

LIGHTING

A Terminal Yard

Lackawanna photo-electrically-controlled installation materially improves working conditions in yard at Hoboken, N. J.

Worm's-eye view of one of the towers

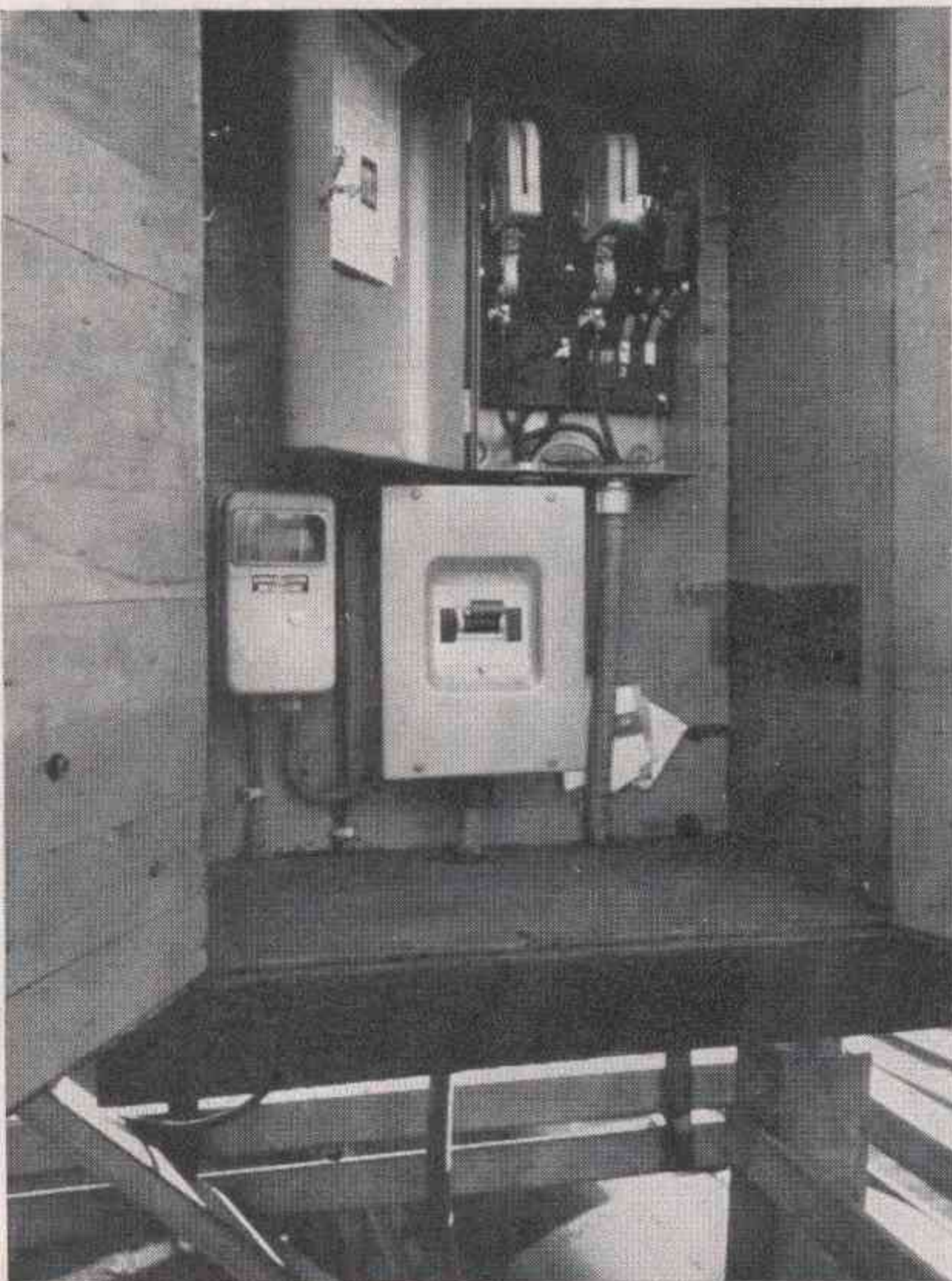
A FLOODLIGHTING installation in the Hoboken, N. J., yards of the Delaware, Lackawanna & Western, proved effective in improving working conditions. It is now neither dangerous nor difficult to walk in the lighted area of the yard. Locomotive operators can see to perform all of their duties without the aid of headlights.

