

# NEW DEVICES

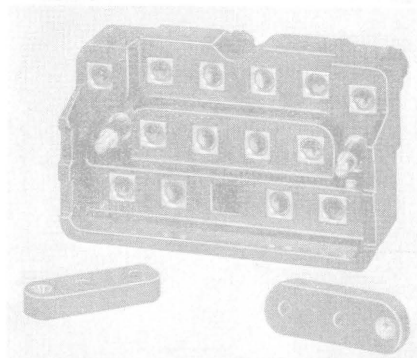
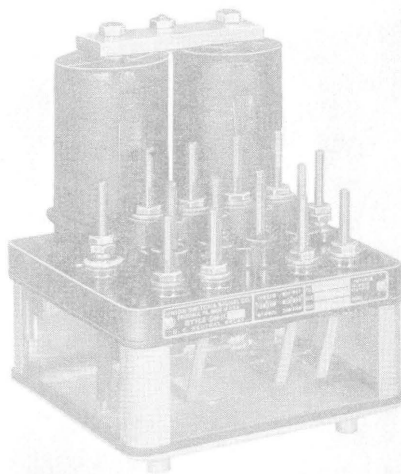
## Plug Couplers for Relays and Signals

THE Union Switch & Signal Company, Swissvale, Pa., now has available auxiliary plug couplers for application to "Union" DN-11 four-point neutral relays, DP-14 polarized relays, having 4-front and 4-back neutral and 4 normal and 4 reverse polar contacts, Model 15 a-c. relays, SLV-13 a-c. relays, centrifugal relays, "CD" code-following relays, d-c. coding units, pendulum type code transmitters, and the "Union" H or H-2 type of searchlight signal. These plug couplers permit the removal and replacement of the relays or operating units without disconnecting any of the field wires. This coupler is made of moulded bakelite and fitted with terminal posts spaced and marked the same as the terminals on the regular operating unit. Attached to the under side of each terminal post and housed inside the bakelite body are spring clip connectors which slide over and make contact with the terminal posts on the operating unit.

Some of the advantages claimed for these devices are:

1. Materially shortens the time required to remove from service and replace operating units, thus preventing or shortening train delay time, especially important in congested territories.

2. Eliminates any possibility of re-



Top view—relay minus coupler, center-view—coupler, bottom—plug coupler applied to DN-11 relay

placing field wires on wrong terminal when changing operating units, as wires are not removed from the plug coupler.

3. Can be applied to signals or relays now in service with little or no change in the operating units. Wires are simply removed from the present

terminal posts and placed on corresponding posts on the plug coupler.

4. Plug coupler spring clips have sliding contact on the terminal screws, and the clips are so designed that ample contact pressure will be maintained.

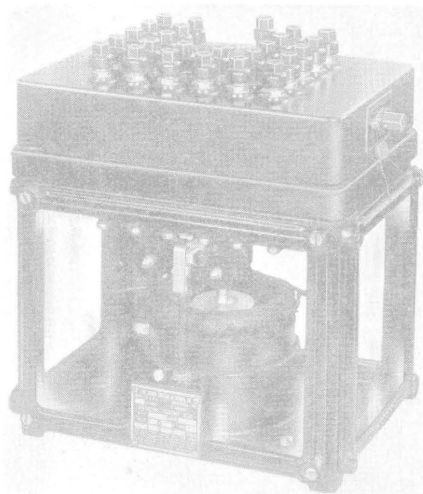
5. Plug coupler is self-aligning, and uniform contact is made on all posts.

6. Terminal binding posts on plug couplers are equipped with insulated nuts which prevents grounding or short circuiting the posts when the coupler is removed from the operating unit.

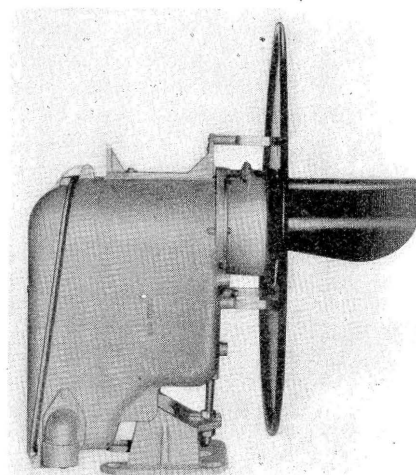
## New Searchlight Signal

THE General Railway Signal Company announces the introduction of a new searchlight-type signal employing a different operating principle from that of existing searchlight signals. The aspects are progressive, i.e., red to yellow to green.

The spectacle is driven directly by the armatures of two neutral relays. In addition, these relays operate contacts for checking and indication circuits. The signal mechanism is housed in a main case which carries the outer lens, deflecting roundels, a plug-board, terminal board, conduit or cable coupling and suitable fittings to make the signal universally adaptable for mounting on foundations, bridges, or poles. The mechanism houses the



