine and aspen are near by while small springs are plentiful. Robison Lake is well stocked with trout and offers the visitor to the region an ideal fishing grounds.

There is here opportunity for interesting mountain climbing. Half a mile up a gradual slope from the lakes takes one to the top of the mountain on the east side of the little saddle in which the lakes are cradled. From this point a panorama of Ruby Valley and its mountains delights the eye. The Ruby Mountains are very steep and rugged at this point.

A climb in the opposite direction takes one over rougher territory and to a higher mountain top. Here one looks out over the tops of the Wasatch Mountains and in the distance can be seen the lofty caps of Pilot and



DEEP LAKE

Deep Lake is curiously formed. On one side is a formation almost like an artificial dam, while the picturesque limber pine and trim aspen border its edges. Old timers of the locality say that although the lake was sounded no bottom was found.

Silver Island peaks. Four hundred feet below this high point are the two cold lakes where originates Cold Creek. The whole outlook is wild and rough. Looking out to the west one can see the Lamoille Valley, Elko and a long stretch of the Humboldt River.

From June fifteenth to the middle of August the climate is generally very delightful for camping. It is usually dry and it is possible to camp here for many days without even putting up a tent as shelter. There are no unpleasant reptile neighbors for the altitude is too great for them. For one seeking an almost ideal place to recreate the area near Soldier, Deep and Robison Lakes holds many attractions.

This country of high mountains, clear skies and lakes of crystalline waters must be reached by a horseback ride of ten miles from Fort Halleck which is twenty-two miles



A CLIMBING CHALLENGE

A climb to the south takes one to a higher mountain top. One looks out over the tops of the Wasatch Mountains and, in the distance, can be seen many still higher peaks.



THE SADDLE

High in the mountains of the Humboldt, in the saddle between two mountain peaks, and where the water hesitates as to which stream it will seek, nestles Robison Lake, while only a half mile away in the same saddle is Soldier Lake.

from the little town of Deeth, or thirty miles from Elko. Bedding, food, tent and all equipment must be carried in to the camp by horse.

There are no movies here, no jazz bands to split wide open the quiet of the night but just a bit of unspoiled wilderness where one can hunt with camera, fish, climb not too rugged mountains or just rest to a full content-

ment amid interesting and restful surroundings. The gems of Ruby Mountains—the lakes, streams, peaks, and canyons found here—are all yours to enjoy if you will but come and camp near the three lakes that nestle in the high valley amid pine dotted meadows.

[NOTE—Forest Supervisor's Headquarters, Humboldt National Forest, are at Elko, Nevada.]

WHY NOT LABEL TREES

BY BLANCHE C. HOWLETT

WASHINGTON, District of Columbia, probably has more varieties of trees, both native and foreign, than any other city in the world. For this reason, I should like to see the trees labeled both with the botanical and with the common names. If this were done, the Capital City of the United States would become a National Arboretum. Could there be an easier way for the people to know nature than to be introduced to her trees?

Some years ago an attempt was made to label the trees. At the time I was reading Lafcadio Hearn and Sir Edwin Arnold's books on Japan. Sir Edwin Arnold in *Japonica* refers to the cryptomeria trees on the road to Nikko as "the most majestic avenue of giant trees to be seen in all the world." I did not know what a "cryptomeria tree" was and asked a Japanese if he could tell me. The Japanese did not know what "cryptomeria" meant; but as soon as I said the avenue of trees leading to the temple at Nikko are cryptomerias, he immediately knew the kind of tree to which I referred and

replied, "A kind of cedar." A Japanese idea of cedar might be quite different from mine. A few days afterwards, while walking through Lafayette Park, I noticed an evergreen tree marked "Cryptomeria Japonica." All the books in the world could not have given me so definite an idea of what a cryptomeria tree is as did that labeled tree in Lafayette Park. I am familiar with the common names of native trees, but there are trees in that ennobled park that are unknown to me. The labels have rusted or fallen. One need not be an artist to appreciate the coloring, especially in winter, of that beautiful bluish-gray beech tree in Lafayette Park, opposite the Belasco Theatre.

Just a few trees in one park have been mentioned, but there are many parks in Washington besides the shade trees on the streets. Iowa Circle is surrounded by horsechestnut tree. The large pyramidal clusters of cream-white flowers dashed with purple and yellow bloom in spring. In the fall the children are not the only ones who pick up

(Continued on page 264)

FOREST GUIDES DEPARTMENT

SOLAN L. PARKES, CHIEF FOREST GUIDE, EDITOR

The Editor recommends that Forest Guide Troops and also Boy Scouts, who are not yet organized as Forest Guides, read this department carefully every month; study the advice and the information it gives, and discuss it so it will be thoroughly understood. If any further information is desired write to the Editor.

FOREST Guides should know what a forest is. They should be able to identify all of the trees not only in the woods, but along the roads and in the streets of towns and cities. They should also know about forest plants and animals, and everything else in relation to the forests.

This is a big order for any boy—but not an impossible one. It will require both study and actual experience in the forest. It will not come quickly, but slowly and surely. There is much to learn.

What a forest is is well and briefly told by Professor J. S. Illick, one of the best known foresters in the country, who says:

“A forest is a complex community of living things. It is more than a mere collection of trees, for associated with the trees are many other plants and animals, all of which live in close relationship with one another.

“There is a right and wrong way for Forest Guides to find out what a forest really is. Many hours may be spent in schoolrooms, libraries, and parlors studying about the forest and its inhabitants. Such a method has some good points, but there is a better way. The right way to become acquainted with the inhabitants of forests consists in getting ready, going out, hiking right into them, and there beginning a first-hand acquaintance with the many and interesting members of which it is made up.

“Do not plan to become acquainted with all the forest inhabitants on the first trip for there are too many of them. Just as it is impossible to become acquainted with all the inhabitants of a city in a single day, so it is beyond the realm of the possible to learn to know all of the many members of the forest on a single hike.

“A good plan for the first hike to the forest is to list or make a census of all the different groups or classes of plants and animals which you may observe, that is, make no special attempt to name the individuals. This may be done by making a table of two columns, the one with the heading Plants and the other Animals, and listing under each all the living things observed. Only two columns are required, for all living things are either plants or animals.”

THE FOREST FIRE SEASON

This is the season of forest fires and the Forest Guides will find much to do in protecting the forests from fire and fighting those which start. The Guides should know how to do both. Professor Illick makes the following suggestions:

1. Do not start a forest fire.
2. Tell all your companions about the damage which forest fires do.
3. Report all forest fires to the nearest forest officer.
4. Learn how to fight forest fires, and take a hand in putting them out.
5. Plant forest trees in vacant corners, waste places, abandoned fields, on barren mountain slopes and other unoccupied forest land.
6. Destroy insects which injure and kill forest trees.
7. Destroy rots, blight, and other fungous foes of the forest.
8. Help clean up the forest by using the dead wood found lying on the forest floor.
9. Cut out only undesirable trees and guard the more valuable ones.

HOW FOREST FIRES START

Someone may have told you that lightning causes many forest fires or that spontaneous combustion may furnish the spark which starts the fires on their mission of destruction. In order that we may get at the very bottom of this important subject, and not be misinformed, let us take advantage of the results of a careful

study which has been made of the causes of forest fires. They may be summarized as follows:

1. Few, if any, forest fires are the result of spontaneous combustion.
2. Lightning does not cause on Eastern forests more than a small percentage of forest fires.
3. Someone's carelessness or neglect causes most of the forest fires which occur each year. No matter what the immediate or apparent cause happens to be the real original cause can in almost all cases be traced back to the carelessness or neglect of some person or group of persons. Carelessly constructed or neglected camp fires, have started many forest fires. The careless throwing away of a burning match, cigarette, or tobacco among dry leaves has been the cause of some of our worst fires. Sparks from engines start many forest fires, but the real cause is the fact that they were not properly equipped with a satisfactory spark arrester, or a satisfactory cleared safety strip was not kept on both sides of the road bed. We all believe in clearing up unsightly and unsanitary places, but too often brush burners choose a windy day or forget to take proper precautions so that the fires which they start cannot get away from them. In many instances those in charge of a fire go away for a while, only to return and find that the fire has escaped and is traveling rapidly over an adjoining woodlot or ascending a steep and heavily timbered mountain slope.
4. Be sure the camp fire is out before leaving it. Take no chances, for you can easily tramp it out, smother it with ground, or soak it with water.
5. Be very careful in cleaning up a camp site. Burn the undesirable material when there is the least danger of the fire getting beyond control.
6. Be as careful with fire in the forest as in your home, for it is an evil doer if it gets beyond control. A good Forest Guide takes no chances with fire in or near the woods, for its actions are treacherous and its destructive power great, if it gets beyond control.

WHAT FOREST FIRES DO

The first thing that Forest Guides should know about forest fires is the fact that they do absolutely no good. They bring no benefits to mankind, for loss and damage are the results of their work. It would require many pages to discuss fully the loss caused by forest fires. The following outline will show some of the principal lines of damage which they do:

1. Forest fires destroy the beauty and value of a region.
2. They destroy the animal and plant life of the forests.
3. They destroy the seeds and seedlings which would develop into stately stands of timber.
4. They kill enormous quantities of growing timber.
5. They consume a large amount of felled timber and other forest products stored in forests.

6. They consume the leaf litter and humus on the forest floor.

7. They impoverish the soil to such an extent that its capacity to produce timber is almost negligible. Briefly, they prevent the production of enormous quantities of needed forest products.

8. They have already made a desert of millions of acres of land.

9. They open the way for the destructive work of insects, fungi, erosion, floods and drought.

10. They sometimes kill live stock, and frequently destroy buildings, crops and fences.

11. They occasionally destroy houses.

12. They cause the loss of human lives.

There appears to be no end to the damage which forest fires do. We cannot let them go on. It is our duty to step in right now and fight them to a finish.

THE WILLOW PATCH

BY BERNARD FLANAGAN

There is nothing so disgusting, causing more commandment busting

Than a bushy bunch of willows on your line;

You can hardly battle through them and no cussing seems to do them

Though your sweat rolls out much bitterer than brine.

They are all-fired tough and wiry and they make your temper fiery,

But the compass heads you through their very heart;

Oh, how healthily you swear, when you find you're tangled there

And you know you're badly beaten from the start.

When you've lumbered through the snow for a dozen miles or so

And you've got a strip of forties yet to do,

Then with estimator's luck you've a willow patch to buck
And the compass says you've got to plug it through.

It is then you have to struggle, for each willow seems to snuggle

In the bosom of a dozen nearby trees;

Oh, it does no good to swear, for the willows do not care,

But it somehow seems to set your mind at ease.

Then you try to go ahead but you find it stops you dead
For the willows make a wicker that will hold;

You are seized with dire despair and you pull your matted hair

And a volume more of curses you unfold.

It is nearing supper time and you're verging on a crime
As you smart beneath the ninety-seventh scratch,

Oh, it's wasting time to swear and you wind yourself right there

When you stand and cuss that doggone willow patch.

BLACK LOCUST RECLAIMS WASHED LANDS

BY E. E. MILLER

IN what is known as the upland districts of West Tennessee and Northern Mississippi, there are hundreds of thousands of acres of land that has once been in cultivation but is now so gullied that it is thrown out. The soil of this upland region is supposedly a clay soil, but it contains so large an admixture of sand that it is easily carried away by the heavy rains common to this region. Gullies will start on even a slight slope and when they start, unless something is done to check them they soon grow to an enormous size. There are thousands of them—great red gulches, some into which big buildings could be dropped out of sight. Of course the fields that are cut up by such gullies can be tended, if at all, only in little patches. Usually they are given up to be destroyed or reclaimed by the agencies of nature, and oftentimes the agencies of destruction prevail. The problem of preventing erosion and reclaiming the eroded lands in this section is a serious one. The fate of whole farming communities is involved in its solution. Some few years ago, the State of Tennessee began experimenting on these gullied lands by planting black locusts. The work has been carried on long enough to make certain that the planting of locusts will reclaim even the worst wasted areas and bring them in a few years to a stage of profitable production. However, the

appropriation for this work has been so small as to limit the work to a comparatively few demonstration plots. The annual appropriation for all the work of the division of forestry amounts to only \$3,600. Of course, the reclamation of waste lands is only one line of the forestry work.

The state has been furnishing the seedlings to plant demonstration areas in black locusts. The State Forester has been giving the work of planting and the later care of the planted areas his personal attention. Several dozen such demonstration areas are now scattered over West Tennessee and the demonstration has been so convincing that farmers are beginning to take up the work for themselves. It is not too much to say that the planting of locusts offers the one practical possibility for the reclamation of tens of thousands of acres now

valueless. The steepest banks of the gullies are blown off by dynamite or dragged down with plows and scrapers. Dams of logs and brush are placed across the gullies to catch the sediment that is brought down by the rains. Above these dams and on the gully banks, the locust sprouts are set out. Usually they are placed some six or eight feet apart each way. They are planted in rows, as far as practical, so as to allow cultivation for the first year or two. After that they are abundantly able to take care of themselves, with only a lit-



TYPICAL GULLIED AREA

Reclamation will stop the gullies and so check the erosion of lands still in cultivation.



THE "BAD LANDS" OF WEST TENNESSEE

Thousands of acres like this—once good land—is hopelessly gullied. Without some method of reclamation established it must be lost forever to the State as agricultural land.

the pruning to train them up in the way they should go.

The growth of the locusts in these gullied lands is remarkable. I have seen trees that would make one fence post in their fourth summer from planting. Other

sprouts, I have seen have reached a height of ten or twelve feet the first year. Like everything else, however, the locust requires some attention to make it a success. Where the young trees have been set out without any preparation or without the building of dams to hold back the soil, growth has been slow. In some cases,

sprouts two or three years old, planted on slopes that still continue to wash, are not much larger than when set out. This work of reclamation would be well worth while if

it did nothing but stop the gullies and so help check the erosion of lands still in cultivation. It does much more than this. It puts on these waste lands a crop that will begin within five or six years of planting to return a revenue that will, if properly handled, keep on indefinitely. Timber for fence posts is scarce in this region. The

railroads ship in cross-ties by the thousands. On many farms, the supply of timber to meet the constant repairs any farm requires is becoming a problem. Black locust groves will, in large measure, solve all these problems. In five or six years from planting, the farmer who has

one of these locust groves can begin cutting fence posts. In fifteen years—possibly earlier in some cases—some of the trees will be large enough for cross-ties. With proper thinning, the growth of the remaining trees would

be kept up to a high point. The locust has the ability to reproduce itself and keep a constant supply of young trees on the land if only a little attention is given to the cutting. From being worth nothing at all, these lands may be made to be worth \$200 or \$300 an acre in a very few years. It is hard to find a more depend-

able and a more rapid method of increasing the value of waste lands. This reclamation planting has been done in several counties and numerous communities. Its value

has not yet been realized by the people of the state or even by the people of the gullied sections. The small appropriation made for the work and the lack of interest in it shown by the majority of West Tennesseans is proof enough of this statement. The general scarcity of timber and the quickened interest in all things relating to the future

timber supply have served to call more attention to it lately than it has ever received before and there is reason to hope that not only will this particular branch of work be put on a firm basis, but that the State of Tennessee

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PLOWING IN THE GULLIED LANDS AND SETTING LOCUSTS IN THE FALL OF 1917

The experimental work carried on by the State in the planting of black locust in these areas proves that even the worst wasted areas may be reclaimed and brought within a comparatively short time into profitable production.



THE AREA PLANTED TO BLACK LOCUST, AFTER THREE YEARS

This is the same area in 1920. In 1917 it was planted to black locust in the hope of bringing back the land and the photograph plainly shows the splendid results of this experiment in reclamation.

"DON'T QUIBBLE NOW—GROW TREES,"

TOO much talk and too little action coupled with the call, "Don't quibble now—grow trees," is an example of the editorial comment that has become a torrent since the American Forestry Association took up the direction of an educational campaign for a national forest policy which culminated in the introduction of the Snell Bill in the House. The measure makes a fitting base upon which to work in the new Congress. The stand of President Harding for forest conservation has been widely commented upon and eagerly taken up by his fellow editors. Some of the editorial expressions follow:

Philadelphia North American: Of course the success of such a move depends primarily on the measure of co-operation that will be forthcoming from the various States, and in order to make the bill highly effective, if it is enacted into law, each State would have to match from its own financial resources any assistance offered by the federal government. Need of public action in this direction is beyond question.

Duluth Herald: Unless this country wants to leave its children the cruel legacy of timber lands wholly bare, the nation and the States will take a hint from France and speed up the work of reforestation.

Providence Bulletin: The new bill in Congress is sponsored by the American Forestry Association and favored by several large groups of users of timber—bodies with interests so large and so widespread they are not likely to want to mislead the government into an unprofitable venture. Reforestation is insurance against a form of bankruptcy in national timber resources that is undoubtedly in prospect if the country does not mend its ways.

New York Times: Supported by the ultimate users of wood or of wood products, as well as by members of the Paper and Pulp Association, the American Forestry Association and other kindred bodies, and based upon its own inherent soundness, this measure should promptly become a law of the land. Under such a plan our forests will not only be safeguarded against a repetition of the ravages of the past, but

will be developed and regrown under expert supervision. The sooner a start is made the better.

Bangor Daily Commercial: The Snell bill for the preservation and development of the forests of the country has been receiving a thorough discussion at the hearings before the Department of Agriculture and has been so generally endorsed that it is predicted that it will receive an early passage by the incoming Congress. The bill, as we have already noted, provides

What Will Mother Say When She Finds He Had It "Clipped?"



Darling, for the New York Tribune Syndicate.

for a national policy of fire prevention, the stimulation of production, proper conservation and federal assistance to these ends.

A rival bill prepared by Gifford Pinchot and introduced by Senator Capper of Kansas, proposes that the government shall acquire all standing timber and operate the forests as national property. This would be heroic treatment indeed and only to be justified upon Mr. Pinchot's somewhat cynical theory that private interests are virtually indifferent to the destruction of the forests and that the States, even with federal aid of cash and expert advice, would be unable to meet the situation. The personnel of the advocates of the Snell bill is a sufficient refutation of the first part

of the Pinchot thesis and the improbability that sufficient support could be obtained for such a wholesale program of nationalization is a practical answer to the other half. Little support is noted for the drastic proposal of Mr. Pinchot who argues that the government shall acquire all standing timber and operate the forests as national property, a step in socialism that is not regarded as desirable in this country.

Chicago Tribune: The *Tribune* urges the passage of the Snell Bill as a wise conservation measure needed not only in our present situation but for the sake of the future.

Washington Star: There is a measure before Congress, under the title of the Snell Forestry bill which, if made a law, would be a long step in the right direction. It may well be that, aroused to an appreciation of the indicated menace Congress will see the expediency of making the step even longer, of appropriating more than four million dollars for work contemplated under the bill during the coming fiscal year. Several times that sum would be none too much to make an effective start, in co-operation with the States, in rehabilitating one of the most important of American resources. But whether final action when taken is to be on the Snell bill as drafted, or on some measure of larger scope and more generous appropriation, let us have action, and that soon.

Portland Oregonian: Two opposing forestry policies are before Congress. One introduced by Representative Snell which was prepared by users of timber and its products with the aid of National Forester Greeley, would enlist government aid and co-operation with the States and timber-owners in preserving timber, replanting the forests, consolidating all land in national forests in the hands of the government, and investigating and encouraging the best use of timber. The other, introduced by Senator Capper and prepared by Gifford Pinchot, proposes that the government shall acquire all standing timber and operate the forests as national property.

The Snell bill, being the combined work of timber-owners, lumbermen, wood-using industries, paper manufacturers, publishers, forestry and conservation associations and of the United States Forester, is convincing evidence of the desire of these interests to preserve and perpetuate the timber supply

SAYS THE MILWAUKEE JOURNAL

and, to that end, the National Forests, and to promote their best use.

Milwaukee Journal: Some politicians, and strange to say some foresters, object to the Snell national forestry bill on the ground that it does not go far enough. This opposition is ill-timed and short-sighted.

The Snell bill provides for greater fire protection than the forests have yet received, the most urgent need now. It also provides for reforesting denuded sections of the national reserves and for enlarging these reserves by adding to them other public lands and private lands to be purchased. It provides for reforesting, for intensive nursery work and research work, including the more economical use of forest products. It offers federal aid to States which protect their forests and reforest their lands.

The bill embodies what is the most advanced and thorough forestry policy yet expressed in a legislative measure. It provides authority and money to prevent the destruction by fire of more of our diminishing timber supply and to begin the task of renewing that supply.

These things are urgent. Every year our forests are damaged by fire. Every year's delay in reforestation means loss in time and opportunity. The need is to save the trees that still stand and plant new ones as soon as possible.

Tacoma Tribune: It (the Snell bill) is particularly necessary at this time because it establishes a definite forest policy, and will effectively provide for an adequate and continuous supply of timber from federal, State and privately owned forest land.

Chicago Post: Hearings may develop points in which the Snell bill should be amended; but in its aims and general outline it represents legislation of the kind which must be commended by sound sense and foresight as true economy.

Lexington (Ky.) Leader: There is a bill before Congress which should enlist the sympathy and support of every intelligent and patriotic man, woman and child in America. It is a bill introduced by Mr. Snell which provides for an appropriation of a million dollars annually to be used in co-operation with the several States in fighting forest fires outside of government forest reserves, and an additional ten mil-

lion dollars a year for the extension of the public forest land, for reforestation, and other items in the national policy of conservation. We have been almost as foolish and improvident as the Chinese, who have cut off their wonderful forests and ruined their country.

Binghampton Press: We hear a great deal about thrift, but as a nation we are not thrifty. In the matter of our timber resources, we are like a man who has been living on his capital instead of investing it and living on the income. If we keep on cutting more than we plant, and do not check the waste by forest fires, we are

land is giving it would be one of the most wealthy States in the Union, per capita, and would attract to it a much larger number of visitors both summer and winter. It is only of recent years that any conception of the wasted wealth in forests has appealed to its citizens. The time to correct the evils of former years is now.

San Antonio Express: The Snell measure is in rather sharp contrast to the Capper bill, which was prepared by Gifford Pinchot, and it is believed to meet more nearly the views of the interests vitally concerned and of the public as well. The Snell bill should be enacted and appears to have met with general approval.

A CALL FOR ACTION



Thurlby, in the *Seattle Daily Times*.

bound to destroy the supply. Not the newspapers and book publishers alone are suffering from this waste of timber. Besides builders, every manufacturer in need of lumber feels the increasing shortage. Congress at last is preparing to take action to check the destruction of our timber supply and to replace what is cut. Of the two bills now before it for action, the one introduced by Representative Bertrand H. Snell is much the more comprehensive and effective. It is an ambitious program, and a wise one. If enacted into law it will open the way for putting an end to the wanton waste of our timber resources and eventually will enrich the nation in amounts far beyond the relatively small sum expended.

Portland Herald: If Maine gave the same attention to the forests that Switzer-

Moline Dispatch: Uniformed citizens have been slow to grasp the urgency of a constructive and effective forestry policy because a timber shortage is a new thing to them. They do not realize all that is implied in the fact that it takes fifty years—rarely less, and in some cases more—to produce a crop of timber.

Bayonne Review: Every newspaper in the country is personally interested in the adoption of a national system of forest protection and preservation and last year's experience in the high cost of news print, a part of which is now being paid by every newspaper reader, makes welcome the promise which is held forth in the program.

The committee named is made up of prominent leaders in the wood-using industries, of famous technical foresters, members of the American Forestry Association, newspaper publishers, and many other industrial leaders. Newspaper readers who want the price of their favorite paper brought back to pre-war rates should urge the Congressman of the Eighth New Jersey District to vote favorably for the Snell bill.

Missoula Sentinel: The national forestry program, now before Congress, calls for \$11,000,000. That seems like a lot of money, but, really, it is a mighty small sum when the importance of trees to America is considered. The Western States are especially concerned in the forestry program. Millions are starving in China because great portions of that country have been denuded. No matter what the urge for economy, we cannot subscribe to any plan to cut the \$11,000,000 asked by the forestry program. The whole country needs it.

THE RATE OF DEVELOPMENT OF THE CONES OF THE NORWAY SPRUCE

J. BEN HILL, PENNSYLVANIA STATE COLLEGE

IN collecting material for class study, the writer had occasion to make several collections of the cones of the Norway spruce (*Picea excelsa*), which furnish data on the rate of development of the ovulate cones of the species. In the latitude of central Pennsylvania, both staminate and pistillate cones appear about in the middle of May, the exact date varying with the season.

The staminate cones come out a few days in advance of the pistillate, the latter about the time the pollen is shed. The young pistillate cone of this species is one of the most beautiful of the so-called "flowers" of the conifers.

difficult to locate at first, they can be found very readily after a little practice.

Though it is well known that the spruces mature their cones within one year and shed their seed the following spring, the rate of growth is perhaps less well known. At the time of pollination, the pistillate cone of the Norway spruce is about one and one-half inches to one and three-quarter inches in length. Cones of this type were collected May 12, approximately at the time of pollination. (Fig. 1.) A second collection was made May 24. This collection showed the cones very heavy



INTERESTING PHASES IN THE DEVELOPMENT OF THE CONE

The first section shows staminate and pistillate Strobili of the Norway Spruce, collected about the time of pollination, May 12, and the second section shows the pistillate cones collected May 24. The third section gives a comparison in size of the young pistillate cone of Norway Spruce collected May 12, one May 24, and one in midsummer. The latter is full grown, while the fourth figure shows mature cones of the Norway Spruce, shedding seed.

They are colored a bright red and present a soft velvety appearance. The young recurved scales of the cones are unusually large and petal-like structures aggregated in a body almost floral in outline.

The small number of the pistillate cones as well as their position renders them relatively inconspicuous in the presence of the multitude of staminate cones, which generally cover the tree. These pistillate cones grow only on the topmost branches or at the extreme tips of the long horizontal branches. At pollination time each pistillate cone stands erect on the tip of the branch which bears it. While their scarcity makes them somewhat

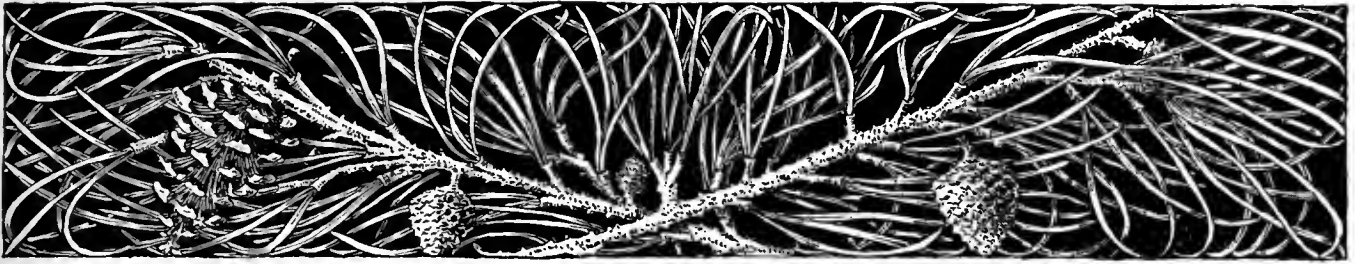
and pendant instead of erect as on the former date. (Fig. 2.) These cones are at least half grown as shown by an inspection of Figure 3, which shows the cones of May 12 and May 24 compared with one taken in midsummer, which had attained its full size. The interesting feature of this observation is the fact of the extremely rapid growth in the early days of the development as compared with the usual slow growth of the younger cones of the conifers as familiar in the pines, which after a year are scarcely larger than the flower when it first opens. Figure 4 shows the cones of the Norway spruce as they appear when open and shedding their seed.

SAVE THE DOGWOOD!

BY INEZ M. HARING

IF popularity may be judged by the frequency of picking, the flowering dogwood may be said to be one of our most popular wild shrubs. From the time it begins to bloom in the spring, until the last flower has dropped, there is a continual procession, both afoot and in the automobiles to its haunts in the woods. The white spread of blossoms, as seen from the roadside, acts as a challenge to the passerby to enter and pick. And what a generous response! Boys daily come trooping back to town, with their arms full to dropping; automobilists return from their afternoon's ride in the country, their wind shield covered with the snowy white blossoms, and huge branches tied upright from the running board.

A successful day! But let us ask ourselves, if it was success? Rather, was it not thoughtless vandalism? To destroy one of our most beautiful flowering shrubs and thus cause it slowly to disappear from certain parts of the country, surely that cannot be counted as success. The continual breaking of the branches and the cutting down of the whole of the smaller trees, is diminishing our dogwood to such a degree, that there is danger of our losing these shrubs almost entirely from our woods, in localities accessible to towns, villages, and cities. The time has come for thoughtful people to take a hand and stop this relentless destruction and save the dogwood.



TREE STORIES

SPIRITS IN TREES

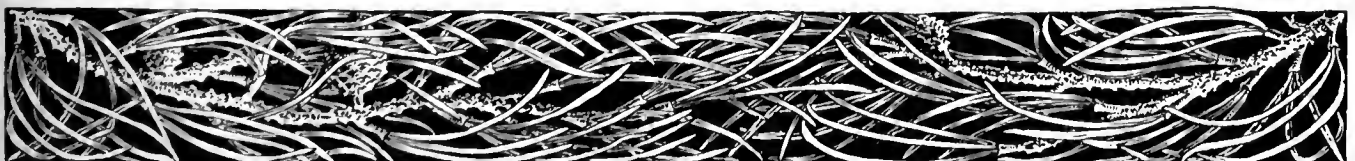
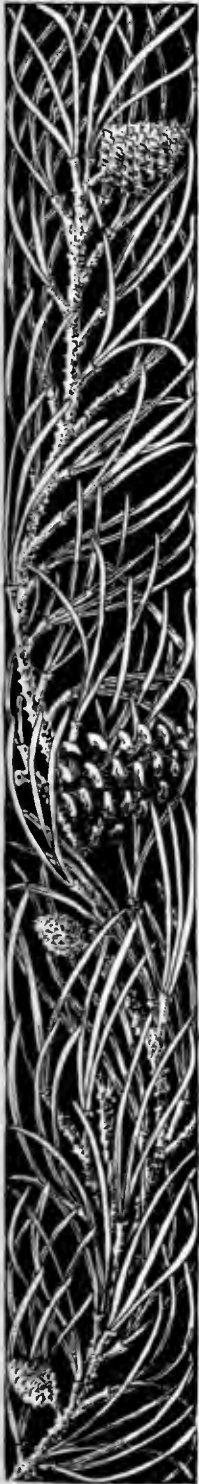
By Mary Isabel Curtis



DID you know, children, that there were stories about all the trees? The Greeks, who lived long ago, believed that a beautiful spirit called a dryad lived in every tree. This dryad was born with the tree and died with it. As long as the tree lived the dryad had a lovely time. She played with other dryads in the forests and sang songs in the leafy branches of her tree. If anybody stopped on a warm day to rest beneath the shade of a tree in the woods, he might perhaps see a dryad and she would come and talk to him in a sweet, rustling, little voice that sounded like a soft breeze stirring the leaves of the tree.

But no dryad wanted to be caught. She would always keep just out of reach, and if anybody tried to capture her—pff!—she would vanish as completely as the gas from a punctured toy balloon.

Although in these days we are very matter-of-fact, there are places where people still believe in tree spirits, and in some parts of Austria the old peasants always beg the pardon of a tree before they fell it. In Bulgaria if a peasant has a tree which has borne no fruit, he will go out on Christmas Eve with an ax and threaten to cut down the tree. Another man will go with him and will say: "Do not cut down this tree, it will soon bear fruit." Three times the peasant will raise his ax and three times his friend will beg him to spare the life of the tree. They will then go away, and they believe that the tree, fearing no mercy will be shown next time, will bear fruit in the future.



CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PAST PRESIDENT CANADIAN SOCIETY OF FOREST ENGINEERS

A LARGE number of annual meetings of interest to forestry were held in Montreal this year and very largely attended. The Canadian Lumberman's Association had a very successful meeting. The Canadian Society of Forest Engineers met, for the first time, for a full day, and had a most enjoyable and profitable meeting. The officers elected were M. A. Grainger, of British Columbia, president; Dr. C. D. Howe, Dean of the Forestry Faculty of Toronto University, vice-president; R. D. Craig, of the Commission of Conservation, secretary; and T. W. Dwight, Dominion Forestry Branch, treasurer. The papers read were, "Mutual Help and Salaries," "Relation of Foresters to Logging Departments," "What Answer Can We Give When We Are Asked How Timber in Eastern Canada Should be Cut by Pulp and Paper Companies," "A Method of Forest Survey," "Aerial Forest Surveys," "Forestry Engineering as a Profession." A good many foresters from New England were present and it is hoped that more American foresters will come to the meeting next year.

The Canadian Pulp and Paper Association held a very interesting and profitable meeting and it is most encouraging to note that the association placed itself most emphatically on record as being in favor of better forestry methods in logging, logging for a sustained yield, better fire protection and closer utilization. The association also voted money for research work and much good should come from this. The first volume of the series of textbooks for use in educational work among employes of the mills was shown, that on mathematics. This is an excellent book and every effort has been made to have it thoroughly practical, all the problems and examples having a direct bearing on the work the men find in their regular routine. The succeeding volumes of the series will probably be ready before the end of the year.

At the meeting of the Woodlands Section of the Association a committee was appointed to confer with the Quebec Government on the establishment of a Ranger School to train men for work in the woods. This school, it is hoped, will be established by co-operation between the industry and the Government and it will probably follow somewhat along Swedish lines, in that it will not be open to the general public, but only to men nominated by the Government or the companies, so that only those who are thought fit to be rangers and who are reasonably sure to continue in that line of work will be trained. The training to be given will be as practical as it is

possible to make it and it is hoped that a corps of trained woodsmen for use in fire protection, woods inspection work and scaling can be built up. The Government will be asked to authorize such a school and make an appropriation for it at the present session of the legislature. A committee was also appointed to co-operate with one appointed by the American Pulp and Paper Association to co-ordinate and encourage experimental work in better logging and utilization methods. A questionnaire is being prepared for distribution asking different firms what kind of experiments they are at present carrying on, and when this information is received it will be digested and those firms which are already working along certain lines will be given all the information along those lines and may also be given financial assistance by the other companies. A resolution was also adopted asking the Dominion Government to place the Branches of the Canadian National Railways, which are not already under the Dominion Railway Board in matters of fire protection, under the jurisdiction of the board.

The Quebec Forest Protective Association, which is a federation of the Co-operative Fire Protective Associations, also met and discussed the question of railway fire protection. It was shown that the National Transcontinental and the Intercolonial Railways, both operated by the Dominion Government were a great menace to the forests, and were setting a great many fires, their record in this respect being much worse than that of privately owned roads. A resolution was passed asking the Government to place these two lines under the jurisdiction of the Dominion Railway Commission as regards fire protection regulations. The Government of Quebec showed again its desire to do everything possible for its forests and to co-operate with the lessees by offering to place all lands still unleased by the Government under the Co-operative Fire Protective Associations, paying the same fee per acre for protection as is paid by the lessees. This marks a long step forward in fire protection.

The Canadian Forestry Association held its annual business meeting and also passed a resolution in regard to railway fire protection similar to those passed by the other associations, and made plans for enlarging and vigorously prosecuting its propaganda activities. The association now has 12,000 members, a secretary with two assistants, and it is hoped to add a French speaking forester for the work in the Province of Quebec.

Mr. M. A. Grainger, late Chief Forester of British Columbia, has organized the Timber Industries Council of British Columbia, with headquarters in Vancouver, and becomes its managing director. This will federate the efforts of the Lumber and Shingle Manufacturers Association, The British Columbia Loggers Association, The Mountain Lumbermen's Association, The Shingle Agency and The British Columbia Timberholder's Association. The objects of the council will be to promote co-operation and stability in the forest industries, to provide central facilities for the industries, to collect and circulate information of interest to the industries as a whole. The work of the council will not overlap that of any other organization and will give a strong central body which can look after the general welfare of the industry, consolidate and defend it. This is a most important forward step.

The diameter limit system at present in force in Quebec and New Brunswick is still exciting a good deal of interest. In New Brunswick some demands are being made for a reduction in the limit and in Quebec efforts are being made to fix it at some suitable figure, as the constant changes of the past few years make it hard for operators. This is a very important question and it is hoped that it can soon be satisfactorily settled.

The Air Board, under the direction of Colonel Leckie, is having some pictures taken of forests with the snow on the ground, to see whether winter pictures are any more favorable for the study of timber conditions than those taken in the summer. The Canadian Air Board is doing remarkable work in promoting civil aviation. There is a remarkable absence of red tape and of the air of superiority which usually pervades Government Bureaus, and valuable experiments are being carried out and results published which are of the greatest value to the public. Their co-operation with civil agencies is splendid and will undoubtedly do much to place Canada in a fine position in civil aviation.

The Canadian Branch of the Aerial League of Great Britain held its annual meeting in the Ritz-Carlton Hotel in Montreal on the eleventh of February, when a report on the Air Board's activities for the past season was made and a paper read on aviation in forestry with slides showing how aerial photographs are used in mapping and estimating timber lands.

A bill has been introduced and has passed first reading in the Quebec Legislature

(Continued on page 263)

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The Book of the 20th Engineers.

Under the title of "Twentieth Engineers, France, 1917-1918-1919," dedicated to "our forgotten comrades" comes this story of the greatest regiment in history. "A History of the Twentieth Engineers," say the editors, "would be, in the main, a resume of output and shipments, feet B. M. and metergauge, Clark 20s and Tower 3-saws, steres and kilos, operation strengths and acquisition factors. To us, the men who lived that history into being, our service was so rich in things to remember, so filled with things we cannot forget, that the actual record of our technical achievements, and the imposing records of our executives, we leave for others to tell. This book is the story of 18,000 men who went over to France to cut lumber because it was needed to win the war. We are endeavoring to tell the story as we told it to our folks when we got home—our comings and goings, our good times and bad times. . . . The Twentieth Engineers was not one of a line of temporary outfits. We were the biggest regiment in the world, we were unique in military annals. We were not recruited hit-or-miss, nor gathered in by the numbers. Every man had to prove that he was qualified for responsible duty when he joined and God knows his proofs were put to the test when we got across. Of all the outfits that made up the American Expeditionary Forces, probably none had a higher percentage of men fitted for skilled and exacting service and ready to deliver that service without the traditional discipline that all good military writers tell us is necessary to make a soldier do his duty. We did our duty because that's what we went there for. We knew there would be no medals, and there were none. We were the only outfit without which our war could not have been won, and we knew that too." The smashing records of daily production of this huge regimental organization stand alone as evidence of unparalleled achievement. The fame and the high praise which has come to the Twentieth from all quarters is richly deserved.

Seeing the Far West, by John T. Faris (Lippincott). Illustrated.

Americans need to wake up to the fact that in their own west is scenery that is beyond compare.

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BOOK REVIEWS

The Romance of Our Trees, by Ernest H. Wilson (Doubleday Page). Illustrated.

Trees have figured largely in religion, in mythology, in social and economic life, in art—indeed there is no form of human effort that has not been touched with the benign influence of trees.

In this volume has been assembled an extraordinary body of facts about trees; a practical book for its exposition of their uses, and a fascinating book for its continual revelation of their beauty and romance. It is beautifully illustrated with pictures of historic and characteristic trees.

Cross Country Ski-ing, by Arnold Lunn (Dutton). Illustrated.

The aim of this little book is severely practical. The author, long a devotee of this famous Alpine sport, writes from the richness of practical experience and the result is a handbook for the beginner with much of interest for the experienced runner. After an introduction which is not without humorous reference to the etiquette of the person who joins a party of experts while knowing nothing about the use of skis, the author treats, in detail, the subject of "Equipment," which is followed by chapters on "Uphill and Straight Running," "How to Ski," and "The Elements of Snowcraft," which he has had rare opportunities of studying during four entire winters in the high Alps.

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terest is described. The author, while not slighting scenes already made delightfully familiar by many writers, has sought to give emphasis also to regions of which little has been said—among others, the great National Forests, whose beauties were seen in the course of more than three thousand miles of travel far from railroads; the National Parks and Monuments, especially those opened in recent years, including Zion Canyon, that wonder of Southern Utah, which but one recent volume has touched upon; the deserts which silently and compellingly call to the traveller who hurries across them by train; and the amazing lava-built regions of Central Oregon, east of the Cascades, which will be better known to Americans when there is a through railroad from Klamath Falls to the Columbia.

History of the First Battalion Old Tenth Engineers (Forest).

With cordial acknowledgment by "Submarine Pete" to all of the men who helped in its compilation as a foreword, the "History of The First Battalion Old Tenth Engineers" steps out—a book which will find a warm place in the heart of every man lucky enough to count himself a member of the "Old Tenth." It was from the Tenth that the Twentieth sprang—that magnificent organization known as the largest regiment in the world, with a record of production and achievement behind the lines never before equalled in the history of any war. This roster, or history will offer a pleasant reminder of their days in sunny (?) France to the men of the Old Tenth. That they "produced the goods" is unquestioned, their contribution toward victory was vital, and their necessity to the success of the cause over there attested by the fact that "General John J. Pershing handed us the flowers in General Orders after every big drive." The book is a creditable piece of work, in keeping with the men whose deeds it records.

Guide to Yosemite, by Ansel F. Hall, Sunset Publishing House.

Every lover of the great out-of-doors looks forward to the time when he may have the time and money to see some of the natural beauties and grandeurs to be found in the National Parks. It is, of course, difficult for him to choose between these best pieces of nature's handiwork but because of the concentration of natural wonders within its borders and the rugged grandeur of its granite peaks Yosemite will certainly be among the first two or three to be considered. When he does go to this wonder spot among the people's playgrounds, he will find this little pocket volume of ninety-eight pages a constant pleasure and a veritable mine of information. Mr. Hall has been a ranger in the National Park Service since his graduation from the University of California Forest School in 1916.

BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

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GRADUATE of a recognized forestry school having had several years practical experience in all phases of forestry, both public and private, and experienced in portable logging operations, desires to make a change. Will consider any proposition in any part of United States or Canada. Box 2030, care American Forestry Magazine, Washington, D. C. (2-4-21)

TECHNICAL FORESTRY GRADUATE, B. S. 1908, M. S. 1914, desires position as City Forester. Twelve years practical experience in tree surgery, planting, transplanting, spraying, orchard care, improvement cuttings and landscaping, including making and execution of plans. Employed at present. References if desired. Married, age 41. Box 2020, care American Forestry, Washington, D. C. (2-4-21)

YOUNG MAN, 30 single, technical training and experienced in forestry and engineering, also first-class knowledge and experience in accounting and office work, desires position offering opportunity for the future. Address Box 2000, care AMERICAN FORESTRY. (2-4)

BUSINESS MAN with technical forestry training and experience, a specialist in aerial mapping and patrol, experienced in protection, cruising and administration, desires responsible position. Now engaged in economic study of paper industry. Address Box 980, care AMERICAN FORESTRY, Washington, D. C. (2-4)

YOUNG MAN WITH WOODS EXPERIENCE and college and military training, desires position in connection with management of forest lands on large estate. Address Box 990, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4)

GRADUATE FORESTER, 31 years old, married, ex-service man, wants position as Forester. Private estate or operating pulp company preferred. Have had 10 years experience in forestry work and practical lumbering. Address Box 2010, care AMERICAN FORESTRY, Washington, D. C. (3-5-21)

WANTED—Position with lumber company. Graduate of 4-year college forestry course. Experience in wood technology, and the grading and selling of hardwood and yellow pine lumber. Address Box 2050, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C.

MARRIED MAN 30 years old, energetic, industrious and systematic, with two years training in forestry, wishes permanent position with a paper and pulp company. To begin with is willing to do most anything. Address Box 2055, care AMERICAN FORESTRY, Washington, D. C. (3-6-21)

TECHNICAL FORESTER with considerable experience in various phases of practical forestry and sawmill work, desires position with manufacturing concern in the East or Middle-West. Dry-kiln work, offering opportunity for development preferred. Address Box 2060, care AMERICAN FORESTRY, Washington, D. C.

YOUNG MAN, 36, single, technical trained and practical experience in forestry, tree surgery, landscaping and orchard care, wants to get in business for himself as city forester in an excellent location anywhere in the United States. Will also consider position as forester on large estate. Employed at present and best of references. Address Box 2065, care AMERICAN FORESTRY Magazine, Washington, D. C.

POSITION WANTED by young graduate forester. Six years practical field work in forestry and lumbering. Am now employed but desire change. Box 2075, care AMERICAN FORESTRY, Washington, D. C. (4-7-21)

FORESTRY GRADUATE, age 30, several years experience in forest work, including city forester, landscape development, portable logging, reforestation, knowledge and experience in farming and farm machinery. At present employed along technical and administrative lines. Will be open near future for responsible position, preferably in development and management of private forest or estate. Box 2070, care AMERICAN FORESTRY Magazine, Washington, D. C. (4-7-21)

YOUNG MAN with master's degree in forestry and who also has had experience in city forestry, tree surgery, and esthetic forest planting desires a position in any phase of forestry—logging, lumbering, forest management, or city and esthetic forestry—where marked ability will bring advancement. Would also consider a position as part time instructor in botany, the remaining time as city forester. Have taught botany while a graduate student in one of the foremost universities in America. An ex-officer of the World War. Address Box 2080, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITION WANTED by graduate forester, veteran 10th Engineers, at present lumber inspector Pennsylvania System, experience in French forests, Southern Pine and Northern Hardwoods. Desire position as forester for private estate or other work. North preferred. Address Box 2085, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITIONS OPEN

WANTED—Assistant State Forester. State of Maryland. Apply to State Employment Commission, 22 Light Street, Baltimore, for full information and application blanks.

WANTED—An assistant forester. Good place offered for a recent graduate who would like to get in business for himself in an excellent location. Address Box 920, AMERICAN FORESTRY MAGAZINE. (8-10-20)

A BOOK ON ANGLING

By FRANCIS FRANCIS. With an introduction by Sir Herbert Maxwell, Bart. A book that cannot fail to quicken the pulse of every fisherman. Angling from every angle, with a vast fund of piscatorial information and the living spirit of the great outdoors. It will also give the fisherman reader many a thrilling picture during winter nights when he must perforce dream of the days of sport to come. Numerous explanatory plates (8 in color). Octavo.....\$4.50

way are taken up in the order in which they come into view along the road. The second half of the book entitled "Trails of Yosemite" will be a delight to those who fare forth to do their sightseeing on foot. In all, twenty-five trail trips are described and as with the roads all points of interest are described in the order in which one comes to them on the trail. Items of historical interest and entertaining bits of description will be a delight to the traveler and insure his seeing and knowing something about all the features of the valley while a numbered diagram and an excellent contour map of the region are finishing touches which make the little volume a most useful and readable trail companion.—Woodbridge Metcalf.

THE ANNUAL MEETING

THE annual meeting of the American Forestry Association was held in Washington, D. C., on Friday, February 25, 1921, over two hundred members attending:

The following were elected officers: President, Charles Lathrop Pack, re-elected; treasurer, Charles F. Quincy, re-elected; directors, Standish Chard, re-elected; Addison S. Pratt, re-elected; W. R. Brown, re-elected; N. C. Brown, re-elected; Elbert F. Baldwin and John Hays Hammond.

The meeting adopted by a vote of 121 to 25 the recommendations of the Board of Directors for amendments to the by-laws providing:

For increasing the subscribing membership dues from \$3.00 to \$4.00 a year.

For a Board of Directors consisting of fifteen members, seven of whom—W. R. Brown, H. H. Chapman, Dr. Henry S. Drinker, C. W. Lyman, Charles Lathrop Pack, C. F. Quincy and E. A. Sterling—shall be permanent members, and eight others, four being elected annually to serve the terms of two years.

For the nomination by the Board of Directors of elective candidates for the Board and provision for other nominations by members.

For the election of the elective directors by vote of members present at the annual meeting and by the mail vote of those not present.

For the election of the president, vice-presidents, treasurer and secretary by the Board of Directors.

For the amendment of the by-laws, except as to the selection of permanent directors, either by the Board of Directors or by members.

For annulment of membership of members in arrears in dues for one year.

Reference is made in an editorial on the first page of this issue to the great value to the Association of the amendments providing for seven permanent directors and for empowering voting by mail or in person for elective directors.

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possesses all of the qualifications that have made N. C. Pine the favored building material in the East since the days of the Pilgrims. We've steadfastly upheld its quality through perfect milling and careful grading; and the modern equipment of our mills today, together with vast holdings of virgin timber, insure you a quality of lumber for many years to come in every way up to the past standards of "Goldsboro N. C. Pine."

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Ground Wood Pulp

DOMESTIC EXPORT

CANADIAN DEPARTMENT

(Continued from page 258)

making the profession of forester or forest engineer, a closed one. That is, no one will be allowed to practice as a professional forester or to call himself a forester or forest engineer who has not a diploma from the Forest School of Laval University. Those already in practice who have such a diploma, or a diploma from some extra Quebec forest school and four years practice in Quebec or having no diploma but six years practice in Quebec will be allowed to register and become members of the Quebec Association of Forest Engineers. This would put the foresters on the same footing as men in the other professions, but would be obviously unfair to other institutions granting degrees in forestry. McGill University has protested against the passage of the bill, and the Canadian Society of Forest Engineers, at its annual meeting, went on record as opposing making forestry a "closed" profession. The bill will probably pass, but it is greatly to be hoped, with important modifications.

LOCUSTS RECLAIM WASH LANDS

(Continued from page 253)

will soon realize its forests are one of its greatest resources, that it needs a real department of forestry, and that an appropriation to carry on the work of such a department will be a profit-paying investment.

A great change is wrought in just two or three years by the planting of locusts; but one has himself to see the eroded and reclaimed lands fully to appreciate it. To stand on the edge of one of these waste places, look down into its red depths, and note how the soil above its head and along its sides is all the time falling into it to be swept away; and then to come back in two or three years and see the same area a sheet of rich-hued living green, a beauty spot instead of a scar on the landscape, and to realize that it is now growing good hard dollars for its owner every year and also lessening the danger of washing to the fields above and below it—to see such change as this with one's own eyes is to begin to realize the importance of this work, and also something of what the trees we have often so wilfully and wastefully slaughtered mean to the preservation of our fields and to our prosperity as a people.

WHY NOT LABEL TREES

(Continued from page 249)

the nuts, which look like beautifully polished mahogany.

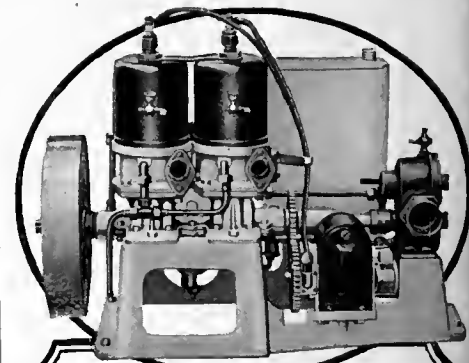
On the short unnamed street facing Daniel Webster's statue, between Rhode Island

and Massachusetts Avenues, Sixteenth and Seventeenth Streets, there are Kentucky coffee trees. In Farragut Square there is a symmetrical yellow-wood tree that looks like a cross between a beech and a locust. There is an avenue of ginkgo trees on Thirteenth Street, leading to the Agricultural Department. The leaves of the ginkgo tree look like the leaves of a maiden-hair fern. The fruit is much sought after by the Chinese. "A word to the wise is sufficient." Do not put the fruit in your pocket for the stone is covered with a soft pulp which, when crushed, is evil-smelling.

From an educational standpoint it is urged that the trees in Washington and also in other cities be labeled both with the botanical and with the common names.

THE "FOREST OF THE STATES"

THE Pennsylvania Department of Forestry has shipped a white ash tree, six feet high, to the Chamber of Commerce, Los Angeles, California. The white ash tree will be Pennsylvania's contribution to "The Forest of the States" that is being established on the Pacific Coast. It was grown by District Forester T. Roy Morton in the Greenwood Forest Tree Nursery, in Huntingdon County.



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W. M. Story, superintendent of Briarbank, Birmingham, Mich.



A view of Briarbank, the beautiful estate of W. T. Barbour, at Birmingham, Mich. It has been the privilege of Davey Tree Surgeons to assist in the preservation of the fine trees of this estate



An example of the difficult and highly technical work done by Davey Tree Surgeons at Briarbank. Notice extensive filling and mechanical bracing.

W. M. Story's tribute to Davey Tree Surgery

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Dear Sirs:

The work done by your company at Briarbank has proven very satisfactory and has helped to preserve a good many of the beautiful trees on the estate which were fast going to decay. I want also to congratulate you on the class of men you have sent here to do work. They have proven themselves gentlemen in every respect—were very energetic and seemed to take great pride in not only doing their work well but would at all times try and finish a job in the least possible time.

Yours very respectfully,

W. M. Story, Supt. Briarbank.

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Havana, Cuba.

TREES FOR FRANCE DIE

THE Department of Forestry of Pennsylvania has been notified that the 1,000,000 white pine trees shipped to France to reforest the devastated regions of that country died before they could be unloaded from the vessel and had to be dumped into a French harbor. Word has come from the United States Department of State, which co-operated in the project with the Department of Forestry, that shipping congestion in the harbor prevented the cargo being removed from the ship before the trees' roots died because of lack of moisture.

The Department of Forestry sent the seedlings as a gift to the French government. They were grown in the Mont Alto and Caledonia forest tree nurseries.

COMMUNITY CAMPS ON THE NATIONAL FORESTS

MANY western communities are recognizing the recreational resources of near-by National Forests as one of their greatest assets and privileges, according to Colonel Greeley, Chief of the Forest Service, and are establishing community camps under more or less formal organization. These camps take every form from the municipal vacation camps erected on the Angeles National Forest under permit from the Forest Service and maintained and managed by the city of Los Angeles, to the improvement of some favorite picnic ground in the National Forests by local citizens in co-operation with local forest officers. The picnic camps are improved by the construction of fire places, rustic tables and seats, and are made available to the public without any charge. The vacation camps under municipal direction charge merely the ex-

pense of feeding and caring for the successive groups of city people who enjoy their privileges.

The growth of the recreational resources of the National Forests is so rapid that specially-trained men are needed to direct and plan for the most effective development of this service, Colonel Greeley states. Any expenditure along these lines will be good business for the Government, since the increased receipts will return to the Treasury much more than the total amount expended.

The protection of wild life and the recognition of the National Forests as natural breeding grounds of fish and game is closely related to the development of the recreational resources. To make more effective the work of game protection, in co-operation with the State and local authorities, and to secure better development of the fish and game resources of the National Forests, Colonel Greeley believes that Congress should make provision for the establishment of game sanctuaries, within which wild life may find security. These sanctuaries, he says, should be relatively limited in area but should be established in considerable number.

MID-WEST WOOD TURNERS ORGANIZE

THE Charter Convention of the Mid-West Association of Wood Turners was held at Congress Hotel, Chicago, February 15. This association is a newly organized branch of the National Association of Wood Turners.

The convention completed the formation of the Mid-West Association, adopted constitution and by-laws, and elected officers for the ensuing year.



Sixteen 42-inch inserted Tooth Cut-off Saws operating on one slasher rig is probably the record number of this type of saw doing business in the world. These saws are operating daily in the mill of the Crown-Willamette Pulp & Paper Company, of Oregon City, Oregon. They are 42 inches in diameter and six gauge, and were selected from regular Simonds stock.

As there was no mill at that time that had a complete slasher rig made up of inserted tooth cut-off saws, these 16 were selected for a trial by the Crown-Willamette Company. They at once justified their selection and gave excellent results.

Through the courtesy of the Crown-Willamette Company, we are privileged to reproduce the illustration showing these 16 Simonds Saws in operation.

PULPWOOD STATES SHOW INCREASED PRODUCTION

PULPWOOD consumption by mills in New York, New England, and the Lake States was 17.7 per cent greater in 1920 than in 1918, according to incomplete returns received by the Forest Service, United States Department of Agriculture. The estimate is based upon a comparison of the output of 118 identical mills, representing about 41 per cent of the total consumption in these States. Should this percentage of increase hold true for the remaining mills, the total consumption for the past year would equal 6,180,000 cords, and exceed the previous maximum of 1917 by 700,000 cords, or nearly 13 per cent.

The production of 1,553,978 tons of wood pulp reported by the 118 mills exceeded the 1918 production by 17.5 per cent, and indicates a 1920 output of approximately 3,894,000 tons, which would exceed the 1917 record production by 384,000 tons or 10.9 per cent.

This is the first preliminary statement by the Forest Service in connection with the study of pulpwood consumption now being carried on in co-operation with the American Paper and Pulp Association and the Census Bureau.

CONFERENCE OF WOOD-USERS

REPRESENTATIVES of the leading wood-using industries in Pennsylvania will be invited by Governor Sproul to attend a conference in Harrisburg on April 13 and 14. They will be called together to discuss the present timber supply and to consider probable sources of future supplies. It will be the first meeting ever held by Pennsylvania business men who must depend largely upon forest products for the continuation of their industries.

Gifford Pinchot, the State's Chief Forester, is working with Governor Sproul in preparing the preliminary plans for the meeting. It is expected that between 250 and 300 industries that use wood will be represented. During the two-day sessions it is planned to bring out reliable figures on the outlook for timber and its allied products in Pennsylvania. It is believed by Forester Pinchot that facts will be pre-

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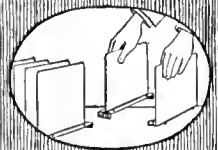
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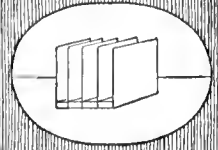
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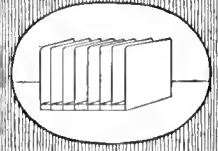
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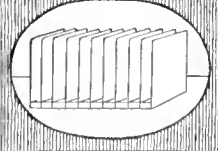
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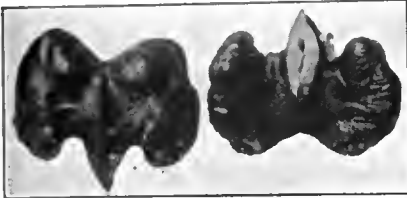


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American Forestry (December, 1920, issue)



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sented showing that the threatened timber shortage is rapidly becoming acute. Practical methods of providing for a certain future timber supply will be considered.

Some of the topics scheduled on the tentative program are: The Forest and the State, by Governor Sproul, who will open the meeting; Where Our Timber Comes From, The Forest and the Railroad, The Forest and the Farm, The Forest and the Town, The Forest and the Press, The Forest and the Factory, The Forest and the Mine, The Forest and Labor, The Forest and the Food Supply, and Why We need the Forest.

GEORGIA WOMEN TO STUDY FORESTRY

THE Woman's Club, of Fitzgerald, Georgia, has earnestly taken up the subject of forestry, and intends, through study along practical lines to fully acquaint itself with the situation so that it may be of real assistance in forwarding the movement for the preservation and renewal of our forests.

At a recent meeting, strong resolutions were passed by the Club urging the importance of conservation, and stressing the "planting of black walnut trees for their beauty and utility, and such other trees as are approved by the American Forestry Association of Washington, D. C."

EASTERN NATIONAL FORESTS

THE National Forest Reservation Commission at a meeting held February 25, approved the purchase of 58,853 acres of land in the White Mountains, southern Appalachians and Arkansas at an average price of \$4.70. These lands consist of 2 tracts amounting to 410 acres in New Hampshire; 3 tracts aggregating 969 acres in Tucker and Hardy Counties, West Virginia; 14 tracts totaling 38,056 acres in Augusta, Rockingham, Shenandoah, Rockbridge, and Amherst Counties, Virginia; 3 tracts with a combined area of 8,745 acres in Johnson, Unicoi, and Green Counties, Tennessee; 11 tracts amounting to 387 acres on the Boone and Mt. Mitchell purchase units, in Avery, Caldwell, Burke, and McDowell Counties, North Carolina; 5 tracts totaling 698 acres in Rabun County, Georgia; 45 tracts aggregating 6,283 acres largely in Montgomery, Polk, Scott, Yell, Pope, Stone, Newton, and Johnson Counties, Arkansas; and 19 tracts in Lawrence and Winston Counties, Alabama, having a total area of 3,305 acres.

ELECTRICITY AND TREES

IT is desired to make clear, in connection with the note on page 107 of the February issue of AMERICAN FORESTRY, that electric wires do not kill trees unless a strong current is brought into direct contact with the main stem, though a branch may be killed either by the escape of current through a worn insulation when the wood is wet, or by burning.

ROADSIDE PLANTING ENDORSED

THE effort being made to secure nationwide planting of roadsides is receiving strong support in the State of New York, according to reports made by C. F. Bley, of Hamburg, a member of the New York State Conservation Association. Mr. Bley says that the proposition has recently been endorsed by the president of the American Farm Bureau Federation, which is a good indication of interest on the part of the farmer element, and should go far toward making it a success. While primarily the objective of the plan is scenic beauty, and added comfort in travel as well as protection of the road-bed, its consummation is far-reaching. The wholesome influence of roadside planting needs no emphasis, and this movement to plant systematically suitable forest and edible nut-bearing trees on all public roadsides should receive cordial support. The trees to be planted under the plan would equal the planting of nine and one-half million acres—or more than fifty per cent of the area of virgin forest still remaining in the United States, says Mr. Bley. Opposition to the plan is bound to be met with in many sections, but Erie County, New York, has gone on record unequivocally in favor of the plan by the passage of a strong resolution endorsing it, which it is proposed to submit to every Board of Supervisors in the State for action.

"GROVE OF THE STATES"

THE Los Angeles Chamber of Commerce is establishing in Exposition Park in Los Angeles, California, a grove of trees representative of each of the States of the Union. Through Governor Davis, a request for Idaho to furnish a suitable tree for this grove was recently received by the School of Forestry of the University of Idaho, and a young Idaho white pine 3 feet high and 6 years old was immediately dispatched on its way to represent Idaho in the Los Angeles Park. The School of Forestry has in its arboretum well grown specimens of all the native trees of the State of Idaho as well as more than 100 species from other sections and so was able to furnish at once a tree which would be especially fitted for this purpose, for the trees grown in the arboretum are much better able to withstand transplanting and transportation to a distant State than wild specimens.

The Idaho white pine (*Pinus monticola*) was selected as being the most representative one of Idaho because Idaho possesses the only large body of timber of this species, the lumber from which is marketed throughout the United States and commands a higher price than any other coniferous wood. The people of the State may be proud of the tree which will bear the name of Idaho for coming generations among the representative trees from every other State of the Union at Los Angeles.

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Final Date for Bids—Sealed bids will be received by the District Forester, Portland, Oregon, up to and including June 30, 1921.

The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, Portland, Oregon, or the District Forester, Ketchikan, Alaska.

FOREST SCHOOL NOTES

SCHOOL OF FORESTRY, UNIVERSITY OF IDAHO

THE School of Forestry of the University of Idaho, at Moscow, offers a correspondence course in Lumber and Its Uses. That the course is meeting a real need is attested by the large number of students that have registered for it since it was first announced about three years ago. Some thirty different States are represented in the enrollment.

The course is designed to be of special value to lumber dealers, lumber salesmen, contractors or builders, carpenters, manual training teachers, and others connected with the wood working industries. The fee is a nominal one and includes the text book and all reference material.

The course consists of twelve assignments covering such topics as the structure and physical properties of wood, lumber grading, structural timbers, seasoning and preservation of wood, lumber production and the selection and use of materials.

A prospectus will be sent on application to the School of Forestry, University of Idaho, Moscow, Idaho.

THE Forestry Club of the University of Idaho recently had the unusual opportunity of hearing Mr. Norman F. Coleman, President of the Loyal Legion of Loggers and Lumbermen, outline the present situation in the lumber industry of the northwest, point out its relation to the industrial problem and explain how the Four L's were handling the different conditions of the present. Mr. Coleman has been making a tour of the lumber mills of the Inland Empire.

A class of log scaling was recently opened by the Idaho State Board for Vocational Education at the plant of the Edward Rutledge Timber Company at Coeur d'Alene, Idaho. Mr. C. E. Knouf, log scaling expert with the United States Forest Service in the Inland Empire, for eleven years, has been secured as instructor and is well qualified by his long experience to handle this work efficiently. No charge is made for the course and attendance of both experienced and inexperienced men will be welcome. The course will run for six hours a day and will cover approximately three weeks' time. It will include instruction in all phases of log scaling, together with study of the causes underlying various types of defects for which allowance has to be made in woods practice.

FOUR CHINESE FORESTERS AT YALE

THE senior class of the Yale School of Forestry is now in spring field training in the South which has been the feature of the senior year since 1907. This year

the class will be located at Urania, Louisiana, west of the Mississippi, on the forest estate of Henry Hardtner, whose experiments in forest restoration have attracted wide attention in the South for their success. Nine seniors will take the course. An unusual feature this year is the presence of four Chinese students in the graduating class; namely, Mark Yuen-chi Hwang, Shun-Ching Lee, Peng Fei Shen, and Chuan Fah Yao, who was recently elected to the Yale Chapter of Sigma Xi. These men will return to China after the completion of the three months' course, to take up various lines of forestry work in their home provinces. Placido O. Dacanay, who came to Yale from the Philippines to complete his training after a term at the University of Montana, will enter the Government Service of the Islands.

The men live in tents fitted with board floors and walls, and receive final instructions in the art of topographic mapping, the "estimating" or measurement of standing timber, the methods of studying growth of trees, and of managing forest lands to produce timber crops, methods of logging, the construction of logging railroads, and sawmill practice. Mr. Hardtner, at Urania, is planning to manage his lands in such a way that there will always be timber to cut and the town will always remain prosperous instead of disappearing as many sawmill towns do after cutting is finished. In this project the Yale class will assist by outlining the rate of growth and methods of cutting which will be needed to secure the desired result. The State of Louisiana in 1919, as the direct result of the work and advice of the Yale School, passed the first law ever adopted in the United States, which requires forest owners on cutting their timber to leave seed trees standing on every acre for the purpose of securing reforestation.

UNIVERSITY OF WASHINGTON COLLEGE OF FORESTRY AND LUMBERING

THE College of Forestry and Lumbering opened with an enrollment of 150 students, representing eight countries of the world and practically every State of the Union. Among the recent additions to the student body of the school is Mr. A. M. Koroloff, representing the Bureau of Forestry and several forestry associations of Russian Siberia. Mr. Koroloff is a graduate of the Petrograd Imperial Forest Institute. Thorsten Streyffert, a graduate of the College of Forestry and College of Commerce of Stockholm, Sweden, has lately entered the College of Forestry here to study American methods of forest practice and management.

The Forestry Department of the Province of Queensland, Australia, has sent Mr. C. R. Paterson, a graduate of the University of Queensland, to the University of Washington for the purpose of investigating and learning new logging

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methods to be adopted in Australia. Official representatives of private forest interests and forestry departments of Chile, Canada, England, and the Philippines are also availing themselves of the opportunities offered at the University of Washington for advanced study of logging engineering, forest management, milling, and for research along the lines of forest products.

Dean Winkenwerder has spent considerable time during the past month in conference with the State Fire Warden and the Land Commissioner on the subject of the purchase by the state of logged-off lands. A bill was drafted, to be put before the legislature now in session, providing for the purchase by the state of logged-over lands. This bill is the entering wedge for a definite state forest policy and it will undoubtedly serve as an effective means of meeting the increasingly serious problem of disposing of logged-over lands. All indications are that the bill will pass the legislature.

FREE TREES FOR RESIDENTS OF NEW YORK STATE

YOUNG trees for reforesting purposes will be shipped from the nurseries of the Conservation Commission during the month of April, according to C. R. Pettis, Superintendent of State Forests. Application blanks for trees are available upon request to the Commission at Albany. Mr.

Pettis advises that those who contemplate reforestation work this spring file their applications as soon as possible, as the supply of trees is limited and it will be a case of "first come first served."

Trees will not be distributed in quantities of less than one thousand of any species. The following species will be available as long as the supply lasts: Scotch pine, three and four year transplants; Norway spruce, three and four year transplants; white spruce, three year transplants; white cedar, three year transplants; black locust, one year seedlings, and Carolina poplar cuttings.

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PRESIDENT PROCLAIMS FOREST PROTECTION WEEK

THE week of May 22 has been designated in a proclamation by President Harding as "forest protection week" during which governors of the various States are asked to arrange educational and instructive exercises to place before the people the need for preventing unnecessary waste by forest fires. The proclamation follows:

"Whereas the destruction by forest fires in the United States involves an annual loss of approximately \$20,000,000 and the devastation of approximately 12,500,000 acres of timber land and other natural resources, and

"Whereas, when the present deplorably large area of nonproductive land is being greatly increased by 33,000 or more forest fires each year, and

"Whereas the menace of a future timber shortage threatens to become a present economic fact seriously affecting our social and industrial welfare, and

"Whereas a large percentage of the forest fires causing the annual waste of natural resources may be prevented by increasing care and vigilance on the part of citizens;

"Therefore, I, Warren G. Harding, President of the United States, do urge upon the governors of the various States to designate and set apart the week of May 22-28, 1921, as forest protection week and to request all citizens of their States to plan for that week such educational and instructive exercises as shall bring before the people the serious and unhappy effects of the present unnecessary waste by forest fires, and the need of their individual and collective efforts in conserving the natural resources of America."

