

lower end being attached to each column, providing ample hose connections for all purposes. Electric power is supplied from the power house on poles above the steam and air trestle, in both direct and alternating current, the former for the individual drive and the latter for the group constant speed drive. The groups have induction motors, and the larger individual drive machines have direct current motors supplying a variable speed control in the motor itself.

The shop has large windows on all sides, which, with the 12 x 70 ft. skylights in each 22 ft. section, produces a well lighted interior. All windows are cleaned at frequent intervals, so that the light inside is but slightly less than that out of doors. Artificial illumination is obtained from Cooper-Hewitt mercury arc lights, suspended from the bottom chords of the roof trusses. Down the central bay, these are located alternately one and two per truss, with one suspended centrally from each truss in the side bays. Mercury arcs, while not providing a natural light, give a bright, penetrating illumination that is restful to the eyes, and with the close spacing provided, the shop is well lighted for all purposes.

The erecting shop contains 26 pits, approached from the south through large swing doors from an 80 ft. transfer table,

motive wheeling crane, capable of lifting the heaviest locomotive on the system. The balance of this erecting shop bay is equipped with three 1½ ton travelling hand cranes at a rail level of 20½ ft., carried on a built up girder of 30 x ¾ in. plate and four 6 x 3½ x ¾ in. angles. Two of these cranes are located west, and the other east, of the wheeling crane which obstructs the passage of the hand cranes either side of that point. In addition, at each column, other than the ones on each side of the wheeling crane, there are 13 ft. jib cranes, constructed of 8 in. channels, as will be noticed on the left in fig. 4. The majority of these cranes have but recently been installed, the original shop construction only providing for one jib at every alternate post, the one crane serving two pits. Consequent delays are now overcome.

A 4 ft. suction fan is located up in a skylight over the row of columns, driven by a 15 h.p. induction motor, and connecting to a 20 in. suction pipe running the length of the shop over the columns; 14 in. pipes branch vertically downward over each pit track, the lower end carrying a telescopic smoke jack, which can be pulled down over the locomotive smoke stack for the firing up test. These jacks are counter weighted so as to slide up out of the way when not required. For the firing up test

the wheeling crane, where after loosening the gear and pedestal caps, the locomotive is lifted bodily. The forward end is lifted by a looped steel hawser suspended from the front hoist placed under the smokebox, and the rear end is raised by a cross bar suspended from links from the cross arm of the rear hoist placed under the rear end of the frame. The cross bar is kept near the door between pits 17 and 18, on strips of bar iron secured to the floor. Rollers are placed under the cross bar, and it is rolled across the pit tracks on the bar iron rails, the ends being there slipped into the slits in the suspended link ends. On the locomotive being raised, the drivers and truck left resting on the rail are rolled across into the centre bay, carrying their boxes. A small 4 wheel truck is run in from the rear and placed under the forward end of the frame, and a pair of mounted wheels placed under blocks of wood bearing up under the rear pedestal cap, placed back in position for this purpose. On these supporting wheels, the locomotive is lowered, run out on the transfer table, and spotted on the pit provided.

Tenders are handled on pits 20 to 26, and also on the extended ends of the through tracks 21 and 22. On these several tracks the tenders are placed by the transfer table in the same manner. The lighter

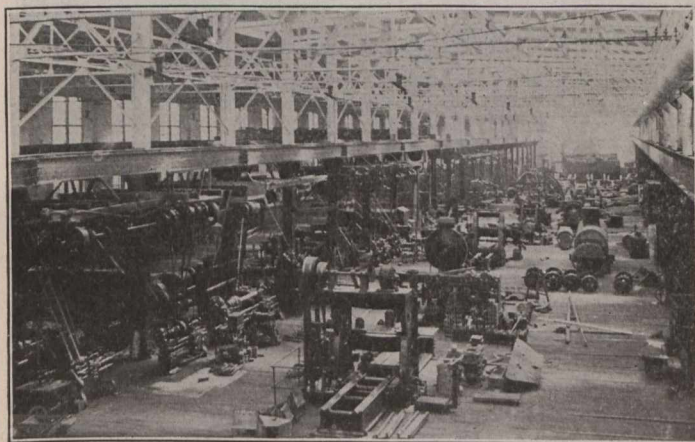


Fig. 3.—Central Bay of Machine Shop, Looking East.



Fig. 4.—Erecting Shop Bay, Looking East.

electrically operated. This transfer table has a windlass with a long cable, which when passed over a sheaf in the forward end of the pit, spots the locomotive where desired. The same attachment is used for drawing the locomotive out of the shop. This reduces to a minimum the period of time necessary to keep the doors open, a most important consideration in severe weather. Locomotives to be shopped enter from the north end of the shop grounds, running on the transfer table in its easterly position over the track passing along the rear of the roundhouse. This track is a through running one, the full length of the grounds, making approach from either end equally feasible. On the south side of the transfer table, as shown in fig. 1, there are several blind storage tracks for spotting locomotives before and after shopping when conditions are such that removal is inconvenient.

The pits, 37 ft. long, are constructed of concrete, and are located slightly nearer the central bay than the south wall, leaving a wide passageway back of the locomotives along that wall. The pit bottoms slope to the south, cast iron drain pipes leading from that end, connecting with a 10 in. tile pipe which empties into the city sewer passing across the grounds in line with Scotland avenue.

Pit 17 has a stationary 125 ton loco-

the locomotive is pinch barred forward until the smoke stack is directly under the smoke jack. The smoke drawn up by the exhaust fan is blown out through the roof, leaving the shop free from the objectionable smoke frequently found in shops where such a provision has not been made.

All but pits 20 to 26 are used for locomotive erection. The erection work is divided up into three gangs, and for each of the gangs, at a central point on one of the columns, there is mounted a steam driven water pump, consisting of a steam end of a 9½ in. air pump, to the lower end of which, in place of the air end, there is attached a 4 in. water pump with water connections therefrom. Each pit in the gang is thereby placed within convenient range of a water connection for giving the boiler a hydrostatic pressure test.

Between each pit there is a work bench, equipped with two vises, and at the north end of the bench, a double sided cast iron pipe rack for carrying the boiler fittings while dismounting. The rack is of ample size to accommodate all the fittings, leaving the floor around the pits entirely unhampered, and clear for the passage of the workmen from point to point around the locomotive.

The practice of this place, when a locomotive is shopped for heavy repairs, is to first spot the locomotive on pit 17 under

repairs are handled on the pits adjoining the locomotive pits, and the heavier ones on the pits at the east end and on the north end of tracks 21 and 22, all these tracks adjoining the boiler and tank shop in the northeast corner of the building, the whole of the shop east of track 19 being occupied by the boiler and tank department. The east four sections of the central bay are the boiler erection floor, fig. 6, where the boilers are handled when requiring heavy repairs.

This department is well equipped for a shop of the size, and has even built boilers complete when required. Near the corner, butting up against the end wall, there is an oil operated furnace about 12 ft. square, of a size designed to handle standard boiler plates. To the left front of the furnace there is a 12 ft. air operated flanging clamp, and between it and the wall is located a large flanging plate. An open forge fire for flange work adjoins the oil furnace along the wall. This battery of flanging equipment is provided with a 22 ft. jib crane swinging from the first wall buttress. The open space in front of this group is the lay off floor.

Alongside the centre bay columns, and to the south of the lay off floor, there is a double punch and shear with a 40 in. throat gap. Each one of the pair is equipped with a 10 ft. jib pivoted centrally on the top,