

few miles of a patrolling warden before discovery. There, unfortunately, was a high range between him and the fire, and the wind was so deflected that it was impossible for the warden to see the smoke. The first reports of the fire came from the prairies, miles away. From there the smoke was clearly visible. Even when the general location of the fire was known and fire-fighting gangs were sent in, these people could see no sign of fire until they were within a few hundred yards of it. Now, had there been an air patrol the fire would have been discovered the day it started. To a person unfamiliar with the mountains this story might seem almost impossible, but a most rigid investigation has established its truth.

THE SQUARED MAP.

Once a fire is discovered, the all-important matter is to definitely locate it so that the fire-fighting gang may reach it promptly. The "squared map," so much used in the war, offers facilities for an airman exactly locating a fire and passing on word to the fire-fighting organization, also in possession, of course, of a "squared map." And that means that the fire-fighters at once know where to go and how. This information may mean the saving of many valuable hours in the beginning of the fight against the fire and a few hours at that time may mean the difference between the destruction of a few acres of forest and the destruction of tens or perhaps even hundreds of square miles.

There is another important use of these maps in regard to fire-fighting. The maps give accurate information as to the conformation and physical features of the district. As already intimated, these have an important bearing on wind direction—a vital consideration in fire-fighting. These also constitute the chief considerations in the decision as to how a fire is to be fought. From an accurate map the fire-fighter at once knows whether the fire threatens specially valuable timber. He also knows whether there are any natural features, rocks, water, open areas, which can be used as a natural line of defence against the fire. This and other information he can get from the maps gives the fire-fighter the knowledge he requires in reaching a decision as to how to lay out his fighting forces. For it must be remembered that fighting a battle with a fire is like fighting a battle with human beings. Generalship is vital, and when a general knows all about the "lay of the land" where the battle is being fought he has information that may readily

mean the difference between a victory and a defeat.

SCOUTING A RAGING FIRE.

There are two other matters in connection with forest fire protection in which it is expected that aircraft may help materially—rapid transportation of men and supplies to the scene of the fire, and scouting operations during the progress of a fire. As to the scouting operations, these are of great importance if a fire attains any great size. A man who is directing fire-fighting operations in such a fire is always handicapped by lack of information concerning the developments of the situation. His staff may be holding the fire at one point, but losing ground at another. Topographical features and consequent variations often give a fire an unexpected turn. An airplane scout, observing the fire from aloft, can keep the chief fire-fighter constantly advised in that connection.

As to transportation of men and supplies, everything that aircraft can do in that regard will prove of outstanding value. As already stated, getting the fight started before a fire has gained too much headway is all-important. Getting fire-fighters to a fire even only ten or fifteen miles away is often a slow and laborious undertaking, for forest trails are not city highways, and, moreover, forest fires have a disagreeable habit of so locating themselves that the first struggle of the fire-fighters is to get over the steep grades and the masses of debris and to penetrate the thick forest growth between them and the fire. It is obvious that with ample landing-places throughout a forest, the airplane can very quickly take men and supplies to the scene of a fire.

ARE GAS BOMBS PRACTICAL?

It is to be hoped that the airplane will also prove effective in actual forest fire-fighting. At present the idea in this connection is that airplanes may be used for dropping gas bombs on the fire. The idea is perfectly reasonable if a gas can be found which will prove an effective fire-extinguisher in the open air. There is a vast difference between using a gas extinguisher in a building and in the open air. Outside, the diffusion of the gas is so rapid that it is comparatively ineffective. Here is a job for a chemist. If he can produce a gas bomb that will extinguish fires in the open air, there is no doubt that the airplane affords the quickest and best means of applying it to the fire.

The utility of aircraft in forest protection appears to be so obvious that it is no doubt a matter of surprise to airmen and to the public