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EDITORIAL

THE SNELL BILL NOW BEFORE CONGRESS

THE Snell Bill for a national forest policy was reintroduced in Congress on the opening day of the present session, April 11. This is the bill approved by the United States Forest Service and endorsed by the American Forestry Association, a number of State forestry associations, newspaper publishers, lumbermen, paper and pulp manufacturers, women's clubs and organizations of various classes throughout the United States. It is the bill which, in the opinion of these organizations, best provides for the forestry needs of the country. It will assure adequate fire protection of the mature forests and of the growing forests; assure the reforestation of a goodly portion of 81,000,000 acres of denuded forest land; assure the acquisition by the United States Government of large areas of land suitable for growing forests; and assure necessary study and investigation of forestry, all tending to produce and maintain enough forests for the future needs of the nation.

This is the bill for which the American Forestry Association has been so vigorously campaigning since its inception. The Association has spent a great deal of its effort in educating the public regarding the necessity for the legislation proposed by the Snell Bill. The public is now in a most receptive mood; in fact, it may truthfully be said that a greater portion of the people are now earnestly thinking, talking and advocating forestry than at any period in all the previous history of forestry in this country. The newspapers are publishing numerous articles and editorials urging State Legislatures and Congress to give attention to this subject, and if there has ever been a time when public agi-

tation for any measure should have effect on State Legislatures and Congress, now is that time. Never were conditions more suitable for securing the forestry legislation which is needed.

The Snell Bill will be opposed—as many good bills are opposed—by people who say they have better measures, by people who differ regarding some of its provisions, by people who do not favor any forestry legislation at all, and by people who favor extreme legislation in forestry; but it is evident to anyone who has heard the arguments for and against it, that the Snell Bill is quite the most satisfactory one judged from every viewpoint.

It is not only a bill which is most likely to be passed by Congress, but it is a bill which, if passed, will, in its operation, bring about the forestry reforms which are needed. The fact that it is approved by Colonel W. B. Greeley, head of the United States Forest Service, an experienced and broad-minded forester, understanding the needs of the public, as well as the rights of the timber land owner, is perhaps the best argument as to why the bill should have the support of the public and be passed by Congress. The next best argument for it is the fact that it has been endorsed by over one hundred prominent organizations representing almost all lines of public thought and endeavor.

It is to be hoped that Congress will give early consideration to this bill and that it will recognize it as one of the most necessary as well as one of the most constructive pieces of legislation which is likely to come before it at this or any other session.

FOREST PROTECTION WEEK

PRESIDENT HARDING has echoed public interest and public desire for action by naming the week of May 22 as Forest Fire Protection Week throughout the United States. This is a most effective means of calling attention to the need of more and better protection of forests against fire. The fact that at least \$20,000,000 in actual loss and a great many million dollars in potential loss are caused by fire in the forests every year should have been sufficient to have resulted many years ago in necessary state and national legislation for protecting forests from fire. Unfortunately, it has not done so. What protection is now available under small

state and national appropriations is very far indeed from being adequate. Perhaps the governors of the states who co-operate with the President in his earnest desire to emphasize in the public mind the need of protecting our forests will take a most important step in this direction, that of urging state legislatures to increase existing appropriations and to provide for appropriations where there are none. The fact that the Chief Executive of the nation recognizes the seriousness of the fire menace and calls for a week of public agitation regarding it, is evidence enough that something should be done and done quickly, if we are to stop these terrible losses each year.

FOREST DEPLETION AND FREIGHT BILLS

THE extent to which the country as a whole is becoming dependent upon the West Coast for its timber supply, and what this means to the consumer in the form of freight bills is rather strikingly illustrated by some statistics issued by the Interstate Commerce Commission. These statistics cover freight shipments from the States of Oregon and Washington for a normal month prior to the recent increase in freight rates. They show that prior to that time these two States were shipping forest products to every State in the Union—Florida with two carloads per month receiving the smallest amount, and Minnesota with 3,615 carloads, the largest. Even New York State, situated as it is clear across the continent, was receiving 412 carloads per month.

Still more striking is the relation between shipments of forest products and other commodities. Normal monthly shipments from the two States of Washington and Oregon furnished the railroads 32,340 carloads of commodity freight, of which 21,270 carloads were forest products. The total freight revenues amounted to \$8,276,591.80, of which forest products paid \$6,508,007.77. In other words, forest products furnished 64.3 per cent of all freight shipments from these two States and 78.6 per cent of freight revenues, and as yet the eastern United States is hardly more than beginning to draw upon the West Coast for its timber supplies. What will the situation be in another 10 or 15 years, when the present stands of southern yellow pine are largely a thing of the past?

These figures are illustrative of a situation which is bound to become more acute if prompt action is not taken to put our present non-productive and partially

productive forest lands to work. The little State of Connecticut, for example, now pays \$3,000,000 a year freight bills for the transportation of lumber from other forested regions. This amount is sufficient to replant each year one-eighth of the entire area of forest land in the State. Moreover, if Connecticut had been practicing forestry any such expenditure would be wholly unnecessary, since under proper management the State could produce its present consumption of saw timber on 86 per cent of its present forest area. Practically every State in the Northeast is in much the same position.

We have now reduced our forest resources in the East and South to the point where 61 per cent of our total stand of saw timber lies west of the Great Plains, and over 50 per cent in the three Pacific Coast States. Our demand upon the latter is becoming heavier each year and with it our freight bills are becoming larger and larger. Recent investigations of a number of large retail lumber companies in southern Minnesota showed that the average transportation cost of material handled by them, due primarily to the increasing volume of western lumber which these companies have had to import in order to supply the needs of their territory, had increased 262 per cent in the last 15 years. Yet these companies are in a region which only a few years ago was immediately contiguous to the greatest lumber producing region of the country, and which might still be a great producer were its idle lands productive. Is it not high time that we took steps to cut our freight bills for forest products and at the same time to remove one of the serious causes of freight car congestion, by adopting a program which will put our 81,000,000 acres of wholly idle and 235,000,000 acres of partially idle lands to work?

A SPECIOUS FALLACY

ONE of the greatest obstacles to the practice of forestry in this country is our failure to really grasp the possibility of continuous forest production. Witness, for example, the following statement, attributed to a prominent statistician in the Department of Agriculture:

"If a lumber mill buys timberland sufficient to enable it to operate for ten years, it constructs a railway for logging supplies, and a sawmill, installing all equipment connected with these operations. It may build a town and establish a commissary. It, therefore, becomes proper and necessary for the lumberman to write off the cost of the plant over a period of ten years. And this is what is meant by extinguishment charges."

For comparative purposes, he is quoted as adding that "depletion is similar but it concerns the exhaustion of the raw material itself."

This is a strictly logical application of the view that

when once the forest is cut it is gone for good, or at least for some fifty or a hundred years until a new forest can be grown to take its place. Even those who recognize that the forest is a crop and not a mine too often fail to appreciate that it is a crop which can be so handled as to yield annual returns. The natural result of this habit of thought is to regard extinguishment charges and depletion charges and carrying charges as necessary burdens which must be borne by the lumber industry, and, in the end, passed on to the consumer.

As a matter of fact it is entirely possible to regulate the cutting of a forest not only so that each part will be reproduced, ordinarily by natural means, as rapidly as it is cut, but also so that the part first cut will be ready for logging again by the time the entire area has been covered. The ideal, or "normal," forest is one made up of a series of fully stocked and vigorously growing stands, each of which is one year older than the next

younger. These stands range in age from one year to the age decided upon for utilization, so that one of them matures and is cut each year. Continuous logging and milling operations are thus possible and no money is tied up in non-growing timber. Conversion of our present virgin and irregular second-growth forests into forests of this sort is, of course, not an easy task, particularly where present economic conditions are unfavorable, but its accomplishment is well worth the effort.

Think for a moment what the establishment of normal forests, in other words the practice of forestry, would mean from the accounting standpoint alone. First of all it would wipe out the extinguishment charges referred to by the statistical expert already quoted. No lumber company that really practiced forestry would ever have "to write off the cost of the plant over a period of years," or any other period; for its operations would be continuous, and the only expenses of this sort that it would have to meet would be for repairs and the replacement of worn-out or obsolete equipment. Secondly, it would do away with the item of depletion charges, since the volume of the forest would remain practically constant, the amount removed each year being replaced by the annual growth. And finally, the burden of carrying charges would be removed, because the entire in-

vestment would be in timber which was growing and therefore yielding an annual return.

The more nearly the establishment of a normal forest is attained, the more nearly is the complete elimination of these charges possible. Such charges are no more an inevitable accompaniment of lumbering than they are of farming. Yet no farmer claims that the entire cost of a mowing machine must be charged against his first crop of wild hay; or that if he chooses to work his land so as to ruin it in ten years the cost of land, buildings, and equipment must all be written off in that period.

The argument is frequently advanced that the practice of forestry is too costly to be practicable. This is a specious fallacy which is doing much to retard the progress of forest conservation. The truth is that forestry, by doing away with extinguishment, depletion, and carrying charges, more than pays for the comparatively small extra costs which it involves. If the lumberman, by adopting a system of accounting applicable only to a non-renewable resource can pass such charges on to the consumer, it may be immaterial to him whether the forest is preserved or not. But from the standpoint of sound finance and the public interest, destructive lumbering is less profitable than forestry.

AFFORESTATION IN GREAT BRITAIN

THE keen interest in forestry in Great Britain which was aroused by the war does not seem to have abated with the cessation of hostilities and the resumption of wood imports from other countries. Distinct progress is being made on putting into execution the ambitious planting program outlined after a thorough study of the situation by a reconstruction committee and later approved by Parliament. The Forestry Commission, which was established in 1919 for the development and conservation of the timber resources of the United Kingdom, is reported to have planted 1,500 acres during the first year of its existence and to have acquired 90,000 acres of land now treeless for future development and afforestation. Tentative plans contemplate increasing the acreage planted next year to 5,000 acres. That even this is only a beginning is indicated by the fact that the Commission has secured an area of more than 300 acres for the growing of nursery stock on which it proposes an ultimate annual production of 24,000,000 plants a year.

A few far-sighted individuals have for many years deplored Great Britain's dependence on other countries for its supply of wood and other forest products. The extent of this dependence is indicated by the fact that in 1913, Scotland, which is more favorably situated than England for the production of forest crops, imported over 90 per cent of the total amount of timber consumed. It took the great war, in which the destruction of shipping by submarines so reversed the usual procedure as

to force Great Britain to secure from eighty to ninety per cent of the timber consumed from its own scanty supplies, to bring the country as a whole to a realization of the danger inherent in this situation.

Now that the awakening has come the work of afforestation is being conducted with characteristic British vigor and persistence. The approved program contemplates the planting within 80 years of 1,770,000 acres, and within the first 10 years of 200,000 acres, now treeless. The conversion into coniferous timber of this area, accompanied by the improved management of existing forests is estimated to be sufficient to enable Great Britain to secure the great bulk of its wood requirements from home-grown timber and to be completely self-supporting for a period of three years in case another war should cut off the possibility of imports. A large proportion of the afforestation work will be done in Scotland, where land suitable for the purpose can be secured at low prices. That the work will be profitable from a purely financial standpoint is indicated by the fact that in the Highlands of Scotland the annual returns from forest products, after the forest is once established, are estimated at £2 or more per acre, as against a present return of 7 shillings or less from grazing—an increase of some 470 per cent.

Will the United States profit from the experience of Great Britain and take prompt steps to perpetuate and increase the production of its forests?

FORESTRY FROM THE AIR

BY STANLEY FROST

A NEW assistant to the forester has been thoroughly tested and proven of great value during the last two summers by Lieutenant Stuart Graham, of the Laurentide Company, at Grand Mere, Quebec. The new helper is the airplane—in this case a flying boat.

The work has been so successful that the company, which started with two planes, now has three and will add two or three more for work during the coming summer. At least four other of the big lumber companies in the St. Maurice Valley are also planning to put in seaplanes for use in 1921.

It is the peculiar nature of the country that lies between the St. Lawrence and Hudson Bay that permits the use of seaplanes. Through this area about seven per cent of the surface is water, and Lieutenant Graham states that when cruising at an altitude of 5,000 feet, he is almost never at a point where he could not make a good landing within the gliding radius of the plane in case of a mishap to his engine. He predicts a very rapid spread of the use of seaplanes for forestry work in any similar country although, of course, it would be impossible in territory where lakes are not numerous.

The results of the work of the last two years have been extremely valuable along several lines, but from the point of view of the forester, they are peculiarly interesting because of the ease, cheapness and speed of mapping

or making accurate aerial observations and for fire patrol.

The experiment was initiated by the St. Maurice Forest Protective Association with the support of the Quebec and Canadian Governments. The latter loaned to the Association two HS2L seaplanes equipped with Packard built Liberty motors which had been left at Halifax

when the American sea patrol was withdrawn. Difficulties of co-ordination, however, resulted in the Association turning the entire control of the work over to the Laurentide Company.

The company owns many thousands of square miles of timber land, scattered over an area 270 miles deep by 160 miles wide. A part of this territory is across the height of land from the St. Lawrence and on slopes that drain into Hudson Bay. Much of it is entirely unsettled and some so far from headquarters that it requires weeks for exploring parties to reach it and some two or three years for logs to come from it to the mill at Grand Mere.

Lieutenant Graham has found few difficulties connected with the use of the planes themselves. Concerning

this feature, he says: "Both of these planes with one spare motor have been flying over vast lands since early in June, 1919, and though minor troubles have been experienced, a machine has not yet been delayed in the woods and the two planes have flown more than 16,000 miles over the forests. A great many exploration trips



A PICTURESQUE "SNAP" OF A FLYING BOAT—THE NEWEST "ASSISTANT TO THE FORESTER" IN PROTECTING AND MANAGING THE VAST DOMAINS FOR WHICH HE IS RESPONSIBLE

have been made during which explicit confidence in the Packard motors was necessary. Civilization was at times several weeks away in case of trouble. As a precaution against accident, a canoe, paddles, rifle, blankets, food and cooking utensils were always carried, but there has been no necessity for using these. The cost of parts used on motor overhauls has been negligible and a mis-firing cylinder has not yet been experienced. In these

For work, particularly in connection with the pulp wood industry, it is possible to detect with the utmost accuracy the difference between soft and hard woods. The shape of the crown cover differs sharply. The softwood crowns, from the air, present the appearance of rather small, perfectly rounded objects with an effect of depth, while the hardwood tops are softer, irregular and flatter. The observer, after a very little experience can thus



"PUTTING THE FIRE FIEND TO FLIGHT"

Striking cartoon by Yardley in the San Francisco "Bulletin," indicating the successful use of aircraft in forest fire control, as demonstrated by the air patrol recently established in the State of California.

long trips the utmost faith both in the motors and in the planes themselves has been necessary and it has been fully justified."

In his work over the forests, Lieutenant Graham has made observations both visually and by means of photographs. The shape of the crown cover and the color of the trees makes possible very accurate observation of the nature of the forest beneath and to a considerable extent of the thickness and value of the stand of timber.

tell not only the kind of wood but approximately the percentage of mixture of the two.

Photographic observation is less accurate because of the failure of photographic plates to react to the different shades of green. The observer, judging by shades, can tell the species of softwood, but the photograph merely distinguishes between soft and hard. Although it is possible to use ray filters which would give the color shades accurately, these are so slow that photographs

cannot be made with them from a moving plane and Lieutenant Graham has found no hope that the process can be speeded up to a point where this will be possible.

As a result, in the mapping work which has been carried out, a combination of photographs and visual observation is used. After some experiments the system has been worked out until it is highly satisfactory. The airplane with a photographer first goes over the territory to be mapped and takes an outline strip of photographs. After these are mounted a second trip is made over the territory, with a skilled woodsman who has this outline before him. He is able to note the particular species of trees in each locality as well as to draw in on the vacant spaces the main features of the land and all stands of timber which are not completely shown in the photographic outline.

The result is a map which physically is sufficiently accurate for all practical purposes at a scale of about 400 feet to an inch, and which shows within very close limits the water area, muskeg, fire scars, stands of hard timber and stands of soft timber by species.

The Laurentide Company has not found it desirable as a general rule to operate directly on the information furnished by these maps and a forester or timber cruiser is usually sent to make a detailed estimate of the stand of timber before a cut is begun. But as a result of these maps, it can determine accurately the physical features of the country in their relation to getting out logs and it can also send its ground parties into the exact points where more detailed work is needed and avoid any chance that they will spend days or weeks wandering about in unprofitable territory.

The cost of maps on this scale has so far figured to about \$6.00 a square mile, if the airplane is used only for mapping purposes. In practice the work is usually done in conjunction with some other duty, so that the cost is considerably reduced. A further reduction is expected during the coming summer when smaller planes, which can be operated at lower expense, will be used for the work.

One of the great advantages of this form of survey is the speed at which it can be accomplished. The time required is only about a tenth of that necessary for ground work while the results are far more accurate than anything except detailed surveys could be.

An instance of the value of this service to the company occurred during the summer of 1920, when word was suddenly received that there would arrive on the same day a man with whom the company was negotiating for the purchase of a large timber area but who had not been expected for several weeks. An official of the company was rushed over to the airdrome and taken out over the territory. Five hours later, when the owner arrived, the company officials were able to meet him with a map of the country and far more accurate information about it than he himself possessed.

Another valuable service, similar to that of mapping, has been rendered in taking logging bosses and company officials over territories with which they wish to become familiar. A three hours' trip in the air would give them more information than they could have acquired in many weeks spent on the ground and has greatly facilitated the laying out of plans for future work.

This work has been carried out at long distances from the headquarters and one particular trip covered 850 miles through the northern woods for timber exploration. This distance was accomplished in twelve and one-half hours. Several stops were made to permit the observers to complete their notes of the country traveled over and one stop was made for fuel. The airplane carried, beside Lieutenant Graham and his mechanic, a photographer and Mr. M. C. Small, chief of the logging operations of the company. Mr. Small says that the information acquired in these twelve hours was greater than could have been secured by years of travel on foot.

The value of the airplane in fire patrol has been very great. In this territory the danger period occurs in the early spring when the woods dry out quickly and fires are likely to gain headway during the period before the hardwoods put on leaves and serve as a blanket. The airplane on fire patrol is able to observe a strip between forty and eighty miles wide and to report very promptly.

Further, the fact that the planes were in the air and likely to come down to investigate any suspicious circumstances has had a splendid moral effect on the few inhabitants of the district, who have feared that they could be detected in case of any carelessness. It has also had a deterring effect on criminals, who realize that pursuit by airplane would make escape almost impossible.

THE GENTLE WOOD

The gentle wood enfolds me in its arms,
 As doth a mother crooning to her child;
 There are no cares, no jars, no rude alarms,
 Here in the ways of this unbroken wild,
 Each softly swaying tree breathes tenderness;
 Each bough-and-leaf-touch seems a loving word;
 The sight of every flower is a caress,

A harmony the note of every bird;
 Even the grasses murmur happy things;
 The vines a soothing tenderness impart;
 The wind, with the faint winnow of its wings,
 Reveals a gracious kindness of heart;
 Apart from men, and the world's restless mood,
 In the wood's depths I find beatitude.

—Clinton Scollard. (Reprinted.)

FOREST RECREATION DEPARTMENT

TRAILS TO THE GREAT OUTDOORS

ARTHUR H. CARHART, EDITOR

MAN made cities. There clouds roll up in the early morning banked against serried skylines and in great canyons with sides of granite roar swift moving streams. But the clouds are of smoke and carry smudgy soot. The tumbled skyline is of roofs, towers, smoke stacks and skyscrapers. The great canyons are streets edged with stone office buildings and the streams they carry are of traffic made up of trams, trucks, autos, and great drays.

There is another land. The clouds come up as in the cities but they are of moisture steaming up from mountain sides where waters are turned to mist by the undimmed sun. The skyline is jagged and sawtoothed, but that is because of giant mountains lifting upward toward a clean sky. And the canyons with rock walls carry streams of tumbling waters where trout lurk under bush or boulder shading pools so deep that even with the clear-

est of waters the depths cannot be seen. When you feel that you wish to get from under roof, away from the smudge clouds and traffic roar use one of the following trip-prescriptions. They offer much and take you to the land of mountains, streams, lakes and clean air.

In the lake land of the Superior National Forest one drifts along over the lines traveled by pioneer priest and trapper. The canoe is the only manner of traveling found in many parts of this land. Camps at night are pitched on rocky ledge shaded by tall, yellow-boled Norway pines and as the velvet black of night shadows creep over the lake and thicken under the trees bordering the shore, relieved in their vast expanse only by the intermittent flicker of your campfire, night birds' call or a

great moose bull may send challenge to other moose and the sound of the splash of his travel through the shallows of the lake edge comes to you distinctly through the quiet of the night.

But should the trip in Colorado claim you your evenings will be spent by some rushing mountain stream where winds sing in the pine needles and your days are full of clear sunlight which floods peak and plain with searching rays. There the Mystic Spanish peaks will stand out clearly in the morning of your first day and Sierra Blanca will be with you for miles along the trail

that same afternoon. The canyons of the Rio Grande and the Needle Mountains will be your scenic lodestones calling you ever on to new views. And Ouray will enchant you with its waterfalls and deep gorges.

What need of telling you of the beauties of Lake Tahoe? Set in great forests which cling to the sides of massive peaks



OURAY, COLORADO

Ouray in its setting of cliff-sided mountains is the climax point of any trip which touches this section. Few mountain towns equal and none surpass for scenic grandeur, the setting in which this little city is built.

this lake charms all visitors. Spicy breaths from great conifers make one draw deep inhalations of the balmy airs and sleep under the stars which hover each night over the mountain lands in the kingdom of peace and quietude.

No ragged skyline of modern city ever approached in rough outline the pinnacled heights of Mt. Stuart in Washington. Great canyons carrying streams of pure water scar the shoulders of great mountains passed in this trip. Trout leap after flies which venture too near the water surface of placid lakes and over all the spirit of the wilderness and peace hovers. Icicle Creek, its scenic canyon, Stuart Pass and many streams and lakes await the traveler who follows this trail.

Not less beautiful than the Spanish Peaks in their snowy covering are the Three Sisters on the McKenzie auto road in Oregon. What driver of auto could ask more than to be on the road, riding on four good tires, a tank full of gas, his mind at peace and having these splendid peaks beckon him on to the top of McKenzie pass,



WHEELER NATIONAL MONUMENT

Surrounded by the Rio Grande National Forest this unusual formation, set aside as a National Monument, can be reached only by a pack trip over a good trail built by the Forest Service. During the second day several points from which the trip may start are passed.

the highest point reached on the trip. A day or two spent loafing along over this road to the top of the pass is a worthy goal for the motor traveler who sets his face to the Pacific Coast. There are two lands. In one

many must live most of the year. There the winds carry the smells of trade and industry. In the other we may play and there find courage to come back again to where man has reared great structures for commerce and production. This happier land is all out-doors where trees, mountains, lakes and canyons tell of a greater Architect's work than any found in the city. To this land the trips here invite you to rest, recreation and understanding of the Spirit of the Infinite, with every assurance that you will thoroughly enjoy it all.

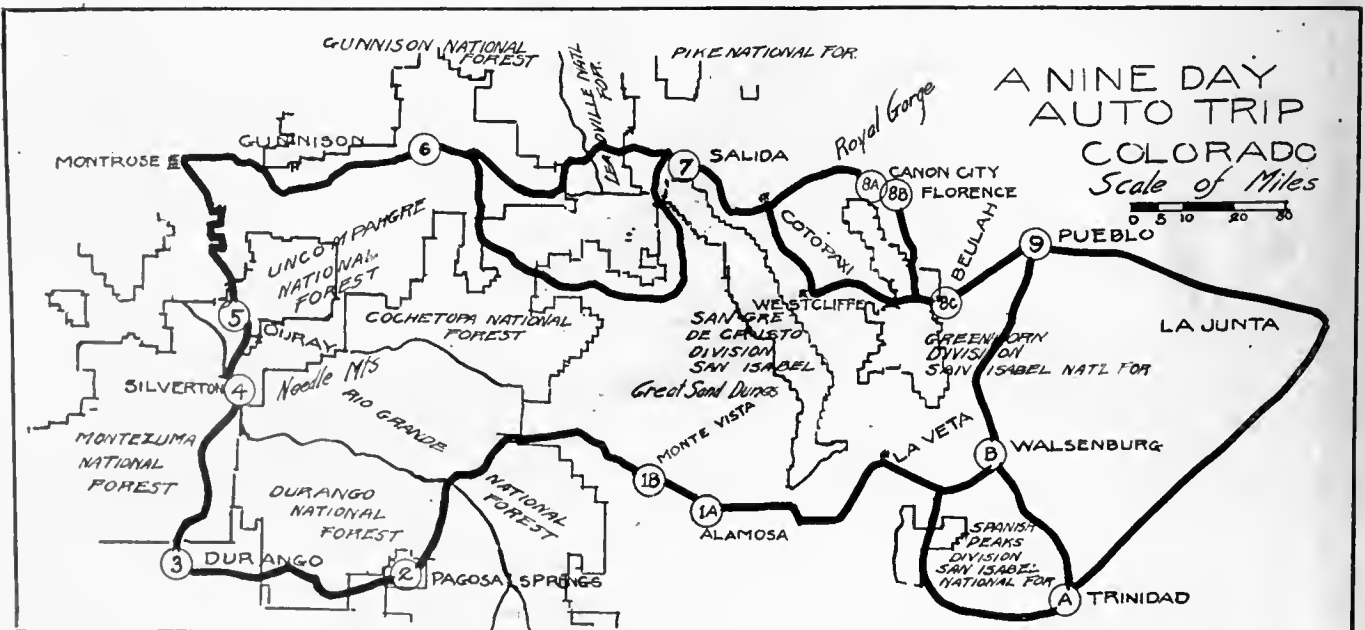
A NINE DAY AUTO TRIP IN COLORADO

INTO the heart of the romantic southwest of Colorado and through the great block of National Forest territory, totalling more than 6,000,000 acres, which is made up of the San Isabel, Leadville, Cochetopa, Gunnison, Uncompahgre, Montezuma, Durango and Rio Grande forests, run highways which outline a nine-day auto trip offering the best of Colorado scenery.

from Walsenburg (B) Colorado or the whole trip may be reversed so one starts at Pueblo, which in the trip outlined, is the finishing point. The decision as to which shall be the starting point of the trip must be made before La Junta is reached for there the road divides.

The start can be made from either Trinidad (A) or

FIRST DAY.—Trinidad or Walsenburg to Alamosa (1A) or Monte Vista (1B). In the day's trip the Spanish Peaks, Sierra Blanca (fifth highest peaks in the



United States), historic Fort Garland and the giant Sand Dunes are visible from the road. The great scenic region of the San Isabel offers much more if one will linger here for several days.

SECOND DAY.—1A or 1B to 2, Pagosa Springs. The trip is mostly in the scenic region of the Rio Grande National Forest. Wolf Creek Pass is crossed and many other interesting points are along the roadway. Fishing is especially good in some of the lakes and streams of the Rio Grande.

THIRD DAY.—2 to 3, Durango. Nearly all of the trip is through the forest lands of the Durango. The scenery is some of the best in the west and many historic camps and other interesting spots are passed.

FOURTH DAY.—3 to 4, Silverton. The trip is made over the new highway built by the Forest Service in co-operation with the State and county. No more spectacular scenery can be found in the Rockies than is in the Needle Mountain section near Silverton. Many days can be spent here visiting these mountain lands of superb beauty. They are the climax of the mountain country of the Colorado Rockies.

FIFTH DAY.—4 to 5, Ouray. Ouray is one of the most unique mountain towns in the world. It is safe to say that nowhere will there be found so much to interest the traveler who will stay a few days in one town to get out on foot and horseback and visit nearby scenic features. Myriads of waterfalls, canyons, scary trails, cliffs of superb beauty and the marvelous setting of the town itself make up bewildering scenic compositions capable of moving travel-hardened tourist to exclamations.

SIXTH DAY.—5 to 6, Gunnison. Most of the trip is in the open valley lands between the mountains. This trip is the one which will most interest the fishermen. The

Gunnison River reached here is noted nationally for its trout fishing.

SEVENTH DAY.—6 to 7, Salida. Over the top of the continent's backbone. Either of the two routes can be taken. The third and fourth highest peaks in continental



RAINBOW TROUT

The Gunnison River and the upper reaches of the Rio Grande both contain many of these beauties. A trip over this route is incomplete without some trout fishing in one of these two well known streams.

United States, Mounts Massive and Elbert, are seen on this trip as well as many other gigantic mountains.

EIGHTH DAY.—7 to 8A, 8B, or 8C. The Royal Gorge is passed by traveling the route to Canyon City (8A) or Florence (8B) while the stupendous sweep of the Sangre de Cristo range and Hardscrabble Canyon are seen if one travels southward from Cotopaxi, near the Arkansas River on the Rainbow Route to Westcliffe and thence to Beulah (8C). By going to either (8A) or (8B) a one-day circle trip may be taken over the loop formed by the Hardscrabble Canyon Road, the trip thus prolonged one day and scenery of magnificent values seen which would otherwise be missed if only one of the routes had been traveled.

NINTH DAY.—To Pueblo at 9. Several hours can be well spent here viewing the great works of the Colorado Fuel and Iron Company, the largest steel plant in the west. Several routes can be taken back to the plains countries and eastern points from here, each a good high-



MONARCH PASS HIGHWAY

This is on one of the two routes during the seventh day of the run. Timberline trees are near the higher points on this road and present unusual shapes and groupings.

way. No single trip of this length will give the traveler the many extraordinary sights found along this line. Many unusual sorts of landscape are passed and

also many very unusual and stupendous formations. It is a master auto trip.

[Information from United States Forest Service, Colorado.]

AN OREGON AUTO ROAD

A DETOUR FROM THE PACIFIC HIGHWAY OR A PART OF A CIRCLE TRIP FROM PORTLAND OREGON

THE McKenzie Highway from Eugene, Oregon, eastward enters the heart of the Cascade National Forest. Along its line are the towns of Springfield, Thurston, Walthville, Leaburg, Vida, Nimrod, Blue River and McKenzie Bridge and here in these settlements can be found the supplies for the road, oil, gasoline and other needed things for the auto traveler. The entire trip can be made in one day, or, if one lingers, can be lengthened into a two-day pleasure jaunt. And if one is not in too much of a hurry a stop at one of the settlements on the upper river will allow an interesting side trip or two to some of the Cascade's best scenery.

The western terminus joins the Pacific Coast Highway and the eastern end connects with the Portland-Idaho Road. By detouring over this road from Eugene one can spend three or

four days extra reaching Portland on a trip north from California or by utilizing this road as part of a circle trip out from Portland an easy week's auto outing may be enjoyed in the National Forests of this section. Scenic



McKENZIE RIVER AND THUNDER MOUNTAIN

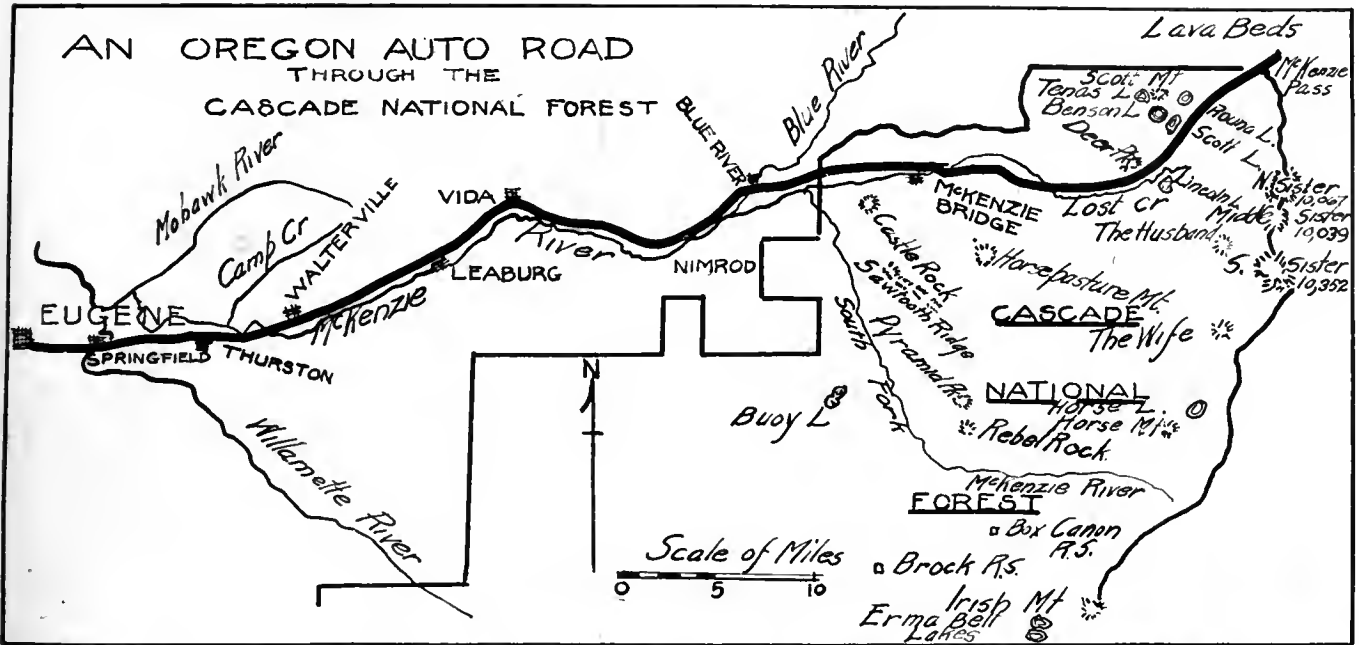
Throughout the trip over the McKenzie Highway the River at each glimpse presents pictures of beauty. Here the picture has the background of ragged crested mountains with timber-clad sides and shoulders.



THE OLD HIGHWAY

On this line a new high-grade auto road presents the same outlook, and what can be more beautiful than the snowcapped tops of Oregon's higher peaks! Here the Three Sisters peep over the skyline beckoning to the traveler to hasten on to get better views of their splendid snow caps.

attractions are many in the Cascade National Forest and the McKenzie Highway traverses sections in which several of the best of these are located. Most beautiful of all are the snow-capped Three Sisters peaks which stand in the chaste beauty of their white coverings amidst the darker mountains clothed in tall firs. They can be reached from McKenzie Bridge by a three-day pack trip and this is one of the most alluring of any of the side trips from this main



highway. Scott, Benson and other lakes are easily reached by turning aside from the auto road. An interesting hour may be spent in visiting the state fish hatchery which is beside the road at one of the points outside of the Forest. Hot medicinal springs are near McKenzie Bridge and when one reaches the crest of the divide great lava fields are spread out to view.

The total distance of the trip is about eighty miles. And each mile brings one to scenes of beauty and scenic values par-excellent. For further information write the Eugene, Oregon, Chamber of Commerce.

[Information from Eugene Commercial Club and United States Forest Service.]

A FOUR DAY AUTO CAMPING TRIP TO LAKE TAHOE

AN auto trip over some of the best mountain roads in the west and where it is possible to camp every night in a public camp ground maintained by the Forest Service takes one through the Eldorado and Tahoe National Forests to far famed Lake Tahoe.



LAKE TAHOE FROM ONE OF THE CAMPING PLACES

Mystic mountains, dim in the haze of the misty distance brood over this lake of renown where beauty of the outdoors lurks. A camp more delightful than this is rarely found.



BAYNIER CAMPGROUNDS

Giant trees shelter the camping spot where lunch is eaten on the second day of this trip and only a few feet away Emerald Bay on beautiful Lake Tahoe sparkles in the sunlight or is iridescent in the changing tones of reflection of sky colorings.



LAKE TAHOE

Traveler of distant lands has rarely met other traveler who has seen lakes more beautiful than Tahoe. Famed as it is, but still not overrated, this lake yearly attracts hundreds of hikers to its shores, there to enjoy its beauty.

FIRST DAY.—Sacramento to Phillips Public Camp Ground near the summit of the Sierras on the Lincoln Highway. Forty-eight miles of paved highway to Placerville and about the same distance along the beautiful American River which is lined with public camps, resorts and summer home colonies.

SECOND DAY.—Phillips Camp to Lake Tahoe, with a

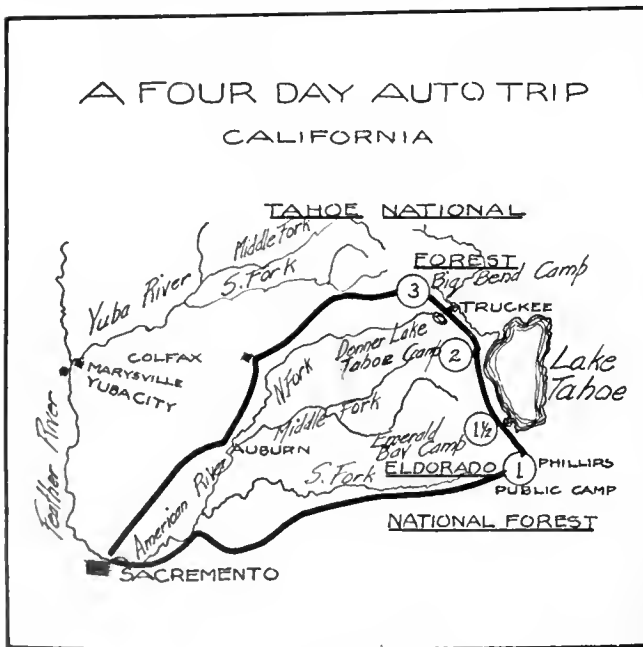
lunch at either the Bay View or Eagle's Nest Public Camps at beautiful Emerald Bay. Camp for the night at Tahoe Public Camp near Tahoe Tavern with plenty of time for boating and fishing in Lake Tahoe.

THIRD DAY.—Tahoe Camp to Truckee, following down the sparkling Truckee River, and thence back to historic Donner Lake and over the summit to the Big Bend Public Camp on Yuba River where a delightful afternoon's fishing may be had.

FOURTH DAY.—Big Bend Camp to Sacramento via Auburn, Colfax and some of the mining camps of the days of '49. Paved road from Auburn to Sacramento.

This is an easy four-day trip, all roads and camps are well signed and if the traveler does not wish to camp, ample hotel and resort facilities will be found all along the way. For further information write Forest Supervisor at either Placerville or Nevada City, California.

[Information from United States Forest Service, California.]



A FIVE DAY TRIP IN WASHINGTON

THIS trip takes one into the heart of some of the most spectacular regions of the Northwest, and features a climb to the top of Mt. Stuart, in the Wenatchee National Forest. It is a trip for only those who wish to do some real packing and a stiff mountain climb to the top of Jagged Mt. Stuart.

FIRST DAY.—Leavenworth, Washington, to the Park Ranger Station. During this day the trail passes orchard lands, Peshastin Canyon, Ingalls Creek, Nigger Creek and

old mine workings. Interesting flora and geology.

SECOND DAY.—Park Ranger Station to camp on Ingalls Creek. This is near the foot of Mt. Stuart. Day's trip takes one by a splendid view of Rainier, Adams and other snow-capped peaks, a striking view of Stuart and through several interesting canyons.

THIRD DAY.—Climb to Mt. Stuart's Summit. Many Alpine flowers and open parks are near timberline. Napoleon's Chapeau, a craggy pinnacle, presents an in-



Craggy Mt. Stuart

A great empire of undiscovered beauty equal to the most beautiful of famed alpine lands lies in the National Forests of Washington. One look at the top of Mt. Stuart will convince one that the Alps themselves are no more rugged.

teresting mountain feature. A great snow field lies near the top of this mountain. Some climbing skill is necessary to reach the top of Mt. Stuart.

FOURTH DAY.—Ingalls Creek to Chatter Creek camp. Through the wildest portion of the trip. Stuart Pass is crossed. Jack Creek, a noted trout stream is passed and many timbered parks.

FIFTH DAY.—Chatter Creek camp to Leavenworth, on the Great Northern Railway. Down Icicle Creek, through a spectacular gorge and along a beautiful mountain

stream which furnishes good fishing. The circle of the trip is completed when Leavenworth is reached.

A longer time may be taken for this trip. For one who can give it the time this should be a week's trip



Icicle Creek

Twisting and turning, splashing and dashing into filmy spray, the Icicle seeks the Sea. Trout pools lure the angler and beauty satiates man's hunger for that which is lovely and unspoiled.

or more. Mt. Stuart is 9,470 feet above sea level. For further information write the Forest Supervisor, Wenatchee, Washington.

[Information by Forest Officers, Wenatchee National Forest.]

A CANOE ROUTE OF THE NORTHLANDS

IN the Superior National Forest and the lake country which surrounds it is a real man's country. There is no place for weaklings here for one must tote his means of travel—the canoe—his food and his shelter with him. Unless a man is prepared to do his share of work this is not a place to put in a vacation, but for those who wish to get back into the wilderness away from all signs of civilization this canoe country is supreme.

Many canoe trips can be worked out

from Ely, Minnesota, into the Superior for there, within a forest of a million acres, are lakes totaling more than 150,000 acres. One route of special beauty is outlined

here and it will take as little as ten days to one limited in time or it may be extended to last nearly a month—a month of delightful outing filled with days on the lakes in canoe and nights spent in the shadow of great Norway pines.

FIRST DAY.—White Iron Lake, through Garden Lake and Fall Lake to Basswood



Breaking camp on Lac La Croix

The tent is of silk and readily rolls up to be packed while the supplies are here being packed in the small cloth bags which are necessary in camping to keep things from getting hopelessly mixed together.



A BULL MOOSE FEEDING IN THE STUART RIVER

This picture, taken with an ordinary camera near Lac la Croix, shows that hunting with a camera is no myth. Just as bad a case of buck fever can be developed while hunting this way as with a rifle.

age, camp to be made at point near this carry to Loon Lake. This is the farthest point out on this trip.

SIXTH DAY.—Loon Lake Portage to mainland opposite Coleman's Island. If one prefers a very pleasant camping place may be found on one of the many small islands that dot the lake surface at this point.

SEVENTH DAY.—To camp near Forest Service Boat-house at inlet to Lac La Croix. This camping place is an ideal spot from which to take several trips each of one day's duration into the bays of and lakes near La Croix.

EIGHTH DAY.—To camp on Crooked Lake about two-thirds of the distance from Curtain Falls to the Lower Basswood Falls. Several large bays reach into the land on the south side of this lake and offer interesting cruises for the less hurried trip.

NINTH DAY.—To upper Basswood Falls. The camp that was occupied previously can be reached on this day's trip and the same good fishing grounds can offer the chance to secure a fresh pike steak caught from the International waters.

TENTH DAY.—From upper Basswood Falls to the finish at the town of Winton on Fall Lake. Ely can be reached by auto or train from this town, it being only a short dis-

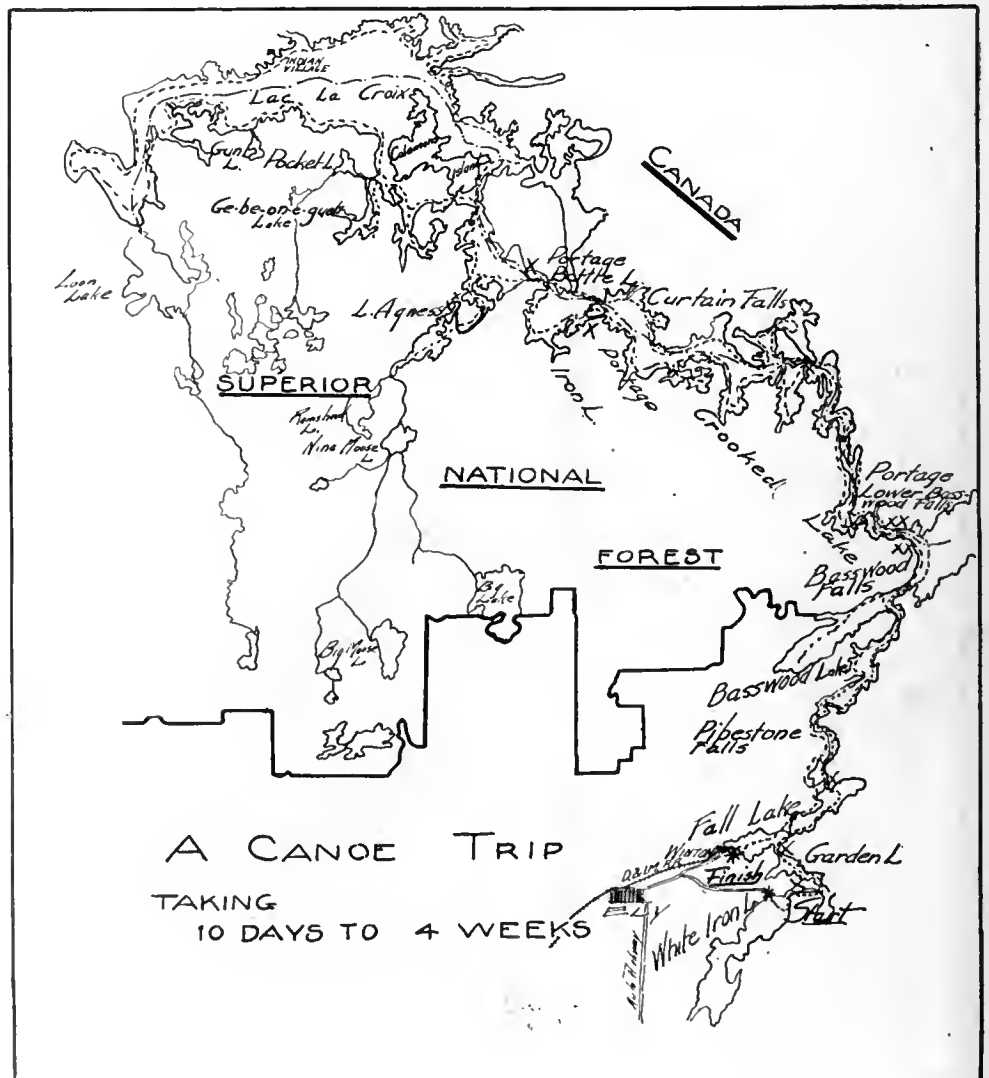
Lake. Several short portages are encountered and the Pipestone Falls are on the route. Camp on Basswood Lake, near the upper falls. An extra day here will afford time to cruise around Basswood Lake and return to the same camp that night.

SECOND DAY.—To Crooked Lake and the lower Basswood Falls. Several short portages are needed to get around the upper and Lower Falls. Below each is a good place for wall-eyed Pike and the larger Northern Pike.

THIRD DAY.—Down Crooked Lake to Curtain Falls. A good easy day's paddling without portages except around Curtain Falls. Pike fishing is very good below this falls.

FOURTH DAY.—To Coleman's Island in Lac La Croix. The Indian village is opposite this island on the Canadian side. If one plans to visit this place a few tokens of friendship should be taken along. Gun, and tobacco do very nicely for this.

FIFTH DAY.—Coleman's Island to the Loon Lake port-





A TYPICAL ISLET

On many of these small islands are ideal camping places, but the fuel often has to be carried from the nearby shore.

tance. Many day-long cruises may be worked out from each camping place. Short portages from Lac la Croix will take the canoeist into other lakes and the deeply indented bays of all of these lakes are delightful places to visit while every small tree-covered islet invites one to stop and explore. To the North is the Quatico Provincial Park of Canada and all of the interesting things in this

area are worth extra time necessary to visit them. When camping in the Canadian sections the rules of the park govern, while on the American side the regular Forest Service standards regarding fire and sanitation are the only restrictions, except that this great forest is a National Game Preserve as well as a National Forest and hunting is limited to camera shooting. Before



CURTAIN FALLS

One of the most interesting water features on the trip is this falls and some of the best pike fishing is in the eddies and rapids below.

entering the Quittico Park secure copies of the rules which exist there to safeguard yourself from trespassing.

For further information write The 10,000 Lakes

Association, St. Paul, The Ely Chamber of Commerce or the Forest Supervisor, at Ely, Minnesota.

[From information supplied by United States Forest Service and Ely Commercial Club.]

AN OUTFIT AND EQUIPMENT FOR CANOE TRIPS

AN autoist would know what to take along on an auto trip. A foot-hiker would know what he wanted to pack on his back. But few of us who go into the canoe country know those things to take and those not to take. An old head at the game has outlined here what to take along on a canoe trip in the Superior and as this information is not readily available for most people it is printed here in the hope that it will serve those who plan a trip in the Superior or other canoe territory during the coming season.

The following list of equipment and supplies to cover a five-day canoe trip includes everything but personal toilet articles and equipment in the class of luxuries.

Equipment for each man: Toilet articles and towel, one suit light wool underwear, one pair light wool sox, one pair heavy wool sox, one pair hobnail shoes or pacs, one pair mocassin slippers, one pair wool or kahki trousers, one wool shirt, one sweater or mackinaw "stag" shirt, one large bandanna and several pocket handkerchiefs, one small can fly dope, one water proof match safe, one large pocket knife or small hunting knife and sheath.

Equipment for both men: Two large packsacks, three candles, one four-pail nesting set, one frying pan, three plates (aluminum), two granite cups, three large spoons, two table forks, two steel table knives, two empty friction topped cans, one folding canvas wash basin, two small cans of matches, one large oiled linen poncho, four to six single wool blankets, one two-pound single bit ax with leather sheath, one sixteen-foot canoe with carrying yoke, one small can canoe glue, one tent (a silkoline or balloon silk "A" tent with floor sewed in and entrance made insect-proof with bobbinetting or cheese cloth).

Food: Five loaves of rye or other bread, one pound

butter, one-half pound cheese, two small packages macaroni cut in short lengths, one-half pound coffee, one-quarter pound tea, five small cans condensed milk, three pounds sugar, one pound oatmeal, two pounds rice, one pound prunes, one pound dried apples or peaches, two pounds bacon, two pounds cornmeal or other cereal, two pounds pancake flour, one pound maple syrup, one pound hardtack or health bread, one-half pound raisins, one-half pound dehydrated soup vegetables, two small cans of cooked beans, one small can of cooking oil, one-half pound salt, one small can pepper, ten beef broth cubes, two cans condensed soup, one-half peck of potatoes.

All food should be carried in cloth bags, preferably waterproofed.

To estimate equipment and supplies for two men for more than five days:

General camp equipment the same. Add two pairs of heavy wool sox, one extra suit wool underwear or one pair wool underdrawers. Include a reflector oven and an extra packsack. For food, multiply the foregoing list with the following changes: Take only two

loaves of bread for the entire trip. Take only one pound of butter. Cancel from the list the potatoes, canned beans, pancake flour and canned soup. Add to it seven pounds flour, two parts white and one graham, one small can baking powder, two pounds navy beans, use one pound powdered milk to each ten days and leave out the condensed milk.

It must always be remembered that a little comfort in camp sacrificed means more comfort on the trail. All equipment must be carried on one's back over portages and dried fruits and vegetables mean light packs.

[Compiled by C. A. Dahlgren, Supervisor of the Superior National Forest.]



CANOE TRAVEL IN THE SUPERIOR

Canoes are the only means of reaching a very great portion of this Forest. The old portages followed by trappers and the Indians before them are today the lines over which canoes are carried from one lake to the next.

HOW SCHOOL CHILDREN STUDY TREES

BY SUSAN S. ALBURTIS

NATURE STUDY DEPARTMENT, DISTRICT OF COLUMBIA PUBLIC SCHOOLS

WITH children, interest in trees and their conservation is slow of growth. The American child is always ready to meet a patriotic appeal. Therefore, a teacher can, through such appeal, give an impetus to a cause that would otherwise take years of ordinary school methods to accomplish. Voting for a national tree offers much opportunity for patriotic expression. It furnishes material for teaching civics. Whether voting for officers of a club, the President of the United States or a national tree the voter should know the qualifications of the candidates. Such qualifications should be weighed carefully, a balance struck in favor of the one who will best serve the office. To be a good voter one must be intelligent. He must educate himself by reading, observation, exchange of opinion and argument.

The foregoing is the clue to the successful outcome of the campaign for a National Tree recently held in the Washington, D. C., schools. Washington schools are fortunate that they have a nature study staff. Its work is limited to the sixth, seventh and eighth grades and its number is so small that each school receives but a forty

minute lesson once in two weeks. However, such a lesson given by an enthusiastic teacher, a specialist who has time and opportunity to provide an abundance of material, who knows her subject and how to teach it, is worth hours of talking about things not seen.

Tree study is the assigned unit for the eighth grades. In outlining the campaign it was decided to make an intensive study in that grade of a fewer number of trees than the regular course called for; to study those most frequently planted within the city limits or found native around the District of Columbia or had a wide range through the States. The candidates selected were the American elm, tulip, sycamore, dogwood, sugar maple, pines, oaks, apple and hickory. The eighth grade pupils were used in small committees to educate the children of the other grades. This is a sound educational method and at the same time a sure means to secure interest.

A visiting nature study teacher with but forty minutes once in two weeks would find it difficult to take classes out-doors for the study of the complete list. The larger part of the teaching, therefore, had to be done indoors.



VALUABLE RESULT OF THE STUDY OF TREES

One feature of the interest shown by the pupils of the Washington, D. C. schools in trees was their campaign against bagworms. In one locality they gathered 17,000 bagworms in 1919—but the following year could find no more than 450 on the same trees.

If one of the trees to be studied was available nearby then outdoor study was the method used. To teach trees in a limited time indoors so that they may be recognized in the open requires careful lesson planning, and the use of much illustrative material. This material consisted of medium sized branches of trees; collections of nuts and tree seeds; wood sections and pieces of bark and pictures.



A CHART ON THE OAK

School children showing the distribution, the wood and the uses of the oak in the national tree voting contest.

The latter were obtained from the American Forestry Association, United States Forest Service and from magazines. Wood sections and specimens of bark were gathered in suburban sections where real estate operators were "improving" land by felling trees. The tree planting department granted permission to the teachers to cut sprays from the street trees in order that every class might have a spray of each kind studied, to press and mount on herbarium paper. The teachers aimed to teach about two trees in a lesson as teaching by comparison covers ground in tree work. Leaf arrangement, shape, color, fruits, bark of both old and young wood; shape of tree; its value in street planting were matters of observation.

At the close of each lesson assignments were given to committees of children to be completed before the next visit of the nature study teacher. These assignments sent the children to all parts of the city, after school and on Saturdays, for first-hand information; others referred them to books. Within a very short time the supply of books in the Public Library was exhausted. The adult

population became interested in trees in order to answer the questions of the children. So many questions and so much information awaited the nature study teachers that frequently the time for the new lesson was much shortened.

The following topics of study on the oak will illustrate the nature of both home work and class work:

THE OAK

White Oak Group—Bark and wood light; acorns on this year's wood; leaves with rounded lobes without spines.

Red Oak Group—Bark and wood dark; acorns on last year's wood; lobes of leaves with spines.

Sudworth's Check List of the trees of the United States, Bulletin 17, United States Forest Service, gives seventy-three kinds of native oaks, fifteen of which are



LEAVES AND WOOD OF THE OAK

Another form of chart prepared by the Washington, D. C., school children in the study of the oak and its uses.

around the District of Columbia. To know one-half of the Districts' oaks does not seem too much for an eighth grade pupil.

Distribution—The Check List shows the oak growing in every State but Idaho, Montana and Wyoming.

Qualities of the Oak—Great height; sturdiness due to strength of fiber; two kinds of roots give power to withstand storms; silver grain.

Insects that live on the oak.

Uses of the Oak—How we use it for bedroom furniture, staircase, interior finishing, dining room furniture, desks, bookcases, tanning leather, in street cars, passenger

coaches, steamboats, on the farm in implements, fences, fuel, etc.

The pupils were asked for the following information:
Name all the streets within five blocks of your school that are planted with oaks.

Find the diameter of the largest oak in this section. Be sure to include the parks. Measure the tree four feet above the ground. Report the kind of oak, its location, its diameter, its circumference.

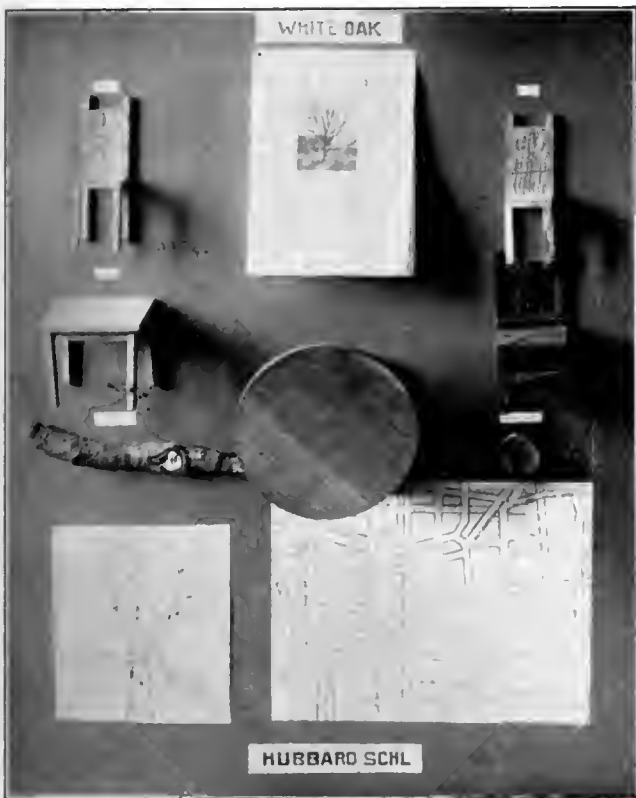
Learn one-half of the kinds of oaks around the District.

What are oak apples?

What is meant by the term "quartered oak?"

THE DOGWOOD

In the study of the dogwood the pupils were required to answer the following questions:



WHITE OAK CHART

This not only has articles made of oak but has also a chart showing location of white oak trees in a section of Washington.

What is there about dogwood that is the cause of its destruction?

Would it be better protected if it became the national tree?

Forty-seven kinds of birds eat its fruit. Can you use this in your argument for it as the national tree?

Why should Washington and Baltimore people especially protect it?

Why is its bark very easily recognized? Try to go to the Zoological Park before its berries fall to study the bark.

Its name is odd. Can you find a reason for it?

Is the wood of any commercial value?

THE APPLE

The apple lesson was most satisfactory as city children had never thought of apples by individual name or eating qualities. The Horticulturist of the Department of Agriculture furnishes each teacher with a named set of the commonest apples in the Washington markets. The children were required not only to know these apples



ARTICLES MADE FROM OAK

Furniture and other things made from oak by pupils who prepared a chart to show both use and identification.

when they saw them in the stores and on the fruit stands, but two others in addition. Interest in apples waxed high during that period which incidentally happened to be the National Apple Week. The health in apple eating was emphasized and re-emphasized by the use of the following quotation from John Burroughs in "Winter Sunshine:"

"The boy is indeed the true apple-eater, and is not to be questioned how he came by the fruit with which his pockets are filled. It belongs to him, and he may steal it if it cannot be had in any other way. The apple is indeed the fruit of youth. As we grow old we crave apples less. It is an ominous sign. When you are ashamed to be seen eating them on the street; when you can carry them in your pocket and your hand not constantly finds its way to them; when your neighbor has apples and you have none, and you make no nocturnal visits to his orchard; when your lunch-basket is without them and you can pass a winter's night by the fireside with no thought of the fruit at your elbow, then be assured you are no longer a boy either in heart or years."



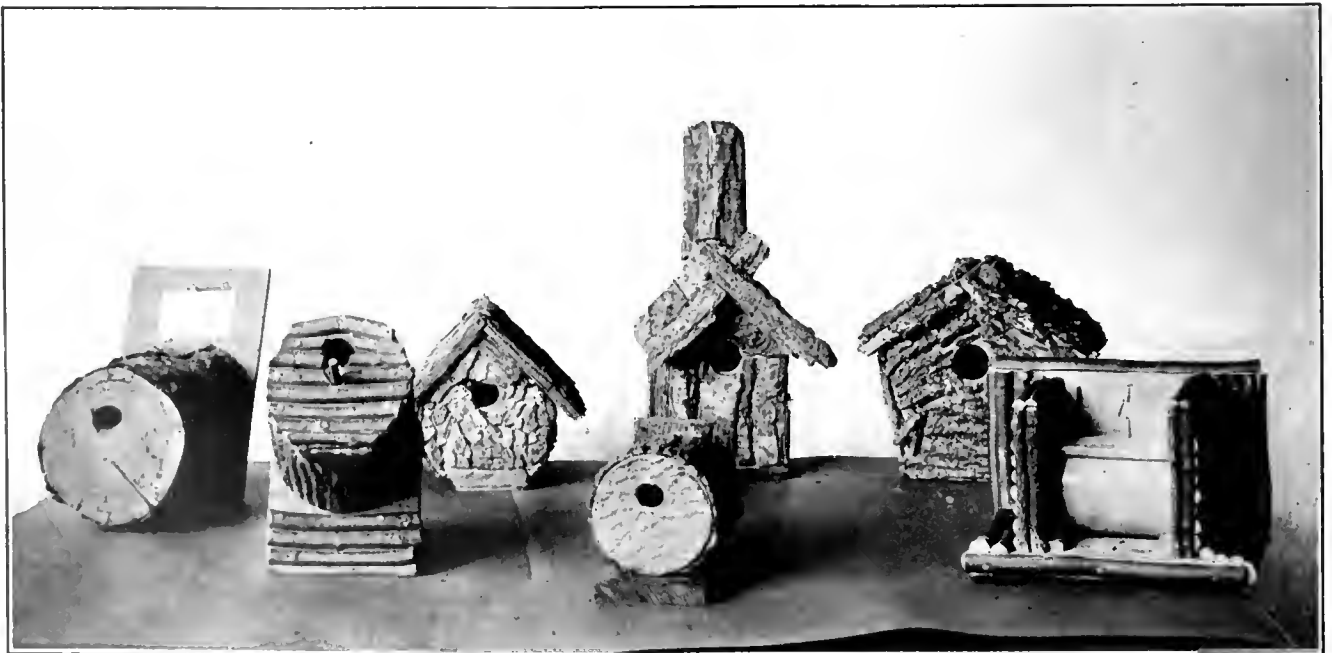
USES OF HICKORY

Chart prepared by the students of a Washington, D. C. school in the contest for the selection of a national tree.



IDENTIFICATION OF HICKORY

Showing how the school children prepare charts after studying the characteristics of hickory.



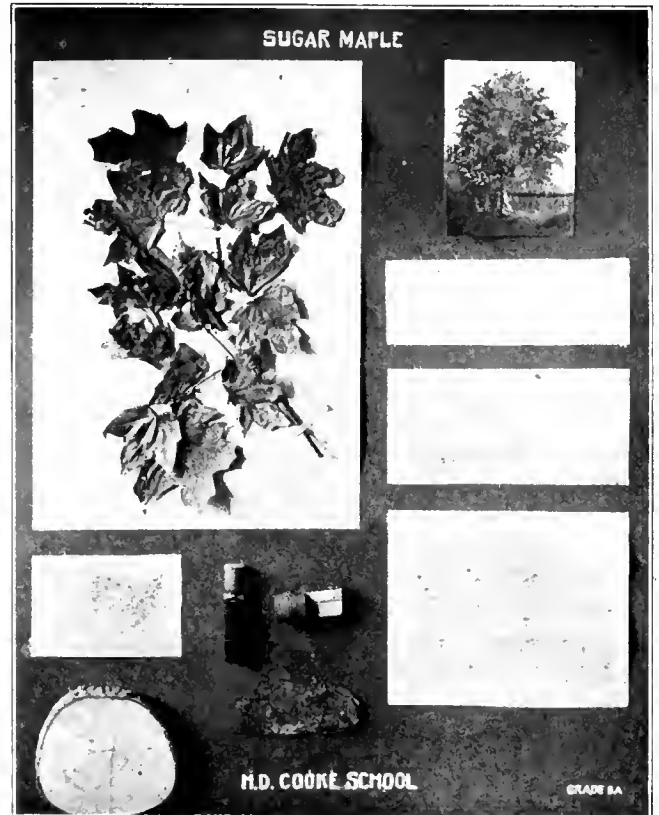
BIRD HOUSES MADE BY WASHINGTON SCHOOL CHILDREN

During their study of trees the pupils found among other things that attractive birdhouses could be made from the bark. Some of these are camouflaged tin cans, some are bark covered; some are made to swing and some to be nailed to trees.



A CLEVERLY MADE CHART

Note the maple sugar production and use pictured in the upper part of the chart, the pool table, bed, chair and dresser in the lower.



THE SUGAR MAPLE

Here is shown both identification and description of the sugar maple in another chart prepared by Washington school children.

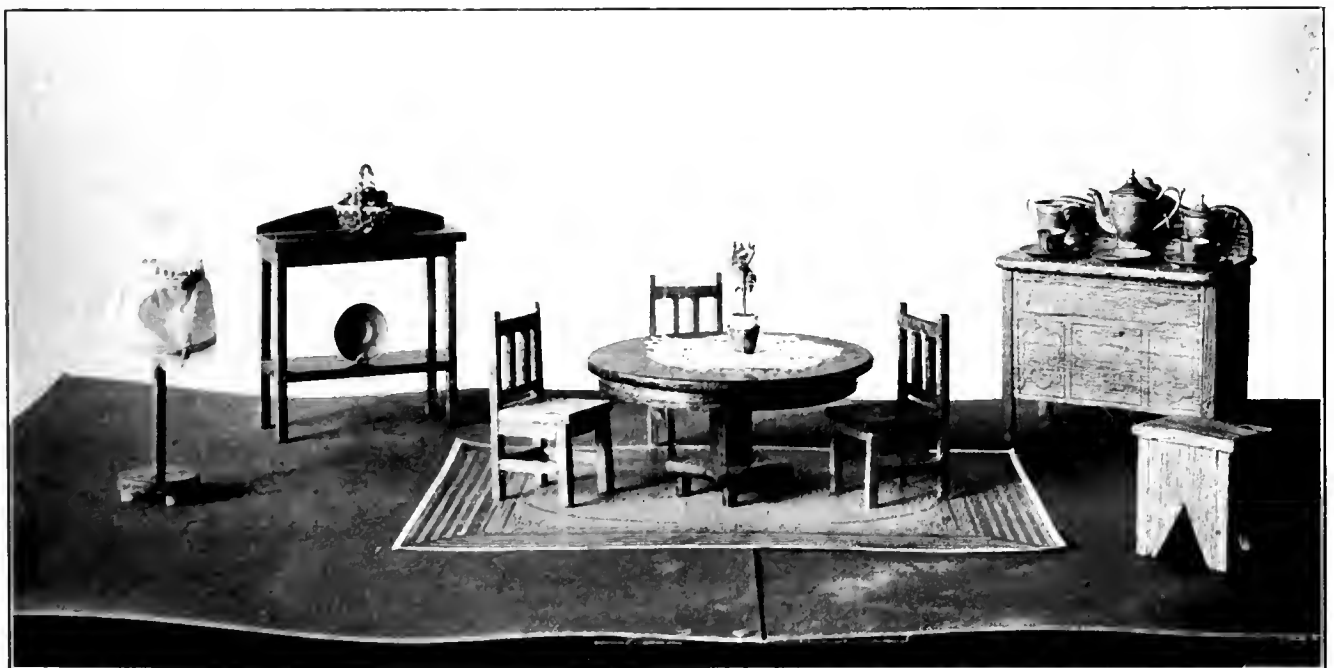


EXHIBIT OF THE USES OF RED OAK

Students who favored the Red Oak in the National Tree voting contest in the Washington, D. C. schools made a fine set of furniture as an argument in favor of its selection as the national tree. This furniture was made to scale, one eighth of an inch to a foot.

The suggestion, how we use the oak throughout the day, led to excellent exercises in oral English. In one school a boy suggested that miniature dining room furniture of oak could be made in the carpenter shops. This was mentioned incidentally in a newspaper article and spread so rapidly that when the suggestion came that an exhibition be held to show the public what the children had done, it was arranged with the little extra work.

The children placed on large mounting cards material that would illustrate their choice for the national tree. These charts were exhibited for four days before the vote was taken and the public asked to use them as a means of education and then vote. Thousands of people visited the exhibition, boys and men in great numbers. The interest shown warranted extending the exhibit three days. Three-minute speeches on the value of various trees as a national tree were delivered by the chil-



CHARTS SHOWING USES OF PINE

The fact that pine is so easily worked in wood-using made it popular with the pupils, who made various articles to show some of the many ordinary uses of the wood.

dren of the eighth grades to the children of the grades below and to the visitors at the exhibition. The American boy or girl feels his country's call deeply, be it a call for war service or a call to vote for the national tree. Speakers in the recent presidential campaign did not take themselves more seriously than these youthful speakers. The speeches were earnest, sometimes poetic, full of patriotic appeal to vote for a truly American tree, and best of all, indicated a determination that the voters should know the reasons for their choice. It was not always the boy who spoke "longest" and "loudest" as one boy expressed it, who carried his audience, but the boy who clearly and logically made his points. During the exhibit one of the daily papers printed a ballot. The children took these to school and voted the last day of the exhibit. The votes were counted in each class, tabulated at the buildings and sent to the central office where the nature study



ONE RESULT OF STUDYING THE USES OF TREES

In the exhibition of uses of wood as part of their studies about trees, boys of the Washington, D. C. schools made the furniture and the girls the bedding and draperies shown in this photograph.

were oddly uniformed, as tin soldiers are apt to be.

"Did Washington's men wear uniforms like these?" someone asked the maker of the exhibit.

"Anybody knows," responded the boy, "that the soldiers in the Revolution had to wear anything that they could get ahold of."

The pine exhibits by one school showed a section of a Maryland road with the telephone and electric light poles and fences made of pine.

