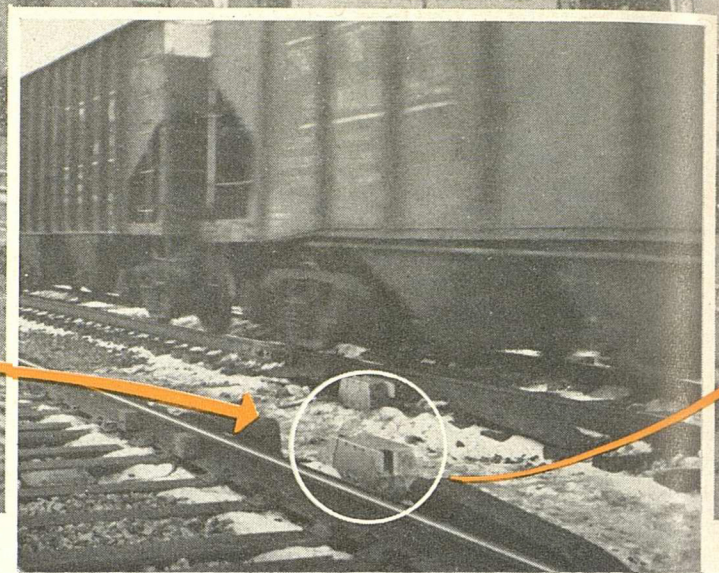


Hot box detector, teamed with like unit on other side of track, checks car journals moving . . .



. . . either way. Top detector in circle views journals of passing freight. Data is fed . . .

Electronics Speeds Hot Box Data

A new system transmits journal temperature reports to a dispatcher 10 miles away. NYC now checks trains both ways at one spot—plans one-way setups to make best use of repair sites along heavy-traffic line.

Long before the crew of a New York Central freight rolling west through Fairview, Pa., knew it, the dispatcher 10 miles back at Erie had the "word" the train was headed for trouble. Before the trouble could develop, though, he'd moved to forestall it, knowing the 31st car in the consist had a hot number-three journal on the south side.

Alerted with pinpoint information, he had the train sidetracked at a point just ahead where the car was cut out for repairs. The train, freed of the bad order car, rumbled on its way with the minimum time lost and the chance of derailment or long delay averted.

The Central has installed hot box detectors in centralized traffic control territory to inspect journals on freight trains running both ways on two main tracks.

The road has a battery of Servo journal checkers at Fairview with graphic recorders in the dispatcher's office in the Erie passenger station.

To be most effective, the Central had reasoned, hot box detectors should be located on a heavy freight traffic line and where the train or cars can be sidetracked

if a box is hot. Therefore, the detectors should be about 30 to 40 miles from a yard where the journals were last checked and inspected. Experience on other roads is that it takes about 30 miles of running for a journal to heat up, if it is going to heat at all.

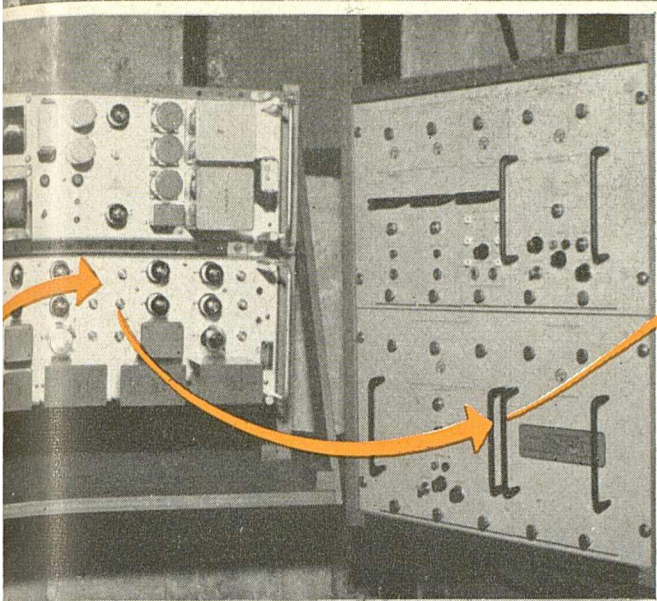
With these factors in mind, Fairview was chosen as the location most suitable. First, it is on the heavy traffic New York-Chicago mainline. Daily traffic consists of 23 eastbound freight trains and 22 westbound, with 12 local freights each way. Three to four more freight trains are run during peak traffic periods. Second, there are three controlled sidings into which trains can be directed within 15½ miles of Fairview. Westbound trains are checked by their crews, eastbound trains are checked in Wesleyville yard, Erie. Third, the detectors here are 31 miles east of Ashtabula, Ohio, where freight trains from Youngstown and Pittsburgh come onto the mainline.

