THE FOREST RESOURCES.

By E. M. Griffith.

The northern portion of Wisconsin, comprising a land surface of some 18 million acres is still largely covered with forest growth, though approximately 80 per cent of the merchantable saw log timber has been cut and removed. Only about 8 per cent of this territory is now under cultivation. Millions of acres have been swept by heavy recurring fires, and are rapidly being reduced to almost barren wastes. The great problem of forest conservation in Wisconsin is the prevention of the enormous annual loss from fire, for if the second growth timber lands, and those which have been reduced to nearly a waste condition are protected, they will produce as fine forests in the future as Wisconsin has been noted for in the past.

The value of the timberlands of northern Wisconsin is enhanced from the fact that they are situated very largely upon the headwaters of our most important rivers, and thereby promote uniform stream flow, greatly enhance the value of water powers, increase the navigability of the streams, and also prevent disastrous floods, and excessive soil erosion. The forests and lakes of northern Wisconsin make this region one of great natural beauty, and if protected they will be the means of making this a famous resort region, for thousands of people who will spend millions of dollars annually.

To estimate the area covered by the forests, the species represented and the total amount of timber, will entail an enormous amount of very careful field work, and yet such a timber census must be made in order that we may know the amount of our forest capital and how rapidly we are exhausting it. The Forest Service of the Federal Government stands
ready to bear half the expense, and it is recommended that the State Board of Forestry should be given sufficient funds to carry on its part of the work. Statistics covering the production of lumber and other products of the sawmill and woods of the United States are compiled and published annually by the Bureau of the Census in co-operation with the Forest Service. In 1860 Wisconsin ranked seventh in the list of states arranged according to the quantity of lumber produced. Ten years later fourth place was occupied, third in 1880, second in 1890, first in 1900 and 1904, second in 1905, third in 1906, and fifth in 1907 and 1908. For the last mentioned year figures were furnished by 899 sawmills in Wisconsin, reporting a total production of 1,613,315,000 board feet, or 4.9 per cent of the total output of all the mills in the country. Though showing a decrease in production in comparison with the figures of the preceding year, 1907, Wisconsin retained its relative position among the state for production. The cut of white pine in the state has decreased largely in the last few years, though this loss in production has been offset by the increased output of hemlock and hardwoods. The state ranked second in the cut of white pine, first in hemlock, third in maple, first in birch, basswood, and elm, fifth in ash and second in tamarack in 1908.

During the winter of 1910 the State Board of Forestry, in cooperation with the Federal Forest Service made a detailed study of the present requirements of the wood using industries of Wisconsin. Chiefly by reason of its proximity to raw material, its excellent shipping facilities by rail and water, its geographical position in relation to consuming markets, and the existence of skilled labor, Wisconsin assumes an enviable position among the states wherein wood forms a large part of the manufactures. The study of the wood using industries showed that more than 930 million board feet of timber, valued at approximately $20,000,000 is utilized annually in the numerous lines of manufacture carried on. This is but part of the lumber industry of the state, as the figures given do not include the vast volume of material turned out by the sawmills as well as other forest products which are not considered as raw material for further manufacture. The value of the raw material only is set forth; were the labor expended upon and the cost of other materials with which the lumber is combined, included, however, the total value of the finished prod-
ucts would soar into additional millions. Of the 930 million feet reported, a little more than one-half of that quantity originated in the state. The figures by no means represent the total amount of wood used, as finished products such as staves and heading used by the cooperage trade and complete wheels and gear used in assembling carriages and wagons were no included in the investigation. Neither was there included in the totals the heavy volume of lumber that goes into flooring, ceiling, siding and other products of the planing mill.