Those of us engaged in teaching know that the success of any movement among children depends on the interest and co-operation of the classroom teacher. The special teacher may suggest to committees of children but it requires the backing of the classroom teacher for results. In the final analysis, therefore, to her be-

longs a large share of the credit for the successful outcome of the Campaign for a National Tree.

If teachers want a thoroughly enjoyable nature unit start a campaign for the national tree. It will take about two months to do it well. List the local tree candidates, study them in the open, historically, commercially. Put speakers on the stump. Ask one of the leading papers of the community to print the ballot and send the returns to the American Forestry Association, 1214 Sixteenth Street, Washington, D. C. Thus is developed an educational campaign to quicken the growth of tree knowledge and well worth the science or nature study teacher's best effort. [Photographs by courtesy of the United States Forest Service.]

164 CITIES TELL THE STORY

THIS tree voting contest developed the most widespread publicity for the schools of Washington that any school activity in any city ever had. The teachers have compiled a list showing 164 cities and towns the newspapers of which published articles and pictures describing the contest. These are as follows:

Alabama—Tuscaloosa.

California—Bakersfield, Corona, Highland, Los Angeles, Riverside, Santa Barbara.

Colorado—Denver, Trinidad.

Connecticut—New Haven.

Delaware—Wilmington.

Florida—Jacksonville, St. Augustine, Tampa.

Georgia—Atlanta, Macon, Rome, Sparta, Waycross.

Illinois—Beardstown, Canton, Chicago, Danville, Du Quoin, Edwardsville, Elgin, Freeport, Lincoln, Melrose, Monmouth, Norris, Peoria, Pinckneyville, Springfield, Troy, Washington, Waukegan.

Indiana—Anderson, Attica, Beymour, Butler, Fortville, Fort Wayne, Kokomo, La Porte, Liberty, Lockport, Marion, Munice, Richmond, Sluffton.

Iowa—Burlington.

Kansas—Dodge City, Independence, Leavenworth, Winfield.

Kentucky—Danville.

Louisiana—New Orleans, Shreveport.

Maine—Lewiston.

Maryland—Hagerstown.

Massachusetts—Boston, Holyoke, Idwell, Lowell.

Michigan—Saginaw, Cadillac, Detroit, Dowagiac, Grand Rapids, Houghton, Manistee, Owasso.

Minnesota—Duluth, Stillwater, St. Paul.

Missouri—Independence, Kansas City, St. Louis.

Montana—Butte, Dillon, Livingston, Miles City.

Nebraska—Lincoln.

New Hampshire—Concord.

New Jersey—Atlantic City, Jersey City, Newark, New Brunswick, Paterson, Town of Union.

New York—Batavia, Binghamton, Brooklyn, Buffalo, Canandaigua, Elmira, Gloverville, Greater New York, Ithaca, Long Island City, Middletown, Plattsburgh, Queensborough, Rochester, Syracuse, Watertown, Winchamton.

North Carolina—Greensboro.

North Dakota—Bismark.

Ohio—Bowling Green, Cincinnati, Cleveland, Middletown, Warren.

Oregon—Eugene, Pendleton.

Pennsylvania—Allentown, Beaver Falls, Carbondale, Chambersburg, Gettysburg, Cambridge Springs, Gettysburg, Hanover, Harrisburg, Johnstown, Meadville, Pittsburgh, Philadelphia, Plainsville, Stroudsburg, Titusville, Washington, Wilkes Barre, Williamsport.

Rhode Island—Providence, Westerly.

South Carolina—Charleston, Spartanburg.

South Dakota—Yankton, Huron, Sioux Falls.

Tennessee—Nashville.

Vermont—Rutland.

Virginia—Petersburg.

Washington—Port Angeles, Toppenish, Walla Walla, Yakima.

West Virginia—Fairmont, Huntington, Parkersburg.

Wisconsin—Chewaleh, De Pere, Eau Claire, Fond du Lac, Green Bay, Hilbert, Jefferson, Merrill, New Glarus, Rice Lake.

Wyoming—Cheyenne.

LIFE IN PONDS AND MARSHES

BY R. W. SHUFELDT

WE usually define a pond as a body of water of less extent than a lake, and examples may be seen in a duckpond or a millpond; this definition holds true whether the pond is a natural one or made through artificial means. Again, ponds may be fed by springs or streams, or they may dry up either wholly or partially during prolonged droughts.

A pond need never be confused with a marsh—the latter being sometimes defined as a fen or a swamp. Here we have a tract of land that may be temporarily, partially, or permanently, overflowed by water—either rain water, or water coming from the overflow of neighboring springs, or from rivers, creeks, or small streams. Such overflows usually occur over stretches of low ground of greater or less extent, causing it to become miry, wet, and swampy. Land thus covered will soon entirely change in character; aquatic plants will spring up in it where the water is not too deep, and water-loving

shrubs and trees will eventually skirt its margins. This will happen irrespective of the fact that such a marsh may dry up—partially or entirely—during dry seasons or droughts.

Swamps may be connected with one or more ponds, or with a system of ponds. When a marsh is formed by low-land in touch with the rise and fall of the tides in bodies of salt-water, such marshes are known as tide-marshes or salt-marshes, and in these the majority of plant growths will be entirely different from what we meet with in a fresh-water marsh or pond. So, too, for the trees and shrubs that flourish along the margins of a salt-water marsh—they will be found to be entirely different species as compared with those growing along the borders of ponds.

Sometimes, when marshes dry up and remain so for a long period, the deeper parts of one or more of them may remain as a pond or system of ponds; but this cannot well happen—indeed, under most circumstances can never



MARSH SCENE NEAR THE GREAT LAKES

This most attractive view is but one of a series of many others forming a part of an exhibit at the Museum of the Chicago Academy of Sciences. Mr. Frank M. Woodruff, curator of that institution, is the designer, and it represents a scene on the Calumet River, near Chicago, long before that city became the great metropolis it now is. Upwards of twenty living forms are presented in it.



DRAGON FLY

Young Dragon flies, known as nymphs, live a subaquatic life, and the structure and history of these form one of the most remarkable chapters in the entire range of entomology.

happen where the marsh is a salt-water one. It can only be affected where extensive changes take place in the area in which such a marsh exists.

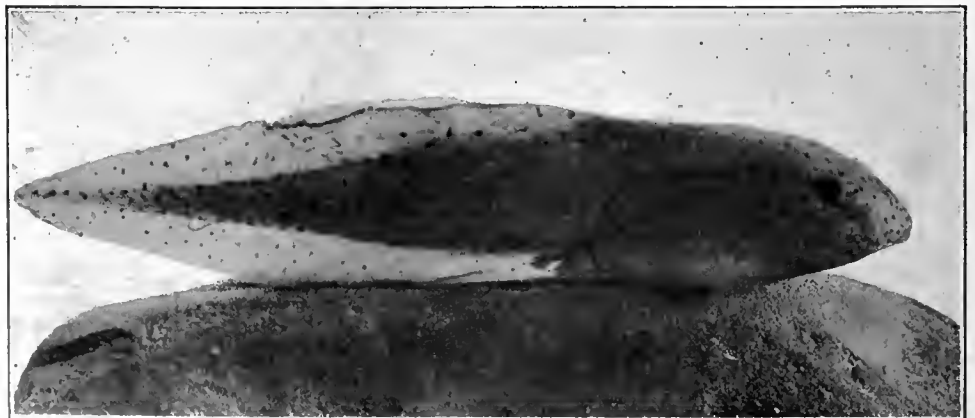
As to the animal life in fresh and salt-water ponds, in fresh and salt marshes, or in combinations of any of these, it differs very materially and for evident reasons. In addition to the difference in the nature—the chemical nature—of the element in which the various animals are called upon to live, there is the matter of altitude and geographi-

cal situation. Naturally, we would not look for salt-water marshes above sea-level, and we do not meet with ponds in mountainous districts; while as to their geographical locations, it is hardly necessary to point out that in New Jersey, for example, one would find very different species of animals in ponds and marshes of all descriptions, from the ones met with in any of the Pacific tier of States; those in New England would be different from the ones found in Florida, or in Texas, and so on for other regions.

Another matter is the fixity of certain forms in their habitats, by which is meant the inability of certain species, through the exercise of their own powers, to quit their normal habitat and pass to another more or less distant. For example, fish in ponds where there are no means of escape either through aqueous connections or through inundations, are confined for life to those pools or ponds wherein they first saw the light; and this is also true of many of the lower forms of animal life, especially of the larvæ of certain insects. However, in the case of the latter they have the power to travel at large when they assume the adult stage. Nymphs of dragon-flies, for instance, when brought forth in an isolated pond, remain in it until they pass to the fly-form, whereupon they roam about on wing as far afield as they please.

Minks, otter, muskrats, and other mammals more or less aquatic by nature, may remain in certain parts of swamps, or make their home in suitable ponds, and stay there for the rest of their lives; though this only happens when they are not molested or harassed by man. But if this comes to pass, and they can get away in safety, they will soon migrate to other sections where the needed seclusion may be enjoyed.

In the more northern parts of the country the feathered residents of ponds and marshes are, as a rule, of the migratory order; so that, when winter sets in, they take themselves off and fly southward. In warmer climates, in the Southern States, the extent of bird-life to be found about marshes and ponds will depend on to what extent they are harassed or destroyed by man, and upon the amount of plant, shrub, and tree-growth to be found



TADPOLES ARE INTERESTING TO STUDY

Bull-frog tadpoles, of which one is here shown natural size, make very instructive forms to rear in aquaria. This one's hind legs were just appearing; the fin to the tail is quite translucent, while many of the life-phenomena of all animals may be studied in this creature.

growing along the margins or in the shallower locations about them. Many ponds and not a few marshes are quite devoid of every kind of plant growth beyond sedges and grasses; so that to find birds in such places would be by no means the rule.

In order to study and enjoy the bird-life of large ponds and marshes one must go far beyond the habitations and resorts of man—even into districts where the automobile is not known. Such localities and undisturbed regions, where this feature existed in all of its pristine naturalness, have only been discovered by the writer in a very few places. As late as 1868, some parts of central Wisconsin lay in a region that had not been invaded to any extent, and some of the lake-marshes and small, isolated ponds were the homes of many species of birds that habitually breed in such places—some of them belonging entirely to the avifauna of the Middle West. Where the plant-growth in an extensive marsh consisted principally of cat-tails, it was not an uncommon thing to see, in the spring, thousands of our elegant yellow-headed black-birds take to flight when something had alarmed them, alighting in the nearby trees and bushes. The explorer, passing through that swamp, would find hundreds of



CHANGES IN THE TADPOLE

At this stage, the tadpole's tail exhibits but very slight evidences of its total disappearance later on; the eyes are larger and nearer the top of the head; the mouth is more frog-like, and the fore-limbs can be discerned beneath the skin.

their nests built on the cat-tail stalks and in such low shrubs as might be growing there.

Ponds and marshes of a similar description in southern Alabama and Mississippi, forty years ago, were wonders in the bird-life they presented. There the red-wing black-birds were found instead of the yellow-headed species, and their nests were fully as abundant. All the birds of this group—aside from the cowbirds and others—lay unusually pretty eggs, which are a pale blue, with curious, scraggly lines of black marking them in a most bizarre manner. These southern ponds and immense marshes, when sufficiently secluded, often teem with various species of herons, ibises, rail, and many other marsh birds. Then, too, where such a pond is more or less surrounded with timber—situated in a forest in fact—we are pretty sure to meet with the wood duck, the most beautiful species of all our freshwater wildfowl. This elegant bird most often breeds in the hollow trunks of trees that overhang the pond or marsh where they occur. In 1870, when attending Cornell University, the writer discovered the nest of a pair of these wood ducks in a swamp at the foot of Lake Cayuga (Ithaca, N. Y.). It was in the hollow stump of an old sycamore, some forty feet above the ground. When the young were ready to leave the nest, their parents brought them down to the water of the swamp, one at a time, until the entire brood had been safely launched in their natural element. There were seven or eight of the little downy fellows, and it was a beautiful sight as they swam out with their parents into



BULL FROG EIGHT INCHES LONG

East of the Rockies, and in suitable localities, bull-frogs are found all over the eastern parts of the United States—that is, in ponds and marshes everywhere. They do not appear until the weather becomes warm and the summer well advanced. The species is a thoroughly aquatic one, and of some economic importance.

the more open water of the swamp. That swamp, by the way, was a wonderful place in those days in which to study many of the forms that live in such places; it teemed with snipe—the one we call English snipe—in season; with the various fresh-water rails; swamp sparrows, wildfowl, bittern, blue heron, and many other birds.

One of the best places for dragon-flies is about such ponds and marshes, and we have many interesting species of them in our country. Dr. L. O. Howard, who has written some wonderfully interesting chapters on these remarkable insects, says in his "Insect Book" that "Although dragon-flies are frequently very abundant in swampy regions and about ponds, there are times when they swarm in enormous numbers. Koffen, a German entomologist, this was long before the World War, has

published a chronological account of the records of dragon-fly migrations from 1494 to 1868. Such migrating swarms seem to have been more frequently noticed in Europe than in this country, but several have been noticed in the United States. For example, Mr. A. H. Mundt, of Fairbury, Illinois, says that 'between the hours of 5 and 7 P. M., August 13, 1881, the air for miles around

seemed literally alive with these dragon-flies (*Æchua heros*) from a foot above the ground to as far as the eye could reach, all flying in the same direction, a south-westerly course, and the few that would occasionally cross the track of the majority could all the more easily be noticed from the very irregular and swift course they generally pursued; but even these few stray ones would soon fall in with the rest again. Very few were seen alighting, and all carefully avoided any movable obstacles.'

"This migration was probably caused by the very dry season which had resulted in the drying up of ponds and swamps, and it is probable that other similar recorded migrations have arisen from the same cause."

The anatomy of a dragon-fly is truly remarkable, as is the life-history of the young, which are strictly aquatic animals, called nymphs. We have yet a great deal to

learn about these curious insects in all their various stages of growth, and today we know but very little about how they begin to breathe air after they leave the water. Some dragon-flies are very beautiful insects, and our professional and amateur entomologists have, in various parts of the country, made some wonderfully fine collections of them, quite the rivals of collections of moths and butterflies.

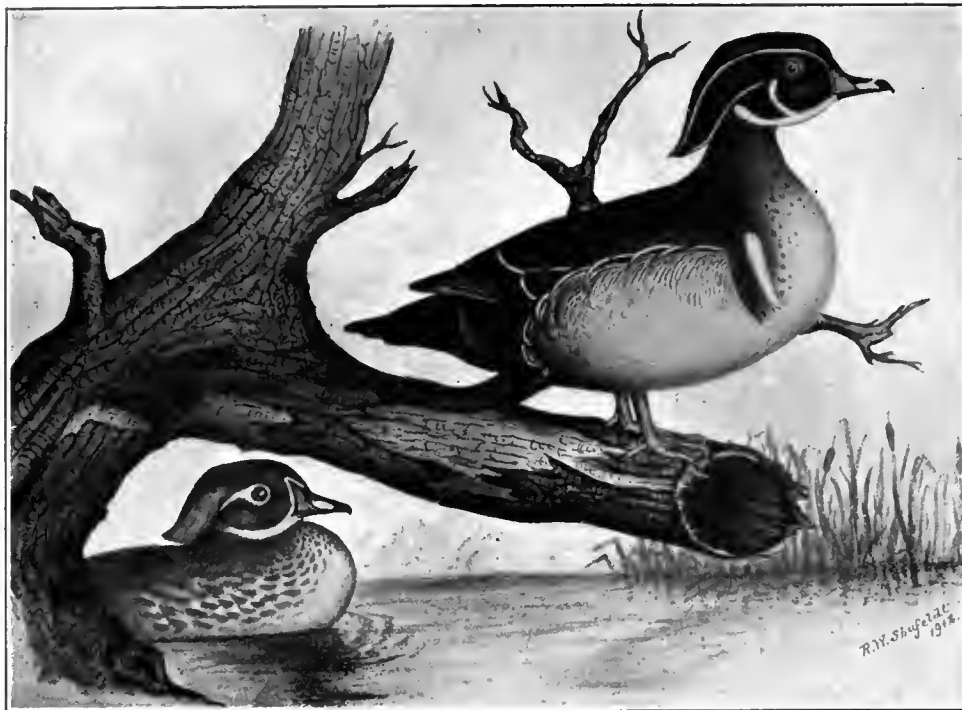
Pond and swamp insects constitute a very large subject in itself, and an exceedingly interesting, not to say important one. To follow this successfully, one should master the use of a modern compound microscope, and have the entire outfit for capturing the specimens. Many of the minute forms have histories of which we know but little, and there are not a few species yet to be discovered even in

ponds and swamps of the thickly settled parts of the eastern States. In a brief article like the present one, it is out of the question to enter upon this very extensive field of research.

In previous numbers of AMERICAN FORESTRY the writer has already published accounts of several species of our fresh-water turtles, and among these an account of our

common snapping turtle; so we may pass that fellow by on the present occasion. A good picture of one, however, is introduced, as he cuts such a prominent figure in a chapter on those animals found in ponds and swamps.

Where they are not likely to be too much disturbed and persecuted, one of the most abundant mammals found in the swamps and some ponds of the eastern parts of the United States is the well-known muskrat. This big, aquatic rodent is well known to the writer, who has shot, trapped, and skinned many a dozen of them. This rodent is also called the musquash, and there are, in the United States, several species and subspecies of them, some being eastern forms, others western, while not long ago a very distinctive one was found in the Dismal Swamp of Virginia—a "swamp," by the way, that in



A PAIR OF HANDSOME WOOD DUCKS

A few years ago, this species of wood duck came very near being exterminated, so great was the demand for a few special feathers from its sides for *trout-flies*! The cut is from a photograph of a water-color by the author.

the old days was a veritable paradise for the naturalist; all of its fauna and flora are by no means well known at this date.

Most of the writer's experiences with muskrats have been in New England and the Gulf States; they were very abundant in the salt water marshes along the shores of Long Island Sound in Connecticut in the early 60's. Late in the fall, these animals build their well-known "nests," also known as cabins or lodges, selecting places usually below high-water mark, and as secluded and inaccessible as possible. As winter comes on, they occupy these nests, and pass that entire season in them. As the marsh freezes over, the nests afford them a place where they can breathe the open air, and be, at least to some extent, safe from their enemies, except man. In them, too, they gather the food upon which they live the winter through, such as lily-roots, mussels, and so on. Muskrat hunters often open up these nests when they can reach them by walking over the ice in the winter.

Many years ago, during a very severe winter, I witnessed the sudden ripping open of one of these dome-

shaped nests by several men who were old muskrat hunters, and who had taken the precaution to plug the avenues of escape. To the surprise of every one, there were no fewer than eleven fine rats in the upper apartment of the nest; but, although they squealed and fought like good fellows, they were all soon despatched with heavy sticks, some of them giving the men quite a chase in the light snow.

Usually not more than four or five occupy this part of the nest during the winter, and they take pains to line it well with soft marsh-grass or some similar material that they can conveniently gather in the autumn; it makes a nice place to curl up and sleep the long winter, huddled together to keep warm.

Good muskrat skins in those days fetched about a dollar and a half each; so this five-minutes take netted the men sixteen dollars and fifty cents, which piece of good fortune was the talk of the village hunters and others for many a day.

Besides muskrats, there are a number of other mammals one may meet with in swamps and marshes in



AT THE TERMINUS OF THE DYKE

Marshy banks of the Potomac River at low water, nearly opposite Washington. The home of big water snakes, frogs, various species of ducks in season, two or three species of turtles, several different kinds of water birds, and other inhabitants of the river marshes. Photograph by the author.

various parts of the country. Among these may be mentioned that curious mole known as the star-nosed mole, which has a form very much like the common mole, but differs from it through having a conspicuous circle of pale, flesh-colored, flexible, and fleshy filaments around the end of its nose. What these are for it is hard to say; although, should they be very sensitive, it is quite likely they aid the animal in discovering its food, which consists largely of angling-worms, as well as to detect the nature of the material or soil ahead of it, as it rapidly burrows in the mire of the marsh where it lives.

One is sure to meet a number of different kinds of snakes from time to time in our swamps and marshes.

the swamp," he says, "we followed the stream. Conditions were found to be in favour of snake-hunting. The stream was very low, owing to a drought, and in stretches here and there was little more than a series of pools, connected by trickling courses of water. The banks of these pools were sandy, and progress into the swamp was comparatively easy in consequence. Not long after starting into the growth, we spied the first moccasin. It was a large specimen, sunning on a log that projected from the water. This snake was stalked cautiously, and a noose, on the end of a very slim pole, was passed over its neck before it took alarm. The reptile was pulled quickly upon firm ground, where its



THE MUSKRAT

Musk rats live in ponds and marshes, as well as along the banks of rivers, streams, and dykes where the latter stay the flow of waters. They dig burrows in river banks, while in marshes and reedy ponds they construct nests. Next to the beaver they are one of the largest of our rodents.

Some of these are quite harmless, while, upon the other hand, the "cotton-mouth" or water moccasin is one of the most venomous snakes we have in this country; they are particularly abundant in the swamps of the Southern States. The writer collected quite a number of these snakes alive in southern Louisiana many years ago, some of them measuring over four feet in length; one would stand but little chance for his life were he bitten by one of these, with no aid at hand.

Doctor Ditmars once had a great hunt for these moccasins in Black Swamp, located in Hampton County, South Carolina, where the cane grew over eight feet in height, and the snakes were there in plenty. "On entering

head was pinned down with a stick, when it was grasped by the neck and placed in a bag. In stepping over a fallen tree, the guide had a narrow escape. Coiled partially under the trunk was another moccasin, which, suddenly surprised, drew back its head, opened its mouth, and prepared to strike; but before it could do so the man leaped to safety." Doctor Ditmar's account of this famous snake is one of the best that has ever been published, and the reproductions from photographs of the living snakes are sufficient to send the creeps down the spine of any one who chances to stand in particular dread of this class of snakes, the bite of an old one of which is usually fatal in about twenty minutes. They are called

"cotton-mouths" for the reason that just prior to striking they widely open their mouths, the mucous lining of which is as white as cotton—hence the name.

It is hardly necessary to state that of all the inhabitants of ponds and marshes, in any part of the country, there are no more interesting group of animals than the numerous species of frogs. We have a large number of species of frogs in this country; we have learned a good deal about them, and, it may be added, there is still



NEST OF A MARSH BIRD

Many species of birds build their nests on or among the plant-growths of ponds and marshes. This is the nest of our well-known Redwing Marsh Blackbird; it is woven about the blades of a marsh-rush, and contains three eggs. These are pale blue, beautifully marked with black, scraggly lines.

much to be learned in regard to their distribution and life-histories. Probably the best-known frog is our common bull frog; but in addition we have, living in our swamps and ponds, the leopard frog; cricket frogs; pickerel frogs; the gopher frog; the green frog; the beautiful Drayton's frog of California; the equally handsome Western frog, and a number of others. Their study is most interesting and instructive, for it is a creature we may readily observe from the egg to maturity, and this has been done in schools, by investigators, and by boys and girls the world over. Indeed, frogs are animals that have been closely studied anatomically, physiologically, and forty other ways.

Frogs are used for food in many parts of the world, and even in our own country their legs are considered a great delicacy. From our experiments upon them and upon larval frogs or tadpoles, we have learned some of the most important facts in general medicine and human physiology; in biology and physical science, and in chemistry; and in one instance within the writer's knowledge

and recollection, frogs were used with remarkable effect in a case at law. It was a murder trial, and a man was charged with poisoning his wife. There were no witnesses, and no direct evidence of any description, for the deed had been done promptly, thoroughly, and without apparent motive. When found, the victim had been dead several hours, and no one had been present when she died. With this slender array of facts, the hope of discovering the murderer seemed quite remote, and the trial likely to be a brief one. The husband was undergoing the trial; the contents of the victim's stomach was before the jury and the court. It was discovered that the couple invariably had a certain cereal for breakfast. Chemists had failed to discover the presence of either arsenic, antimony, or any of the usual poisons used in such cases. At this stage of the proceedings, a young doctor, who had regularly attended the trial, arose in the court-room and requested that he be allowed to make a test; and after the character and profession of the wit-



SNAPPING TURTLE

A strange thing about this species of turtle is that it can only feed under water; it will starve to death with plenty of food within easy reach should it be placed before it on shore.

ness had been established, this was permitted. Seating himself in the witness-chair, he asked for a small, clean china bowl, which was furnished him. Then, addressing the judge and jury, he said that it had been proved that the contents of the victim's stomach consisted of undigested quaker oats, and, taking a package of the same which he had brought with him, he stirred some of it in water in the bowl. Opening another package, he produced a couple of *bull-frogs*; placing these in the bowl, and, covering the latter with wire gauze, he passed it around for the judge and jury to examine. The frogs were seen to swim about in the most natural manner

possible. He then put the frogs in a glass jar, and thoroughly cleaned out the bowl. Asking for a small quantity of the food found in the victim's stomach, and summoning the jury about him, he dissolved it, in a similar manner, in water in the bowl, the water being obtained from the cooler in the court-room. Then, taking the same two frogs, he dropped them in the bowl, again covering it with the wire gauze. The judge and jury were now all curiosity as to what was to happen. In about five minutes, both frogs suddenly stopped swimming, and were seized with a most characteristic spasm. Each straightened out as straight as a straight could be, curled up their forelimbs on their chests, and in a few seconds they were dead. The witness then turned to the judge and said: "Your Honor, the woman was poisoned with strychnine, administered in quaker oats by some person unknown." Requesting that the bowl be once more thoroughly cleaned and fresh water put in it, he produced some sulphate of strychnine from his pocket, together with two more living frogs. Placing the latter in the bath thus prepared, in a few moments precisely the same kind of spasms attacked them, and they promptly died. At this point the prisoner spoke up and admitted that he had poisoned his wife; while in the same breath, as he shook his fist at the witness, he said: "D—n those frogs!" The man was convicted and duly executed.

Thus we see that we have many things of the greatest possible interest in our ponds, swamps, and marshes; and at least one batrachian that on occasion may serve to bring a murderer to justice, or be used, in another way, to demonstrate the circulation of the blood and the action of the heart in health and disease.

ANATOLIA—A COUNTRY WITHOUT WOOD BY FRANCES L. GARSIDE

SUPPOSE, just for an hour, you turn your eyes from the beautiful trees in your dooryard, and journey in your imagination to a land where our not-overly popular poplar is the only tree. These tiny groves, lining the banks of tinier streams, are the result of forestration.

The land is Anatolia, in the Near East, and as you approach a town your eyes are first attracted by the poplar trees. If you look down on the town from a high hill it is easy to pick out the Armenian quarter, for the way to find it is to look for ruins.

"Ah," you think, "that is a result of race hatred. The Turks go mad when they see anything Armenian."

Not entirely so. These mud houses in which the Armenians dwell were torn down after the inhabitants had departed for the sake of the poplar beams which up-held the mud roofs. Wood is so scarce in Anatolia that it is seized as rapaciously as if it were worth its weight in gold.

It is so scarce that carloads of vine-prunings, thistles and briars are transported into the towns and villages for fuel. One who has made a fire of this nature of fuel on a country roadside is unpleasantly familiar with the endless task of feeding the fire to secure a very uncertain heat.

Firewood in Anatolia costs from \$15 to \$18 a ton when it can be had. The Nationalist Government has prohibited the Near East Relief from buying wood in this district except on specially issued vessikas or orders. Though one does not usually class fruit trees as fuel, even these have been cut down and burnt, so desperate is the need for firewood.

It is this lack of wood that has hampered the Near East Relief in a great measure in its provisions for the Armenians. There is not only the scarcity of fuel to combat, and the consequent suffering with the cold, but there has been no wood for making furniture, nor, of course, for building houses. The orphanages are built of mud, and as far as possible the gasoline can has supplanted wood in supplying household needs. It is beaten into chairs; every needed kitchen utensil once held gasoline; it becomes both a bathtub and the dipper that is used to fill it; it is the plate, the cup, and the spoon. Unfortunately, it cannot be utilized as fuel.

But—there are no trees. And we of America, who can not look to the left or to the right without the eyes resting on a beautiful tree—are spiritually exhausted after an hour's imaginary trip to Anatolia, and are eager to return home.

THE FOREST RANGER

Rode through the mountains a ranger,
Timing his motion to song.
Utter his helping in danger,
Royal, and eager, and strong.
Hearty his handclasp at morning;
Mighty his crushing of wrong;
Splendid when loosened his scorning,
Stained not with anger too long.
Proven by all things that prove,
Mighty his friendship and love.

Certain his promise outflowing,
Open his thoughts as the sky;
Pleasant his coming and going,
Brilliant his dark fearless eye;
Dreadful when wakened his hating;
Awful his scorn of a lie.
This—is a man worth the mating,
Truth in his hands cannot die.
Sower of forests to be,
Builder of State is he.

His are the mountains and heavens,
His the great shaping of deeds;
Wisely he casts in his leavens,
Wisely the future areads.
Service he gives in strong passions,
Forests he grows for the years.
Laughing at follies, he fashions
Spite of all falsehoods and fears,
Forests that long shall endure;
Service immortal and sure.

—Charles Howard Shinn.

FOREST GUIDE DEPARTMENT

SOLAN L. PARKES, EDITOR

THE editor of this department has been ill for some time but is now on the job and will devote his time to forwarding the Forest Guide Movement, doing all that he can to make the program available for those organizations which desire to have it for their members, and also to others which would like to follow the teachings of the program as outlined in the January number of the AMERICAN FORESTRY Magazine. It will take a little time until the full details of the plan can be presented.

* * *

While sitting in the office of the Commissioner of Forestry of Pennsylvania on the afternoon of April 5 my eyes swept the range of hills across the Susquehanna River, in Perry County, and I saw smoke rising, just a little white cloud at first, and I said, "I think there is a forest fire over there on the hills." Chief Forest

Fire Warden White came in, and in a few seconds foresters were on the way to extinguish the blaze.

Five hundred and eleven Boy Scout Troops in Pennsylvania have enrolled as Forest Guides, with the total number of ten thousand one hundred fifty-six Forest Guides in the State of Pennsylvania. There is also the button of the Pioneer Forest Guide, which is a new classification in Forest Guide Service for those who give leadership to the boys in their charge. These buttons will be sent out to the leaders in Pennsylvania as soon as the lists are compiled.

* * *

The photographs show the contents of four cases which can easily be built by any boy or girl scout troop, or any school or club.

The cases are built from boards one-half inch in thickness. Inside measurements, twelve inches wide and



THE WHITE PINE

A case of white pine specimens, cone and seed in center while to the right at the top a branchlet or clump of needles is shown. Immediately at the bottom is a cluster of five needles. You can easily identify the white pine as there are always five needles on a cluster. At the bottom, bark and so forth as in other cases.



RED CEDAR

Red-cedar specimens. There is also a peculiarity about the cedar leaves or needles which is shown plainly on the charts. The bottom of this exhibit is built to show bark, grain and cross section, and makes a very attractive case, as it shows so clearly the red wood of the cedar.

eighteen inches long and two inches deep. Over the chart showing the tree physiology is placed a sheet of celluloid, as is also the case in covering the leaf, the leaf first being placed on cotton, celluloid over same and then tacked to the specimen case as shown in the illustrations.

It will be a good plan for all Forest Guides to build up exhibits for their troop meeting-rooms. Some can build the cases, others can collect the specimens, all can help to make up the cases. Write to J. S. Illick, the Department of Forestry, Harrisburg, Pennsylvania, ask him to send you the book, "Trees of Pennsylvania," which will help in your study of trees and in the building of the cases.

The editor built nine cases and presented them to the National Headquarters of the Boy Scouts of America, at the biennial conference of the scout executives of the United States. He also recently built a number of these cases for use in the Scoutmasters' Training Course, by Dr. Hurt, the scout executive of Chicago.

In the June issue of the AMERICAN FORESTRY Magazine, we will have a story on insect life, and will also show and tell you how to mount and preserve specimens of wild flowers, weeds, and so forth.

* * *

To those who have written to me and whose letters I could not answer, owing to my illness, I want to say in these columns, that I shall now begin to answer the mail that has been accumulating for several months, and that with the June number of the AMERICAN FORESTRY Magazine, we will open the question box to help you along in your Nature work.

Anyone interested in the Forest Guide Movement, and who wants to join, no matter where, or in what part of the United States you may live, is invited to write to the editor of this department, Solan L. Parkes, Editor, Forest Guide Department, Post Office Box No. 9, Reading, Pennsylvania, inclosing a two-cent stamp for answer.



BLIGHTED CHESTNUT

At the upper left, the physiology of the chestnut tree on a chart. In the center top, a small branch showing the live spores of the chestnut blight. To the right, a leaf of the chestnut tree. In the center a branch which shows the results of the blight. At the bottom the grain of the wood of the chestnut, healthy bark, a panel of commercial timber, a cross section and a bottle of seed, fruit or nut, while at the extreme lower right hand corner is the chestnut burr.



THE SASSAFRAS

The seed or fruit, cross section, bark and panel, and for those who do not know, the three leaves taken were from a branch of the sassafras tree. At the top of the case, a leaf with but a single lobe, in the center two lobes, or what is sometimes termed as the sassafras mitt, at the bottom a leaf with three lobes. The writer has found as many as five lobes on a single leaf.

DEFECTIVE SHADE TREES MENACE LIFE

BY T. E. SNYDER

SPECIALIST IN FOREST ENTOMOLOGY, BUREAU OF ENTOMOLOGY, U. S. DEPARTMENT OF AGRICULTURE

EACH year throughout the country there are experienced heavy tropical rainstorms, accompanied by high winds, sharp lightning and torrential downpours of rain, often also hail. These severe storms are seasonal, usually appearing in the late afternoon, and leave in their wake a trail of down telephone and tele-

graph poles and evergreen trees, as well as to telephone and telegraph poles and railroad ties which are placed in earth ballast. It is a general feeder.

This injurious insect occurs in Canada as well as in the United States. From its known widespread distribution there is little doubt but that it occurs over the greater part of temperate North America.

Trees attacked by this borer, including the living sapwood and dead heartwood of both deciduous and evergreen trees, are pine, juniper or red cedar, white cedar,



ADULT BEETLES OF THE PARANDRA BORER ENLARGED FOUR TIMES IN SIZE. THESE INSECTS ARE WINGED AND LAY THE EGGS WHICH HATCH INTO THE BORERS. IN THE SMALL INSERT IN THE LOWER LEFT HAND CORNER THE BEETLES ARE SHOWN NATURAL SIZE.

graph poles, tangled wires, damage to buildings and uprooted and broken off trees. It is not infrequent that there is a loss of life.

The greater portion of such damage can not be prevented by human foresight, but much of the damage to park and street trees can be prevented by better care of the trees. A tree survey should be made at frequent intervals to locate and plot the defective trees, those with dead branches and unsound trunks—those either decayed or infested with borers. It is such trees that are broken off during heavy wind storms, sometimes with loss of human life, and commonly with damage to property.

During the past eleven years careful examinations at Washington of trees broken off during storms and littering the streets and blocking traffic have revealed that one borer is directly responsible for most of this damage by weakening the tree trunks and causing them to snap off. This is the *Parandra* borer (*Parandra brunnea* Fab.) an insect very injurious to a great variety of both broad



THIS IS A GOOD PICTURE OF THE BURROWS OF THE PARANDRA BORER IN A MAPLE TREE IN MARYLAND, AND IT SHOWS THE BORERS AND THE PUPAE, OR RESTING STAGE.

black walnut, butternut, hickory, willow, beech, chestnut, chinquapin, oak, elm, tulip-poplar, apple, pear, plum, wild and cultivated cherry, locust, *Ailanthus*, soft maple, basswood, cottonwood, black ash, sweet gum, and *Paulonia*. The *Parandra* borer belongs to the family



EGGS OF THE PARANDRA BORER IN NATURAL POSITION IN THE WOOD OF APPLE—VERY MUCH ENLARGED

Spondylidae, a small family closely related to the *Cerambycidae* or "round-headed" borers.

The *Parandra* borer is one of several species of wood-borers from which trees are in very little danger of injury so long

as they are kept in sound and vigorous condition. The larva of *Parandra*, or the borer, is a heart-wood borer and is one of the most common borers or grubs found in shade trees. It normally attacks the lower trunk, usually



VARIETIES OF SIZES OF PARANDRA BORERS ARE TO BE FOUND IN AN INFESTED TREE AT ANY ONE TIME. THE BORERS PICTURED ARE NATURAL SIZE

within a few feet of the ground, or rarely the larger limbs of some species of broad leaved trees. The work of this borer is quickly followed by that of other borers and the decay of the infested wood and the frequent breaking down of the tree at the point of the greatest injury to the trunk. Damage by this insect to shade trees is probably greater than any other wood-borer for it completely honeycombs the heartwood and later the living sapwood. As they burrow through the wood, the borers closely pack the fine boring dust behind them; this boring dust is reddish or dunnish yellow in color, and has a clay like consistency; it is characteristic of this borer.

Other insects and fungi soon appear to accelerate decay and within a few years the portion

of the tree infested will consist of merely a thin shell of sound wood surrounding a decomposed heart. A tree so affected may continue to live but will be in danger of falling or being broken off during a gale at any time and sometimes in its sudden, crashing downfall it takes a human life with it.

When a tree is first attacked the beetles insert their



SHOWING CLEARLY THE DEEP BURROWS MADE BY PARANDRA IN WOOD

eggs into the surface of the wood of scars or dead spots. The eggs are laid, principally in July and August, probably at night, in large numbers closely grouped and inserted deeply into the wood. After the eggs hatch the larvae or borers extend their burrows throughout the adjacent sapwood and heartwood. The larvae, which are typical roundheaded borers, mine throughout the wood for a period of three years extending their galleries upward and downward and after a short resting stage—pupal stage—transform to adult beetles within the wood. Whereas the grub or borer is one of the commonest, the adult beetles are rather scarce, although they are sometimes seen flying, attracted to electric lights during July and August. Observations indicate that the adults do



AN OLD APPLE TREE BROKEN IN A STORM AS THE RESULT OF INJURY TO THE HEART BY PARANDRA BORERS

not always emerge from the wood which they infest, but remain on the exterior of poles which they have damaged, below ground, or in the hollow bases of trees, where mating takes place and the eggs are laid. Poles and trees which have been long infested often reveal dozens of these dead beetles in hollow cavities. The beetles shun the sunlight.

The first most important consideration relative to preventing injury to trees by the *Parandra* borer is to prevent scarring of the trees. Such scars are produced by various mechanical injuries to the bark, improperly cutting off limbs, etc. If trees are not injured in such a manner the beetle will not deposit eggs in them. If there are exposed dead surfaces they should be covered with an antiseptic and waterproof dressing such as a single application of a mixture of creosote and coal tar, about one-fourth or one-third creosote. A good grade of lead paint can be substituted for the tar, if desired, although it is not generally considered as satisfactory; or grafting wax may serve satisfactorily for small surfaces.

Large scars or cavities in trees should be properly cleaned out, disinfected and filled with cement according to the approved practices of tree surgery; for more de-

tailed information see "Practical Tree Surgery," by J. F. Collins, Yearbook, United States Department of Agriculture for 1913.

It is very important that in cities periodic surveys be made of park and shade trees. Defective shade trees should be treated or removed. If this is done much of the damage done the trees during heavy storms can be prevented and it may possibly result in the saving of human lives.

In planting city shade trees preference should be given to the sturdy oaks (red and pin) and American elm; the softwooded maples and poplars can not so well withstand the high winds of sudden storms. This applies to both trees infested and uninfested by borers.

However, even disregarding the danger in defective trees to man and his property, trees should be kept in a vigorous and sound condition. The value of their shade is great; they beautify the city. Parks have been well termed the "lungs of the city;" their purer air, freshness, shade and beauty contribute to man's physical, mental and moral welfare, particularly in the case of children and the sick. Preservation of trees in the city, then, may indeed be termed a form of life insurance for city dwellers.

AMERICA MUST REFOREST

IN the course of a speech in the House of Representatives on March 3, Congressman John Davey said:—

"America must wake up and reforest or America will rue the day of her spendthrift debauch. The early settlers sent back word that they had discovered a land of inexhaustible fertility. Americans of succeeding generations have proceeded on the theory that all the God-given assets of the nation were inexhaustible. We have destroyed with prodigal waste more and more of the native woodlands—the timber supply. We have done exceedingly little replanting. We are consuming the principal of our inheritance just as fast as a reckless unconcern will permit.

"Where will the future lumber supply come from? Where will we get the wood pulp for print paper? We are sweeping away the God-given forests and building great cities with breathless haste. We say we are creating wealth. We are merely transforming it on the one hand and destroying it on the other.

"Take a daylight ride across the Alleghenys and look at the denuded mountains! Contemplate the devastation that man, selfish and thoughtless man, has wrought! And then, when you realize what all this prodigal destruction means to the future of America, let your soul shudder at the thought of the future condemnation that

awaits us from generations yet unborn. We who revel in our false wealth and unpardonable profligacy must answer to the God of nations and the children whom we bring forth to struggle in an impoverished land.

"Men and women of America, we cut down the great forests that blessed this country. We allow the remnants to be burned over and vegetation destroyed. The rains pour down, and, instead of being held in check by the loose and porous soil in the network of roots, it rushes down over the hillsides and carries with it the fertile soil, leaving in its wake barren hills and deep ravines.

"Thus we have alternating floods and droughts. The fertile soil is gone, the product of hundreds of years of nature's providence. The little springs that come from the water held in check and feed the lakes and streams must gradually diminish and, I greatly fear, cease to exist in large part.

"This question of reforestation is of monumental importance. America can not continue to exist as a virile, forward-moving nation unless we protect what we have and start to build up that which we have so ruthlessly destroyed. We can not afford to be a nation of vandals much longer. America must reforest or America must drink the bitter dregs of national decline and impotency."

"HALL OF FAME" FOR TREES

THE BIGGEST TREE IN NEW YORK

The prize for the biggest tree in New York State has been awarded to Charles J. Richards, editor of the *Gowanda News*, for an elm tree which is nearly thirty feet in circumference at four and one-half feet from the ground.

Honorable mention is given to the following five contestants: Black walnut at Setauket, Long Island, proposed by D. M. Frick, Hackensack, New Jersey; "Teddy's Delight," triple linden, at Phelps, New York, proposed by Dr. F. H.



NEW YORK'S BIGGEST ELM

Wisewell, Phelps, New York; Umbrella elm at Avon, New York, proposed by W. G. Markham, Avon, New York; Cherry tree (too big for George Washington to cut) at Hempstead, Long Island, proposed by Walter S. Funnell, editor of the *Hempstead Inquirer*; American elm, winner of Utica public contest, conducted by city park commission, with Egmont Bower as the winner of the Utica contest.

The contest was opened by the New York State College of Forestry at Syracuse as the result of a question whether the Setauket tree was the largest tree of any kind east of the Mississippi. It was thought to be a matter of interest to determine which is the largest tree, and the contest thus started was taken up by New York Forestry, publication of the State Forestry Association, and the American Forestry Association.

The winning tree has these remarkable dimensions: Circumference 30 inches from the ground, 34 feet, 2 inches; at six feet, circumference, 23 feet, 7 inches; height over 100 feet.

It has no branches for 50 feet above the ground and its circumference at that point is 20 feet.

Now the Pennsylvania Department of Forestry has begun a campaign to locate the Big Trees of Pennsylvania. It is collecting information on the largest specimen of each kind of the 100 different species of forest trees that grow in the State. Colonel Henry W. Shoemaker, a member of the State Forest Commission, and Professor Joseph S. Illick, Chief of the Office of Research, are in charge of the project. Professor Illick said he is seeking information about large, unique, and historic trees. He believes each county of the State has some champion tree, and he wants to know about it. Bedford County boasts of the largest Swamp White Oak yet found in Pennsylvania. That tree is thirty-two feet in circumference at the base. Dauphin County claims the largest Sycamore, which is more than twenty-five feet in circumference at the base. It is declared that the State's largest Sugar Maple stands at Eaglesmere, Sullivan County. Professor Illick desires the following measurements of Big Trees: Circumference at base; circumference at breast-height; total height of tree, and the total spread of branches.



"TEDDY'S DELIGHT"

"Teddy's Delight" is a triplet tree near Phelps, New York, nominated for a place in the Hall of Fame for trees by Dr. F. H. Wisewell. The tree has been christened with that name because of its three trunks from one root. It has a circumference of 20 feet at the lowest possible measurement and a height of about seventy feet. Dr. Wisewell informed Colonel Roosevelt about naming the tree and received a very nice letter from the former President. The tree is a linden and the American Forestry Association is as "delighted" to have the nomination as Dr. Wisewell is in making it.

"HALL OF FAME" FOR TREES

Chicago, the Garden City of America, has several parks that are noted for their extent, and for their hundreds of rare specimens of trees and shrubberies; many of which were donated by the different foreign countries at the close of the World's Fair.

In Washington Park is a tree of more than local fame. It is a beautiful elm that was planted



THE GENERAL GRANT ELM

in the year 1879 by General U. S. Grant on the occasion of his visit to Chicago, on his return from his famous trip around the world.

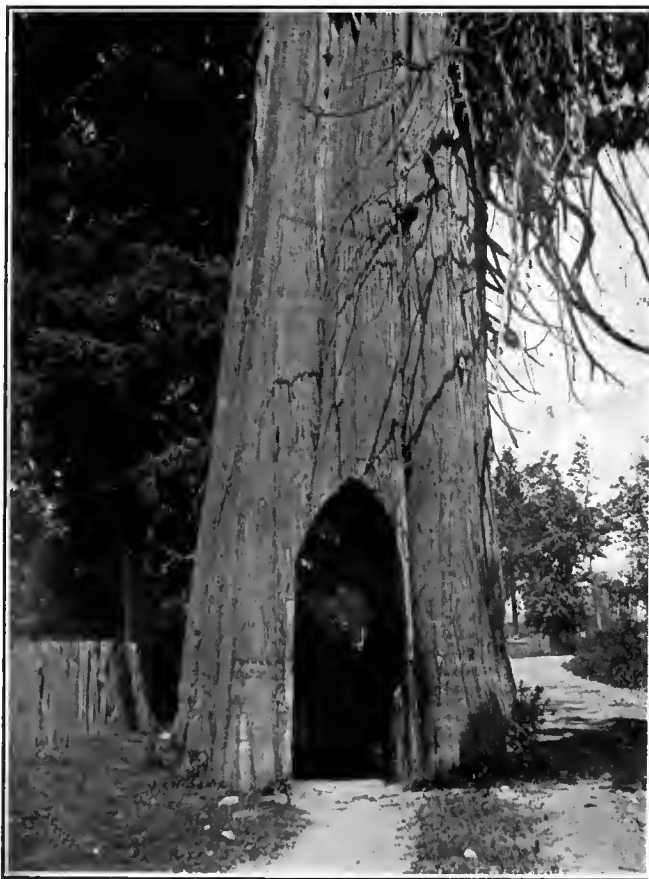
Unfortunately, the General failed to keep an account of the trees which he planted on this long, long tour. The list would be of much interest, for in each large city of the Orient, and of America as well, the crowning event of the day's program given in honor of this distinguished visitor, was the tree-planting scene.

Today there are many "General Grant" trees, in different parts of the world. This one is nominated for the Hall of Fame by Mrs. Viola Overman and Roswell T. Spencer.

This famous elm in Chicago receives every attention by the Park Commissioners. In order that its historical interest may be perpetuated, a boulder with the following inscription has been placed near by:

"Tree planted by Ulysses S. Grant,
December 6, 1879."

At Snohomish, Washington, is an arbor vitae that is listed among America's interesting trees, and it has been nominated for a place in the Hall of Fame by



THE SNOHOMISH ARBOR VITAE

Mrs. Viola Overman. It is a giant, tall and wide-spreading, measuring all of thirty-nine feet, nine inches in circumference. This is the largest of its species in this section of the country.

True to its meaning—the tree of life—it is an ever-green. And despite the fact that a bicycle path has been cut through its huge trunk, the tree continues to grow and bloom and flourish! The arbor vitae, like the famous *Wawona* of California, seems utterly oblivious to this familiar encroachment into its very heart.

"HALL OF FAME" FOR TREES

This tree, which stands on the farm of Melvin Sims, two miles west of Whitehall, Indiana, marks the "final, sure-enough, honest-injun" center of population of the United States. The spot was determined by Prof. W. A. Cogshall,



Underwood and Underwood.

TREE MARKING THE CENTER OF POPULATION OF THE UNITED STATES

of the University of Indiana, an astronomer, after taking observations of the sun, and the result of complicated calculations based on the 1920-21 census figures. Prof. Frank G. Bates and Professor Cogshall are shown in the photograph standing beside the tree.

THE QUENTIN ROOSEVELT TREE

On Armistice Day, the first anniversary of the planting of the American Forestry Association's tree, the pupils of the Force School, in Washington, held exercises in memory of Quentin Roosevelt, for whom the tree was planted. Young Roosevelt was the only former pupil of the school to lose his life in the World War. Miss Janet McWilliams, the principal of the school, announced the new memorial tree committee, which is self-perpetuating from year to year. The

new committee members are: Edith Duchay, Edward Stephan, Henry Herzog, Alice Spalding, Clement Sabotka, Walter Sweeney, Theodore Grissinger, Arthur Sperry, Ferrer Vitorri, Margaret Borges, Clarence Long, Manning Gasch, Agnes Gill, Melvin Church, Hamilton Shea and Dorothy Harrison. James Bradley was appointed school historian for the new



THE TREE PLANTED BY THE PUPILS OF THE FORCE SCHOOL TO HONOR THE MEMORY OF "QUENTIN, THE EAGLE."

year. In the picture are shown Edith Duchay, Edward Stephan, James Bradley, Melvin Church, Hamilton Shea. This committee reported on the condition of the memorial tree, a lombardy poplar, which is planted in the school yard.

"HALL OF FAME" FOR TREES

This maple tree, planted in his memory on the day Abraham Lincoln died, has been given a place in the Hall of Fame for Trees with a



ANOTHER LINCOLN MEMORIAL TREE

history which the American Forestry Association is compiling. The nomination is made by Mrs. Allen Partridge, of Augusta, Maine, before whose home the tree stands. The tree was planted on April 15, 1865, by Mrs. Ruben Partridge, who directed her three sons, Charles, Frank and Allen, to bring a small tree from the woods and plant it in memory of the fallen Chief.

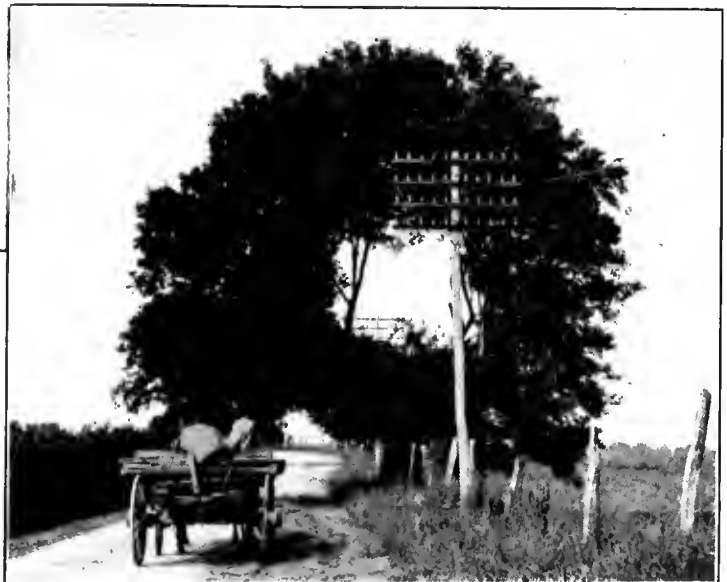


SHAKESPEARE MEMORIAL OAK

An English Oak on the campus of the University of Rochester was planted April 23, 1864, in commemoration of the ter-centennial of the birth of William Shakespeare. The tablet states that the tree came from Stratford; but if it was brought as an acorn or as a seedling is now unknown. The tree is nominated by Prof. H. L. Fairchild, emeritus professor of Geology.

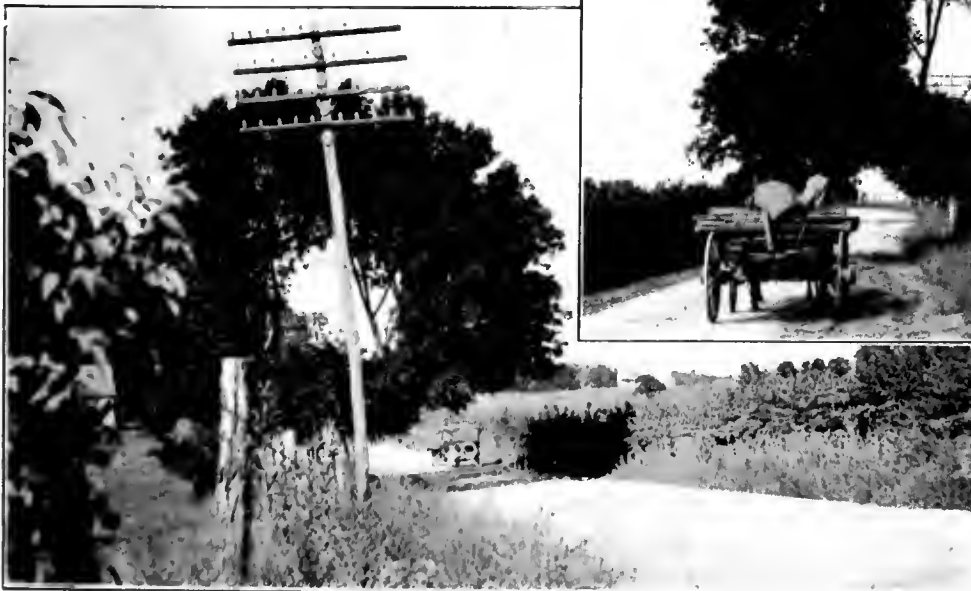
"THE TREE WITH A HOLE IN IT"

"The tree with a hole in it" is nominated for a place in the Hall of Fame for Trees by Mrs. W. J. Prindle, of Arcadia, Florida. The tree is a beech and is picturesquely located on the Russellville Pike, three miles east of Clarks-



LOOKING WEST

ville, Tennessee. It has been so trimmed that thirty-eight telegraph wires pass through the opening.



LOOKING EAST

ACTIVITIES OF THE AMERICAN FORESTRY ASSOCIATION FOR APRIL, 1921

The campaign of education for the Snell Bill was continued vigorously during the month by the Association. A number of articles were prepared and sent to the newspapers and information regarding the bill was furnished to a number of organizations which are considering the advisability of approving it.

* * *

The Association furnished advice and information to a number of prominent citizens of Oklahoma on how to organize and conduct a State forestry association, and also offered its assistance in aiding to perfect the State organization and make its work effective.

* * * * *

The Association prepared a series of articles on fighting insect pests which injure trees, for the United Press, which is circulating these articles to all of the many hundreds of newspapers which take its special service.

* * * * *

The Association upon request furnished the American Association of Nurserymen with several hundred copies of its special bulletin, "The Tree," for distribution among the nurserymen in order to aid them in giving information about Arbor Day ceremonies and providing a program for Arbor Day plantings. As a result it is expected that Arbor Day will be more widely observed this year than ever before.

* * * * *

The Association provided the Department of Public Instruction of Springfield, Illinois, with a number of cuts for the Department's annual Arbor Day and Bird Day booklet.

* * * * *

Special articles on forestry were provided during the month for the Literary Digest, The Music Trades magazine, The Delineator and the special forestry number of the Boston (Massachusetts) Commercial Bulletin.

* * * * *

A letter from Carlisle P. Winslow, Director of the Forest Products Laboratory, at Madison, Wisconsin, in reference to the increase of \$100,000 in the appropriation by Congress for carrying on the work at the Laboratory, and also in relation to the efforts of the Association to aid in securing this increase in the appropriation, says: "I want you to know that your continued interest in and helpful support of our work is very much appreciated, and I hope that we may count upon its continuation in the future."

* * * * *

The Secretary during the week of March 20 visited the State Forestry Department in Harrisburg, the forestry schools at Cornell, Syracuse, and Yale, to confer with foresters regarding the Snell Bill and other activities of the Association.

* * * * *

The Association provided the Year Book of the Delaware and Montgomery Counties (Pennsylvania) Federated Council of Boy Scouts of America with an article on trees and another on "Wild Birds as Pets."

* * * * *

The Association, upon request of the Chairman of the Senatorial Finance Committee of the South Carolina Legislature, suggested initial steps in forestry legislation for consideration at the next session of that Legislature.

* * * * *

The Association has arranged to supply the conservation committee of every woman's club in every State in the Union with information about trees and with a ballot on which to vote for a national tree. The Federation of Women's Clubs has urged each State chairman of conservation to recommend this tree study and balloting campaign to each club under her jurisdiction, so that there may be a widespread diffusion of knowledge regarding trees and also a further appreciation of our forest needs.

* * * * *

The Association has furnished information and advice to progressive citizens of Missouri who contemplate organizing a State forestry association for the purpose of developing forestry in Missouri.

SPRINGTIME IN THE WOODS

BY A. BROOKER KLUGH

(PHOTOGRAPHS BY THE AUTHOR)

HOW good it is to roam once more through the woods, to feel the soft carpet of leaves beneath our feet, to inhale that indefinable yet wholly delightful "woody" odor, and to see on every hand the awakening of nature at the touch of Spring.

One of the very earliest flowers to appear above the carpet of leaves of a by-gone year is the Bloodroot, so named because of the reddish juice which exudes from the stems and root-stocks when they are injured, and which was at one time used by the aboriginal tribes as war-paint. This red fluid shows through the transparent

at all, so that while it is open when bees and other pollen-carrying insects are about, it is closed for the protection of the pollen at other times.

As the flower comes to maturity the leaf expands, and later in the season it attains a large size, sometimes being six inches across with a stalk ten inches long.

The Bloodroot is one of the plants which must be admired in its native haunts, for the petals fall so readily



THE BLOODROOT

An early comer in the woods in spring and very beautiful because of its coloring and delicacy of form. One must enjoy the bloodroot in the place it grows, however, as its flowers are very frail and die quickly when taken.

stems of the leaves and stalks of the flowers, giving them a clear orange color.

When this plant first emerges from the ground the leaf is wrapped in a cylinder about the flower-bud, then the bud rises like a little pearl from the centre of its green cradle. The flower opens wide on bright sunny mornings; in the afternoons the petals begin to close inwards; and at night it closes up. On dull days it does not open



LARGE WHITE TRILLIUM

The showy flowers of the white trillium carpet the spring woods with beauty. As the flowers grow old they assume a delicate pink shade which detracts nothing from their beauty and adds to their interest as a subject for study.

that the flower will not stand transportation from the woods to the house.

Another attractive denizen of the spring woods is the Dutchman's Breeches, or "Boys and Girls," as it is often called. A quaint but pleasing fancy concerning this plant is thus expressed by an unknown poet:

"In a gymnasium where things grow,
Jolly boys and girls in a row
Hanging down from a cross-bar stem
Builted purposely for them.
Stout little legs up in the air,
Kick at the breeze as it passes there;
Dizzy heads in collars wide
Look at the world from the underside.
Happy acrobats aswing,
At the woodside show in early spring."

This flower is pollinated by bumblebees, which insert their long tongues into the spurs in which the nectar is held. The flower-stalks and leaves spring from a cluster of little tubers, crowded together to form a scaly bulb, and it is in this bulb that the nourishment is stored which allows the plant to make such rapid growth so early in

the season. The leaves of this species exhibit a delicacy of cutting which is surpassed by very few of our plants, a delicacy more characteristic of the ferns than of most flowering-plants.

Soon after the earliest blossoms have lifted their heads to the sunshine the stately queen of the vernal woods—the Large White Trillium—unfurls her banners of snowy white. In many woods this species occurs in such numbers as to give the forest floor the appearance of a white-starred carpet.

If we look very carefully at a good many flowers of this species we are likely to find a white spider, with the front two pairs of legs much elongated, sitting close to the centre of the flower. This is the White Crab Spider, a species which thus maintains an attitude of watchful waiting with its long legs spread like a pair of forceps over the middle of the blossom ready to seize such insects as may visit it in search of nectar or pollen.

When the flowers of the Large White Trillium become old they turn pink, which sometimes leads people to believe that they have found a new species. Occasionally the petals have a green stripe down the centre, and still more rarely the petals are entirely green. I once found a remarkable specimen of this species in which the petals were green, the stamens transformed into little green leaves, and inside the ovary in place of ovules were tiny folded-up leaves.

Another plant of much interest found in our spring woods is the Jack-in-the-Pulpit, or Indian Turnip, a plant of the Arum Family to which the well-known Calla-Lily also belongs. The sheath ("the pulpit"), which surrounds the central portion is called the spathe, and is really a leaf modified for the protection of the flowers. The central portion ("Jack") is termed the spadix, and



JACK-IN-THE-PULPIT

About the most familiar of all spring flowers, the Jack-in-the-Pulpit, also called the Indian Turnip, is as well one of the handsomest. Its distinctive form and coloration—combined with its haughty bearing proclaim it a leader in the "society" of the woods.



DUTCHMAN'S BREECHES OR "BOYS AND GIRLS"

These gay little flowers are general favorites and they are found luxuriantly growing by the early spring visitor to the woods. The leaves of these flowers are fernlike in form and very beautiful.

on this the flowers are borne. Sometimes the spadix bears flowers of both sexes, sometimes of one sex only, the percentages of the different kinds being, staminate plants, 54 per cent; pistillate plants, 36 per cent, and plants with both stamens and pistils, 10 per cent. Pollination in this species is brought about by small insects, mainly flies and beetles, which appear to seek the spathes as suitable places in which to hide. From the spathes containing staminate flowers these insects can easily emerge, as there is plenty of room between the wall of the spathe and the spadix, but egress from the pistillate plants is not so easy on account of the narrowness of the space towards the bottom and many of the insects remain in these spathes until they die.

When the Jack-in-the-Pulpit first appears above ground in the spring it looks like a sharp mottled peg. This peg consists of an outer sheath within which the leaves are rolled lengthwise to a point, and within these rolled leaves is the spathe, also rolled lengthwise, and containing the developing spadix. At the time of flowering the leaves are not fully expanded but are flaccid and wrinkled.

Seedlings of this species produce a single simple ovate or cordate leaf the first year. In their second year they produce a single trifoliate leaf, and in subsequent years they may have one or two, and sometimes three, trifoliate leaves. In suitable locations, that is, where there is plenty of moisture, the leaves of mature plants often reach very large dimensions, and along the borders of woodland streams I have found plants with leaves over three feet in height.

This species, like all our spring-flowering plants, is a perennial, and the underground portion is a large flattened corm with a circle of roots round its upper border. This corm gives off little corms, so that the species spreads in this vegetative manner as well as by seeds, and this fact accounts for the usual occurrence of this plant in clumps. The corm of the Jack-in-the-Pulpit is extremely acrid to the taste, and this biting property is not due to some peppery substance, as is commonly supposed, but to the presence of minute, sharp-pointed crystals of Calcium oxalate, which penetrate the tongue and the mucous membrane of the mouth. When the corm is boiled these sharp crystals are dissolved so that it becomes edible, and it is because of its use in this condition by the native North American tribes that the plant received the name of Indian Turnip.

During the early summer the spathe falls away, revealing the green, rounded, shining berries, and by August

both spathe and leaves have withered, and only the spadix, with its bright scarlet berries, is left.

Many species of violets blossom in our spring woods—pale blue, deep blue, white and yellow. One of the most attractive species is the Long-spurred Violet, with pale blue flowers with darker centres, which often grows in beautiful groups.

The flowers mentioned above, and many others, bloom in our hardwood forests in the spring—in fact at this season the woods are a wild-flower garden, while later in the season they have comparatively few flowers. The reason for this vernal habit of woodland plants is that

in the spring the sunlight shines down almost unobstructed on the forest floor, but later on, when the trees have attained their full leafage, but little light filters through. And light is required for the carrying on of the work of food elaboration by the leaves, so that the forest plants send up their leaves into the spring sunshine, manufacture food, and store it in underground structures, such as bulbs, corms and rootstocks, so that



THE LONG-SPURRED VIOLET

Such a display is enough to tempt anyone to visit the spring woods! Dainty violets ranging in color from palest blue to deep blue, white and yellow, will be found. The Long-spurred Violet is one of the most attractive of all with its pale blue flowers and dark centers, growing in beautiful clumps.

they are ready for an early start next spring.

Several species of butterflies flit about our woods in early spring, these being individuals which have passed the winter in a dormant condition beneath loose scales of bark and in other retreats. One of the most striking of these is the Camberwell Beauty, with wings of very deep maroon, bordered with yellow.

Birds abound in the spring woods, for not only have many of our earlier feathered summer residents arrived, but there is a constant stream of migrants passing through on their way to their northern breeding-grounds. These migrants make their flights by night and during the day they feed and rest, so that each day we find differ-

(Continued on page 324)

PAPER MAKING IN JAPAN

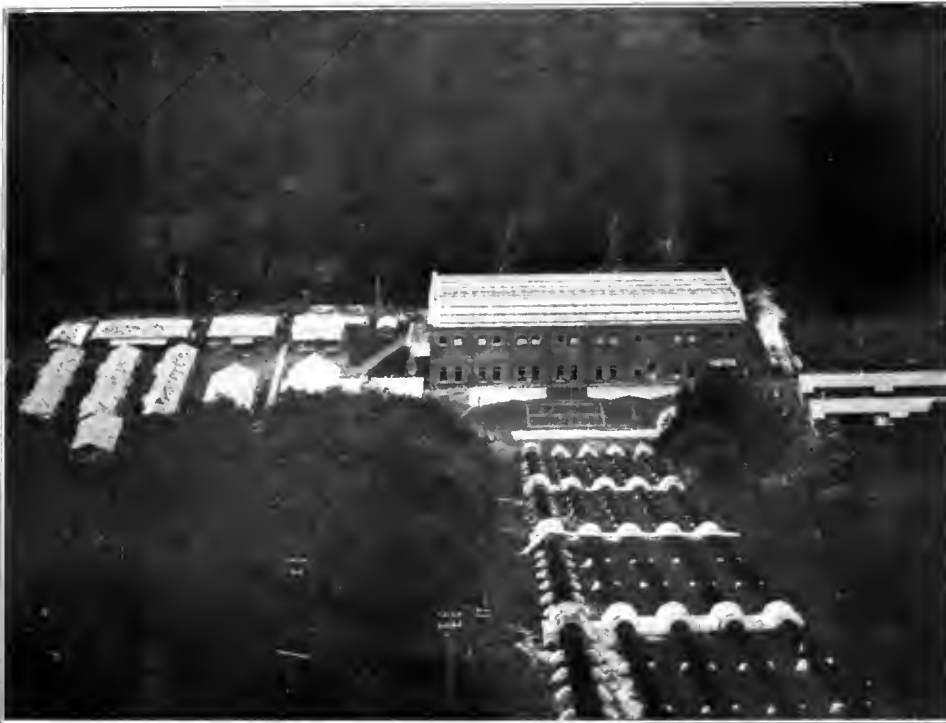
BY J. KOBAYASHI.

MANAGER, WOODS DEPARTMENT. OJI PAPER MANUFACTURING COMPANY

THE forests of Japan are one of her most important and valuable resources. Owing to her geographical location, and the fact that Japan is narrow and

land, 10,480,000 acres; private forest land, 21,910,000 acres, or a total of 54,620,000 acres. The demand for timber has increased considerably recently owing to the prosperity of native industries, but afforestation is not following as it should. It is said that three times as much is being cut as is being planted. The National and Crown Forests are well treated and reforested under the management of the Forest Services of the Agriculture Department and the Imperial Household Department but the cutting on the remaining forest areas is heavy and reforestation scant.

Much is being done in Japan to encourage conservation and reforestation and the Government and forestry associations are endeavoring to bring to the people a knowledge and realization of the conditions which must be met. Japan has now three Imperial universities, four academies and several lower class schools of forestry. The Forest School of Tokyo Imperial Uni-



THE TOMAKOMAI MILL OF THE OJI COMPANY AT HOKKAIDO. THIS IS THE LARGEST PAPER MILL IN JAPAN, PRODUCING EIGHTY THOUSAND TONS OF NEWSPRINT PAPER A YEAR AND USING ONE HUNDRED AND TEN THOUSAND CORDS OF PULP WOOD

long, running from north to south, she contains within her boundaries forest zones ranging from subtropic to cold temperate. Her comparatively moist climate is also propitious to forest growth and the most important species found are cedar (*Cryptomeria Japonica*, Don.), pines (*Pinus densiflora* S. et Z.; *Thunbergii*, Parl.), cypress (*Chamaecyparis obtusa*, S. et Z.), spruce (*Picea ajanensis*, Fish.), fir (*Abies sachalinensis*, Mast.), oak (*Quercus grossoserrata*, Bl.), keyaki (*Zelkova serrata*, Mak.) and camphor (*Cinnamomum Camphora*, Nus. et Eberm).

The ownership of forest lands in Japan lies as follows:

National forest land, 18,820,000 acres; crown forest land, 3,410,000 acres; public forest



ON THE WAY TO BE MADE INTO PAPER. THIS BIG DRIVE WILL BE CONSUMED BY THE MILLS OF THE OJI COMPANY AND MADE INTO PAPERS OF VARIOUS HIGH AND LOW GRADES

versity was established in 1880 and is sending out 20 to 40 graduates yearly.

