LEHIGH VALLEY HIGHWAY CROSSING SIGNALS

The use on the Lehigh Valley of highway crossing signals which give both an audible and a visual indication, heretofore noted in the *Railway Age Gazette*, has been rapidly extended, and the company now has 47 grade crossings thus protected. These crossings are scattered throughout the lines of the company in New Jersey, Pennsylvania and New York. The crossing at Treichler, Pa., is shown in the accompanying engraving. It will be noticed that the disk of the signal is not set parallel to the line of the railroad, the highway being laid on a curve and requiring that the signal shall be seen on a line at an acute angle with the railway. The back side of the signal for the approach on the other side of the railway will be seen close to the end of the station building. The sign shown on the farther side of the tracks, at the right of the telegraph pole, bears the legend "Railroad Crossing; Stop, Look and Listen."

The enclosed disk signals used for the purpose here indicated are those heretofore in use as automatic block signals. Three-position, upper quadrant semaphores have been adopted as standard for the block signals, releasing a large

Audible and Two-Indication Visual Signal for Highway Crossing

number of disks for this new use. The company proposes to install these signals as rapidly as possible at all road crossings on the main line, except those at which there are gates.

The signal shown in the illustration stands at "Danger," a red disk for the day-light indication. A red light shows at night at the smaller opening in the upper part of the "banjo." When no train is approaching the disk appears white. The sound is given by the usual large gong. The shadow which appears at the right of the upper opening in the signal case is caused by a shield fixed to the case to prevent the red light from being seen by enginemen.

In these crossing signals, as well as in all automatic block signals now being installed, acetylene gas is being used. This illuminant was first employed by the Lehigh Valley for this purpose in August, 1910, on the Perth Amboy branch, and since then it has been installed in 370 signals.

The acetylene gas has proved much more reliable than kerosene. It is so much more reliable, in fact, that on the three-position upper-quadrant signals the additional lamp for a "marker" is not used. In the past four years only two acetylene lights have gone out. One of these failures was due to the gas burner enlarging and using up the supply, and the other was caused by loose scale falling upon and stopping the valve.

The cost of acetylene is also less than kerosene. To light one kerosene lamp with oil has cost 2.3613 cents per 24 hours, or 4.7226 cents for two lamps on a signal. To light a three-position upper-quadrant signal with acetylene gas costs only 4.3822 cents for 24 hours. The cost of the gas itself is only 2.5 cents, but the interest on the equipment, which amounts to 1.8822 cents for twenty-four hours on the investment of $114.50, makes up the difference. If oil were used in a three-position upper-quadrant signal, the company would deem it necessary to have a second lamp, in accordance with the Railway Signal Association standard, as kerosene is less reliable; and the cost would then be greater than for the single acetylene light.

THE DETROIT TERMINAL RAILROAD

With the recent completion of the last section of its belt line around the city of Detroit, the Detroit Terminal is in a position to become an increasingly important factor in the industrial development of that city. The unusually rapid growth in the number and size of the industrial plants located along the main lines of the railways entering the city has caused serious congestion in practically all of the area within the city limits suitable for such development. A belt line within the limits has been proposed frequently in order to provide additional trackage to develop new territory and the Michigan Central built a section of such a line from its Bay City division south to the river at a distance of about two miles from the heart of the city. Such a line could offer only temporary relief, however, and many railway and business men who had given the subject careful consideration were of the opinion that the only permanent relief was to be secured by building a complete outer belt line outside of the city limits.

The first step toward the realization of this plan was taken in 1905, when a company was organized to be financed by local capital for the purpose of building a line from the Detroit river north to a connection with the Michigan Central and the Grand Trunk at a distance of about four miles from the city hall. This section of what was later to be the Detroit Terminal, was built in 1906 and at present is serving a large number of important manufacturing plants. The original company was later acquired jointly by the Michigan Central, the Grand Trunk and the Lake Shore, and the new belt line extended in sections until the company now operates 18 miles of main line extending from the river on the east around the north side of the city to the Michigan Central main line on the west in addition to 18 miles of industrial side tracks. The property, including equipment, represents an investment of about $1,500,000.