The primary function of the yard is to load and unload cars from car floats. It also serves piers, coal docks and warehouses. Car floats are loaded over bridges which are hinged at the shore end, and supported on floats at the water end. The portion of the yard which is lighted is that which is included within the dotted line in the diagram.

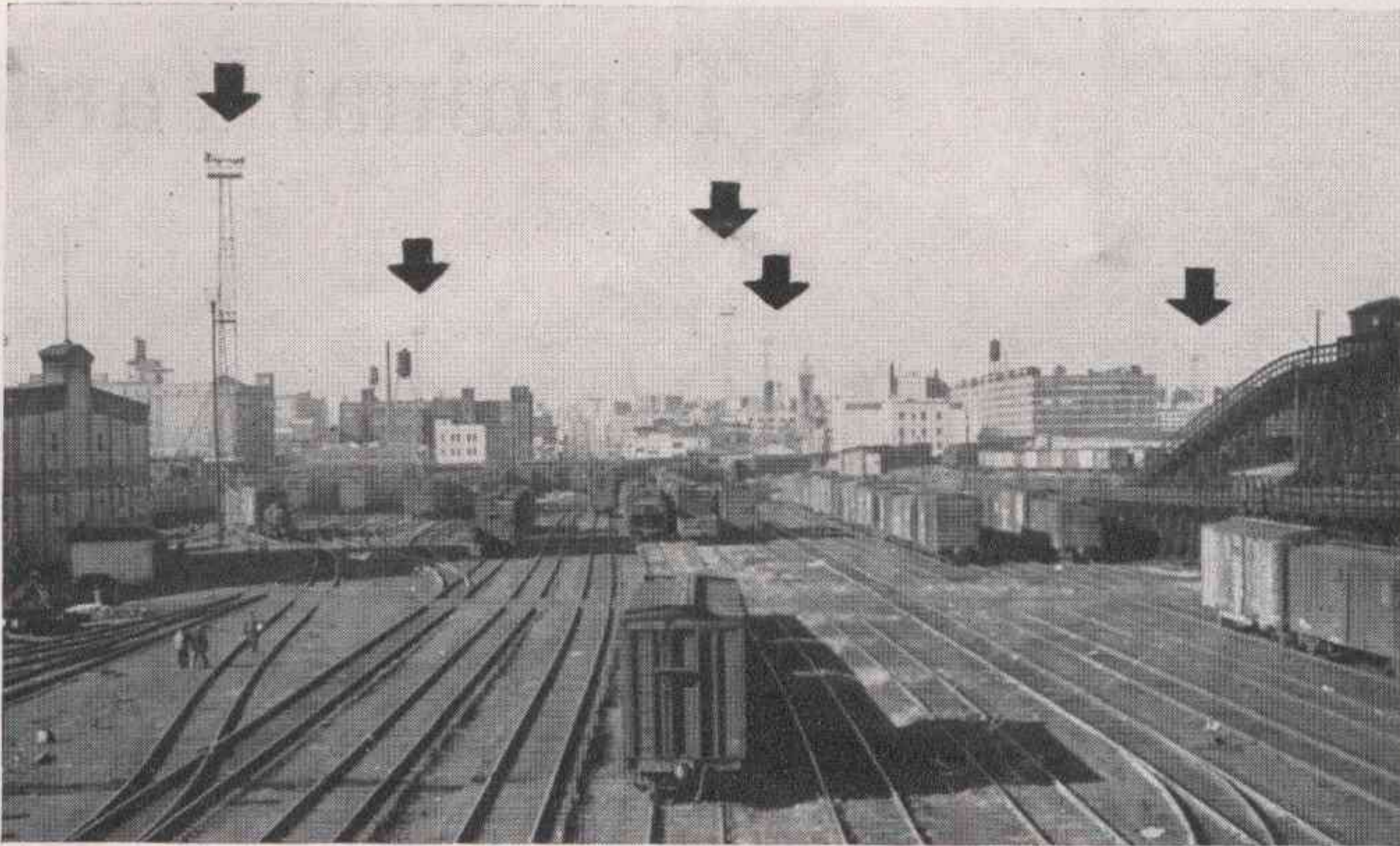
The lighting units are located on one old tower and seven new ones. The new towers are standard towers supplied by the American Bridge Company. They are made of galvanized angles and no guys are required. Nine piles under each tower support the reinforced concrete footing. The towers are 100 ft. high, and have 8-ft. by 2½-ft. platforms with railings for protection of the men who replace lamps and clean the front glass of the lighting units. There is room on each platform for 12 lights, the number actually installed on each tower is shown in the diagram. The platform is reached by means of three ladders, with a landing or platform between the first and second, and the second and third ladders.