The manufacture of wood pulp is a growing industry in Japan. She now has 30 wood pulp mills and produces annually 280,000 tons of chemical and mechanical pulp. The consumption of pulp wood is about 400,000 cords a year. Spruce and fir are mostly used as pulp woods and are grown in Hokkaido and Sakhalin, the northern islands of Japan. They are cut in winter, drawn by horses on the snow and driven on the river in spring and summer. Our company is cutting very close, to insure the most intense utilization, leaving stumps no

higher than one foot from the ground. The production of pulp must be largely increased in future because the demand for paper is growing stronger each year but it seems rather a hopeless situation because of the insufficient supply of wood. It is significant that Japan imported 40,744 tons of chemical wood pulp from the Pacific States and from British Columbia in 1919.

The Oji Paper Company, with a capital of \$25,000,000, established in 1871, has 13 pulp and paper mills in various sections of Japan and produces about 140,000 tons of high and low grade papers annually.

THE MARVELOUS JOURNEY OF A DOUGLAS FIR LOG

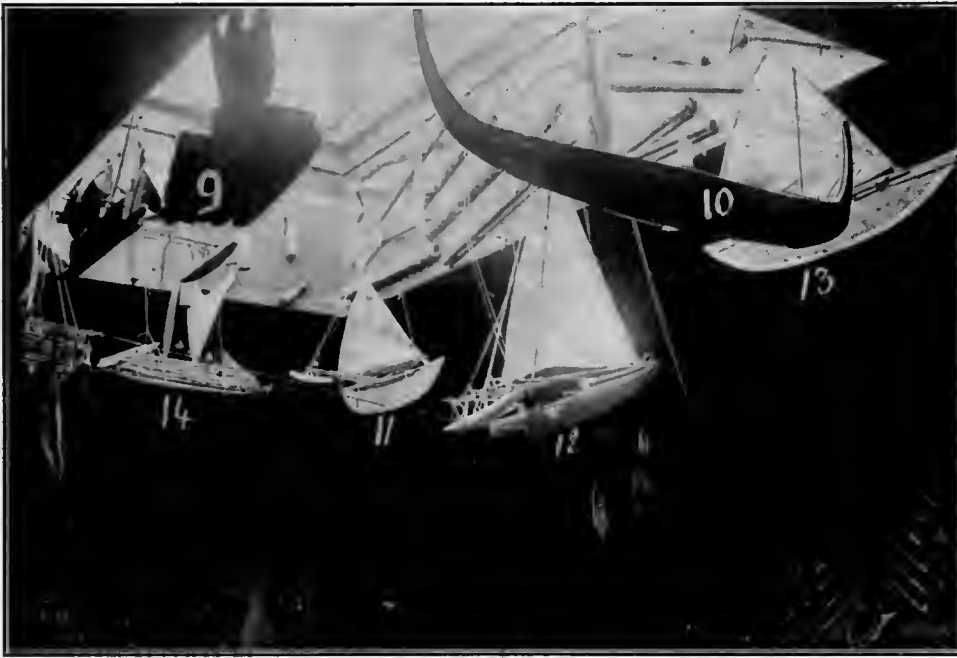
BY FRANCIS DICKIE

FOR many hundred years a few Douglas fir logs which found their way into the sea after being uprooted at the ocean's edge or on the banks of rivers tributary to it, have been caught by ocean currents, far flowing and strange of direction, and carried a distance of some 6,000 miles to come to rest at last on one or another of the Gilbert Islands in the South Seas. In recent years, since the white man began logging operations on the Pacific Coast, the number of logs to make the wonderful journey has been much greater, due to log booms on their way to the mills being broken up by storms at sea.

Truly never was stranger story told than the Odyssey of these many logs crossing so vast a stretch of water, for they came to places where they were most needed. The Gilberts are low-lying coral atolls upon which grows no timber suitable for making canoes. Thus since time immemorial the islanders have gazed seaward daily with anxious eye for the coming of fir logs. When a log or logs was sighted great excitement reigned. The news

spread quickly and all the people from inland came to share in the good fortune. Never was Nature more unkind to a people than these Islanders, for they had no stone to make tools. They overcame this difficulty, however, by taking the shell of a gigantic clam (*tridacna*

gigas), the most remarkable of its species which in some cases weighs a ton, and from it made adzes, knives and chisels. With these the fir logs were cut up in thin strips. These were then shaped to the form of canoes some 12 to 15 feet long. This wood was sewn together by thread taken from husk of coconut called coir; pandanus leaves being



MODELS FROM WHICH THE CANOES ARE MADE

Canoes are made by the Indian inhabitants of the Gilbert Islands in the South Seas from Pacific Coast Douglas fir logs broken from booms by storms enroute to the mills and washed eventually upon the shores of the Islands, six thousand miles away.

used for caulking. The canoes have only a two-foot beam, and are very sharp. They would not be practical save for the added outrigger which makes them very seaworthy. In the photograph, figures 11 and 13 are two exact models, even the coir string used in sewing may be seen. These models were made by natives and brought to Canada by a collector of canoe models from all the world.

"BACK UP TALK WITH ACTION,"

ACTION is the one word that would be selected could the editorial opinion of the country be subjected to a process that would epitomize the united thought of the editors as to the need of legislation for a national forest policy. The American Forestry Association's educational campaign on the need of forest conservation has been taken up in every section of the country as also have its other campaigns directing the thought of the public to trees and tree planting values. Some of the comment follows:

New Orleans Picayune: For years we Americans have been talking forest conservation—and failing to back our talk with adequate action. There is still time, it is believed, to insure the perpetuation of our national timber supply even though we have largely wasted in much talk and little action the years since the approaching exhaustion of our forests first forced itself upon the national attention. But we cannot safely delay any longer. If our timber supply is to be perpetuated we must have a national forestry policy and a law that will translate it into accomplishment. The Snell bill ought, therefore, to pass at this session if possible. In our judgment it should have not only the popular "approval in principle," but the active and immediate support of all who desire the conservation and perpetuation of our forest resources.

Scranton Republican: One of the most important problems now uppermost in this country is the movement for the development and protection of American forestry. Whatever differences may exist as to details all must agree that the cultivation and care of our forest areas constitute an essential factor in the work of reconstruction.

This is in accordance with the policy of the American Forestry Association which aims to deal with the question on a broad scale for the purpose of remedying existing defects and providing against a future scarcity of timber.

In addition to having the support of the American Forestry Association, the Snell bill is backed by some of the most influential organizations in the country, whose business is one form or another, depends upon forest products either as lumber, pulp or other material in large and constant demand to meet the public needs.

These organizations, which are vitally concerned in the development of the forest and the steady increase of its products for the industrial requirements of the country, have adopted a national forestry program, strongly supported by a committee of which R. S. Kellogg, of New York, is chairman, and with a membership representing the leading lumber and pulp industries of the United States and the National Chamber of Commerce.

There is no greater obligation confronting the government of Nation and State today, than that of restoring the forests, increasing their area and productiveness

requirements of later generations. Today vast tracts, once thickly covered with valuable timber, throughout the North American continent furnish grim evidence of the lack of foresight in the days when no lumber problem seemed imminent. And now the public is gradually recognizing the economic danger in our disappearing forests and considering the need of conservation and of a constant replenishment of the supply of timber.

Our awakening is much belated. Unlike many other valuable natural resources, the constant growth of forests depends on human effort. Centuries would lapse before devastated timberland would be reforested by its own efforts with trees suitable for the lumberman's ax. Even under the best forestry it takes from fifty to one hundred years to mature a timber crop.

The American Forestry Association is urging federal and state legislation and the co-operation of timber owners, wood-using industries and individuals to assure ample timberland in the future. The economic welfare of the nation requires the better protection of our forests and the reforestation of devastated timberland.

Nashville Banner: The *Banner* is glad to note and approve Governor Taylor's interest in forestry work. It is something to which the nation at large should be alive and on which the welfare of the future very much depends.

The Governor is reported as saying: "Tennessee must stop the destruction of forests and must adopt a policy of reforestation." That is as good as gospel if Tennessee is to have any timber and lumber supplies in the near future. We are already

importing lumber from the Pacific Coast for building purposes in Nashville. At the present rate of destruction the United States will have to go to the heavily wooded regions of tropical Africa and South America for its supplies of useful wood.

There are many waste lands in Tennessee that could be, and should be, made into forests. It may require time, but the work is necessary and can't be begun any earlier than the present.

The demand for wood is great for all purposes and well-kept forests from which only the older trees were cut and the young preserved, so as to perpetuate the forests, would be worth millions to the country. The forestry proposition has come to be very important, even serious, and if Governor Taylor can start an earnest



Knott, in Dallas News.

in accordance with the best methods, and protecting them against waste and vandalism. This is what the Snell Forest bill proposes to do, and it deserves to become a law.

Cleveland Plain Dealer: The rapid exhaustion of American forests furnishes a striking example of the ultimate results of wastefulness. Not many years ago our lumber supply was considered practically limitless. Builders demanded only the best lumber. Thousands of acres of woodland were laid bare. Only a small portion of the trees ever were utilized for useful purposes. Most of the product from felled trees was considered waste and destroyed. Meanwhile little or no effort was made to provide more forests to meet the lumber

SAYS THE NEW ORLEANS PICAYUNE

and energetic consideration of the subject among the Tennessee masses he will have done a great work.

Green Bay Gazette: The Snell bill provides for a survey of forest resources and timber requirements of the nation. It contemplates forest protection and renewal in co-operation with states, federal expenditures for this purpose not to exceed expenditures by the state. It has the endorsement of the American Forestry Association, and its passage is of concern to the entire country and particularly to those Northern States which will be its most direct beneficiary and which must be looked to primarily for reforestation. If we are to enter upon a constructive program of reforestation, it is evident that public opinion must make itself felt at Washington.

Minneapolis Journal: Adequate protection against forest fires, co-operation of the States with land owners and encouragement of private reforestation, are the main topics of the North Central States Forestry Conference in Chicago. Eight States, including Minnesota, Wisconsin and Michigan, belong to the Conference.

A few years ago such a meeting would have been regarded as unnecessary and foolish. For America's timber resources were deemed inexhaustible. But the people of this country now realize that they have been ruthlessly prodigal in allowing vast areas to be denuded. There has been no national forestry policy and Americans have already paid a heavy price for this wastefulness and neglect.

The problem of America's forests as a heritage and a hope is now pressing, and it can be met only by concerted action of individuals, States and Nation. So far as possible individuals should plant trees. But the need is so great and the areas are so vast that reforestation cannot be left to the individual or even to the State. The length of time required to get returns on money invested in replanting makes it necessary that the Federal Government undertake this service. An adequate forestry policy would enforce the proper cutting and removal of timber, provide for replanting and establish a system

of forest taxation to encourage the conservation and growing of timber.

Fond du Lac Reporter Wisconsin is one of the richest States in the Union, but it would be even richer and its people

bering activities of only a comparatively few years ago are conspicuous by their absence. True, we needed the wood supplied by the trees that fell before the attack of the loggers, but there was nothing to prevent us from engaging in a reforestation policy even while the great timber mills were still in full blast.

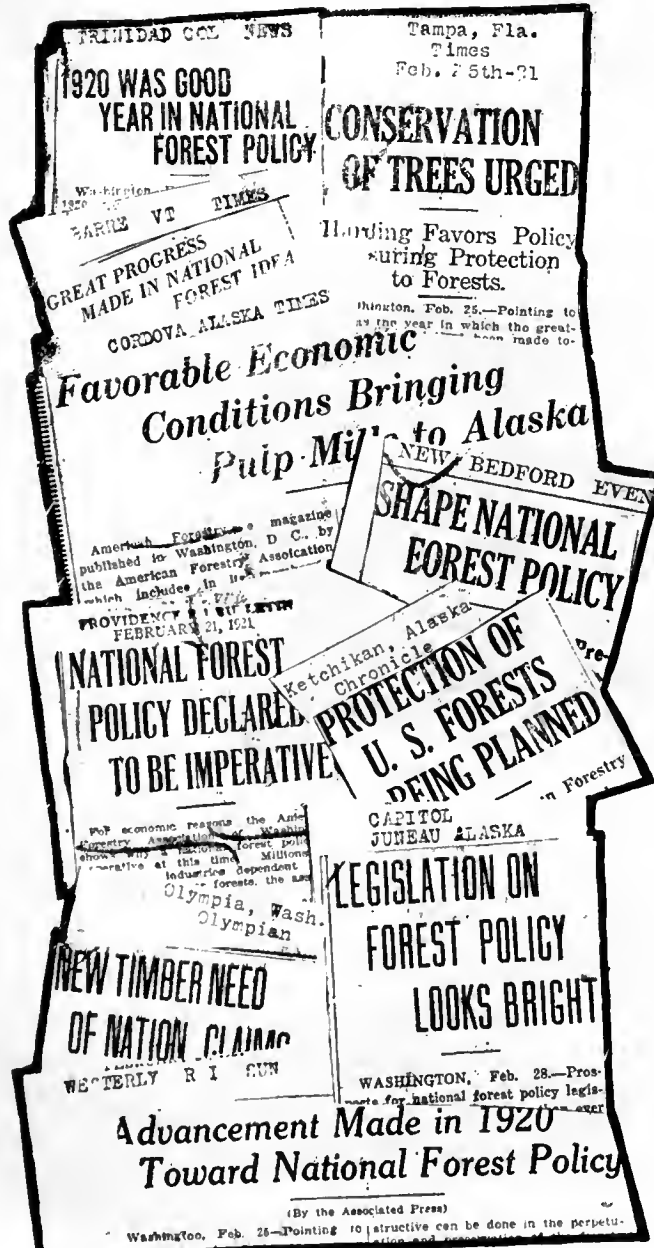
Middletown (N. Y.) Times Press: Among the important measures presented to Congress is a bill outlining a comprehensive national forest program, including better fire protection for the forests. Provisions of the bill have been worked out by a committee widely representative of those directly interested in the welfare of the forests, including the general public. According to Charles Lathrop Pack, president of the American Forestry Association, it is really the first united move in this direction in the history of the country. Endeavors have long since been put forth for preservation and control of the forests, but not in the comprehensive and far reaching proportions that the proposed new law contemplates. The bill calls for national appropriations of not less than \$11,000,000 a year.

Chattanooga Times: Chattanooga, with the flood menace ever present, should be especially and keenly alive to the necessity of forest protection. Every forest fire in the mountains of East Tennessee increases the danger of disastrous overflows of the Tennessee River and it behooves the civic organizations and public generally to give hearty and immediate co-operation in the movement to give better protection to the mountain trees.

Indianapolis Star: A forestry bill is expected at the next session of Congress and by the time all the undesirables get over here we may also have an immigration law.

Boston Herald: If the contest (tree voting) awakens great interest in our trees it will have been worth while.

Saginaw Courier: For ourselves, a preference for a national tree which will grow a really dependable and clinker-free grade of good coal is confessed.



From Alaska to Tampa and from New England to the Pacific Coast is the field into which the big news associations carry the educational campaign of the American Forestry Association for a national forest policy.

would enjoy a greater measure of health, happiness, and prosperity if the State's timber supply had not been so extensively depleted. Most of us have little difficulty in remembering the great sawmill industry that once thrived in Wisconsin. There are sawmills here still, but the great lum-

SPRINGTIME IN THE WOODS

(Continued from page 319)

ent species in the same piece of woodland. Among the earliest of these migrants is the Junco, a little bird with the head, back, throat and breast slate gray, the underparts white, and a white bill. This species feeds on the ground and has a partiality for the vicinity of brush-piles. It has a great variety of call-notes, and its song resembles that of the Chipping Sparrow of our door-yards and roadsides but is somewhat deeper in tone.

The White-throated Sparrow, a large sparrow with a plain gray breast, a white throat and a yellow spot in front of the eye, is another early migrant, and its plaintive minor whistle, ending in three sets of triplets, is one of the sweetest sounds of the spring woods. As is the case with all birds the songs of different White-throats vary a great deal. They are all, it is true, built on the same general plan and may at once be recognized as the song of this species, but there is an infinite variety of detail which can be detected by the keen ear well attuned to bird music.

The Purple Finch, a bird of glistening, deep carmine plumage, is another excellent musician, singing a rich, rolling, well-sustained song. This species has a decided fondness for buds of various kinds, and may often be seen eating the catkins of the poplars.

The two Kinglets, the Golden-crowned and the Ruby-crowned, the smallest of our birds with the exception of the Hummingbirds, are common during the spring

migration, and flit about the trees prying into every nook and cranny in search of insect tid-bits. The Golden-crowned Kinglet has nothing much in the way of a song, but the Ruby-crowned has a beautiful song of most surprising power for so small a bird and, while singing, the male often elevates his ruby crown-patch.

A great many of the birds which visit our woods in the spring are Warblers, small, mostly gaily-colored birds of which there are a large number of species. They rove about the woods in loose flocks, usually made up of several species, and are constantly flitting from tree to tree. Some species frequent the lower branches of the trees and the underbrush, while others keep to the top-most branches of the tallest trees. None of the Warblers are distinguished musicians though most of them have quaint and characteristic little ditties.

The Wilson's Thrush is one of our earliest woodland summer residents to arrive. It is usually silent for a few days after its arrival, then for a few days it sings a faint "ghost-song," and then breaks into its full song which is a beautiful refrain with a remarkable quality which can be best described as spiral.

The Chipmunk, too, has awakened from its winter sleep, and sitting up on a log or stump it sends forth its call of "chonk-chonk-chonk" which is taken up by other chipmunks until the woods re-echo to the chorus with which these little animals greet the spring.

IDENTIFICATION OF OAK WOODS

OVER fifty species of native oaks assume the proportions of trees, and about twenty-five are used for lumber. After the oaks are cut into lumber, there is no means known to the United States Forest Products Laboratory by which they can be identified as to exact species. By examination of the wood alone, however, it is easy to separate the oaks into two groups—the white oaks and the red oaks; and for the most purposes, fortunately, it is not necessary to classify them any further. The oaks all average about the same in strength, but those in the white oak group are much more durable under conditions favorable to decay than those in the red oak group.

The white oak group includes true white oak, swamp oak, bur oak, cow oak, post oak, overcup oak, and chestnut oak. The red oak group includes true red oak, yellow or black oak, scarlet oak, Spanish oak, Texan oak, black jack, water oak, willow oak, and laurel oak.

The color of the wood is a ready but not absolutely reliable means of distinguishing the white oaks from the red oaks. Red oaks usually have a distinctly reddish tinge, especially near the knots. The wood of the white oaks is generally a grayish brown; but occasionally a reddish tinge is found in white oak lumber.

For more accurate identification it is necessary to

examine the pores of the wood. These will be found as tiny holes on a smoothly-cut end surface, the largest being visible to the unaided eye. They are not of uniform size throughout each growth ring, but are considerably larger in the wood formed in the spring, decreasing in size rather abruptly towards the summerwood. The large pores in the springwood of the heartwood and inner sapwood of the white oaks are usually plugged up with a froth-like growth called tyloses, and those of the red oaks are open. This feature, however, is not so reliable for classification as the character of the much smaller pores in the summerwood.

To tell for a certainty whether a piece of oak belongs to the white or red oak group, cut the end grain smoothly with a sharp knife across several growth rings of average width. With the aid of a hand lens examine the small pores in the dense summerwood. If the pores in this part of the growth ring are plainly visible as minute rounded openings, and are not so crowded but that they can readily be counted, the wood belongs to the red oak group. If the pores in the summerwood are very small, somewhat angular, and so numerous that it would be exceedingly difficult to count them, the wood belongs to the white oak group.

NATIONAL HONOR ROLL, MEMORIAL TREES

Trees have been planted for the following and registered with the American Forestry Association, which desires to register each Memorial Tree planted in the United States. A certificate of registration will be sent to each person, corporation, club or community reporting the planting of a Memorial Tree to the Association.

RICHARDSON PARK, DEL.

By Woman's Richardson Park Civic Club: John James Hoffecker, Jr.

WASHINGTON, D. C.

By Library of Congress: Charles Edwin Chambers, Edward Theodore Comegys, Frank Edward Dunkin, John Woodbury Wheeler.

TAMPA, FLA.

By Tampa Rotary Club: G. W. Bates, R. G. Perry, Urbin S. Bird, Henry C. Grinton. George Otto Hansen, F. L. Harvey, R. C. Lyles, Patrick McLaughlin.

ATLANTA, GA.

By English Avenue School: Fallen Heroes. By Hill School: Sgt. Jesse A. Johnson.

DES PLAINES, ILL.

By Irving Park Women's Club: Alexander Dunn. By Seventh District, Illinois State Federation of Women's Clubs: Their Gold Stars. Mayfair Woman's Club: Their Community Gold Stars.

URBANA, ILL.

By University of Illinois: Merrill Manning Benson, Linn Palmer Cookson, William Franklin Earnest, Otto Benton Gray, Milo Lincoln Haley, Joseph Henry Johnston, Lawrence Scott Riddle, John Lawrence Teare, Edward Kent Armstrong, Calvin W. Hesse, Harry Henry Strauch, Charles Henry Gundlock, Benjamin James Prince, Leslie George Chandler.

MONTICELLO, IND.

By War Mothers of White County: Hero Dead Who Served in the World War.

VINCENNES, IND.

By Francis Vigo Chapter, D. A. R.: Lt. Francis A. McHvaine, Bryant S. Van Kirk.

MARION, IOWA

By Marion Chapter No. 183, O. E. S.: Sgt. Joseph Barnoske.

LOUISVILLE, KY.

By Outdoor Art League: Robert M. Boyle.

COLFAX, LA.

Civic League: Clarence Corbet, Ellis Tarter, M. N. Gentry, Martin Bazar, Oscar Price, Archie Prothro, Maynard O'Quinn, Lester Duncan, Chesson Lewis, William Wise, Adam Christy, Sylvester DuBois, William Norris.

AMESBURY, MASS.

By Amesbury Improvement Association: Sixteen Trees for the Men of Amesbury.

VICKSBURG, MISS.

By Vicksburg Civic League: Lt. H. B. Aden, Jr. Lt. Henry Cook Allein, William W. Allein, Lawrence Bigbee, Eugene Bobbs, V. G. Boone, Douglas Boone, Hal Scott Cole, Willie Cory Crouch, Marshall Fielder, Ernest E. Ford, John Loyola Geary, W. H. Gifford, Dan Bunch Guion, Lt. Dr. Guy C. Haralson, Jeff Henderson, Anssie Berry Houston, Capt. George Theodore Houston, Perry Johns, Stinson Lanier, Lieut. Perry Lyons, Paymaster Sprague Magruder, Edwin B. Muirhead, Samuel R. Nelson, Frank D. Onsley, George David Peck, Torry Pichetto, Thomas Prine, Charles Henry Rogers, George Henry Slater, John Hardie Scrells, Charles B. Stallings, Mark J. Watden, William Randolph Yerger, Fred D. Barksdale, Willie James Blackwell, Edward Bryant, Henry Ham, James Collins, David O. Harold, Laddie Harris, Henry McDonald, James Showalter, L. H. Slaughter, George Streeter, Arthur Thomas, Arthur Williams.

JEFFERSON CITY, MO.

By Military Sisterhood of America: The Men Who Served in the War.

ANSLEY, NEBR.

By Woman's Civic Club: In Honor of Stuckey, Rhodes and Amsberry.

EAST ORANGE, N. J.

By West Orange Post No. 22, American Legion, Edward J. Bradley, John S. Bradley, Harry George Buchanan, Joseph J. Burns, John B. Byrnes, Daniel J. Coggins, Leslie F. Colton, William Theodore Dunn, John A. Glennon, William J. Hart, James J. Jagger, William H. Jones, Darwin Karam, John Katopodis, Alfred Kayser, Ferdinand Kenz, Francis William Kunz, William F. Larkin, James Francis Lonergan, Edward D. McChesney, Harry S. Merklin, John Meyer, Joseph Paris, Frank John Peiker, Walter Perkins, Charles Roehm, James E. Sayres, Herbert M. P. Cocker.

RIDGEFIELD PARK, N. J.

By Young Women's Patriotic League and American Legion Post No. 40: Lewis Herbig, Philip V. Ford, Carl Gros Kurth, Robert A. Williams, Ernest R. Nelson, Ernest Guerding, O. F. Gaillard, George E. Sempsey, Lillian Ward.

MONROE, N. Y.

By Woman's Civic Club: Amy Todt, Harold Booth, Victor Jones, Samuel Vofrie, George C. McElroy.

NEW ROCHELLE, N. Y.

By National Plant, Flower and Fruit Guild: Lt. C. Clayton Cole, Lt. Herman W. Valentine, Lt. William L. Elliott, Jr., Lt. Reuben Abrams, Lt. Vaughan Sargeant, Lt. Louis T. Plummer, Ensign Robert Starr Beattie, Leonard J. Fischer, Henry A. Abel, John F. Leaf, Charles L. Hubbell, Jr., Arlington Van Orden, Harrison W. Blackstone, Walter S. Brown, James C. Broadard.

SARATOGA SPRINGS, N. Y.

By St. Clements Church: Lt. Frank Nolan, William Rougier.

SIDNEY, N. Y.

By American University Club: Claude Lee Empet, Ray C. Hallock, John Joseph Diminco, Peter J. Poach, Horace Phelps Beal, Frank D. Young, Charles L. Jacobi.

ENFIELD, N. C.

By Historical Commission: Joseph Jethro Bumpus, Jacob Thomas Currie.

MARTIN'S FERRY, OHIO

By Service Star Legion: Amedo Cappellette, James McCann, Isaac Vickers, Stephen Specock, Paul Smith.

WARREN, OHIO

By Dickey Avenue School: John Ballard. By Roosevelt School: William Boch, William A. Fultman, Noble Lintz, Glenn P. Thompson. Laird Avenue School: John Elmer Shisler, Glenn P. Thompson. South Park Avenue School: Quentin Roosevelt. First Street School: Thomas Williams. Market Street Elementary School: Clarence Hyde. Tod Avenue Elementary School: Howard Hillman. McKinley School: Sheldon Rollo Hickox.

GLASSPORT, PA.

By St. Cecilia's Congregation: Louis Foster, Vincent Tavalaro, Conrad Pfluger, Adam Salvadore, Eugene Stepko.

HARRISBURG, PA.

By Department of Parks and Public Property: Raymond Carl Axe, Earl Edwin Anrand, Charles W. Barker, Raymond L. Beard, Benjamin Hoyer Boggs, John Harry Beshore, Robert A. Doll, Richard Lee Bothwell, Charles

Breneider, William F. Chamroy, Percy A. Chronister, Isaac Cohen, Allen L. Cupp, William Clouser, Eugene R. Davis, Ralph Divley, Robert J. Davis, Wesley DeHaven, Harry Dillon, James Galt Elder, Carl Fannus, George Wm. Fitzpatrick, Paul Chester Furman, Adam Genslider, Rexford Mason Glaspey, John Gotshall, William A. Gorner, Grover Cleveland Hain, Frank P. Hawk, Harry Bower Hoagland, Herbert K. Harry, David J. Hoffert, Louis Edwin Houseal, Charles M. Houser, Palmer W. Herrold, Harry Edison Hess, Ray E. Johnson, Donald Johnston, Fred E. Jones, Charles Ed. Kipple, Robert J. Kirby, Milton Kelley, Paul Dill Leinback, Alfred Joe Lilley, George E. Long, Walter Wane Lower, Earl Crouse Martin, Ed. Henry Meyers, Lee W. Monyer, James T. Moore, John P. Morgan, Jr., Wilmer W. Mullen, Francis X. Naughton, William Shamon Noggle, Jacob Naus, George D. Peters, John C. Peiger, Jr., William J. Putt, Robert W. Payne, James L. Redman, Amos C. Reese, John Roscoe Rohrer, James A. Rettinger, Charles W. Revie, Herman R. Rhoades, John P. Sattler, Ed. A. SoIway, Guy Warren Showers, Mervine Shireman, Leroy D. Smucker, Theodore R. Stump, Sylvester P. Sullivan, Benedetto Salvador, Jacob Smith, George Howard Seitz, William James Taylor, Norman Ed. Thomas, Harry F. Waltz, Edwin Crull Wells, Robert D. Wilson, C. Edward Weitmyer, William G. Winter, John Harrison Joseph Garboner, William C. Arnold, Leroy Bryan, Marcel Von Bereghy, Charles F. Bricker, Harris D. Buckwalter, James Brightbill, Francis S. Miller, Ed. R. Murray, Allen Hartman, Henry Franklin Emswiler.

TACONY, PA.

By Tacony Service Flag and Memorial Association: Horace W. Ayers, Jr., Anthony V. Young, Frank E. Zeigler, Stuart Morrow, Borucki, Albert W. Buckner, Edward J. Cantz, John J. Cron, Nicholas Crispi, Benjamin H. Fisher, Herbert S. Lytton, Marshall B. Lever, Harold B. Merz, Leo T. McCabe, Giacomo Moscarello, William D. Oxley, Patrick O'Brien, George W. Roberts, Jr., Edward F. Smith, Earl W. Schalch, William H. Thompson.

PITTSBURGH, PA.

By Troy Hill Chapter, Service Star Legion: Bernard Bischoff, Ferdinand C. Schwab, Edward L. Schmitt, Robert M. Roush, Charles P. Roerig. By Beechview Chapter, Service Star Legion: Carl S. Schreiber, Robert C. Hart, R. H. Fickling, J. M. Rice, William W. Hoffman, John Mazarri, Fred Mountain, J. E. Austin. By Roosevelt Chapter, Service Star Legion: Thomas Anthony Lucia, Christopher L. McNerny, Attridge F. McManus, Robert Race, William E. Found, James J. Sullivan.

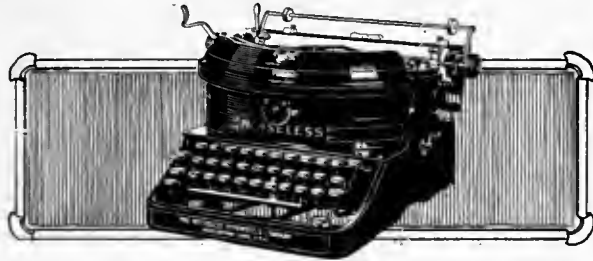
WILLIAMSPORT, PA.

By Williamsport Dickinson Seminary: William S. Ablett, John F. Anderson, C. E. Follmer, Ervin C. Hamilton, John C. Kerr, Raymond O'Conner, Ralph E. Peterson, E. P. Shirey, Roland G. Whiteley, Darius B. Whitesell.

CAMDEN, S. C.

By Civic League: Walter West, Walter M. Lloyd, Alfred Bundell, Mendel Gladden, Pat Davis, Leroy Beek, Bratton DeLoach, Massenberger Trotter, Gillian Hall, Harrison Stokes, Joseph Boone, Smillie Hinson, Henry Brown, Malcolm Bateman, Fairley Arthur, Eben McLeod, Coleman Phillips, Stephen Richards.

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TAKEN FROM LETTERS
TO THE EDITOR**

"No magazine comes to my home that I appreciate more than I do AMERICAN FORESTRY."

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"It was moved, seconded and carried that the secretary of the Council of Jewish Women communicate with the American Forestry Association, saying that our sympathies and interests are with the Association, and we feel it most important to the child; furthermore, that we would advise that all superintendents of public schools bring this magazine to their own schools."

MRS. LEON G. BALL.

"The publication is a work of art and the contents a source of gratification."

HENRY M. STOWE.

"The AMERICAN FORESTRY Magazine is certainly an excellent publication and it finds a large patronage in our library. It is along the line of the class of literature that our young people of the present day should become thoroughly familiar with. Anything I can do to boost its popularity I shall be pleased to take advantage of."

W. A. FISKE.

"I find AMERICAN FORESTRY a very wonderful magazine, and I do not feel that I can dispense with a single number."

MRS. WILBUR F. CRUMMER.

"I hope that your efforts will bring to the American people a realization of the need for a protective forestry policy."

P. A. HOWELL.

"AMERICAN FORESTRY is being received regularly at our school, and is of splendid value."

BERNARD OSTROLENK.

"Your association has done wonderful work during the past year."

J. A. FRANKLIN.

"You are hereby authorized to continue our subscription to your splendid magazine, AMERICAN FORESTRY."

MACON CHAMBER OF COMMERCE.

"You are right—AMERICAN FORESTRY is the one magazine which I cannot get along without. I hope that the Association will have the most successful year that it has yet had."

EDITH M. M. CHAPMAN.

"You certainly have a very effective way of getting out news matter and having it used by the papers. I know that the publicity work which you have been doing for the Snell Bill is bringing some very excellent results, and I hope you will keep it up. We need a body of public sentiment that will back up effectively our demands for the right kind of legislation in the next Congress."

HUGH P. BAKER.

"We have heard a great deal of favorable comment upon the new Forest Recreation Department as edited by Mr. Carhart. It has surely been very good so far and should help greatly to popularize AMERICAN FORESTRY."

JAMES E. SCOTT.

"I want to congratulate the Association on its great accomplishments and wish for it an ever-growing success."

LUELLA A. OWEN.

"The Executive Committee of Ebell is heartily in sympathy with the preservation of American forests and glad to endorse and contribute to the American Forestry Association."

MARGUERITE JEROME HAMMOND.

"I am greatly pleased with Dr. Shufeldt's article in AMERICAN FORESTRY for March, on Woodchucks."

ANNA BOTSFORD COMSTOCK.

"May I congratulate you and more the members of the American Forestry Association and still more the people of the country on the action taken at your Annual Meeting on February 25. I want to express my appreciation of the splendid work you have done and are doing in the interest of a broader forestry policy."

F. W. KELSEY.

"If there is any way in which I can personally co-operate with you in your great work do not hesitate to let me know."

EDGAR S. NASH.

"The AMERICAN FORESTRY Magazine is indeed a valuable magazine, and I have lost much time in not being acquainted with it before."

ALGAT LANGE.

"I am with the American Forestry Association. I am for more publicity, for more distribution of information regarding American forests and their vital relation to industrial America. I have been watching the Snell bill, and hope that eventually Congress may deem it essential to spend twelve millions on our forests, which affect everybody."

E. WHEELER WHITMORE.

PENNSYLVANIA PLANTS MEMORIAL TREES

ALL of the men and women in Pennsylvania who served in the World War will have trees dedicated to them at Arbor Day exercises in Harrisburg, Pittsburgh and Philadelphia. A tree will be planted in their honor in each of these cities. Governor Sproul will plant a tree in the Capitol Park; Mayor Moore will preside at exercises at Independence Square, and Mayor Babcock will do likewise in Pittsburgh.

Arrangements for the dedication exercises have been made by Governor Sproul and Gifford Pinchot, the State's Chief Forester. The Department of Forestry will supply the trees, American elms, from its nursery in Tioga county. Soil from every county in the State, collected by the various District Foresters, will be placed about the roots of each tree.

BROOKINGS MANAGER OF NATURAL RESOURCES DEPARTMENT

THE Chamber of Commerce of the United States has established a Department of Natural Resources Production, with W. D. Brookings as manager. The Department will comprise one of the eight departments into which the work of the Chamber has been divided in order to serve its large membership to the best advantage.

Mr. Brookings has had a wide experience in forestry and lumbering, having been in the lumber manufacturing business in California for a number of years as well as being connected with retail distribution in the southern part of the state. At the time of the war Mr. Brookings joined the forestry regiment and took a company of the Twentieth Engineers to France in 1917. During his service in France he was promoted to the rank of major and transferred to the Landes, near the Pyrenees, in charge of the First Battalion, operating five sawmills. During the past two years he has been making an exhaustive study of forest resources, and in the course of his investigations has traveled throughout the United States and British Columbia. Mr. Brookings thus comes to his work with the Chamber especially qualified to accomplish much in a constructive way in the development of his Department.

JUNIPER, NOT CEDAR

In the November, 1920, issue of AMERICAN FORESTRY, in the article by S. J. Record on scented woods, the caption on the lower left-hand illustration on page 666 should have read Western Juniper, not Western Red Cedar.



A block of Maples five to six inch caliper, twenty-five to thirty feet high

The Right Tree in the Right Place

The right tree means a specimen which has been grown under the scientific care of a reliable nursery. Trees thus grown are strong and straight, and so well nourished that the usual setbacks of transplanting are minimized to the last degree. The right place is of nearly equal importance. Soil conditions should be considered as well as the natural harmony of its surroundings. Amawalk trees are dug and shipped with exacting care, and we are ready at all times to furnish any information at our command concerning silviculture. Our catalogue, which we will be glad to send you, has considerable information devoted to this subject.

- | | | | |
|----------------------|----------------|---------------------|----------------|
| Austrian Pines..... | 11 to 16 feet. | Norway Maples..... | 16 to 35 feet. |
| Arborvitae..... | 7 to 12 feet. | Pin Oaks..... | 16 to 35 feet. |
| Hemlocks..... | 11 to 16 feet. | European Beech..... | 11 to 25 feet. |
| Colorado Spruce..... | 7 to 19 feet. | Lindens..... | 12 to 26 feet. |
| Norway Spruce..... | 14 to 21 feet. | Sugar Maples..... | 16 to 35 feet. |

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BOOK REVIEWS

West African Forests and Forestry, by A. Harold Unwin (Dutton). Illustrated.

The author, late Senior Conservator of Forests in Nigeria, having spent thirteen years in West Africa in forestry, has had exceptional experience, and his book offers the reading public an excellent opportunity to share in its benefits. He starts by dealing in general with West African forests, then successfully in geographical order with the trees and forests of Gambia, Sierra Leone, Liberia, the Ivory and Gold Coasts, Togo, Nigeria, and the British Sphere of the Cameroons. He supplies notes on timber trees both for export and local use, and gives throughout the botanical and vernacular names of indigenous trees. Doctor Unwin has also chapters on the oil beans, seeds and nuts of the West African forests; on the oil palm and palm kernel industry; and the question of the forest in relation to agriculture.

The Development of Institutions Under Irrigation, by George Thomas (Macmillan). Illustrated.

This book, one of the Rural Science Series, is a thorough and intensive report of the history of irrigation in the State of Utah. The large areas of land which have been reclaimed all through the west make the subject one of first importance to all who are interested in western projects, as well as to students of irrigation and its effect on institutions. Mr. Thomas has done an interesting historical piece of work, well-written, and well worth the attention of economists, geographers, and historians of the United States.

The Practice of Silviculture (With Particular Reference to Its Application in the United States). By Ralph C. Hawley (Wiley). Price, \$4.00.

Published in March, this book will fill a long-felt want and cover, as a text-book, a field at present unfilled. It has particular application to the forests of this continent with regard to silviculture. The subject is presented from the standpoint of the teacher and the arrangement and discussion is shaped in a manner which will be clear to the student. The topics treated are reproduction methods, clear cutting method, the seed tree method, the shelter-wood method, the selection method, the coppice method, coppice with standard method, intermediate cuttings, method of controlling cuttings, slash disposal, forest protection against forest fires, against insects, against tree diseases and protection against domestic animals (grazing). Protection against avalanches, landslides, floods and shifting sand. The author's long experience in the practical application of silviculture on forest properties and in teaching the subject, as well as his position

BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

FOREST VALUATION—Fillbert Roth.....	\$1.50
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among the leading foresters of the United States, assure the authority and value of his book.

Logging, West of the Cascades. Issued by the Willamette Iron and Steel Works.

This handsome collection of views, selected as typical scenes found in that interesting forest belt extending along the west coast of North America will prove interesting both to those who are and who are not familiar with the region.

STATE NEWS

CALIFORNIA

THE Forest Committee of the California State Automobile Association has formulated a bill dealing with the subject of a forest fire patrol law in California and proposes to request the introduction of this bill in the present session of the State Legislature. Copies of the bill have been presented to the State Board of Forestry, which in turn has requested the pine and redwood manufacturers' associations and the California Forestry Committee to state what objections, if any, they have to the proposed legislation.

This matter naturally is of vital interest. The Federal Forest Service in California and District Forester Paul G. Redington have strongly and consistently urged the necessity for the protection of privately owned timber lands within the State from fire, and endorse this movement made by the California State Automobile Association, "making it compulsory on private owners to establish reasonably effective methods of fire patrol and suppression on their lands. Oregon has such law, and the Idaho Legislature this winter is considering the enactment of similar legislation.

"The extent and kind of damage that even a light forest fire does to the woods is not appreciated. Not only are large trees felled through the weakening of the butt by fire, but in pockets where the heat becomes intense whole stands of timber are killed and the young growth suffers greatly throughout the area covered by the fire. Cracks in the scars produced by fire at the base of trees are ready openings for the entrance of the spores of wood-destroying fungi, and green trees felled by fire constitute a fertile breeding ground for the bark-boring beetle, an insect which annually girdles and destroys a vast amount of merchantable timber.

"The public, as a user of wood, has a right to demand that owners of timber lands do their utmost in a practical way to decrease the large annual loss by forest fires."

Partial returns on the annual census of the lumber production for the State of California, which is conducted by the California District of the United States Forest Service, in co-operation with the National Lumber Manufacturers' Association and its local Associations, the California White and Sugar Pine Manufacturers' Association and the California Redwood Association, show a cut by twenty-seven of the largest mills in California of 630,225,000 board feet.



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When You Want It**

It's useless to say "I must wait a year before planting." If you are afraid it is too late to plant, Mr. Hicks will show you that it is not. Come to the nursery and see big Oaks, Lindens, Hemlocks, Pines, Firs (15 to 25 years old) labeled "Moved in June, 1920." We have shrubs and flowering trees with big balls of earth, and in tubs; Climbing Roses and hardy plants in pots. This nursery shows that the fun of gardening need not stop when summer begins.

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A new catalogue, which is helpful in a new way. It tells how to "plant where plants will enjoy themselves."

Is your home along the seashore? Is your soil acid, or is it dry and sandy? "Home Landscapes" makes valuable suggestions for all conditions of soil; by using this information, your trees and shrubs are more certain to grow. It also describes the new plants from China (introduced by the Arnold Arboretum) which you can have on your grounds this summer.

Home Landscapes has 16 pages in color, showing beautiful gardens. A copy will be sent on request.

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Tree Seedsmen ATLANTA, GEORGIA Established 1897

The same mills cut in 1918 582,622,000 board feet. If the same proportion between the cut of these mills, and the total cut holds good for 1920 which existed in 1918, the total cut for the State of California for 1920 should exceed 1,360,000,000 feet.

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FORESTERS ATTENTION

AMERICAN FORESTRY will gladly print free of charge in this column advertisements of foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

POSITIONS WANTED

WANTED—Position as City Forester. Technically trained and experienced forester. 30 years old. Have had 5 years experience in city forestry, tree surgery, landscape work. Box 2010, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-5-21)

GRADUATE of a recognized forestry school having had several years practical experience in all phases of forestry, both public and private, and experienced in portable logging operations, desires to make a change. Will consider any proposition in any part of United States or Canada. Box 2030, care American Forestry Magazine, Washington, D. C. (2-4-21)

TECHNICAL FORESTRY GRADUATE, B. S. 1908, M. S. 1914, desires position as City Forester. Twelve years practical experience in tree surgery, planting, transplanting, spraying, orchard care, improvement cuttings and landscaping, including making and execution of plans. Employed at present. References if desired. Married, age 41. Box 2020, care American Forestry, Washington, D. C. (2-4-21)

YOUNG MAN, 30 single, technical training and experienced in forestry and engineering, also first-class knowledge and experience in accounting and office work, desires position offering opportunity for the future. Address Box 2000, care AMERICAN FORESTRY. (2-4)

BUSINESS MAN with technical forestry training and experience, a specialist in aerial mapping and patrol, experienced in protection, cruising and administration, desires responsible position. Now engaged in economic study of paper industry. Address Box 980, care AMERICAN FORESTRY, Washington, D. C. (2-4)

YOUNG MAN WITH WOODS EXPERIENCE and college and military training, desires position in connection with management of forest lands on large estate. Address Box 990, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4)

GRADUATE FORESTER, 31 years old, married, ex-service man, wants position as Forester. Private estate or operating pulp company preferred. Have had 10 years experience in forestry work and practical lumbering. Address Box 2010, care AMERICAN FORESTRY, Washington, D. C. (3-5-21)

WANTED—Position with lumber company. Graduate of 4-year college forestry course. Experience in wood technology, and the grading and selling of hardwood and yellow pine lumber. Address Box 2050, care AMERICAN FORESTRY MAGAZINE, Washington, D. C.

MARRIED MAN 30 years old, energetic, industrious and systematic, with two years training in forestry, wishes permanent position with a paper and pulp company. To begin with is willing to do most anything. Address Box 2035, care AMERICAN FORESTRY, Washington, D. C. (3-6-21)

TECHNICAL FORESTER with considerable experience in various phases of practical forestry and sawmill work, desires position with manufacturing concern in the East or Middle-West. Dry-kiln work, offering opportunity for development preferred. Address Box 2060, care AMERICAN FORESTRY, Washington, D. C.

YOUNG MAN, 36, single, technical trained and practical experience in forestry, tree surgery, landscaping and orchard care, wants to get in business for himself as city forester in an excellent location anywhere in the United States. Will also consider position as forester on large estate. Employed at present and best of references. Address Box 2065, care AMERICAN FORESTRY Magazine, Washington, D. C.

POSITION WANTED by young graduate forester. Six years practical field work in forestry and lumbering. Am now employed but desire change. Box 2075, care AMERICAN FORESTRY, Washington, D. C. (4-7-21)

FORESTRY GRADUATE, age 30, several years experience in forest work, including city forester, landscape development, portable logging, reforestation, knowledge and experience in farming and farm machinery. At present employed along technical and administrative lines. Will be open near future for responsible position, preferably in development and management of private forest or estate. Box 2070, care AMERICAN FORESTRY Magazine, Washington, D. C. (4-7-21)

YOUNG MAN with master's degree in forestry and who also has had experience in city forestry, tree surgery, and esthetic forest planting desires a position in any phase of forestry—logging, lumbering, forest management, or city and esthetic forestry—where marked ability will bring advancement. Would also consider a position as part time instructor in botany, the remaining time as city forester. Have taught botany while a graduate student in one of the foremost universities in America. An ex-officer of the World War. Address Box 2080, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITION WANTED by graduate forester, veteran 10th Engineers, at present lumber inspector Pennsylvania System, experience in French forests, Southern Pine and Northern Hardwoods. Desire position as forester for private estate or other work. North preferred. Address Box 2085, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITIONS OPEN

WANTED—An assistant forester. Good place offered for a recent graduate who would like to get in business for himself in an excellent location. Address Box 920, AMERICAN FORESTRY MAGAZINE. (3-10-20)

A BOOK ON ANGLING

By FRANCIS FRANCIS. With an introduction by Sir Herbert Maxwell, Bart. A book that cannot fail to quicken the pulse of every fisherman. Angling from every angle, with a vast fund of piscatorial information and the living spirit of the great outdoors. It will also give the fisherman reader many a thrilling picture during winter nights when he must perforce dream of the days of sport to come. Numerous explanatory plates (8 in color). Octavo.....\$4.50

NEW YORK

THE New York State Forestry Association, with headquarters in the Chamber of Commerce at Syracuse, opened its 1921 membership campaign with a special issue of the Rivet, its official news leaflet, published in conjunction with the quarterly magazine, New York Forestry. The need for greater effort in reclaiming waste land and in setting to work the idle land of the State is the issue on which the Forestry Association makes its bid for support. New York contains 12,000,000 acres of idle land. Less than 10,000 acres per year are being reforested. The Association argues that unless the citizens of New York unite to remedy the evils caused by depletion, it will be a thousand years before our idle forest land becomes ideal forest land. A plan is presented for obtaining the necessary information about forest planting, through Association headquarters.

PENNSYLVANIA

BECAUSE of the open winter and early spring the nurseries operated by the Pennsylvania Department of Forestry are already in full swing. More than 500,000 trees have been lifted out of the nursery beds of the Greenwood Nursery, in Huntingdon County, and about 750,000 at the Mont Alto Nursery in Franklin County. At the Clearfield Nursery all the stock available for distribution this spring, amounting to approximately 600,000 trees, has been removed from the beds. Nearly half a million trees have been shipped to private planters from these three nurseries.

Orders for more than two and three-quarter million seedlings have been received from 684 applicants. These trees will be shipped to every part of the State, as there are only two counties, Greene and Juniata, from which no orders have yet been received.

John W. Keller, Chief, Bureau of Silviculture in the Department, says that forest tree planting by private owners of forest land is now an established practice, and the trees ordered this spring will reforest 2,000 acres of land and, if protected carefully and handled properly until mature, will cut 50,000,000 board feet of lumber.

The Forest Academy students on Monday, March 14, began the planting of 120,000 forest trees near Mont Alto, in Franklin County. This is the earliest date upon which spring planting operations have begun for many years, and, judging from the progress that is being made, all the trees will be planted during the next week. These trees are being planted upon areas formerly occupied by chestnut which had been killed by the chestnut blight.

TENNESSEE

RECOGNIZING that the forestry situation in Tennessee is serious and that the responsibility for protection of her forests is grave, a strong and earnest effort is being put forth by the forestry interests of the State to meet it. J. M. Overton, President of the Tennessee Forestry Association, reports that a bill has been introduced in the present Legislature seeking to establish a separate forestry bureau under a State Forestry Commission. This commission will be composed of the presidents of the three largest educational institutions in the State and the State Commissioner of Agriculture and the State Superintendent of Public Instruction. The bill asks for an appropriation of \$17,200. If the full appropriation asked is not granted, the State should be given at least \$10,000 a year for co-operation with the Federal Government in the matter of fire protection and reclamation of her waste lands. Though the policy of economy adopted by the Legislature is thoroughly well understood. This is a matter of vital interest to Tennessee and will undoubtedly receive the cordial support and indorsement needed by the citizens of the State to pass the necessary legislation. The newspapers are taking a great interest in the movement and carry convincing publicity regularly.

CENTRAL STATES FORESTRY CONFERENCE

THAT recreational return is a forest product and that forestry in the states should be so interpreted as to provide camping facilities, hunting, fishing and touring as well as a timber growth was the declaration of the Central States Forestry Conference at its first session at which the representatives of eight states met to plan the formation of an organization to secure essentially uniform laws for forestry in Missouri, Iowa, Minnesota, Wisconsin, Michigan, Illinois, Indiana and Ohio. The resolutions passed at this conference, at which the National Forestry Program Committee participated by sending some of its members to speak for the Snell bill, for a national forestry program, as well as to aid in the securing of state laws, were specific in declaring that recreational use of the forest must be kept constantly in mind. State Forester R. B. Miller, of Illinois, told how the passage of the Snell bill would aid Illinois and other states in solving their forest problems, particularly in giving federal aid for the prevention of forest fires.

The conference also adopted resolutions declaring for state recreation grounds for hunting, fishing, camping or other out-of-door sports, for a system of state parks in Illinois, and for a system of game refuges and resting places for waterfowl, and

for public shooting grounds, following the lines as far as possible of the Pennsylvania system.

The resolutions also asked that wild life conservation be taught in the public schools.

FIRE LOSSES IN THE UNITED STATES

FOREST fires, sweeping over 56,488,307 acres of land in 45 states, caused damage amounting to \$85,715,747 during the five years 1916 to 1920, inclusive, according to information just made public by the Forest Service of the United States Department of Agriculture. A total of 160,318 forest fires occurred during this period. Minnesota was the chief sufferer, its loss being \$30,895,868.

The bulletin containing this information is a special edition of Safeguarding America Against Fire, issued for the Federal and State forest services by the National Board of Fire Underwriters. It presents the latest survey of the country's forest fire situation, and points out that the major portion of the damage to America's forest resources, due to human agencies, is preventable. Railroads caused the largest number of all fires chargeable to such agencies.

The bulletin also presents reports from the Forest Service on fires in the National Forest and from State forestry officials covering conditions in 20 states.

DISSTON

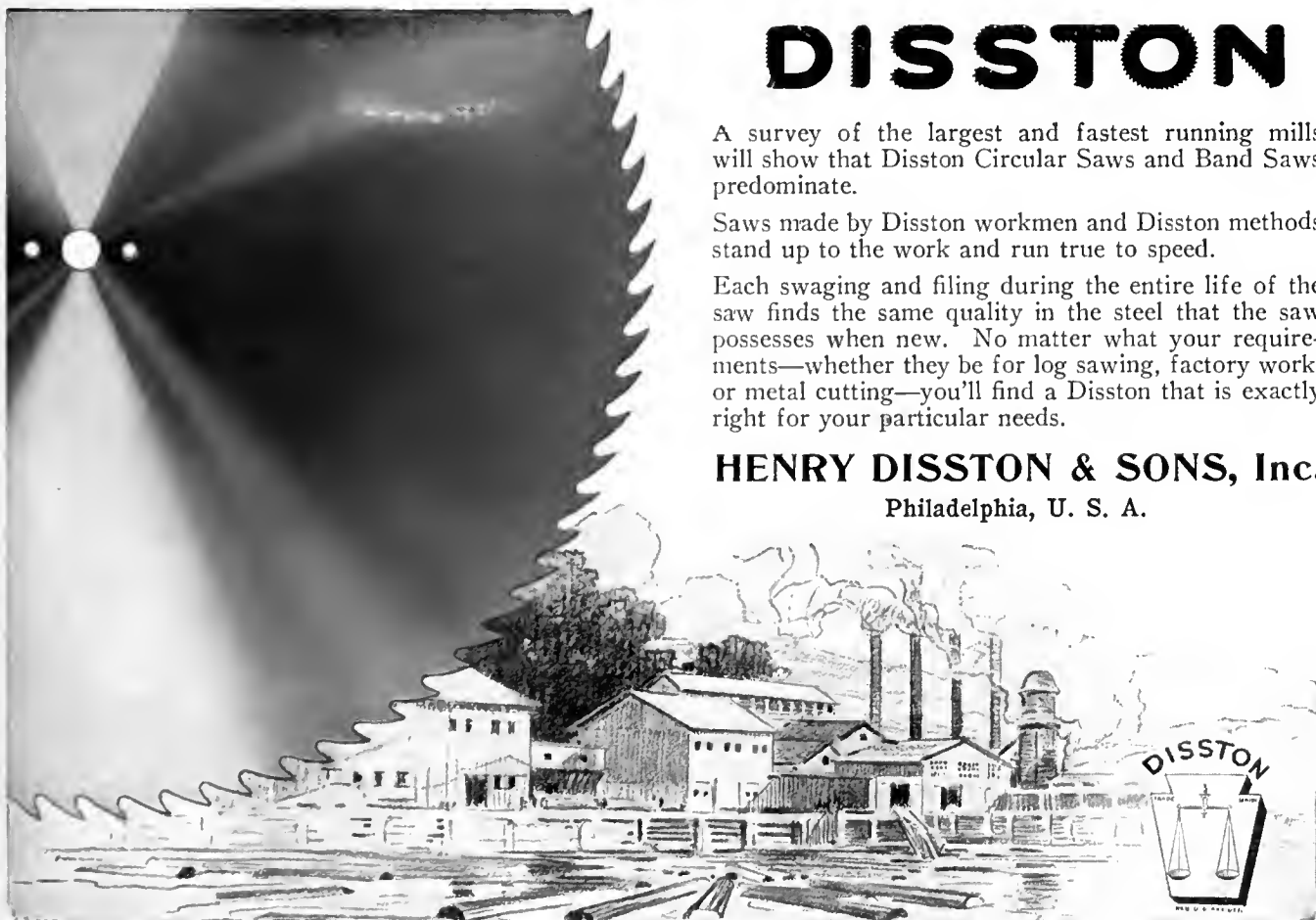
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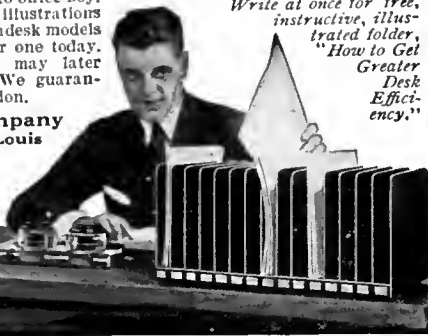
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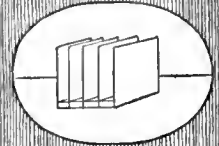
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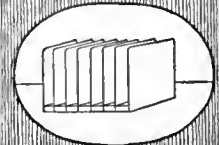
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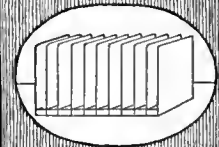
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FOREST LAND EXCHANGE

THAT legislation which would authorize the U. S. Forest Service to accept private, state or other lands chiefly valuable for timber production in exchange for national forest land, timber or assignable timber certificates would be of tremendous importance in solving the forestry problems of this country was the statement of C. L. Billings, land agent for The Edward Rutledge Timber Company, of Coeur d'Alene, Idaho, recently. Mr. Billings showed that within the last few years the importance of land exchange in blocking out and enlarging National Forest areas had gained wide recognition, but that general legislation covering the whole country was needed to properly meet the situation. Exchange of forest lands would be of value to the U. S. Forest Service in consolidating and enlarging government owned areas and in facilitating their protection, administration and management. It would also be advantageous to the private owner in being able to realize on small holdings surrounded by National Forest land and to the larger owners in seeing a way out of their cut-over land problems. These advantages, however, would be secondary to the more important point that this land exchange legislation would more than any other factor increase at once the area of forest land under management for sustained yield and stimulate the reforestation and protection of timber lands.

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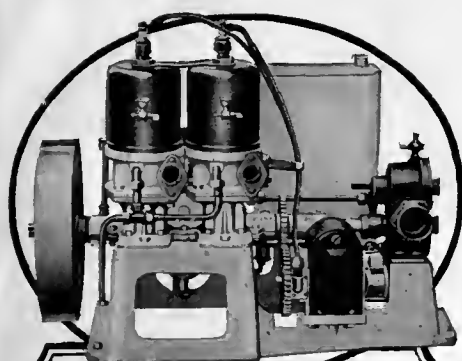
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FOREST SCHOOL NOTES

THE IDAHO SCHOOL OF FORESTRY

WITHIN the past few weeks three series of special lectures dealing with different phases of the work of the United States Forest Service have been given to the students of the School of Forestry at the University of Idaho, Moscow, Idaho, by prominent members of the United States Forest Service.

During February, J. C. Fitzwater, District Forest Inspector from Sandpoint, Idaho, presented ten lectures covering the policy and activity of the United States Forest Service in regard to the sale of timber and organization of the Pend'orielle and Kaniksu National Forests under definite working plans for the perpetuation of the timber business dependent upon supplies of raw material from these forests.

Mr. C. F. McHarg, District Forest Inspector, from Coeur d'Alene, Idaho, delivered a series of ten lectures during the first week of March, covering the administrative organization and activities of the U. S. Forest Service.

The protection of the forest from fire was the subject of a course of six lectures given to the Idaho Forest Club, by Mr. C. C. Delavan, Fire Assistant on the Coeur d'Alene National Forest. Mr. Delavan stated that the forest fire problem in North Idaho was more serious than in any other portion of the country because of its peculiar climatic condition and outlined the essential features of the protective organizations which have been developed to combat this situation.

The School had the pleasure of a visit from Thomas Jackson, one of its alumni, who is engaged in logging engineering work for the Edward Rutledge Timber Company at Clarkia, Idaho. Mr. Jackson talked to the forest club on the use of wire rope in logging and the engineering problems involved in connection with it. In closing, Mr. Jackson stated that the new problems constantly to be met by a logging engineer made the field one of unusual attraction to young men and that the industry was in real need of a large number of men with the proper qualifications to help get logs from difficult places at low cost.

YALE FOREST SCHOOL

PROFESSOR MITSUNAGA FUJIOKA of the Kyushu Imperial University, Japan, is visiting the Yale Forest School to obtain information and suggestions for the establishing of a new forest school at Fukuoka.

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school grade, while the others are in the industrial schools. The realization of the great need for more technically trained foresters is leading to the establishment of two new colleges, one in the Kyoto Imperial University and the other in the Kyushu Imperial University.

In the latter school the effect of Yale will be very materially felt, since the Professor in charge will be Dr. Shoitsu Hotta, who graduated from the Yale Forest School in 1918. It is intended to model the new school on the general lines followed at Yale. Accordingly, Professor Fujioka is making a special study of the curriculum, the library, equipment and other matters of concern to the new college. He is also especially interested in forest products, wood utilization and tropical forestry. Yale is the only school in America giving a course in tropical forestry.

A LECTURE on "The Price of Lumber" was delivered at Yale University, January 20, 1921, by Mr. R. B. Goodman, chairman of the Committee on Economics, National Lumber Manufacturers' Association, under the 20th Engineers, Memorial Fund.

Mr. Goodman gave in this lecture a comprehensive, scholarly and timely survey of the lumber industry's situation. "A real contribution and a lasting one to forestry economics," is one of many comments made upon the lecture by those who have read or heard it and are in a position to speak authoritatively.

WISCONSIN FORESTRY ASSOCIATION

PLANS have recently been perfected for the organization of the Wisconsin Forestry Association.

H. C. Campbell, of Milwaukee, was named chairman of the temporary organization; J. W. Jones, Rhinelander, vice-chairman; C. L. Harrington, Milwaukee, secretary, and George D. Bartell, Milwaukee, treasurer. The association will again meet in Milwaukee to form a permanent organization and lay plans for a junior association.

LITTLE FORESTERS

UNDER the direction of the head thereof, the boys in the manual training department of the Bonham High School, have made a survey of the trees in that city. It shows that there are 15,338 trees of forty varieties, and that of this number 3,907 need pruning, 1,085 have cavities and 673 are diseased. This work is both useful and commendable. It ought to promote better care of the trees and it surely will beget a lively interest within the rising generation for these great friends of man.—Dallas (Texas) Journal.

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Deposit.—With bid \$10,000, to apply on purchase price if bid is accepted, or refunded if rejected.

Final Date for Bid.—Sealed bids will be received by the District Forester, Portland, Oregon, up to and including May 25, 1921.

The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, Portland, Oregon, or the Forest Supervisor, Medford, Oregon.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION
WASHINGTON, D. C.

PERCIVAL SHELDON RIDSDALE, Editor

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JUNE, 1921

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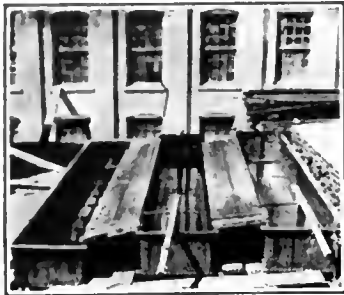
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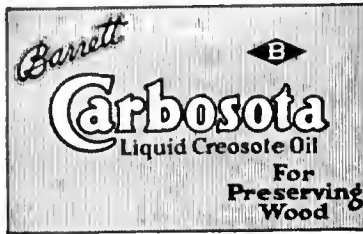
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AMERICAN FORESTRY

VOL. 27

JUNE, 1921

NO. 330

EDITORIAL

TWO FORESTRY BILLS

THE text of both the Snell-McCormick Bill and the Capper Bill for a forest policy is printed in this issue of AMERICAN FORESTRY for the information of the readers. Both of these bills are now before Congress and hearings will shortly be held by congressional committees.

The Snell-McCormick Bill is the measure approved by the United States Forest Service, the American Forestry Association, the National Forest Program Committee, and scores of other organizations. The Capper Bill is supported by the National Conservation Association.

BUSINESS INTERESTED IN FORESTRY

THE serious attention of business men from one end of the United States to the other is now to be given to forestry. The Chamber of Commerce of the United States has appointed a committee to study the problems of forestry. This will not be a perfunctory study. It will be a practical investigation of the conditions in every part of the country and a careful study of the problem of what shall be done to perpetuate our forests, to reforest waste land, and to provide for a supply of forest products for our future needs and to protect existing forests.

The committee, composed of able and experienced men, will perhaps first go to the Pacific Coast, where the bulk of the remaining timber of the United States is, and

make a detailed examination of conditions there. Later, other regions will be visited and similar investigations made. A meeting will be held in Chicago soon.

No more important development in forestry has occurred in some time than this interest of business men who, under the auspices of so powerful and influential an organization as the Chamber of Commerce of the United States, propose to learn for themselves facts about the forest conditions and help to solve the forest problems which are so serious. Whatever they decide to do will have a strong influence upon legislation, both state and national, and aid materially in getting the legislation which is so urgently needed.

TEXAS DEMANDS FORESTRY LAWS

TEXAS missed a chance, when its legislature was in session, to pass an excellent forestry bill. It was defeated by the lumbermen, who opposed it. Governor Neff has now called a special session of the legislature. It is expected that the forestry bill will come up again. It should pass. The people of the state desire it. The newspapers are demanding it, and its importance is emphasized by the Dallas Journal which says:

"A thoroughgoing bill for a start in the reforestation of Texas encountered stout objection when it was offered in the regular session. A similar bill, and no other would meet the need of the State, will encounter like objection upon every introduction. The best interests of Texas will be served if that opposition is met and overcome now. Every year of delay renders more difficult the task of saving the timbered domain of Texas for the uses of pos-

terity. Destruction of our forests proceeds at a rate which it will prove all but impossible to offset with the most intelligent and aggressive work in reforestation. The sooner a beginning is made the more effective will the work be. The objections of lumbermen to the proposed severance tax is based upon a selfishness that considers personal interests and today only, giving no thought to those who may come after, to the future needs of the State whose natural resources have enriched them, or to the obligations under which the right to these resources has put them. Public opinion, in its own behalf, should reinforce the efforts of the forestation forces when a new measure is submitted. If it voices itself strongly enough the opposition will throw down its hands and submit, as it should. Governor Neff should resubmit the forestry question and give public opinion a chance to make itself heard."

WOOD SHINGLES FROM BRITISH COLUMBIA

LAST year fifty thousand homes and buildings in the United States were roofed with cedar shingles which came all the way from British Columbia. We now rely on this well timbered Canadian province for one-seventh of all the wood shingles used in this country. It is indeed well for us that we have this outside source of supply, for it is estimated that the combined red cedar resources of our greatest shingle producing states, Washington and Oregon, amount to less than forty billion feet, which, if it were forced to fill all our shingle needs, would be entirely exhausted in less than eight years. The use of other woods, such as redwood, cypress, white cedar, pine and hemlock serves to reduce this drain on the red cedar supply, but unquestionably red cedar now stands pre-eminent among all shingle woods.

The Canadian Government has estimated that there is over seventy billion feet of good shingle cedar in the Province of British Columbia, nearly twice that remaining in our northwestern states. Until reforestation can begin to compensate for our own consumption we will grow each year more dependent upon British Columbia for shingles, or we must be prepared to pay much higher prices than ever before.

The proposal that shingles be made one of the articles to receive a high tariff will, if adopted, place squarely before everyone the present and immediate need of taking steps to conserve our forests. It will be a bitter pill to swallow, but one that should prove effective.

FORESTS AND HUMAN PROGRESS

WRITING under this title in the *Geographical Review*, Mr. Raphael Zon, of the United States Forest Service, discusses in considerable detail the effect of forests on the progress of civilization. He recognizes three stages in the relation of man to forest: (1) Civilization dominated by forests; (2) civilization overcoming the forests, and (3) civilization dominating forests. These three stages may exist simultaneously in different parts of the earth. Thus Central Africa and South America are still in the first stage, a considerable part of North America and Asia in the second, and Europe and parts of the United States in the third.

During the first stage forests constitute a serious obstacle to human settlement. It is a striking fact that practically all of the early civilizations originated in comparatively arid regions with little or no forest cover. In the old world this is well illustrated by the Egyptians, Babylonians, Assyrians, and Phœnicians, and in the new world by the Aztecs and the Incas. Everywhere the primeval forest has constituted one of the most formidable barriers to man's spread over the earth, Roman colonization halted when it reached the virgin forests of Central Europe, and these same forests later broke up the successive westward sweeps of the nomadic hordes of Huns, Magyars, and Avars. Penetration and clearing of the forest were alike difficult, and habitation in it in the early days of civilization was limited chiefly to individuals or to weak and primitive tribes which fled to it as a refuge.

Gradually, however, civilization advanced to the point where man was able to compete with the forest on even terms. With the development of improved tools, the more extensive use of fire, and the establishment of more permanent settlements, he was no longer completely dominated by the forest but began in turn to overcome it. Large areas were cleared for agriculture, as in the old "log rolling" days in Ohio and Indiana. Still larger areas were exploited for firewood, building materials, and other forest products. In Europe during the Middle

Ages many industries dependent on wood for fuel, such as metallurgy, glassmaking, and tanning, were located in or near the forest. During this stage penetration of the forests was facilitated first of all by rivers and small streams and later by trails, roads, and railroads.

Speaking generally, it may be said that up to a certain point as civilization has progressed the forest area has diminished. This process has in time led to the third stage, where the tables are completely turned and the forests are even more effectually dominated by man than he was formerly dominated by them. So absolute has been the conquest that in many parts of the world the forest has been exterminated beyond any possible chance of natural recovery. An extreme example of this is presented by Great Britain, where nearly 95 per cent of the original forest is now gone. Even in the United States we have left only 463 million acres of forest land out of the 822 million acres originally forested, and a large part of this is wholly or partially unproductive.

Yet this decrease in forest area has not been accompanied by a corresponding decrease in our requirements for wood. While other materials such as steel, iron, brick, and cement are partially taking the place of wood for certain purposes, additional quantities are being needed for other purposes and new uses for it are constantly being found. The annual consumption of pulpwood in the United States, for example, has increased in thirty years from 300,000 to 6,000,000 cords. In Great Britain the per capita consumption of lumber trebled in the sixty years from 1851 to 1911. Experience has shown that wood is one of the primary necessities of life and that there is a point beyond which further clearing of the forest is not only an economic waste but a hindrance to the progress of civilization itself.

