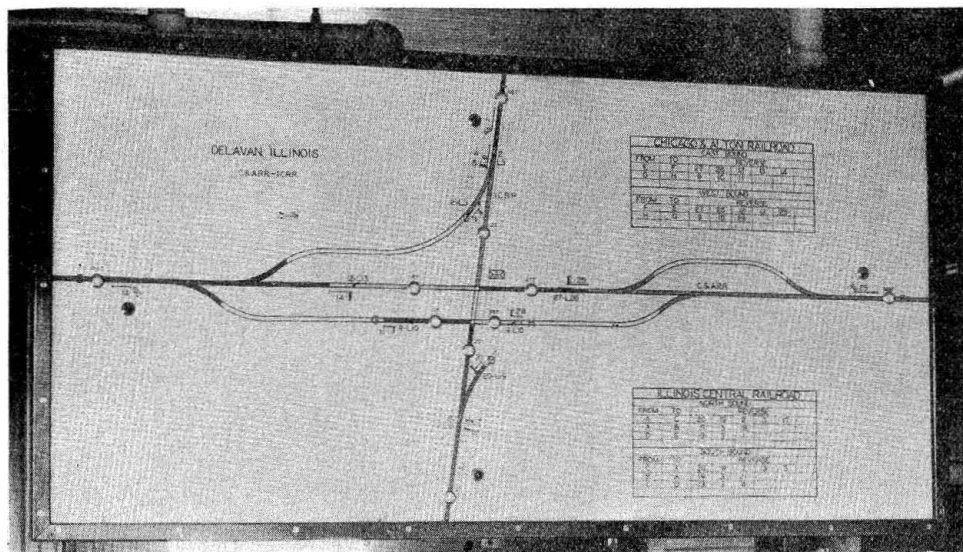


# Installs Mechanical Plant

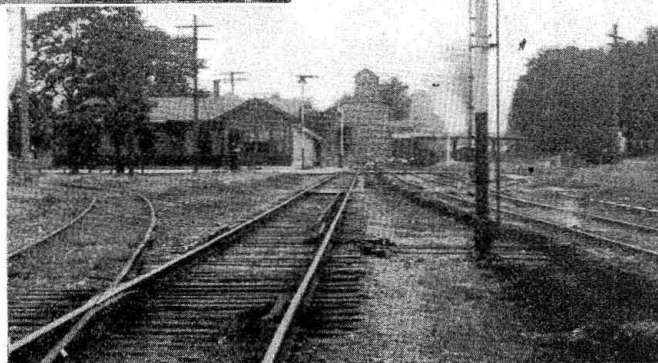


*A 24-lever plant at crossing of Illinois Central eliminates train stops—Unique electric locking system*

THE Chicago & Alton has recently completed the installation of a 24-lever mechanical interlocking plant at a crossing of its single-track line with that of the Illinois Central at Delavan, Ill. This line of the C. & A. extends from Kansas City, Mo., to Bloomington, Ill., which is on the main line from St. Louis to Chicago, Delavan being 30 miles from Bloomington. High class traffic, such as meat, fruit and melons, is handled eastbound from Kansas City to connections north and east at Bloomington. All such perishables are routed over the line through Delavan on account of the fact that the icing plant is located on this route at Mason City, Ill. This line is used principally for fast eastbound freight, the return movement being made over alternate routes in this district. The C. & A. has 12 scheduled freight trains over this line daily and a way freight each way daily excepting Sunday, in addition to four passenger trains, or a total of about 18 trains daily, besides extra freight trains.

The Illinois Central line through Delavan extends from the main line at Clinton, Ill., northwest to Peoria, Ill. The freight business consists of four scheduled trains each way daily, in addition to two passenger trains each way or a total of 12 trains daily. In other words, a total of approximately 30 trains pass through this plant daily.

On the C. & A. a long adverse grade of 0.57 per cent in the direction of the heavy eastbound movement, extends through Delavan. A reverse curve further complicated the starting of trains when once stopped at the crossing. A similar adverse grade on the I. C., for northbound movements, extends for a considerable distance approaching from the south.



*View looking east on the C. & A.*

No interlocking had ever been in service at this crossing and all trains were required to stop. On account of the adverse grade conditions considerable time was lost, and the equipment was damaged in making these stops. An interlocking was, therefore, highly desirable for it was estimated that at least 4,300 stops of tonnage trains could be eliminated annually on the C. & A. and about 1,700 on the I. C.

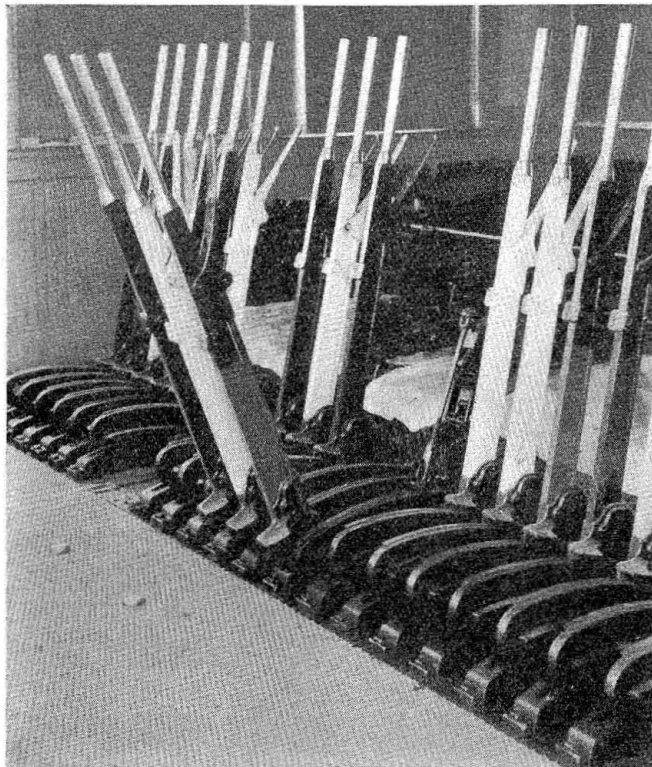
For years the C. & A. maintained a station about 100 yards east of the crossing with an agent on duty the first trick, and an operator on the second trick. Likewise, the I. C. had a station with an agent on one trick, an operator on the second trick, and in the busy coal movement season an operator on the third trick.

