

fences, ditches, roads all show plainly and the areas of different kinds of land also.

Even the character of the soil can be seen. The areas in cleared land, swamp, burn, scrub timber, and good timber can be easily measured with a planimeter and the exact value of the land determined. A scale of prices for the different kinds and qualities of land is determined and all lands are bought by it. The seller and the purchaser can sit down over an aerial photo and make a trade much better than in any other way, for they have all the details before them.

In planning all kinds of engineering work, laying out roads, ditches for drainage, areas to be planted and so forth, the photos are of the greatest assistance, and by taking a series the progress of the work can be checked very much more rapidly than by ground measurements. The areas cut over in a logging operation can be checked on the photos, the roads can be seen, areas left uncut can be determined and the general efficiency of the work can be judged.

What the Work Costs

The general results from the work promise well and the Laurentide Company has decided to make aerial work part of its operations. Permanent hangers are being built, together with houses for the personnel and shops for the care of repair work.

The cost of the work, as carried on experimentally, has not been excessive and as it becomes standardized, can be materially reduced. The main thing is to have the machines in the air as much as is possible so as to cut down the unit costs of the work. The cost per mile works out at about \$3 per mile and the cost of photographs at about 2.6 cents per acre. This is based on the use of the HS2L seaplanes which use about 25 gallons of gas per hour and are slow climbers. Also there are many items of expense which are incident to beginning the work and which will be eliminated later when more experience has been gained.

Easy Transportation.

To sum up the results so far obtained; for carrying men, whose time is valuable,

to distant parts of the work, the planes are most useful. The manager of a company, with large woods interests gets tied down to his office and mill work, and a trip into the woods consumes so much time that he does not like to take it. The same is becoming increasingly true of logging managers and superintendents. They do not like the hardships of long journeys into the woods and the being out of touch with their general work for days at a time. With the planes, the most distant operations can be visited and the work inspected with only one night away from home. Local foremen in the woods will be kept up to their work much better. In case of accident doctors can be rapidly taken into the woods and injured men brought out. Mail can be taken in and reports brought out much oftener.

For rapid reconnaissance the planes are invaluable. Tracts which are for sale can be inspected in days where weeks were required and the information obtained is much more accurate and fuller than can be had from ground work. In a few hours in the air, the general drainage of a country can be determined, burns, swamps and timbered areas sketched in, the species present noted and the general character and quality of the timber ascertained. Windfalls and insect damage can be seen and all areas estimated with more accuracy than from a strip survey. When the ocular survey is supplemented with photos, there is no room for doubt about the character of the country and instead of depending on the opinion of the man who has made the reconnaissance, all the responsible men interested can get together and discuss a purchase or a proposed operation intelligently and with the information before them.

Spotting Fires

Spotting forest fires and taking help to extinguish them is a valuable part of the work.

The carrying of provisions to distant operations will certainly become a part of the work before long, doing away with the building of expensive tote roads and making possible the placing of provisions just before the work begins, in-