Where this point has been passed a fourth stage in the relation of man to forests might, perhaps, be recognized and designated as "civilization restoring and improving the forests." Western Europe, where nearly all of the present forests are man-made, is already in this stage. In some places cleared areas are being planted

and everywhere steps are being taken to increase the productivity of the forest. Even England, which has hitherto been most backward in this respect, has recently adopted a comprehensive program for the planting of 1,700,000 acres. Is it not high time for the United States to adopt a similar policy and to pass from the stage of mere forest domination to that of forest restoration

and improvement? Already we are feeling the effects of forest neglect in depleted supplies and increased prices. Why not follow the dictates of common sense and justify our reputation for practicality by taking immediate steps to stop the present indiscriminate devastation of our forests and to provide for their perpetuation and increased production?

FORESTS AND STREAMFLOW

THE beneficial influence of forests upon streamflow in hilly and mountainous regions has long been recognized by foresters and other observers throughout the world. So general indeed has recognition of this influence become that, in order to safeguard their water supplies, many European countries have enacted legislation for the preservation of their mountain forests, and the United States has embarked on a program for the acquisition by the Federal Government of forest lands on the watersheds of navigable streams. There have, however, always been skeptics who have remained unconvinced by the theoretical considerations and general observations on which belief in the influence of the forest has been based. A striking answer to these skeptics is furnished by the recently published results of the streamflow investigation that has been under way since 1900 at the Swiss Forest Experiment Station.

This investigation was undertaken in order to settle beyond dispute just what, if any, influence was exerted by forests upon run-off in the mountains of Switzerland. Two small watersheds of 137 and 172 acres, the first of which was almost wholly forested and the other slightly less than one-third forested, were selected for the purpose. With the single exception of the forest cover, the two watersheds were strictly comparable in other respects, such as form, topography, geology, and climate. For eighteen years complete meteorological observations have been made and accurate records of run-off maintained in the two basins. These have yielded the most complete and convincing data yet available as to the precise part played by the forest in the regulation of streamflow. The conclusions established will, therefore, be received with the keenest interest and respect by all those interested in the problem.

The results show that the proportion of the yearly run-off to the total precipitation averaged practically the same, approximately 60 per cent in the two watersheds. The distribution of the run-off was, however, very different. In general the discharge of the stream from the well forested watershed was much more uniform than that from the poorly forested one, with higher minima and lower maxima. This difference is due to the greater absorptive capacity of the forest soil, resulting from its porosity and permeability, and not, as was formerly thought, from its humus cover. The latter can, it is true, retain a very large quantity of water, but it does not give this up readily to the underlying soil. In fact, a thick cover of raw humus and moss may, after it once becomes saturated, actually promote surface run-off and thus prevent the water from soaking into the soil.

The water from melting snow and from short, heavy downpours of rain was absorbed far more effectively by the soil of the well forested area than by that of the poorly forested one. Indeed the maximum discharge from the former after such rains was seldom more than one-third to one-half as much as from the latter. After prolonged rains the effect of the forest cover upon streamflow depended on the moisture content of the soil at the beginning of the rain. If the soil was comparatively dry at that time its effect in preventing surface run-off was quite noticeable, while if it was already thoroughly soaked there was little difference in the discharge of the two streams. Although the forest cover was thus unable to prevent all floods, equally heavy discharges from the well forested watershed did less damage than those from the other because their velocity was lower and they carried a smaller amount of eroded material. All of the differences noted would have been more pronounced had the well forested watershed not had steeper slopes than the other, and had the latter been completely deforested.

The prevailing view as to the effect of forests on streamflow is thus corroborated by the results of a carefully conducted and thoroughly scientific investigation. It will be most interesting to compare these results with those obtained from the very similar study now under way at Wagon Wheel Gap, Colorado. The clearing of the area took place a year ago, so that it will soon be possible to draw tentative conclusions.

Meanwhile, the results of the Swiss investigation will greatly strengthen the hands of those who are urging the protection of our mountain forests as a means of safeguarding our water supplies. While the precise relations determined to exist there are strictly applicable only to other areas with the same physical conditions, careful analysis of the factors concerned leaves no doubt that the demonstrated tendency of a forest cover in hilly countries to check surface run-off and to equalize streamflow is universal. Added strength is thus given to the policy of Federal acquisition of mountain forests, inaugurated nearly ten years ago by the passage of the Weeks Law. It is highly important that adequate funds should be appropriated for the enlargement of the areas already acquired. It is almost equally important that this policy should be supplemented by public control of all "protection forests." Experience both here and abroad has shown all too clearly that only in this way can the conservation of our water resources, one of our most valuable natural assets, be assured.

YOUR NATIONAL PARKS

BY STEPHEN T. MATHER

DIRECTOR, NATIONAL PARK SERVICE

THE National Parks belong to you as well as to all the American people; they are being developed to make them accessible to the greatest possible number of their owners. The best means of transit are provided for those who come by railroad and the way is smoothed for those who come by private motor car, by wagon, afoot or by horseback; hostelries are provided to fit every taste and purse. No longer has the person who has formerly made the scenic spots of Europe his choice an excuse for saying there are no adequate living facilities provided in the National Parks.

For the man who has learned the joy of the open road a welcome camp site is found in a National Park, where he may park his car and pitch his tent. Clear, cool, sparkling water and firewood are near at hand and sanitary facilities add to his comfort. In the larger camp grounds in the Yellowstone combined ranger stations and community centers are to be erected where the park rangers will furnish authentic information regarding the wonders and beauties of the park and where in the evenings the travelers from Maine to California and from Florida to Minnesota can gather around the open hearth fire in true community spirit.

A system of roads in each of the Parks spreads out before one their scenic grandeur. Yellowstone has a complete road system; construction of a transmountain road, which will place Glacier Park on the direct line of the most northern of our transcontinental highways, will be started this year; the Fall River road, crossing the Continental Divide at an elevation of over 11,000 feet above sea level, was completed last year in Rocky Mountain National Park by the State of Colorado; work on the new Carbon River road in Mount Rainier, giving access to its wonderfully scenic northwest section, will be started this year; the Round-the-Rim road in Crater Lake Park gives fascinating glimpses of the marvelously blue waters lying 1,000 feet below; Yosemite has its Tioga road, giving a new approach to California from the East, and a new all-year road is soon to be constructed leading to its world-famed Valley; a new approach road to Giant Forest in Sequoia Park is to be hewn into the steep sides of the valley of the Middle Fork of Kaweah River below Moro Rock; and the Rim road, bordering the tremendous chasm of the Colorado is being widened and improved in Grand Canyon National Park. Zion in southwestern Utah, our newest National Park, is being made easily accessible for motor cars by the State.

The National Park-to-Park Highway links up the Parks in a grand circle tour with radiating highways stretching in each direction offering innumerable smaller circle trips to the motorist who has not time to complete the grand circle tour. The good roads movement everywhere is receiving added impetus through motor travel to the National Parks.

As the hotel has been developed to care for the train traveler, so will the public camp grounds be developed

for the motorist. Many cities and towns are already providing these camp grounds, vying with one another in offering the most attractive sites and the best conveniences. These camps have been found to have a definite economic value and the States have opportunity to further their broader development through the establishment of systems of State parks.

The Park road systems give access only to portions of the Parks and are like windows through which one can obtain a glimpse into nature's treasure houses. To those who desire to enter into the treasure houses and penetrate the fastnesses, easy trails that lure one stretch away. Afoot or on horseback, away from the beaten path, Nature reveals her innermost secrets. Glacier is essentially a trail Park; around the shores of Yellowstone Lake over Big Game Ridge the trail traveler is afforded an intimate view of Yellowstone's wild life; Yosemite offers over 600 miles of trails; in Grand Canyon a trail trip to Cataract Canyon affords an interesting study of the primitive life of the Havasupai Indians and exhibits a series of exceptionally beautiful waterfalls, and on the completion of the suspension bridge across the Colorado River in the bottom of Canyon, the north rim with its fine vegetation and magnificent stands of Yellow pine intermingled with groves of aspen will be open to trail travel.

The fisherman has not been neglected in the National Parks. Through cooperation with the Federal Bureau of Fisheries and the several State fish commissions fish hatcheries are maintained in a number of the Parks, and each year the Park streams are stocked with fish. The Parks are fast becoming famed for their excellent fishing.

A nature guide service has been inaugurated in Yosemite in cooperation with the State Fish and Game Commission, and children and adults are taught to read the trailside as they would an open book. A study of Nature's manifestations, as exhibited by geological formations and geyser action, is conducted also in Yellowstone. Through co-operation with the Bureau of American Ethnology the cliff dwellings and ancient temples of pre-historic people in the Mesa Verde are being revealed by excavation and restoration.

In the elimination of private holdings from the Parks an opportunity for splendid giving exists for generous public-spirited citizens and organizations. In this manner many giant trees in Sequoia Park that were in imminent danger of destruction have already been preserved to the people for all time. Opportunities for this public-spirited work are many and widespread, Yellowstone being the only National Park where no private holdings have ever existed.

Know your National Parks.

Through intimate association with Nature, exemplified in the highest degree in our National Parks, new inspiration and ideals are formed, tired bodies are refreshed, health restored and joy in living is assured.

The National Parks welcome you.

UNFAMILIAR SCENES IN NATIONAL PARKS

BY HERBERT W. GLEASON

“WHY do you keep speaking about the ‘National Parks’? I didn’t know there was more than one.”

Such was the remark to the writer by a man of unusual intelligence, who although he was well informed as to many matters of public importance, had somehow overlooked the development of the national park system of this country. It was a genuine surprise to him to be told that there were no less than nineteen national parks already created, with several more in prospect, besides thirty-six national monuments which are also, in effect, national parks.

It should be said, however, in all fairness that not until within the past four years, since the establishment of the National Park Service, has there been any thorough and systematic effort made to acquaint the public in general with the facts regarding our national parks. Before that time it was left almost wholly to the railroads to advertise the national parks; and as their object was chiefly financial profit, each railroad was concerned to advertise only the one or two parks within reach of its own line. A new era of information and development succeeded the inauguration of the National Park Service,



Courtesy of National Park Service

A NATIONAL PARK IN THE EAST

Popular impression is that all the National Parks are in the West, but here is a view in Lafayette National Park, in Maine. The tourists are standing on Summit Beach Cliff, from the top of which there is a view well worth the climb.

And it is to be feared that this is not a solitary instance of lack of knowledge. Only recently the writer was addressing a large audience of cultivated New England people, and asked how many of those present knew the location of Lafayette National Park. Not a single hand was raised in reply. Yet Lafayette Park is the only national park in New England; its origin, in the gifts of land by public-spirited residents of Mt. Desert Island off the coast of Maine, and its creation by act of Congress had been duly noted in the public press, and various periodicals had reproduced numerous illustrations of its scenic beauty.

and the past four years have witnessed an amazing progress in both of these directions. In fact, as a direct result of the propaganda issued by the Service and the efforts put forth to make the parks more readily accessible, our national park system has come to hold a large place in the estimation of the public, and the number of visitors annually has increased beyond all expectation. The following figures taken from the last report of the Director of the National Park Service, giving the amounts appropriated by Congress for several of the larger parks in 1916 and again in 1921, and the number of visitors to the same parks in 1916 and in 1920, are highly suggestive:



GRAND TETON, YELLOWSTONE PARK

A view of this majestic mountain range from Jenny Lake. Its altitude is 13,747 feet.

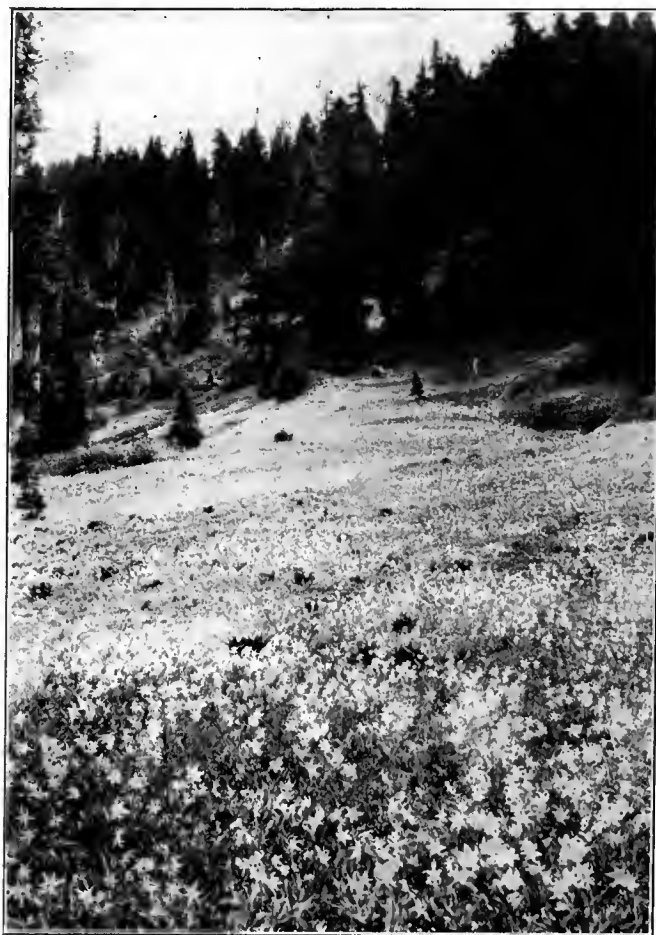
Right here it should be said that a large share of the credit for this notable advance is due personally to the Director of the National Park Service, Hon. Stephen T. Mather, who has not only given to it his best thought and constant energy, but has many times drawn heavily upon his private funds to meet financial needs for which Congress had made insufficient appropriation.

	Appropriations		Number of Visitors	
	1916	1921	1916	1920
Yellowstone Park.....	\$8,500	\$350,000	35,849	79,777
Sequoia Park.....	15,550	86,000	10,780	31,508
Yosemite Park.....	75,000	300,000	33,390	68,906
Mt. Rainier Park.....	30,000	150,000	23,989	56,491
Crater Lake Park.....	8,000	25,300	12,265	20,135
Rocky Mountain Park....	8,000	65,000	51,000	240,966
Grand Canyon Park.....		100,000	66,500
Glacier Park.....	75,000	195,000	12,839	22,449
Private automobiles entering the parks.....			29,358	128,074
Total number of visitors to all the parks.....			356,097	919,504

Readers of *American Forestry*—it goes without saying — are well informed upon all these matters. But there are many features of national parks which have not been

exploited by the railroads, and to which even the folders issued by the National Park Service have given slight attention, which are worth emphasizing. It has been the good fortune of the writer during the past twenty years to visit nearly all of the national parks and monuments, — in many cases repeatedly, — and to secure a very extensive series of original photographs illustrating, not merely scenes along the ordinary routes of travel, but many subjects quite aside from those routes. The question is often asked, "What is the best method of touring the national parks?" That depends largely upon the tourist and also upon the particular park visited. In general, however, it may be said that one will gain the greatest amount of satisfaction, in visiting any park, by going entirely independent of any party or time schedule. Wherever possible, a walking trip is to be recommended in preference to traveling by automobile or on horseback. This will allow the tourist opportunity not only to enjoy to the full all the more conspicuous features of the park, but will enable him to make numerous side trips to localities off the beaten line of travel, and many times he will find these side trips peculiarly rewarding.

In Yellowstone Park, owing to the long distances which intervene between the major points of interest, walking through the park is not to be advised except for those



Photograph by Herbert W. Gleason

A FIELD OF AVALANCHE LILIES

In many places in Mt. Rainier Park these beautiful flower clothed fields are seen where avalanches have swept the ground free of trees and given grass and flowers a chance to grow,



Photograph by Herbert W. Gleason **SUNSET ON THE TETON MOUNTAINS**

In the foreground is Jackson Lake, a large body of water in a section which it is now proposed to set aside as an extension to Yellowstone Park. In the background are the famous Teton Mountains.



Photograph by Herbert W. Gleason

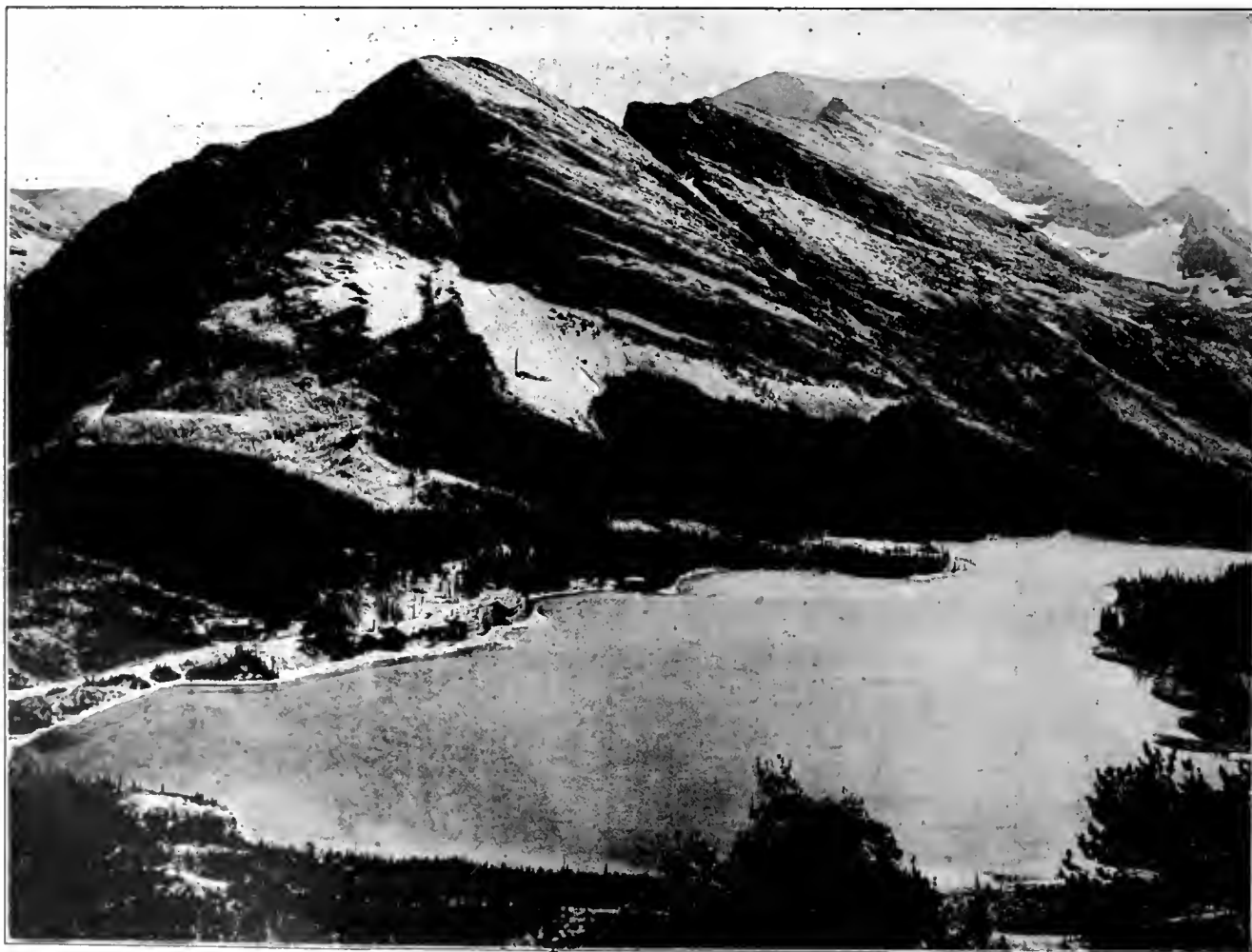
THE JEWEL GEYSER, YELLOWSTONE NATIONAL PARK

While this geyser is not as well known as some of the others, it has a beauty and a majesty which should attract every tourist to the Yellowstone to it.

who have an abundance of time on their hands and who possess exceptional physical energy. The ideal way to see the Yellowstone is by private conveyance, with camping outfit, allowing for indefinite stops whenever desired. That this method is becoming increasingly popular is shown by the fact that last year nearly 14,000 private automobile parties made the tour of the park—four times the number that were recorded in 1916.

Yellowstone Park has been so thoroughly mapped out, and its chief scenic features made so accessible, that one finds sufficient to occupy his attention in following the regular itinerary without attempt at deviation. But it is well, even with guide-book in hand, to note many of the less conspicuous features. In visiting the geysers, for example, do not give the entire time to "Old Faithful," the "Grand," the "Riverside," but seek out some of the smaller geysers. These are not so spectacular, but each one possesses a peculiar beauty of its own. The little "Jewel" geyser, which plays frequently, is one of the most exquisitely beautiful objects in the park. It derives its name from the fact that the column of water thrown into the air seems to explode into millions of shining drops, which fall back as veritable jewels. So among

the countless hot springs, boiling pools, travertine terraces, etc., without discounting the impressiveness of the major sights, one may often find lesser phenomena which are real gems of beauty. Even at the Grand Canyon,—that climax of the glory and wonder of the park,—do not be content to view it from the regulation points and in broad daylight alone. Visit it by moonlight, and catch something of the profound mystery which seems to envelop it. Or summon all your "early morning courage" and view the Canyon from the brink of the Great Falls at sunrise, when the mists rising from the streams are contending with the sunlight for the possession of the Canyon: you will find the sight well worth a five-o'clock-in-the-morning venture. And be sure and climb one of the higher mountains of the park. Electric Peak is the highest and the most difficult to climb, but the view from Mt. Washburn is quite as fine—some think even finer—and you can ride to the summit of Mt. Washburn in an automobile, if you choose. Arriving there, after you have taken in to your utmost capacity the magnificent panorama spread around you, look down at your feet and behold the wealth of floral beauty which flourishes there at 10,000 feet above the sea. These are all alpine



Photograph by Fred H. Kiser

A PARK HOTEL IN THE SHADOW OF THE MIGHTY MOUNTAINS

Right at the foot of formidable Mt. McDermott, and on the shore of the lake of the same name in Glacier National Park, is situated Many Glacier Hotel, where the tourist may have every comfort he has in big eastern hotels, while the boundless West is just outside.



Photograph by Herbert W. Gleason

ST. MARY'S LAKE, IN GLACIER PARK

From Lily Bay on one side of this beautiful lake are seen the great mountain peaks in the distance, with numerous glaciers cutting furrows of white down their rocky sides.

plants, and even if you possess nothing of the botanist's technical knowledge, you cannot help but rejoice in the abundance, the variety, and the richness of color of these courageous mountain-top dwellers.

In visiting Yellowstone Park one should not fail to make a trip to Jackson Lake and the Grand Teton Mountains. These are some forty miles south of Yellowstone Lake, in a region which it is proposed to incorporate within the park limits at the earliest possible date, and where is to be found some of the sublimest mountain scenery along the entire stretch of the Rockies.

Glacier Park, in Montana, affords opportunity for an ideal walking trip, as the public camps are located at points easily reached from one day to another, and an ordinary "hiker" can cover the distances without undue exertion. This refers to the regularly scheduled "tour" of the park. The entire northern portion of Glacier Park is as yet very deficient in trails, and to attempt an exploration of this portion of the park would be an exceedingly strenuous and somewhat hazardous undertaking. The trails already completed, however, reach some of the most attractive localities in the park and furnish enjoyment enough to satisfy the most ardent seeker after the grand and beautiful in nature.

With a large part of Glacier Park decidedly "unfamiliar," it would be easy to select numberless instances of

scenic beauty to fulfill the purpose of this article; but reference will be made only to points within reach of the usual course of travel. St. Mary's Lake, as seen from the chalet at the foot of the lake or from Going-to-the-Sun Camp, is familiar to every visitor; but comparatively few attempt to cultivate a more intimate acquaintance with the lake than can be gained from these two points. A boating trip upon the lake, exploring its various bays and coves, is most earnestly recommended, not only for the delightfulness of the trip itself, but for the new views of the surrounding mountains which take on wholly different aspects and reveal unsuspected beauty as they are seen from different points on the lake. The same is true of Lake McDermott, the terminus of the automobile trip from the eastern entrance of the park. This last-named lake is the central point of a region which abounds in opportunities for short excursions. The most interesting of these is that which takes the visitor to Iceberg Lake, distant some seven miles, where a small glacier, nestling in the lap of a rocky amphitheatre whose vertical cliffs rise two thousand feet above the beholder, descends into an alpine lake and breaks off into miniature icebergs which float around the lake. Along the stream which forms the outlet of this lake there is a whole series of jubilant cascades, the most beautiful of which is that called the "Silver Stairs," slightly off

the main trail. One should also not fail to note the wealth of wild flowers which are found in close proximity to Iceberg Lake.

The Continental Divide extends through the middle of Glacier Park, from northwest to southeast, and in crossing this divide there are several passes which have been taken advantage of by the trail-makers. Among these are Dawson Pass, Red Eagle Pass, Gunsight Pass, Logan Pass, Piegan Pass and Swift Current Pass. Of these Gunsight Pass is the one most frequently traveled, while Swiftcurrent Pass is perhaps scenically the most impressive. "Granite Park," which lies on the western slope of the last-named pass, is one of the most charming localities in the entire park and deserves to be more widely known and appreciated.

withstanding this throng of visitors, the greater portion of the park is a closed book except to a few adventurers who, on foot or on horseback, have sought out the remoter localities and brought back word of their surpassing grandeur. The village of Estes Park, long famous as a summer resort, is the main entrance to the park, and from here roads and trails radiate in various directions. Naturally, the greater number of visitors put up at the hotels in Estes Park; but excellent accommodations can be had at several places—more remote but also far more picturesque—within the park bounds. And it is from these latter places that the "unfamiliar" scenes are most readily reached.

Of course, the chief attraction of Rocky Mountain Park is the rugged and majestic mountain scenery, which



Photograph by Wiswall Bros.

SNOW WATERS OF THREE GLACIERS

The front range at Bierstadt Lake, Rocky Mountain Park, Colorado, eighty-five miles from Denver. From left to right appear Flattop Mountain, Tyndall Glacier, Hallett Peak, Otis Peak and Andrews Glacier.

There is a third national park along the Rocky Mountain range, created only a few years ago, but which has already far outstripped, in point of patronage, all of the older national parks,—the Rocky Mountain Park, in Colorado. No other park is so quickly accessible from a large center of population, and the splendid roads which lead to the park from Denver—sixty miles distant,—are exceedingly popular with automobilists. Yet not-

culminates in Long's Peak—14,255 feet above sea level,—while there are no less than 15 other peaks having an altitude exceeding 12,000 feet. Associated with these peaks there are several small glaciers and a great number of charming alpine lakes. Some of these, like Bluebird Lake, Dream Lake, Odessa Lake, Fern Lake, and Loch Vale, are close up under the Continental Divide, perched high on the shoulders of the range and offering not only

rare beauty in themselves but glorious outlooks over the surrounding country to all who succeed in reaching them. As for the wild life of the park, both animal and floral, one finds this a source of never-ending interest. Mountain sheep, elk, and deer are frequently seen, while the industrious beaver and their works are in abundant evidence. To describe the wild flowers would require a volume.

Colorado is also fortunate in possessing still another national park of unique interest,—Mesa Verde Park, in the southwestern corner of the state. This park in its entirety may be classed as “unfamiliar,” for it is a long way from the routes of transcontinental travel and is reached only by a narrow gauge railroad whose “limited” trains—limited as to speed!—consume a generous amount

down the opposite wall of the canyon, in a niche protected by the overhanging cliff, a whole village of stone buildings, curious in design and partly in ruins. Coming to another canyon you find a similar village, only much larger, and in another canyon still another, and you are told that the park abounds in antiquities of the same sort. These are the cliff-dwellings of a people whose whole history is shrouded in mystery. Who they were, where they came from, how long they lived here, why they left, and where they went to,—these are questions as yet unanswered. They belonged to the Stone Age, having no knowledge of metal implements, yet they possessed a marvelous constructive skill; while the profusion of relics found in the ruins show that in the making of pottery and fabrics of various kinds they had a considerable degree of



Photograph by George L. Beam THE COUNTRY OF THE CLIFF DWELLERS

Here the housing problem of centuries ago was solved by excavating homes in the cliffs. The view is looking northward from Inspiration Point, in the Mesa Verde National Park. At the left is the Sun Temple, and at the right the Cliff Palace.

of time in reaching their destination. With the improvement of the highways in this section of the state there will be a very great increase in automobile travel.

Imagine yourself journeying over a high plateau covered with scrub pine and juniper, with not a vestige or suggestion of human habitation for a dozen miles or more, when suddenly you come to the brink of a canyon deeply countersunk in the plateau, and discover, half way

artistic appreciation. Some of their patterns and designs go back to early Grecian and Egyptian times. How did they get them? All these evidences of a prehistoric civilization are of absorbing interest, and when Mesa Verde Park becomes more readily accessible it will prove to be one of the most popular objectives in national park excursions, because of its many unique features.



Courtesy of National Park Service

LASSEN PEAK IN ERUPTION

This volcano, which has been intermittently active in the last few years, is now in the Lassen Volcanic National Park, and preserved for the public.

Passing over to the Pacific Coast, Mt. Rainier National Park, in the state of Washington, is rapidly becoming familiar to the residents of Seattle, Tacoma, and other cities of the neighborhood, owing to the excellent system of roads recently completed, which allow automobiles to reach a point high up among the glaciers of Mt. Rainier. This mountain, an extinct volcano, is really the king of all the noble peaks which stand guard along the Pacific Coast, and its entire altitude—14,408 feet—can be seen from sea level. It stands in the center of the park, and from its summit there radiates a stupendous glacier-system composed of no less than twenty-eight different ice-streams, some of which are five to six miles in length, while their precipitous descent gives rise in many places to enormous groups of seracs and ice-cascades.

Mt. Rainier is surrounded with a series of the most lovely natural parks, whose verdure has caused the mountain to be likened to a magnificent diamond in a setting of emeralds. Paradise Park, on the southern slope of the mountain, is the only one accessible to automobiles, all the rest being reached only on foot or with saddle-horses and pack train. A wonderful trail has recently been constructed which entirely encircles the mountain, and

while of necessity it is sometimes compelled to follow the lower levels it frequently reaches points of exalted vision and opens up localities which were hitherto practically unknown.

A trip over this trail is one of the most delightful mountain excursions imaginable, and although portions of it are rather rough it is abundantly rewarding. It usually requires seven or eight days to make the round trip from Paradise Park, but more time should be taken if possible, in order to allow for certain side trips off the main trail. There are no sources of supply along the route, and hence everything in the way of food, bedding, shelter tents, etc., should be provided at the outset.

The wild flowers of Mt. Rainier Park, in their profusion, novelty, variety, and depth of color, compel admiration from even the most indifferent beholder. Over four hundred species have been noted at Paradise Park, some of which—such as the avalanche lilies, mountain anemones, and lupines—literally cover acres of ground when in full bloom.

In southern Oregon there was formerly a mountain much higher even than Mt. Rainier; but there came a sad day in its history, when the whole top of the mountain was either blown off in some terrific cataclysm



Photograph by Herbert W. Gleason

ALONG THE CASTLE CLIFFS

Here, ages ago, was a great volcano, which either blew off its head or caved into its own fiery depths. Where once was a seething furnace is now beautiful Crater Lake.

—for it was a volcano, like Mt. Rainier,—or else it was engulfed in its own volcanic caverns. Today on the summit of the mountain, known as Mt. Mazama, there is an immense crater, six miles in diameter, within which is found one of the most remarkable lakes on the face of the earth. This lake has a maximum depth of 2,000 feet, and the enclosing cliffs which are absolutely vertical in many places rise to a maximum height above the lake of 2,000 feet. The color of the lake is an intense ultramarine blue, shading into green along the shore, while the cliffs, being of volcanic rock, exhibit a color-scheme hardly less varied and brilliant than that of the Yellowstone Canyon. This is the dominant feature of Crater Lake National Park, and it is well worth crossing the continent to see.

An automobile road, thirty-five miles in length, encircles the lake, following the rim wherever possible, and affording many superb views of the lake and the surrounding country. The crater walls are so steep that it is possible to reach the shore of the lake only at two or three points, but a good trail has been built leading down from the south rim, and one can enjoy boating and fishing on the lake very readily.

The park also contains several other volcanic cones and a number of creek canyons which are exceptionally interesting. Of the latter, Anna Creek Canyon is nota-



Photograph by Herbert W. Gleason

THE WHITE CASCADES

This torrent of water pours down the grand canyon of the Tuolumne, in Yosemite Park, and is one of the beauty spots in that famous region.

ble for the groups of lofty sand pinnacles which it contains,—curious and fantastic forms created by centuries of erosion. As a whole, Crater Lake Park is rapidly coming to be recognized as one of the most priceless assets of the nation in the realm of natural wonder and beauty.

California has four national parks,—Yosemite, Lassen Volcanic, Sequoia, and General Grant. The two last were established for the purpose of preserving a number of groves of the famous Big Trees, *Sequoia gigantea*. Lassen Volcanic Park contains Mt. Lassen (10,465 ft.), the only active volcano in the United States proper, besides various subsidiary volcanic phenomena. Yosemite Park is much the largest, having an area of 1,125 square miles, and including some of the grandest and most beautiful scenery on the continent.

Yosemite Valley, world-famous for many years, is unquestionably the chief outstanding feature of Yosemite Park; but there are within the park a number of other localities which, as they become better known, will make Yosemite a rival in popular favor with any other national park on the list. Tuolumne Meadows—the most wonderful camping-ground in the way of climate and scenic attractions in America; the Sierra Crown—a group of lofty snow-clad peaks centering about Mt. Lyell (13,090



Photograph by Herbert W. Gleason

YOSEMITE VALLEY

Just as beautiful with its covering of white in winter as in its summer green is the famous Yosemite Valley

ft.); the Grand Canyon of the Tuolumne River—a mighty gorge, twenty-two miles in length, with cliffs rising from four to five thousand feet sheer on either hand, and with a magnificent succession of waterfalls and cascades throughout its entire extent; the region about Mt. Dana and Mono Pass; the Mariposa, Tuolumne, and Merced groves of Sequoias; Mt. Hoffman and Tenaya Lake; Benson, Rogers, and Tilden Lakes in the northern portion of the park; Hetch Hetchy Valley—alas! its glory is departed,—these are some of the “unfamiliar” features of Yosemite Park which will some day be appreciated at their full value.

up Conness Creek to Mt. Conness and possibly as far as Rogers Lake, down the Tuolumne Canyon at least as far as the Waterwheel Falls, and finally returning to Yosemite Valley via the Tioga Road and the trail leading down by the side of Yosemite Falls. Having made this trip once, you will not be satisfied until you have made it again—and yet again,—and then you will realize that you have seen only a small portion of Yosemite Park.

But California is not yet satisfied. It has still two more parks on its “waiting list” which it wishes to dedicate to “the benefit and the enjoyment of the people.” One of these is the Redwoods National Park, in the northern



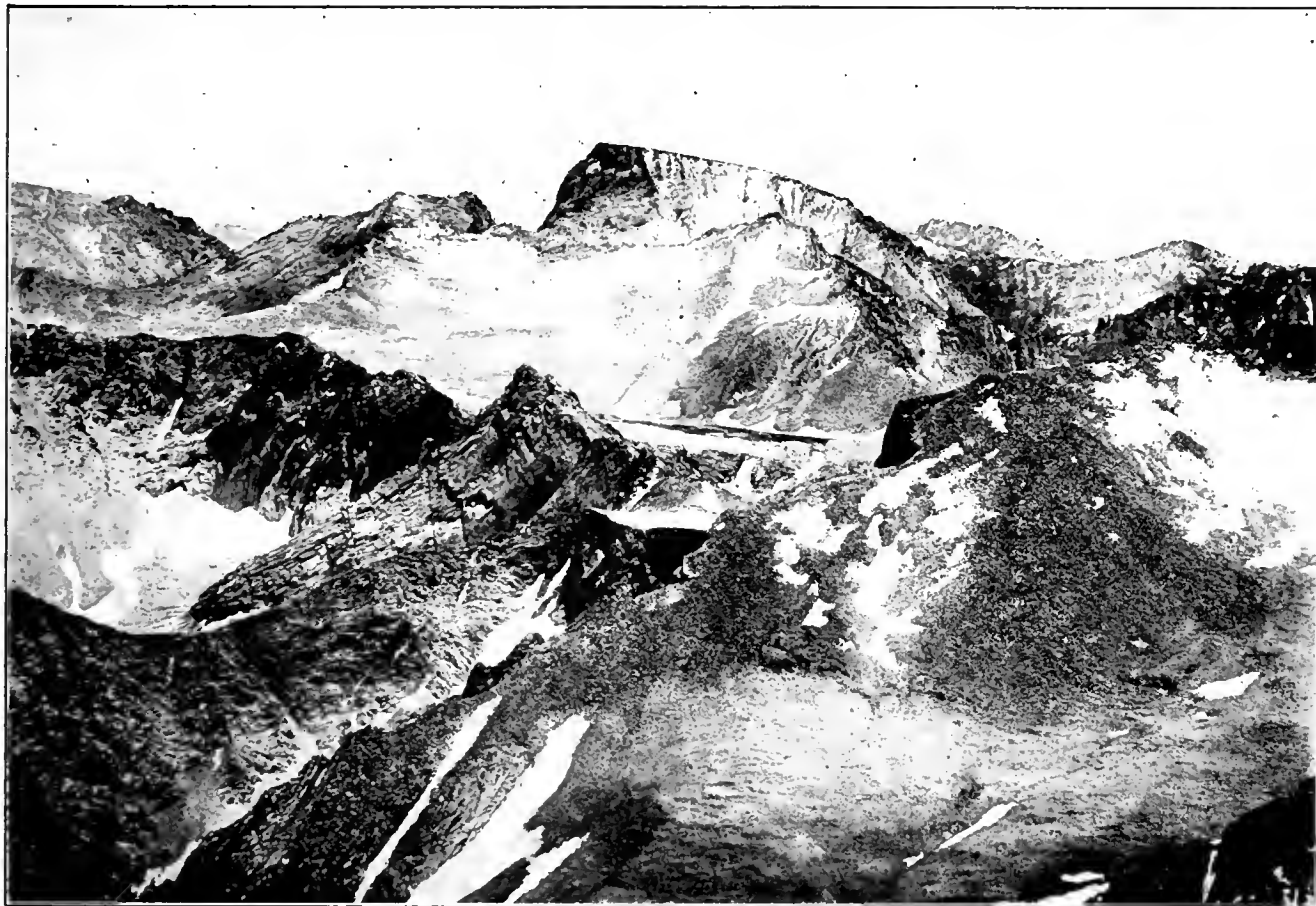
Photograph by Pillsbury

THE GATES OF THE YOSEMITE

The entrance to this wonderful Park in California gives the visitor an appreciation of the magnificent scenic effects which will meet his eye when he is in the Park. To the left is seen the majesty of El Capitan, and to the right the heights of Cathedral Rocks and the sheer beauty of Bridal Veil Falls, while the Merced River flows in the foreground.

To arrive at a reasonable familiarity with Yosemite Park one should plan an excursion for at least a month's duration. First, devote several days to Yosemite Valley and the Mariposa Grove of Big Trees. Then follow the Sunrise Trail past Merced Canyon and Cathedral Peak to the Tuolumne Meadows, making headquarters at Soda Springs for two or three weeks. From this point make separate trips as convenient to Dog Lake and Delaney Meadows, up Lyell Fork to Mt. Lyell, up the Tioga Road to Mt. Dana, over Mono Pass and down Bloody Canyon to Mono Lake and return via Leevining Canyon,

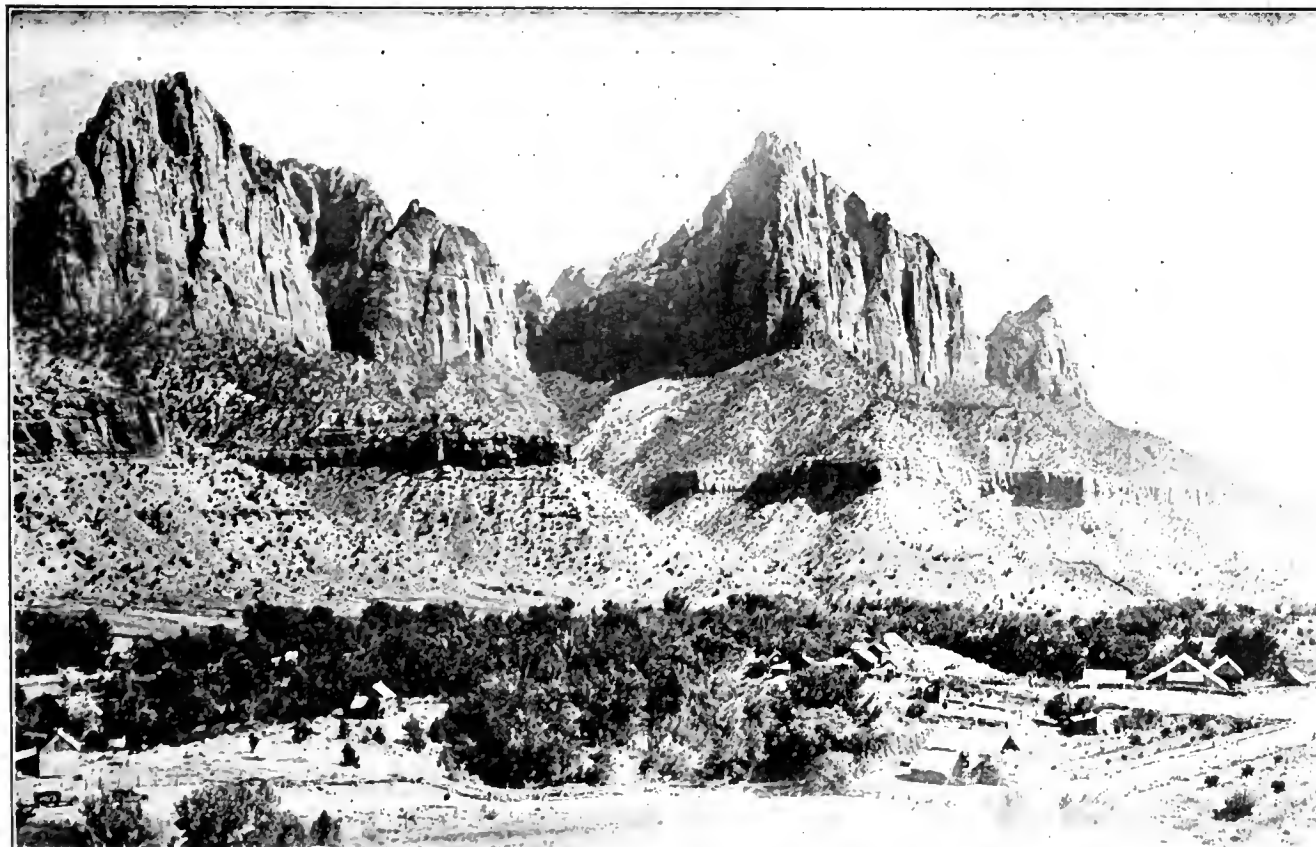
portion of the state, designed to conserve the last remaining forest of the noble Coast Redwood (*Sequoia sempervirens*), and the other is the Roosevelt National Park, in southern California, proposed as a fitting memorial to the late ex-President Theodore Roosevelt. The last-named park will include the present Sequoia Park and in addition over one thousand square miles of mountainous country lying along the crest and the western slope of the Sierra Nevada, culminating in Mt. Whitney (14,501 ft.), the highest mountain in the United States outside Alaska. A marvelous high-mountain trail, named



Courtesy of National Park Service

THE HIGHEST PEAK IN THE UNITED STATES

Mount Whitney, which raises its head above every other peak in the country, has an elevation of 14,501 feet above sea level. It is included in the limits of the proposed Roosevelt National Park.



Courtesy of National Park Service

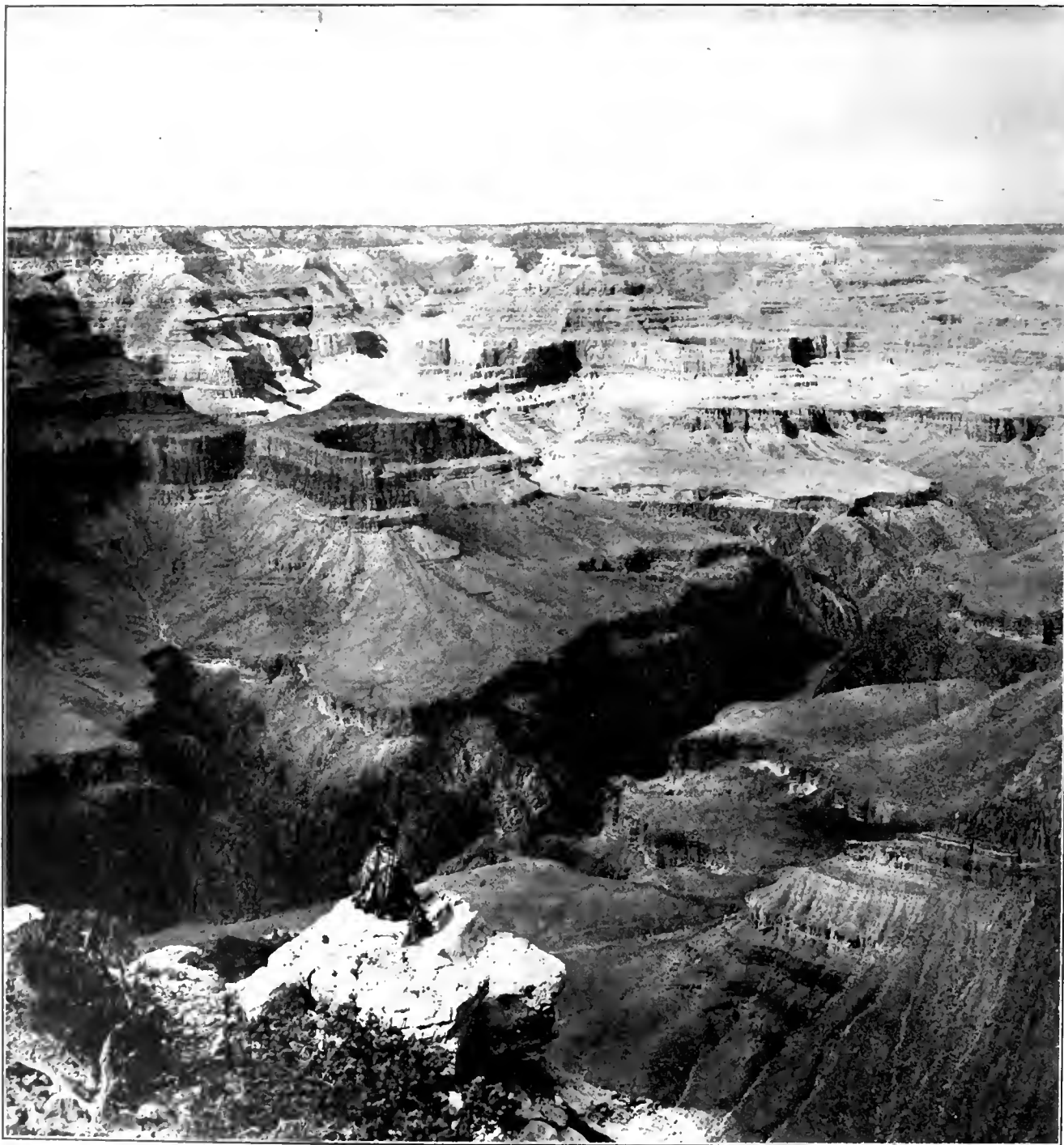
ENTRANCE TO ZION NATIONAL PARK

This enormous canyon is the opening to Zion National Park, in Utah, one visited by many automobile tourists and well worth seeing. The routes for tourists to the Park are almost as attractive as the Park itself.

in honor of the late John Muir (who did much to remove the "unfamiliarity" of our national parks), is in process of completion and will connect the Roosevelt Park with Yosemite. It is urgently hope that both these projects for national parks will receive favorable Congressional action at an early date.

The most important piece of park legislation recently enacted by Congress was the creation, on February 26, 1919, of the Grand Canyon National Park in Arizona. For many years the Grand Canyon has been acknowledged

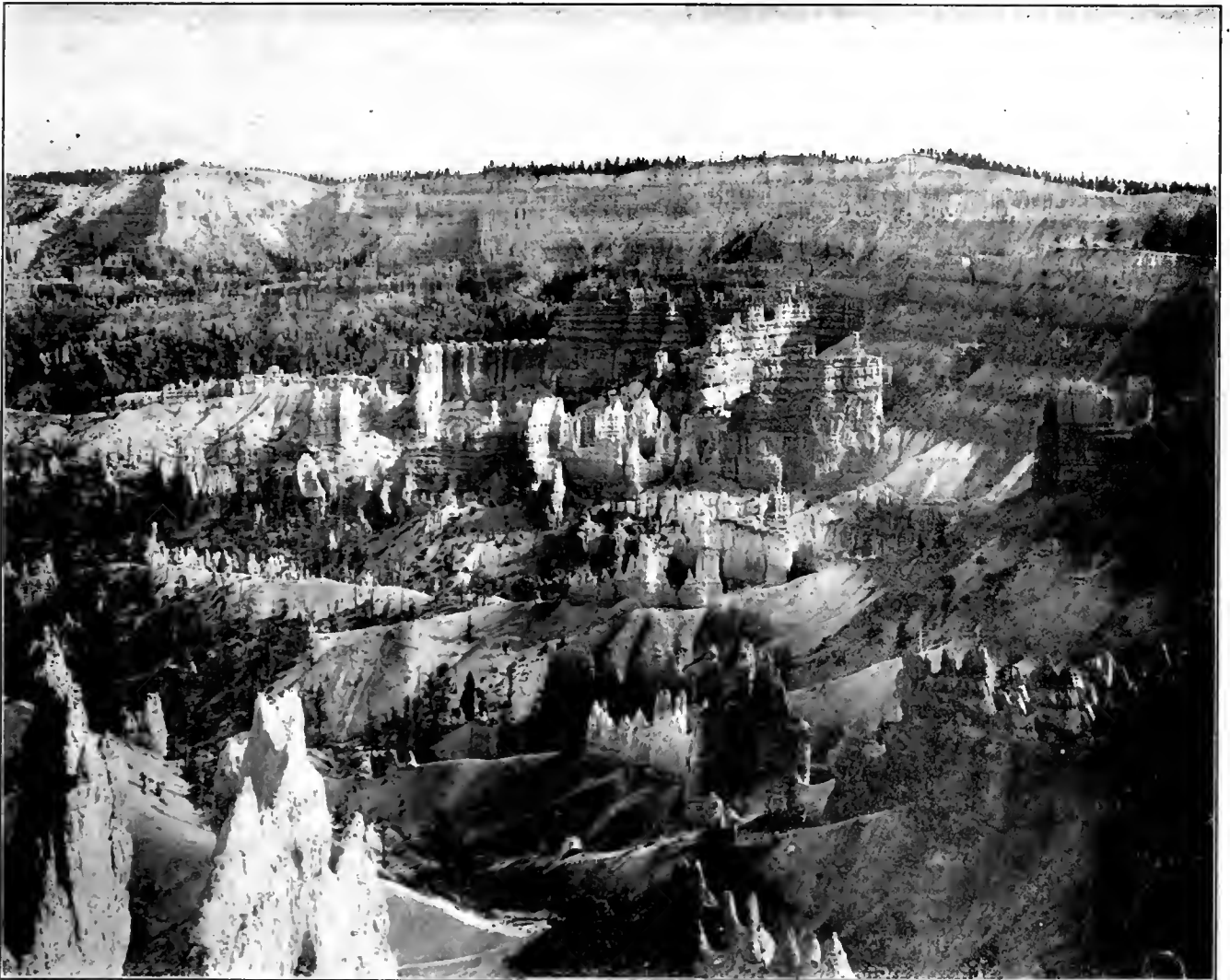
the acme of canyon scenery the world over. It has been deservedly styled "not the eighth wonder of the world but the *first* wonder of the world." Artists, poets, literary men, and even confirmed globe-trotters have been baffled in their attempt to adequately depict or describe it. Yet with all that has been said and written about it, and notwithstanding that hundreds of thousands of people have visited it, the Grand Canyon still remains the most "unfamiliar" of all our national parks. Its mighty extent, its vast depths, its countless ramifications, its un-



Photograph by H. T. Cowling

LOOKING INTO THE DEPTHS OF THE LORDLY GRAND CANYON

The Indian on the rock in the foreground well represents the spirit of the Canyon, which, in a vast measure, typifies the restraint, the aloofness, the poetry, the romance, the dignity, the force and the power which are the highest characteristics of the Indian. The view is from Mojave Point.



Photograph by George L. Beam

THE SILENT CITY

Like a deserted city of great buildings falling in decay is this view of Bryce Canyon, in Utah. The remarkable groupings look like the shattered remains of a city which has undergone a terrific bombardment.

scaled pinnacles and temples, its pervading atmosphere of mystery, combine to make it the most difficult to grasp and comprehend of all our scenic wonders. It will take years of "development" before Grand Canyon becomes, even to a slight degree, "familiar."

In order to gain a partial appreciation of the grandeur of this grandest of grand canyons, it is not enough to arrive at the railway terminus early in the morning, glance over the rim here and there, and then depart on the evening train. That is the program which many visitors adopt, and then they go away and say they have "seen the Grand Canyon." As well might one say that he had "seen New York," having caught a glimpse of its sky-scrapers from the steamer's deck while coming up the Narrows and then immediately taken another steamer going in the opposite direction. A much better program is the following: Spend several days on the rim—just as long as you can possibly afford,—drinking in the vastness and wonder of the scene beneath you, and then, having secured a suitable outfit, descend into the Canyon by the Bright Angel Trail, continue on to the river by the Corkscrew Trail, return to Indian

Springs Garden and camp there over night. The next day be sure and get up early enough to see the sunrise,—a sight you will never forget. After breakfast start out on the Tonto Trail and follow this along the Plateau to the westward, crossing and re-crossing numerous tributary canyons, with occasional close-up views on the right of the Granite Gorge and the mighty river roaring in its dark abyss, while on the left tower the majestic battlements and pinnacles and massive escarpments of the main canyon wall. At nightfall you reach Hermit Camp, tired out but tremendously elated over your trip. The next day you ascend the Hermit Trail back to the rim. Don't hurry—needless advice! you will find abundant reason for *not* hurrying,—but stop now and then and enjoy the glorious scene spread out before you and ever-changing as you ascend, far-reaching in its extent, marvelous in its coloring, overwhelming in its immensity. When you get back to the hotel, after this experience, you will be less inclined than ever to say that you have "seen the Grand Canyon."

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STEPHEN T. MATHER, THE MAN WHO DID IT

ANY general review of the National Parks is incomplete without mention of the man who rescued them from chaos, made them known to the public, organized them, moulded them into an efficient system, developed their road, trail, hotel and transportation systems to the needs of their swift growth, released them from the bondage of politics and placed them under a body of able superintendents especially trained to the complicated requirements of the service.

Stephen T. Mather did this as his contribution to the nation. But not all of his contribution. When appropriations lagged he drew heavily on his private means. To a protesting friend he once said: "I got my money from the American soil. Let some of it go back as a thanks offering." His business is the mining of borax from the Californian desert.

Franklin K. Lane, because he knew his personal and business quality, invited Mr. Mather to come into the Interior Department as Assistant to the Secretary and prepare the western National Parks for the crowds which the approaching Pacific expositions might be expected to bring them. Mr. Mather spent a month in Washington looking over the situation. It was then he dreamed his great dream of the magnificent system which is now growing under his hands. He accepted the office with the understanding that he should have the chance to make this dream come true.

An incident of his installation is worth telling. Secretary Lane led him into his new office, seated him, bowed grandiloquently and said: "Mr. Secretary, I salute you." Then he left the room, but a moment afterwards thrust his head through the door and said:

"By the way, Steve, I forgot to ask you, what are your politics?"

The situation which faced the new executive was appalling. National Parks were grouped with the odds and ends, the misfits, which Congress from time to time had dropped in to the Interior Department because there was no fitting administrative place for them. There were no appropriations for administration. There was not even one clerk who did nothing else. There was no co-ordination; every National Park was an individual administrative unit. If one, for instance, needed the temporary service of an engineer, it was not lawful to send there the engineer of another park who had nothing to do at the time. An over supply of material purchased for Glacier National Park could not be used in Yellowstone. The task was Herculean.

Mr. Mather surrounded himself with experts and went manfully to it. The first thing was to get the people behind him. Few people could name more than two of the sixteen National Parks then constituting the system. Thousands thought Yellowstone the only National Park. School books contained no mention of National Parks. Only the greater atlases identified them. Their fundamental principle of complete conservation

was understood by very few. Only a handful of men in Congress knew or cared anything about them. To most, they were merely a group of playgrounds which happened to be owned by the nation and therefore must be cared for.

After a year's study Mr. Mather determined that a bureau of administration at Washington was the necessary first step toward development and systematization. An idealistic bill to create a bureau had already been introduced into Congress, which he remodeled to the practical needs of the situation. In 1916 Congress, passing this bill, created the National Park Service, but appropriated no money; so it did not become effective till the following year. Resigning his Assistant Secretaryship, Mr. Mather then became Director of this Service. The magnificent national parks system we now possess has been his accomplishment of the several years since. May he live the years necessary to carry his splendid dreaming into full realization!

From the beginning Mr. Mather realized that success depended upon the complete elimination of politics from the administration of the Parks. This was easy to accomplish in the new administrative office in Washington, but it was a matter of difficulty in the field, where the superintendencies had been regarded as legitimate political plums.

But these were the points of most importance. Upon the personal quality, fitness and training of the superintendents depended absolutely the success or failure of the whole.

The superintendent must not only be a man of administrative ability and trained to the life and hard conditions of the wilderness. He must be a natural leader and handler of rough men, a strict and just disciplinarian. He must be an indefatigable worker, a resourceful commander in the emergencies of the wilderness. He must make a dollar do the work of two. He must know how to fight fires, protect forests and wild animals. If not an engineer, he must be familiar with road building and construction work of all kinds under wilderness conditions, prepared to take personal charge and make difficult decisions in emergency. He must do his work with a minimum of assistance, for appropriations were altogether insufficient.

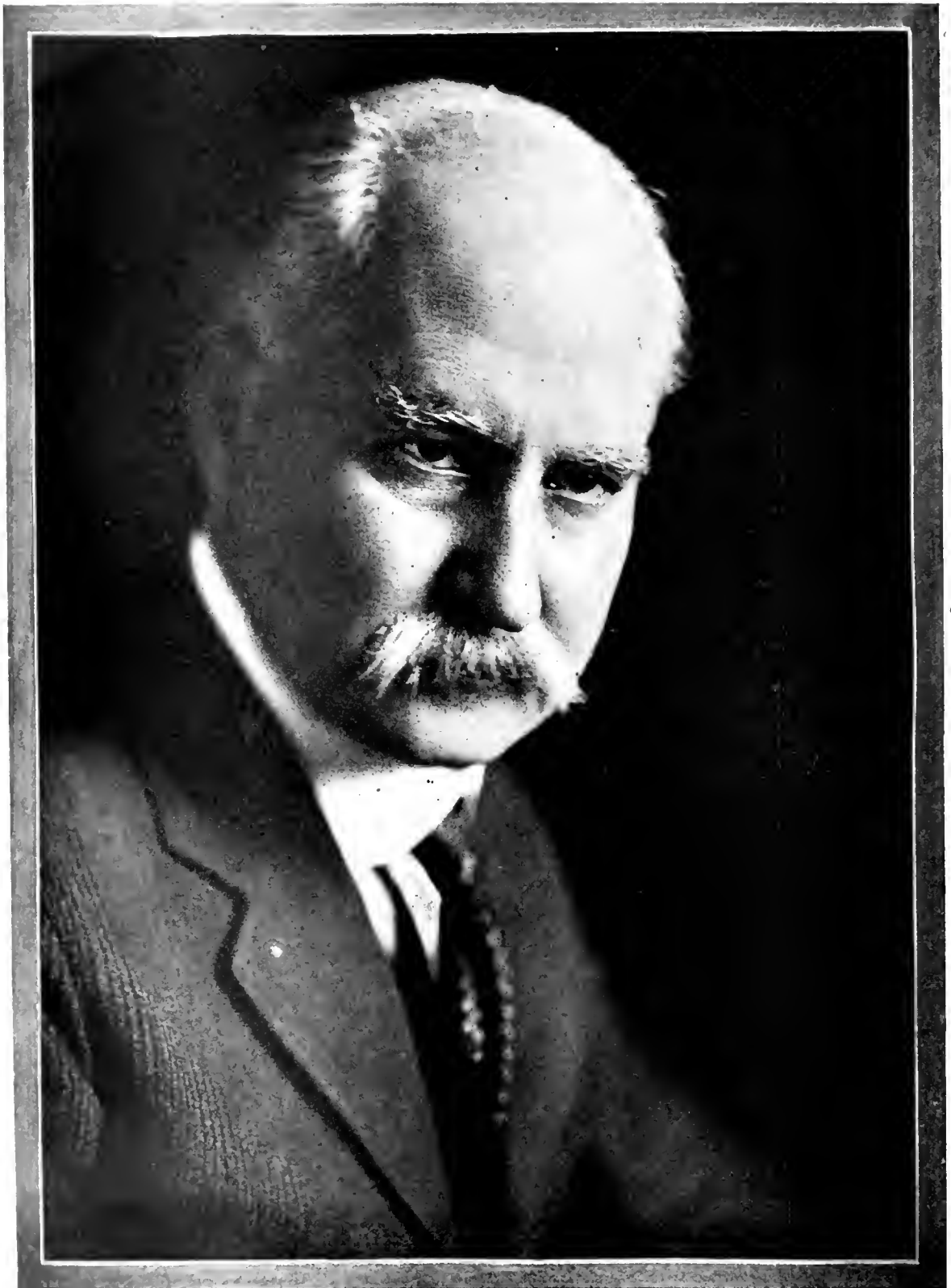
And besides these qualifications, difficult enough to find combined in any one executive, the superintendent must also be the wise, forceful, energetic, diplomatic and accomplished guardian of the many thousands who every year visit his wilderness from homes in cities and towns!

To find these men, to persuade them to accept government salaries, to train them, watch their work and back them up was a feat of the utmost difficulty. His success has been remarkable so far as it has gone. It is a work of years.

National Park superintendents are on the "unclassified list," that is, they are not protected in their positions by



STEPHEN T. MATHER
Director of the National Park Service



ALBERT BACON FALL
Secretary of the Interior

the civil service. It would have been easy to have them classified, but that would have kept in office many wholly unfitted for their places. Mr. Mather's policy, then, was to withhold classification until he could reasonably perfect the force. This force then, remains today open to political enterprise. It is the one necessarily weak place in the organization of the National Park Service.

Under Mr. Mather's leadership, the National Parks have not only become a great system astonishingly efficient when you consider the brief period of their development, but they have become the idol of the people. The system is the most popular work under government control today. Visitors have increased manyfold. They more than doubled even during the war. And Mr. Mather has nearly quadrupled Congressional appropriations. He has added new and splendid parks—

Grand Canyon, Mount McKinley, Hawaii, Lassen Volcanic, and the first national park in the east, Lafayette.

But Mr. Mather's ideas are by no means confined to the upbuilding of a well organized and well administered system. His dream sees them a system of international fame, drawing many thousands of foreign visitors yearly to America. He sees these Parks the objective points of great systems of automobile highways, county, state and national, drawing a million motorists from all the states to common meeting grounds. He sees them the lure to great increases of railroad travel. He sees them important prosperity-makers for the states which border them. To all these ends he is indefatigably shaping his building.

It is a great dream which he no longer possesses alone. America shares it with him.

THE VALUE OF OUR NATIONAL PARKS

BY HON. ALBERT B. FALL, SECRETARY OF THE INTERIOR

SCENERY is one of the most valuable resources of any country. This was evidenced before the war by the great part tourist travel played in the income of France, Switzerland, Italy, and other countries, and the effort now being made by foreign countries to re-establish the tourist industry on a larger plane. For touring is based on the enjoyment of scenery, and the country that has the best to show will enjoy the largest influx of visitors. As a Nation we are richly endowed with scenery, but pre-eminent stand the National Parks. Briefly stated, these now number nineteen, and, including the tremendous volcanic exhibits of the Hawaiian Islands and the Mount McKinley game section of Alaska, are areas of supreme scenic splendor or possessing other unique quality, which Congress has set apart for all time for the use, health, recreation and enjoyment of the people.

In the creation of National Parks the element of size is of no importance. The scenery must be of such supreme and distinctive quality or there must be natural features so extraordinary or unique as to be of national interest and importance. Areas which express in less than the highest terms the particular class or kind of exhibit which they represent are not included, for to do so lowers the standard, and impairs the dignity and prestige of the existing National Park system. This principle is readily understood after a study of the individual characteristics of the existing National Parks.

The appeal these nationally preserved wonderlands have made is fully proven by the phenomenal increase of travel to the Parks during the last three years. Including travel to a few of the 24 National Monuments, travel to the Parks in 1918 amounted to 451,661 people; in 1919 to 811,516; and during the last season, 1920, to 1,058,455. The majority come in their own motor cars. Every opportunity is afforded the public to enjoy their visits in the manner that best satisfies the individual taste, and to enable this, the fullest possible freedom of action is

granted and the varied forms of outdoor entertainment are provided. Hotels and camps are established providing a variety of accommodations. Mountain climbing, horseback riding, hiking, motoring, swimming, boating, and fishing, and above all camping, are the favorite sports during the height of the summer season. In winter the development of winter sports in such parks as the Yosemite, Rocky Mountain, and Mount Rainier already offers opportunities for skiing, sleighing, snowshoeing, tobogganing, skating and the like amidst ideal surroundings; indeed, most significant is the fact that during the last winter the Yosemite Valley entertained visitors from 37 States of the Union, and from 23 foreign countries.

The educational values of the National Parks are also becoming more and more recognized. They offer opportunities to universities and schools for the conduct of vacation period studies. The nature guide courses that have been instituted have proven exceedingly popular, and will gradually be extended to other Parks. In time, adequately equipped museums containing specimens of wild flowers, shrubs, and trees, and mounted animals, birds, and fish native to the individual Parks, may be provided. Already the Parks are developed with roads and trails which are being expanded as appropriations are made available by Congress, and yet are established with such care that any over-development to disturb the quiet enjoyment of the wild places is guarded against. Hunting, of course, is not permitted, except in the Mount McKinley Park, in Alaska, under exceptional circumstances, because one of the prime purposes in the establishment of the Parks is that they are to constitute game sanctuary, where wild life may be observed and developed in its natural habitat.

The term "National Parks," therefore, has a definite meaning. It means that as long as this policy of National Park maintenance endures, there will always be an untouched bit of native wilderness preserved from the leveling forces of economic development. And yet they play a most important part in the development of the part of

(Continued on Page 406)

OUR NATIONAL PARKS AND HOW TO REACH THEM

BY ARTHUR E. DEMARAY, EDITOR, NATIONAL PARK SERVICE

IN 1920 over a million persons visited the 19 National Parks and 24 National Monuments. It would seem that, with such a volume of travel to the Parks, prospective tourists would have a general idea where the Parks are located and how to reach them, but such is not the case. Sixteen of the National Parks lie west of the Mississippi River; thirteen of these dot the Rocky Mountains and the Pacific Coast ranges; one National Park is on the Hawaiian Islands; the Mount McKinley National Park is in Alaska; and the only National Park east of the Mississippi is on Mount Desert Island off the Coast of Maine. Naturally, the great bulk of travel to the National Parks has so far been from the Middle West and from the States in which the Parks are situated, although, more and more persons living in the East are planning western trips, either by railroad or by motor, to include one or more of the National Parks. It is to these prospective Park tourists that this message is addressed.

The railroads have announced summer excursion fares to the National Parks at much reduced rates, effective June 1; return tickets may be used until Octo-

ber 31, allowing for liberal stopovers enroute. These tickets may be purchased to include one National Park or to include several, and it is possible to combine the major parks in a grand circle tour of the West. In fact, these grand circle tours are becoming increasingly popular. Among the large tourist agencies offering escorted tours are the American Express Company, Frank and Company, Thos. Cook & Sons, and Raymond and Whitcomb, while the Travel Club of America and the Massachusetts Forestry Association conduct such trips each year. The Chicago and Northwestern Railway and the Union Pacific System have established a Bureau of Service of National Parks and Resorts in Chicago, Illinois, which not only furnishes complete information regarding accommodations, costs, and how to reach the National Parks to all applicants without charge, but also conducts escorted National Park tours to the Yellowstone and Rocky Mountain National Parks.

Let us follow a typical itinerary and make one of these grand circle tours. Leaving Chicago, our first objective is Denver, Colorado, which is oftentimes called the "Gateway to the National Parks." The first Park



Courtesy of National Park Service

ONE OF TWENTY-FIVE THOUSAND CAMPERS IN 1920

Only a few years ago less than 25,000 tourists went to all the National Parks every year; but in 1920 that number alone camped in Yosemite National Park. The photograph shows one outfit comfortably located on the free public camp grounds there.

to be visited is the Mesa Verde National Park in southwestern Colorado, the home of the cliff dwellers whose prehistoric structures nestle in the sides of the canyons which seam the pinyon-covered mesa which gives the Park its name. The trip is made over the Denver and Rio Grande Railroad by way of Colorado Springs, Pueblo, and Alamosa to Mancos, Colorado, which is the point of departure for the Park. From Mancos automobile stages operate daily into the Park during the season from May 1 to November 1. A public camp is available and comfortable lodgings and good meals are furnished. The return to Denver is via Montrose,

ing feature of the Park. Here also are remarkable records of the glacial period which may be discerned by the untrained eye. We may go to the Park all the way from Denver by motor or we may go to one of the principal railroad entrances from which daily motor stage service is available the year around. Let us take the trip from Denver by motor, passing Longs Peak enroute and crossing over the Continental Divide by the new Fall River Road, which reaches an elevation of 11,767 feet, to Grand Lake, the western entrance to the Park where we will rest comfortably overnight in an excellent lodge. Denver is made the next day, cross-



Photograph by George L. Beam

HOMES OF THE ANCIENTS

The Fire Temple Group as seen from across Fewkes Canyon in the Mesa Verde National Park. This group was excavated and restored by Dr. Fewkes in 1920. It is an unusually fine example of the cliff dwellers' homes.

