



Part of the North Shore's Construction Force With Matt Van Lennep, Superintendent.

North Shore Line Installs Two Electric Interlockers

Union Type-F Plants at Busy Junctions Completed in Rapid Time for New Skokie Valley Route

By H. W. Roberts

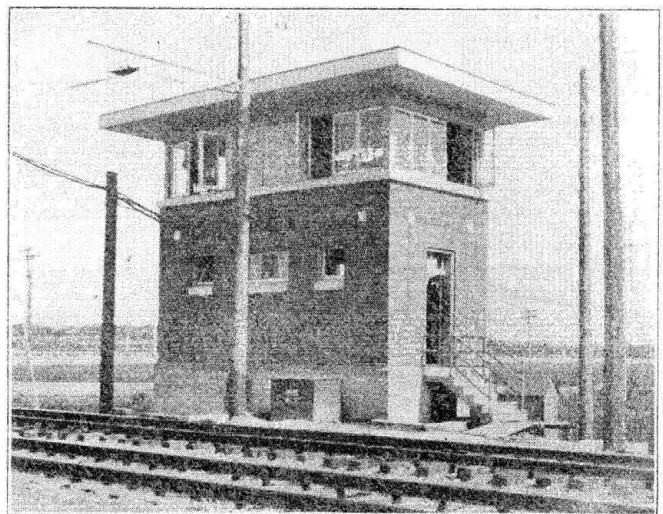
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THE high-speed electric railway system recently built between Chicago and Waukegan, through the Skokie valley west of the north shore residential district adjoining Chicago, has two electric and one mechanical interlocking plants to expedite the handling of its heavy interurban traffic. These comprise: (1) a 26-lever Union Type-F electric plant at Skokie Junction, Ill., where the electric line crosses the Lake Bluff cut-off of the Chicago & North Western; (2) a 50-lever electric plant with similar equipment at South Upton, Ill., which is a junction of the electric lines to Milwaukee, Wis., Mundelein, Ill., and Lake Bluff, as well as a crossing with the freight line of the Chicago & North Western; and (3) a 24-lever Chicago Railway Signal & Supply Co. mechanical plant at Dempster st., Niles Center, Ill., to handle a double-track junction and two crossovers in this terminal for the joint benefit of the North Shore line and Chicago Rapid Transit company.

The towers, distinctive for their simple and pleasing exteriors, are lighted on all four sides through windows at the second floor level and are of fireproof, brick and concrete construction. A flat roof with transite ceiling is used on all of the towers. There is an abundance of daylight in the machine room, the towerman being afforded an unobstructed view of all trains within the limit of the plant. In the basement of each tower a hot water heating plant is installed with an adequate coal storage bin.

The first floor houses the storage batteries, relays in steel cabinets and suitable charging equipment. A reinforced concrete floor supports the interlocking ma-

chine on the second floor. Wire requirements are reduced to a minimum by having the machine on the second floor directly above the relay cabinets on the floor below. All control wires between the two are carried in two runs of 4-in. conduit. At the back of

