

Hotbox detector views journal for one ten-thousandth of a second. Indications are sent 65 miles to dispatcher's office where hotbox indication alarm equipment (inset) registers up to four hot journals on a train.

Erie Installs Its First Hotbox Detector

First hotbox detector installed by the Erie is at River Junction, N. Y., 65 miles east of Buffalo. Journals on eastbound freight trains are checked. The detector, with its automatic alarm system, is interconnected with the signal system. A signal $2\frac{1}{2}$ miles beyond the detector is set to Approach, and another signal 5 miles beyond the detector is set to Stop. Hotbox indications are sent to the Buffalo dispatcher's office.

● Just prior to the merger, the Erie Railroad installed its first hotbox detector to observe eastbound freight trains operating over the Buffalo-Hornell line. The detector has now been in service a little over four months. During a one-month period of service the hotbox detector achieved an efficiency of 87 per cent.

The hotbox detector is at River Junction, N. Y., about 65 miles east of Buffalo. The detector, with its auto-

matic alarm system, is interconnected with the signal system. The alarm system indicates to the dispatcher at Buffalo the location of hotboxes in the train. Actuation of the detector by a hotbox automatically sets signals for stopping the train.

When a train passes the detector, a hot journal will cause the alarm system to transmit the hotbox indication to the Buffalo dispatcher's office. Here a light will be lighted, an alarm bell

will sound, and a counter will begin to count axles remaining in the train. At the same time a signal two and one-half miles ahead of the train is controlled to display the Approach aspect and another signal five miles ahead of the train displays the Stop aspect. At both signals an indicator is lighted which displays white letters "Hot Box" on a black background. The words "Hot box" are placed vertically one above the other.

When the train stops at the second signal (Stop) a member of the crew goes to a telephone pole box and calls the dispatcher. He tells the crew member the location of the hotbox. The crew then inspects the journal, takes whatever action is necessary and so informs the dispatcher.

The hotbox location counters can indicate up to four hot journals on a train. The railroad has not experienced over four hot journals on one train since the detector was placed in service on August 2. Also, at the dispatcher's office is a pen graph recorder that records on a paper tape the detector readings of the journals. The dispatcher scans this tape, looking for potential hotboxes.

Tape Scanning Finds Warm Ones

In a one-month period the dispatcher by scanning the tape, found 45 warm or potential hotboxes. He notified car inspection forces at Hornell yard, 30 miles east of the detector location at River Junction. Of this number 12 were set out and repaired before reaching Hornell. Three were on roller bearings that were all right, and 30 were found by inspection forces and received attention at the yard.

During the same period 48 trains caused abnormal indications, which consisted of the 45 warm or potential hotboxes, and 15 indications which were high enough to cause the automatic alarm system to so indicate. Of these 15 hotbox indications, 10 were found by train crews, 3 were not found by crews but were found by the Hornell car inspectors, and two are still listed as unconfirmed.

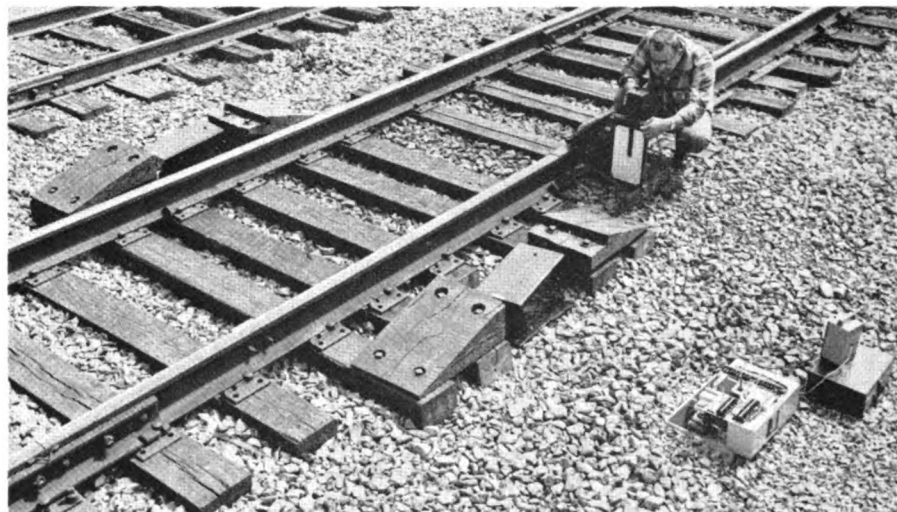
At the River Junction hotbox detector location a relay housing contains, in addition to the amplifier and carrier equipment, a panel with test jacks, pushbuttons, toggle switches and adjustable potentiometers necessary for the adjustment of the hotbox detector and its associated equipment, as well as the carrier equipment which transmits the hotbox detector and automatic alarm indications to the dispatcher's office, 65 miles distant. A pen graph recorder is also located at River Junction, which is helpful to the maintainer when he is adjusting and aligning the detector. For align-

ing the detector viewing heads, the maintainer has a wood template and a light source to simulate a hotbox. The wood template fits over the top of the running rail and is so shaped to provide the proper spatial relation between the light source and the hotbox detector viewing head.

The viewing heads are mounted on separate cast iron foundations between the ties, so as to reduce vibration from passing trains. Large wood wedges are bolted on the two ties in front of and behind the detector heads. These wedges are placed to prevent dragging equipment from damaging the detector heads.

The hotbox detector and its associated alarm equipment were made by General Electric Co. It is capable

of observing moving journals with train speeds of 6 to 60 mph and is operative from -40 deg F to +120 deg F. (For a detailed article describing the basic hotbox detector and its pen graph recorder see *Railway Signaling and Communications*, October 1959, page 26.) Indications are sent from the detector location at River Junction to Buffalo, 65 miles, via carrier, over an existing wire pair. Cost of the installation, including the equipment, was \$50,000. The installation was made under the jurisdiction of F. Youngwerth, General Superintendent Communications and Signals, Erie Railroad, now Erie-Lackawanna. Photographs are reproduced through the courtesy of the Erie Railroad Magazine.



Maintainer aligns detector head using an electric light for a simulated hotbox. Light is mounted on template attached to rail to provide proper spatial relation of detector head and car journal.



▲ Pengraph recorder and test panel at the hotbox detector location aid maintainer in detector preventive maintenance.

Automatic block signal is controlled to Stop position when detector indicates a hotbox. Control is automatic. ▶