Salida, the Royal Gorge of the Arkansas and Colorado Springs. This is the "Around the Circle" trip and some of the finest scenery in the Rocky Mountain region is traversed. Seven days are required to make the trip.

The next Park to be visited is the Rocky Mountain National Park in northwestern Colorado. Here three hundred and ninety-seven square miles of the Rocky Mountains have been reserved as a great National playground. The "Snowy Range," as this section is sometimes called, has peaks which average from 11,000 feet to the 14,250 feet altitude of Longs Peak, the culminat-

ing the Divide a second time through Berthoud Pass, altitude 11,000 feet, and including a section of Denver's Mountain Park System. The charge of \$25.74 for this more than 230 miles motoring is very reasonable.

The next National Park to be visited on our itinerary is the Yellowstone, the land of geysers—the land containing the cameo of canyons, the Grand Canyon of the Yellowstone—the land of the bear, the elk, the buffalo and other exhibits of the native wild life of America. The rail journey is made north from Denver through Cheyenne to Cody, Wyoming, a town established by the late



Photograph by J. E. Haynes

ACCOMMODATING CAMPERS IN THE PARKS

Camping grounds are provided for automobile tourists in the Parks and they are properly policed and kept clean. This camp is at Mammoth Hot Springs, in Yellowstone National Park. As many as 300 cars were parked in this camp on a single night during the tourist season of 1920.

Wm. F. Cody, better known as "Buffalo Bill." Here the auto stages await us for our trip through the Park. The regular four and one-half day tour costs \$54 if we stop at the hotels and only \$45 if we stop at the big permanent camps. This charge, of course, includes the motor transportation. We have the privilege of coming in by one entrance and leaving by the same entrance or leaving by either of the other entrances. The Park season is from June 20 to September 15. On our particular journey we will leave by the northern, or Gardiner, entrance.

From Cody the road follows through the Canyon of the Shoshone River, where we view the great reclamation dam and reservoir; thence through Sylvan Pass, skirting Yellowstone Lake, and on to the Grand Canyon of the Yellowstone for our first night in the Park. Next day our stage will carry us across to the Norris Geyser Basin, through the Lower and Upper Geyser Basins to Old Faithful. The third day the Continental Divide is crossed and the day's journey ends at Yellowstone Lake, where we may fish if we desire. The fourth day the Grand Canyon is again visited and the journey to Mammoth Hot Springs is made via the Dunraven Pass, or, if we desire, we may cross the summit of Mount Washburn upon the payment of \$2 extra fare. Our last night in the Park is

spent at Mammoth Hot Springs, where great terraces have been built up by the deposition of the mineral from the waters of the hot springs. The fifth day we leave through the Gardiner Canyon and resume our trip by rail to Glacier National Park in northwestern Montana. We have the choice of going via Billings or by Helena, the State capital.

Glacier Park Station is the eastern entrance and the beginning of the road to the Many Glacier Hotel on Lake McDermott, 58 miles distant. One of the largest and finest log hotels ever constructed cares for the Park tourists at Glacier Park Station. The Park season is from June 15 to September 15. There are many wonderful trail trips to be made in Glacier Park, for Glacier, more than any other Park, is one in which the tourist, who desires to really see it, must ride or hike the trails. It is a rugged mountain region of unsurpassed alpine character, with over 250 glacier-fed lakes of romantic beauty and more than 60 small glaciers. It is, however, the superb massing of its mountain peaks and its beautiful lakes that mark its individuality. There are three principal passes from the east to the west side—the Gunsight Pass, Logan Pass and Swift Current Pass. At present there is no road crossing through the Park, but Congress

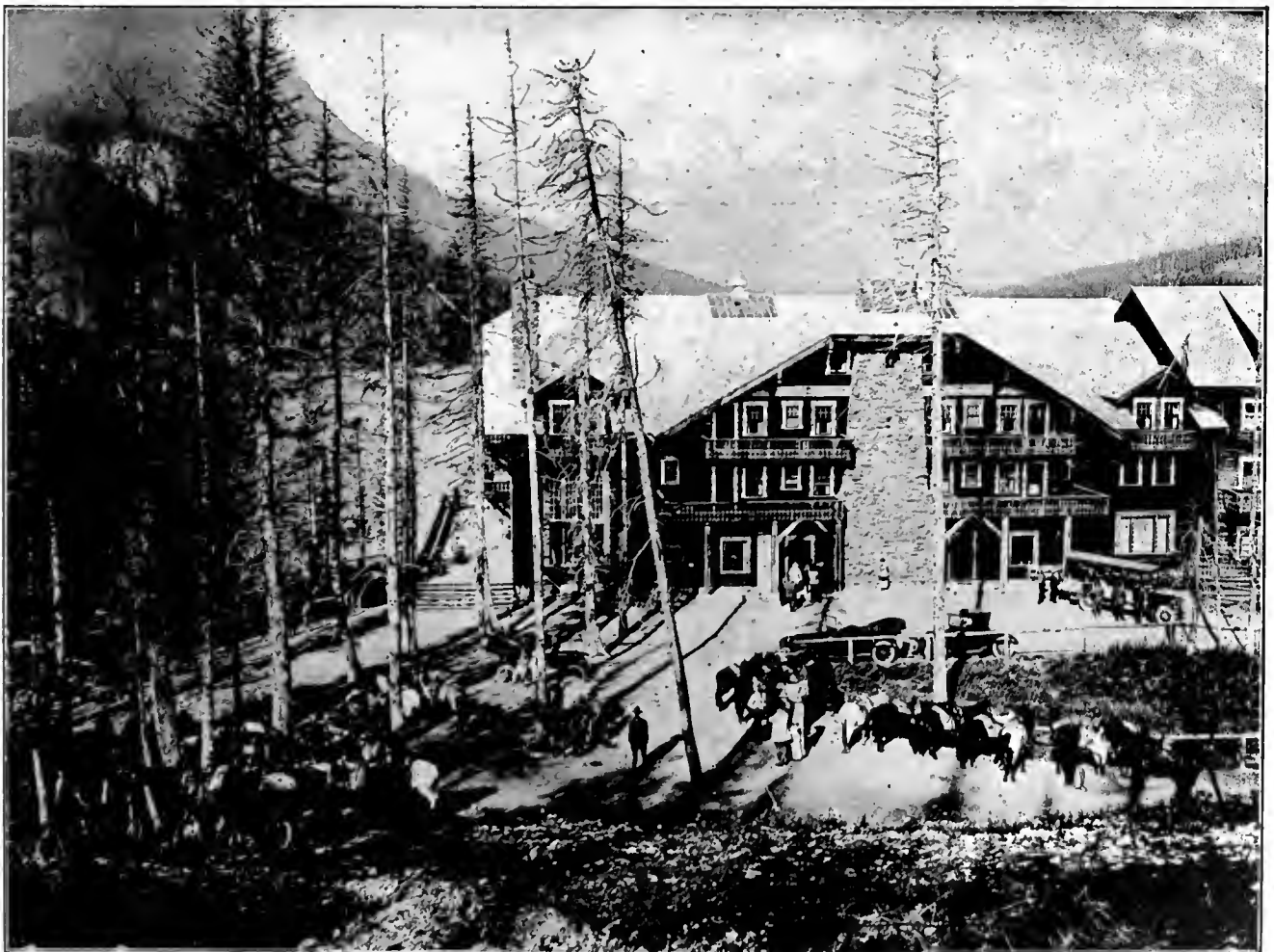
has approved a transmountain road project and has appropriated \$100,000 to commence its construction. This road will skirt the north shore of St. Mary Lake, crossing the Divide through Logan Pass, descending the valley of McDonald Creek to Lake McDonald and skirting the east side of this, the largest of Glacier's lakes, joins the present road at its lower end. Construction this year will be centered on the Lake McDonald section. It will require about five years to complete the highway.

We will assume that we have crossed through Glacier by horseback and have arrived at Belton, the west entrance. Here at 10 o'clock at night we may take a sleeper on the Great Northern's Oriental Limited, and the following evening at 8 o'clock we will arrive at Seattle, Washington. Of course, we must spend some time sight-seeing in Seattle, but our next Park objective is the Mount Rainier National Park, which we may reach by motor from Seattle or Tacoma during the season from June 15 to September 15.

"Easily King of all is Mount Rainier," wrote F. E. Matthes, of the United States Geological Survey, reviewing that series of huge extinct volcanoes towering high above the sky line of the Cascade Range. "Almost 250 feet higher than Mount Shasta, its nearest rival in gran-

deur and in mass, it is overwhelmingly impressive both by the vastness of its glacial mantle and by the striking sculpture of its cliffs. The total area of its glaciers amounts to no less than 48 square miles, an expanse of ice far exceeding that of any other single peak in the United States. Many of its individual ice streams are between four and six miles long, and vie in magnitude and in splendor with the most boasted glaciers of the Alps. Cascading from the summit in all directions, they radiate like the arms of a great starfish."

The southwest corner of the Park, at which is the main entrance, is distant by automobile road 56 miles from Tacoma and 90 miles from Seattle. The Park road is 20 miles in length and ends in Paradise Valley, where the Paradise Inn is located. From Paradise Inn, or Camp, for there is a very comfortable tent camp located here, the principal trail trips and climbs are available. Of course, the summit climb is the "big stunt" of the Park. Mount Rainier has an altitude of 14,408 feet, and is the third highest peak in the United States. Experienced Swiss guides are employed to take the climbing parties over the glaciers, and while the summit climb is strenuous, both men and women make the trip. One of the most enjoyable sports in Rainier is snow sliding. Guides will



Photograph by R. E. Marble

MANY GLACIER HOTEL, GLACIER NATIONAL PARK

The tourist need have no fear that his comfort will not be properly provided for when he has such hotels as this to lodge and feed him as he travels through the Parks.

equip us with "tin pants," which are merely khaki riding trousers with reinforced seat heavily paraffined. After several hours climbing up steep snow drifts we are told to simply sit down and lift up our feet, and, if we are lucky, we may accomplish a graceful slide.

From Seattle our rail journey is continued south to Portland, Oregon, where we should stop at least for a day in order to enjoy the scenic motor drive over the Columbia River Highway. The next Park to be visited is the Crater Lake Park, in southern Oregon. The train is left at Medford, Oregon, where automobile stages will carry us to the Park some 84 miles distant. Stages operate daily to Crater Lake during the Park season, July 1 to September 30. The National Park takes its name from the lake of extraordinary blue in the crater of an extinct volcano whose sides average from 800 to 1,000 feet high. An excellent lodge stands on the rim of the crater. An easy trail runs down to the water's

edge and motor-boat trips may be made around the lake. Here also some of the finest trout fishing may be had. A road has been built entirely around the rim of the lake,

giving fascinating views of the lake lying below at nearly every turn. We must continue our journey and we motor to Klamath Falls, Oregon, which is at the end of a branch line of the Southern Pacific. However, a through sleeper is waiting to take us to San Francisco. This special sleeper is picked up on the main line at Weed, California, where a splendid opportunity is had to view snow-crowned Mount Shasta.

If we had time we might stop at Red Bluff California, and engage an automobile for a trip to the Lassen Volcanic National Park. Lassen Peak, the only active volcano in the United States, is the chief scenic feature of the Park. We journey on, however, to San Francisco.

Across the Bay from San Francisco on the slopes of Mount



NELLY NO-CHIEF

A Blackfoot Indian maiden of Glacier Park who has no fear of the camera and does not believe in the short skirt fashion.



Photograph by R. E. Marble

BLACKFEET INDIAN LODGE, GLACIER NATIONAL PARK

One of the ever interesting attractions at Glacier National Park are the Blackfoot Indians, of whom hundreds may be seen. The photograph shows Mrs. Louis Hill and a party of friends visiting a Blackfoot Indian Lodge.

Tamalpais lies the Muir Woods National Monument, a magnificent stand of *sequoia sempervirens*, the gift to the United States of William Kent, former Congressman from California. This is one of the most noted redwood groves in California.

But the wonderful Yosemite is calling.

We board the train in San Francisco at 8 o'clock in the morning and that evening we are dining in either the hotel or one of the camps on the floor of the Yosemite Valley. No matter what our expectation, we are delightfully astonished upon entering the Yosemite Valley. The sheer immensity of the precipices on either side of the Valley's peaceful floor; the loftiness and the romantic

Park from east to west and, penetrating the High Sierra through Tioga Pass, drops to the desert-like region of Mono Lake on the east side; thence through historic towns of pioneer days in Nevada finally reaches Lake Tahoe. Daily stage service is available between Yosemite Valley and Tahoe Tavern on Lake Tahoe between July 15 and September 15. The trip requires two days and the cost of transportation is \$35. Meals and lodgings enroute will average from \$10 to \$12 per passenger. Tahoe Tavern is reached by rail from Truckee, California, on the main line of the Southern Pacific Railroad. Transcontinental tourists may leave the main line at Truckee, go by train to Lake Tahoe, thence by motor stage over



Photograph by Frank A. Jacobs

CAMPING NEAR THE SNOW LINE

Beautiful Rainier Park attracts thousands of automobile tourists and the photograph shows how they make themselves at home in the free public camp ground in Paradise Valley, with the magnificent mountain facing them.

suggestion of the numerous waterfalls; the majesty of the granite walls; and the unreal, almost fairy quality of the ever-varying whole, can not be successfully foretold. But the Valley is only a small part of the Yosemite Park. It occupies eight square miles out of a total of more than one thousand one hundred. The Park above the rim is less celebrated, principally because it is less known. One of the finest trips in the Yosemite, if not in America, is over the Tioga Road, which crosses the

the Tioga Road to Yosemite Valley, thence by train to Lathrop, California, and resume their trip to San Francisco, or may reverse this route, paying for detour transportation between Truckee and Lathrop via the Yosemite Park and Lake Tahoe.

Of course, we must visit the Mariposa Grove of Big Trees in Yosemite and we will motor there from the Valley, remaining over night in the delightful hotel at Wawona, and continue the following day to Merced,

where our rail journey is resumed to Fresno, if we are to visit the General Grant National Park, or to Visalia, if we are to visit the Sequoia National Park.

The General Grant National Park, which has an area of but four square miles, was created to preserve the celebrated General Grant tree, which is the second largest living thing in the world. The Sequoia National Park is the big tree Park. There are 12,000 trees over 10 feet in diameter, some are 25 feet to 36 feet in diameter. The General Sherman, the largest and oldest living thing in the world, is 36.5 feet in diameter, 102.8 feet in circumference, and 279.9 feet in height. Stages operate between Fresno and the General Grant Park and from Visalia to the Giant Forest in the Sequoia National Park during the Park seasons, which are from May 24 to October 10.

North and east of these Parks lies the wonderful area which it is proposed to reserve as the Roosevelt-Sequoia

is the highest elevation in the United States proper. Access to this region is now available by saddle and pack horse from either the General Grant or Sequoia National Parks.

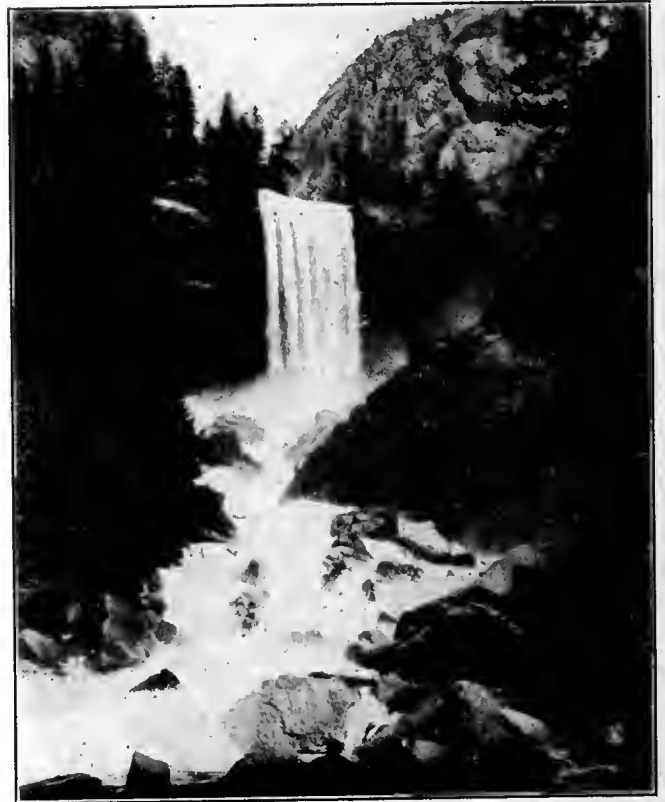
Los Angeles and southern California are the natural



THE SENTINEL IN CRATER LAKE

The bottom of the lake in most places pitches off at such a steep angle that it is quite possible for the motor-boat to hug in close to the surrounding rocks and cliffs. This remaining sentinel of a by-gone period is invariably visited by the motor-boat.

National Park. This is destined to be one of the world's greatest playgrounds. Its three tremendous canyons, the Kings, the Kern, and the Tehipite, are already famous. The eastern boundary will be the crest of the High Sierra, of which Mount Whitney, 14,501 feet in altitude,



VERNAL FALLS, YOSEMITE PARK

This is one of the big scenic features of the famous Park and has been described by many artists and poets with brush and pen.

habitat of the tourist, and thither we are bound. We may leave Fresno or Visalia in the late evening and the following morning will arrive in Los Angeles. If we desire to visit Zion National Park in southwestern Utah we may do so as a side trip from Los Angeles. Leaving Los Angeles on the Salt Lake Route in the morning, we arrive at Lund, Utah, the following morning. From Lund motor stages operate daily during the season from May 15 to November 1, to Zion Canyon, a distance of 100 miles. Zion Park is also reached from Salt Lake City via the Salt Lake Route. A combination of the beauties of Yosemite Valley and the Grand Canyon might be used to describe Zion Canyon, which is the principal accessible feature. The cost of the side trip from Lund is \$36.50, which includes motor transportation, meals and lodgings, and two nights at the Wylie Camp in the Park. It is possible to include in the side trip the marvelous Bryce Canyon, which lies in a straight line about 50 miles northeast of Zion.

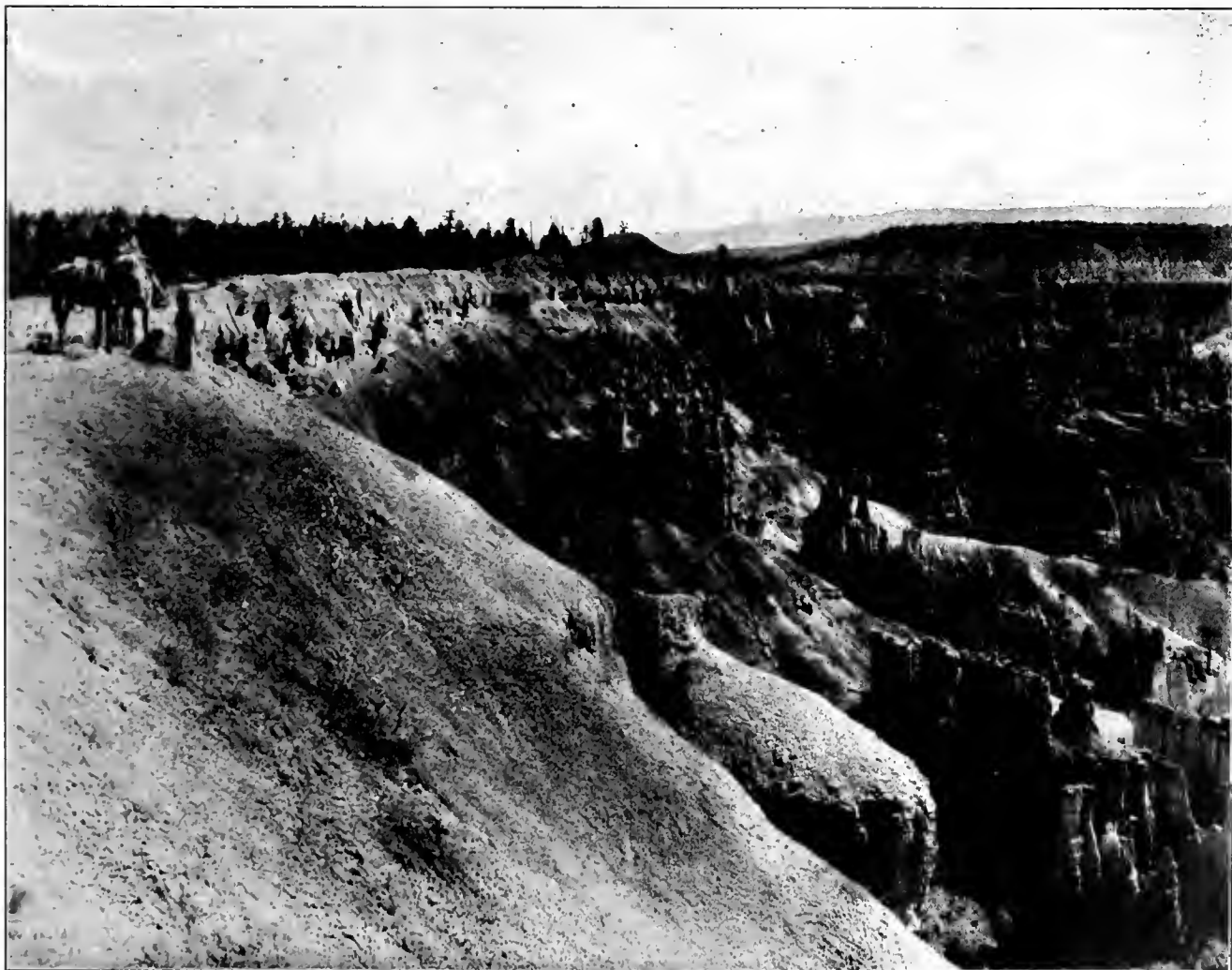
Our grand circle tour is nearly finished, although the greatest spectacle is yet to be presented; this is the Grand Canyon National Park in northwestern Arizona. We make our reservations on the Grand Canyon car of the California Limited, the crack train of the Santa Fe Railroad, and, leaving Los Angeles at 11.30 A. M., we ar-

rive at Grand Canyon the following morning at 8.20 A. M. our sleeper having been detached at Williams, Arizona, in the night and carried through to Grand Canyon early in the morning. Most tourists retain the same space on the Grand Canyon car and leave the Park that night for their return to Chicago; but this is an unfortunate mistake. One can not begin to comprehend in one day the spectacle that is unfolded. Three days at least are needed, a week's time is better, and even longer may be spent profitably. However, as we are following a typical grand circle tour itinerary, we are allowed only one day at Grand Canyon, and then we are enroute to Chicago, our starting point.

It is possible to complete the tour as outlined in from 60 to 70 days, depending upon the time allowed in the various Parks. The cost will average from \$800 to \$1,100, which includes all expenses. Of course, very much cheaper trips can be planned from practically every point in the United States, visiting one or more of the National Parks. On practically all transcontinental trips it is possible to visit at least one National Park.

From Seattle, Washington, one may make the boat trip to Alaska, and in another year tourists will be able to make the trip over the new Government railroad from Anchorage to Fairbanks. This new railroad closely approaches the Mount McKinley National Park. Mount McKinley, altitude 20,300 feet, is the highest mountain in North America. It has the further distinction of rising higher above the surrounding country than any other mountain in the world. The Park area is the fountain head of the big game herds of Alaska.

From most of the Pacific Coast cities steamship service is available to the Hawaiian Islands. The Hawaiian National Park embraces three areas, two of which are on the Island of Hawaii, and the third on the Island of Maui. These areas include the summits of Mauna Loa and Kilauea, and the extinct crater of Haleakala. Kilauea's "Lake of Everlasting Fire" is one of the most spectacular exhibits in the world. It is reached from Hilo, the second largest town on the Islands, and hotels are available within the Park area. The Hawaiian Islands have been brought closer to the East through the establishment by



Photograph by George L. Beam

ON THE BRINK OF BRYCE CANYON

This impressive canyon is in Utah and is reached from Marysvale, on the Denver and Rio Grande Railroad. It is well worth the trip and a long stay after arrival in order to thoroughly appreciate the constantly changing light effects on the formation.

the Matson Company of direct steamship service between Baltimore and Honolulu via the Panama Canal. New large palatial steamships are operated on this route.

Lafayette National Park in Maine, while mentioned last, is one of the important members of the National Park system. The Park area is composed of the group of granite mountains upon Mount Desert Island. The Cadillac Mountain, altitude 1,532 feet, is the highest point of the eastern coast. Hotel accommodations are available at Bar Harbor, which is reached by train and boat service

Yellowstone Trail, National Parks Highway and Theodore Roosevelt International Highway. There are other highways beginning in the Middle West and reaching several of the Parks. The Custer Battlefield Highway extends from Omaha, Nebraska, to the Glacier National Park. The Black and Yellow Trail extends from Chicago to the Yellowstone National Park.

All these highways, with the exception of the Old Spanish Trail and Bankhead Highway, join and give access to the National Park-to-Park Highway, which was estab-



Courtesy of National Park Service

CAMPING UNDER THE GIANT SEQUOIAS

Attractive camps in the shadow of these noble trees are dotted throughout the forest during the season in the Sequoia National Park, California, and every year finds more and more campers taking advantage of the opportunity offered for a delightful trip.

from practically all points in the East; also good motor roads reach the Island.

But one will say that the above information is of no use to the person who is planning a motor trip through the National Parks, and the question arises whether one can go by motor; the answer is yes. In fact, 60 per cent of the Park travel last year was by private automobile. From south to north there are nine main transcontinental highways crossing the United States from east to west. These named in order are: Old Spanish Trail, Bankhead Highway, National Old Trails, Roosevelt National Highway, Pikes Peak Ocean to Ocean Highway, Lincoln Highway,

lished and designated last fall by the National Park-to-Park Highway Association in cooperation with the American Automobile Association, and with the approval of the Department of the Interior. The National Park-to-Park Highway is 4,700 miles long. It passes through nine western States and links in a great circle chain Rocky Mountain, Yellowstone, Glacier, Mount Rainier, Crater Lake, Lassen Volcanic, Yosemite, General Grant, Sequoia, Grand Canyon, and Mesa Verde National Parks—the heart of the Continental Divide; geysers; glaciers; ice-clad mountain peaks piercing the sky; crater of long dead volcano filled with a wonderful lake of deepest blue

water; the only active volcano in the United States; glacier-carved valleys; canyons cut by the action of the elements, thousands of feet deep; mammoth trees; and ruins of cities whose prehistoric inhabitants have left no other record. In extent and grandeur of natural exhibits it surpasses any other scenic drive on earth.

This wonder highway also offers to the tourist the greatest exhibits of wild life in America and variations in climate along its course from the torrid to the frigid, often within the space of a few hours; an excellent example of this is the run from the San Joaquin Valley to the Sequoia National Park, where, by simply going up the mountains, one may experience any shade of climate desired.

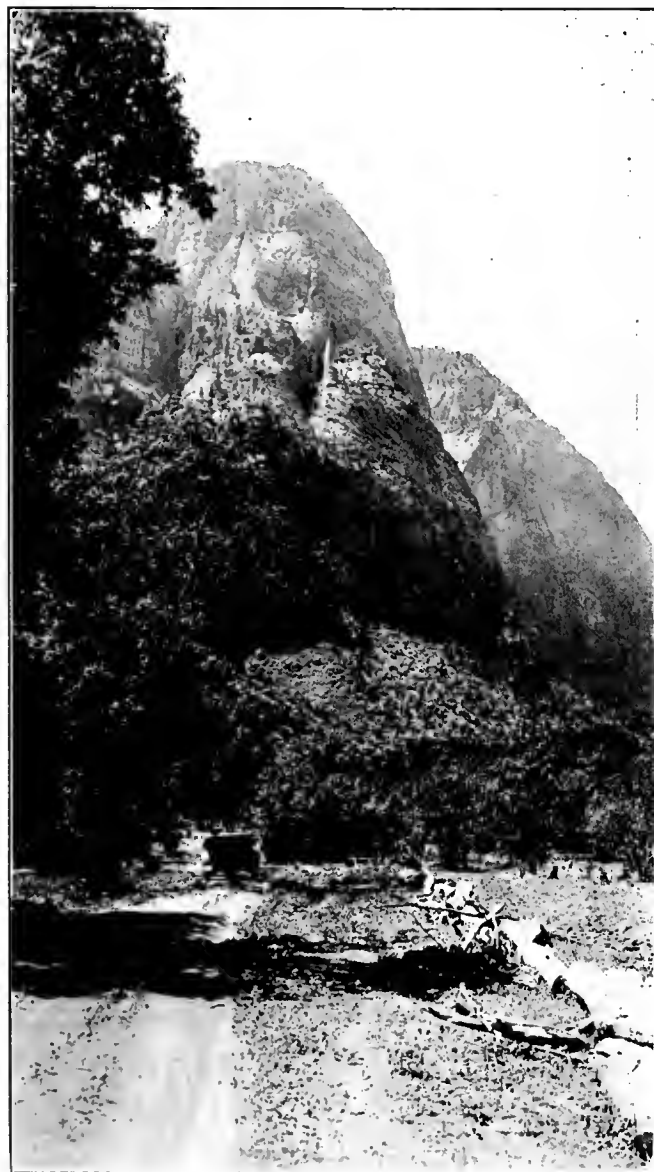
While the Park-to-Park Highway is to be a well marked definite route, it is but a nucleus of a great inter-park road system which will eventually be developed. From the big



Photograph by Herbert W. Gleason

THROUGH THE REDWOODS

One of the highways in the territory which it is now proposed to make into the Redwoods Park in California.



Courtesy of National Park Service

MOTORING TO THE NATIONAL PARKS

Here is a road to the Zion National Park, Utah, which leads through a region rich in colorful scenic interest, where reds, pinks and startling whites predominate.

circle route there are a number of arteries of existing highways of scenic or historic importance such as the Columbia River Highway, the Denver Mountain Parks System, the Pikes Peak Highway and the Yosemite-Lake Tahoe loop, which are an essential part of this inter-park road system. The several western states offer exceptional small circle tours within the limits of their respective boundaries. Particularly is this true of Montana whose cross-state roads are being extensively developed.

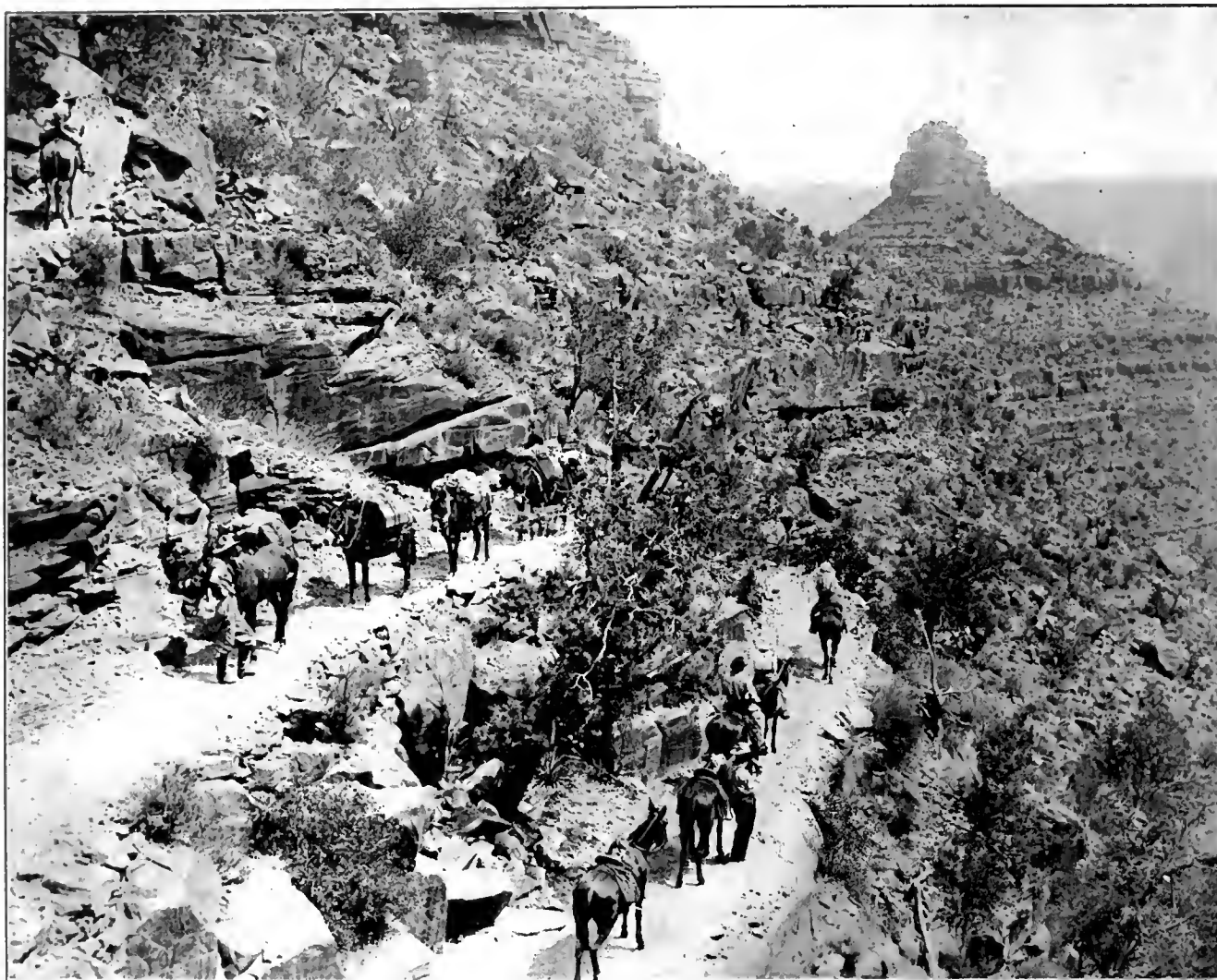
The motor tourist has not been neglected in the National Parks, for in each there have been established free public camp grounds, where one may bring camp equipment and camp out. The free public camp ground is being extensively developed throughout the West, cities and

towns vying with one another to provide the most attractive camp grounds for their motor visitors.

Let it be said here that the National Forest Reservations, through which access to most of the National Parks is had, offer many attractions to the motor tourist. The Forest Service has actively co-operated in the building and maintenance of park approach roads and has also provided free camp grounds within the Forests. But National Parks and National Forests are inherently different. Com-

provide this information the National Park Service, Department of the Interior, has published circulars of general information regarding most of the Parks, which are available for free distribution. These pamphlets contain the rules and regulations and also contain the authorized rates for all public utilities operated within the Parks.

The motor tourist should also procure a good road map. The National Park Service has available for free dis-



Copyright by Fred Harvey

IN THE GRAND CANYON

No feature of the National Parks is better known than the wonderful Grand Canyon, which no man or brush has yet adequately described. This is one of the zig-zags on the Bright Angel Trail.

plete conservation is the National Park principle; the National Forest principle is conservation through utilization of natural resources by scientific methods. The area of National Parks equals only five per cent of the area reserved as National Forests. National Parks are the recreation grounds of the people, while National Forests may supplement these features by recreational development.

Whether one plans to go by train or motor one should inform oneself beforehand of what is to be seen and to

tribution a small map of the Western United States, showing the location of the National Parks and the Park-to-Park Highways.

EX-FOREST Ranger Robinson was recently quoted in one of the San Francisco papers as follows:

"Fellow named Robinson, who is in the Forest Service up Sonora way, postcards down that the only difference between the modern ranger and the pioneers is that while the latter blazed the trails, the former trails the blazes."

UNCLE SAM'S MOST NORTHERN WOODLOT

BY L. C. PRATT

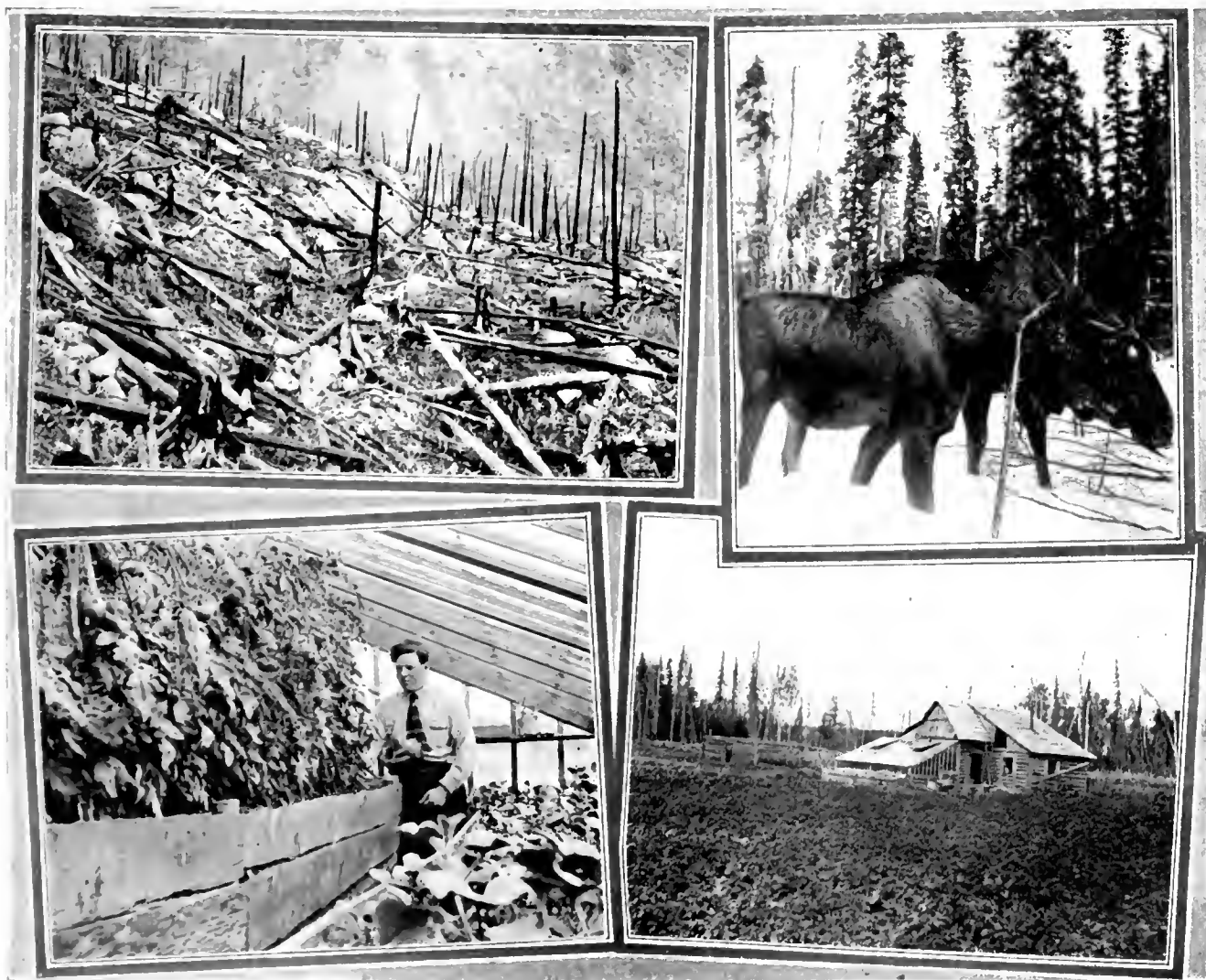
(WITH PHOTOGRAPHS BY THE UNITED STATES FOREST SERVICE)

THE Chugach National Forest of Alaska has more than the average share of romance common to Uncle Sam's spacious woodlots and playgrounds. This Forest of the far north is the namesake of the Chugach Mountains, which are in turn godfathered by the Chugachamint Indians, a local tribe. The very names of its bays, channels, and is'lands—Turnagain Arm, Point Gore, Fire Island, Resurrection Bay—suggest the thrill of adventure; a directory of the scattered settlements along the shore, such as Aurora, Se'dovia, Hope, Neuelchuck, Sunrise, Roosevelt, Kussiloff, Latouche, Home, and Valdez, would bear the impress of many tongues and signify the dramatic history of the country.

This romantic National Forest occupies a narrow strip of land along the coast of Alaska in the great crescent-

shaped bend formed by the head of the Gulf of Alaska and stretches from Cape Suckling on the east to Afognak Island on the west, with an airline distance of nearly 400 miles between its eastern and western extremities. The great irregularity of the coast, with its countless islands, fiords, sounds, inlets, and canals, gives the Chugach Forest a coast line of more than 3,000 miles. This Forest contained at one time about 12,000,000 acres, but has been reduced from time to time until its present area is a little over five million acres. The headquarters are located at Cordova, a thriving town, which is the beginning of the Copper River Railroad. Rangers are stationed at Cordova, Anchorage, and Katalla.

The Chugach Forest contains a stand of merchantable timber roughly estimated at eight and one-half billion



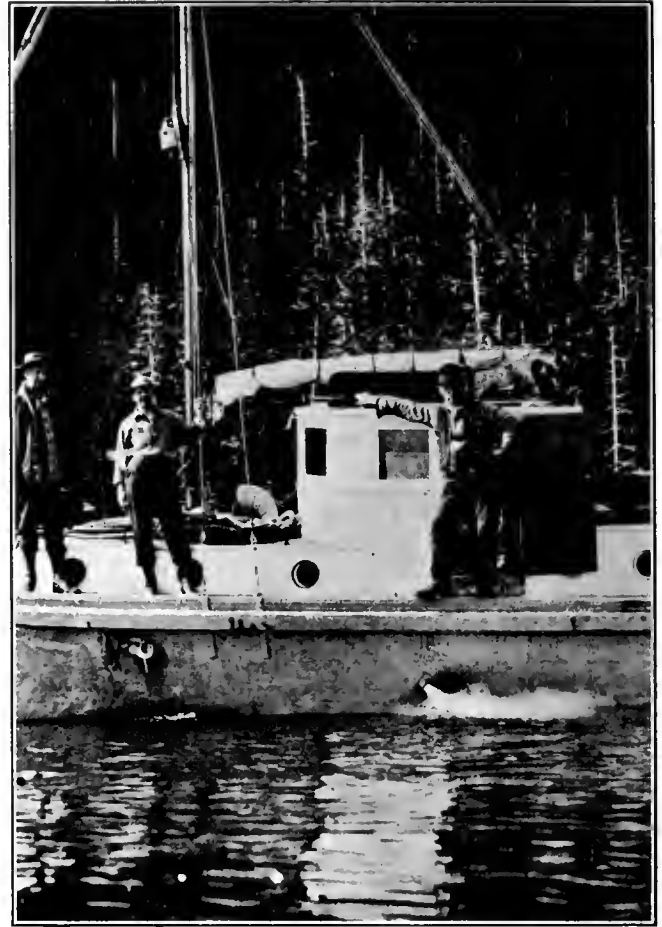
A LITTLE COLLECTION OF ALASKAN SCENERY

First is shown a typical picture of a stand of virgin timber, after a forest fire caused by carelessness has swept in uncontrollable headway through the country. Then, hunter's lure, in big-game country, but not quite game enough to escape the camera. Below is seen a fine crop of Alaskan tomatoes grown in a ranch hothouse on the Chugach, and lastly we see that the Alaskan pioneer has and uses "spuds" as well as spades. This field of potatoes was grown near Knik, in the Cook Inlet region.



STEAMSHIP DOCKS ON COPPER RIVER

Cordova is a thriving town with railroad and steamship facilities. The town is headquarters for the Chugach National Forest—that public property roughly estimated as holding eight and one-half billion board feet.



FOREST SERVICE LAUNCH

The Alaskan forest ranger's "bronc," and a most necessary part of his equipment in his work along the extended coast line of the Alaskan forests.

board feet. To the early gold-seekers, this great natural wealth appeared to have no value beyond supplying them with logs for their cabins, timbers for their mines and sluice-boxes, and fuel for their stoves. With the development of the Territory the once-despised forests are assuming a more important place, and at present they promise to rival gold in the return of wealth. Native lumber is now depended upon almost exclusively for construction of all kinds in Alaska, and it is beginning to find favor in outside markets, especially the Sitka

spruce which is exported in considerable quantities.

The sale of mature timber from the Chugach has shown a steady increase since the creation of the Forest. During the fiscal year 1920 individual sales to the



THE FLAGPOST OF CIVILIZATION

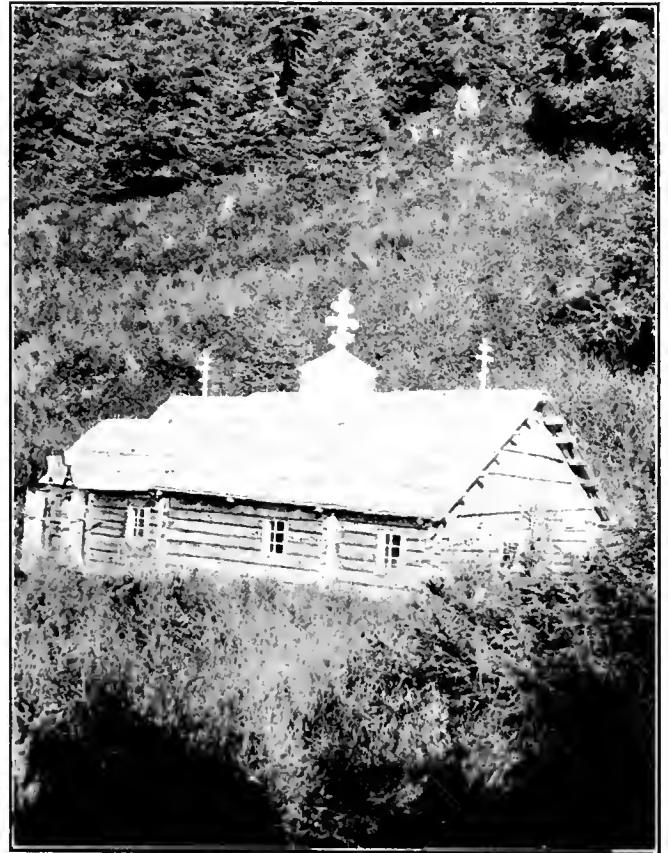
Hand in hand with railroad construction, such schoolhouses as this are heralding progress in pioneer villages carved out of the wilderness.

number of 112 were made, covering more than six million board feet. In addition to this, the Alaskan Engineering Commission cut from the Forest under free-use permit the equivalent of over four million board feet in the form of lumber, ties, piling, poles, and bridge timbers, for use in the construction of the Government



ON THE DOCK AT SEWARD

We are apt to think of Alaska in terms of glaciers, blind trails, or gold nuggets. We forget to anticipate the city life which is "on the way."



RUSSIAN CHURCH AT CHENEGA, PRINCE WILLIAM SOUND, CHUGACH FOREST

A relic of Russian possession, before Uncle Sam bought Alaska, with her boundless wealth in natural resources, for mere song.

railroad which runs through a portion of the Chugach Forest. There are indications, however, that the greater part of the timber within the Forest will eventually be used for the manufacture of paper pulp.

Under existing regulations of the Department of Agriculture, which provide for the use of land within the National Forests for any legitimate purpose, a great variety of enterprises are carried on within the boundaries of the Chugach Forest. The most important of these is the fisheries industry. The canneries and salt-eries located along the shores of the islands, bays, and inlets of the Forest give employment to more than six thousand men and women dur-

ing the fishing and canning season, and represent an investment of some \$12,000,000.

Perhaps no territory under the "Stars and Stripes" offers greater attractions to the sportsman and trapper than the coast of Alaska. Kenai Peninsula is visited annually by big-game hunters from many parts of the world. Within the Chugach Forest are to be found the



THE "STARS AND STRIPES" AT HOME TO COLUMBIA GLACIER

The "Restless," headquarters boat of the Chugach Forest, is an essential part of Forest Service equipment in this land of persistent coastline and diversity of transportation necessities.

moose, deer, mountain sheep and goat, brown and black bear, ermine, mink, marten, land and sea otter, fox, wolverine, beaver, ground and tree squirrel, rabbit, porcupine, muskrat, ptarmigan, grouse, duck, goose, swan—is it necessary to complete the list?

This Forest formerly con-



TO THE HUNTER BELONG THE SPOILS

Big-game hunters naturally migrate to this country regularly for here is found sport of the finest in the hunting of moose, deer, brown and black bear, ermine, mink, land and sea otter, fox, marten, mountain sheep and goats—the list is too long to complete.

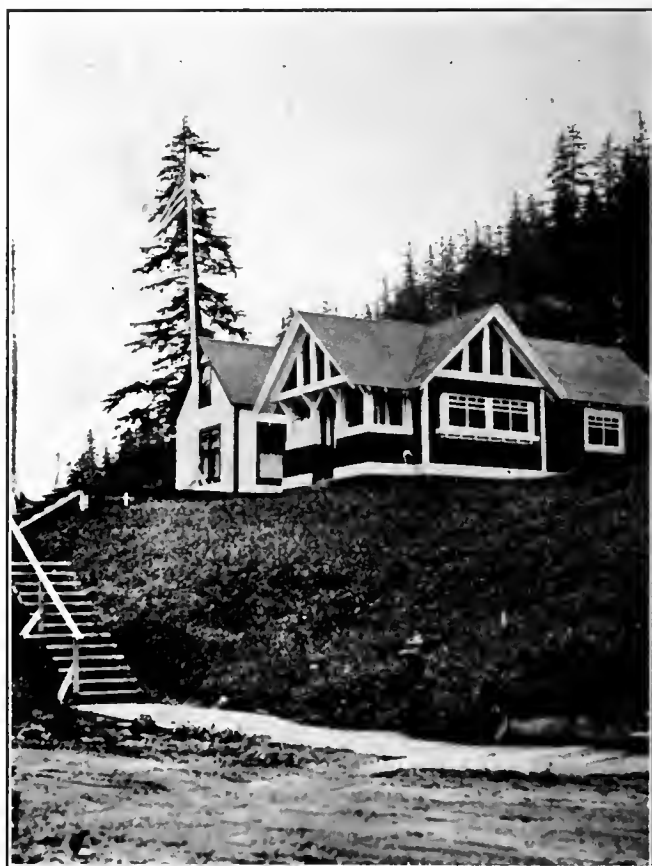
tained some fairly large areas of land suitable for agriculture, but these tracts have been eliminated from the Forest and restored to the public domain. However, the Chugach still contains some small, isolated areas which have agricultural possibilities, and these are subject to homestead entry under the Forest Homestead Act of June 11, 1906. Where a settler desires to use for gardening a tract which is not large enough to form a practicable farm unit, he may secure the use of it by applying for a special-use permit and paying a small annual rental therefor. Many small tracts are being occupied and cultivated under this arrangement.

Other uses include residences, temporary camps, hotels and roadhouses, sawmills, railroads, parks, schoolhouses, tramways, wharf and boathouse sites, and fox ranches. There are now twenty-four fox ranches within the Chugach Forest, located on the islands about Prince William Sound. Here the animals are liberated and raised practically in the wild state. These ranches export many furs, and fur farming is becoming a really important industry. In all, about 60,000 acres of land

is occupied within the Forest under special-use permits of various kinds.

Although less than 30 degrees from the North Pole, the climate of south-central Alaska is very mild, the temperature seldom registering below zero. The mean annual temperature for Prince William Sound is 38 degrees Fahrenheit, and it is warmer during the winter months than at any other point in the world in similar latitude. The temperate climate is due largely to the beneficent influence of the Japan Current which sets into the head of the Gulf of Alaska.

The eastern part of the Forest, from Cape Suckling to the divide between Prince William Sound and Cook



UNCLE SAM'S FOREST HEADQUARTERS

Even in near-Arctic Alaska, the forest supervisor is housed with the simplicity and rustic comfort befitting his position as the guardian of the outdoors.

Inlet, lies in a latitude of exceedingly heavy rainfall, with an average annual precipitation of more than 100 inches for the district and a recorded maximum of 189 inches. Forest fires are unheard of in this section.

The region of upper Cook Inlet and Kenai Peninsula, however, offers entirely different climatic conditions. Being farther from the open sea and consequently less subject to oceanic influences, the precipitation here averages only about 20 inches a year; and forest fire conditions are similar to those existing in some of the forested areas of the Pacific Coast States. The fire season begins almost as soon as the snow is off, generally in May, and continues until the fall rains commence in late August

or early September. It is necessary to employ a force of smoke-chasers and patrolmen during the fire season in part of the Forest. During the five-year period, 1916-1920, 121 fires occurred within the Forest in this region, burning over 7,442 acres and destroying timber to the value of \$4,257. The majority of these fires occurred along the right-of-way of the Government railroad, which starts at Seward, on the south end of Kenai Peninsula, and will extend northward 467 miles to Fairbanks when completed. One forest fire in 1919 destroyed railroad property to the value of \$125,000.

With the exception of a few areas in the Cook Inlet region, the topography of the Forest is exceedingly rugged, the mountains often rising abruptly from the sea. On Resurrection Bay the towering peaks seem to reach into heaven. Timberline is usually at an elevation of about 2,000 feet; above this rise barren, glaciated peaks ranging from 3,000 to 8,000 feet in elevation.

The Chugach Forest contains some of the most sublime scenery to be found anywhere. Glaciers, snow-capped mountains, forested islands, and tree-bordered lakes and bays are abundant. Unfortunately, much of it is now inaccessible to the average tourist. The summer visitor on the regular routes of travel, however, may see the wonderful Miles and Childs Glaciers and enjoy the gorgeous mountain scenery along the Copper River & Northwestern Railroad, some fifty miles from Cordova. Here two giant glaciers almost face each other from opposite sides of a great river. The front of each is more than two miles long, sheer ice-cliff rising vertically in places more than 300 feet above the surface of the water with background of mountain masses towering in awe-inspiring grandeur. These glaciers vie with each other in activity during the summer months, and the roar of the ice breaking and tumbling into the waters can be heard for miles. Frequent summer excursions are run from Cordova to the glaciers over the Copper River Railroad to witness the brawling Virginia Reel of the liberated waters in restless vis-a-vis.

UNFAMILIAR SCENES IN NATIONAL PARKS

(Continued From Page 355)

The coloring of the Grand Canyon is a subject over which most visitors wax enthusiastic. But in depth and vividness of color the Grand Canyon does not equal Zion Canyon in southern Utah. On the north fork of the Virgin River there is a remarkable canyon, only twelve miles in length and less than half a mile in width, which so impressed Brigham Young when he visited it many years ago that he called it "Little Zion." In 1909 it was proclaimed a national monument under the Indian name of "Mukuntuweap," and on November 19, 1919, Congress created the Zion National Park which includes this canyon as its principal feature. The vertical walls, which rise from two thousand to nearly four thousand feet above the canyon floor, are of a red sandstone formation, highly colored in shades of Indian red and terra cotta

over their lower strata, while the upper are much lighter, approaching a cream white, and this again is overlaid in places with a deep pink formation. The rock-sculpture is by no means uniform, but there are sharp pinnacles, rounded domes, bold headlands, and retreating angles,—the whole exhibiting a most pleasing variety. At the upper end of the canyon the walls approach so close to each other that there is only room for the dashing torrent at their base. Although one hundred miles from any railroad point, Zion Canyon is easily reached by automobiles over most excellent roads; and as soon as its wonderful cliff scenery and brilliant coloring become more generally known it will take its place on the "familiar" list of our national parks.

The whole region contiguous to Zion Canyon abounds in striking rock formations, often with intense coloring. This is the country of the "Vermilion Cliffs," the "White Cliffs," and the "Pink Cliffs"—belonging geologically to the Triassic, the Jurassic, and the Eocene deposits,—and at various points where the forces of erosion have had their way, such as the so-called "Cedar Breaks" and "Bryce Canyon," there is a display of most astonishing rock-sculpture combined with a depth and variety of color almost incredible. Bryce Canyon is already proposed as a national park, which, in its final status, will doubtless include other similar areas.

Just a word as to the other national parks not thus far noted. The Hot Springs Reservation in Arkansas was the earliest of the national parks to be created—the date being April 20, 1832,—and has long been famous as a health resort of great value. Wind Cave Park in South Dakota—an extensive underground cavern of unusual interest,—Platt Park in southern Oklahoma—another health resort,—and Sully's Hill Park in North Dakota—an important wild animal preserve,—are areas of small extent and chiefly "familiar" only to residents of the immediate neighborhood. The Hawaiian Park on the Hawaiian Islands and Mt. McKinley Park in Alaska are recent creations, not yet made the subject of development, and their remoteness will doubtless for many years place them beyond the travel scope of the great majority of the American people.

To become familiar with our national parks—at least, to a certain degree—is the duty, as well as the privilege, of every American citizen. They are among our most precious possessions as a nation. We term them "the people's playgrounds," but they are very much more than that. We have not yet begun to realize what an important part they are destined to play in our educational system, furnishing, as they do, object lessons of incalculable value of the operation of those world-building and world-beautifying forces about which we study in our schools; while their aesthetic and moral stimulus is sure to be increasingly appreciated as the years go by. To preserve them inviolate for future generations, and to resist to the utmost every movement directed even in the slightest degree toward their commercialization, is the sacred obligation resting upon every member of this republic.

REFORESTATION IN THE MIDDLE STATES

BY WILLIAM EDWARD HAYES

THE successful reforestation of the Middle States is a matter which now lies mostly in the hands of the United States Government. This is what present indications in the States of Ohio, Indiana and Illinois point to. State officials in these three States have used every means possible to bring before the minds of the people the very serious fact that the natural resources were swiftly becoming depleted. These officials have had a

lands for the purpose of getting pasture space, and they are now setting about to raise the timber they use in fence posts and joist.

The Ohio farmer is about the same thing. Hundreds of thousands of acres in the State of Ohio which have been lying idle in the past years will soon be taken over, and reforestation started. At least this is planned, and like in Indiana and Illinois, it will be necessary to have some assistance from the federal government.

These three States have enjoyed good roads which they could not have dreamed of were it not for the fact that the federal government took care of a certain financial burden which helped carry on the good roads work.

It is exactly the case in the reforestation problem.

National Forests in the East have been bought by the government, and a strip of forest land will soon extend half way through the southern Appalachian region, com-



ON THE STATE FOREST RESERVE

This is a view of a part of the Ash tract, showing the excellent growth of these trees. The Ash is probably the most hardy of any specimen in the forest.

long, hard fight to convince the farmers that the timber question was a grave one.

The farmers are now convinced. For the most the legislators in these States are now convinced. The Farmers' Federation in the State of Indiana, after having been told of the critical need for reforestation in that State despite the fact that it ranked third in the union in agriculture, has taken a definite stand in favor of providing a means for the revival of the famous hardwood forest for which Indiana was noted for many years.

The farmers of the State are now engaged in doing just those things which have been brought before them. They have stopped the wanton destruction of their wood-



RECKLESS SPOILIATION OF THE WOODS

This photograph shows a condition which had to be fought in Indiana and Ohio where timberland was being utterly destroyed for the purpose of getting grazing lands.

prising of the States of Virginia, West Virginia, North and South Carolina, Tennessee and Georgia. The National Forests are already firmly established in the States west of the Mississippi River.

In the Middle States no federal provision has as yet been made to assist in the work of reforestation. Illinois,

Indiana and Ohio are ready to co-operate with the national authorities on this question.

The progress of reforestation in Ohio and Indiana has been somewhat in advance of that of Illinois because Illinois was late in getting started. Much tribute, however, is owing Illinois for what she has accomplished under a severe handicap.

The situation in Indiana, while still serious, is now getting to the point where much is being planned in future



THE ADMINISTRATION BUILDING

This is the headquarters of the Administration force on the grounds of the Indiana State Forest. It is made of logs and most attractively finished.

policy. It is true that the Hoosier State has been lax for several years after her vast forests of the world's most famous hardwood were practically wiped out. The tremendous influx of big business is partly responsible for this, but most of all the excellent agricultural advantages which were to be had by the fertile soil brought about, not a wise, but a wanton destruction of timberlands some years ago.

Recent estimates by the Indiana State Department of Conservation give out that Indiana acreage now totals some twenty-two million, and of this there are not more than two million acres of good timber land remaining. This woodland area of the State is widely scattered, and is usually found in very small tracts.

The first State forest in Indiana was acquired in 1903 when the State legislature provided funds for the buying of two thousand acres of land in Clark County for experimental purposes. The cost was less than one thousandth of one cent per capita.

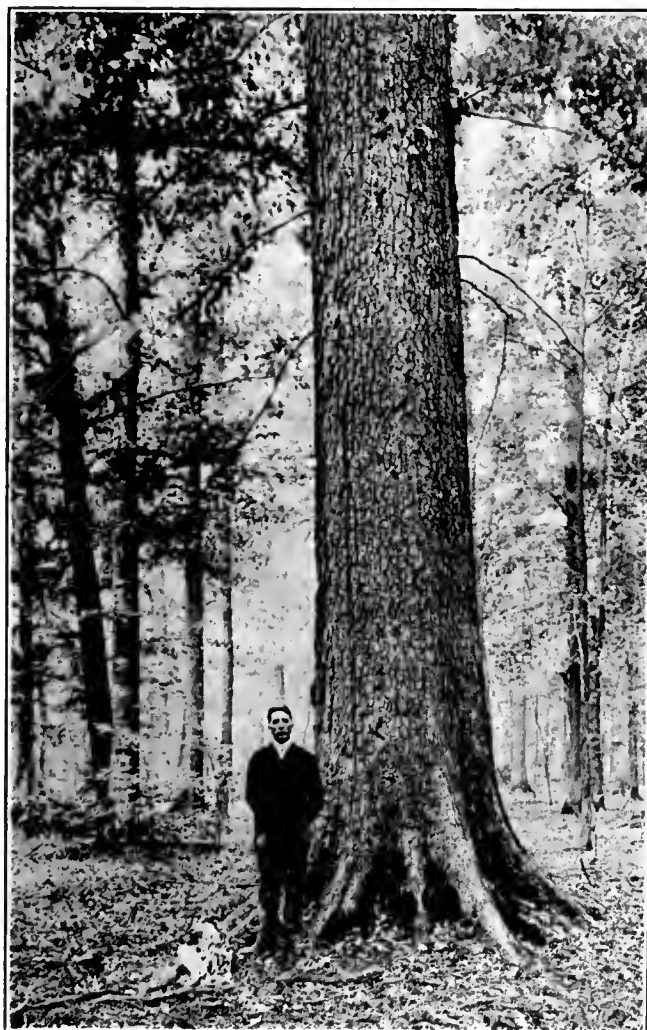
This land was then divided into eighty-four tracts, consisting of from one to ten acres each, and in 1904 the first work of planting was begun. Specimens of white ash, black and red oak, yellow poplar, black walnut, black locust, chestnut, catalpa, hickory, elm, sycamore, wild cherry, Scotch pine, cottonwood, European larch, Norway spruce and sugar maple were put in.

After most careful management through the years this two thousand acre tract is today the largest and the most successful State owned hardwood experimental station in the United States.

With some of the plantings winter killings were experienced, but expert care in pruning and coppicing has proven beyond doubt that the reforestation problem in Indiana is but a matter of securing enough acreage to get at it on a reasonably large scale.

The State conservation department is at work now sending out data weekly to the State legislators informing them of the seriousness of the situation and also keeping them closely in touch with the success of the present State forest.

It has been intimated in political circles that the matter of State forest acreage will be given especial attention at the next session of the general assembly, and it is



FINE SPECIMEN OF THE COW OAK

This tree (*Quercus Michauxii*), is very rare as far north as Indiana, but it is growing splendidly in the Klein woods, four miles north of North Vernon.

expected that Indiana will then be able to carry out to a great measure the extensive plans which have been formulated.

The press, one time somewhat opposed to the idea of taking good soil and turning it back into forest, has

changed entirely in sentiment since the ushering in of the acute paper shortage, and the changed attitude of the Hoosier newspapers has also been largely responsible for the trend in public opinion.

Indiana and Ohio are unanimous in the belief that the forest preserves should link up closely with the game preservation, and should also be used as natural recreation grounds. Forests in these States would serve to provide a place where the citizens would be able to secure camping out privileges much more advantageous than those which are now at their disposal under private control. And it cannot be denied that when the State forests are used for recreational purposes, it attracts people to them and this would provide not only education to the citizen in forestry but in game and game preservation.

Ohio has now two city forests, one in Cincinnati and one in Oberlin, and is continually urging that cities acquire their own forests as every opportunity is open for such action in the Buckeye State.

Ohio has been successful in her two experimenting stations, and every indication now points to a vast and extensive reforestation program for the coming year.

FOR the purpose of laying out summer camp sites in the northwestern portion of the Olympic National Forest, F. W. Cleator, special landscape officer, has been permanently transferred from the district forester's office in Portland to the local office, according to R. L. Fromme, supervisor of the Olympic National Forest.

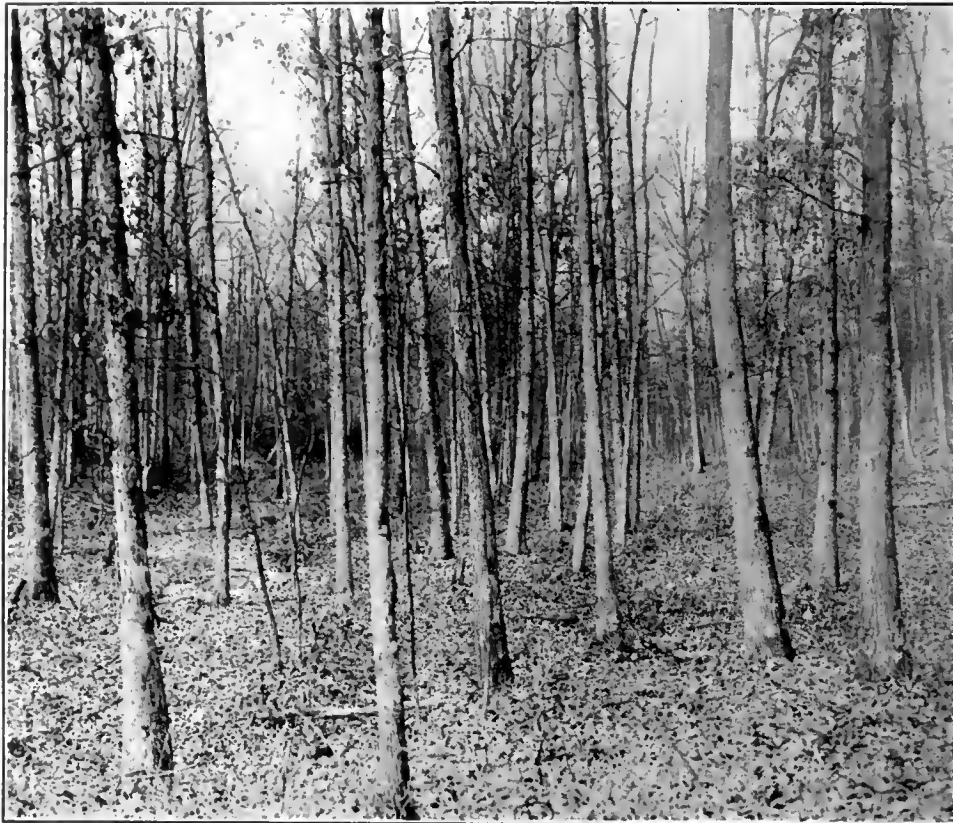
THE forests of British Columbia in 1920 yielded products to the value of \$92,628,807, an increase of \$22,000,000 over 1919.—*Conservation.*

Summing the conditions in the three great States of the Middle West, it is found that despite the fact that these States are among the leaders in agriculture, production and manufacturing, they are ready and willing to go ahead with a reasonable reforestation program because they realize the seriousness of the situation.

They realize that they are paying higher prices than ever before in history and that they are having to import the very building materials which they at one time raised and supplied the needs of the outer world with. These States are awakened to the fact that it takes co-operation to make the plans they have formulated a reality. They know that another generation is coming, and they understand that this generation

must be supplied with the substance which has been almost wiped out in the shape of timber.

But, as has been said, the co-operation of the people, the municipalities and State officials is not sufficient. The Middle Western States must have the help of the federal government, as they received in the highways program. With this firmly established, the reforestation problem is solved, and future generations will be amply provided for.



A GOOD EXAMPLE OF WHAT CAN BE DONE

This view of the woodland on the Indiana State Forest Reserve shows second growth of white oak and the sturdy planting proves conclusively what careful management and care can accomplish in but a few years.

THE list of men who passed the U. S. Civil Service examination last October for the position of forest ranger on the National Forests of Oregon and Washington has been received at the Portland office of the Forest Service. This is the result of an annual examination held to secure a list of men qualified to become protectors of the timber resources belonging to Uncle Sam in these two states. The 1921 list shows 15 men in Oregon passing the examination and 17 in the State of Washington.

