

DETECTOR VIEWS JOURNAL for one ten-thousandth of a second. It can check journals on cars moving 6 to 60 mph.

Hotbox Detector Report: 87%

► **The Story at a Glance:** During a one-month period, Erie-Lackawanna's hotbox detector installation at River Junction, N.Y., achieved an efficiency of 87%. Of the 15 indicated hotboxes, 13 were found to be hot and requiring attention.

In the same 30-day period, 45 journals were indicated as being warm (incipient hotbox type). Twelve of these were set out and repaired, three were on roller bearings that were all right, and 30 received attention from car inspectors.

Erie-Lackawanna installed its first hotbox detector at River Junction, N.Y., about 65 miles east of Buffalo, to observe eastbound freight trains. The detector with its automatic 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. There, a light goes on, an alarm bell sounds, and a counter begins to count axles remaining in the train. At the same time, a signal 2½ miles ahead of the train is controlled to display the Approach aspect. Another signal five miles ahead of the train displays the Stop aspect. At both signals, an indicator is lighted which displays the words "Hot Box" in white letters on a black background.

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 informs the dispatcher.

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

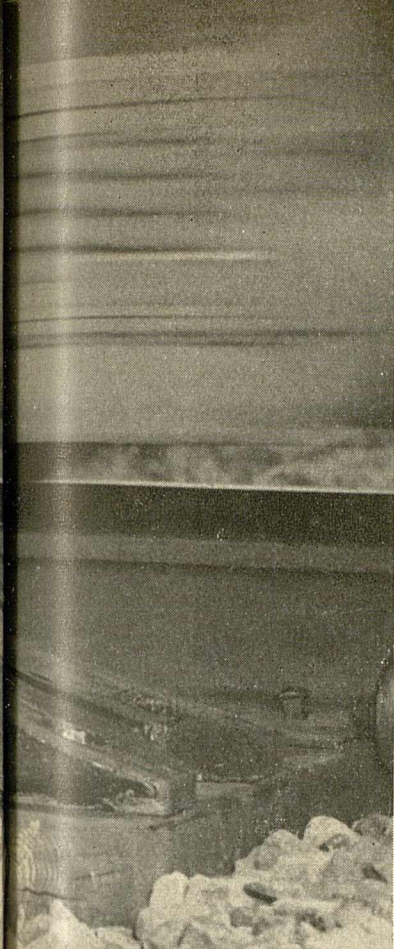
potential hotboxes.

In a recent one-month period the dispatcher found 45 warm or potential hotboxes. He notified car inspection forces at Hornell yard, 30 miles east of the detector location. Of that number, 12 were set out and repaired before reaching Hornell, three were on roller bearings that were all right, and 30 were attended to by inspection forces.