The I. C. station as well as that of the C. & A. were in need of replacement and, therefore, it was decided that a new joint station, located at the crossing would permit joint employees to handle the trains and operate an interlocking. On this basis the new plant was authorized and one operator on each trick and an agent on the first trick now handle the work. A material saving is realized in the consumption of coal, time and reduction in damage to equipment occasioned by the elimination of train stops. The plant cost about \$27,000.

The first problem in planning this combined station and interlocking was to locate the interlocking

machine so that it would be in the same room and near the operator's table and the ticket window. It was also desirable that a man standing at the machine have a view of the track layout inside the home signals at least. In order to meet these requirements, the machine was located on the ground floor in a large corner room facing the tracks. The machine is parallel to the C. & A. tracks, and the leverman has his back to the track when operating the machine.

The concrete foundation of the building forms a basement about five feet deep. The Saxby & Farmer mechanical machine, with horizontal leadout levers, is placed on a large concrete pier in this basement. The pipes extend through 2-in. open pipes under the station platforms and then under the rails to deflecting bar leadouts located on the far side of the tracks.



The interlocking machine is on the ground floor of the station

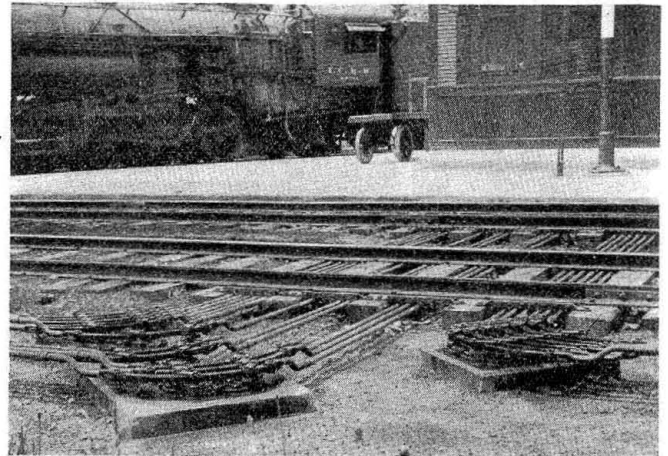
The home signals are mechanical, while the distant signals are electrically operated by G-R-S Model 2 top-of-mast mechanisms. These distant signals are three-position, being normally at caution, and are track circuit controlled to the danger position, or operated to the clear position upon reversing the home signal lever. A battery of 18-cells of Edison primary battery is used to operate each distant signal, and a set of three cells of the same type of battery is used for each track circuit. Rail connections are made with No. 8 single-conductor Okonite parkway cable.

The main-line derails on the C. & A. are the Wharton type, while those on the passing track are the Hayes lift type. On the I. C., a house track switch, which happened to be in the proper location, is used as derailing protection, being set normally for the diverging route. This arrangement has the additional advantage of permitting switching movements to be made into this house track without interfering with the through movements on the

C. & A. line. The switches and derails are well braced, using special rail braces made by the Chicago Railway Signal & Supply Co.

### Unique Electric Locking

Complete electric locking is provided at this plant. In order to simplify the locking, a unique arrangement was designed using only three forced-drop electric locks, one being applied to each of the three lock levers. Lock lever No. 3 is for the Illinois Cen-



The deflecting-bar lead-out operates smoothly

tral, lock lever No. 13 for the C. & A. main line and lock lever No. 10 for the C. & A. passing track. The electric locks are the G-R-S forced-drop type, and the circuit controllers are the vertical plunger type. All the wiring on the machine is run in 1½-in. conduit with cast-iron junction boxes.

The scheme of locking includes approach locking in conjunction with detector locking, and with indication locking on the distant signals. In this circuit, the control is secured by the application of forced-drop locks on the lock levers governed by track and stick relays. The locking becomes effective when the lock lever is reversed, but is capable of being released by restoring the home signal to the normal position, providing a train has passed over the release section in the plant, or providing no train is on any of the track sections repeated by the annunciator. Clock-work releases were provided to release the route in the event that signals were once cleared for a train approaching which might stop in sections repeated by the annunciators. The storage battery for the lock circuit and lights in the model board consists of five Exide Type-KXHS 125-a. h. cells.

The home signal and dwarf signal lights are normally connected to alternating current taken from the lighting circuit in the station after being transformed down to 10 volts. A double-throw double-pole switch is provided in the signal light circuit so as to throw this circuit on to the storage battery in case of an a-c. power outage. A white light above this switch burns when the a-c. is available and when the circuit is thrown on the storage battery a red light below the switch lights up.

The wiring from the station to the signals and relay boxes over the plant is in Okonite parkway cable made up of No. 14 conductors. The interlocking equipment, electric locks, relays, etc., for this interlocking was furnished by the General Railway Signal Company and was installed by the construction forces of the signal department of the Chicago & Alton.