WASHINGTON'S FOREST CATASTROPHE

BY HEISTER DEAN GUIE

THE greatest forest disaster in the history of the State of Washington occurred January 29 when a tornado, traveling 160 miles an hour, swept the Olympic Peninsula, falling eight billion feet of virgin standing timber. The path of the storm was over 70 miles long and 30 miles wide, devastating 2,200 square miles of territory in western Clallam and Jefferson Counties. One-third of the forest growth in these two counties was flattened to the ground, 25 per cent of it so twisted and splintered that it cannot be salvaged. In the Hoh River district 75 per cent of the timber fell in the hurricane, according to an eye-witness, who declared the mammoth trees bordering the Hoh and Bagachiel Rivers were mown down like grain.

The famous Olympic Highway suffered incalculable damage between Fairholme, on Lake Crescent, and Mora, on the coast, a distance of 42 miles. Some portions of the road were not affected but others felt the full fury of the terrific gale, which blew down great trees by the hundreds along what was formerly one of the most beautiful highways in the Northwest. In many places it was possible to see for miles across the storm desolated areas adjacent the road, where, before the disaster, primeval stands of magnificent timber kept out the sunlight.

Trails and telephone lines were obliterated and ranch buildings shattered. Six frame houses at the Indian village of La Push were destroyed and others seriously damaged. Isolated settlers were so completely cut off from communication with the outside world that many of them killed their horses and cattle because they could not bring feed to them. Labyrinths of fallen trunks blocked roads and trails for miles. Travel was so laborious and slow that it took five days for the man bringing the first news of the disaster to Port Angeles to traverse the distance usually covered in a few hours.

As far as could be ascertained within two weeks following the storm no lives had been lost, but there were several narrow escapes. Five miles from Forks, near

the center of the storm area, the automobile of a rural mail carrier was demolished by a tree a moment after the mail carrier and a companion had deserted it. The men escaped by crawling for a mile under fallen trunks.

A truck driver, caught in the hurricane, left his truck and ran through tumbling trees for a quarter of a mile to safety. After the storm he returned to find his truck buried beneath branches and debris but unharmed. Settlers worked with him for eleven days cutting out down timber, removing 670 trees from the road in a distance of two and a quarter miles.

Much wild life undoubtedly perished, in the opinion of veteran woodsmen and inhabitants of the devastated districts. Five thousand elk roamed the territory swept by the storm. Half of them are believed to have been killed by falling trees and by being trapped in tangles of down trunks, where they starved to death. To protect the survivors, the State Legislature—in session until March 10—was urged to extend the closed season indefinitely. Under existing game laws, elk may be shot this coming fall for the first time in years. Extension of the closed season would not only conserve the elk, but would keep out many hunters whose presence in the ravaged districts would augment the fire menace during dry weather.

Ten days after the storm, Governor Louis F. Hart, accompanied by State and federal forest officials made an automobile tour of inspection the length of the Olympic Highway, their machines following in the wake of road crews, who sawed hundreds of trees to open the highway for the official party. The havoc wrought by the tornado appalled and saddened everyone as the extent of the catastrophe was realized.

The inspection tour impressed upon the governor and forest officials the necessity of immediate action to prevent a holocaust this summer. A fire once started in the down timber would sweep the whole territory, fighting operations being impossible because of the tangled condition of the country. Measures contemplated to reduce the fire menace as much as is humanly possible are the



THIS SHOWS THE MAJESTIC BEAUTY OF THE OLYMPIC HIGHWAY NEAR FORKS BEFORE THE STORM



SPLINTERED AND UNFIT FOR SALVAGE. TWO SECTIONS OF A MIGHTY TREE BROKEN BY THE TORNADO.



A VICTIM OF THE STORM. THE ROOTS OF THIS FALLEN GIANT ARE THIRTY FEET ACROSS

creating of safety zones by burning strips 200 feet wide on both sides of all the roads in the region, the establishment of intensive patrols and the regulation of campers and tourist travel. Motorcycle patrols will probably be used to watch the activities of automobile tourists on the Olympic Highway between Fairholme and Mora. No fires nor over-night camps will be permitted except at designated spots.

A proposed plan to burn over the entire storm-wrecked region, on the ground that the fire would destroy the undergrowth and debris and not injure the fallen and stand-

trolled burning to timbered districts not touched by the tornado.

Salvage of the undamaged portion of the fallen timber is the gigantic task confronting the State and federal forest officials and private corporations. Forced logging will be necessary to save the spruce and hemlock, which deteriorate quickly, decay commencing two years after such trees are on the ground. Sixty per cent of the forest growth in the region is hemlock. The cedar and fir occasion no worry as they last indefinitely.

The greatest fire trap known in the history of the



THE SAME SPOT ON THE FAMOUS OLYMPIC HIGHWAY—AFTER THE STORM. A WAY WAS CUT THROUGH FOR THE GOVERNOR'S PARTY

ing timber met with the disapproval of old-timers, residents of the Peninsula. They pointed out that if the district is burned over this spring there is every chance of down hemlocks retaining smoldering fires for several months, which fanned by a brisk breeze in the dry season would burst into flame and start a terrible conflagration. Records of the past ten years show that every forest fire of any seriousness in the Peninsula began with hemlock logs that had been in spring slash fires. There are also enough trees left to make a wholesale burning very dangerous. The possibility of crown fires might easily result in the spreading of the intended con-

United States resulted from this cyclone, says officials of the United States Forest Service.

"If fire should ever gain headway in this devastated area, the most stupendous conflagration ever known in this country would result," said Acting Forester E. A. Sherman, in discussing the disaster. "The topography is very broken and the blow downs are in part at least known to be 'spotty,' with much fine timber uninjured. Fire would not only destroy all these islands of timber, but would seriously endanger a vast surrounding stand. Fifteen billion feet is exposed in the adjoining part of the Olympic National Forest, besides

large amounts on State and private lands. The destruction would be likely to exceed even that of 1910, the most appalling fire season ever encountered by the Forest Service, when over 4,000,000 acres of National Forest land were burned over in the West, and 6,500,000,000 board feet of timber, valued at nearly \$15,000,000, was lost."

To meet the emergency the Secretary of Agriculture requested the Secretary of the Navy to detail hydroplanes for an air survey of the storm-swept region in order



SEVEN FEET IN DIAMETER AND SIXTEEN FEET HIGH. NO TRACE OF THE REST OF THE TREE COULD BE FOUND ALTHOUGH THE FOREST WAS SEARCHED FOR SEVERAL HUNDRED YARDS IN THE VICINITY OF THE STUMP

that the amount of damage might be determined, since it was impossible to traverse the uprooted forests on the ground. A request has also been made to the Secretary of War that the railroad constructed by the Spruce Production Corporation, extending from Port Angeles to Lake Pleasant, on the Olympic Peninsula, be equipped with rolling stock and operated at its maximum capacity. This railroad is the one important line of communication into the devastated area, and will afford a means of salvaging a considerable amount of the down timber.—(Photographs by Webster and Stevens, Seattle.)

F. R. INGALSBIE, mineral examiner for the forest service in Montana and Idaho, has resigned his position to enter private practice.—*The Missoulian*.

NEWSPAPERS AND FIRE PREVENTION

A BURNING cigarette butt beside a woods-road in northern Maine may mean much to the business management of the Texas Daily Bugle. Sounds like a joke—but is it? The Daily Bugle, say specialists of the Forest Service, United States Department of Agriculture, represents the newspaper industry dependent on forests for its existence; the smouldering cigarette portrays forest fires caused by human carelessness. Newspaper is made from wood. Fires destroy the forests and lessen the supply of raw material with a resultant increase in the price of paper stock. Hence, the relation between the cigarette butt in Maine and the newspaper in Texas.

This is the day and age of newspapers. There are in this country 21,000 papers with a total daily circulation of over 28,000,000 copies. Sixty dailies have a circulation exceeding 100,000 copies each, and one Sunday paper claims 1,000,000 circulation. Newsprint is a 100 per cent product of the forest, but few persons stop to think that there is real relation between their daily paper and the problem of forest protection.

The paper industry of the United States uses about 5 ½ million cords of wood a year. This is equivalent to from 40 to 80 years' growth of timber on approximately 500,000 acres of forest land. No concerted effort has been made to replace the amount taken from the forests, and the yearly drain has depleted the capital stock to something like 50,000,000 cords of spruce, the most desirable wood, in the regions of centralization of the pulp and paper industry. This indicates only a little more than 10 years' supply in sight, and it is predicted by the Forest Service that within this period the paper mills of the Northeast and Lake States will be hard put to secure pulp wood to keep their mills and machinery busy.

The pulp and paper industry is at present centered in the New England States, New York, and, to a lesser extent, in the Lake States. The bulk of raw material, exclusive of some 1,300,000 cords of pulp wood imported from Canada, comes from these States. During the past five years 25,000 forest fires in these regions burned over more than 4-¼ million acres and occasioned a loss of \$33,850,000. The damage done to pulp-wood stands by these conflagrations amounts to a staggering total.

In the use of our forests to provide material for the industrial development of the Nation, fire and devastation have usually followed lumbering, instead of the desired and natural reestablishment of forest cover. Fire has taken the rejuvenating life out of some 81 million acres of our forest land, and, practically unhampered by man, has played pranks with the wood-using industries. The "red plague" continues to spread year by year, largely through the carelessness of campers, loggers, settlers, and railroads. From 60 to 80 per cent of the annual forest fire loss is due to human agencies and is, therefore, preventable. The newspapers of the country have been hampered by the extremely high prices of paper, and one of the underlying reasons for this increased cost is our diminished supply of pulp wood.

FOREST RECREATION DEPARTMENT

ARTHUR H. CARHART, EDITOR

VACATION LAND

TO one seeking knowledge of Oregon's National Forest playgrounds there is no better general guide than the booklet "Vacation Land" published by the United States Department of Agriculture. The book takes rank with the best of Forest Service pamphlets which tell of the great recreation areas within the National Forests.

The pages of the booklet number over seventy and within the back cover is found a map of the National Forest lands in the State of Oregon. The remainder of the book is filled with interesting sketches of the forests and much general information.

Among the sentinel peaks of the West Coast Mount Jefferson stands majestically with snow crowned head. Within the cover of "Vacation Land" and as a fitting prologue to what follows is a photo portrait of this venerable member of mountain nobility. Turning the page on which Mount Jefferson is depicted will reveal the

first page of the text opposite which is a list of the National Forests of Oregon, the names of the Supervisors of each forest and the towns which are the forests' headquarters.

The opening paragraph of the text beckons to one so enticingly that the reader feels "Wanderlust" calling him from daily tasks. "When tired of the daily grind, you say to yourself, 'I need a vacation,' your first thought is to get away from civilization and its trammels. You next are to find interesting and health-giving recreation. In the National Forests of Oregon you will find both and much besides. . . ."

Following this is a sketch of what the forests of Oregon offer to the vacation visitor. General conditions in these forests are discussed under a separate heading and then follow pages of good accurate information regarding each forest of the state. The area of the forest is given in each case, the location, and the topography



MOUNT JEFFERSON, IN THE SANTIAM NATIONAL FOREST

This mountain in Oregon has exceptional beauty. Good trout streams are plentiful, waterfalls glisten in settings of green, and the lure of Oregon and her forests soon captivates one.

mentioned. The higher peaks are named and elevations given. Waterfalls, lakes, cascades and other special features of the forest are told of in short paragraphs or sentences. Each of the sixteen National Forests in the state is thus outlined and one seeking a vacation territory will find many things told of in each forest biography which will invite him to visit them.

Beginning on page fifty-three and continuing for the remainder of the booklet is general information of interest to a camper or tourist wherever he may be going on a trip. General rules for fire prevention are given. Personal equipment, outfit and clothing are next outlined after which is found a ration list for one man for one

day with equivalent substitutes. Camp equipment for various sized camps follows and some simple camp cookery is included. Sanitation, packing, handling game, distress signals, first aid and a brief discussion of the administration of National Forests complete the publication.

For one who wishes to secure information on Oregon's National Forest playgrounds the book is invaluable. To those who seek general information on camping the book offers many good suggestions. "Vacation Land" is worthy a place in any library. Copies may be secured as long as the supply lasts by writing the District Forester, Portland, Oregon.

OTHER LITERATURE ON OREGON'S NATIONAL FOREST PLAYGROUNDS

"ROAD and Recreation Map—Oregon." A map, 23x36 inches, of the state of Oregon showing the main auto roads of the state and the principal scenic points. On the back of the map is printed information regarding recreation areas in and near the National Forests of Oregon.

way from Portland to Eagle Creek Camp Grounds.

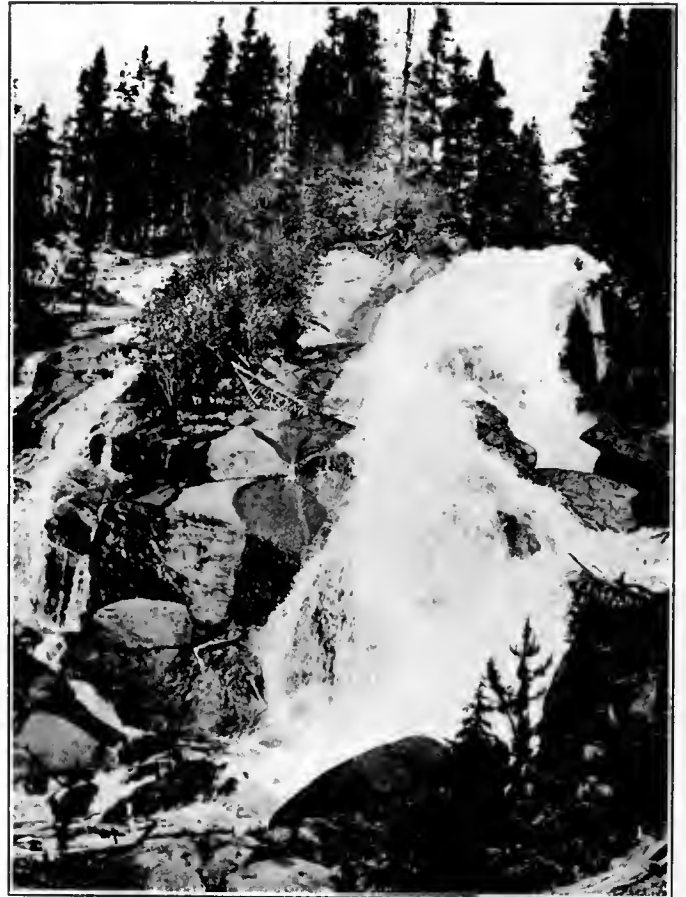
"Recreation in the Southern Cascades." A guide map of the Crater National Forest. Valuable to the person



A WATERFALL KNOWN TO LESS THAN A DOZEN PEOPLE

The recreation capital of the nation contains many such landscape details as fine as this one found in the Pike National Forest, known as "Kathlyn Cascade."

"Handy sized card log of the Columbia River Highway." A very practical guide to one traveling the High-



NORTH BOULDER FALLS IN THE COLORADO NATIONAL FOREST

Known by many, but there are hundreds of other water features as beautiful which have only a local fame, like the exquisite little Kathlyn Cascade.

planning a trip to Crater National Forest and Crater Lake National Park. Shows trails, roads, camps, etc.

"Map of Columbia Gorge Park, Oregon National Forest." Gives in detail a map of the region along the famous highway. Columbia Gorge Park is 13,873 acres in extent and although a part of the Oregon National Forest

has been set aside by the Secretary of Agriculture (on July 27, 1915) as a public playground, forever to be dedicated to the "use and enjoyment of the general public for recreational purposes."

Any of the above may be secured, so long as the supply lasts, from the District Forester, United States Forest Service, Portland, Oregon.

"Log of McKensie and Williamette Highway." A book or road logs covering the scenic drives around Eugene, Oregon. Material for the booklet secured by United States Forest Service and published by the Eugene Chamber of Commerce. Valuable to the tourist and traveler in this portion of Oregon. Write the Chamber of Commerce, Eugene, Oregon, if a copy is desired.

THE LOFTY TETON PEAKS

BY C. A. MCCAIN, SUPERVISOR, TETON NATIONAL FOREST

TO the pioneers of our western country, and to the historians and students of the lore of their wanderings, the Teton Peaks of Western Wyoming were long ago recognized as familiar landmarks. Although the exact date of their discovery by white men has been lost in the obscurity of ages, we have record of their mention over a century and a half ago and that they were given their name by the French trappers of those early days. John

Colter, the discoverer of the wonders of Yellowstone National Park, guided his steps to the Tetons in 1807, and the Astoria Expedition hailed the peaks with relief while floundering through the wilderness in 1811.

In that distant period, and for a long time yet to follow, white men visited the locality for two purposes; to explore new country and to trap and barter for furs. The lofty Tetons served as a milestone announcing the



U. S. Forest Service

THE AWE-INSPIRING MAJESTY OF THE TETON RANGE

A long-familiar landmark to the pioneers of our Western country, the Teton range brings revelation to many a tourist of today. Picture a chain of beautiful lakes, encircled on one side by an open forest of pine and on the other by stupendous granite walls, their waters the temperature of the melting snows from which they spring, their crystal depths reflecting the mighty giants that tower above them, and you have the essence of perfection in vacation country—the sheer beauty of the Teton National Forest.

last lap of their journey, the pinnacle from which the waters beyond flowed toward the Pacific. In this day and age our Argonauts flock westward seeking relaxation from the cares of business, an opportunity to enjoy an outing in the big outdoors, health—and the rugged giants still mutely proclaim the goal of their endeavors! For the Teton National Forest, whose waters flow to feed two oceans, abounds in scenic attractions that make it a vast national playground, the favorite portion of which is formed by the Teton Peaks and their immediate environment.

Picture a chain of beautiful lakes encircled on the one side by an open forest of pines and on the other by sheer walls of granite, their waters of the temperature of the melting snows from which they spring, their crystal depths reflecting the mighty peaks that tower over a mile above them, and you have the message that the Tetons now convey. Everything that the tourist may crave is here provided.

Although on the map this chain of lakes shows an almost straight and continuous line some twenty-five miles in length, each is indented into the rugged barrier of the mountains and secluded from its fellows. Leigh Lake, String Lake and Jenny Lake flow one into the other; Jackson, Bradley, Phelps and Taggart Lakes are independent units of the chain. Varying in size and contour, from Jackson Lake some twelve miles in length, to Bradley with its less than a mile, each has many individual attractions, and all blend together to form a pleasing memory for the visitor.

The bracing quality of the atmosphere—the lakes are nearly seven thousand feet above sea level, the peaks about the same distance higher still—full of the fragrance of the pines and stirred by cool breezes from the water, make the region delightful for the camper in summer. Fish may be caught in plenty, either from the shore or by trolling from a boat or launch. Cutthroat trout are native to the

The Call of the Great Outdoors

By John Jordan Douglas

*Oh, I am off to the call of the World,
Where the winds blow fresh and free;
And the banners of youth are still unfurled
From the hills to the shining sea.*

*Oh, I am off with a Gypsy's joy,
Where the clouds and the trees are wed;
With the romping heart of a barefoot boy,
With cheeks like an apple red!*

*Oh, I'm away with the swift-winged bird,
Away from the city's throng;
And the fettered wings of my soul ungird
To the thrill of a new-born song.*

*Oh, the whirl of the wheels and the wine
of the flight,
The touch and the tang of the road;
And I drink to the nation's magic night
In the outworld's wide abode!*
—Reprinted.



U. S. Forest Service

CAMPERS ON THE TETON NATIONAL FOREST

No more beautiful region for a summer outing can be found, and there are none more popular with those who have paid it a visit. In the shadow of the mighty Teton range are found camping grounds not to be excelled. The bracing quality of the atmosphere, the fragrance of the pines, the beauty of the distant hills all conspire to lure the tourist and lull him to forgetfulness of cities and the ways of business he has left behind.

waters, although the giant mackinaw and other species are almost as numerous.

On the side next to the mountains, the shore line of each of the lakes is precipitous, as the peaks rise directly from the water. On the side across from the Tetons, however, the contour is smooth and the slope is very gentle from the level of the surrounding country to the water's edge. Here the timber grows to the shore line, and as the view from this side of the lakes is magnificent it is the favorite of the camper. Where roadways have been opened one may drive to the shore with a car. Tourists in transit through the valley invariably pause at one of these camping spots for a wayside picnic, and during the height of the season the lake shore is dotted here and there with the tents of those who have decided to prolong their stay. Fishing, boating, picking berries, or just plain loafing, the time never hangs

idly on their hands. Upon this near view the Tetons assume gigantic proportions, dwarfing into insignificance less prominent features. A glacier of a hundred feet in thickness near the summit will look the size of a pocket handkerchief. The cascades and waterfalls that plunge

down toward the lakes resemble silvery ribbons rather than mountain torrents. The canyons and chasms that separate each of the peaks from its fellows appear as narrow clefts where they can be distinguished at all. The view of the peaks is deceiving in almost every respect

save one; they look hard to climb, and to do so is an almost impossible task, as the many futile efforts bear witness. Unlike the Alps, there is no corps of guides waiting to convoy tourists to the summit of the Grand Teton, and their absence is not regretted. The tourists are awed by the stupendous grandeur of the peaks, take pictures of them to show to the folks at home, but feel little desire to risk their necks in an attempt to scale them.

Many people from the eastern cities spend the entire summer in this vicinity, either maintaining their own summer homes or staying at one of the several resort ranches nearby. Here they secure saddle horses and explore the



U. S. Forest Service

A TYPICAL VISTA IN THIS DELIGHTFUL VACATION LAND

The tourist is awed by the stupendous grandeur of the peaks, usually takes many pictures, but feels little desire to risk his neck in an attempt to scale the heights, which, by the way, is almost impossible of accomplishment. The Teton country is indeed a land of inspiring beauty and many people from eastern cities spend the entire summer in the vicinity.

country at will. By a round about way they can ride to the backbone of the Teton Range and follow along its course between the peaks, from which superb views may be obtained. A more direct route is now being opened up by the Teton Forest, a trail up one of the most picturesque

of the many canyons that lead to the summit.

No more beautiful region for a summer outing can be found, and there are none more popular with those who have paid it a visit. Although it is only in very recent years that writers have placed the numerous attractions

of the locality before the public, the throngs of visitors are increasing greatly in numbers from year to year. They can increase a hundredfold and there will still be no crowding. The mighty sentinels overlooking this vacation land could announce room for as many more.

PRESIDENT HARDING PLANTS A MEMORIAL TREE



Photograph by International

PRESIDENT HARDING PLANTS A TREE IN CENTRAL PARK

The President is placing the first shovelful of earth around a tree planted in memory of the Americans who fell in the great war. At the left of the tree Mrs. Harding is standing.

WHEN MEMORIAL TREES ARE PLANTED PLEASE INFORM THE AMERICAN FORESTRY ASSOCIATION, WASHINGTON, D. C.

President Approves Memorial Tree Planting

President Harding issued the following statement on May 6 in response to a request from Joseph M. Patterson, of the Chicago Tribune, which paper has taken up vigorously the American Forestry Association's memorial tree planting idea.

I find myself altogether responsive to your request for an appeal to the people to plant memorial trees along the important public highways as memorials to the men who were sacrificed in the World War, and, indeed, also to those who gave their service without the ultimate sacrifice. I can hardly think of a more fitting testimonial of our gratitude and affection than this. It would be not only the testimony of our sentiments, but a means to beautify the country which these heroes have so well served.

A general adoption of this plan would, in the coming years, be noted as one of the useful and beautiful ideas which our soldiers brought back from France. The splendid avenues of France have been among the great delights and attractions to travelers there, and a similar development would equally add to the beauty and attraction of our country. I am pleased to know that the idea has been already taken up quite extensively and that considerable progress has been made. If the co-operation of state, municipal and county administrations may be secured, as well as of the forestry services of the nation and the states, it ought to be possible to make a rapid advance in a comparatively short time. I hope that you and your coadjutors may be successful in securing a most substantial beginning in this direction during the present season.

Very truly yours,

WARREN G. HARDING.



Photograph by Harris and Ewing

MRS. HARDING PLANTING THE OHIO TREE

A tree presented by the State of Ohio to the American Forestry Association's home, on Sixteenth street, Washington, D. C., by Mrs. Warren G. Harding. A tree from each state is planted along a miniature roadway, where every passer-by can see it.

PRUNING

BY F. L. MULFORD

NOW that the time of year is at hand when much of the pruning of ornamental plants is timely, the ends to be achieved by it should be considered.

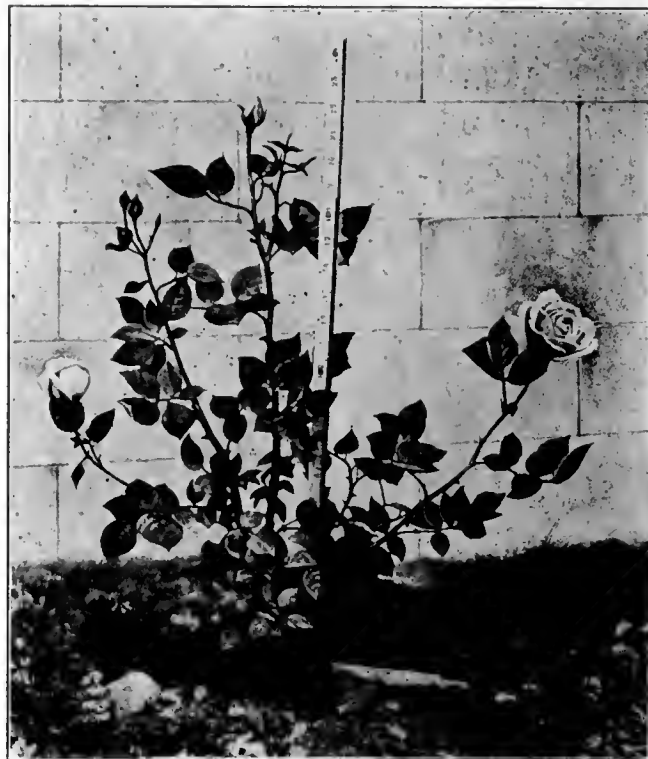
The purposes of pruning are to remove dead wood, to reduce the top in order to offset root mutilation, to control the form of the plant, to affect the quantity and quality of bloom, and to remove flowers. Because of lack of understanding of the purposes of pruning much of the work that passes under this name is mere plant cutting without any comprehension of the results that are likely to follow. For this reason the knife and pruning shears and especially the saw, should never be used on living plants without knowing the probable result.

Dead wood should be removed whenever it is discovered, as the sooner it is taken off the sooner the healing of the wound may begin. There is a partial exception to this, however, with plants that may seem to have been severely injured by winter killing or other unusual conditions, when ample time should be allowed to see how far the plant may be able to overcome the apparent injury before cutting is begun. This holds after transplanting also. How long it should be before pruning is done under these conditions is largely a matter of experience and no rules can be laid down for it, but six weeks or two months after the same kind of plants are well started is not too long to wait. New leaf buds are formed on most plants after others are killed, unless the vitality is too much reduced, but this requires different times for different plants, therefore no rule of procedure can be given. A

newly planted ginkgo tree has been known to stand a whole season without putting out a single leaf and yet the next year it started off and grew as its neighbors.

Transplanting of deciduous plants as it is usually done, results in root pruning and a complete removal of the roots from the soil. In re-planting it is impossible to at

once re-establish as close a connection of the roots with the soil as existed before. For this combined reason it is usually desirable at the time of transplanting to remove enough of the top to reduce the number of leaf buds to correspond with the reduced efficiency of the root system. With some of the shade trees this may require the removal of a half or three-fourths of the leaf buds, but with many of the shrubs if carefully dug and handled it may not be necessary to remove hardly any of the top. With evergreen plants that are transplanted with a ball of earth, little root pruning occurs, and if well done no

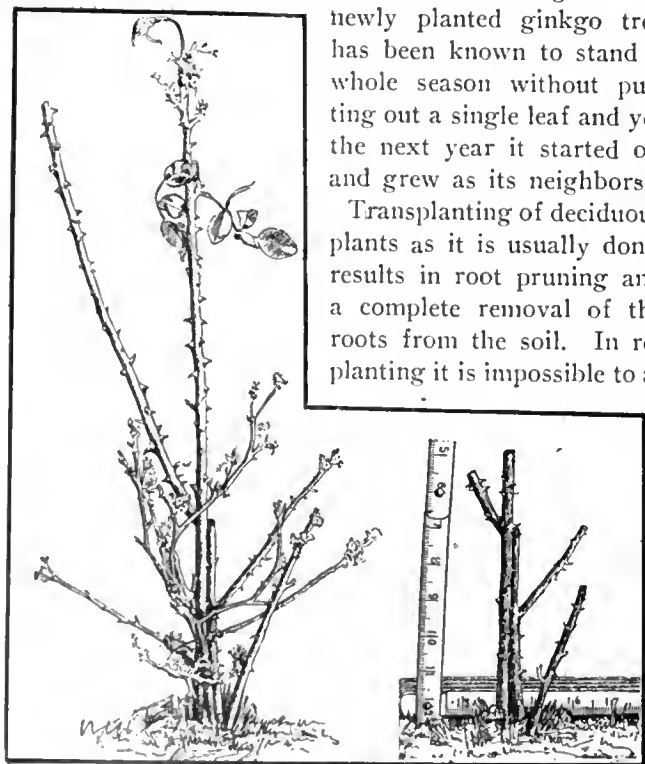


THE RESULT OF PRUNING FOR INDIVIDUAL BLOOMS
This is the same Radiance rose, two months later. Two beautiful blooms have been cut from the plant already, the remaining stubs, about one inch long, being hidden under the foliage.

loosening of the contact of the roots with the soil, therefore, no pruning of the tops is necessary. And, further, because of the character of the growth many evergreens would be ruined by pruning.

Judging by the way many trees and shrubs are pruned there is a widespread lack of understanding of the function of pruning as it relates to the form of plants. An understanding of this relationship is fundamental not only to pruning, but also to the use of plants in ornamental planting.

All landscape planting may be divided into formal and informal, which are, however, sometimes rather closely combined. In informal plantings, plants are encouraged to develop in as nearly their natural form as possible, while in formal plantings either formal plants are used or more informal ones may be sheared or trimmed into for-



BEFORE AND AFTER

This is a hybrid tea rose (Radiance) before pruning and the same bush after proper pruning for individual blooms. It would have been better to cut the left-hand shoot even shorter.

mal shapes. Sometimes a design or plan may be formal, while the planting may appropriately be informal, or as it is sometimes called, naturalistic. On the other hand, the use of formal plantings with an informal design gives most unsatisfactory results. The two most conspicuous errors of this sort are the placing of geometrical flower beds in the middle of a lawn, especially on the home grounds, and the planting of many kinds of shrubs as individual specimens and shearing all of them to a similar oval outline. As already intimated it is appropriate to shear plants used in formal plantings to such form as is appropriate for the design as a whole, but in informal



AN OLD FAVORITE—THE DOROTHY PERKINS RAMBLER

This shows the flowering of this dainty and familiar rose in all its generous profusion of color and bloom. Pruning of this prolific plant should be done after the riotous blooming time is past

planting pruning should strive to preserve the natural character and expression of the plant. If any rule can be laid down to assist in achieving this result it would be to never clip off the end of a branch. If a portion of a limb needs removing it should be cut out entirely back to the next large branch. This applies to trees and shrubs alike. Some shrubs require a renewal of wood from time to time in order to have good young growth to produce flowers. This is secured by cutting out some of the old stems clear to the ground, but not by shortening back or "heading in" as it is often called. This may be done by cutting out a few each year, or a larger



PROPERLY PRUNED AFTER FLOWERING TIME

And here are the same Dorothy Perkins roses, less than a month later, after all the flowering wood has been cut out clear to the ground, leaving only the current season's growth.

number at less frequent intervals; but not over a third of most bushes should be cut away at any one time, unless it is found by gradually increasing the amount of wood removed from year to year that better results are obtained by more severe pruning.

Mistakes are often made in the placing of plants by using one that is too large for the location, or by having a spreading or drooping one where an upright one is demanded. The attempt is often made to correct such mistakes by ruthless pruning. The result is never satisfactory. Again clumps of shrubbery may encroach beyond the desired limits. Before attempting to rectify

such a condition by pruning it should first be determined whether or not a removal or a re-arrangement of part of the plants would not be desirable. A similar condition often holds with trees. Of course, with them transplanting is not as simple a matter as with shrubs, but thinning by removal of some of the trees can often be done to advantage. Where repression may be necessary it should be undertaken with its true purpose in mind, and not under the pretense of doing something for the good of the tree. Severe pruning is as unnecessary and unwarranted on a healthy tree as a major operation on a healthy man. If a tree is not thriving the cause

of the difficulty should be as carefully sought before resorting to pruning as is done with a sick man before an operation is suggested.

The practice of cutting off the ends of large limbs of trees so that the tree may put a lot of bushy sprouts and make a more compact mass of foliage is bad for the tree. With a silver maple it is the signing of its death warrant for an early date, and a Carolina poplar is not left in a much better condition. It is another case of attempting to change the outline and character of the plant by pruning and the results are always injurious to the tree. Occasionally, a tree that is in an unhealthy condition from root injury or restriction of the feeding area may be helped by severe trimming, but even under such con-



AN EXAMPLE OF POOR PRUNING

There are bad stubs in the top of this Norway maple where the ends of branches have been cut. Each of these cuts is liable to start decay that will run down through the tree and destroy it.

ditions it should be accomplished as far as possible without leaving stubs.

The evil effect of severe pruning is more apparent on evergreen trees than on deciduous trees, for with many of the coniferous evergreens the removal of the tips of the branches with the foliage means the death of the whole limb. When the growing ends are injured the older portions usually will not form new buds nor push out new growth.

The pruning of plants for formal effects either individual specimens or hedges should be frequently done so that it may be only necessary to remove the small new growths, thus avoiding the cutting of any large branches.

Deciduous plants should be trimmed while dormant and in addition two or three or more times during the growing season, while evergreens should be trimmed just before growth starts in the spring and again in midsummer.

With flowering plants comes the additional problem of so pruning as to produce the greatest mass of bloom or the best possible individual blooms. For either of these purposes the pruning should be done just after blossoming, so that there will be the longest possible time for the formation of flower buds for the next year. Thus, spring flowering plants should be pruned in May or June, instead of in March. This applies to wistaria, climbing roses, lilacs, spring flowering spireas, and the whole host of early flowering bushes that are now in bloom or have bloomed this spring. Cutting of the flowers is often a legitimate preliminary pruning, but the extent to which this may be indulged depends on the character and the rapidity of the growth of the plant. If flowers are cut from bushes it is well to go over them carefully just after the flowering season, and make sure that the cutting has been done so that the bush is left in good condition. If this has been ragged or has left stubs, new cuts should be made, taking off the bad ends back to good limbs.

Hybrid wichuraiana and hybrid multiflora roses, the types of climbing roses usually grown in the north, bloom only on shoots from wood of the previous season's growth. To encourage this growth it is desirable after blooming to cut out as much of the old wood as possible without destroying the present season's growth. In fact, roses on a fence or other low support that send up freely a large number of new shoots, may have all the previous season's wood removed immediately after flowering.

Those plants that bloom in late summer can be pruned any time before growth starts in the spring. With these the flower buds are formed on wood of the current season's growth, as rose of Sharon, hardy hydrangeas, crape myrtle and trumpet vines.

Where quality of bloom is desired there are many plants in which a modification of the foregoing suggestions will give much different results. For example, if in pruning hardy hydrangeas instead of cutting out a few branches and maintaining the natural form of the bush, the plant should be mutilated by cutting back each branch of the previous season's growth, leaving but one or two eyes at the base, the resulting flower heads would be very much larger. The vigor that otherwise would be spread among a large number of branches and flower heads would thus be concentrated on a few, resulting in the larger size of the few remaining heads. In the case of hydrangeas the flower heads come only on the end of each branch, so that the number of flower heads is limited by the number of buds left on last year's wood.

Bush roses, like hybrid perpetuals, hybrid teas, and teas, are another example. Where the bushes are left almost unpruned there are a large number of comparatively small flowers. When bushes two or three or more years old are cut within a foot or nine inches of the ground, the stems are longer and the flowers larger. Intermediate pruning gives intermediate results. Again, if

the roses on the severely trimmed plants are cut off with long stems so that there is not over an inch or a little more left on the bush next the old wood, new vigorous shoots will push out that will give better results later than as though only six inches of the top of the stem is cut off with the rose.

The best time to do needed pruning is when the knife is sharp. Pruning for the sake of pruning should never be done. Wounds heal fastest from cuts made in June and probably slowest from those made in August. Most

pruning is done in winter, because there is more time then that cannot be satisfactorily used in other ways. Some plants bleed badly if pruned just after the sap starts in the spring. If excessive this may be weakening, but apparently is seldom seriously injurious to the tree, though it certainly is distressing to the operator.

To summarize, pruning should be done with a definite, well-defined purpose in view. Most ornamental plants are less likely to be injured by no pruning than by being pruned with lack of definite understanding of the ends to be accomplished.

CHAMBER OF COMMERCE FORESTRY COMMITTEE

THE United States Chamber of Commerce has appointed an advisory committee on forestry with a view to submitting to its constituent bodies throughout the country a referendum of the conditions and needs of the country in forest matters.

In its endeavor to formulate a national forestry policy this National Forestry Policy Committee of the Chamber of Commerce of the United States will not confine itself to a study of principles embodied in forestry bills before Congress. This was decided upon at the first meeting of the Committee held on April 25, at Atlantic City.

Early discussion developed a question as to the scope of the Committee. Some of the members felt that the Committee should limit itself to an examination of the several forestry bills pending in Congress, while others took the position that the Committee's investigation should embrace the subject in the broadest possible manner.

Joseph H. Defrees, president of the National Chamber, was called upon to outline the powers of the Committee. He said that it was not the intention of the Board of Directors of the Chamber that the Committee should only go into the bills before Congress, but that it should endeavor to formulate general policies of its own after a thorough study of the whole forestry question. He said there were no limitations to its activities in investigating and reporting on a national forestry policy.

The Committee thereupon decided that it would make an exhaustive study of the subject in all its different phases. In this connection, the Committee adopted this resolution:

"Resolved, That there should be cooperation between federal government and the states as well as private timberland owners to forward a national forestry policy."

David L. Goodwillie, of Chicago, chairman of the Committee, appointed a number of subcommittees to deal with specific subjects under the general heading of forestry. These subcommittees are:

Charles S. Keith, chairman, and Harvey N. Shepard, to deal with Government Regulation, Private Holdings, Individual Denial of Public Right.

F. C. Knapp, chairman, and George L. Curtis, to deal with Fire Protection and Expenditures.

Hugh P. Baker, chairman, and Charles F. Quincy, to deal with Acquisition of Land and National Forest Survey.

Dr. Henry S. Drinker, chairman; F. C. Knapp and John Fletcher, to deal with Taxes and Taxation.

George L. Curtis, chairman; F. C. Knapp and Charles S. Keith, to deal with Utilization of Wood and Forest Conservation.

Hugh P. Baker and Harvey N. Shepard, to deal with Reforestation and National Forests.

The members of the Committee are:

David L. Goodwillie (chairman), box shoo manufacturer, Chicago, Ill.

Charles S. Keith, President, Central Coal and Coke Co., Kansas City, Missouri.

F. C. Knapp, President, Peninsular Lumber Co., Portland, Oregon.

George L. Curtis, Curtis Companies, Inc., Clinton, Iowa.

John Fletcher, Vice-President, Fort Dearborn National Bank, Chicago, Illinois.

Charles F. Quincy, President, Q. & C. Company, and director American Forestry Association, New York, N. Y.

Dr. Henry S. Drinker, President, Pennsylvania Forestry Association, and director American Forestry Association, Montgomery County, Pennsylvania.

Dr. Hugh P. Baker, Secretary and Treasurer, American Paper and Pulp Association, New York City.

Harvey N. Shepard, Chairman, Massachusetts State Forestry Commission, Boston, Massachusetts.

W. DuB. Brookings (Secretary), Chamber of Commerce of United States, Washington, D. C.

It has been decided that the Committee will go to the Pacific Coast to study the problems of forestry on the ground. The bulk of the remaining virgin timber of the United States is in Oregon, Washington, and California, and it is felt that a personal investigation by the Committee should be made in consideration of the importance of the questions involved to the operators and timber owners of those states, as well as to the great lumber using communities of the rest of the country.

JUNE DAYS IN FIELD AND FOREST

BY R. W. SHUFELDT

(PHOTOGRAPHS BY THE AUTHOR)

THERE is no month in all the year that holds out greater inducements for one to lay aside everything and get out into the open than does the month of June.

in stages most interesting for study and observation, and in most regions, especially throughout the more northern sections, one has all one may desire by way of early summer days, with azure skies, gentle showers, and exhilarating climatic conditions.

Throughout the northeastern Atlantic States, from Pennsylvania southward, the flowers of the Shadbush



RED AND GREEN FRUIT OF JUNE BERRY

Fig. 1—There are several species of the June berry in this country, and they are all small trees or shrubs. As a genus they fall in the Rose family, and their leaves are simple and arranged in racemes.

This is true for every inch of the country, from Maine to Mexico, from the Atlantic coast to that of the Pacific—June is *the* month for everything that renders the world of nature so charming and so enticing. Hundreds of flowers are then in bloom; the beauty of woods and forests and isolated trees is then at its height; while animal life of all kinds, land forms as well as aquatic ones, is



SLENDER BLUE FLAG

Fig. 2—Various Irises or Flags occur in our flora; this is *Iris prismatica* of the Iris family; the upper flower shows very well the origin of the Fleur-de-lis. June is the month for them; and when growing in masses, they are strikingly beautiful and impressive.

have already dropped their white petals; while well down toward Virginia this favorite shrub has already passed to the fruiting stage, and those familiar with it call its

lovely red and purplish berries the June berries (Fig. 1). As these have an agreeable and rather sweetish taste, many people like to eat them, though they are rarely exposed for sale in the fruit markets. Some call them Service berries. While it is usually found growing in dry, open woodlands, it is also to be found along the banks of sluggish streams or on the borders of marshes.

Alice Lounsberry states that this shrub may grow to become a tree sixty feet high; but we must believe that it rarely reaches a height to exceed thirty feet. As a matter of fact, in barren soil, more or less rocky, one may find June berries in full fruit that have hardly attained the height of six or seven feet. Its leaves are well shown in Figure 1, where, too, a fine bunch of its fruit is displayed.

One may well ask why this famous shrub has received names so utterly different in their meaning — a question which Mrs. Dana has answered in the following words: "The shadbush has been thus named because of its flowering

at the season when the shad 'run'; June-berry because the shrub's crimson fruit surprises us by gleaming from the copses at the very beginning of summer; service-berry, because of the use made by the Indians of this fruit, which they gathered in quantities, and, after much crushing and pounding, made into a sort of cake." A likely place to find a June-berry shrub in full fruit is along the

margin of some such pond as we see in Figure 3; but should we not meet with one, there are many other interesting things that we will surely find.

At a little distance we see, growing amidst the sedge that borders the banks in some places, what appears to be a patch of beautiful purplish flowers; some are growing out in the water, away from other plants. As we come

nearer, they are readily recognized as the Blue Flag in full bloom, or, as they are called, Blue Iris, the plant here figured being the Slender Blue Flag. In our flora it has several close relatives in its own genus, such as the Larger Blue Flag; the Dwarf Iris; the Yellow Iris, and others, the entire group being related to the Iris family, the *Iridaceae*. All have sword shaped leaves and tough, tuberous rootstocks, and in all the flowers are wonderfully handsome and very showy. Many species have now been cultivated and grow in our gardens. Iris is Greek for the rainbow; the goddess of the same name was the attendant of Juno, and the history of the flowers of this famous plant is very interesting. It was Ruskin who said that "the fleur-de-lys, which is the flower of chivalry, has a sword for its leaf and a lily for its heart"; and, as a flower, it runs into the history of France, of Napoleon, of the Crusader, of Louis the Seventh—and into no end of works in literature and the fine arts.



A TYPICAL FROG POND

Fig. 3—This beautiful pond is in Southern Maryland, a mile or so below Great Falls. In it live many interesting aquatic forms, including two or three species of frogs. Patches of elegant yellow pond lilies may be seen upon its surface; while where the margins are sedge lurk pretty specimens of the little ribbon snake and other creatures.

ant of Juno, and the history of the flowers of this famous plant is very interesting. It was Ruskin who said that "the fleur-de-lys, which is the flower of chivalry, has a sword for its leaf and a lily for its heart"; and, as a flower, it runs into the history of France, of Napoleon, of the Crusader, of Louis the Seventh—and into no end of works in literature and the fine arts.

Several species of frogs breed in our ponds; and in this month of June not only may we see them jumping into the water as we walk along their margins, but we may note, too, their various kinds of tadpoles, seen swimming about just below the surface. Great, big fellows, some of them, being the tadpoles of the bullfrog, and by no means easy to capture, even with a good dip-net. Speaking of frogs, it was only last June—perhaps a little earlier—that the writer captured a most interesting specimen of a frog which he had never before seen alive so far north. It was living in a deep wagon-rut filled with rain water, in a piece of woods running along the Potomac on the Virginia side, a mile or so west of Mount Vernon. It proved to be a fine specimen of the Southern Bullfrog (Fig. 4), and doubtless a male, as its ear-drum was much larger than its eye, and its eyes were placed unusually close together. Superiorly, its head and shoulders were of an

elegant green, most vivid in tint, and this gradually shaded into a bronzy or olive color behind. Its nostrils were more prominent than we find them in the common bullfrog, and its face was longer and more pointed. The



WILD BLACKBERRY IN FRUIT

Fig. 5—The shrubby plants of this group all belong in the Rose family. When young, the fruit is red—hence its name *ruber* (Roman). We have more than forty species of them in the flora of the United States, and they range from coast to coast. When in blossom in New England, they look like this in Georgia.



THE SOUTHERN BULLFROG

Fig. 4—This species was first found at Bay St. Louis, Mississippi, and has been taken in Florida. The specimen here shown was captured by the writer in Virginia, just west of Mt. Vernon. It was in the water of a deep wagon rut in the woods, and was apparently a male.

groove down the middle of its back is well seen in the reproduction of the excellent photograph the writer obtained of the living specimen. It was at Bay St. Louis, Mississippi, that this species was first discovered, and it has also been captured in various places in Florida; but the writer is not aware that it has been taken so far north heretofore. As compared with our common bullfrog, it is an entirely different looking species; it outclasses the latter entirely in coloring, and may readily be recognized by other characters which it presents. Specimens of this frog were frequently taken by the writer in the bayous and ponds south of New Orleans, Louisiana, nearly forty years ago, and these were examined along with other batrachians, by the late Prof. E. D. Cope.

Well down the coast in June, everything in nature is much further advanced than is the case northward. In the Carolinas, the field blackberries may be in full fruit, and there is no more beautiful sight than masses of bushes of them when such is the case (Fig. 5).

Those who were out much in the open during the summer of 1920, in the northeast Atlantic Coast States, will remember what a peculiar year it was with respect to the presence of insects, birds and flowering plants. Insects of every description were remarkably scarce, some butterflies and moths not being observed at all. To be sure,

a couple of Luna moths were secured by the writer (Fig. 6); but aside from one specimen of a silk-worm moth (*Telea*), no other large moths were seen. Indeed, this extreme scarcity of insects and birds in 1920 was observed by the entomologists and ornithologists of the United States National Museum, and in various cities the local papers commented upon the fact.

As to the plants, many species did not bear flowers at all during that summer, or if they did they were so rare as not to be noticed by any one; upon the other hand, some plants flowered luxuriously. This was markedly the case in some of the common flowers, such as the horse nettle, a plant which, at the time mentioned, was to be seen growing in great abundance everywhere — even along the sidewalks in the city of Washington. Not only this, but the plant and its flowers was especially fine in all respects during that summer (Fig. 7). Considerable difficulty attends the photography of this plant, as it begins to wilt almost as soon as it is gathered; the best way to get a good picture of it is to dig up the entire plant, and carry it home in a shaded basket. Other plants are in the same case with respect to wilting, such as the Jewel-weed, the Dandelion, and the Wild Geranium or Crane's bill.

During this phenomenal summer of 1920, it was no uncommon thing to observe in wet places, in the neighborhood of Washington, great masses of Jewel-weed — both the red and the yellow — with hardly any flowers upon the plants; while in the same locality the Virginia Day-flower might be flourishing most luxuriously, bearing its blue flowers by the hundreds.

Such facts as these are probably far beyond our ken and may never be explained. The above conditions obtained in trees, too; for while such trees as the locusts (Fig. 8) blossomed most profusely, the poplars had scarcely any flowers. It was truly a wonderful sight to see the locust trees in some parts of the East; and so abundant and fragrant were their great bunches of flowers that the air was filled with their perfume for miles about.

Yellow or Black Locusts, with various other trees related to them, form the family *Leguminosæ* or Pod-bearers—an enormous group, with representatives all over the world; most of them are of vast economic importance, and no fewer than seven or more thousand species have been described. They have been called “pod-bearers” for the reason that they all bear simple, two-valved pods containing the seeds when their flowering stage is over. This being the case, it is clear that such plants as the clovers, all the peas and beans, lentils, and so forth, are arrayed in this group—in fact, any plant, in any part of the world, with a seeded pod like a honey locust or a bean, belongs in this family, the *legumes*. Some yield fine foodstuffs, while many of the trees produce timber of the best quality. Some furnish us with dyes, rubber, oils, balsams, and so on; and not a few of our finest garden flowers are members of the pod-bearing family, as the sweet pea and a long list of others.

Insofar as the pod-bearing trees go, they are all of especial interest to foresters, as we not only have the various species of Locusts, but such fine trees as the Red-bud or Judas tree, and the Texan variety of it (*Cercis texensis*), which latter is a shrub rather than a tree. Then there is the Kentucky Coffee tree; the Yellow-wood or *Virgilia*; the Texan ebony, and others.

Many of the American leguminous trees are thorny—even the Honey locust is known in many places as the Three-thorned Acacia; and the wood of

the latter is widely used for fuel and for fencing on farms where the tree is abundant. Wheel hubs are turned from this wood, and in some sections it is a great favorite as an ornamental shade tree; while it makes an excellent hedge when kept trimmed well down. Its flowers are small and inconspicuous. In nature it occurs most frequently in rich woods and river bottoms; and where one tree grows, we are likely to find quite a number of them.

An altogether different tree is *the* Locust, also called the Yellow or Black Locust, which may grow to be



THE LUNA MOTH

Fig. 6—We know of no more beautiful North American moth than the common Luna, it being of a bright, though pale, pea green, with the fore-wings emarginated in front with brown. This one was captured by the writer at Glen Echo, Southern Maryland, and is here seen resting on the bark of a big sycamore. It is just out of its cocoon.

seventy or eighty feet in height. In form it is usually slender, and its erect branches turn at the summit to form an oblong head. Rough, and of a dingy gray color, its bark exhibits many longitudinal deep furrows, and in these many insects may hide. On the other hand, its twigs are quite smooth, rather downy, and of a liver-brown color when wet. Its heavy, coarse-grained wood is of an ochre color, hard, heavy and wonderfully durable; even when used as fence posts for years in wet soil, it withstands the treatment and remains sound. Hence it is much used in ship construction, and in the manufacture of many parts of wagons and automobiles. A tonic of some value is made from its bark; and where the tree is abundant, many are cut down for fuel. Locust trees have spread pretty thoroughly over nearly all parts of the United States, and in a great many localities they are planted for ornamental purposes.

In the middle section of the country, the Locust trees bloom in early June, the drooping racemes being axillary, and the white, pea-like blossoms extremely fragrant; some of the clusters are at least seven or eight inches in length.

As to the leaves of the Locust, they are so well shown in Figure 9 that, as Doctor Holland says about his moth and butterfly plates, "they need no verbal description." The pods, each containing from four to ten seeds, often hang on the trees all winter, irrespective of climate; they are of a deep brown color, and very smooth and silky. Early in the autumn the leaves of the Locust turn a bright yellow, and the trees

are then very beautiful to behold. Unfortunately, Locust limbs and twigs are exceedingly brittle; so that, when the trees are much exposed to high winds, they snap off, and the symmetry of the tree's outline soon becomes unpleasing and scraggly. Old wind-driven Locusts are familiar objects in numerous places, where they have caught the full force of many storms. But when a big Locust tree is in full flower, its beauty and fragrance is hard to beat; and it is most delightful to note the good time thousands of honey bees are having, as they revel in the sweets of its generous blossoms. This is its hey-day; but one would not take it for the same tree to see it in

winter, with its scraggly limbs and twigs, and to listen to the rustling of its hundred and one dry and rattle-like pods. When evening comes, the leaves of the Locust partly close up, much after the fashion of a sensitive shrub, and this is likewise the case during rainy weather. Julia Rogers tells us that the cultivation of locusts had been introduced in Europe by Vespasian Robin some years prior to 1640, and that Linnæus, for this reason, named the genus *Robinia*. "Great plans were made a century ago for the growing of these trees to supply the British Navy with shipbuilding timbers," says Miss Rogers. "The plan never reached the magnitude its promoters desired; yet the locust is to be met with more often in European gardens and forests than any other American tree."

Insects pests do not seem to injure the locusts to any appreciable extent in Europe; while, upon the other hand, the locust borer in our country has, in some sections, actually ruined the entire output of these valuable trees, thus rendering its cultivation useless.

When this borer is absent, the tree reaches a very high point in the scale of economic importance in the lumber market, and it becomes quite profitable to grow them extensively for that purpose.

This locust borer is a very pretty beetle nearly an inch in length. It has knobby antennæ and red legs, and the body is black, with transverse, wavy yellow lines, some five or six in number. Early in the autumn this beetle may be collected on the flowers of the goldenrod, and several of them make desirable

additions to the cabinet of the young entomologist.

Most people are under the impression that the Locust is a thorny tree; but such is by no means the case, as what are supposed to be thorns are merely prickles, like the ones found on gooseberry and rose bushes. If one will examine a perfect locust leaf, a pair of these little prickly stipules will be found at its base, and when the leaf falls in the autumn, these remain with it. Sometimes, they grow to be of some size, and cause the handling of locust branches to be a by no means pleasant task.

This locust tree is not a very suitable one for lawn-planting for the reason that it sends up many suckers



THE COMMON HORSE NETTLE

Fig. 7—Horse nettles, of which there are several species, belong in the Nightshade family; it is found growing in waste places and in sandy soils. The flowers are pale violet, rarely pure white.

from its roots; then, too, it leafs out late and sheds early in the autumn. Its other disadvantages have already been referred to—its distorted appearance when leafless, and that it is pretty sure soon to be killed by the locust borers. Notwithstanding this unfavorable record, thousands of people in this country are dead in love with our American locust trees, and it is not at all likely that this love will grow one whit less with the generations to come. Among the pod-bearers, the Locust has many relatives in this country, such as the Redbud, the Texas Redbud, the Texan Honeylocust, and the Kentucky Coffee tree.

This last is one of the most remarkable of our American forest trees. In the first place, it may grow to be fully one hundred feet in height; and, although it is to be found over a good part of Eastern United States, it is one of the very rarest of our forest trees. It possesses a very durable light brown wood, which, when obtainable, is chiefly used for fencing purposes. In some cities we may find it used as a shade tree in the streets, while in nature it grows best in moist, rich soils. Its inconspicuous flowers are, according to Julia Rogers, either "greenish white" or "greenish purple"; and she

says that the tree "is remarkable for its dead-looking frame, which holds aloft its stiff, bare twigs in spring after other trees are clothed with new leaves. But at length the buds open and the leaves appear, twice compound, and often three feet long. The basal leaflets are bronze green, while the tips are still pink from having just unfolded. This stately tree, its trunk topped with a close pyramid of these wonderful leaves, is a sight to remember. Often the trunk is free from limbs for fifty feet or more." We find much to observe during the

month of June in almost any part of the United States; but it varies both in kind and amount according to the part of the country we may be in. In Maine one would find what would never be seen in Florida during June. North of Virginia, nearly all the birds have finished breeding, with the exception, perhaps, of the cedar birds—a species that usually nests long after others are through. So the principal attractions in the open for the student of nature at this season of the year are the trees, the plants and the insects



COMMON LOCUST TREES IN FULL FLOWER

Fig. 8—Every one loves this tree and the rich fragrance of its hundreds of showy flowers. The pair seen here grow on the sandy point at Miller, a mile or so west of Mount Vernon, the famous home of Washington, in Virginia.

and spiders, to which must be added all aquatic forms, and of which there are many kinds, all the way from an amoeba to not a few mammals.

Every tree lover should receive the beautifully illustrated monthly magazine American Forestry. Write to the office 1214 Sixteenth St., Washington, D. C. for a sample copy.

HEW TO THE LINE, AS B. L. T. SAID, AND

EVIDENCE of the wide-spread popularity of the American Forestry Association's educational campaigns is seen in the way newspaper paragraphers have taken up various phases of the work. The cartoonists, too, see many opportunities in keeping the importance of forestry before the readers. The test of a subject is the way the paragraphers take it up or let it alone. They have taken it up, so, as the late B. L. T., of the Chicago Tribune, said for so many years at the head of his column, "hew to the line, let the chips fall where they may."

SPEAKING OF OUR WASTEFUL LAND TENANCY SYSTEM



Darling, in the Washington Herald.

Hagerstown Mail: The American Forestry Association is carrying on a popular vote to name a national tree. No man who remembers his boyhood will vote for either the hickory or birch.

Minneapolis Journal: The American Forestry Association is asking what is the national tree. If Mr. Burbank could cross the oak and the pine, the question might be answered.

Indianapolis Star: A forestry bill is expected at the next session of congress and by the time all the undesirables get over here we may have an immigration law.

Nashville Banner: The Associated Press carried a dispatch from Washington to the effect that American forests are so rich with infinite variety that President Wilson was unable to name a choice for a national tree. He wrote to the American Forestry Association, which is compiling a national

referendum as to what tree best represents America. A correspondent of the Banner came to the President's relief by suggesting the cactus tree, which thrives in arid lands.

Albany (Ala.) Daily: The American Forestry Association, of Washington, has sprung a new idea in elections upon an unsuspecting public. Some half a dozen well-known trees are candidates before the American people for position as our National Tree. The campaign is distinctive in American campaigns, but one of the chief features is the fact that the "candidates" are dumb. They cannot inflict campaign oratory on the public. There is a great deal of consolation in that!

Detroit Free Press: The search for a national tree which is now being carried on by the American Forestry Association will remind old-timers that the Democrats used to accord that distinction to the hickory whenever they won an election.

Montgomery Advertiser: To forestall our gloomy uplifters who may be committed to the weeping willow, we suggest the magnolia—ever green and as enduring as the rock of ages.

Cincinnati Enquirer: Without deprecating the claims of the cited authority's choice, or the claims of any other of the numerous candidates for this high national honor, it is here suggested that not one of them has a chance, not the barest look in. It national tree long has been selected. It never can be displaced by any other tree in this democracy—not so long as Congresses and Legislatures, political parties and politicians exist to water its roots, encourage its growth and to preserve its existence to the end that it may bear abundant fruit. Yea, the persimmon tree is the national tree; and the longest pole still is essential to securing of its choicest fruitage.

Billings (Mont.) Gazette: Down south the persimmon is running strong as the national tree in the plebiscite being taken by the American Forestry Association. That's because of the popularity of the persimmon tree in the south, and it may be that it grows over a wide enough area of this country to swing sufficient votes. Up in this country, and particularly around Billings, we're handicapped in the election. We might put forth as our candidate the cottonwood tree, but with little chance that it would be named. Around shedding time, we doubt if it would even swing a majority of votes in its home precincts.

Everybody has been asked to vote a choice for the national tree—schools, or-

ganizations of all kinds, civic bodies and individuals. The press is variously expressing its selection. Strong candidates, are oak, walnut, elm, maple, white pine, cedar, sycamore, Douglas fir.

The plebiscite is a good thing. Anything is a good thing that arouses an interest in trees. No city can have too many of them, nor a variety too wide. Billings is well shaded, but, as the city grows its tree-population should grow with it. Trees planted now as spindling saplings, requiring the watchful care of new infants, some day will become the verdant growths that beautify the thoroughfares and bring refreshing rest to those that pass or pause beneath them.

The *Boston Transcript* took up the subject of maple sugar and would lead the world to believe that only in New England can the blown-in-the-bottle, honest-to-goodness maple sugar be produced. To quote the *Boston Transcript*: New England people have great respect for the American Forestry Association, which is doing an excellent work all around; but they will nevertheless take the association's latest piece of "publicity" with several grains of the salt of incredulity. The Forestry Association has been instructing the country on the subject of making maple sugar. It seems to imagine that a national view can be taken of this subject, which is not the case—true maple sugar being distinctly a New England and a Canadian industry. It is true, as the American Forestry bulletin states, that the sugar maple grows elsewhere than in New England and Canada. It is also true that the sap of the *Acer Saccharinum* is sweet, or in some degree

BEFORE IT IS TOO LATE



Orr, in the Chicago Tribune.

LET THE CHIPS FALL WHERE THEY MAY

sweet, wherever the tree grows. But the sap of the birch, and that of the sugar pine of the far Northwest, also yields sugar. It takes more than a sugar maple tree to make maple sugar. The tobacco plant, under cultivation, will grow anywhere, but only the Vuelta Abajo produces the true Havana leaf.

Vermont is the home and center of real maple sugar, but the article is produced in excellent quality throughout northern New England and portions of Canada. The maple sugar of northern Michigan, of Minnesota, of the North Carolina and Tennessee mountains, is not readily recognizable as "maple" by the cultivated New England palate. For one thing, the sap there is below quality, owing to the nature and ingredients of the soil in those remote regions. And in the second place, proper methods of manufacture and of refining are generally unknown there. The Chippewa Indian of Michigan, Wisconsin and Minnesota boils maple sap in a camp kettle and strains the product through his blanket; but should we call that "maple syrup"? Assuredly not. It takes the hillsides of New England, and the inherited and developed skill of the New England sugar maker to produce the genuine article.

The American Forestry Association is simply raising false hopes in distributing broadcast, in regions far removed from the sweet influences of the limestone and granite ridges of New England, the maritime provinces and Quebec, its bulletin of information on the subject of maple sugar production. What has never been there,

namely, a really good article of locally produced maple sugar or syrup, will never be. It is possible, however, that the vain attempt induced by the Association's bulletin will be of eventual benefit, by cultivating in distant regions the desire and the taste for a delicious article of which New England must ever retain a monopoly.

Now comes a voice from the central west raised in protest at the claims of the *Transcript*. Again we quote:

St. Paul Dispatch: New England is a queer blending of the erudite and the recondite. The *Boston Transcript* is much disturbed because the American Forestry Association has had the temerity to intimate that maple sugar is produced beyond the confines of the cultured and fortunate, though somewhat limited, district over which it presides with conceded grace and distinctness. It resents the possibility, even remote, of the real article of *Acer Saccharinum* growing outside of New England and adjacent regions in Canada and protests especially against distinguishing as "maple syrup" the product of "the Chippewa Indians of Minnesota, Wisconsin and Michigan," referring loftily to this favored section as remote and necessarily barbarous.

It is not surprising that Boston visualizes Minnesota as part of the Wild West, with village fortified against surprises by marauding Indians, and the lives of farmers divided between forays against ravening wolves and periodical hunts of buffaloes roaming in countless hordes over the prairies. The extent to which the *Transcript* is plunged into deepest darkness in this respect may be deduced from its disgusted assertion that the maple syrup of Minnesota is produced by the Chippewa Indian, "who boils maple sap in a camp kettle and strains it through his blanket."

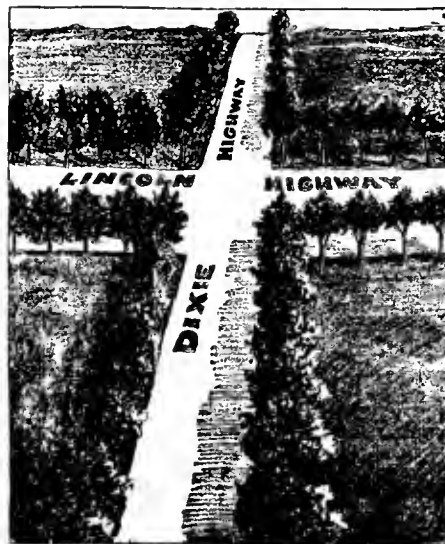
The maple tree of the approved New England variety may be rare in Minnesota, but not half so rare as the Chippewa Indian in this industrial activity—or any other activity. The spectacle of a noble red man boiling sugar is a novelty which Minnesota would yearn to see. Exhibitions of pioneer days in which the aborigines figured have been occasional features of the State Fair, but to stage such a performance as our cultured Boston contemporary imagines a part of daily spring life in Minnesota would startle State Fair visitors as a piece of melodrama worked out of overwrought imagination.

Thus while Boston and St. Paul battle for the maple sugar spotlight the readers' thought is turned to trees. Next month other phases of this great subject will be taken up by the editors.

The educational value of these things is well expressed by the Chicago Tribune, which has taken up the campaign for Roads of Remembrance. The Tribune says:

Chicago Tribune: The memorial tree planting which will be dedicated to every service man in the war, and which will be of great benefit in the reforestation of the country, has the approval of virtually every citizen and association of citizens. Their

A LIVING MEMORIAL ACROSS AMERICA



McCutcheon, in the Chicago Tribune.

"In honor of each and every United States soldier and sailor in the world war a tree along the great American highways, every tree to bear the name of a man who served."

expressions approve the sentiment and the utility, and it is fairly certain that the movement is on the way towards the organization which can operate, get the trees, plant them, and inscribe them one to each individual soldier and sailor in the service of the United States.

The project interests nearly a third of the country, directly and intimately, appealing to affection for some man who served, and the sentiment itself will interest all the country, whether a family name is carried by a tree or not. The intelligence of the country will approve as much as its sentiment does.

Americans have been cutting trees without much thought of the future. They know they have torrential rains, which not only cause floods, but which wash the soil into the streams and carry it off, impoverishing the land. They know that China now starves because the land long ago lost its trees and its soil. They know that China and the United States have a great deal in common in the character of their rains and of their action, unchecked, upon the soil.

Americans can retain the productivity of their land by restoring trees where they are needed. Such a project as reforestation ordinarily proceeds slowly against inertia. If it is injected with a living sentiment and turned to the purposes of a great national memorial peculiarly appealing to the people, it should go ahead with speed and effectiveness.

Just Plant a Tree

Woman's World.—Immediately following the armistice the American Forestry Association proposed the idea of planting a tree for each soldier in a community who lost his life in the war. Schools, colleges, churches and patriotic organizations have planted trees and established "Roads of Remembrance."

For the small town and the rural school there is no finer memorial than tree planting. It has a special significance, symbolizing growth, strength, and enduring beauty from the very soil from which comes their life. These trees are living, growing testimonies, not along to those who died, but a strengthening evidence that those who are left behind are not unmindful of the sacrifice, nor negligent in love of country.

As a soldier might express it: When I die, please plant for me a tree, to keep alive the memory of other boys and men like me, who fought no glory, asked no fame, except to die in Freedom's name. Please do that little thing for me, when I am gone—just plant a tree.

ACTIVITIES OF THE AMERICAN FORESTRY ASSOCIATION FOR MAY, 1921

The Association's campaign for the passage of the Snell Bill was carried along vigorously during the month by the publication in several thousand newspapers of articles showing the necessity for a forest program, for the perpetuation of our existing forests and the planting of our many millions of acres of waste land. A number of organizations endorsed the movement and will aid in securing the passage of the bill.

* * *

The Association was represented at the annual convention of the Chamber of Commerce of the United States at Atlantic City by Directors Charles F. Quincy and Dr. Henry S. Drinker, who are members of the Forestry Committee of the Chamber, and by Secretary P. S. Ridsdale. The action of the Forestry Committee is described on another page of this issue.

* * * * *

In aiding to make successful Forest Protection Week, May 22-28, proclaimed by President Harding, the Association prepared and distributed to the newspapers of the country a number of articles emphasizing the necessity of forest protection and also organized in Washington, D. C., a demonstration of properly fighting a forest fire.

* * * * *

Bulletins on how to teach their pupils a knowledge of trees and their uses were distributed to thousands of school teachers to the extent that they will be able to know their values and also in their states to prepare demonstration charts. This work is spreading rapidly throughout the United States and it is expected that the study of forests and trees before long will be taken up in every public school.

* * * * *

Mrs. Warren G. Harding planted in front of the Association's building a tree presented to the Association by Ohio and the small spade which the President's wife used in this planting will be loaned to organizations throughout the United States for the purpose of planting memorial trees. Mrs. Medill McCormick, of Chicago, at the same time planted a tree presented by Illinois.

* * * * *

The Association was informed by The Chicago Tribune that it had taken up the campaign for the planting of memorial trees, and also the planting of trees along the highways of the United States, and that it will make a vigorous campaign for this purpose.

* * * * *

The General Federation of Women's Clubs was provided, through Miss Julia A. Thorns, the chairman of the Forestry Committee, with material for the study of trees and for taking in every state a vote for a national tree after the value of each tree had been carefully studied. Each club belonging to the General Federation will take up this activity.

* * * * *

The Literary Digest during the month published two full pages from AMERICAN FORESTRY magazine, one on the manufacture and use of shingles and the other on methods of reclaiming denuded and eroded lands by forest plantings.

* * * * *

The Association received the ballots cast by the school children of Dayton, Ohio, and Springfield, Ohio, in the national tree voting contest, which ballots were made after a careful study by the sixty thousand school children of these cities of various trees and their values.