The investigation shows that of the 930,382,000 feet used, at a total cost of $20,293,034, 51 per cent of the total quantity, or 474,494,820 feet, was cut from the forests of the state and 49 per cent or 455,887,180 feet was cut in other states or countries. When the figures on the quantity grown in the state and out are considered in connection with the position Wisconsin holds in comparison with other lumber producing states, it will be seen that the supply of timber in Wisconsin is being rapidly exhausted and that we must stop all possible forms of waste. Three of the industries utilized nearly two-thirds, or 64.89 per cent to be exact, of the total quantity of raw material reported. The largest of these is the pulp industry consuming 33.35 per cent, followed by the sash, door and millwork factories credited with 18.72 per cent and the box making plants using 12.82 per cent. The average prices per thousand feet paid for raw material by the pulp and box concerns are among the lowest, $15.54 and $13.09, respectively. The nominal prices are accounted for by the fact that in the pulp industry the material is utilized in the forms of bolts and logs upon which no charge of manufacture into lumber is added, while in the box industry low grade lumber is employed chiefly, and sometimes even the waste of the sawmill is utilized. In the manufactures of sash, doors, and millwork a high grade of lumber, clear or select stock generally, is necessary and which brings the average cost up to $30.10 a thousand feet. The smallest of all average prices is that paid by the manufacturers of excelsior—$9.89—and, as in the case of the pulp mills, low grade bolts or logs are used exclusively.

In point of the volume of raw material used, as well as in the aggregate cost of the material, the pulp industry stands first among those of the Badger State. To the pulp manufacturers
the forestry problem is of vital importance because of the dwindling supplies of suitable pulp timber in the United States. The manufacturers also are deeply interested in the protection of the watersheds of Wisconsin because of the utilization of so much of the available water power by the mills. Three species were reported entering into the production of ground wood pulp—spruce, pine and poplar. While all of the pine was reported as white pine, a small per cent of the total was Jack pine with which experiments have been carried on for some time. Spruce is the chief species used for ground wood pulp, 96,204,000 feet having been reported used and of which amount 27,066,000 feet or 28 per cent was secured in the state and 69,138,000 feet, or 72 per cent bought outside the state. The difference in the average price a thousand feet of the material bought in and out of the state was but four cents—$20.21 and $20.17, respectively. For the 1,610,000 feet of pine cut in the state an average price of $10.06 a thousand feet was paid, while for the 1,418,000 feet coming in from other sources, $9.52 a thousand feet was paid. The average price a thousand feet paid for the 2,264,000 feet of popular originating in the state was $10.11, as compared with $9.24 a thousand feet paid for the 206,000 feet bought outside.

In the production of sulphite fibre the Wisconsin mills reported the use of three species, hemlock, spruce and balsam, amounting in all to 208,591,000 feet and aggregating $2,822,987 in cost. The quantity given above is more than double of that which entered into ground wood pulp. The average cost a thousand feet of the hemlock, spruce and balsam was $13.53, in contrast with the average cost of $19.63 for the species used in grinding. Hemlock amounting to 116,570,000 feet was used, of which amount 75,268,000 or 65 per cent, was grown in the state, and 41,302,000, or 35 per cent came from other states. The average price a thousand feet paid for Wisconsin hemlock was $12.02 and but $11.93 of the wood secured elsewhere. For spruce an average price of $17.41 a thousand feet was paid for the 18,746,000 feet reported originating in Wisconsin, and $17.02 a thousand feet for the 48,685,000 feet of spruce coming from other states. The average price for the 12,854,000 of balsam secured in Wisconsin was $11.00 a thousand feet, while $10.98 a thousand feet was the average price for the 11,736,000 bought outside.
In both the ground wood pulp and sulphite fibre a total of 163,635,000 feet of spruce were used. Of this volume Wisconsin furnished but 28 per cent. The total amount reported for all species was 310,293,000 feet, aggregating in value $4,819,081. Of the total number of feet consumed Wisconsin contributed 44 per cent, and from other states was drawn 56 per cent.

The second largest industry in Wisconsin in the matter of consumption of raw material is the manufacture of sash, doors, blinds, and interior and exterior finish. Although the pulp mills utilized over 100,000,000 feet more timber than the sash, door and millwork factories, the total cost of the lumber used by the latter exceeded that of the pulp industry by nearly $500,000.

These figures will give you some idea of the great importance of the wood using industries to the state, but they cannot continue unless we see to it that our forest resources are so managed as to yield a continuing supply of raw material. The state now has a forest reserve of some 325,000 acres and the state board of forestry hopes to increase this area to 2,000,000 acres so that the headwaters of our important rivers may be protected, our wood using industries supplied with a considerable amount of raw material and at the same time the great beauty of our northern lake region will be preserved as a resort region for the people of our own and neighboring states. However, the state cannot own and control but a small portion of the timberlands of Wisconsin and therefore the private owner must be brought to realize that his best ultimate return will come from managing his forests so as to give a constant and increasing yield.