The line is single track with the exception of the section south of the Michigan Central main line. Provision has been made for double tracking the entire line and it is expected that some second track will be laid in the spring. The principal yard is located at North Detroit, where it is planned to provide for an ultimate capacity of about 3,000 cars. The present equipment consists of six 170,000-lb. superheater locomotives.

The terminal has been aptly characterized as an automobile road on account of the large number of automobile and automobile accessory companies which it serves. In the first nine months of the past year there originated on the belt line 29,000 car loads of finished automobiles, an average of over 100 car loads per day. The total movement on the line averages about 75,000 loaded cars in and out per year. The company has not adopted the policy of owning real estate suitable for industrial development and offering it on lease to prospective manufacturers, but stands ready to build an industrial siding into any new plant located within reach of its lines.

There are about 50 important industries served by the line

at present, including the Chalmers Motor Co., the R. C. H. Corporation, the Hudson Motor Co., the Continental Motor Co., the Lozier Motor Co., the Ford Motor Co., all of which produce automobiles, and the Metal Products Co., the Welded Steel Barrel Co., the Anderson Forge & Machine Co., the Armstrong Tanning Co., the Glass Enamel Package Co., and the Detroit Cast Stone Block Co., producing miscellaneous products. The line also serves the Edison Illuminating Co., and about 50 other plants which do not produce business but are large receivers of coal, building supplies, etc.

Every industry along the line is switched once a day and oftener if the amount of business warrants. In most cases an engine pulls the loaded cars from a number of industries in one drag to the classification yard at North Detroit and the distribution to the industries is made in a similar manner. For some of the larger plants, as the Ford Motor Co., or the Edison Illuminating Co., solid train load deliveries are made direct from the yard. The Ford company is one of the largest producers along the belt line, the maximum day's business at that plant being 176 car loads in 24 hours, representing 1,008 complete automobiles. This plant is served by six tracks with a capacity of 16 to 18 cars each and it is sometimes necessary to handle as high as 120 cars at this plant in one switch. In addition to the outbound loads, the Ford company also receives a large amount of material, running as high as 100 car loads per day.

