

74-ton crabs fitted with bridle stirrups and special hooks for lifting the  
tram bodies off the trucks. TRAMWAY WORKSHOPS, PRESTON.

Since 1928, all the electric trams placed into service by the Metropolitan Tramways Board have been built in the Preston Workshops, erected and equipped at a cost of approximately £330,000 on a site of 17 acres. Designed so that extensions can be made without altering the orderly progress of work, the shops are arranged in four main groups : (1) engineering and electrical ; (2), blacksmithing, platework and foundry ; (3), woodworking and lifting ; and (4), painting. Between groups 1 and 2 and 3 and 4 are the electrically-operated traversers, each being driven by a 50-h.p. tramway type motor.

Floored with wood blocks set on concrete, the engineering and electrical shop is 256 ft. long by 180 ft. wide, and is equipped with three 5-ton electric overhead travelling cranes in addition to several 1-ton hand-operated cranes attached to the roof columns. Fourteen sets of tracks run into the shop from the traverser alley, and nine of these are equipped with pits 4 ft. 3 ins. deep and 52 ft. long. In that portion of the shop devoted to wheel work, there is a Niles Bement Pond press which forces the wheels on to the axles with a pressure of 10 tons per diametrical inch. Another 5-ton electric overhead travelling crane is found in the blacksmithing, platework and foundry shop, which is 120 ft. wide by 256 ft. long.

Fourteen sets of tram tracks lead from the traverser alley into the lifting bay of the third group. Ten of these tracks run right through the body building section of the shop, while nine communicate with the traverser alley between the wood-working shop and the paint shop. The lifting bay is served by a 15-ton electric overhead travelling crane, which has two

7½-ton crabs fitted with bridle stirrups and special hooks for lifting the tram bodies off the trucks. When a body has been lifted, the trucks are towed off by a Fordson tractor to the truck shop, there to be completely overhauled, while the body is lowered on to special wheeled trestles and conveyed into the body section of the shop for a similar overhaul and renovation. Including the lifting bay, the woodwork shop is 256 ft. long by 180 ft. wide. All the machines in use here are driven individually and are provided with an exhaust system to carry off the shavings and sawdust, the pipes for which are set in channels cut in the floor. Shavings and sawdust are kept separate, and are delivered through cyclone separators into storage bins. Adjoining the woodwork section is the car body portion of the shop. In these two places the work of repairing and overhauling proceeds simultaneously with the building of new bodies. A feature of the maintenance service is that parts are made for stock, and so are available immediately for fitting into position when it is necessary to replace damaged sections. In this, as in many other respects, the policy of standardisation is of great help in reducing costs.

Portable adjustable trestles of the board's own design are used in the paint shop, which is 160 ft. long by 120 ft. wide, and has a spray paint chamber with exhaust fan. The eight tracks in this shop give accommodation for 16 trams with ample margin for working on the ends. Four of the tracks run right through and curve into the single track running to the entrance to the works. By means of these, it is possible to run the finished cars right through into service. Incidentally, it may be pointed out that each tram visits Preston every 18 months for its paint work to be touched up.

Apart from the shops, there is the store, a building 192 ft. long by 128 ft. wide, the administrative block (in which are housed the designing

staff and the research laboratory), the mess, locker and recreation rooms, and the sub-station, equipped with two 300-kv.a. transformers, which supplies power to the works.

Approximately 500 persons are employed at the Preston Workshops, the weekly wages bill amounting to £2,500. Since the works came into full operation, 320 trams have been built at Preston, apart from the large number which have been altered, re-built, overhauled and painted. At the moment 40 trams are on order and are in course of construction, while bodies are being built also for the buses with which the board intends to provide transport on the Rathdown street, Williamstown and Footscray-Sunshine routes. On the average, something like 800 trams pass through the shops each year on the regular maintenance programme--a system which has made an extraordinary difference in the working of the metropolitan tramways. When the board came into existence in 1919, the number of trams withdrawn from service owing to defects developing was approximately one per 4,000 miles. The effect of systematic maintenance and overhaul soon altered that high figure. To-day it is one tram per 26,000 miles, a figure which can stand comparison with any tramway system in the world.

Wheels on to the axles with a pressure of 10 tons per diametrical inch. Another 5-ton electric overhead travelling crane is found in the blacksmithing, platework and foundry shop, which is 120 ft. wide by 156 ft. long.

Fourteen sets of tram tracks lead from the tramway alley into the lifting bay of the third group. Ten of these tracks run right through the body building section of the shop, while others communicate with the tramway alley between the wood-working shop and the paint shop. The lifting bay is served by a 15-ton electric overhead travelling crane, which has two