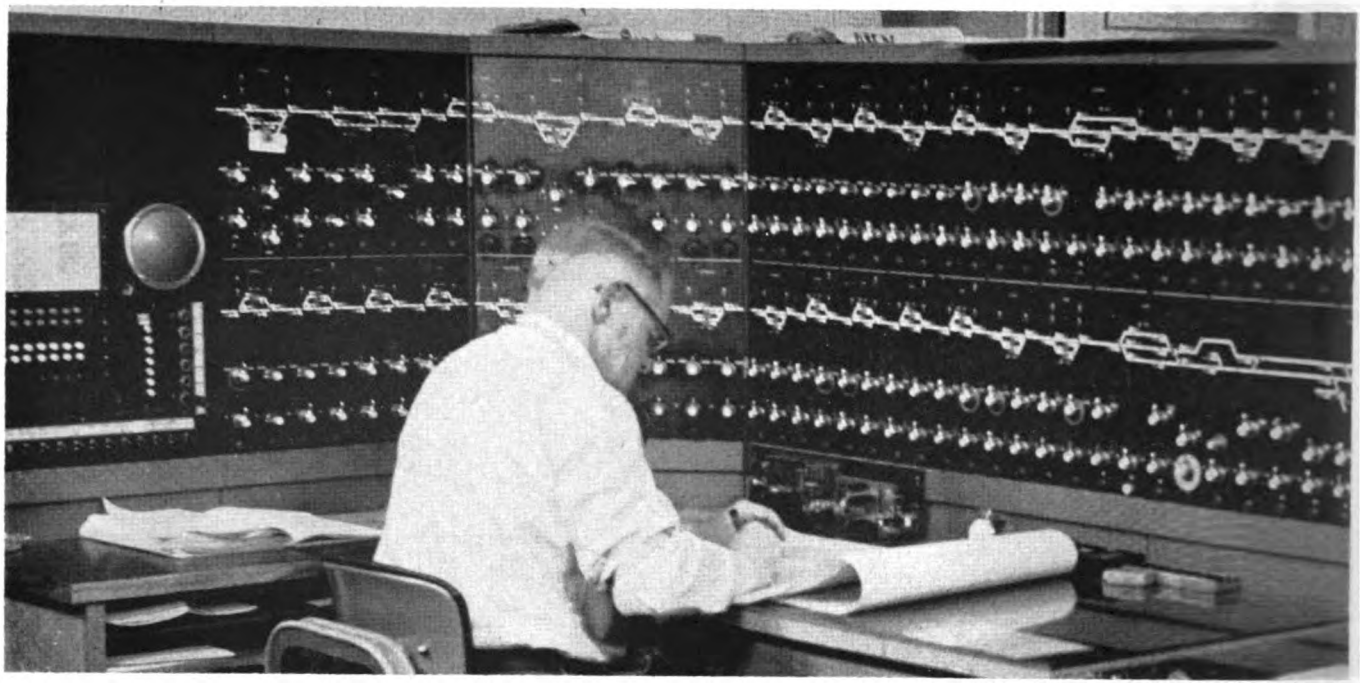


This machine has a "double-deck" arrangement of track diagram and levers

One CTC Machine Replaces Three

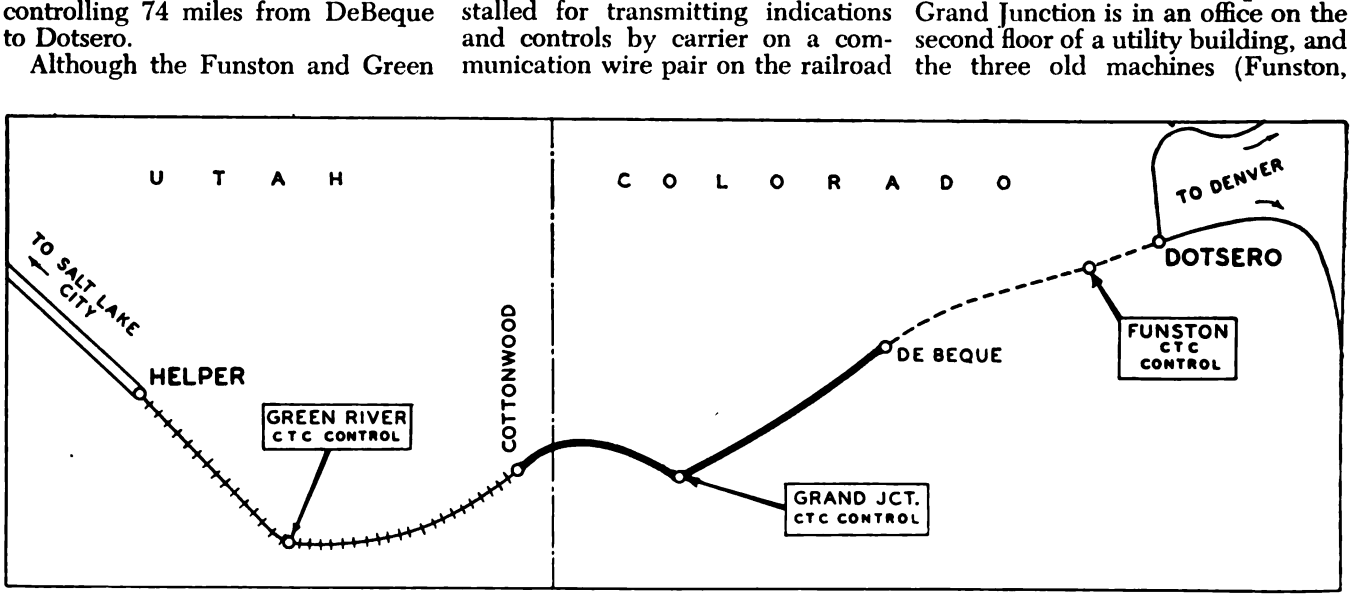
New machine with "double-deck" track diagram controls 285 miles of road in Colorado and Utah on the Rio Grande

