Fire Control in the Lake States

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EVERY Forester is fully conscious of the fact that the practice of Forestry, on either public or private land, cannot be successful without adequate fire control. Much time and study may be spent in preparing a complete detailed management plan for an area and a considerable sum expended in applying the plan, all of which may be wiped out by one forest fire in a few short minutes. There is no set formula which prescribes what must be done in order to effect adequate fire control as this varies in different parts of the country and with different types and age classes of forest growth. We must use the information we have available, mainly statistics, and temper this with past experience and good judgment. Within the past few years considerable prograss has been made in fire control planning, which is a result of scientific studies made primarily of weather conditions, and the rate of spread and resistance to control of the various fuel types, under different climatic conditions and seasons. Improvements have also been made in fire fighting equipment, fire fighting technic and personnel training.

IN the Lake States Region our problem is largely one of prevention. Man-caused fires head the list by a wide margin in causes of fires and can be prevented only through education, proper law enforcement, and close cooperation between federal and state agencies with each other and with owners of private forest land. Considerable progress has been made in the prevention of man-caused fires through the use of radio, newspapers, lectures, special publications, cooperative agreements with lumber companies and others operating in the forest and the many informal, personal contacts made daily by forest officers . The work of educating the public to be fire conscious is becoming more important each year with the increasing number of people who are using our public forests for camping, hunting, fishing and other forms of outdoor recreation. Fires that are stopped before they start are the only fires that do no harm.

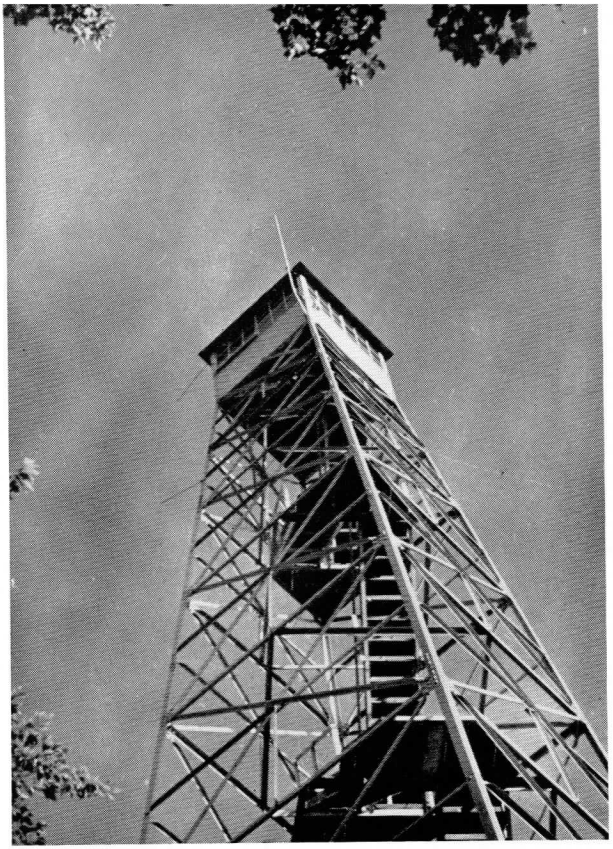
Law enforcement when properly used is an excellent instru-

ment in fire prevention. It cannot, however, in itself be relied upon to curb man-caused fires for it may instigate revenge and result in an increased number of fires through incendiarism. Law enforcement must follow education and then is effective only when public opinion is aroused and the community appreciates the benefits to be derived from the prevention and control of forest fires. It is important to obtain definite and complete evidence before a prosecution is attempted because when law enforcement is resorted to it is, after all, the number of convictions which produces the desired effect.