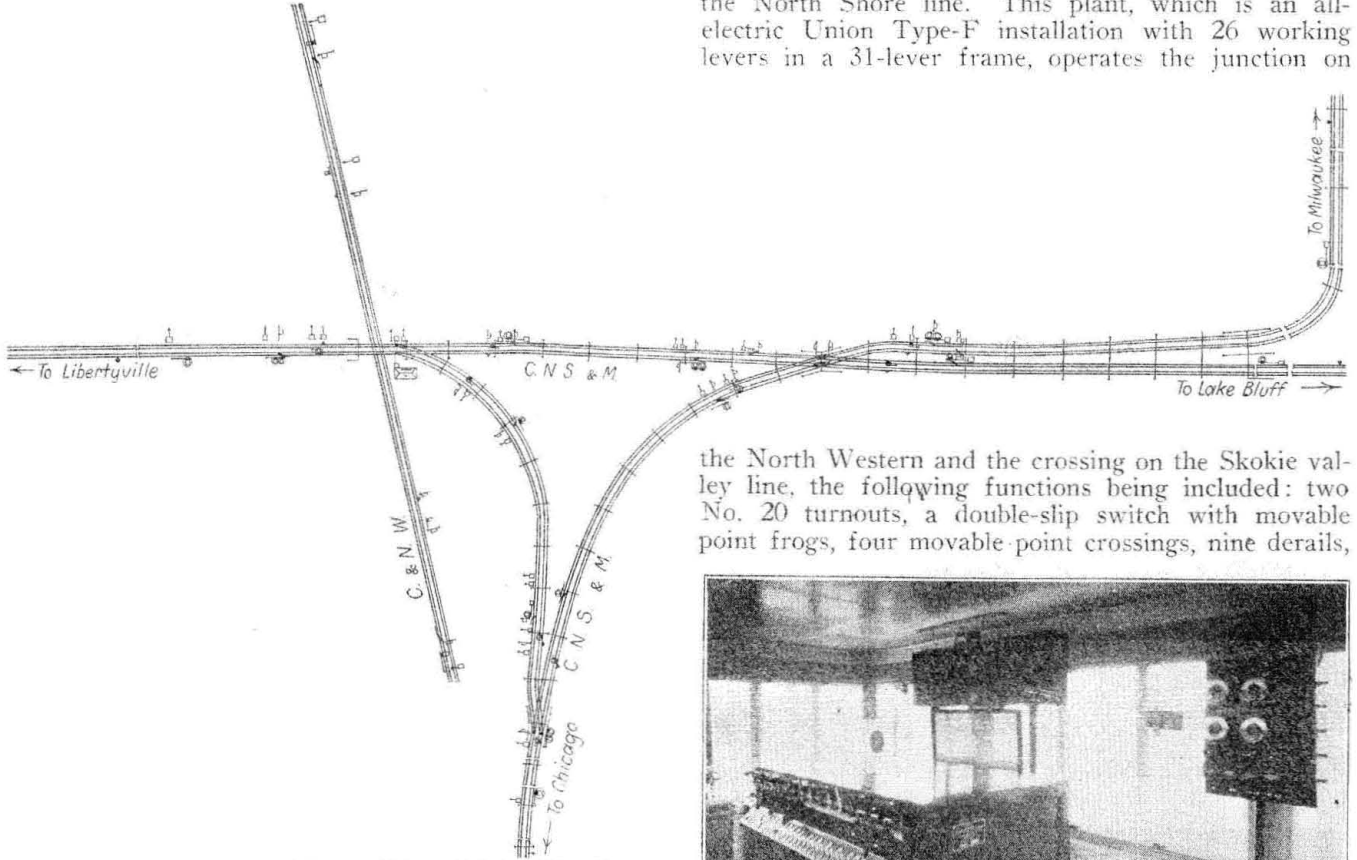


The Tower at South Upton Is Distinctive for Its Attractively Simple Exterior

the machine the illuminated track model is mounted upon two supporting pipes within which the wires are run. Normally, the lights in the track model are out, being energized only upon the entrance of a train into

a track circuit. Six to eight-volt lamps are used mounted behind glass diffusing buttons. An adjoining panel mounts the clock-work time releases, these hav-

the North Western, the turnouts of the latter leading to Lake Bluff were shifted south about 500 ft. to enable the installation of No. 10 movable point crossings on the North Shore line. This plant, which is an all-electric Union Type-F installation with 26 working levers in a 31-lever frame, operates the junction on



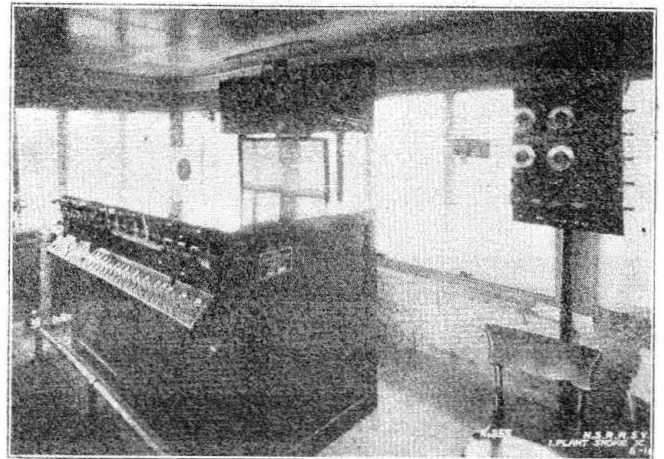
Track Layout of South Upton Plant Which Handles a Heavy Express Traffic on the Electric Line

ing two normal and two reverse contacts; the emergency switches for use during track circuit failures, and the vibrating bell annunciators. The latter are track instrument controlled from points 4,000 ft. in advance of the distant signals on the electric line and track relay controlled on the steam road.