Plug coupler as applied to centrifugal track relay

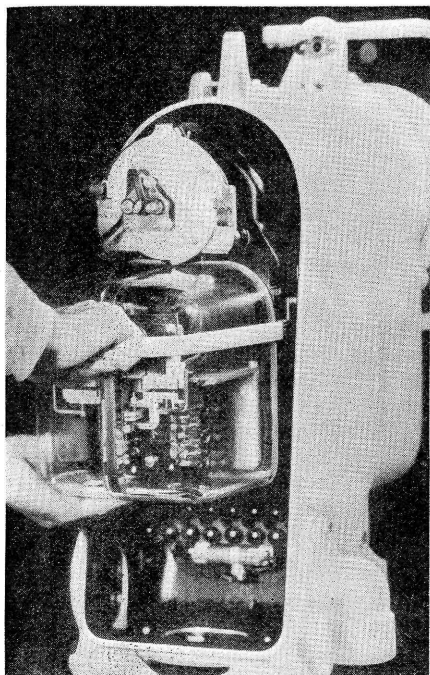


Complete SC searchlight unit

signal relays, and the optical assembly comprising a reflector unit, color disks, and an inner lens of the compound lens combination. This lens is replaced with a plain cover glass when used with a stepped outer lens. The mechanism is plug-connected as a complete unit by a straight thrust into the main case. The carrying handle locks the mechanism in place, and prevents the door of the main case from closing unless the handle is in the "locked" position.

The two neutral relays, which drive the spectacle, are de-energized when the aspect is *red*. The *yellow* relay, upon picking up, turns the spectacle to place the *yellow* disc in the light beam. When the *green* relay picks up, the spectacle is turned to the *green* position, without going through the *red* or de-energized position.

Each relay has a maximum capacity of six dependent front-back contacts. The standard arrangement provides 4 FB contacts on the *yellow* relay and 2 FB contacts on the *green* relay. Front contacts are silver to silver-impregnated carbon; backs are silver to silver; pressure 1- $\frac{3}{4}$  ounces. All contacts and air-gaps meet A.A.R.



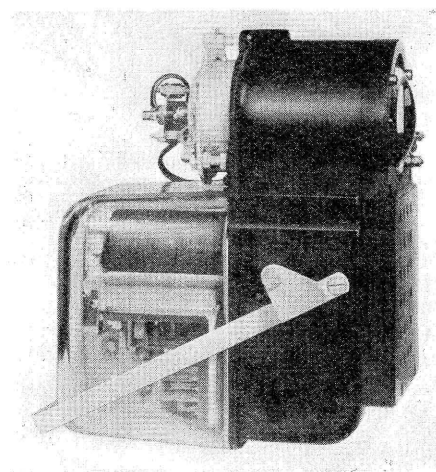
Plug-connected mechanism being lifted into place

specifications for relays. Because of the use of heavy neutral armatures for actuating the spectacle, this signal possesses greater mechanical release torque than other existing searchlight signals. For the same reason, contacts are less subject to vibration. Armatures pivot on needle-type bearings under a minimum pressure of 16 lb. per bearing. These bearings have already proved highly successful on such constantly moving parts

as the armatures of code-following relays used in coded track circuits.

Optical efficiency has been improved by the use of a modified inner lens. In addition, several adjustments have been provided on the reflector unit to obtain accuracy in alinement and positioning of component parts. The relationship between inner and outer lens is maintained by a three-point contact between the plugboards of the mechanism and of the main case.

To eliminate the reflection of external light which is a cause of dilu-



Complete operating mechanism of SC searchlight unit

tion of the colored beam, the color disks are tipped to throw any white light reflections up into the upper part of the mechanism where they are absorbed. The results indicate that the purity of color is maintained even when the beam from a powerful locomotive headlamp is directed head-on into the signal.

All wires to the signal terminate on an accessible terminal board which is below the mechanism and bolted to the main case. Space is provided for an additional terminal board if needed. A lamp resistor and a replaceable line surge arrester are mounted on the board. The terminal board is connected to the plugboard in the main case. Wires follow the contours of the base of the case, and connect to plugs which protrude from the surface of this plugboard. Integral with the mechanism is another plugboard to which all wires within the mechanism are connected. When the mechanism is plugged into the case, each plug makes a positive 12-point contact in its corresponding socket, thus assuring a uniformly low resistance contact.

The SC signal can replace a semaphore without the use of additional control relays, with the exception of an approach-lighting relay, if desired. The present 0-45 deg. control wire is connected to the *yellow* relay and the

45-90 deg. control wire to the *green* relay. Operating energy is approximately 0.04 watt per relay. The *yellow* relay, in combination with a Type-K, Size-2, primary track relay, will provide track shunting sensitivity equivalent to the Type-K primary-secondary track relay combination. If coded track circuit control is used, the signal can be operated directly from the decoding apparatus without additional control relays. The signal may also be controlled directly from a polarized line without the use of intermediate control relays.

## Vibroground

THE Western Railroad Supply Company has recently placed on the market, a new instrument, manufactured by Associated Research, Inc., for the testing of ground resistance. This new instrument, known as the Model 251 Vibroground, has been developed and perfected through the accomplishment of the application of the well known radio vibrator. Although simi-



Model 251 vibroground with the lid removed

lar to the conventional vibrator, the one used is built to rigid specifications and is of the synchronous, self-rectifying type. The power supply for the Vibroground consists of two No. 6 dry cells housed in the bottom of the case. The use of this system of power supply obviously eliminates the necessity of turning a crank to obtain voltage for resistance measurements, insures consistent voltage when testing grounds, and releases the operator's hands for other work, such as recording notes, test data, etc.

The indicating instrument is a D'Arsonval type, d-c. galvanometer, equipped with a highly efficient cobalt steel magnet, which is capable of detecting as little as .001 volt drop.