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FOREST PRODUCTS LABORATORY † FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE

IMPROVED HARVESTING METHODS

EQUIPMENT SURVEY NOTES

WYSSEN CABLE SYSTEM

The Wyssen cable system developed in Switzerland warrants careful study for certain logging conditions in the United States. Timber in some rough, mountainous sections heretofore considered as too high cost to harvest with ordinary logging equipment becomes practical to log with a good cable system. Such timber is commanding more attention in the United States, and will continue to increase in importance.

The Wyssen system is one of the better-known light rig systems used in Switzerland and France. Descriptions by H. G. Winkelmann, Director of the Central Swiss Forestry Office, and Alfred Huber, a Swiss forester, indicate the practicability of the Wyssen system for logging in the East and relogging in the West. This note dealing with the Wyssen system is based on foreign reports translated by the Forest Products Laboratory and experience in the United States.

Essentially, the Wyssen cable system is a combination high-lead skidding and aerial transportation system, taking full advantage of gravity. Although the minimum slope recommended is 27 percent, it is stated that operations can be carried on with less slope by using power instead of gravity.

It is composed of a single tight skyline cable, a haulback cable, and a specially designed carriage used in connection with stops on the cables (fig. 1). Since gravity is the main motive force, only 17-horsepower motor is required to operate a single drum winch carrying the haulback cable. This assembly is positioned at the upper end of the skyline. Logs can be transported uphill by using larger motors.

In practice, the motor and winch are mounted on skids. The unit is moved from one operating point to another by anchoring the free end of the haulback cable and winding it up on the drum (fig. 2). When the unit is finally spotted and anchored near the upper end of the skyline location, the haulback cable is pulled down the slope by hand. After being hooked to the skyline, the haulback line is reeled in, thus pulling the skyline up the slope.

A location above the power unit is selected to anchor the skyline to a deadman, stump, or guyed spar tree. After anchoring the upper end,

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the cable is tightened and the lower end similarly anchored. Minimum height must be sufficient for material being transported to clear intervening obstructions (fig. 3).

For a 3/4- to 1-inch skyline carrying a load of 5,500 pounds, the maximum unsupported span is given as 2,600 feet. Cables over a mile in length are generally used with intermediate supports (fig. 3). Both slope and direction of the skyline can be changed somewhat at the support point.

The significant feature of the system is the carriage and its use in connection with unique cable stops that are slid along and clamped in place as needed. The clamping mechanism is operated by a trip line so that changes can be made from the ground.

When the carriage is in place, the haulback line (3/8 to 1/2 inch) is threaded through the uphill side over pulleys and down through the bottom. A stop is fastened just above the end hook, and the combined weight of the two is sufficient to pull the haulback line to the ground when the winch is released.

In operation, loads are attached to the hook with choker cables and, as the haulback line is reeled in, the stop above the hook strikes a trip mechanism in the carriage. This locks the stop on the haulback line to the carriage, and releases the lock holding the carriage to the skyline stop. The carriage is then free to travel down the skyline, propelled by the weight of the load. Speed can be controlled by a brake on the free running winch drum. A stop at the end of the run reverses the locking mechanism, making it possible to lower the load. Travel of the load down has been recorded at 3,350 feet per minute.

Although lateral skidding to the skyline is stated to be 1,000 feet, reports on installations indicate the general practical distance to be 400 feet. No doubt the topography and height of line have a decided bearing on this.

Installations have been made in New York, Colorado, Montana, Washington, and British Columbia. A description of the British Columbia installation is contained in Report R1637-51.

Although the unit described here is a common size, larger sized units using 31- and 60-horsepower motors are now available for loads up to 5 tons.

References

(1) Anonymous.
1946. Les Mouvelles Techniques De Manertention Et De Transport Des Bois Chez M.E.V.R.I.C. Revue du Bois, Vol. 1, No. 11, pp. 39-42.

(2) _____
1946. Une Technique Nouvelle Pour La Mise Envaleur Des Forets De Montague. Revue du Bois, Vol. 1, Nos. 7 and 8, pp. 19-22.

(3) Huber, Albert.
1948. New Skyline For Long Distance Logging. Timberman, Vol. 49, No. 7, pp. 78-80.

(4) Kriska, Tibor.
1947. Use of the Wyssen Cable-Way in Harvesting Construction Wood. Polana, Vol. 3, Nos. 11 and 12, pp. 241-242.

(5) Winkelmann, H. G.
1943. Der Seilkran Wyssen, Le Telepherique Wyssen. Der Holzmarkt, Vol. 24, No. 19, 26 pp., illus.

(6) Giordano, G.
1959. Logging Cable-ways. United Nations Publication FAO/ECE/LOG/60.

