

THE TRAMWAY PLANT.

POWER HOUSE EXTENSION.

NEW SUB-STATION AT EPSOM.

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Possibly few of the many thousands people who are in the habit of riding daily in the Auckland electric can have more than a faint perception of the magnitude of the works and plant connected with the tramway system. To keep the wheels of nearly 100 cars constantly revolving, and to cope with the ever increasing traffic necessitates not merely the maintenance of an up-to-date equipment but carrying out of extensive additions from time to time. Some important improvements have lately been carried out in connection with the company's plant, these including amongst other things extensions to the main power station, the erection of a sub-station at Epsom, a new pumping station, and improvements to the depots at Ponsonby and Epsom.

The extensions at the main power station in Hobson-street have been in progress for some time, and are now on the verge of completion. The main building has been extended to the end of the boundary, the frontage having been nearly doubled, and provision has also been made for further enlargements, as the demands of the system increase. Apart from the additions to the building one of the most prominent features of the extensions has been the erection of a second chimney of the same height as the previous one, viz., 125ft, and of an internal diameter of 8ft, or one foot wider than the first stack.

The main flue has been extended into this stack, and a new fuel economiser, consisting of 360 tubes, has installed. By means of this economiser the water is heated, before it passes into the boilers, by means of the gases which circulate round the tubes on their way to the chimney. The facilities for handling and storing the large quantities coal that are required for feeding the several hungry furnaces are also being vastly improved by the erection of coal conveyors - and overhead bunkers, capable of holding 700 tons of coal. A Babcock-Wilcox boiler is now being put into position. the equipment of the engine-room has been added to by the erection of a 600-kilowatt steam alternator, with a voltage of 5500, as well as a 500-kilowatt motor generator. The former will supply power to the sub-station, whilst the motor generator will act as a reserve for use during hours of light load, and a 25-ton crane for lifting

massive pieces of machinery that have to be handled is also to be seen in the engine-room. Other additions include office accommodation, for the superintendent and his assistants, and a testing-room and workshop. The convenience of the staff has not been overlooked, as is evidenced by the provision of up-to-date lavatories and bathrooms at the rear of the station.

THE SUB-STATION

The sub-station which has been erected at Epsom adjoining the car depot, is installed with two 500-kilowatt motor generators one being used at a time, the second serving as a "spare," and the usual standard high-tension and low tension switch-boards. A five-ton travelling crane for lifting the heavier pieces has also been installed. The building is of brick, with a temporary galvanised end, which can be readily removed at any time that an extension of the plant and building may be found necessary.

The whole of the plant in connection with the sub-station, has been supplied by the British Electrical Engineering Company, under the supervision of their engineer, Mr W. A. Dutton. The current after being generated at the main station at a voltage of 5500, is conveyed to the sub-station by means of two extra high tension three core paper-insulated, lead covered and steel armoured cables. These cables are laid on the conduit system as far as Newmarket, and from there to the sub-station they have been laid "solid" in Doulton earthenware conduits, filled with bitumen. This work has been completed by the Callender's Cable and Construction Company, Ltd, of London, whose engineer, Mr. E. P. Tidwell, has superintended the execution of the work.

This work was completed recently and on Saturday and Sunday last high-pressure tests at double the working pressure were successfully carried out at the substation, the voltage reaching up to 12,000. The power in reaching Epsom is taken through a switch-board to motor generators, which consist of high-tension, three phase alternating current motors, direct coupled to a direct current generator, which supplies power at the ordinary tramway working pressure of 550 volts. By this means the power will be supplied to the whole of the lines between Newmarket and Onehunga, and also to the Remuera, Mount Eden Road, and Dominion Road sections. The company has also laid low-tension feeders in auxiliaries to the present system within the city area. Where conduits already existed they have been made use of for conveyance of the feeders, whilst in other places they have been laid "solid". In

connection with these feeders pillars have been erected within the city. The pillars feed the current into the trolley wires at convenient spots along the lines.

Another important addition to the company's plant is a new brick pumping station which is being erected alongside of the existing station in Lower Hobson-street. This station is being equipped with three motor driven pumps, which are each capable of delivering 1500 gallons of sea water per minute to the condensers in the power-house. At the present time one of these pumps will be sufficient during the hours of "light load" while two will be ample for "heavy load" requirements, the third pump acting as a reserve. An additional new suction pipe is being laid from the Hobson-street wharf to the new site.

ADDITIONS AT PONSONBY

The most striking evidence perhaps of the extensive nature of the company's great and fast growing industry is to be found at the Ponsonby depot, where some important additions have recently been completed. The running shed accommodation for the cars has been increased, the repair shop has been greatly enlarged, and a new wood-working shop and smithy have been provided. Several new machines of the latest types have been placed in these departments for carrying out the thousand and one repairing jobs required in the maintenance of a large tramway system. An automatic sand-drying machine, which dries and screens the sand which is carried on all cars for use on slippery rails or steep grades, is now in operation. In the wood-working shop the making of the frames for the glass fronts that are affixed to them is proceeding. At present there are only about 16 cars that have not been fitted with these fronts.

Large stocks of machine and electrical and general fittings are kept in the storerooms, whilst the multiplicity of labour-saving machines and devices of all kinds afford further evidence of the completeness of the establishment. At Epsom the depot has also been extended, but all the important repair and manufacturing work is carried out at Ponsonby, where upwards of 80 hands are engaged. At the Epsom depot some 17 men are employed. An improved system of keeping the accounts in connection with the conductor's takings has been installed at Epsom, where the whole of the work in connection with this important portion of the business is done.

The number of cars on the road will shortly be increased by eight, this being the number that are now being built to the order of the company by Messrs. Cousins and Cousins. Additional accommodation will thus be provided for upwards of 500 passengers. The completion of these cars bringing the total number up to 100.

(Searchable PDF version prepared by David Hyde - pseudonym 'David de la Hyde')

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