

Desk-Lever Interlocking Installed on Canadian National

Layout involving two crossovers, three junction switches and seven signals is controlled by seven levers

THE Canadian National has installed a desk-lever interlocking at Coteau, Que., 38 miles west of Montreal on the double-track main line from Montreal to Toronto. At Coteau, a single-track main line to Ottawa branches off to the northwest and a single-track main line to Valleyfield diverts to the south. In addition, the track layout includes two crossovers between the two main tracks and a single switch to a freight yard.

For years these switches were handled by switchmen, one man being required on each track. This operation introduced certain delays and although automatic signals on the main line were controlled by the switches, additional safety was desirable. The main line through traffic includes 10 passenger and 10 to 14 freight trains daily, while 6 passenger and 4 freight trains are handled to and from the Ottawa line. Various switching moves and freight-train moves are made to and from the Valleyfield line. Therefore in order to facilitate operation and improve safety, it was decided to install an interlocking. Incidentally the plant is controlled by the operator in the Coteau station so that it was possible to transfer the men, formerly employed as switchmen, to other duties. On account of changes in traffic, an interlocking at Lynden, Ont., had been removed from service so that a seven-lever desk interlocker, as well as some switch machines and signals, were available for use at Coteau.

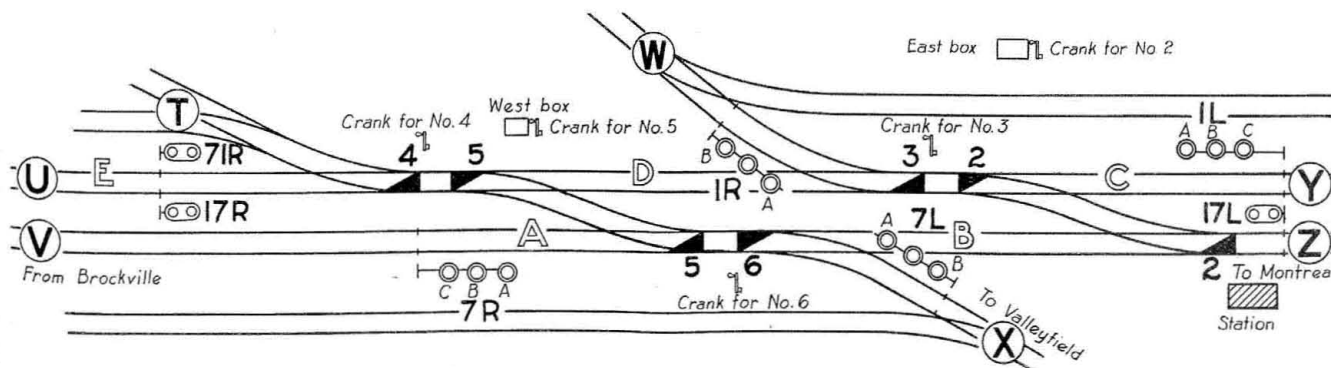
How the Seven Levers Are Used

As shown in the track plan, the four high signals at Coteau each have three units and the dwarfs operate to two aspects, all signals being the color-light type. The switches are operated by 20-volt d-c. machines. The interlocking machine, located in the operator's office in the Coteau station, consists of seven interlocked desk levers. One lever is used to control each crossover and each switch. This leaves only two signal levers, No. 1 and No. 7, to control the seven signals, involving a total of 13 proceed aspects.



Signal 7R in the foreground

The levers are normally on center, and are moved to the right to control eastward signals and to the left to control westward signals. For example, for a through train movement lever 7 is thrown to the right to clear the top unit of signal 7R. If switch No. 6 is reversed leading to the Valleyfield line, lever 7 is thrown to the right, causing unit B of signal 7R to clear. In case a train is standing at the station in the interlocking or automatic block limits, and it is desired to make a train movement into the plant, the slow-speed signal can be displayed by unit C of signal 7R, which is cleared by moving lever 7 to the right and then pushing a button. Lever 7 also controls signal 71R when this signal is being used to run a train from the yard track through crossover No. 5 and on to the westward main or to the Valleyfield line. How-

