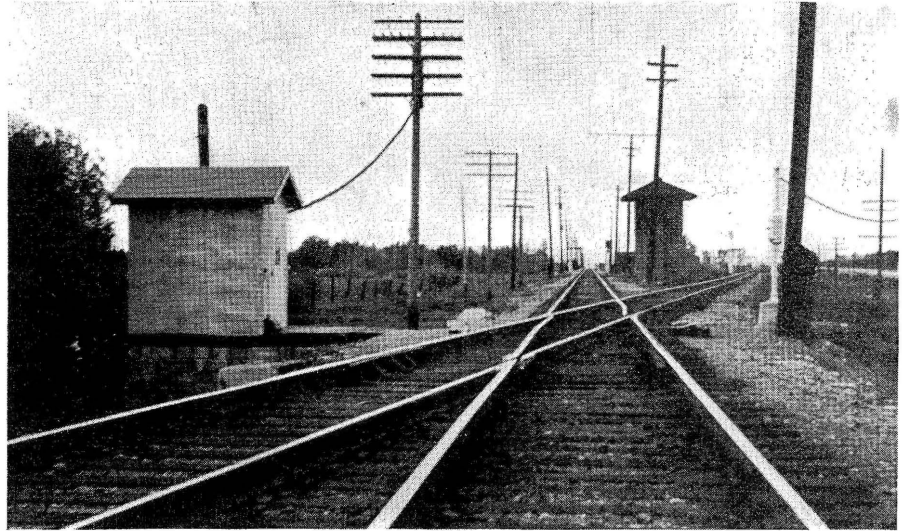


Plant at Sinclair, Mont., at crossing of Milwaukee and Northern Pacific, including movable-point crossing frogs and smash boards. Makes a net saving of \$3,572 annually.



Automatic Plant Replaces Mechanical Interlocking

AT SINCLAIR, about eight miles east of Deer Lodge, Mont., a 20-lever mechanical interlocking, at a crossing of the Chicago, Milwaukee, St. Paul & Pacific and the Northern Pacific, has been replaced by an automatic plant. The Milwaukee track involved in this crossing is an electrified single-track main line over which four passenger and three freight trains are operated daily.

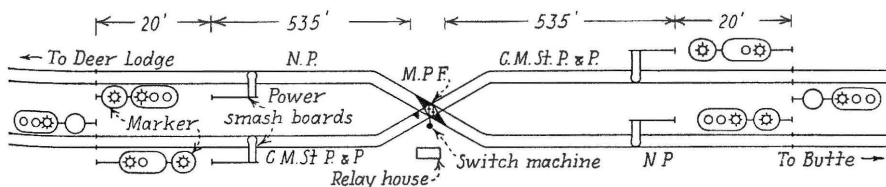
The Northern Pacific line involved in the crossing is also a single-track

tween the two lines near the crossing. As this tower was no longer used as a block office, it was decided that a logical means of reducing operating expenses would be to replace the manually-operated plant, which had been in service since 1909, with an unattended automatic interlocking. The new layout includes one Union Model-22 power switch machine for operating the movable-point frogs at the crossing, four smashboards, each operated by means of a Union style-

smaller building was erected near the crossing for housing the control equipment, rectifiers and storage battery for the automatic plant.

A battery of 22 series-connected Edison B-4-H steel-alkaline storage cells is used for operating the switch machine, which averages 20 movements daily. Nine cells of this same battery are also used to operate the smashboards, feed 33 Union DN control relays and act as the standby source of power for lighting the home signals on the Northern Pacific. The distant signals on the Northern Pacific have Edison M-500 primary battery for standby. The storage battery is charged through two rectifiers from the same a-c. power line which supplies energy for normal operation of the signals. An RX-21 rectifier is used for charging the nine cells and an RX-42 rectifier for charging the other 13 cells.

The new interlocking was completed and placed in service in February, 1936, and has functioned entirely satisfactorily. The changeover was made by the signal forces of the Milwaukee at an out-of-pocket expense of \$8,732, as compared to an annual net saving of about \$3,572 which is being realized.



Track and signal plan of the automatic interlocking showing the location of the signals and smashboards

main line, the daily traffic consisting of four passenger and four freight trains.

The mechanical interlocking previously in service at this location included four derails, a movable-point frog and eight high signals, all operated from the mechanical interlocking machine in a frame tower located be-

T2 mechanism, and color-light home and distant signals on each line. The home signals are located 535 ft. from the crossing frogs, and the smashboards are 515 ft. from the frogs, so that a train approaching the plant can over-run the signal 20 ft. before hitting a smashboard. The tower formerly used was abandoned, and a new