

**THE MENACE OF THE FOREST FIRE.**  
BY DAY ALLEN WILLEY.

The destruction of forests in the United States by the fires which occurred during the year 1908 has been the greatest in money value of any yet on record. While the total loss cannot be exactly estimated, the investigation which is now being made by the United States Forest Service bears out this assertion.

igan, the Adirondack region of New York, and in eastern Maine. As yet the entire extent of the woodland destroyed cannot be given, as the measurements have not been completed.

In some years the loss has averaged at fifty million dollars, representing the value of the timber, the buildings, and other property in the burned area. The past year, however, was one of extraordinary losses.

lying between Lake Superior and Lake Michigan and bordering on Wisconsin. This area comprises about 35,000 square miles, excluding the water surface. Needless to say, this region has been the scene of very great activity in lumbering, by reason of the enormous extent of the pine forests. The tracts of first-growth pine are still very large, not only in Minnesota, but in northern Michigan, while nearly all of the region is



The destruction wrought by forest fire in a western village—only the machinery of a factory left.



One cause of the forest fire—waste lumber and sawdust carelessly ignited and left to burn. The wind is carrying the fire directly into the standing timber.



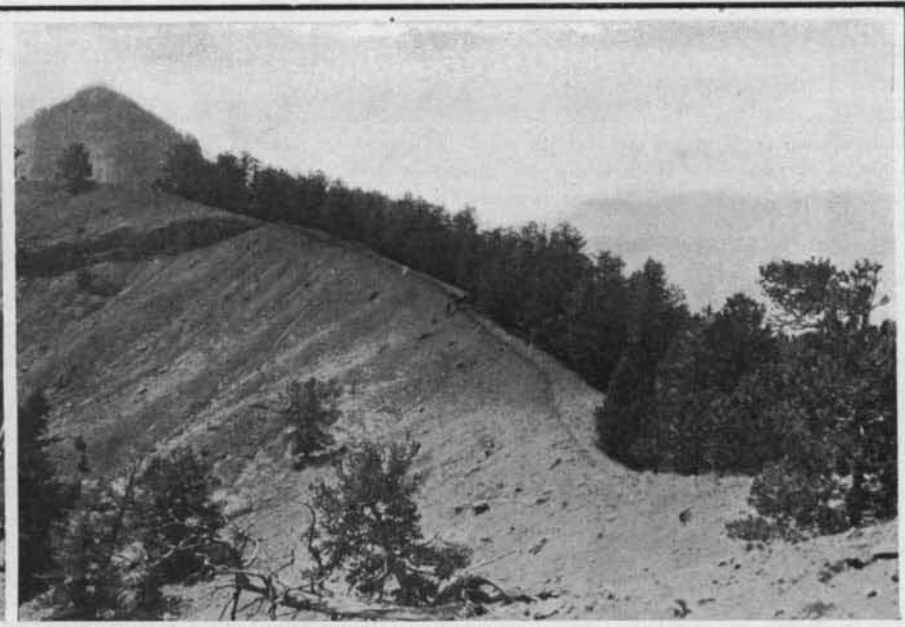
How the rangers fight forest fires by digging trenches and covering the fire with earth.



The rapidity with which a forest fire spreads. Views of a conflagration in Southern California.



Men making a clearing in the timber on a mountain to check the spread of a fire.



A mountain ridge often affords a natural fire break. This one stopped a fire in Wyoming.

**THE MENACE OF THE FOREST FIRE.**

So much has been printed in the daily press regarding the fires, that the reader might imagine they were extensive wherever large tracts of woodland are to be found. As a matter of fact, the destruction was confined to a comparatively few States, and in some cases to only small sections of these. Yet according to the government experts, the damage caused amounted to fully \$100,000,000. These figures are based upon investigations that have been made in the principal centers of disaster, such as northern Minnesota and Mich-

One reason for the extent of the loss was the high grade of the woodland burned, while another was the number of communities which were almost obliterated by the fire, to say nothing of the fatalities, which probably aggregate 500 if not more. Probably the section of the country which suffered most disaster was that portion of Minnesota near the head of Lake Superior, several counties in northern Wisconsin on the border of the same lake, the northern section of the Michigan peninsula, and the portion of the State

heavily wooded with younger trees of second and third growth.

