

NOTES

SECOND-GROWTH WHITE PINE AS RELATED TO THE FORMER USES OF THE LAND

In connection with the discussion of reproduction in the southern pineries as being favored by previous pasturage of the land, this note (preliminary to a more extended paper) on the history of the second growth of white pine in New England may be to the point.

In the last fifteen years certainly 80 per cent of the cut from this region has come from stands 50 to 100 per cent pure—so-called pine woodlots. Even to a person unfamiliar with local economic history, the geometric, sharply defined shapes of these tracts, discernible by their dark color in any stretch of landscape, suggests the previous uses of the sites. In three townships in the best of the white-pine belt 90 per cent of the pine woodlots originated on land formerly farmed or pastured, and observations in many other towns between the Connecticut border and central New Hampshire indicate that this percentage applies to the whole region. Only under exceptional conditions, such as very sandy soil or the effects of a timely fire, has pure pine survived to maturity on other than cleared land.

The silvical evidence on this point is very neatly corroborated by the historic. The bulk of the merchantable stands are (or have been) from 50 to 70 years old. In the reproduction period thus indicated came the Civil War, the western emigration, and the big development of railroads and manufacturing along the main streams, all of which factors brought about an abandonment of farms in upland townships amounting in many cases to 50 per cent of the cleared area. A knowledge of the history of very many specific cases indicates that pure pine today invariably means pasture or field as the previous condition of the land.

Not all such areas, however, have reproduced to white pine, even though they furnish, as a rule, the most favorable kind of seed bed. It is plain that most of the pine woodlots represent mainly a single fall of seed, since all are nearly even-aged. It is also apparent that several plentiful seed years may occur with no result, in which case the development of woody plants or tough ground cover may preclude pine altogether. The successful combination of factors seems to have been, first, the weak sod or scanty weed growth of land recently grazed or cropped; second, the prompt fall of sufficient viable seed, such as is

produced by large, full-crowned trees, and, third, a fair amount of rainfall during the first half of the first growing season.

In drawing conclusions from the life history of these pine woodlots, it is usually overlooked that the existing stands give no hint of the number that failed to materialize through unfavorable influences. Natural reproduction as managed by Nature is excessively costly in seed, time, and wasted area. Nevertheless, in the hands of an experienced man, with adequate local knowledge of soils and vegetation, properly regulated, grazing should go a long way toward controlling some of the factors essential to the reproduction of white pine.

R. T. F.

GIRDLING FOREST TREES WITH A GASOLINE TORCH

The fact that a common gasoline blow-torch has been successfully used in girdling trees leads to the conclusion that such an apparatus may be of value in timber-sale operations. At Plainville, Ohio (1908), where the torch was used to girdle such species as willow, locust, maple, and hackberry, the operation was more successful than girdling trees of the same size and species with an ax. Those girdled were all thin-barked species, ranging in diameter from 4 to 8 inches. The trees girdled in late September made an effort to leaf out the following spring, but succumbed entirely by the end of July. Those girdled with an ax, but without removing the chip, remained living for a year, and two of the trees (hackberry) successfully healed the wound in one or two places.

It seems that a torch of larger dimensions than that ordinarily found on the market, or a special apparatus with supply tank slung on the back with the burner attached to a flexible tube, could be designed to meet the requirements of work in the woods. The operation could be hastened by employing a semicircular burner, so that the flame may be applied over a greater surface from one position. It is doubtful if this method could be used in girdling thick-barked species of the older age classes, such as yellow pine, larch, and Douglas fir; but it should be possible to successfully girdle grand fir, hemlock, and other thin-barked species of any age class. As a labor-saving device, it is believed the method has considerable merit and should be experimentally demonstrated on a large scale.

JAMES R. WEIR.

INTERCEPTION OR ABSORPTION?

Barrington Moore's article entitled "Factors Influencing Reproduction of Red Spruce, Balsam Fir, and White Pine," in the November issue of the JOURNAL, has been read with interest and profit.