THE USE OF CARRIER has enabled the Denver and Rio Grande Western to consolidate the control of three centralized traffic control machines into one machine at Grand Junction, Colo., controlling approximately 285 miles of road between Dotsero, Colo. and Helper, Utah. This territory was formerly controlled by three machines: (1) one at Green River, Utah, controlling 133 miles from the end of double track at Helper to Cottonwood, Utah; (2) one at Grand Junction controlling 72 miles from Cottonwood to DeBeque, Colo.; and (3) one at Funston, Colo., controlling 74 miles from DeBeque to Dotsero.

Although the Funston and Green River control machines were moved to Grand Junction, the field control and indication circuits were retained without change. The CTC is the GRS type F, class M, duplex coded systems using three physical line wires for control and indication circuits. These physical circuits feed in both directions from Funston and Green River, and at these points carrier terminal equipment was installed for transmitting indications and controls by carrier on a communication wire pair on the railroad pole line to Grand Junction. As part of this project, the communications department transposed this wire pair from Green River to Funston for 30 kc for a type C carrier. The signal carrier operates between 3.33 kc and 5.01 kc.

Double-Deck Panel

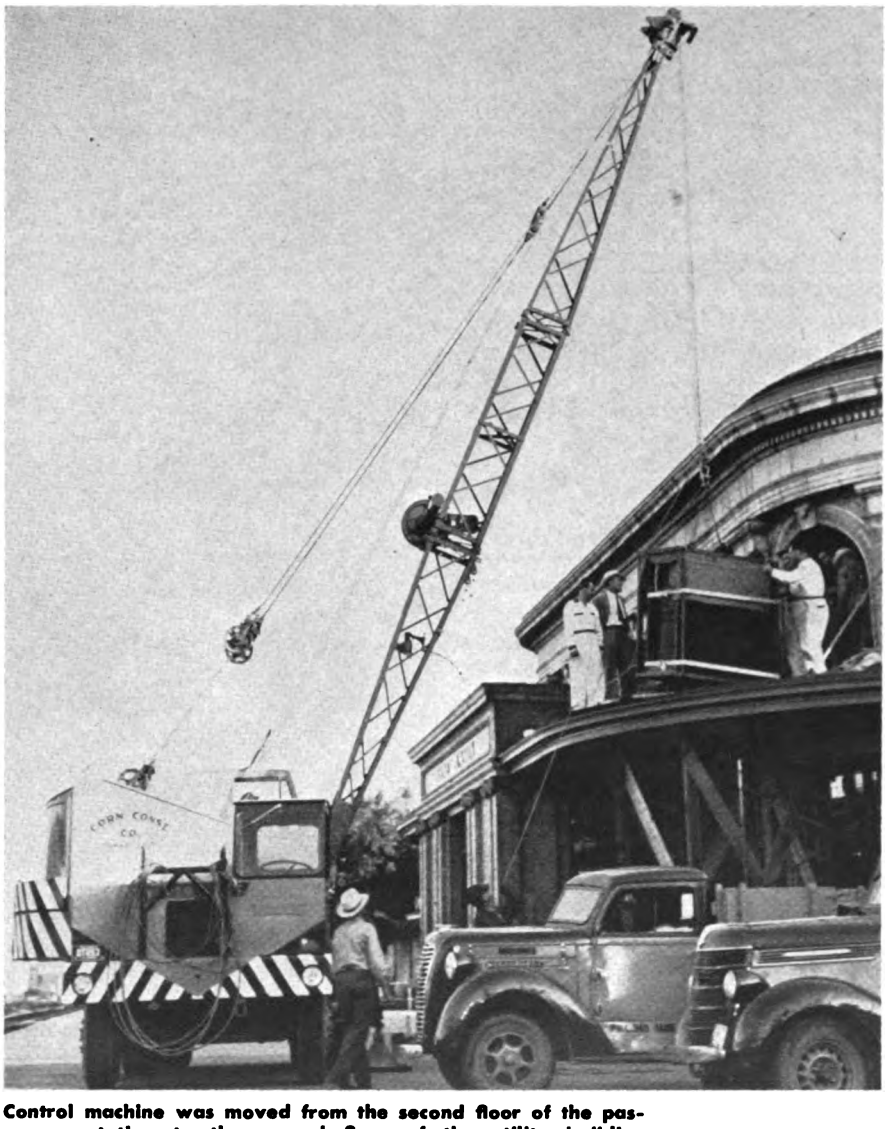
The new CTC control panel at Grand Junction is in an office on the second floor of a utility building, and the three old machines (Funston,



