

ment of private timber lands. The first effect of the transfer was a rapid improvement in the efficiency and character of the reserve force. Good men were retained and poor ones eliminated. Salaries were raised and standards of work improved. The supervisors, the men upon whom the business of administration fell most heavily, were chosen from the ranks—strong western men with broad knowledge and ability. Technical men were assigned as assistants, and when those men showed the necessary ability to handle men and business, as well as technical matters, they were made supervisors. Rangers were employed the year around and stiff examination in practical woodmanship required for service.

Those who would succeed in obtaining and holding a position with the forest service on its western reserves must be men above the average of ability and devotion. The forest service is becoming the pride of the West.

Many things have been learned from the greatest of all teachers, experience, and much remains to be learned.

How does it come, for instance, that cattle and, worse still, sheep are allowed to graze on nearly every western reserve? Back in 1897, we find in that same report which recommended the use of reserves, the statement that sheep grazing was rapidly destroying the forests in many sections, and referred to sheep as hoofed locusts, pursuing their devastating way through the forests of the West. It was the fight in Oregon over grazing that taught the reserve administration its first valuable lesson—that generalities won't do when applied to an empire the size of the West. Not only did scientific investigation show that sheep grazing did but little harm in some sections, but it was discovered that it might even be beneficial to the forest. Overgrazing, and not grazing itself, was the trouble. Limited grazing, by keeping down grass and stirring the soil, favors the reproduction of pine. So the system of grazing under permit spread till it is one of the crowning features of the national forests. It is absolutely under control—and by the results, whether good or bad, to the forest and soil, the grazing is regulated. Where irrigation interests demand the first consideration, grazing is restrained and the old fights between cattle and sheep men have disappeared on the reserves.

Agricultural Land Eliminated.

Agricultural lands have never been purposely included in national forests, and have been eliminated as fast as possible. At first, the taking up of small claims within the forests was discouraged, but with the development of the ranger force settlers were no longer feared—they became indispensable aids in fighting fires and were encouraged by grazing privileges.

Recent legislation allows the segregation of any land within such forests, if shown to be agricultural and desired for settlement. Fortunately for the reserves, the agricultural character of these lands can be determined, not by fertility, but by topography and by water supplies, and they are not called upon to determine the best use of sandy soils. In a region of average rainfall there is no land so poor but that some eager and deluded homeseekers will wish to settle on it.

But the most vital question in the reserves is the timber. This timber is for use—it will be cut—but if the same methods are pursued on the reserves as have characterized the operations of lumbermen through the pine regions east and west, fire protection alone will not bring back the timber, and our forests will be forests only in name.

Extensive timber cutting did not take place on the national forests until after their transfer to the Department of Agriculture, which placed them in control of men pledged to

guard the future, as well as the present forest. The Forest Service was not without practical experience. Back in 1903, Minnesota had allowed the creation of the Cass Lake reserve, and this was the first executive work which the Forest Reserve performed. The success of that work proved their ability to accomplish things deemed impossible by lumbermen. Brush and tops were piled and burned at less than 25 cents per 1,000 feet cut. Seed trees were left and are still standing with slight loss from wind, where, it was thought, the loss would be total. The prestige and experience thus gained were carried west in 1905. Throughout the National forests there is no logging which is not being conducted in compliance with the terms of carefully drawn contracts in which such provisions have been made for the replacement of the present by a future crop, as seem fully efficient to accomplish it.

More Experience Is Needed.

But more experience is needed. The actual results of cutting methods will show whether reproduction is being secured. Planting on a large scale is impossible, because of the expense, but is done to some extent on water sheds.

Again, it is important to know how much timber should be cut. Is it enough to secure a second crop, or should the National forests be held against the coming timber famine? Where local timber is needed now, there is no choice but to cut it, but where the timber is desired by lumbermen to enable them to hold their own timber for better prices, the forest service discourages the sale of stumpage.

Very little is known yet about the rate at which the timber is growing in these forests. Wherever possible, no more timber should be cut than the amount grown each year.