Moore's conclusions concerning the interception of precipitation by spruce crowns seem not to be fully supported, since they are based entirely upon the percentage of moisture found in the soil under spruce crowns rather than on the quantity of water actually received by such areas. It is, of course, patent that a considerable amount of precipitation may be intercepted by a dense spruce crown. That the quantity of water so intercepted is sufficient to almost preclude the growth of vegetation on such areas does not appear to be established, because by such a process the spruce would be cutting off its own water supply as well as that of its competitors.

Moore notes that the root system of the spruce "forms a dense mat in the raw humus or duff—a mat so dense that hardly a square centimeter under a spruce stand escapes." He also states that "spruce is in a position to get the first water that reaches the forest floor."

Does it not seem probable that the disposition of the root system rather than the interception of precipitation by the crowns is the prime factor in bringing about a xerophytic condition under the spruce?

HOWARD R. FLINT.

EMPIRE STATE FOREST PRODUCTS ASSOCIATION

The annual meeting of the Empire State Forest Products Association, held at Utica, N. Y., on November 8, was characterized by the co-ordinated presentation of the most important problems affecting private forestry practice. The program reflects this intended drive on taxation, fire protection, and reforestation. It is significant to note that not less than twenty professional foresters attended the meeting.

Professor Hosmer opened with an address on "Forest Taxation," which was followed by W. R. Brown's paper on "Standing Timber Insurance." Both of these papers engendered much helpful discussion. In the afternoon Prof. J. W. Toumey gave an admirable talk on "The Economic Aspect of Reforestation in Northeastern United States" and Ellwood Wilson spoke on "Lessons from Canada," with particular reference to the work of the Laurentide Paper Company in reforestation.

The feature of the banquet was the address by President John G. Agar, of the Association for the Protection of the Adirondacks, on "The State Policy of Land Purchase for the Forest Preserve."

WEST COAST LUMBER MANUFACTURERS' ASSOCIATION MEETING

The *West Coast Lumberman* of February 1, 1918, contains an exhaustive report of the meeting of this association on January 26. The annual report of the retiring president, A. L. Paine, besides giving general information as to the activities of the association, contains a striking statement showing that the burdens of association work fall on a few of the more progressive men. In Paine's words: "Did it ever occur to you that the most active men of this association are the ones best able to stand alone?"

Addresses before the meeting were also made by Dr. H. K. Benson, of the University of Washington, who summarized the situation in regard to utilization of mill refuse; H. H. Isherwood, a prominent eastern retailer, urged the necessity of more lumber advertising and backing up the retailer by the manufacturers. Particularly he pointed out the desirability of furnishing the retailer with complete plans and specifications for buildings and parts of buildings, so that the retailer can quote lump-sum bids on requirements of consumers instead of quoting by the thousand feet only.

One of the most enlightening addresses was made by O. B. Harri-man, of the Bridal Veil Lumber Company, who elaborated a complete plan for formation of a \$1,000,000 corporation termed the Lumbermen's Clearing House, whose function shall be the discounting of lumber invoices for manufacturers and wholesalers and the guaranteeing and collecting of all accounts received for discount, such accounts to be only those of approved credit risks. In support of this plan analytical data are submitted covering 1,000 cars of lumber shipped as follows:

Cars Discounted.—Fifty-nine per cent took 2 per cent discount in 23 days; 17 per cent took 2 per cent discount in 51 days; total per cent, 76; average discount time, 30 days.

Cars Not Discounted.—Ten per cent paid in 65 days; 14 per cent paid in 114 days; total per cent 24; average time, 94 days.

From these and other data, it is shown that three times the capital is required for this purpose by the present methods as would be required under the proposed method of discount by Lumbermen's Clearing House within fifteen days from date of invoice. The proposed method is claimed to have the following advantages:

1. Mills would get sufficient capital to finance shipments without use of bank credits.
2. Terms of payment would be enforced without loss of friendship of customer by individual mill.

3. Enforcement of terms of payment would reduce capital required by lumber industry of Washington and Oregon by 50 per cent.
4. Credit information cheaply obtained.
5. Trade acceptances used where discounts not granted.