Grand Junction and Green River) containing the relays are on the ground floor directly beneath the new one. During the time that the Funston and Green River control machines were being moved, a small control machine consisting of nine two-position snap switches and a pushbutton was connected to a spare master unit located at Grand Jct., and the territory involved was controlled by carrier from this unit until the machine was restored to service. In each case, elapsed time from the start of disconnecting the machine at its old location and restoration to service at Grand Jct., was approximately six hours. During this time, train operation by CTC was retained without delay to a single train.

The next phase of consolidation involved bringing the control of the entire territory from the three old machines downstairs, to the new control panel upstairs. This was done by moving a few switch and signal control levers at a time. The CTC machine relays and control equipment were retained in the old machines. The new panel has a "double-deck" track diagram with associated indication lamps and control levers for the entire territory —Dotsero to Helper. Double-decking the track diagram held the overall length of the panel to 16 ft. 6 in.

The consolidation has resulted in a reduction in operating expenses because of the elimination of a complete set of dispatchers at Green River, and a set of operators at Funston. Because of the possibility of prostration of the carrier circuits due to causes normally encountered, i.e., fires or storms, the railroad made arrangements with a commercial telephone company to provide standby circuits for carrier signal controls and indications from Grand Junction to Funston and Green River. The major items of equipment were furnished by the General Railway Signal Company and construction work was performed by railroad forces.



Control machine was moved from the second floor of the passenger station to the second floor of the utility building

I.C.C Statistics

The Bureau of Safety and Service of the Interstate Commerce Commission has issued its annual tabulation of statistics pertinent to block signals, interlocking automatic train control, telegraph and telephone for transmission of train communication systems, in use on the railroads of the United States as of January 1, 1955. The following information is abstracted from compilation.

Automatic block signaling was in service on 80,861.1 mi. of road or 111,468.4 mi. of track. Of the miles of road, 53,578.5 were single track and 27,282.6 were two or more tracks. Non-automatic block, at the beginning of 1955, was in service on 27,413.9 mi. of single track and 1,234.5 mi. of two or more tracks, totaling 29,883.1 mi. of track or 28,-648.4 mi. of road.

As of January 1, 1955, train operation by signal indication without train orders was in service under traffic control systems (C.T.C.) on 22,378.2 mi. of road, 27,206 mi. of track.

The railroads reported a total of 4,312 interlockings, of which 590 are automatic, 1,053 electric, 285 electromechanical, 374 electro pneumatic, 1,089 mechanical, and 921 remote control. Automatic train stop is in service on 9,238.7 mi. of road, 15,509.3 mi. of track, with 5,451 locomotive equipped. Automatic train control is in service on 1,025.3 mi. of road, 1,952.1 mi. of track and 892 locomotives. Automatic cab signaling is in service 3,952.8 mi. of road, 8,627.2 mi. of track and 3,847 locomotives.

These statistics also include detailed information concerning installations of radio and inductive carrier systems of communication on railroads. In road train service, radio is in service on 69,879 mi. of road including 520 wayside stations, 2,815 locomotives, 2,015 cabooses or other mobile units and 1,228 portable pack sets. The inductive systems is in service on 6,083 mi. of road including 223 wayside stations, 1,141 locomotives, 340 cabooses and other mobile units and 1 portable packset.

In yards and terminals radio is in service on 486 wayside stations, 2,046 locomotives, 171 cabooses or other mobile units and 597 packsets. Inductive system is in service in 10 wayside stations and in 18 locomotives.