The forest fires of 1908 caused the destruction of several important towns. The largest community in the series was Chisholm, fifty miles west of Duluth. This place had a population ranging between 4,000 and 5,000 people. Its principal buildings were constructed substantially of fire-resisting material. The streets were broad, and the edge of the town was somewhat removed from the woodland in the vicinity. Such was

the magnitude of the fire, however, that it destroyed nearly every building in Chisholm, leaving merely a few brick walls. Here the loss ran into several million dollars. Next to the destruction of Chisholm, the burning of several small settlements on the Michigan peninsula was the most notable instance of the danger of forest fires to communities. The principal community destroyed was Metz, a settlement of about 500 people located in Presque Isle County in the north-eastern part of the State on the Detroit and Mackinac Railroad. Metz is one of a half dozen communities inhabited principally by workers in the timber tracts. In the vicinity the cleared lands are occupied largely by small farmers. The fire that swept over Metz burned most of these farmhouses, and killed all living vegetation in the fields. Posen, six miles from Metz, was saved only by the efforts of the people aided by the railroad employees. Alpena County, adjoining Presque Isle on the south, was also visited by fire at the time Metz was destroyed. The flames extended to the suburbs of Alpena, the principal city of the Michigan peninsula, and only after a contest of three days and nights did the citizens, aided by the fire department, succeed in preventing another great disaster.

The Adirondack forest region has been the source of so many fires, and has been so carefully studied, that the State of New York's loss has been closely estimated. In a single year recently, fires started in areas representing 3,500,000 acres of its woodland. The trees on no less than 500,000 acres were ruined for commercial purposes. The expense of fire protection and fire fighting during the year in question amounted to \$185,000. In the ten years ending with 1907 the

timber regions of such States as Colorado, Montana, Oregon, Washington, Idaho, and Wyoming have been very small in extent in comparison with the sections of the country we have named. One reason for this is that so many of the national forests are located in the States named, and so much of the woodland is under the system of our national forest protection. It should be remembered that nearly all American fir and cedar come from the States of Washington and Oregon. In the West many of the most valuable growths of hardwoods are still standing. A number of fires have started from various causes on the forest reservations—usually through the carelessness of explorers, prospectors, and others—but they have been prevented from spreading and doing material damage by the officers of the Forest Service, who are distributed throughout the territory under the control of the government.