Movable Point Crossings Employed

At Skokie Junction, the mechanical interlocking plant formerly in service was operated by the North Western

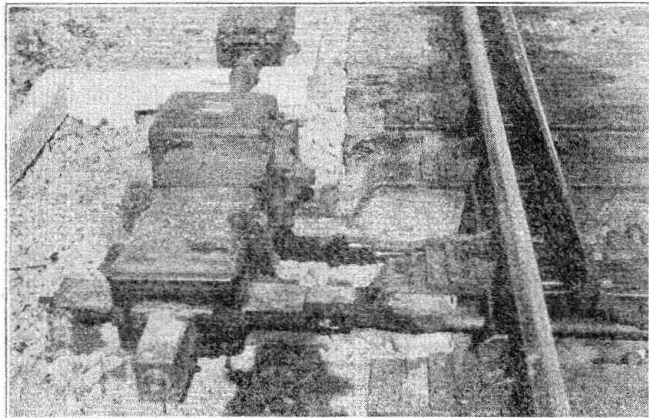
the North Western and the crossing on the Skokie valley line, the following functions being included: two No. 20 turnouts, a double-slip switch with movable point frogs, four movable point crossings, nine derrails,



Union Type-F Electric Machine at Skokie Junction

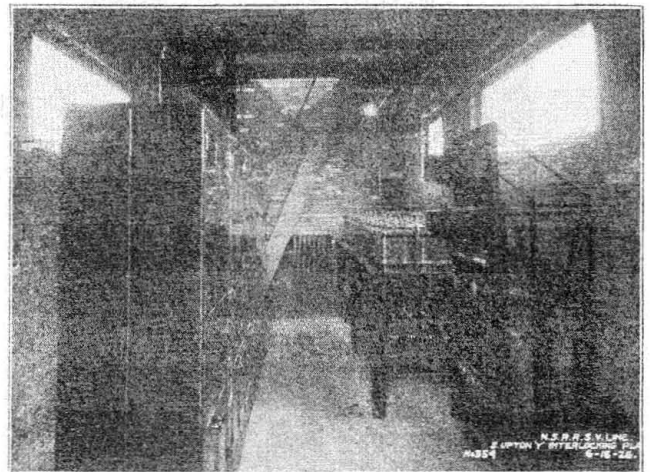
six two-position lower quadrant semaphore signals on the North Western, four Union Style-N two-position color-light signals on the North Shore, and two Style-N two-position dwarf signals:

The track circuits on the electric line are double rail a.c. with Union 1,000-amp. impedance bonds installed to carry the return d.c. propulsion current through the



Close-Up of a Style-M Switch Machine Showing Rail Bracing

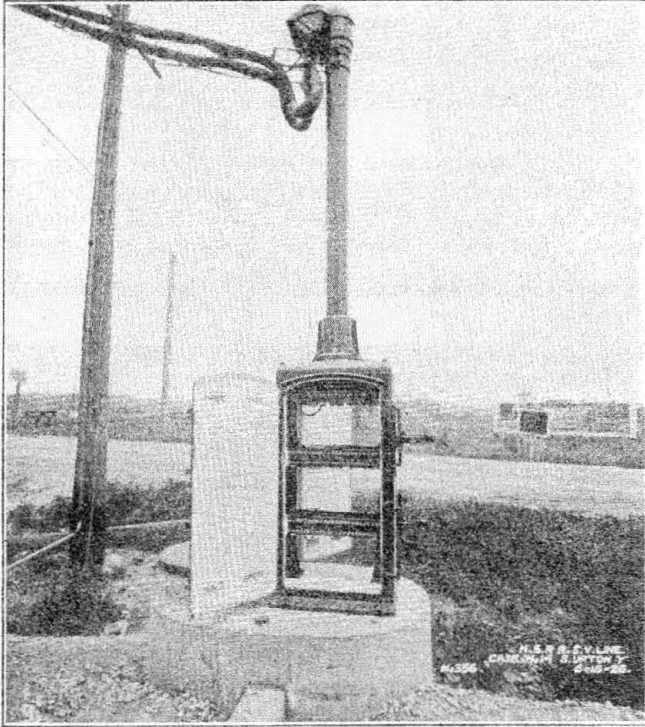
as this is a junction on the steam road of its Lake Bluff cut-off and Milwaukee freight line. When the new Skokie valley line of the North Shore was built, which parallels for practically its entire length, the line of



Relays Are Housed in Steel Cabinets Located Immediately Below the Machine on the Floor Above

signal track circuits. The track transformers are Union with 110-volt primaries and adjustable secondaries (1 to 13.5 volts) for 60-cycle operation in conjunction with Union Model-15 track relays. On the North Western the track circuits are d.c. fed from Exide Type KXHS cells charged by Leich mechanical rectifiers. Trunking is used to carry the track wires from the instrument cases to the rail connections, all other control wires being carried overhead in hand made marlin laced cable.