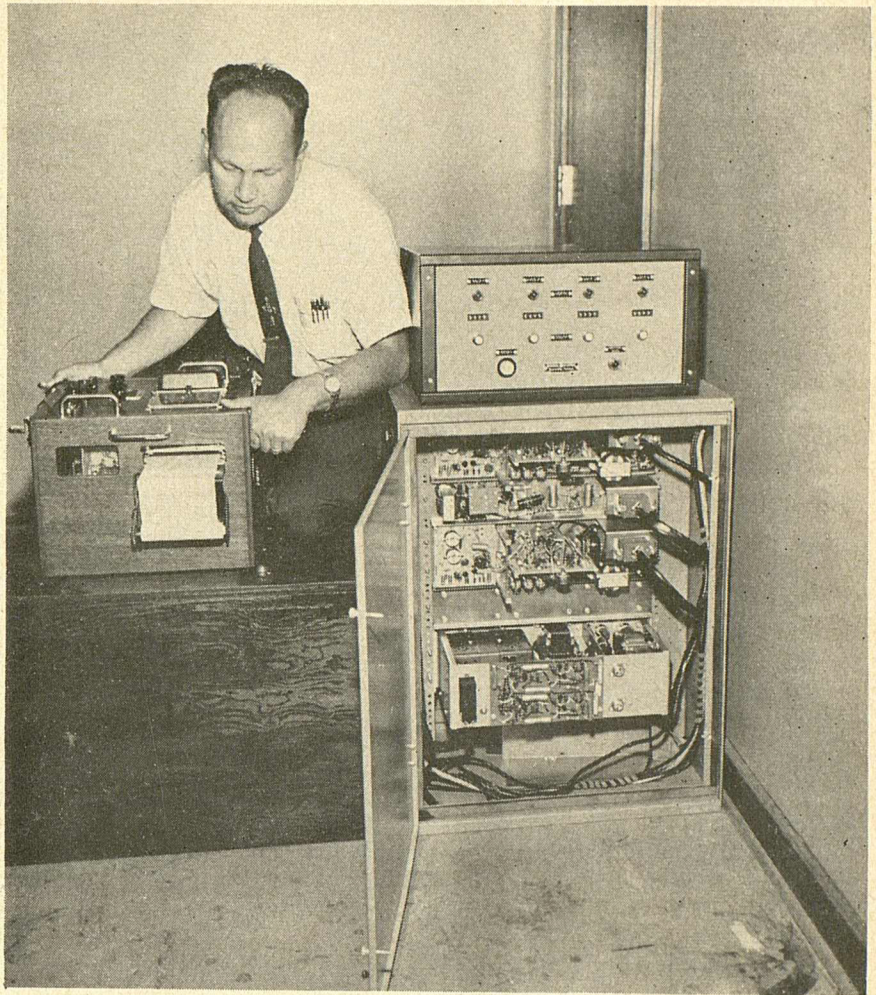
15 Hotboxes in One Month

During this same period there were 15 actuations of the alarm system indicating hotboxes. Of these, 10 were found by train crews, three not found by crews were found by Hornell car inspectors, and two are listed as unconfirmed.

The hotbox detector and its associated alarm equipment is made by General Electric Company. 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. Indications are sent from the detector location at River Junction to Buffalo via carrier over an existing wire pair.



Photographs courtesy Erie-Lackawanna



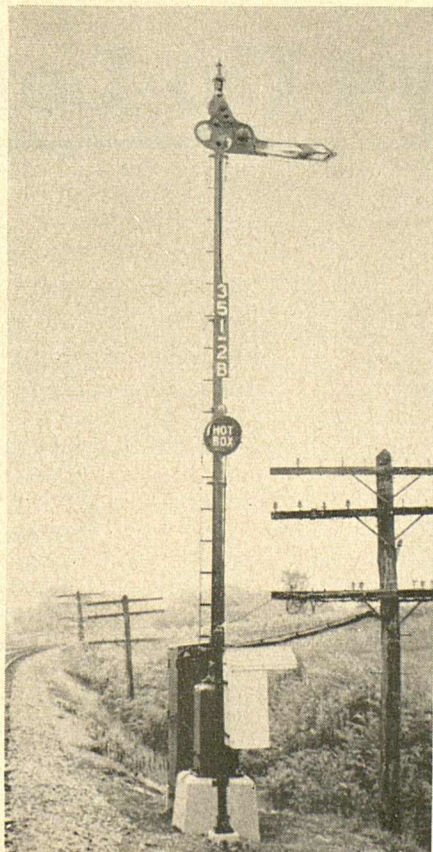
Efficient

Cost of the installation, including the equipment, was \$50,000.

At the detector location is a test panel for the adjustment of the detector equipment and test jacks for checking on the operation of the carrier equipment that transmits the hotbox detector indications 65 miles to the dispatcher's office. A penograph recorder in the relay house at the detector location is helpful to the maintainer when adjusting the equipment. For proper alignment of the detector viewing units, the maintainer uses a light source to simulate a hotbox. The light source is fitted to a wood template that attaches to the rail to place the light at the proper spatial relation with respect to the detector.

Each detector-viewing unit is mounted on a separate foundation between the ties to minimize vibration. Wood wedges are bolted to ties on each side of the detector viewer to protect it against possible dragging equipment.

The installation was made under the jurisdiction of F. Youngwerth, general superintendent communications and signals.



DISPATCHER'S OFFICE has penograph recorder and indication alarm equipment. Top row of indication lights are for hotboxes on north side of train. Just below these lights are the counters to indicate the number of axles to the end of the train from the axle containing a hotbox. Four lights below the counters are for hotboxes on the south side of train. Only eastbound trains are checked.

AUTOMATIC SIGNAL indicates stop when a hotbox is detected. Indicator lamp on mast displays white "Hot Box" on a black background. Train crew uses white pole box phone to call dispatcher to ascertain hotbox location in train. Signal 2½ miles in approach to this signal displays Approach aspect and white "Hot Box" letters on an indication lamp.