This proposed plan is too comprehensive to permit giving adequate idea of it in a short review. If realized, however, it will be an important step in organizing the credit of lumbermen so as to insure cheaper short-term credit. Similar methods applied to long-term requirements would be a step toward obtaining the lower interest rates necessary before any effective steps can be taken toward management of private forests for continuous production.

The Philadelphia *Record* had the following striking and timely editorial in its issue of December 1, 1917:

"THE NEED OF MORE POWER

"No fanciful statistics are required to prove how very much better off the Nation would be if its 'white coal' were now available for the development of mechanical energy. It matters not whether our unused water powers are capable of producing 50,000,000 or 100,000,000 horsepower, or whether hydro-electric power, with the cost of transmission from point of production to point of utilization added, is cheaper by half or twice as dear as steam power converted into electricity or used directly. The fact is that our unused water powers are running unproductively to waste and they cannot be harnessed in time to relieve the existing congestion in the production and distribution of ordinary black coal.

"Crying over spilt milk is proverbially futile; and it would serve no good purpose to revert to the long-drawn-out wrangle about the respective authority of the Federal and State governments over water powers. Nor need one conjure up again the spectre of a water-power monopoly, which former President Roosevelt and Forester Pinchot employed so successfully to render development impossible. It is not necessary for the Federal Government to impose a tax on the use of waters which it does not own, and which the United States Supreme Court declared belong to the States, in order to assert regulative jurisdiction over water powers. Hydro-electric power is an instrumentality of commerce, and, as such, the regulation of the same would come under the jurisdiction of Congress as completely as railroads, telegraphs, or pipe lines, even though this instrumentality should be, as the railroads, telegraphs, etc., are, partly employed in commerce within a State.

"A wrongful use of the Federal taxing power, therefore, is not necessary to bring water powers under legitimately exerted Federal control. The Interstate Commerce Commission makes rates which affect transportation on railroads, even which begin and terminate wholly within a State, and it would be impossible for a water-power company to sell electricity within a State at a higher rate competitively with another company that would be prepared to supply it from beyond a near-by State boundary. As for the creation of a monopoly, the Federal Gov-

ernment could suppress a power trust as readily as it could suppress an oil, paper, tobacco, or any other kind of a trust, even to the extent of confiscating its property. Congress should pass immediately the bill proposed by Secretary Lane more than two years ago and thus make a vast store of energy available as soon as possible. We shall need every ounce of power which our 'white coal' is capable of developing. The emergency may be even greater, after the war reopens international competition, than it now is."

FORESTRY AND PAPER MAKING

On both sides of the line the contention of the newsprint paper manufacturers and of the newspaper associations regarding cost of the manufacture and price of newsprint has been going on for a long time without any result at present writing. In the United States the case is before the Federal Trade Commission; in Canada before a special commissioner. There is one point in the controversy which is of special interest to foresters and which has not received as much attention as it deserves in the testimony on either side. It is the question of supplies of raw material, which should influence the price-making if the law of supply and demand is still to rule. It must not be overlooked that the length of time for which pulpwood supplies can be secured for a mill has a most important influence on the price which it is proper for a manufacturer to charge who must foresee the need of amortization or sinking fund for his plant if he is forced to go out of business for lack of supplies.

If, as appears from the findings of the Trade Commission, the capital required per ton of paper is from \$25,000 to \$35,000—according to others nearer \$50,000—there must be enough in the manufacturers' profit to retire this capital before the end of the supplies to run the mill, or nearly so. There seems to be little doubt that accessible pulpwood supplies in the Northeastern States and even in Canada are becoming scanty and hence more valuable (see evidence published in *Forestry Quarterly*, Vol. XIV, pp. 770 ff.).