Close cooperation between federal and state agencies is necessary in order to designate areas for which each agency is responsible and set up definite cooperative agreements in reporting and suppressing fires. This is especailly important when a lookout covers a part of an area protected by another agency and also in emergencies when one agency may "borrow" men and equipment from another agency. The general fire control programs must be correlated in order that the public has a clear understanding of our problems and methods and does not become confused regarding the aims and policies of the various agencies. Fire control is largely a problem in prevention and there is no reason why man-caused fires cannot be reduced and eventually become rare instead of the principal cause of fires. The efforts along fire prevention lines have shown encouraging results in that the number of man-caused fires is gradually though slowly decreasing. However, in spite of all that has been accomplished through legislation, education and law enforcement, forest fires are still far too common and the state and federal agencies must continue to increase the efficiency of their fire control organization .

Fire control action on National Forests in the Lake States Region is now governed to a large extent by detailed plans prepared from data gathered in a comprehensive study of factors affecting detection, cause, and behavior of fires and also of transportation and communication systems.

THE forests have been covered by a visibility survey from which maps were prepared, showing the area actually seen from each lookout point when visibility is 10, 6, or 4 miles. These maps prepared as overlays readily indicate coverage by the detection system under varying conditions of visibility and show the need for manning secondary towers and establishing patrols to effect coverage for any specific area. This particular



"Eyes of the fire organization."

study also shows the need for additional towers and in some instances has resulted in the relocation of existing towers. Lookouts have been called "the eyes of the fire organization" and since fires will occur, an efficient detection system is invaluable in discovering and reporting fires so the suppression crews can get to them while they are small.

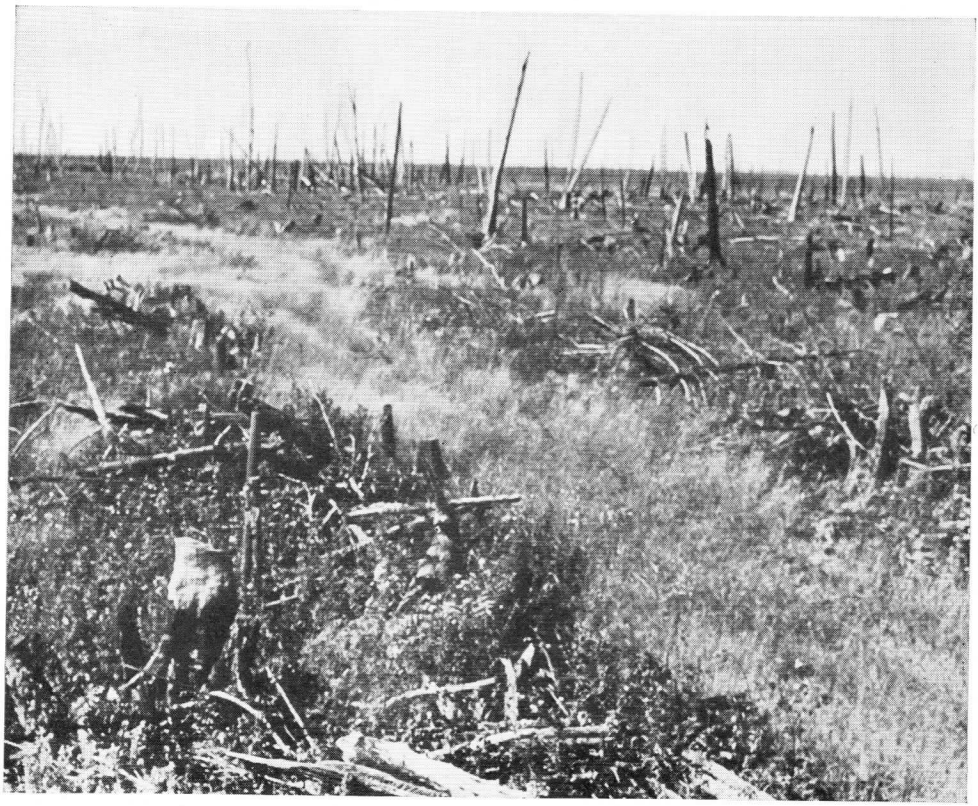
This last point brings up the problem of the transportation system, which, other things being equal, directly controls the times in which suppression crews can reach a fire. In planning the transportation system, all existing roads are taken into consideration and incorporated into the plan. Before new roads are built, primarily for protection, their need must be definitely justified. This justification is necessary in order that money will not be expended on a road into an area where the hazard and risk are low and the rate of spread of a fire would be so slow that it could be reached and controlled while it is still small without such a road. When new roads are constructed for other administrative purposes, full consideration from a fire view-

point is always given to their locations and standards of construction.

