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include tinted glasses to protect his eyes and aid him to distinguish faint smoke at long range, field-glasses with which to examine suspicious-looking smudges, a special form of lookout map correctly oriented, a fire locator (or alidade) for determining the bearing of a smoke, and finally a telephone or other means of communication by which he may report without delay. Rapid means of communication are fundamental to successful lookout service. For this purpose the forest telephone is universally preferred, but other means are sometimes used for reasons of expediency and are nearly always maintained in order to guard against temporary isolation of the station should the telephone line be broken.

Wherever a region is fully covered by lookout stations, the precise location of a fire within a distance of a fraction of a mile may be quickly secured by the simple process of intersecting from two or more stations. Where the fire is visible from only one station, other methods of location, slightly less exact, have been devised. Many difficulties in the establishment and maintenance of dwellings on the high peaks of the western mountains have been encountered and many ingenious devices resorted to in overcoming them which it is beyond the scope of this article to discuss. Also, it is impossible to discuss the human factor in lookout service which is in itself an element of much importance.

The Work of Suppression.

A fire having been discovered and

reported by the lookout man, the third element of the specialized staff is brought into action. This is the unit whose main function is Suppression. The title "smoke chaser" applied to this unit adequately indicates the nature of the service. The "smoke chaser" corresponds to the fireman of a city fire brigade. His duty is to remain within call of his telephone bell or other communicating apparatus and upon being advised of the location of a fire to proceed to it by the shortest route in the least possible time and to extinguish it. Here again, minutes count and every possible measure is taken to see that none are lost. If he travels on foot, his pack is ready to be instantly shouldered. After careful study and experiment a "smoke chaser's" pack, containing all essentials for three days and the tools needed for fighting a fire, has been devised to weigh only 21 pounds. If he can use a horse, it stands ready saddled and bridled; if he travels by power boat, it floats at his dock fully equipped. His only duty is to leave instantly, get to the fire in the least possible time, and do everything in his power to put it under control.

Supervision of Forces.

The "smoke chaser," however, is only the first or skirmish line of defence. Back of him stands the whole organized control force, the entire man-power of the community where this system has been most highly developed. This brings up the fourth function, that of Supervision. For the

successful operation of a specialized protective force it is essential that the function of Supervision be performed by a permanent staff. In order to provide year-long employment economically, this staff must necessarily be incorporated in the organization which is concerned with the woods operations. Private owners can incorporate it in their logging crews; governments in the scaling or inspection staff. This is a particularly easy problem in Canada where logging is confined almost exclusively to the winter season and fire-ranging almost wholly to the season when logging ceases.

Keeping in mind the military analogy already alluded to, it will be evident that the supervising staff is nothing more or less than a skeleton organization composed wholly of officers, which organization can be rounded into a complete defensive unit by calling upon a large body of assistants of various degrees of training, according to the necessities of the season. In a region where anything in the nature of permanent settlement is found, this training may, indeed, be carried to considerable lengths and the efficiency of the force greatly enhanced.

It will be realized, however, in studying the details of forest protection work that it divides rather distinctly into two general classes. There is on the one hand, the more strictly administrative duties which fall to the various supervising officers. These include the day-by-day supervision of the work of prevention and detection forces; the inspection of field conditions; study of fire conditions and labour supply; preparation and revision of mobilization schemes; the supply of provisions to field forces; direction of construction on improvement projects and various other activities not concerned with the actual process of fighting fires, but either preventive in character or in the nature of preparation for fighting fires that are anticipated.

On the other hand, there is the actual forest fire-fighting, mostly on a small scale in a smoothly running organization but sometimes on a very large scale and with crews of considerable size. This, too, will as a rule be under the direction of the same supervisory officer, although in some cases the actual executive work on the fire-line is placed in the hands of a fire-line foreman, while the supervisory officers devote their attention to co-ordinating the various auxiliary services and determining the general strategy of the fire control operations. Here is seen a distinct development of staff and line functions as will be hereinafter explained.

(To be continued)