Lighting Units

The lighting units on the platforms are General Electric 1,500-watt, type L-69, Sports Floodlights. They are fitted with general service lamps, and are



Cabinet on the lower platform of one of the towers which contains the magnetic switch, the photo-cell relay and a manually operated circuit breaker



The yard as seen from the east end looking west showing five of the new towers

designed for the lighting of long narrow areas. They are light in weight,—the floodlight, complete with lamp weighing only 19 lb. The Tufflex tempered plate glass cover is spun-sealed to exclude water, dirt and insects. The reflector is made of Alzak processed aluminum.

The socket housing is an aluminum die casting secured to the reflector housing with clamps and gasketed to exclude dirt and moisture. The opening made by removing the socket housing is sufficient to permit its reapplication with the lamp in place, thus eliminating the need of a removable or hinged front door. No focusing is required when lamps are replaced.

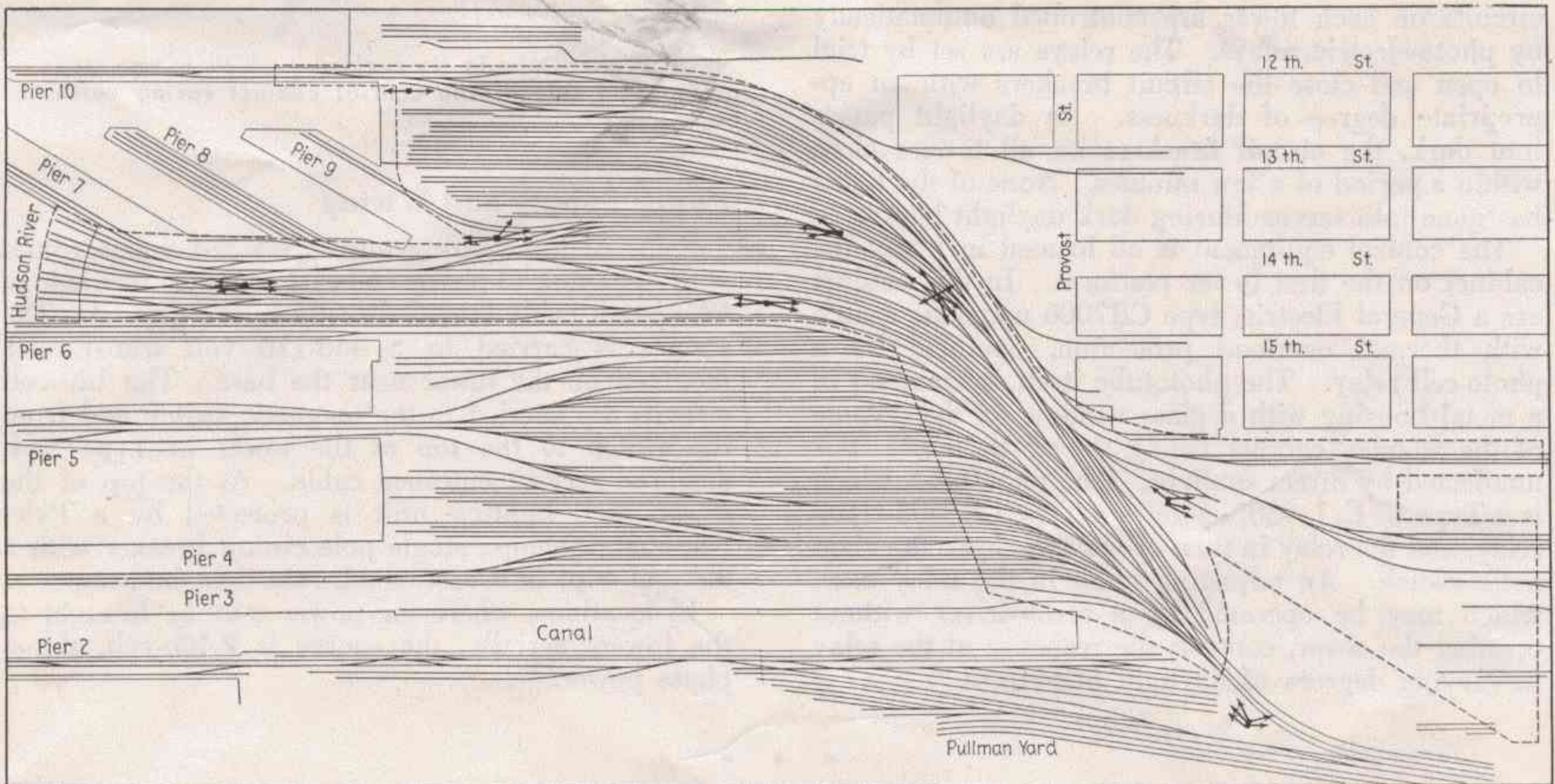
The galvanized, malleable iron base used to mount