In this connection the question of what can be expected from the cut-over pulpwood lands regarding a second cut, regarding reproduction and regarding growth, is of interest. Answer to this question can, of course, come only from a more or less detailed investigation. Such an investigation has been started by the Canadian Commission of Conservation, and a preliminary report of the first season's work was given at the annual meeting of the commission by Dr. C. D. Howe, in charge of the investigation. During the summer of 1917 Dr. Howe examined in a most painstaking manner, by careful analysis of sample areas,

woods which had been cut over by the Laurentide Company on their limits in Quebec. While Dr. Howe is careful not to generalize too far from the limited basis of facts ascertained, we do not see any reason why in general terms his findings would not apply to the thousands of square miles of similar type woods that have been or will be subjected to similar treatment in Quebec and Ontario, the great sources of pulp-wood supplies.

In the first place, Dr. Howe finds that in the mixed stands of hardwoods and conifers, which are the rule, balsam fir leads, with 36 per cent; yellow birch comes next, with 26 per cent, and red spruce, with only 20 per cent, the balance being minor species. The determination of the upland spruce, practically all, as *Picea rubra* comes rather as a surprise, extending, as it does, the field of this Adirondack and Maritime province species farther west and north than it had been credited.

The preponderance of the balsam fir, which in general had been known before, is of significance both from the present supply point of view and that of reproduction. As long as water transportation must be relied upon, a considerable loss from sinkers must be expected from fir; besides, considerable damage by rot makes this material less valuable.

The white pine, which formerly overtopped the mixed woods and gave to them a decidedly coniferous character, is almost entirely eradicated, even down to the young specimens and regeneration, except on borders of lakes, swamps, and other open places. Growth studies on some 2,000 trees and countings on many sample areas to determine the character of the stand per acre were made.

In the address before the commission, Dr. Howe most clearly and simply, for the comprehension of the veriest layman, traces the changes that take place as a sequence to the cutting of the pulpwood and what growth to expect.

As regards the diameter increment, the 4 to 8 inch poles were found to be 80 to 100 years old, the 8 to 12 inch class 100 to 150 years; so that it would take at least 50 years for the latter and 70 years for the former to grow into the 12-inch minimum diameter for spruce in Quebec—not an inviting outlook for private enterprise!

Of the 635 seedlings of spruce found on the average per acre, the mortality rate was determined such as to reduce them to six when near commercial size, and the percentage of loss is still greater in balsam.

The growth of the spruce is so slow beneath the overtopping hardwoods, and there are so few survivors per acre in the intense struggle for existence, that the future is hopeless from the standpoint of the

private company. The amount of balsam obtainable in the near future remains in doubt until the progress of the everywhere-prevalent fungous and insect diseases is determined. If the hardwoods could be utilized, their removal might result in a much larger portion of the young spruce reaching merchantable size. The possibility of utilizing white birch for pulpwood and yellow birch for railway ties is being investigated by the forester of the Laurentide Company. However, the whole question of the effect of the removal of biologically dominant hardwoods in stimulating the growth of suppressed conifers is still largely in the condition of theoretical discussion, and Dr. Howe's address closed with an earnest plea for definite experimentation in the various problems of forest regeneration in the north woods. Extensive studies of an intensive nature into conditions controlling forest reproduction on the cut-over lands are necessary before reasonably reliable predictions of future pulpwood supplies can be made, and such reliable predictions must be made possible before the newsprint price controversy can be settled on an equitable basis.

EMPIRE STATE FOREST PRODUCTS ASSOCIATION MEETING

The report of the proceedings of the twelfth annual meeting of the Empire State Forest Products Association, held at Utica in November, 1917, calls attention to a new phase in the forestry movement which is significant, namely, the employment of a technical forester by a group of timberland owners who are at the same time manufacturers.

It is true the National Lumbermen's Association has the priority in employing technical men to further their business, but we think we are not mistaken in believing their activity was used in developing markets, while the forester of the Forest Products Association appears to have his attention mainly directed to the woods end of the business, to real forestry work. A similar development may be noted in Canada with the formation of the woodland section of the Canadian Pulp and Paper Association, which has the same object in view and may eventually employ a technical forester.