When the detectors were first installed in September 1957, the graphic recorders were installed in a wayside housing with the amplifying equipment. Employees ob-

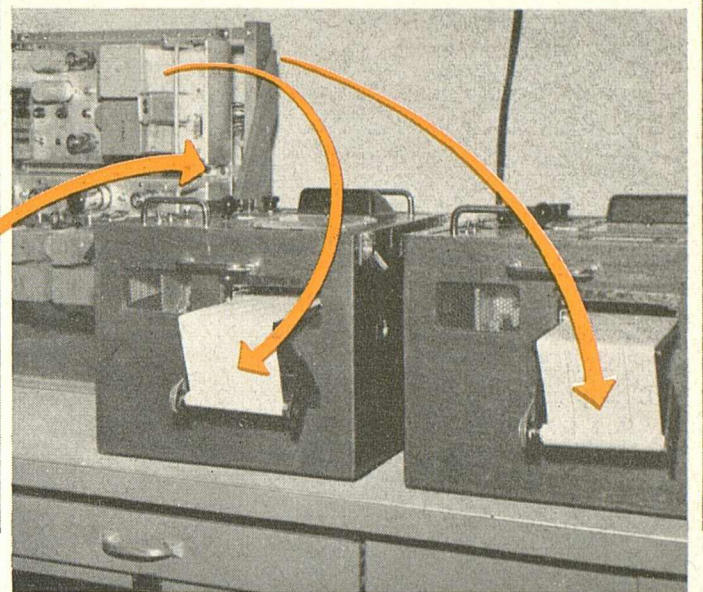
served the recorders and telephoned "hot journal" information to the dispatchers at Erie. Although this arrangement operated satisfactorily, the advantage of having the graphic recorders in the dispatchers' office was that the dispatcher acts upon the "hot journal" information by putting a controlled signal to stop. When the train crew calls in, he tells them the location of the hot journal.

Thus the problem was simply one of being able to take the output of the hot box amplifiers and send it over existing line wires into the graphic recorders at Erie. General Railway Signal Company came up with "Data Scan" to perform the wanted job. It is a system of remote indication which uses a 20-kc carrier operating on the CTC code line. Four FM tones are used for the detector outputs, one for each detector on the four rails.

Two-way detectors at Fairview have been an experiment to determine their usefulness. The Central plans to replace them with single-direction detectors at Fairview to inspect eastbound trains. Any of these trains showing hot journals will be yarded at Wesleyville, where they will



... into amplifier unit (right), and then into carrier apparatus (left) for transmission to . . .



... receiver equipment at Erie, 10 miles off. There it's transcribed on recorders (right).

o Forestall Costly Train Delays

be checked by car inspectors, as at present. Detectors for checking westbound trains are to be installed at Angola, 22 miles west of Buffalo. Trains indicating "hot journals" will proceed to Dunkirk yard, where they will be checked by car inspectors. The graphic recorders will remain at Erie, and the indications from the Angola detectors will be sent via carrier over the code line.

As this is in CTC territory, the dispatcher will be able to direct trains into sidings if the need arises, before the train reaches either Wesleyville or Dunkirk. Westbound trains inspected at Angola can be directed into a siding 10 miles west of the detectors. Angola was selected for westbound train hot box detection, because it is about 30 miles out of Buffalo yard, as well as being east of Dunkirk where car inspectors are located.

Spot 70 Hot Boxes

During a recent three-week period, the hot box detectors inspected 541 freight trains on which 70 journals were recorded abnormally hot. Disposition of the 70 cars was as follows: 21 cars were set out to allow the journals to cool. After inspection and repair as required, the cars were forwarded. On 30 cars, the indicated journals were rebrassed and the cars forwarded. On 12 hot journals, the cars were not set out. The journals were lubricated while the trains were in yards or on sidings, after which they continued on their way. Sim-

ilar action was taken regarding five cars on which the journals were repacked. Brakes were found sticking on two cars. This was remedied after the train was stopped. The cars were not set out.

When a train is passing Fairview, an assigned employee reads the tape, knowing that the deflection of the stylus is proportional to the heat radiated from the journal box. To read the tape, the man counts the deflection of the stylus in millimeters and subtracts the deflection of the journal on the other end of the same axle. If this difference is 9 mm or more on an eastbound train or 10 mm or more on a westbound

train, it is a reportable indication. Roller bearing cars give indications comparable to hot boxes, and are readily identified by high readings on all journals of the car.

When indications are reported, the location of the car in the train, the side of the train that the indication is on, and the location of the journal on the car, are given. For each train recorded, the tape is marked with the train, engine number, track, direction and time, as well as north or south rail. A separate hot box record includes this information as well as the initial and number of the car, its type and what was done with it.