* * * * *

The Association urged Governor Stephens, of California, to sign the bill which has just been passed by the California State Legislature appropriating \$15,000 for continuing the work on the John Muir trail, and the bill appropriating \$300,000 for the purchase of redwood timber along the state highway in Humboldt County.

* * * * *

The Association urged and heartily endorsed the movement to preserve for the State of Wisconsin the region known as "Northern Lakes Park," which is in great danger of being destroyed by loggers.

TWO FORESTRY BILLS

Two bills for a national forest policy have been presented to Congress. One is the Snell bill, which is endorsed by the United States Forest Service, the American Forestry Association, the National Forestry Program Committee and others; the other bill is the one introduced by Senator Capper.

Both these bills are here published in full for the examination of our readers:

THE SNELL BILL

The Snell bill was introduced on April 11, and was referred to the Committee on Agriculture:

A Bill to provide through cooperation between the Federal Government, the States, and owners of timberlands for adequate protection against forest fires, for reforestation of denuded lands, for obtaining essential information in regard to timber and timberlands, for extension of the national forests, and for other purposes, all essential to continuous forest production on lands entirely suitable therefor.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Agriculture, through the Forest Service, is hereby authorized and directed, in cooperation with appropriate officials of the various States or other suitable agencies, to recommend for each forest region of the United States the essential requirements in protecting timbered and cutover lands from fire, in reforesting denuded lands, and, where and to the extent necessary, in cutting and removing of timber crops by such methods as will promote continuous production of timber on lands chiefly suitable therefor; and the Secretary of Agriculture is further authorized, on such conditions as he may determine to be fair and reasonable in each State, to cooperate with the various States and through them with private and other agencies within the States in bringing into effect such essential requirements favorable for forest protection and renewal with a view to furnish a continuous supply of timber for the use and necessities of the people of the United States. There is hereby authorized to be appropriated annually, out of any money in the Treasury not otherwise appropriated, \$1,000,000, to enable the Secretary of Agriculture to carry out the provisions of sections 1 and 2 of this Act.

Sec. 2. That in no case other than for preliminary investigations shall the amount expended by the Federal Government in any State during any fiscal year under the foregoing section exceed the amount expended by the State for the same purposes during the same fiscal year, including the expenditures of forest owners required by State law, and the Secretary of Agriculture is authorized to withhold cooperation, in whole or in part, from States which do not comply in legislation or in administrative practice with such requirements as shall be established in accordance with section 1 of this Act. In the cooperation extension to the several States due consideration shall be given to the protection of the watersheds of navigable streams, but such cooperation may, in the discretion of the Secretary of Agriculture, be extended to any forest lands within the cooperating States.

Sec. 3. That the Secretary of Agriculture, through the Forest Service and in cooperation with the various States, organizations of timber users, owners of timberlands, and other agencies, is hereby authorized and directed to make a survey of the forest resources of the United States to determine the quantity, location, availability, and suitability for various uses of each class or species of timber; to determine the approximate area, location, condition, and productive capacity of the land chiefly valuable for timber growth and not required for other purposes; to ascertain the yearly requirements as to kinds and quantities of timber of each State and important wood-using industry; and to obtain such related information as in the judgment of the Secretary of Agriculture may be necessary to carry out the provisions of this Act. There is hereby authorized to be appropriated out of any money in the Treasury not otherwise appropriated, \$3,000,000, to be made available at such times and in such amounts as may be required and recommended by the Secretary of Agriculture for carrying out the purposes of this section.

Sec. 4. That there is hereby authorized to be appropriated annually, out of any money in the Treasury not otherwise appropriated, the sum of \$1,000,000 to enable the Secretary of Agriculture to conduct experiments and investigations in reforestation and methods of cutting and utilizing timber, to establish forest experiment stations, and to conduct experiments, investigations, and tests in the chemical, physical, and mechanical properties, and utilization of native and foreign woods and other forest products, including timber tests, wood preservation, tests of wood and other fibrous materials for pulp and paper-making, and commercial demonstrations of improved materials, methods and processes, and such other tests and investigations as in the judgment of the Secretary of Agriculture shall be desirable to promote the most effective use of forest products in the United States. The investigations, experiments, tests, and demonstrations provided for by this section may be conducted independently, or in cooperation with other branches of the Federal Government, with State, county, and municipal agencies, educational institutions, business organizations, and individuals; and authority is hereby granted the Secretary of Agriculture to receive money contributions, under such conditions as he may impose, from cooperators, which contributions shall be covered into the Treasury and shall constitute a special fund, which is hereby appropriated and made available until expended, for the payment of the contributor's share of the expenses of conducting any such investigation, experiment, or test, and for refunding to contributors amounts contributed by them in excess of their share of said expenses: *Provided*, That the Secretary of Agriculture shall expend such portions of the appropriations authorized by this section as he deems necessary to study the effects of tax methods and practices upon forest perpetuation, to devise tax laws designed to encourage the conservation and growing of timber, to cooperate with State agencies in the consideration of such laws, and to investigate and promote practicable methods of insuring standing timber or growing forests from losses by fire and other causes.

Sec. 5. That there is hereby authorized to be appropriated annually, out of any money in the Treasury not otherwise appropriated, the sum of \$1,000,000, to enable the Secretary of Agriculture to purchase or otherwise obtain forest-tree seed and nursery stock, to establish and maintain forest nurseries in the national forests, to sow and plant denuded lands within the national forests with forest trees, and to conduct necessary experiments and investigations in connection with such sowing and planting, including all necessary expenses incident thereto.

Sec. 6. That there is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$50,000,000, to be made available at such times and in such amounts as may be required and recommended by the National Forest Reservation Commission for carry-

ing out the purposes of the Act of March 1, 1911, entitled "An Act to enable any State to cooperate with any other State or States, or with the United States, for the protection of the watersheds of navigable streams, and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of navigable rivers," as amended.

Sec. 7. That the Secretary of Agriculture is hereby authorized to locate, examine, survey, and with the approval of the National Forest Reservation Commission, and at the price or prices fixed by it, to purchase lands chiefly suitable for forest production in any part of the continental United States, whether the control of such lands will promote or protect the navigation of streams on whose watersheds they lie or otherwise; and the appropriations authorized for the purchase of lands under the Act of March 1, 1911, entitled "An Act to enable any State to cooperate with any other State or States, or with the United States, for the protection of the watersheds of navigable streams, and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of navigable rivers," are herewith also authorized for the purposes named in this section: *Provided*, That all of the provisions of the aforesaid Act of March 1, 1911, as amended, not inconsistent with the provisions of this section, shall apply to any lands so purchased.

Sec. 8. That the Secretary of the Interior be, and hereby is, authorized to accept on behalf of the United States title to any lands within or adjacent to exterior boundaries of national forests if, in the opinion of the Secretary of Agriculture, the public interests will be benefited thereby and the lands are chiefly valuable for national forest purposes, and in exchange therefor may give not to exceed an equal value of such national forest land or timber or assignable certificates for timber within the national forests as may be determined by the Secretary of Agriculture and accepted by the owner as fair compensation, consideration being given to any reservations which either the grantor or the Government may make of timber, minerals, or easements. Such assignable certificates for timber shall be issued under the authority of the Secretary of Agriculture, shall be for the agreed values of the lands acquired, and shall be accepted at their face value, when accompanying bids, for the purchase of national forest timber or in payment for national forest timber purchased under existing laws and regulations. Any timber given under such exchanges shall be cut and removed under the direction and supervision and in accordance with the requirements of the Secretary of Agriculture. Lands conveyed to the United States under this section shall, upon acceptance of title, become parts of such national forests as the Secretary of Agriculture shall designate: *Provided*, That the Secretary of the Interior shall report to Congress annually the quantities of such land exchanges as are consummated and the names of the parties thereto.

Sec. 9. That all lands now embraced in national forests or national parks which are owned by the United States or subject to disposition by the United States, including unreserved public land, lands covered by former patents, or grants which have reverted in the United States, and Indian reservations, and all lands of the character herein defined which may hereafter be acquired by the United States, with the exception of military, naval, lighthouse, and other special reservations, which are classified by the Secretary of Agriculture and approved by the National Forest Reservation Commission as valuable chiefly for the production of timber or protection of watersheds, shall be, and the same are hereby, withheld from all forms of entry, appropriation, or allotment, except mineral entries authorized under existing law, from and after the date of the filing of such classification with the Secretary of the Interior; and the lands so classified shall remain withdrawn from any form of entry or appropriation as aforesaid, with the exception of mineral entries authorized under existing law, until the Congress shall direct otherwise; and there is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$1,000,000, to be made available at such times and in such amounts as may be required and recommended by the Secretary of Agriculture to enable him to classify and determine the areas of the lands herein defined which are valuable chiefly for the production of timber or protection of watersheds: *Provided*, That nothing herein contained shall affect the standing of any valid claim, entry, or allotment existing on such lands at the date of their classification or the equities or rights of the claimants or entrymen thereunder.

Sec. 10. That the National Forest Reservation Commission, created pursuant to the Act of March 1, 1911, is hereby authorized and directed to recommend to the President of the United States the incorporation in national forests of any lands classified as valuable chiefly for the production of timber or protection of watersheds and withdrawn from entry under the preceding section, which, in the judgment of said commission are adapted to national forest purposes. Said commission is further authorized to determine the value of any lands so withdrawn which are the property of Indian tribes, and to make recommendations to Congress for the purchase of such lands or otherwise for the liquidation of the equities of such Indian tribes therein.

Sec. 11. That the President of the United States is hereby authorized, in his discretion, upon recommendation of the National Forest Reservation Commission, to incorporate in national forests, now existing or which the President by Executive proclamation may create, any lands classified and withdrawn as defined in section 9 herein; but the addition to any national forest of such lands shall not affect any valid claims, entries, or allotments existing at the date of their withdrawal, and to the rights, equities or title of any Indian tribes: *Provided*, That the President may, in his discretion, incorporate in national forests all or any portion of military, naval, or other special reservations, not including national parks, or any lands acquired by the United States through gift, bequest, or otherwise which are chiefly valuable for the production of timber or protection of watersheds under such regulations or conditions as he deems wise with respect to the use of such lands for military, naval, or other purposes: *Provided further*, That it is the intent and purpose of this Act that should any part thereof fail because of ambiguity or other reason, such failure shall not be construed as adversely affecting the remaining parts.

THE CAPPER BILL

Senator Capper introduced the following bill on May 2, 1921. It was referred to the Committee on Agriculture and Forestry:

A Bill to control forest devastation, to perpetuate forests in the United States, to raise a revenue from forest products, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

DEFINITIONS.

That, when used in this Act—

"Commercial forest land" means all private land within the United States which is now or hereafter in forest, except farm wood lots as in this section defined, and except such land as the Secretary shall have caused to be examined at any time and shall have found to be at such time chiefly valuable for other uses than the growth of forest crops. And the Secretary is hereby authorized in his discretion to cause such examination to be made.

"Farm wood lot" means land which is a part of a farm, whether contiguous or not, and is used as a subsidiary source of farm supply or farm revenue, but which is otherwise like commercial forest land as defined in this section.

"Forest crop" means the wood of trees on forest land.

"Harvesting a forest crop" means the felling of trees on forest land, together with the production therefrom of one or more raw forest products and/or the removal of such products for sale, consumption, or use.

"Forest devastation" means the harvesting of a forest crop otherwise than in compliance with standards established by regional and local regulations made under section 3 of this Act.

"Operator" means any person who is engaged in the business of harvesting, or causing to be harvested, for himself, one or more forest crops on commercial forest land.

"Raw forest product" means the wood of felled forest trees, prepared for removal from the place of felling to be sold, used, or consumed, such as logs, poles, piles, round mine timbers, round or split posts, split staves, pulp wood, fuel wood, other cordwood, hewn ties, hewn timbers, bolts, and the like.

"Standard log scale" means such uniform scale for the measurement in board feet of the volume of all raw forest products as the Forester, with the approval of the Secretary, shall by regulations prescribe; and such regulations may provide for the conversion of measurements in any log scale, or in any cord measure, or in any other measure of raw forest products, into their equivalent in units of the standard log scale.

"Taxable product" means a raw forest product produced from trees felled on commercial forest lands by any operator.

"Standard product" means a taxable product produced from such part of a forest crop as is harvested in compliance with standards established and defined by regional and local regulations under section 3 of this Act.

"Product below standard" means a taxable product produced from such part of a forest crop as is harvested otherwise than in compliance with standards established under section 3 of this Act.

"Secretary" means the Secretary of Agriculture.

"Forester" means the Forester of the United States Department of Agriculture.

"Regional forester" means any officer or agent of the United States designated by the Secretary to perform the duties imposed on regional foresters by this Act.

"Person" means and includes a natural person, partnership, association, company, or corporation, and any officer, receiver, or employee of any of them, and any member of a partnership who as such officer, receiver, employee, or member is under a duty imposed by this Act or by any regulations under this Act.

FOREST REGIONS

SEC. 3. (a) That the Secretary shall divide, and may from time to time redivide, the United States into forest regions, which shall be delimited as he shall deem best in view of forest and economic conditions, in order that the standards established and defined by regional and local regulations under section 3 of this Act may be adapted to and applied in accord with local forest and economic conditions. The Secretary may conform the national forest districts to said forest regions.

ADMINISTRATION.

(b) That the Secretary shall establish in the forest regions provided for in subsection (a) of this section, and in the District of Columbia, such service as he shall deem necessary for the administration of this Act; and, upon due request from the proper authorities of States with which the Secretary is cooperating under section 12 hereof, he may deputize State forest officials to assist in the administration of this Act.

HARVESTING REGULATIONS.

SEC. 3. That in order that this Act may be applied locally in accord with regional and local forest and economic conditions—

(a) The Secretary shall make, and may from time to time amend, regulations establishing and defining in general terms as to each forest region such reasonable standards for the harvesting of forest crops as he shall deem necessary to secure in such region a continuous succession of forest crops of reasonable quantity and quality.

(b) The regional forester of each forest region, with the approval of the Forester, shall make, and may from time to time amend, local regulations, not inconsistent with the regional regulations, establishing and defining as to any locality therein such reasonable standards for the harvesting of forest crops as he may deem necessary to secure in such locality a continuous succession of forest crops of reasonable quantity and quality.

(c) Standards established and defined by regional and local regulations under subsections (a) and (b) of this section may include such measures as protection of trees left standing, disposal of slash, reduction of fire hazards due to harvesting, temporary reservation from harvesting of such trees as may be necessary for the perpetuation of forest growth, or, on the request of the operator approved by the Forester, subject to conditions prescribed in such approval, reforestation by planting in lieu of such reservation, and the like.

(d) Before the making of regional regulations as to any region under subsection (a) of this section, the Secretary shall seek the cooperation of an advisory board as to such region, to consist of the State officials in charge of forest work in the States concerned and one representative each from such lumbermen's and wood users' organizations as he may designate; and before the making of local regulations under subsection (b) of this section the regional forester shall seek the cooperation of a similar advisory board as to each locality, such advisory boards, at their option, to function as standing advisory bodies on matters relating to the practical application of the regulations and such amendments to them as may from time to time be advisable.

CLASSIFICATION AND RETURN OF TAXABLE PRODUCTS.

SEC. 4. That every operator shall truly classify as standard products, or

as products below standard, all taxable products produced by him during each year, and shall make return thereof as and when required by regulations under subsection (a) of section 7 of this Act.

INSTRUCTIONS IN 1922

SEC. 5. That the Forester shall, so far as practicable, cause to be inspected on the ground, during the calendar year 1922, harvesting operations on commercial forest lands, for the purpose of instructing operators or their agents on the ground in the method of applying the standards established by regulations under section 3 of this Act.

TAXES.

SEC. 6. That for each calendar year after 1921 there shall be levied, assessed, and collected, and shall be paid by every operator, an excise tax on the privilege or franchise of conducting the business of harvesting forest crops on commercial forest lands, measured by the quantities of taxable products produced by him in such year, as follows: For the calendar year 1922, at the rate of 5 cents per thousand board feet standard log scale in respect of all taxable products; and for each and every calendar year thereafter at the rate of 5 cents per thousand board feet standard log scale in respect of standard products, and at the rate of \$5 per thousand board feet standard log scale in respect of products below standard.

RETURN AND PAYMENTS.

SEC. 7. (a) That on or before the 15th day of March, 1923, and each year thereafter, each operator shall make, under oath, return for the preceding calendar year, stating specifically the quantities, in board feet standard log scale, of standard products and of products below standard, respectively, produced by him during such preceding calendar year, from trees felled in his harvesting of forest crops on commercial forest lands. Such return shall be made in duplicate, one duplicate to the collector of internal revenue for the district wherein is located such operator's place of business, the other duplicate to the regional forester for the forest region wherein is located such place of business. On or before each such March 15 every such operator shall pay to such collector the taxes imposed by section 6 of this Act in respect of the taxable products produced by him during the preceding calendar year. The Forester and the Commissioner of Internal Revenue shall by joint regulations prescribe the form of such return and the form and manner of such payment.

ACCOUNTS AND RECORDS.

(b) That the Secretary is hereby authorized and required to make, and may from time to time amend, general regulations governing the classifying of taxable products under this Act and requiring the making and keeping of such records and accounts and the making of such statements and reports under oath, other than the returns required by subsection (a) of this section, and prescribing such forms for such accounts, records, statements, and reports as he shall deem necessary for his information in the administration of this Act. No such accounts, records, statements, or reports, and no part of the information given therein by any operator shall be disclosed to any other operator or to the public except as may be necessary in the course of and as a part of legal proceedings instituted for the enforcement of this Act, or as may be otherwise required in pursuance of law, and except in statistical form without identification of persons.

FIELD INSPECTION AND EXAMINATION OF ACCOUNTS.

(c) That the Secretary is hereby authorized to cause any officer or agent of the United States designated by him for that purpose to go upon and inspect any commercial forest land before, during, or after the harvesting of forest crops for all purposes connected with the administration of this Act, and the Forester and/or the Commissioner of Internal Revenue, for the purpose of ascertaining the correctness of any record, account, statement, report, or return required under this Act, or for the purpose of making the return where none has been made, are hereby authorized to cause any officer or agent of the United States designated by either of them for that purpose to examine any records, accounts, books, papers, or memoranda bearing upon any matter required to be included in any such record, account, statement, report, or return, and may require the attendance of the person making or keeping the record, account, statement, report, or return, or the attendance of any other person having knowledge in the premises and may take his testimony with reference to the matters required by law or by regulation under this Act, to be included in such record, account, statement, report, or return, with the power to administer oaths to such person or persons.

SEC. 8. That the provisions of sections 3164, 3165, 3167, 3172, 3173, and 3176 of the Revised Statutes, as amended by the Revenue Act approved February 24, 1919 (Statutes at Large, volume 40, pages 1146 to 1148, inclusive), so far as they are not inconsistent with this Act, shall apply to the administration of and proceedings under this Act: *Provided*, That no return in addition to the return required by subsection (a) of section 7 of this Act shall be required under the first sentence of said section 3173 preceding the first proviso thereof.

PENALTIES.

SEC. 9. That every person who—

(a) Knowingly classifies any taxable product untruly or in violation of regulations made under this Act, or knowingly causes or permits such untrue or violative classification to be made; or

(b) Knowingly in any manner falsifies or causes or permits to be falsified any record, account, statement, report, or return required to be made or kept under this Act or regulations made under this Act; or

(c) Willfully refuses to pay or truly account for and pay over any tax imposed by this Act when and as required by this Act or by regulations under this Act, or willfully attempts in any manner to evade such tax—

Shall be punished by a fine of not more than \$5,000 or by imprisonment for not more than one year or by both such fine and imprisonment in the discretion of the court.

CUMULATIVE PENALTY.

SEC. 10. That any person found guilty under subsection (c) of section 9 of this Act shall, notwithstanding other penalties provided by law, be liable to pay the amount of the tax evaded or not paid, to be assessed and collected in the same manner as taxes are assessed and collected.

APPROPRIATION.

SEC. 11. That appropriations are hereby authorized to be made annually out of any money in the Treasury not otherwise appropriated, to be expended under the directions of the Secretary for carrying out the purposes of sections 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 of this Act.

CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PAST PRESIDENT CANADIAN SOCIETY OF FOREST ENGINEERS

MUCH interest is being evinced in the forestry situation and methods in Sweden by the pulp and paper industry in Canada. At the suggestion of the Canadian Pulp and Paper Association, the Chief Forester of Quebec has gone to Sweden, the Chief Forester of Ontario will probably go, and the Association is sending its own representative, Mr. Edward Beck, to study forestry policies and methods of reforestation, management and logging. Many Swedish foresters and men interested in the pulp and paper industry have visited Canada during the past year and a close rapprochement is being established between the two countries. Of especial interest is the Swedish method of passing from a virgin to a managed forest, the method of determining the annual cut and also the policy pursued by the Government in its supervision of private lands.

The forestry situation has improved materially in Eastern Canada during the past year. The Governments have taken much more interest in the management of their forests and they are feeling their way toward the regulation of the amount to be cut and the substitution of the diameter limit of cutting by a rational and carefully prepared working plan. In cooperation with the Quebec Government, several of the large companies are preparing working plans for their licensed lands, which, if approved, will be carefully carried out and will put their holdings on a practical forestry basis.

The Laurentide Company, Ltd. has made such an arrangement with the Quebec Government and has foresters now inspecting and reporting on the territory to be cut next fall and winter. Their recommendations will be laid before the Government the end of May and permission asked to carry them out. This company has also brought, this spring, all its logging inspectors and scalers down to the mill to study the utilization of the wood they are making and to familiarize themselves with the various processes through which it must pass, so that they can intelligently cooperate with the mill men in the thorough utilization of as much of the tree as is possible and the elimination of waste.

It is understood that the Dayton-Wright Company, of Dayton are building for the Spanish River Pulp and Paper Company a special airplane or rather hydroplane for use in mapping forest lands. This machine will be of the float type, will be entirely enclosed and so arranged that the photographer and observer will be housed

in and have a perfectly clear view of the land over which they are flying and will be able to take notes, make sketches and take photographs with as much ease as if they were in an office. The machine will have a low landing speed so as to make it safe and will have a wide radius of action. This is the first machine which has been designed especially for forestry work and its use will be watched with the greatest interest.

The machines of the Laurentide Company are ready to take the air and a large summer's work is anticipated. Plans made call for the photographic mapping of 2000 square miles of territory and forest fires will also be spotted and reported. Log drives will be inspected from the air and progress photos made of them. Territory cut over the past season will be photographed in order to bring the forest maps up to date and to see how the work has been done. Photographs taken last season showed, in one case very clearly, logs that had not been taken out, skidding and hauling roads, timber which should have been cut but was not and the general condition of the country logged. Foresters, logging superintendents and others who have business in the woods will be carried to and from the districts where they are working and territory where boundary lines are to be run will be photographed so that provisions can be put on lakes to be crossed by the lines, so that the survey crew will not have to carry them all along the line. This will save much time, work and expense, as often provisions on boundary lines have to be taken over or around difficult ridges. At each mile openings about 15 feet in diameter will be cleared so that later photos will show the mile posts and give a check on the scale of the photos.

It was rumored at the opening of Parliament that the Commission of Conservation would be abolished and its duties divided among other departments. No further news has been given out about the proposed change and it is sincerely to be hoped that nothing more will be done. The excuse given was economy. It was said that all the work done by the Commission really came under and could be done by other Departments. This is true, but the fact remains that nothing was done by such Departments and they felt more or less that their work was criticized by the formation of the Commission. Government Departments so soon degenerate into mere administrative machines, losing their initiative and the sense of proportion



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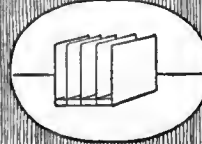
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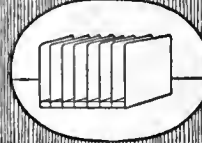
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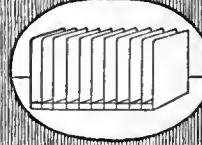
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in their work. They develop "red-tape-ities" and the chiefs spend a lot of time signing papers when they should be thinking about practical work. The Commission of Conservation broke into entirely new ground. It did a large amount of research work and developed, especially in its forestry work, the principal of cooperation. In this way it only paid half the cost of many projects, the other half being donated by private agencies. It showed much initiative and a wonderful spirit of cooperation and public service.

**THE VALUE OF OUR NATIONAL
PARKS**

(Continued from Page 359)

the country in which they are located; the hundreds of thousands of visitors leave their money along the way, and many, through this intimate contact, become so impressed with the appeal of the country that they become not only investors, but settlers in the community. They come from all sections of the country; every State yearly sends its delegation. From a hard-headed business standpoint we must acknowledge that tremendous advantages accrue locally and nationally through the position of such lodestones of travel as the scenic areas that comprise our National Park system. It is therefore our duty to carefully guard these areas as the exponents of the best that is to be found in our national scenery.

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OUR FORESTS

Retrospect and Prospect

To the indifference of this generation and preceding generations toward the exhaustibility of our great natural resources, and to the consequent thoughtless desire to convert them into dividends, is due the depleted forest wealth of our country today.

The United States can not only save to itself its present great asset of forests through the operation of the forces which would be set in motion by the enactment of the Snell Bill, introduced in the House of Representatives on the first day of the present session, but in time the intelligent and nation-wide pursuit of this policy will result in there being obtained the highest productive efficiency on all lands in the United States suitable for forest growth.

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TUSCALOOSA, ALA.

By Tuscaloosa Post, American Legion: Walter F. Shuttlesworth, Nealy Hlyche, James A. Tilley.

PASADENA, CALIF.

By City of Pasadena: John Burroughs, John Muir, T. P. Lukens, Charles F. Holder, Garrett Newkirk, Warren D. Parker.

SANTA CRUZ, CALIF.

By Santa Cruz High School: Paul Herriot, Donald Rose, Vance Bliss, Roy Evans, Reuben Wilkinson, Ward Church, Claire Parker, Norton Pratt, Kenneth Reid, Bernard Pillsbury, Miss Pearl Turner.

WHEATLAND, CALIF.

By Wheatland Civic Club: Lewis Melton McCurry, Wilton L. McDonald, Claude Boswell, McKinley Parker Brock.

PUEBLO, COLO.

By The Woman's Club: Edwin Brown, Aubrey Kief, Dr. Earl F. Smith, Glen K. Spencer, James A. Wimmer, Harry B. Cadwell, Victor Prevost, Eugene Smith, Dr. Ray R. Taylor.

CHICAGO, ILL.

By Chipilly Post, No. 310, American Legion: Warren H. Brust.

DES PLAINES, ILL.

By Des Plaines Women's Club: Dorothy Budlong.

OTTAWA, ILL.

By Tree Club of Ottawa Woman's Club: Capt. S. Raymond, Sgt. Benjamin F. Reeder, Corp. Marshall Purrucker, Corp. Emmet Moran, Corp. Karl Gregg, Corp. James T. Duffy, Corp. Fred W. Zeller, Arthur D. Nussem, Keith F. Pierce, Paul Zeizic, Fra Kasel, Robert Woods, George C. Adler, John J. Case, Adelbert G. Anderson, Guy D. Hoxie, Ettore Vignoche, Earl Duval, Bernard Woodward, Yeoman Peter Boyle, Thomas White, William Lanigan, Emile Boissenin, Harold F. Anderson, Milton Ward, Carl A. Breitling, Fred Gerding, George A. Holloway, Peter F. Mack.

HARVEY, IOWA.

By Harvey Public Schools: The Unknown Dead.

ARKANSAS CITY, KANS.

By Community Service Council, Walter J. Cline.

GRAND HAVEN, MICH.

By Mr. Fred Jonker: Sergt. Alvin F. Jonker.

NEGAUNEE, MICH.

By Negaunee Community Council: Fred Ostrom, Oswald Davey, Albert Johnson, Alton Jones, John Lahti, Vaino M. Saari, Joseph A. Baillargeon, John C. Johnson, John H. Mitchell, William Bath, James Bennetts.

SEMINARY, MISS.

By Seminary Lodge, No. 461, F. A. M.: Pierce McLauren Cranford.

PARSIPPANONG, N. J.

By Parsippanong Chapter, D. A. R.: Boys Who Enlisted in the World War.

CUBA, N. Y.

By Cuba High School: Harold Peters, Wilbur Kerney, Harlan Wheeler, Cornelius McLaughlin, Howard Mangin.

LIVERPOOL, N. Y.

By Liverpool Post No. 188, American Legion: Alexander R. Klunder, John A. Smith, Herbert W. Crawford, Joseph A. Selinsky, Eric Skjlbred, Harry G. Whitman.

NEW YORK CITY.

By Company "E", 307th Infantry, 77th Division: Wyatt L. Arbuckle, Joseph Airpin, William C. Bentz, Lee Brown, William Burger, O. D. Churchman, Maynard A. Cuddeback, Albert G. Daniels,

Herbert W. De Long, Charles Ennis, Harry Forman, Umberto Fortunato, Louis Gerstein, Wasell Goraza, Lee Grubbs, Ferrand R. Guthrie, Francis P. Harmon, William C. Hasler, Gunder Haug, Frank Heinzl, Louis Hyman, Charles F. Kirk, William J. Lane, Jacob Levy, John Lick, John Manning, Cone A. Mea, William Miller, Lindsay E. Murdock, John J. Mooney, William C. E. Nelson, Frederick W. Newsome, John T. O'Neill, Gustav Pecha, Carmello Pisano, James P. J. Quigg, Benjamin W. Roth, John A. Segnit, Jr., Clarence D. Shomers, Jack Slotopolsky, George Anthony Smith, Charles Stauderman, Charles Steigelman, Albert C. Steiner, Andrew Stuessy, Robert Smith, John J. Urgo, Joseph Vandenberg, Edgar Walker, John S. Weir, John C. O'Brien, Phillip J. Scudder. By Company K. 307th Infantry, 77th Div.: Lt. Herbert L. Miller, Sgt. Jacob Hochman, Corp. William H. Brown, Corp. Albert J. Gotti, Corp. Edward J. Malone, Corp. Walter E. Peiffer, Corp. David R. Peck, Corp. Louis Rust, Corp. Isaac Tisnowar, Corp. Gustave Wagner, Tobias Ammon, Carl A. Anderson, Gustave Anderson, John Bang, Bert L. Blowers, Patrick J. Cafferty, Roscoe G. Church, Arthur E. Coffin, Harvey R. Cole, William P. Crouse, James Folliart, Frank H. Garret, Charles Johnson, John Kanthak, David Klein, Michael Lekan, John Linardo, Frank I. Lipasti, James Mahoney, John Manfredi, John Meehan, John Joseph Palkey, Emil Jerry, Benjamin Riberts, Nabbruck, John Neitzibile, Joseph Palermo, Wilbert T. Rumsey, Gustave Schmidt, Lawrence Semolla, Frank Stingle, William H. Stoll, George Swackhammer, Wladslaw Szablinski, Walton W. Woodland, Sgt. James J. Murphy, John J. Shea.

ROCKY MOUNT, N. C.

By Bethel Heroes Chapter U. D. C.: William A. Jordan, James B. Vester, Parrott F. Daniel, Homer S. Proctor, Harry W. Swanson, William L. Braswell, Claudy G. Champion, James C. Moses, Roscoe D. Matthews, Fred Ship, Capt. Gray Sills, Lt. John Manning Battle, W. R. Coleman, W. C. Culpepper, Edward Pitt, John N. Wilder.

WILMINGTON, N. C.

By a Friend: Joyce Kilmer, Wilmington Boys.

CANTON, OHIO.

By Lincoln Highway Memorial Association of Stark County: Floyd A. Hughes, Corp. Emmet H. Weller, Corp. Ewing Jones. By Mr. and Mrs. Thomas Vogelgesang: Karl W. Vogelgesang. By Friendship Club, Canton High School: Sgt. W. Quayle Holwick. By Invincible Review, Women's Benevolent Association of Maccabees: August S. Schaedler. By Mr. and Mrs. E. E. Miller: Sgt. Roscoe C. Miller. By Mrs. Jennie S. Reed: Karl Wilbur Reed. By Evangelical Sunday School: Corp. Charles A. Kell. By Madison-McKinley Chapter, United States Daughters 1812: Capt. Urban S. Wetzel, Roscoe W. Hyatt. By Spanish War Veterans, Aux. No. 5: Spanish War Veterans. By John and Emma Alexander: David Alexander. By John and Myrtle Eck: Raymond H. Eck. By Andrew Papaleo: Corp. Frank L. Papaleo. By Mrs. Bertha Cecil: Harry O. Cecil. By Rocco Clemente: Joseph Clemente. By Benjamin and Cora Batsch: Frank S. Batsch. By Mr. and Mrs. A. J. Henderson: Ray E. Henderson. By Arthur M. Miller: Corp. Howard D. Miller. By Mrs. Emma Miller: Otto Miller. By Charles Mike: Sam Mike. By J. M. Kauffman: Sgt. Mervyn E. Kauffman. By Edward D. Roherer: Jacob E. Roherer. By Mrs. Bertha Wasson: Leo St. Miller. By Mrs. Anna Larson: David Larson. By Henry and Ida

Shock: James Alvin Shock. By Irvin Grey: Corp. Harry Pratt Grey. By Otto C. Weimer: Lt. John H. Weimer. By John Little: Frank Little. By Mrs. J. A. Hammer: James A. Hammer. By Mrs. Anna Hinchman: Raymond H. Rubin. By Mrs. Ellen Smith: William R. Smith. By Wm. E. and Emaline Lehnis: Karl Lehnis.

CRAFTON, PA.

By Crafton Chapter, Service Star Legion: Crafton Heroes.

PHILADELPHIA, PA.

By the Civic Club on the Parkway: Newton L. Bosler, Donald A. Ashmore, William Ashton, Edgar W. Baird, Matthew Baird, Jr., John K. Yates, Jay Cook, 2d, W. H. S. Schultz, Edward M. Biddle, Julien Cornell Biddle, William Martin, Thomas Ryder, Ned Knott, James Mellor, Henry Edward Paul Pritchard, Richard Stockton Bullitt, Knox Boude Birney, Thomas Graham Hirst, Anson F. Carnill, Samuel Emlen Carpenter, Jr., Rubin Dobbins, James Patchel, Maxwell McKeen, Robert Howard Gamble, Joseph F. Murphy, Burton E. Chandler, Alfred Reginald Allen, Wm. Nelson Corner, Richard Foulke Day, Edward L. Davis, Franklin Archibald Dick, Col. Theodore Roosevelt, Mortimer Park Crane, Charles Thomas Evans, Jr., George B. Evans, Jr., Lawrence W. Fox, Paul Sykes, Thomas G. Fox, Arthur Holler, Wm. Goddell Freeman, Arthur H. Dutton, Franklin B. Pepper, Clarence Patton Freeman, J. Paul Lloyd, Dr. Howard Kennedy Hill, William F. Har- rity, Jr., Quentin Roosevelt, Vinton Adams Dearing, Elisha Boudinot Keith, Wm. C. Junkin, Albert Louis Miller, Hobart A. H. Baker, Paul Borda Kurtz, Lewis G. Smith, William Henderson Long, Taylor Everty Walthour, Edwin Thorp Van Dusen, J. Baird Atwood, Leon C. McArdle, J. Franklin McFadden, Edward F. Bennis, Jr., Louise Hortense Snowden, David E. Williams, Joseph Smiler, Smedley Darlington Butler, Charles W. Pickering, Jr., Wilson Potter, Wistar Morris, H. Harland Skerrett, Jr., Edward L. Clark, H. Harrison Smith, Minot Jones, Jaques Fiechter, William B. Dixon, Harry T. Rogers, Jr., George C. Rogers, Charles H. Zimmerman, Jr., Norton Downs, Harry Ingersoll, W. H. Warden, Jr., Henry S. Shuster, Preston M. Wright, John Strauss, Edmond Charles Clinton Genet, John W. Carr, Elisha Kent Kane, William Geizer, J. Walter Lees, John Lou- denslager, Benjamin Bullock, Charles William Bergner, Henry Rawle Pemberton, Harry Cook, Richard McCall Elliott, Jr., Gordon Nilsson, Lovel Hardwick Barlow, William Simpson, Joseph Gray Duncan, George Armistead, Alfred Alexander Biddle, H. R. Houston Woodward, Anthony J. Dallett, William Howell McCreary, George Woodward, Jr., Samuel Hazelhurst, Leslie Shaw Betts, Charles M. Betts, Edward Clemmens Cassard, Edward E. Denniston, Henry Slocum Wagner, Paul Wheatley Sutro, Charles Wartham Newkirk, Wilbur C. Sinter, Elmer Franklin Rice, Phinias Prouty Chrystie, Herbert W. Warden, Jr., Rodney Kenneth Bonsall, John McT. Somers, Arthur M. Stephenson, Dr. William F. Guilfoyle, Horace Lyman, William Woodward Arnett, John Hancock Arnett, Antonio di Fabbio, James J. Boyle, Andrew Wheeler, Jr., John C. Wister, Robert Gilpin Ervin, Charles Edward Gilpin Ervin, Howard Houston Henry, George Ritter, Elizabeth Campbell

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PITTSBURGH, PA.

By League of Women Voters, 19th Ward: Carl Schreiber. By Service Star Legion: Beechview Heroes. By East Liberty Service Star Legion: William R. Carlisle, William L. Neilson, Paul E. Baker, Herbert F. Coy, Kenneth A. Moorhead, George E. Appleton, Henry A. Wipfler, Lester L. Rohe, Lloyd L. Denlinger, James J. Costello, James H. Young, For Our Heroes. By Mrs. Bella Hay: Sgt. Harry S. Hay. By M. O. D.: John Morrow Unit. By Service Star Legion: 5th Ward Heroes.

SCRANTON, PA.

By Henry Schultz and Family: Henry Schultz. By Peter Scholl: John Scholl. By Mr. and Mrs. M. Schlessor and Family: Charles W. Schlessor. By Aunt and Foster Mother: David L. Davenport. By Father and Mother: Fred J. Birch, Jr. By His Mother: Corp. Leonard J. Preston. By Father, Brother and Sisters: Carl Fickus. By His Parents: George Edward Heher. By Mother, Brother and Sisters: Ruppert Rees. By Mrs. E. T. Fielding: Lt. Donald M. Fielding. By His Father and Mother: Corp. Stanley J. Detrick. By Father and Mother: John F. Kenchan.

WYALUSING, PA.

By County Civic League: Our Bradford County Heroes.

GALVESTON, TEXAS.

By Ida Austin Bible Class: Lt. Guyton Smith.

VANDERWERTEN, VA.

By Neighborhood House, Congregational Church: Capt. W. W. Burns, A. H. Dadman, Steven Hughes, Lewis C. Freeny, Col. Charles Lynch.

SEATTLE, WASH.

By University of Washington: Frank Peterson, Ralph Beebe Rees, Allen Cooper Osterlander, Luken P. Young, Clerrill H. Beller-ton, F. E. Bueler, Daniel Hart, Francis D. Johnson. By Seahurst Minute Women: Thomas Hughes.

WHEELING, W. VA.

By Women's Club: Our Heroes of the Late War, William Rhodes, Edward Bowman, Vincent Davis, Harry Davis, Elwood Bauer.

FOND DU LAC, WIS.

By Woman's Club, Soldiers of the World War. By Edwin A. Brown Post, Woman's Relief Corps No. 35: Nurses of the World War.

LAKE GENEVA, WIS.

By Lake Geneva Women's Club: Corp. Frank Kreisen, Wm. Faver, Elmer Katzman, Harry Kelley, Robert Ledger, Henning Pearson, Warren Semnicht, Robert Smith, George Trapp.

MILTON, WIS.

By Randolph Unit, Service Star Legion: Fallen Heroes.

REDWOOD GROVE SAVED

ONE of Humboldt County's choicest groves of *Sequoia sempervirens*, or redwood has been saved for the enjoyment of posterity through the purchase of this grove by the county. The area preserved is known as the Dunn and Dimmick holding, and is situated on the South Fork of the Eel River, adjoining the scenic State highway through Humboldt County. The purchase of this redwood tract is part of Humboldt County's program of co-operation with the Save the Redwoods League, which is endeavoring to secure the preservation of representative redwood

groves in the basin of the South Fork of the Eel River. The League, of which Franklin K. Lane is president, has, with the co-operation of Humboldt County, acquired several important pieces of redwood timber.

Many travelers and scientists have declared that the road through the Humboldt redwoods is one of the great scenic highways of the world. They are enthusiastic advocates of the preservation of these trees.

BARRELS MADE OF PAPER

FARMERS and manufacturers have felt the ever-increasing cost of barrels, and it has been pointed out on more than one occasion that barrels are playing no small role in the general high-cost-of-living scheme, says the *Scientific American*.

For some time inventors have been at work on the barrel problem with a view to producing cheaper containers. Several of them have tackled the paper barrel problem and it appears as though their work has finally materialized into something of



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ELEVEN-GALLON BARREL MADE OF PAPER AND COSTING ONE-THIRD AS MUCH AS A WOODEN ONE

practical value. These paper barrels are generally made in the form of many layers of stiff paper, held together by some suitable adhesive which may also be watertight and weatherproof.

The barrel shown in the accompanying illustration is made by a winding process employing chip board, and is said to cost on-third less than a wooden barrel of equivalent size. The inventor also claims greater strength for this paper barrel.

Paper cans and other containers can be made of wound paper, and no doubt much will be done along this line in the near future.

*There is a vale in Flemish land,
A vale once fair to see,
Where under the sweep of the sky's wide
arch,
Tho' winter freeze or summer march,
The stately poplars march and march,
Remembering Lombardy.*

—CLINTON SCOLLARD.

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BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

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FOREST REGULATION—Fillibert Roth.....	2.00
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* This, of course, is not a complete list, but we shall be glad to add to it any books on forestry or related subjects upon request.—EDITOR.

EFFECT OF SLOPE ON FOREST FIRES

ON south slopes of mountains and hills the per cent of destructive fires is twice as great as on north slopes and three and a half times as great as on level land, states S. B. Shaw, Forest Examiner, after an exhaustive study of the subject in California, as quoted by *The Forest Patrolman*, Portland, Oregon. He also has found that in the early and late parts of the fire season a very high per cent of all fires occurs on the south slopes while during the peak of the fire season north and south slopes are about equally represented; that during a period of years 65 per cent more fires have occurred on south slopes than on north slopes and, on the average, fires occur on north slopes only 80 per cent as often as on south. The east and west slopes in the state occupy an intermediate position between north and south slopes. It is claimed that at least as a partial cause, the higher percentage of fires on south slopes is due to the greater proportion of brush fields because fires in brush spread more rapidly than in timber, and there is more moisture on north slopes than on south ones.

WOMAN'S EFFORTS BRING SHADE TO TREELESS TOWN

THIS year Freedom, Wyoming, is enjoying the novelty of shade trees along its streets and on its lawns because one of its woman residents had vision enough to see trees there and determination enough to get them planted. This public-spirited individual set as her goal 250 trees in Freedom in six months, but so popular did the movement become that early summer found 1,460 trees planted.

Freedom is located in the treeless portion of Wyoming. No native trees grow there, and up to this year none had been imported. The shadeless streets and lawns were unquestionably in need of trees, both for comfort and beauty, but as nothing was done about it they remained treeless. Last year the woman who decided that Freedom had gone treeless long enough wrote the State home demonstration leader—the local women were not organized into a club—and asked if she could help her start a movement to plant trees in her town. The State leader suggested that she write the forestry division at the State Agricultural College and ask what kind of tree would do best in that part of the State. She was advised that blue spruce did very well there and that the division would be glad to furnish them to the town for 4 or 5 cents apiece.

The price was so nominal and the desire for trees so strong among Freedom residents that once an opportunity was given to acquire them with little effort everyone wanted trees, and the result was 1,460 planted in the town in six months.

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The illustrations are from photographs taken by Mr. Dugmore and form the most complete, beautiful and helpful series ever made of important details as well as complete trees. More than 600 text pages, with 17 color plates and 350 half-tone illustrations. Net \$6.00

BURROUGHS MEMORIAL FOREST

ON the shoulder of Rose Mountain north of Big Indian the 25 boys of the Raymond Riordon School Conservation Unit entrusted with the mission by the Conservation Commission of the State of New York have finished planting the first section of the Burroughs State Memorial Forest, says the *Kingston (N. Y.) Daily Freeman*.

The first 3,000 trees were planted while snow was in the air and two mornings the boys turned out of their tents in one of the ravines on the mountainside to find the ground white. Although they ranged from 11 to 19 years of age and were sheltered only by canvas during the entire week there was not a single case of sickness in the camp.

Two hours of study each morning, six hours on the planting line a mile above their camp on the mountain, the cooking of their own food and the keeping of their camp in proper shape during the entire week, make up a story of typical American boy accomplishment, under heavy weather handicap.

A total of 14,000 trees were planted by the boys—10,000 spruce yearlings and 4,000 Scotch pine four year olds. It is announced that the mountain is to be rechristened Burroughs Mountain in honor of the famous naturalist in whose memory the forest is to be established and maintained by school boys of the state.

FLORIDA FRUIT GROWERS WANT REFORESTATION

THE eaters of Florida oranges and grapefruit may not think of reforestation as in any way affecting their breakfast tables, but the Florida citrus fruit growers have a different point of view, according to forestry officials of the United States, who have found the leaders of the industry anxious about future supplies of box material.

The Florida grapefruit and orange crop now requires on the average more than 12,000,000 boxes yearly to get it to market. It has a money value of something like \$30,000,000, and the industry is still expanding rapidly. By 1930, if production continues to increase in similar ratio to that in recent years, the output will require 40,000,000 boxes annually. Each box requires about five and one-half board feet of lumber.

Local southern pine forests are the source of the raw material for these boxes, but the supply is drawn upon also for wooden containers for the products of Florida truck farms.

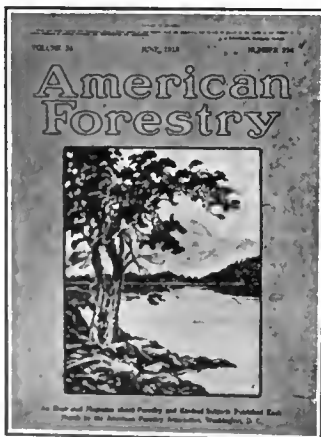
Forest depletion under methods which do not provide for regrowth has reached a point which makes the question where containers are to come from a matter of very practical concern to the citrus industry in Florida.

The Government has a National Forest in Florida of over 300,000 acres, on which the practicability of forest management for

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a sustained yield has been fully demonstrated, according to the Forest Service, but the lumber needs of the State will require a very much larger acreage than this.

SUMMER HOMES ON THE NATIONAL FORESTS

THAT the use of the National Forests for recreational purposes is increasing rapidly and bids fair to rank third among the major services performed by the National Forests, with only timber production and stream-flow regulation taking precedence over it, is the statement made by Colonel W. B. Greeley, head of the Forest Service, in his annual report. Many summer homes are being erected on the National Forests by private individuals, and the use of forests for other forms of out-of-door recreation was greater during the past year than ever before.

The summer home business promises to become an important source of revenue, Colonel Greeley points out. On the Angeles Forest in southern California, for example, a total of 1,329 permits for summer residences and commercial resorts were, he says, in effect at the close of the past fiscal year. The revenue from this one item amounted to approximately \$22,000. It is believed that within a few years' the revenues obtained from the various recreational settlements within the Angeles Forest will pay the entire cost of protection and administration.

A MECHANICAL MONSTER

A gigantic machine, with jaws which open to take in timber or assembled wood structures 30 feet in height and which can crush them like egg shells when the jaws close together again, has recently been erected at the Forest Products Laboratory at Madison, Wisconsin, says the United States Forest Service.

This machine is to be used for testing very large wooden columns. It is possible to exert a force of a million pounds with it, and it is built to crush a wooden post a foot square. Its great range of testing speeds enables it to apply its tremendous load with the fatiguing slowness of a building settling on its foundation timbers or with the speed of a train dashing onto a wooden trestle.

PENNSYLVANIA TO REFOREST

THE Pennsylvania Department of Forestry expects to grow about 15,000,000 trees for reforesting 10,000 acres of waste land in this State from the seed it is planting in its forest tree nurseries this spring. The Department has collected 700 pounds of white pine, hemlock, and black locust seed, and 260 bushels of black walnuts, acorns, and ash and maple seeds. Six hundred and sixty pounds of pine, spruce, and larch seed have been purchased by the Department.

You Sing America, Why Not SEE IT?



DENVER THE GATEWAY

TO 12 NATIONAL PARKS
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Artists, writers and lecturers cannot do justice to the historic and scenic wonders in America's National Parks, Monuments and Forests. Massive groups of towering, sun-kissed, snow-capped mountain peaks and forests—America's water-sheds on the backbone of the continent—God-made parks with man-made auto roads and trails, beautiful pine-clad canyons, gorges, glaciers, glorious sunsets, wild flowers, giant trees, trout streams, hidden lakes, geysers, pre-historic animals, ruins of Cliff Dwellers and Aztecs. A description would bankrupt the English language. The human eye only can reproduce them; they must be seen to be appreciated. As National Parks, Monuments and Forests the United States is preserving their natural glory and usefulness as a heritage for all generations to see and use for rest, recreation, vacation and pleasure. Rocky Mountain National Park, the nearest and most popular National Park, Mesa Verde National Park, the Cliff Dweller ruins of Ancient America, and fifteen National Forests are in Colorado.

DENVER HAS A NEW \$250,000

FREE AUTO CAMP FOR MOTORISTS

Plan to enjoy your vacation in the National Parks and Forests. See Rocky Mountain National Park, Denver's Mountain Parks, Mesa Verde National Park, Arapahoe Glacier and take the Fall River Circle Trip; two days, 236 miles, crossing Continental Divide twice; the Peak-to-Peak Trip, Long's Peak to Pike's Peak; 250 miles on the rim of the Colorado Rockies and climb, hike, fish and camp in the National Parks and Forests.

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The Denver Tourist Bureau

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(Continued From Page 404)

COOPERATIVE FIRE PROTECTION.

Sec. 12. That the Secretary is hereby authorized and directed to recommend for each forest region of the United States the essential requirements in protecting timber and cut-over lands from fire, and is further authorized, on such conditions as he may determine to be fair and reasonable in each State, to cooperate with the various States duly adopting his recommendations and through them with private and other agencies, in bringing into effect such essential requirements favorable for forest protection. In no case, other than for preliminary investigations, shall the amount expended by the Federal Government in any State during any fiscal year under this section exceed the amount expended by the State for the same purpose during the same fiscal year, including the expenditures of forest owners required by State law and approved by the proper State officials; and the Secretary is directed to withhold cooperation from States which do not comply in legislation and in administrative practice with such recommendations as shall be made in accordance with this section.

APPROPRIATION.

Sec. 13. That appropriations are hereby authorized to be made annually, out of any money in the Treasury not otherwise appropriated, to be available until expended under the direction of the Secretary for carrying out the purposes of Section 12 of this Act.

VOID PARTS.

Sec. 14. That it is the intent and purpose of this Act that should any part thereof fail because of ambiguity or other reason, such failure shall not be construed as adversely affecting the remaining parts.

SHORT TITLE.

Sec. 15. That this Act may be cited as the "Taxation of Forest Products Act, 1921."

The Snell Bill was introduced in the Senate on Friday, May 20, by Senator Medill McCormick.

Note—(The only changes in the McCormick Bill from the Snell Bill are the authorization for appropriations of \$1,000,000 instead of \$3,000,000 in Section 3 and of \$10,000,000 instead of \$50,000,000 in Section 6; together with an additional clause in Section 5 authorizing the Forest Service to cooperate with States, Counties, etc., in the planting of Memorial Highways and Forests.)

FORESTERS ATTENTION

AMERICAN FORESTRY will gladly print free of charge in this column advertisements of foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

POSITIONS WANTED

GRADUATE FORESTER, 31 years old, married, ex-service man, wants position as Forester. Private estate or operating pulp company preferred. Have had 10 years experience in forestry work and practical lumbering. Address Box 2040, care AMERICAN FORESTRY, Washington, D. C. (3-5-21)

WANTED—Position with lumber company. Graduate of 4-year college forestry course. Experience in wood technology, and the grading and selling of hardwood and yellow pine lumber. Address Box 2050, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C.

MARRIED MAN 30 years old, energetic, industrious and systematic, with two years training in forestry, wishes permanent position with a paper and pulp company. To begin with is willing to do most anything. Address Box 2055, care AMERICAN FORESTRY, Washington, D. C. (3-6-21)

TECHNICAL FORESTER with considerable experience in various phases of practical forestry and sawmill work, desires position with manufacturing concern in the East or Middle-West. Dry-kiln work, offering opportunity for development preferred. Address Box 2060, care AMERICAN FORESTRY, Washington, D. C.

YOUNG MAN, 36, single, technical trained and practical experience in forestry, tree surgery, landscaping and orchard care, wants to get in business for himself as city forester in an excellent location anywhere in the United States. Will also consider position as forester on large estate. Employed at present and best of references. Address Box 2065, care AMERICAN FORESTRY Magazine, Washington, D. C.

POSITION WANTED by young graduate forester. Six years practical field work in forestry and lumbering. Am now employed but desire change. Box 2075, care AMERICAN FORESTRY, Washington, D. C. (4-7-21)

FORESTRY GRADUATE, age 30, several years experience in forest work, including city forester, landscape development, portable logging, reforestation, knowledge and experience in farming and farm machinery. At present employed along technical and administrative lines. Will be open near future for responsible position, preferably in development and management of private forest or estate. Box 2070, care AMERICAN FORESTRY Magazine, Washington, D. C. (4-7-21)

YOUNG MAN with master's degree in forestry and who also has had experience in city forestry, tree surgery, and esthetic forest planting desires a position in any phase of forestry—logging, lumbering, forest management, or city and esthetic forestry—where marked ability will bring advancement. Would also consider a position as part time instructor in botany, the remaining time as city forester. Have taught botany while a graduate student in one of the foremost universities in America. An ex-officer of the World War. Address Box 2080, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITION WANTED by graduate forester, veteran 10th Engineers, at present lumber inspector Pennsylvania System, experience in French forests, Southern Pine and Northern Hardwoods. Desire position as forester for private estate or other work. North preferred. Address Box 2085, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITION WANTED BY FORESTER. A healthy United States citizen, 36 years old, actively engaged in logging in equatorial America, where he has done considerable practical and scientific pioneer work, now wants to return to work under more civilized and progressive conditions. Has 12 years' bush and mill experience. He works best where difficulties and problems are greatest. He is a practical enthusiast for constructive and reconstructive forestry, and desires to make connection with a body recognizing said qualities. Address Box 2090, care of American Forestry Magazine, Washington, D. C. (6-8-21).

EX-SERVICE MAN wishes employment with some Forest Construction Concern or Irrigation Company which can use a young man who is a Technical High School Graduate, and who is a Mechanical Draftsman with some slight knowledge of plane surveying. Willing to work and can do same. Address Box 2095, AMERICAN FORESTRY MAGAZINE, Washington, D. C. (6-8-21)

POSITIONS OPEN

Nursery in Central West

Is looking for a capable, experienced young man, especially fitted for the growing of forest tree and evergreen seedlings for commercial purposes. Must be a man of initiative and one who can plan his work. Give references, facts and experience and state salary desired.

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ENGLAND ASKS SYRACUSE FOR FOREST SPECIALISTS

ENGLAND has just paid a handsome compliment to the New York State College of Forestry at Syracuse and Dr. Harry P. Brown, Professor of Wood Technology, in that institution, by offering him the position of wood technologist in the Imperial Forest Research Institute, Dehra Dun, United Provinces, India. The offer to Dr. Brown came directly from the India Office, Whitehall, London, and was signed by Kershaw, Under Secretary of State of India.

Upon learning that Dr. Brown had been offered this position, Dr. Herbert Stone, Special Lecturer at the University of Cambridge, School of Forestry, and author of several books on forestry, wrote as follows:

"I am very glad to hear that you have an offer of a post in the Indian Forest Service at Dehra Dun. There is no service in the world where a man is so liberally treated. It is the Mecca of the pick of the younger men. The qualifications insisted upon for probationership are so severe that only the cleverest men can hope to

stand a chance. I know no one on this side that I should care to recommend. I congratulate the service in obtaining the best man."

During the seven years he has been connected with the College of Forestry Dr. Brown has built up a strong department and has contributed many articles to scientific and technical journals on the structure of wood. He has recently completed a book entitled "Forest Trees of New York" which will shortly appear as a bulletin to be issued by the College.

After mature deliberation Dr. Brown has decided to decline the offer and remain with the College of Forestry.

FORESTRY OPPORTUNITIES IN SOUTH AMERICA

THE prospect of large lumber operations in South America carried on by interests from the United States is opening a field of promising possibilities to the American forester. This situation has caused the faculty of the New York State College of Forestry to consider the advisability of increasing the language requirements of the Spanish course.

The value of Spanish to the American forester is a reflection of the growing scarcity of forests in the United States and Canada and the availability of the South American supply. The consequential high prices of wood products make lumbering in distant countries profitable. South America presents a new sphere of discovery in wood utilization as there are many species of trees about which little is known regarding their applicability to commercial purposes.

MAPPING LIGHTNING ZONES

THE time-worn theory that "lightning never strikes twice in the same place," has been modified by forest experts of the United States Department of Agriculture to this extent: Lightning very often strikes in nearly the same places. It has its zones, in other words, where its appearance may usually be counted on with each electrical storm.

With the accumulation of data on causes and locations of fires in the national forests, these lightning zones could be mapped out and protective measures introduced—such as fire lines, regulated grazing and cleaning out of dead trees—which would more or less automatically control lightning fires at the start, the foresters believe.

Next to campers and sparks from locomotives, lightning ranks third as the source of fires in the national forests. The records of the Forest Service of the department show that for the years 1914—1918, inclusive, lightning caused on the average 30 per cent of all fires reported. However, during 1920, a very unusual season, over 50 per cent of the 6,078 fires that occurred in the national forests were set by lightning.

YELLOW BIRCH IN NEW YORK

HOW the New York future forest can be aided by development of the yellow birch is the subject of the latest technical publications of the New York State College of Forestry at Syracuse, in which Professor Edward F. McCarthy, of the Department of Forest Utilization, and Professor H. C. Belyea, of the Department of Forest Engineering have compiled the results of an extensive study of conditions in New York, under the title "Yellow Birch and its Relation to the Adirondack Forest."

The bulletin contains the results of a study which took the two foresters into the northern forests with a party of assistants for many months, and also involves the utilization of birch for the paper industry.

The study will be of immense interest to the forest profession, because it is probably the most exhaustive study of yellow birch growth and forest conditions ever made.

IT PAYS TO PROTECT THE BIRDS

THE passage of the migratory-bird treaty act, it is estimated, has resulted in a total return, in actual food value to the hunters of the United States, of more than \$20,000,000. State officials have notified the Biological Survey of the United States Department of Agriculture that in Minnesota alone hunters report 2,058,400 ducks killed in 1919. As each of these birds may be considered to have a food value of at least 75 cents, the total return from them in food to this one State was about \$1,500,000. If it had been possible to sell these birds they would have brought twice that amount. The great value of game to the country is thus made evident.

That the passage and enforcement of the law preventing spring shooting and marketing of migratory game birds is now producing excellent results is pointed out by officials of the Biological Survey. Without such restrictions they say the game birds not only would be greatly reduced in numbers but in many instances would be brought near extinction. The Biological Survey, which is charged with the enforcement of the Federal law and regulations protecting migratory birds, is receiving reports from all sections of the country showing that with the protection now enjoyed by the birds their numbers are increasing each year, and that they are returning in spring to numerous breeding grounds which they have deserted for several years.

In addition to the food value of the game thus assured by continued protection, the restrictions on shooting made by the law tend to perpetuate hunting as a sport. This has a recreational value through outdoor pursuit in building up the physical health and strength of the more than 7,000,000 hunters in the United States who go out with the guns every fall.

**PLEASANT THINGS
TAKEN FROM LETTERS
TO THE EDITOR**

"Supervisor Charles DeMoisy has a crackerjack of an illustrated article in the Forest Recreation Department of AMERICAN FORESTRY for March," says the *Daily News Bulletin* of the Intermountain District of the Forest Service, and AMERICAN FORESTRY appreciates the comment.

"I was personally very well pleased with the manner in which the Beartooth article was published in AMERICAN FORESTRY, and our office has received many requests for additional information pertaining to the recreational opportunities afforded by the Beartooth."

R. T. FERGUSON.

"I have seen a copy of AMERICAN FORESTRY for March containing Dr. Shufeldt's very excellent article on Woodchucks and Porcupines and even though I am not well acquainted with the habits of either of these animals, the peculiarities which are described proved of great interest to me."

DR. PHILIP SKRAINKA.

"The Forest Guides Movement will be a success. You have done much to help it along."

SOLAN L. PARKES.

"Permit me to say that your idea of planting a tree from each State in the Union in front of your building in Washington is original and highly commendable. I congratulate your Association on the beautiful thought which you are planning to make effective."

MARTIN V. CALVIN.

"I am enjoying the magazine very much. The last number, with its article on the woodchuck and porcupine, by Dr. Shufeldt, was of particular interest to me."

DR. L. D. POWERS.

"I am delighted to renew my subscription. Keep up the good work."

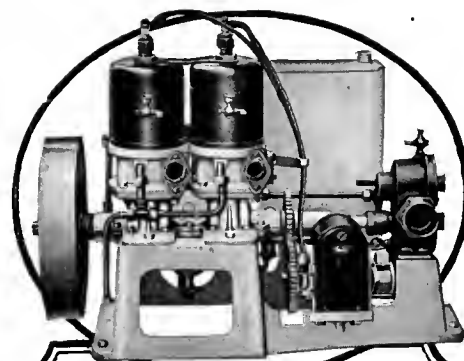
CHAPIN JONES.

"It is a great work that your Association is doing and I am proud to help my little bit toward this service, and wish to assure you that no magazine comes into my home with a warmer welcome than the AMERICAN FORESTRY Magazine."

S. W. CROWELL.

"Your efforts to have the popular choice for the National Tree are very interesting and instructive."

GRACE RAYMOND OTIS.



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**Forest Fire Pumping
Outfit**

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LOGGING IN SWAMPS

A NEW five-ton Franklin-Bullock tractor, equipped with a powerful all-steel winch, making it adaptable for all logging purposes, has just been produced by the Franklin Tractor Company. The tractor, which is of the crawler type and capable of working on any sort of ground, can be used for skidding and loading and can also provide power for hauling. These outfits have been used successfully in many different sections of the country where the variety of work has made it possible for them to prove equally effective in mountains, swamps, and sand. The economy of operation, through the use of this method of logging, makes possible a great saving. As a ground skidder, the tractor can easily handle logs scaling as high as 2,000 feet board measure. It has a working radius of 700 feet from the mast tree. Logs



THE NEW TRACTOR CAN BE USED FOR SKIDDING AND LOADING, AND IS CAPABLE OF WORKING ON ANY TYPE OF GROUND

can be assembled, cut into desired lengths, and piled on the landing ready for loading without the use of a single team. Not only are the expenses of drivers' wages and team maintenance eliminated, but an increased output is secured as well. Another outstanding feature of the Franklin tractor is its mobility. Practically no time is lost in moving from one setting to another. This makes it possible to assemble logs at relatively small costs at places easily accessible to trucks, wagons, or teams. As a loader the new tractor can be used with an ordinary jammer or a mast and boom. When the tractor is used for skidding or loading, none of the tractive parts are in operation. Logging men who have been accustomed to have their tractors run to each individual log as it lies in the woods can easily realize what this saving of wear means. By having the tractor remain in the stationary position and using a line for hauling in the log, depreciation, which is always a big item in the cost of operation, is virtually eliminated. The accompanying photograph

shows a Franklin-Bullock at work in a Southern swamp. Here 800 feet of line was used and with the tractor a proper distance from the mast tree a 700 foot haul was possible. While at this setting, the tractor hauled in a log 76 feet long and three feet in diameter at the large end. During the same day, several trees more than 90 feet long were brought in without difficulty. An interesting feature of this operation was that the owners of the timber were reclaiming trees formerly abandoned because of their inaccessibility. Several concerns who have heretofore been unable to bring out valuable trees because of swamps are planning to use outfits similar to this one to cut down the waste of their timber.

MORE PECANS

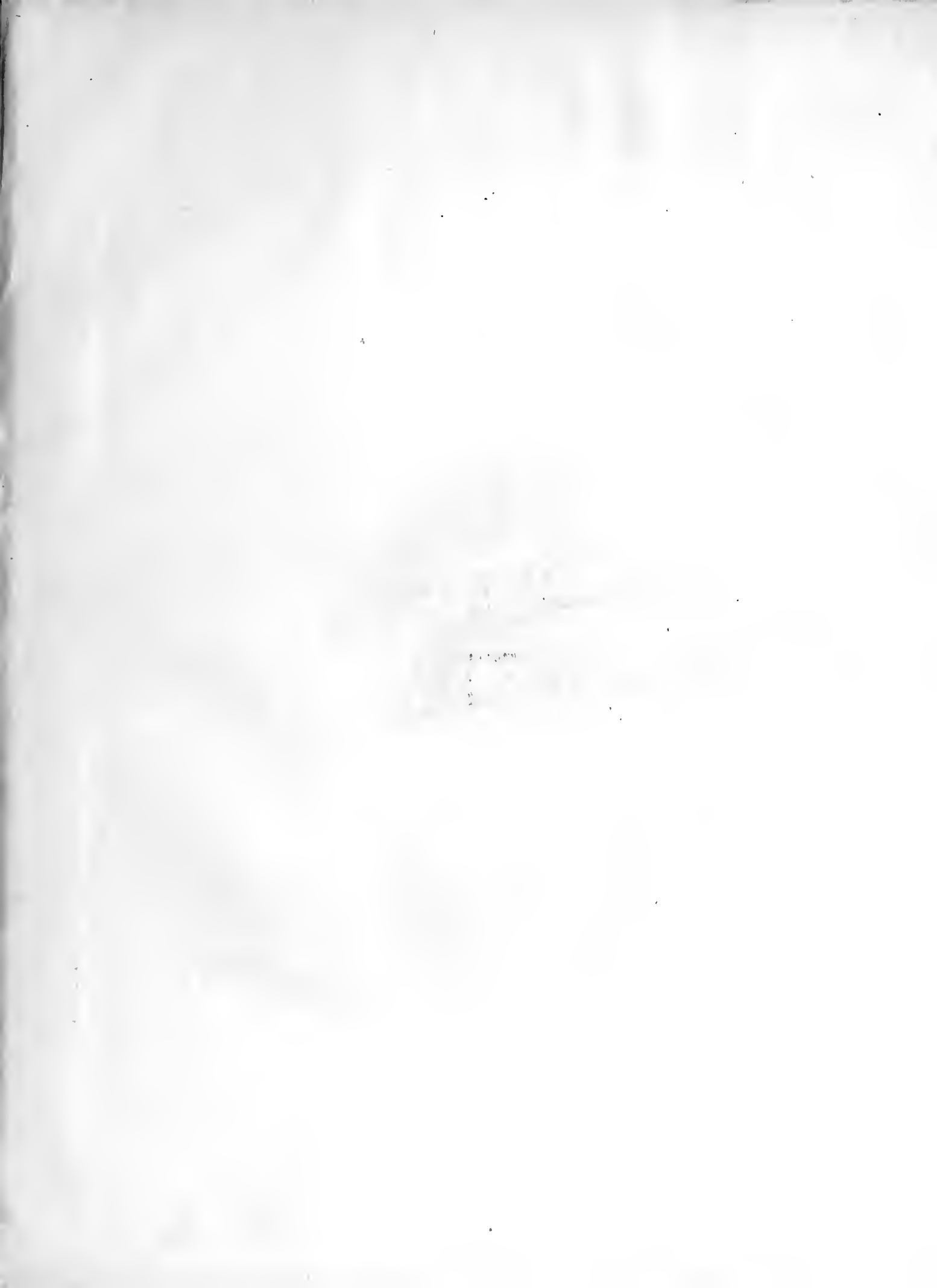
THE latest report on pecans shows the finest crop of record, considering the United States as a whole, the promise being for 89 per cent of a full crop. Last year 27 per cent of a full crop was realized. An unusual fact is that this year the promise is from good to excellent in practically all portions of the belt. The quality of the nuts is 88 compared to 73 last year.

The development of the pecan industry during the past 10 years has been remarkable. A ready market has developed for the improved varieties. Vast quantities of pecans were formerly allowed to waste in the forests, or were gathered only by the hogs, but the wild crop is now much more closely gathered and increasing attention is being given to the native groves. Immense plantings of improved pecan trees in the Southeastern States are coming rapidly into bearing, and the orchards that have been conducted on sound business principles are proving a profitable investment.

SQUIRRELS PLANT BLACK WALNUT GROVES

BOUNCING along the fence rail like a bit of animated thistle-down, he manages to convey the impression that he hasn't a serious thought in his head, and few would suspect that the squirrel is the chap who supplied the American Army with the wood for its gunstocks, though he didn't mean to do it of course. He was looking after his own food supply, saving the resources of summer against the famine of winter, but incidentally he placed a big deposit to man's account in Nature's savings bank.

The Forest Service, United States Department of Agriculture, is authority for the statement that the squirrel, through his habit of burying nuts, has been the most important agent in the reproduction of the black walnut groves. The timber from the groves planted years ago by the squirrels satisfied an important need during the war when walnut was used to make gunstocks and airplane propellers.



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