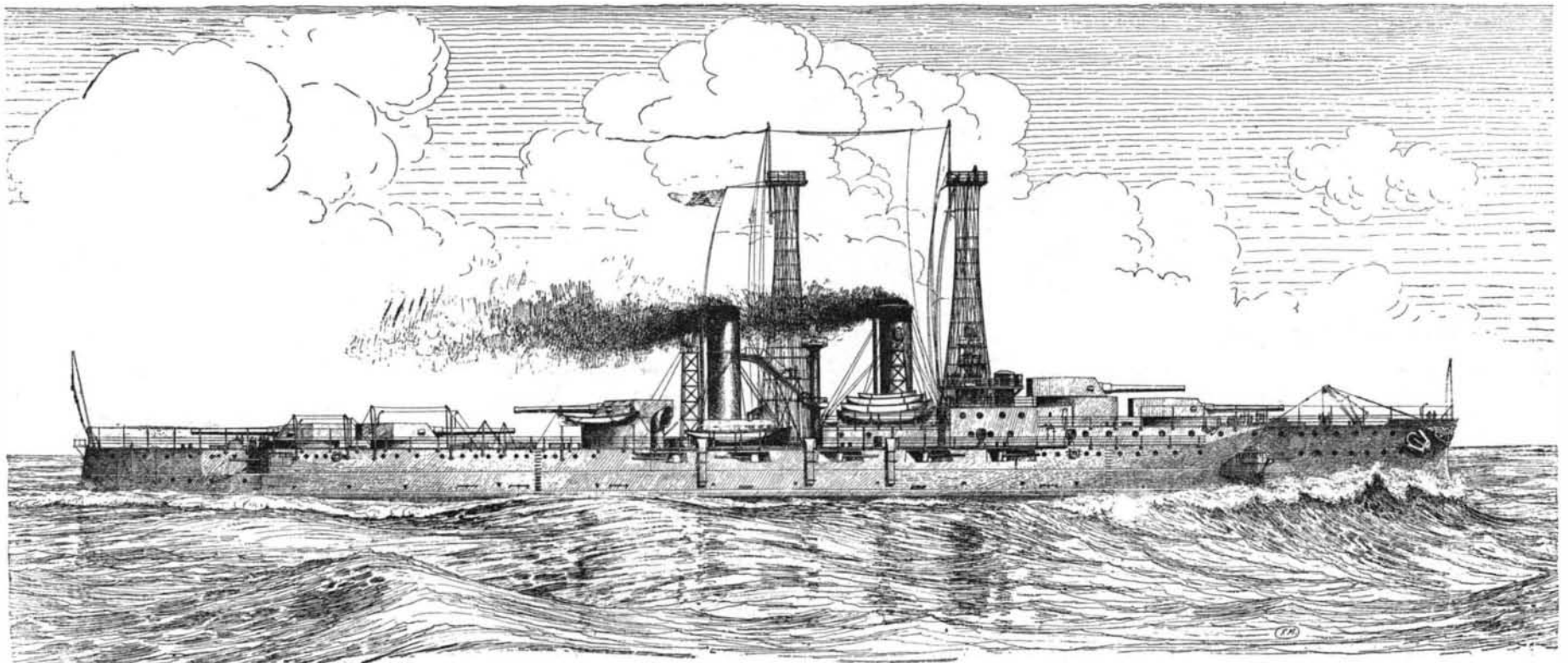
The forest fire is not the only menace. If underbrush or dry weeds and grass ignite, the flames spread with surprising rapidity. The heat generated often creates a strong air current, which hastens the progress of the fire. Since many dwellings and towns are adjacent to fields of this sort, especially in a country of "clearings," they are often threatened by such dangers. These "ground fires" are too well known to dwellers on the western prairie, even where there are no young trees or bushes. If the moisture has evaporated sufficiently, the crust may become as inflammable as dry peat, since it is so matted with roots and other dried vegetation that a piece of it can literally be ignited with a match. When a prairie fire gets under a good headway, it is very difficult to

During the dangerous seasons patrols should be actively looking out for fires, and if possible provision should be made to enable them to summon assistance readily in case of need. This may be done by telephone lines or by signal towers. A good plan would be to have located at various places simple tools, for often a single man, properly equipped and ready, can put out an incipient fire.

The tools for killing a fire are various, a great deal depending upon the topography of the country. Only a densely branched green pine or spruce brush may be necessary, or a large-sized broom with which to whip out the running fire, or to sweep burning embers back. A spade or shovel is needed to cover burning logs or embers with soil or to dig trenches. A mattock is necessary where the soil cover is tough and the soil rooty, and hence not easily handled with a spade or shovel alone. Other useful aids are an ax to get logs out of the way of the trenches, or a saw for the same purpose, pails to carry water for drinking purposes and, if practicable, for quenching smoldering embers, and pack baskets to carry provisions.

#### THE LAUNCH OF OUR FIRST "DREADNOUGHT."

The launch of the "North Dakota," the first battleship of the "Dreadnought" type to be built for the United States navy, which took place on November 10 at the Fore River yard, Quincy, Mass., is an event of more than ordinary naval importance. Although we seem to have lagged somewhat behind the foreign navies in building ships of this type, the British having seven or eight afloat, the Germans two or three,



THE 20,000-TON, 21-KNOT "NORTH DAKOTA."—OUR FIRST "DREADNOUGHT."