the unit on the tower is attached to the unit by a trunnion bracket which allows the unit to be swung up, if necessary, for cleaning. No tools are required, and when the reflector is swung back, it returns to its original position. For lateral aiming, there is a V-notch rear sight in the top of the socket housing and a blade front sight on the upper rim of the reflector housing. For the original vertical adjustment, there is a degree scale on the mounting trunnion which permits daytime adjustment from aiming charts. For lighting the area immediately under the tower, some of the towers are fitted with a wide spread, sealed-beam 300-watt lamp, pointed directly downward and mounted at a height of 80 ft.

The circuit breakers which control the lighting

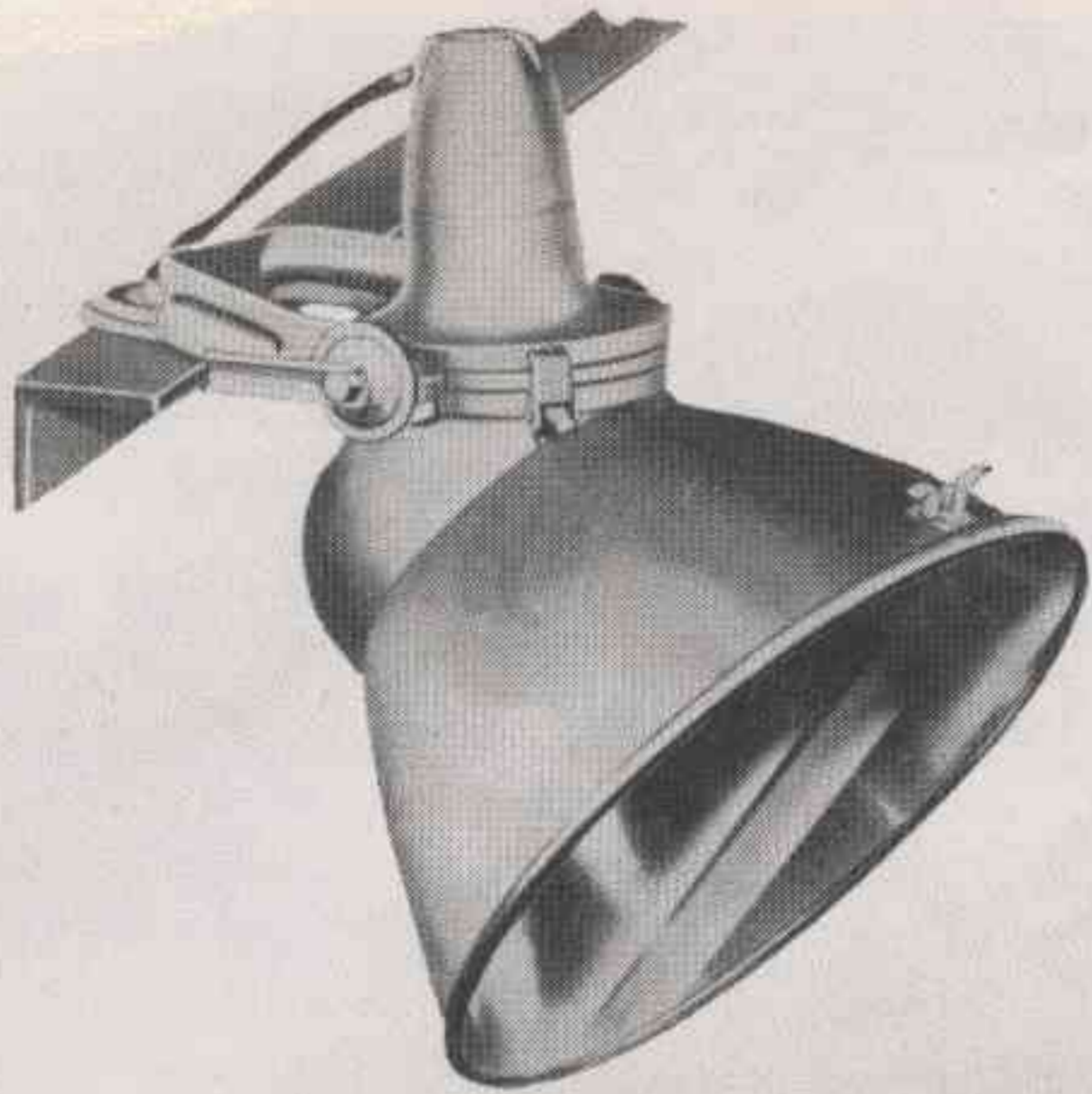


Night view from the center of the yard looking east



Top: Day view of the car float bridges—Center: Plan of the Lackawanna's Hoboken yard showing the location of the floodlight towers—Bottom: Night view of the car float bridges