Switches and derails are operated by Union Style-M, 110-volt d.c. machines using Type-F circuit controllers. The derails are of the Wharton type in the normal routes and Hayes type in the back-up routes. Detector

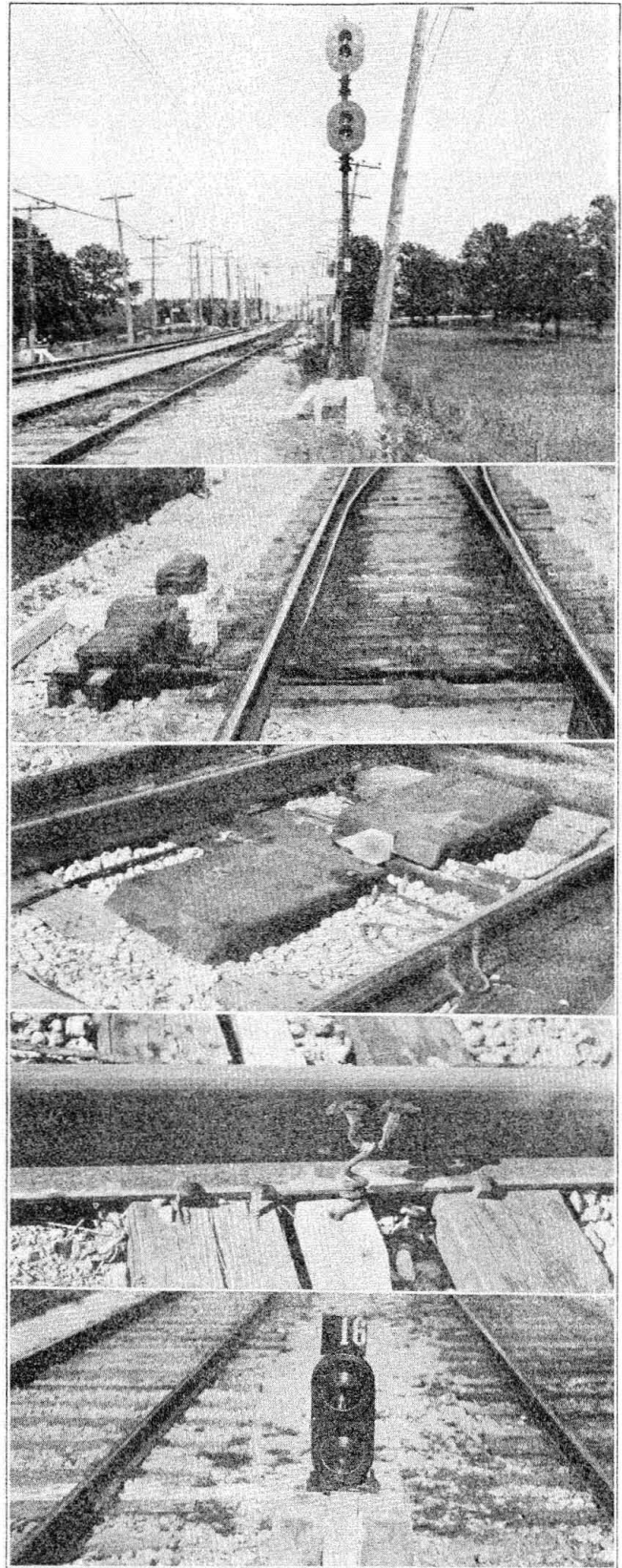


Wires From the Tower Are Carried Under the Tracks to This Distribution Center and Overhead to Operated Functions

and approach locking circuits are used, the signals being controlled as semi-automatic stick signals on both roads. For operation, power is supplied by a 55-cell storage battery in the tower, using Exide Type-EMG5 cells, trickle charged by a Type U-60 Wotton vertical motor-generator set.

The plant at South Upton Junction is essentially the same type as that at Skokie Junction, but is about twice as large, there being 50 working levers in a 55-lever frame. Functions operated, which may be located by reference to the accompanying track plan, include: 4 turnouts, 2 single slip switches, 22 derails and 32 signals. Included also, but not as part of the operated units, are 7 rigid crossings.

Remarkable construction progress was made in building both of these electric plants with the forces of the North Shore line. Work in the field was started on February 9, 1926, and to meet a rather difficult completion date in order to be in service at the time trains were scheduled to run over the new line, it was necessary to recruit a comparatively large organization. With a maximum working force of 5 foremen, 35 signalmen, 30 helpers, 60 linemen and 50 laborers it was possible to place the plants in operation on May 24, 89 working days after starting construction activities. This was accomplished under the general supervision



Union Style-N Two-Position Home Signal at South Upton Switches and Derails Are Operated by Union Style-M 110-volt d.c. Machines

The Impedance Bonds Are of 1000-Amp. Capacity Type of Rail Connection Used for Signal Track Circuits One of the Style-N Two-Position Dwarf Signals

of J. W. Stephenson, signal engineer, with the writer assisting, and Matt Van Lennep, superintendent of construction.