TRAVEL time maps are made available to the dispatcher, from which, when a fire is located, he can immediately see the travel time required by a crew to reach the fire from known sources of available manpower. The travel time map is used by the administrative officer to determine if "bad spots" on the forest are in excess of reasonable travel time. Such information and subsequent correlated planning may mean the difference between success and failure or a "good" and "bad" fire season.

One very important aid to fire control is the fuel type maps. These maps show types of extisting fuel over the forest, classed as to the rate of spread and the associated resistance to control. Fuel types are classified for both these factors into low (L), medium (M), high (H), and extreme (E). Thus L-L would designate a fuel type with a low rate of spread and low resistance to control. H-M would designate a fuel type with a high rate of spread and a medium resistance to control. These factors, however, for certain fuels will not be the same in the summer as they are in the spring before growth starts and in the fall when the vegetation is dead. Thus it is necessary that different fuel type maps be used for the summer season as compared with the early spring and late fall season. This classification of fuel types is based upon a study of hundreds of reports on fires occurring over a period of years, and analyzing fire behavior in the various fuel types and under varying conditions of weather, control methods and other factors. As a result of this study dispatching tables have been compiled which, after the location of a fire is established, and the travel time and fuel type in which the fire is burning are determined, inform the dispatcher of the correct number of men to send to effect control .

The fire protection force that is necessary to secure adequate protection depends on the existing or expected fire danger. The fire danger is obtained from observations made at fire weather stations, usually one station for each Ranger District, where readings are taken three times daily at 8:00 A.M., 12:00 Noon and 6:00 P.M. These weather stations obtain the relative humidity, wind velocity and fuel moisture content; and this correlated with the number of days since last rain, amount of rain, and condition of vegetation as to dead, curing or green, give the fire danger for any specific time.



Courtesy American Forests, magazine of The American Forestry Association

Typical waste areas as the result of numerous fires in the Lake States.

THE fire danger is divided into seven classes, ranging from Class No. 1 (low) to Class No. 7 (extreme). The ranger, upon receipt of this information, sets up his organization for the prevailing or forecasted class of danger insofar as his available manpower and equipment will permit. This factor is also considered by the dispatcher in sending men to a fire as the dispatching table referred to previously is built up by classes of fire danger. This table is not 100 per cent correct, but continuous study and a more intensive analysis of fires is gradually bringing it to a higher degree of accuracy.

The telephone is still the principal method of communication although the use of the radio is increasing, especially at isolated stations and on large fires. In the past, one fault with

radios has been that they were too sensitive and complicated, thus requiring specially trained personnel to set up, operate and maintain. Much advancement has been made lately, however, as radios are being simplified and their range of successful operation increased. Undoubtedly radio in the future will play a more important part in the communication system than it has in the past.

This applies also to the airplane, which in the past has been used to some extent for patrol and in certain isolated areas for transporting men and equipment. Region 9 now has an airplane and experiments are being carried on to determine what can be expected from its use and its full value in fire control.

Training of personnel in fire control phases to increase knowledge and efficiency is fully recognized. This training includes fire fighters and lookouts through to the fire boss and behind the line positions. Results of training have been very satisfying, with experienced as well as new personnel.

With all the information available and by preparing for periods of high fire danger as they build up, we should be able to effect adequate control.

Picture page 2, by Ernest Williams, courtesy American Forests, the magazine of the American Forestry Association; pages 39, 43, 49 courtesy American Forests, the magazine of the American Forestry Association; page 105, by A. L. McComb.