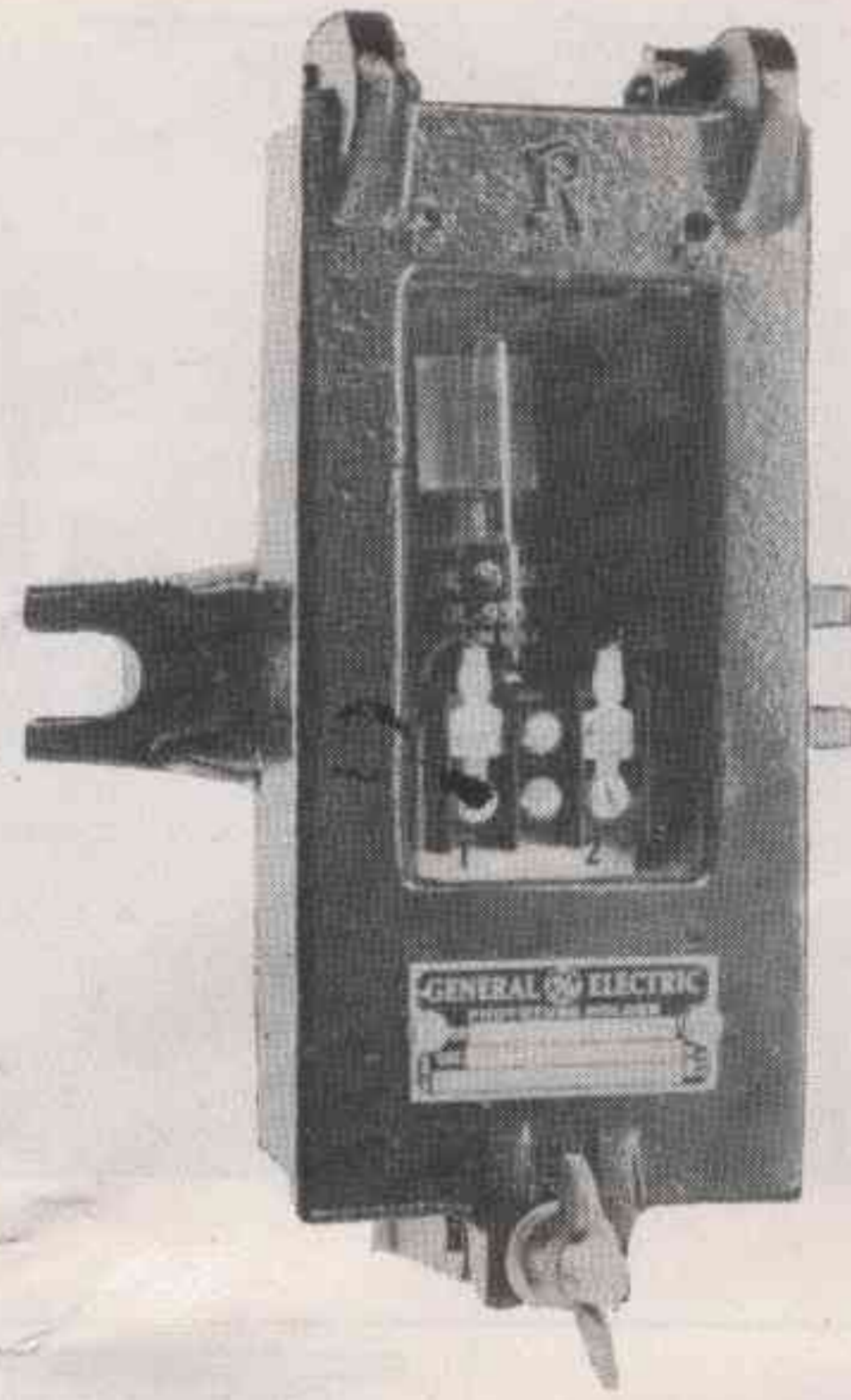




One of the G.E. type L-69 Sports floodlights

circuits on each tower are controlled automatically by photo-electric relays. The relays are set by trial to open and close the circuit breakers with an appropriate degree of darkness. As daylight passes into dark, the circuit breakers on all towers close within a period of a few minutes. None of the lights has gone into service during dark daylight hours.

The control equipment is all located in a wooden cabinet on the first tower platform. In this cabinet are a General Electric, type CR7006 magnetic switch with thermal overload protection, operated by a photo-cell relay. The phototube itself is mounted in a metal housing with a glass window on the outside of the wooden cabinet facing the north where it is unaffected by direct sunlight. The phototube, which is a Type G. E. L-930, operates a Type CR7505-H109 relay, and the relay in turn opens and closes the magnetic switch. An adjusting knob in the relay case, which may be operated by a screwdriver without opening the cover, controls the response of the relay to varying degrees of daylight brightness.