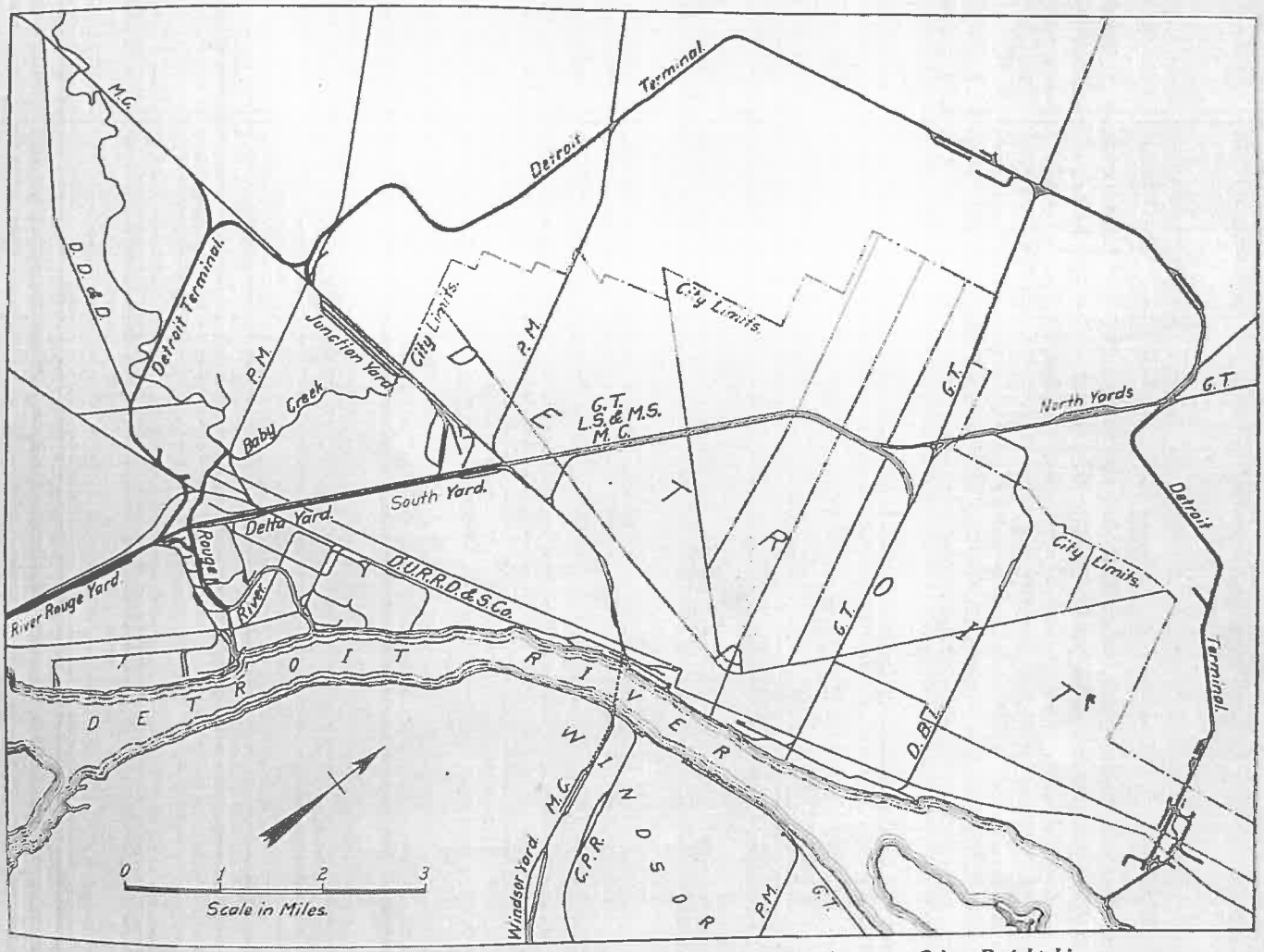
While the industrial development along the belt line has barely begun and a comparatively small amount of the total business of the city is originated by the Detroit Terminal at present, the line serves other important functions in improving the freight terminal situation in the city. Although its ownership is vested in three roads, it has physical connection with the Pere Marquette, the Wabash, and the Detroit, Toledo & Ironton in addition to the owning companies. By handling the transfer of through business over the Detroit Terminal the classification yards on the other roads are very much relieved and the handling of local business is very much facilitated. The line also serves, of course, to collect and deliver business to the main lines and to receive and distribute incoming business to the industries which it serves.

The Detroit Terminal is operated by an organization independent of the owning roads, W. D. Trump being manager of the property.

STREET TYPE C LOCOMOTIVE STOKER

The Street locomotive stoker, as it is now being manufactured, is the result of seven years' development work, during which period it has been built in three different types, designated as A, B and C. The type A stoker was the first experimental design, for which run-of-mine coal was placed on the tank, where a crusher was provided for reducing it to the proper size.

The type B stoker is the same as type A, with the exception that the crusher is omitted, and a screen is provided in the floor of the tank for admitting prepared coal to a screw conveyor which carries it to the locomotive and delivers it to the stoker. This type of machine has been fitted to 375 locomotives, and they are all now in regular service. The operation of this machine has been eminently satisfactory, but it was found that improvement could be made in a num-



Map of Detroit and Vicinity Showing Detroit Terminal Line and its Relation to Other Freight Lines