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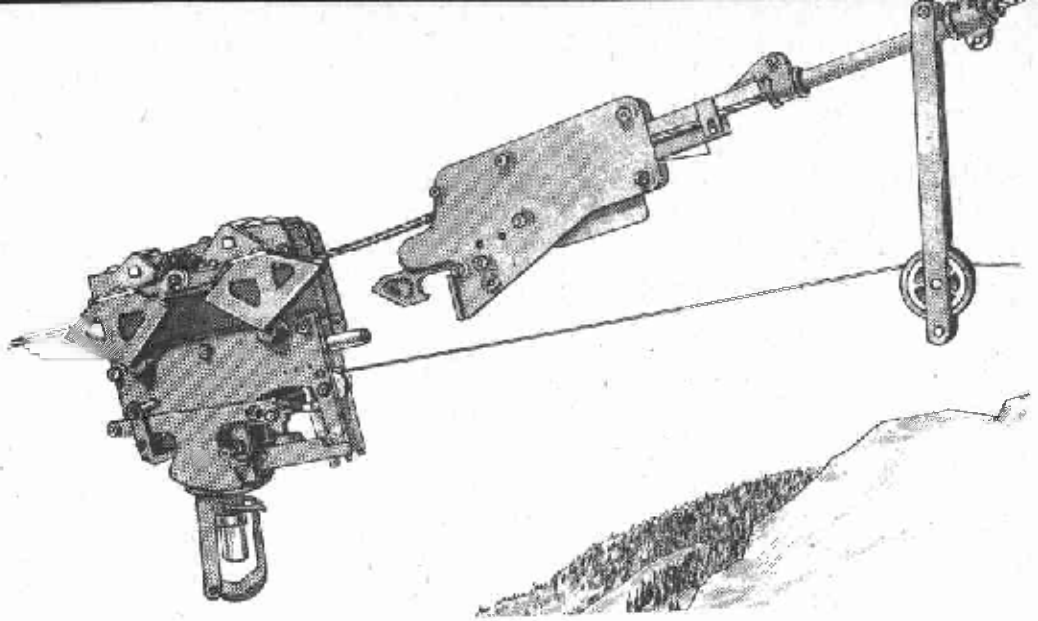

Figure 1.--Wyssen cable carriage and stop with lifting hook locked in place.

Figure 2.--Winch and motor unit being moved up a steep slope by winding up the cable.

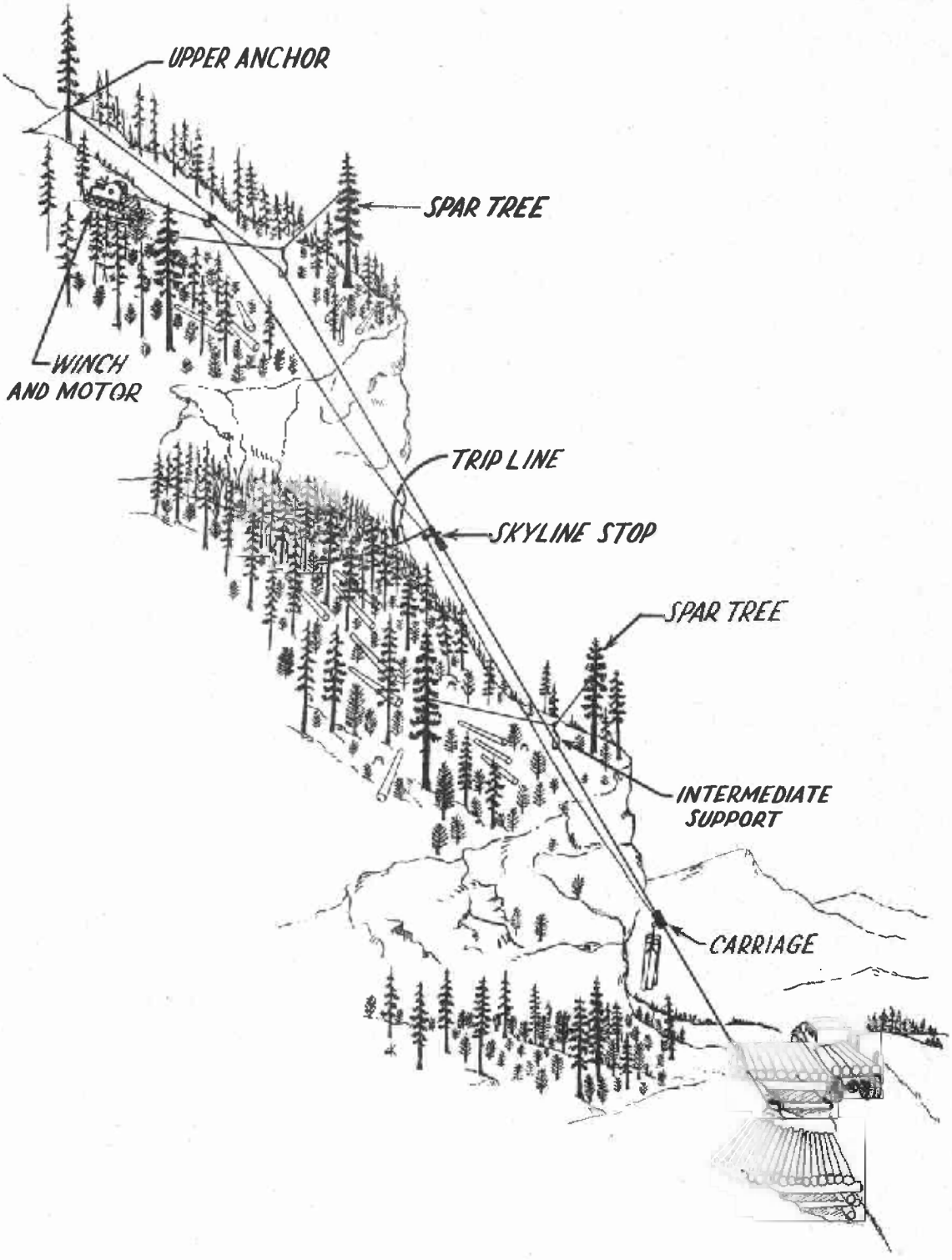

Figure 3.--General layout of the Wyssen system showing use of intermediate supports to clear obstacles and support long spans.

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