Launched at the Fore River yard, November 10, 1908.

forests destroyed in these mountains have covered 700,000 acres, while the State records show that \$500,000 has been expended in checking the spread of fires and in extinguishing them where possible.

These figures are of unusual interest at this time, because they show the immense loss which can be caused in comparatively a limited area, contrasting the Adirondack region with the woodlands of such States as Washington, Idaho, Oregon, or the three Western States which were so devastated during 1908. Where the cause of Adirondack fires was discovered, it was shown that nearly all of them were due to inexcusable carelessness or negligence. In one year, out of 300 fires in this region, 121 were traced to sparks from locomotives, 88 to piles of leaves left burning, 29 to camp fires made by hunters and others, and 6 to embers from tobacco pipes and cigars. This shows that the great majority of the fires could have been avoided. Timber experts are of the opinion that sparks from locomotives form one of the most prolific sources of forest fires. A study of the fires made in twenty-eight different States, shows that in one year the sum of three million dollars in timber was destroyed by flames originating from this cause. Spark arresters ought to be more generally employed.

As already stated, the burned area of timber land in 1908 was confined to a few sections of the country. In one year recently, timber covering tracts of 7,800,000 acres was ruined by fire. The wood was distributed over no less than twenty-eight different States, the total loss being estimated at twenty-four million dollars. The fire loss of 1908 is divided among only five States. It is noteworthy that the fires in the great

control if any breeze is blowing. Fires of this sort have swept over parts of Kansas, Nebraska, and other States in the plains country, reducing entire villages to ashes.

The fire most dreaded by the timberman and farmer in the woodland clearing is the "top fire." In a pinery, for example, a dry twig or cone may ignite from the flying sparks of a sawmill stack. If any breeze is blowing the blaze will spread through the tree tops. The fire is mostly in the air. It leaps from tree to tree, sending a shower of sparks and cinders upward and downward. The bulk of the flame is at such an elevation that nothing can be done to extinguish it except to cut a lane in the forest to prevent the spread of the fire—if there is still time. Such a fire is hard to fight and very destructive. The tops of the trees are burned, and the lower portions die in consequence.

Had the people of the forest States a comprehensive knowledge of the simple yet effective means that can be employed in obstructing and deadening fires, undoubtedly the annual losses would be reduced to a small percentage of the present figures. One reason why forest and field fires often get beyond control, is because efforts are made to beat them out with green brushwood or by covering the ground flame with piles of green leaves, if these can be procured. The burning area may be so large that the fire gets away from such control, and the workers must give it up. Had they found an open space or forest lane, and here turned up the damp earth in front of the advancing fire line, they could thus check its progress, and the labor of extinguishing it would be lessened.

and the Japanese two, it must be remembered that in the "South Carolina" and "Michigan" we possess two ships afloat which, though they are of only 16,000 tons displacement, each mount eight 12-inch guns, and therefore, strictly speaking, belong to the "Dreadnought" type. The launch is also significant because of the rapid work which has been done upon this, considerably the largest vessel ever built for our navy, its keel having been laid as late as December 16, 1907, and the ship at the time of the launch being nearly sixty per cent completed.

The remarkable record made by the shipbuilders in launching the "North Dakota" in 10½ months from the laying of the keel is noteworthy, when it is considered that although in one or two instances abroad a battleship has been launched in slightly over eight months from the laying of the keel, still in these cases the per cent of completion of the foreign ships was not so great as in the case of the "North Dakota," where 9,000 tons of material, or sixty per cent of the ship, have been worked in in the record time above mentioned, and in addition, much of the vessel's auxiliary machinery, fittings, and equipment are already finished and ready for installation, including the five huge turrets in which will be installed the main battery of the vessel. These turrets are at present completed and lying on the dock alongside of the berth to be occupied by the "North Dakota" when she takes her initial dip, and the installation of these housings will be at once proceeded with. It is rightly considered, therefore, that the Fore River Company have made a world record in the construction of the "North Dakota" to date; and should the same rate of produc-