The two great obstacles to the practice of forestry by private owners are fire and taxes. Our state board of forestry in cooperation with the Forest Service is now making a careful study of forest taxation, in the hope that our legislature may give some relief to private owners who are almost forced to cut their timber on account of taxation.

Through the establishment of the Forest Products Laboratory at Madison, plans are being worked out for an extended inquiry into the closer utilization of waste, with a view of increasing the profits of the lumbermen and the saving in cost of raw material to the various industries. The faculty of the University of Wisconsin have introduced courses in the training
of young men in wood utilization, so that within a few years men having intimate knowledge of the qualities and uses of wood may be at the service of the manufacturers. With knowledge of the needs of the manufacturers and knowledge of the timber resources, a rational forest policy can be outlined so that the producing and consuming industries dependent on wood may be perpetrated and enlarged.

The severe forest fires during the summer of 1910, which have done an enormous amount of damage in many of the northern counties, have again emphasized the urgent necessity of a patrol system, which backed by the necessary laws will largely prevent the starting of forest fires. The present town fire warden system, though far from perfect, has nevertheless been the means of extinguishing a very large number of fires after they had usually gained considerable headway. That is the great weakness of the system that it simply makes provision for putting out forest fires after they occur and does not prevent their starting in the first instance. Only a well organized system of patrols or forest rangers can accomplish this and such an organization will cost from $250,000 to $300,000. These are large sums but when it is remembered that the losses from forest fires in 1908 amounted to $9,000,000 and that the losses in 1910 will be nearly as heavy, it is seen that the state is amply justified in spending large sums to prevent such losses, and that a well organized patrol system is really insurance at a relatively low cost.

It should also be remembered that there are some 13,000,000 acres of wild and unimproved lands in northern Wisconsin, covered for the most part with forest growth, which must be patrolled and protected, and that therefore the actual cost of the patrol system will be only about two cents per acre, which is the lowest possible figure that any adequate protection can be provided. The present system of town fire wardens should be abolished and instead county fire wardens should be appointed, to form an auxiliary fire fighting force, under the direction of the patrols, and these county fire wardens should be empowered to fight fire anywhere in their own or adjoining counties.

The state as a whole is directly and financially interested in protecting the great wealth of our forest resources, and therefore it is just and reasonable that the state as a whole, by
means of a general tax such as is proposed, should bear the cost of a protective patrol. However, the counties in northern Wisconsin, and especially the lumber companies and timberland owners in these counties, are more directly interested and benefited by the protection of their forests than the counties or taxpayers in other portions of the state. Therefore it is recommended that each of the counties covered by the patrol system should be obliged to raise and set aside each year a fire fighting fund, for the county fire wardens not less than $300 per township, or thirty-six sections. Thus, if a county contained twenty townships, the fund would amount to $6,000, but if only $2,000 were expended in any year in fighting fire, the county should only be obliged at the beginning of the next year to raise that amount. In this way the state as a whole would bear the cost of fire prevention, but the counties and citizens most directly benefited would pay all the expense of fighting fire. No fairer, or more equitable, plan for distributing the cost of protecting the forest resources of the state has been found.

The special legislative committee on Water Powers, Forestry and Drainage, have recommended that the State Board of Forestry should be given the proceeds of a general state tax of 2/10 of a mill. The proceeds of this tax would be used to purchase the lands which it is necessary that the state should own in order to consolidate the forest reserves, and thus make possible systematic forest management, and also to pay for the patrol system.

The lands within the forest reserve area, which are not owned by the state, are largely held by non-resident owners, are absolutely unprotected and therefore the danger point from which start most of the destructive forest fires. No systematic forestry management is possible until these lands are acquired by the state and it is the poorest possible kind of economy to put off their purchase from year to year, as they are deteriorating in value through recurring fires, and in their present condition they block all forestry progress. Private owners must be encouraged to practice forestry through the enactment of just and reasonable timber taxation laws. The present system of annually taxing growing timber is of course one of the strongest incentives to the owner to cut the timber.
and thus escape such taxation which is fundamentally unjust when applied to a timber crop requiring many years to reach maturity. The land itself should bear an annual tax equal to other lands similar in character, but the timber crop should not be taxed until it is harvested. Such a law would at once strongly encourage forest conservation instead of leading directly to forest destruction, as is now the case.