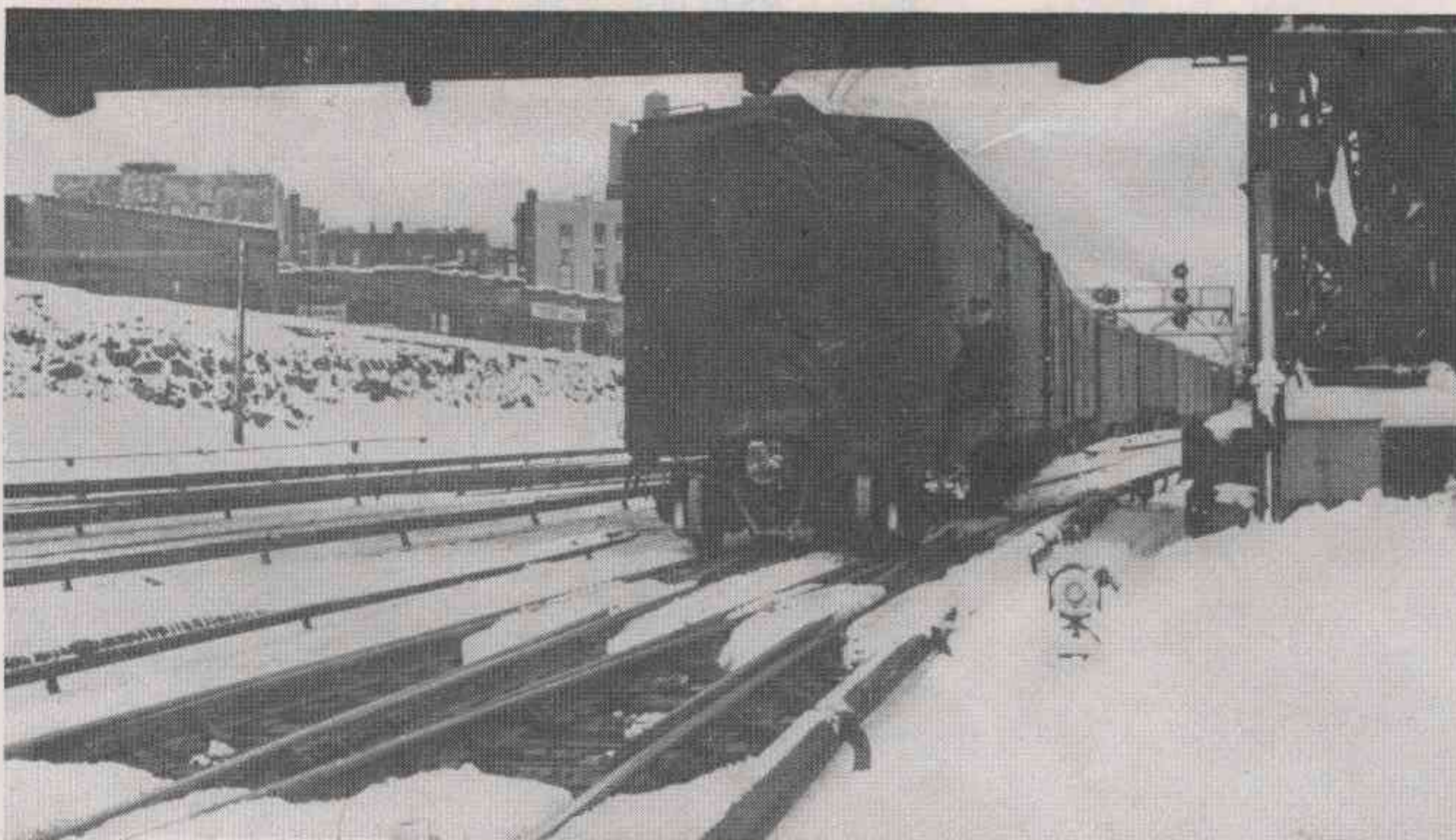
The phototube in its enclosure which is mounted on the side of the control cabinet facing north

Power Supply and Wiring

Some of the lighting towers are fed underground with 440-volt, 3-phase, 60-cycle power carried in Okosheath cable buried directly in the ground. The service is carried to a 440-110 volt transformer mounted on the tower near the base. The 120-volt circuits are carried to the magnetic switch and from the switch to the top of the tower in Type ASE armored service entrance cable. At the top of the tower each lighting unit is protected by a Pyle-National, 20-amp., single pole circuit breaker with a thermal trip, in a cast-metal, rain-tight housing.

In locations, where the power may be brought to the towers aerially, the source is 2,400-volt, three-phase power.

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Costs as low as five cents per point-per-hour of heavy snow were recorded by the New York Central for the electric heating of switch points during the winter of 1948-49—The General Electric heaters used consist of a calrod heater with a sealed terminal housing at each end and a rubber-covered cable lead—The closing of an electric switch at the approach of a storm is the only manual operation required—Cars being moved over a switch which has been cleared of snow by electric snow melters