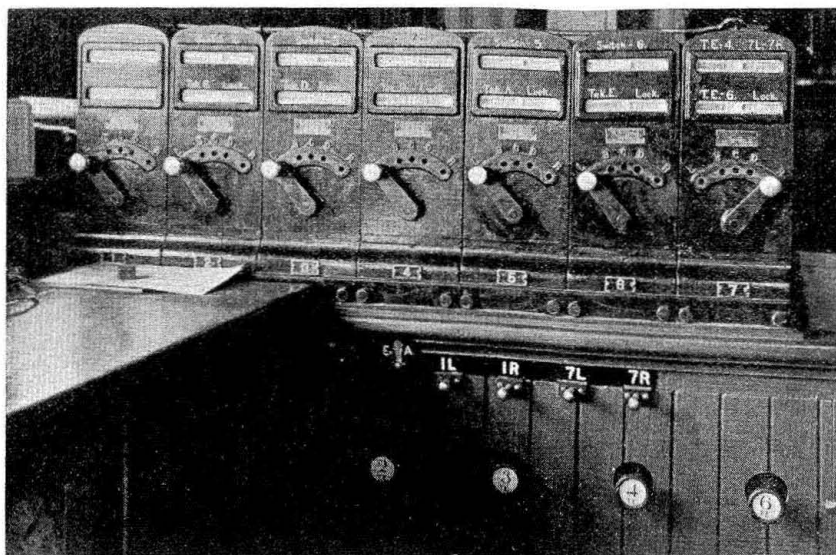


Two levers control 13 proceed aspects

ever, if such a move is to be made from the yard track to the eastward main via crossover No. 2, the same signal 71R is in this case controlled, not by lever 7 but by lever 1. Study of the diagram and the manipulation chart will show that signal 17R is likewise controlled either by lever 1 or 7, depending on which crossover is to be used. It will also be noted that switches 3 and 6 are reversed

for the control circuits and as a standby for the lamps. These batteries are charged by Union RT rectifiers.

The wiring distribution from the station to the instrument houses is in aerial cable. This cable is brought out from the station through a four-inch pipe set vertically in the cone of the roof, thus solving a rather difficult problem because the edges of the roof are so low as to



Five levers control the switches and crossovers and two levers control the seven signals with 13 proceed aspects

to serve as main line derail protection whenever the combination so permits. For example, in lining up the route from *U* to *Z* via crossover No. 5, the switch No. 3 is reversed to serve as a derail before the crossover is reversed. The desk lever set includes mechanical locking and the locking sheet shows some interesting combinations.

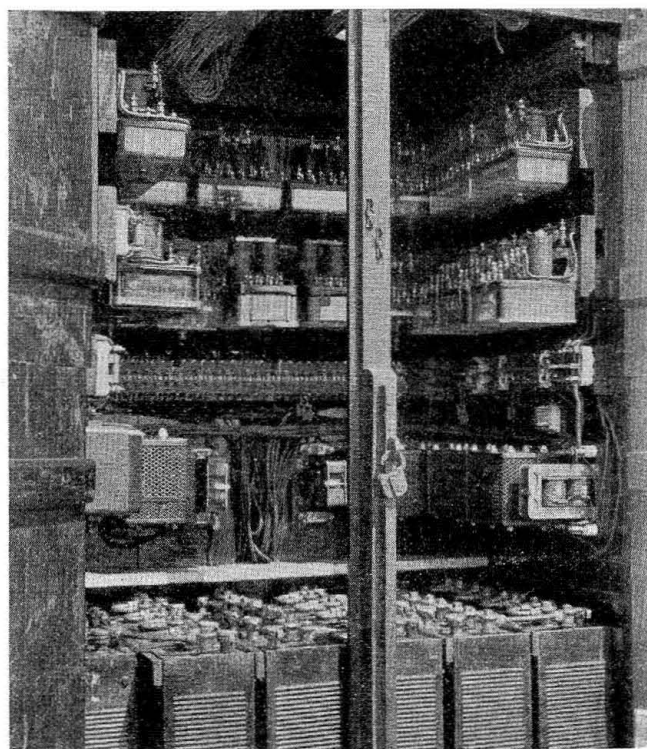
The plant is equipped with complete approach, route and detector locking with trailing release at the fouling points. Electric clockwork time releases are used to release the locking when necessary, according to standard practice. As the maintainer of this plant also covers a section of automatic block signaling, it was considered advisable to provide a hand crank at each switch machine, the crank being located in a box including contacts so arranged that if the crank is removed from its holder all signals governing over the switch are held at stop.

Power Supply and Wiring

The plant is operated by the a-c. floating system, a 110-volt a-c. line being used to operate the rectifiers to charge the storage cells. The relays, rectifiers and battery are located in three large housings. The two larger housings are made of concrete, being 4 ft. wide, 3 ft. deep and 6 ft. high. The walls are 6 in. thick, and the foundation, including the floor, 4 ft. thick. The outer top door swings up and serves as a cover to protect a maintainer from the rain. The third housing is an ordinary sheet-metal case. The relays in these housings are mounted on boards 1.5 in. thick and 7 in. high, the boards being set about three inches apart and out from the wall about two inches so as to allow space for running the wires behind the boards and out through small holes to the relays. The incoming cables terminate on Brach arresters mounted on the top board. Insulated No. 14 solid wire is used for connections from the arresters to relay posts.

In each of the two concrete houses there is a set of 20 cells of Edison storage battery used for operating the switches in that group. Likewise, a set of 7 cells is used

require complications if the cable were run under the edges of the roof and then up. Parkway cable is used for the connections to the rail, Dominion bootlegs being used. The No. 9 parkway conductor is joined and



Instruments and battery in concrete house

soldered to a stranded conductor which extends to a plug in the rail.

This installation was planned and installed by signal forces of the Canadian National, Central Region, the switch machines and desk interlocker being of General Railway Signal Company manufacture.