The advent of Prof. A. B. Recknagel in this position seems to have given a new impetus to the efforts of the association, which in the previous eleven years of its existence have left hardly any impression. In the present report Recknagel merely clears the decks for action by canvassing the conditions of the membership of the association as to their ownership of timberlands and interests. It appears that nearly 1.4 million acres are represented in the association, 61 per cent of

which is merchantable and only 12 per cent vacant and water, with an annual cut of around 650 million board feet in logs and cordwood, employing near 14,000 men.

One interest of the association, which was particularly accentuated by the president, lies in the direction of bringing the State of New York to a saner policy with regard to its forest preserve, which makes a "cemetery of 1,800,000 acres of potential forest area," an investment of approximately \$4,000,000, and with "an annual appropriation for the care and maintenance of the cemetery . . . of \$300,000." We need not expand to our readers an explanation of this extravagance, or should we say extravaganza. A lengthy discussion of the situation, in which both sides were represented, took place at the banquet.

We have no space to go into the details of the report. Among the addresses which are worth reading are Professor Hosmer's clear exposé of the forest taxation problem; Professor Toumey's discussion of the economic aspects of reforestation, in which the author pins his faith on private endeavor, although he furnishes cogent arguments against such expectation.

W. R. Brown sent a highly interesting account of his Timberlands Mutual Fire Insurance Company, recently formed in New Hampshire, which has already written policies close to \$400,000. This is a development which we commend especially to the attention of our readers. It has led to a new profession, namely, that of "forest actuary."

The *Canada Lumberman*, editorially objecting to the extravagant statements made in popular magazines regarding the waste of wood in forest and mill, gives the following measurements of the longleaf pine trees: Of a 26-inch d. b. h. tree, 74.5 per cent of the total cubic contents, including stump and branches, went to the mill and 45 per cent was turned into lumber; of a 14-inch tree, 67 per cent went to mill and 46.5 per cent into lumber.

The Canadian Forestry Association held a well attended conference of two days, at Montreal, February 6 and 7. The association has now a membership of 6,200. Total receipts for the year were nearly \$12,000, of which \$2,235 were secured through special subscriptions—a financial feat these war times! It is significant to note that a railroad man and a lumberman were elected president and vice-president, namely, Lieut.-Col. J. S. Dennis, of the Canadian Pacific Railway, and J. A. Gillies, of Gillies Brothers.

On January 7, 1918, the U. S. Senate, by a vote of 37 to 32, passed the Walsh-Pittman Oil and Coal Land Leasing Bill. This bill has been pending in the Senate for four years. If it passes the House and becomes a law, it will establish a new principle on the part of the Government in dealing with its mineral resources.

Under date of January 28, 1918, Mr. Gifford Pinchot sent a letter to various newspapers throughout the country commending the administration water-power bill recently introduced in the House of Representatives. The bill in question was formulated under the direction of the Secretary of Agriculture, the Secretary of War, and the Secretary of Interior. It deals with water power in National Forests, public lands, Indian lands, and navigable streams.

Mr. Pinchot says that it "embodies the principles essential for wise use and development of our public waters in the public interest. The passage of this law will secure to American people forever vast resources whose use for the good of all will make this land a safer and better place to live in." The bill has been referred to a special committee of the House, created to consider it.

The Nancy forest school has been temporarily removed to Paris, conditions at Nancy, due to the nearness to the war front, having become unfavorable to its continuance there. Fifteen to twenty students are expected to attend.

In November last a reorganization of various services charged to provision the armies with wood materials into a single *Service des Bois*, under the Minister of Munitions, was effected in France. It is to secure the various needs for wood by purchase in the market, by direct exploitation, or by requisition, and to organize a rational utilization of the means of production. For this purpose the country is subdivided into nine *Centres de Bois*, with a director presiding over each, of the grade of lieutenant-colonel, with the necessary staff. For the service of the softwoods a further division into *circonscriptions* (regional locations) in charge of a superior or subaltern officer; for the service of hardwoods one special *circonscription* is provided at each center.

At each center a company of forest laborers is maintained. An inspector-general exercises general supervision, co-ordinating the work and distributing orders for material and controlling the work in general.