What is the relation of the national government to forestry in the east? States, such as Michigan, where the Government owns no land, are far better fitted to manage their own problems than to depend upon Washington. What is done must be done by state effort, with state support and state funds. But there is one region which demands national action. The Southern Appalachians control many of the headwaters of streams of importance to more than a single state, and they contain the last home of the eastern hardwood forests. The industries dependent upon these hardwoods must be protected. These forests, if managed properly, may be cut without being destroyed, and the supply of hardwoods thus continued. The Southern States in which this region lies will never take the united action necessary to secure this region for timber production.

These lands must be acquired by purchase, hence each year's delay will mean great additional expense from the rising value of woodlands. Such lands cannot be farmed—when cleared they are washed away, filling up streams. Floods take the place of even flow of water, ruining water powers and drowning out crops. Delay and ever delay has marked the progress of this movement to secure the Appalachians for a national forest. Are we to wait till the opportunity is gone and then try to mend the broken forest? Now is the time for action. We need the help of Michigan, of Wisconsin and Minnesota, for nothing but a universal demand will overcome the inertia of Congress.

The growing of timber on a large scale is our greatest national need today, and with the best efforts of nation, states and individuals, we will lag so far behind our needs that our present policy, no matter how aggressive, will seem in twenty years to have been incredibly short-sighted and inadequate. We sincerely hope that Michigan may take first rank among the states which are facing this problem hon-

estly and doing the work laid out for them on a scale commensurate with the needs of the future.

FORESTRY IN MICHIGAN.

Prof. Beal, With Aid of Stereopticon, Shows What Can Be Accomplished.

President Bissell then introduced Dr. W. J. Beal, of the Michigan Agricultural College, stating that he would read a paper on "What Forestry Can Do for Michigan in the Immediate Future," in:

- (a) Saving the remnant of original stands.
- (b) Protecting and utilizing the second growth.

With the aid of the stereopticon, Dr. Beal gave an interesting talk and illustrated to the audience many phases of life in connection with the prospecting for and lumbering of timber from Michigan lands which has resulted in the almost complete extermination of the forests of the State. He said: As a gentle reminder let us refresh our memories by glancing at a few views which show some of the agents which have helped to reduce the forests of our State. The men with designs on timber were in their offices and are not here shown, but we show a foreman nicely robed, in his cutter, going to the camps with orders. Note the giant cork pine in the midst of a dense growth of other trees; a pine grove of Norway, with a dozen men ready with saws and axes; men cutting timber; teams rolling logs; laborers taking dinner in the woods; logs going to mill by team and by river; great loads of posts and logs; one load of pine logs 60 feet long, scaling 30,066 feet, board measure, drawn a mile by one team of grade Clydesdales, owned by Pack, Woods & Co. Here views of stumps, brush and charred logs, and poor trees left as food for fire; and here eager crews getting logs off the banks into the river. Here are great banks of large logs, some of them 60 feet long; now men working to start a jam of logs down the river. Here men assorting logs by getting them into the right ways to different mills; here loading logs and telegraph poles onto cars, where the engine hurries them to the mill yard. Here a mill where 60 men convert logs into lumber and sawdust, and here a thread-like road winding along the hillside with nothing in sight but remnants of logs and charred stubs. See in the next mass of logs, down and standing, where the lumberman has taken all he wanted,—a fearful waste soon to be burned again and again when the dry weather comes, leaving no pines alive and no living tree above the ground, where the few small stumps may send up sprouts, the fire permitting.

A Very Few Cases.

"The above scenes and hundreds more are familiar and are yet well understood by most of you. There have been a few oases scattered over the stump lands, but their number is insignificant and decreasing because no one considered them of any value and gave them no attention. I refer to second growth of timber, the result of seeding where a few neighboring mother-trees were left long enough to perform the good work. A few and far remote nice groves ten to fifteen years old are shown, some of these consisting of thirty or forty acres. One of them, a half-mile out of Grayling, received no attention and has been destroyed by fire, as no one looked after it. In my opinion, such isolated patches of pine will never amount to much unless they are patrolled and steadily cared for in times of dry weather, when there is danger from fire. No one will find this care profitable unless there is a considerable area of this land that may make it profitable; and even with care, there is considerable danger. The nearest approach to excellent care for such spots that I can suggest is to see that the land is burned at least once a year just as soon as it is dry