

burning, careless campers, lightning, incendiarism, all contributed. The great fires of Idaho occurred August 20. There were then many fires burning in the mountains. Nearly all were under control, that is, they were trenched, and a force of men were guarding them and preventing their spread.

With reasonably calm weather, all would have been extinguished before long, but suddenly a terrific hurricane arose, which lasted practically a day. So strong was it that men were unseated from their saddles. Whole areas of forest were absolutely flattened. Men were killed by falling trees in front of the fires. Every smouldering fire was fanned into a conflagration. Sparks were blown miles ahead of the fires. The flames rushed through the crowns of the trees with a fury which was appalling. Within a day there was a fire a hundred miles long. Seventy six fire fighters had been killed, and, if it had not been for the skill and nerve of the rangers, many more would have been lost. For a few days all work was devoted to rescue, and then the fight on the fires was resumed. It was a noble fight and the nation should be proud of the forest officers who toiled day and night, again and again risking their lives to save the forests and the towns which were imperilled.

This is the first instance of an organized attempt to fight such great fires. It cost a million dollars, but there was saved property aggregating certainly over one hundred million, if not two or three times that.

The experience clearly demonstrated the fact that fires can be controlled when the forests are properly developed and manned by an adequate force of men, for where these conditions existed the fires were subdued promptly and with little loss. The great and disastrous fires occurred where the forests were without means of transportation and communication and without adequate patrol. The lesson is also taught that money must be spent by the government on construction of roads, trails, telephone lines, and other equipment of the forests; and there must be more men for patrol. It will take time to develop this vast wilderness for full protection, but the work should progress faster than in the past. European forests are safe because of this kind of development. It has taken many years to perfect the organization. We can make our forests equally safe, but it will require large expenditures for development in improvement. This I believe the people should be willing to expend.

Forestry on Other Lands.

But the government owns only a small portion of the total forest area of the country, and very little in the East. Most of the forests now furnishing the lumber used in the country are privately owned. The

government forests are as yet not being cut to a large extent. They are the most remote, and in many cases the least valuable forests. They have not yet been reached for the market. Four fifths of the merchantable timber is in private ownership. A few owners are practicing forestry, but only a few of the larger holdings are handled with a view to the continuous production of timber. It is probable that less than two per cent of the lumber on the market today has been put under the principles of forestry.

We have, then, the great task not only to perfect the management of the national forests, but to introduce forestry on the lands not publicly owned. To accomplish this requires the combined efforts of the government, the states and private owners. A number of states have purchased land for forest reserves. But in the aggregate the area is small. These reserves should be greatly extended. On private lands the first task is fire protection. Private owners now hesitate to invest money in forestry because of the fire risk and because also they fear that the possible profits will be eaten up in the taxes now imposed on growing timber. They should be helped in removing these obstacles to forestry. The states have a duty to introduce a system of taxation which will not prevent forestry. The states have the duty to directly aid private owners in fire protection. There should be a thoroughly organized fire-protective service supported by the states. This will involve a considerable annual outlay and the burden will be on the public. But the benefits from forestry are chiefly derived by the public. The single individual is unwilling and often unable to invest money primarily to secure a general public benefit. I regard this as the first duty of the states in forestry. It is certain that forest laws, no matter how perfect in themselves, will not be effective unless they carry ample appropriations to enable organized practical forestry.

The country has accepted the principles of forestry. It now demands practical results. We can produce the results if the country will meet the necessary cost. Prussia spends \$2 an acre on its public forests. We spend 2 cents an acre on ours. It is not unreasonable to expect an increased national expenditure. Many of our states spend nothing on forestry. If those forests outside the public domain are to be protected and the public is to receive the benefits derived from such protection, the states must assume their responsibilities and carry their share of the burden.—*The Bulletin of the Geographical Society of Philadelphia.*

[While Mr. Graves's remarks apply particularly to the United States, there is also much food for reflection for Canadians.—Ed.]