

BUILDINGS.

All departmental buildings have been kept in good order and repair. A new bath-building (previously referred to) for massage treatment has been added. A workshop has been built for the storage of electrical material, and for carrying on work in connection with the maintenance and the extension of the electric-light installation. A small dark-room has been added to the Tourist Inquiry Office for the use of photographers. The existing office is conducted in conjunction with the Works Offices; but, as the location of this office is somewhat inconvenient to tourists, and the work done there has grown so large, it has been found necessary to make provision for separating them by erecting a new Tourist Inquiry Office in Fenton Street, near the Post-office. A cottage for the assistant gardener has been provided on Kuirau Reserve.

ROTORUA ELECTRIC-LIGHTING WORKS.

Owing to the rapid growth of the town, the applications for private lighting during the past twelve months have exceeded all expectations. The extensions have been considerable, and it has been found necessary to import a considerable portion of the material required.

In erecting new lines care is taken to anticipate future requirements, and the cost of connecting other premises within reach of these lines will be comparatively small. One hundred and seventy-seven totara line and arc-lamp poles are now erected within the town, and thirty-six iron branch poles. The total length of insulated cable, branches and mains, is $15\frac{1}{2}$ miles, $3\frac{1}{2}$ miles of which have been erected lately.

Forty-six transformers, with a total output of 108.38 kilowatts, are now connected to the town mains; and ten others, supplying an additional 30.30 kilowatts, will be erected shortly.

Last winter a requisition was received to continue the lighting from midnight to daylight. On inquiry it was found that only a comparatively small amount of lighting was required during those hours, and the request was not granted; but, as the number of consumers who require the light after midnight is increasing, it may soon be necessary to run from sunset to sunrise.

The total amount of lighting now connected with the mains is equivalent to 3,256 eight-candle-power lamps, of which number private consumers (including Railway, Post, Survey, and Justice Departments) have 2,357; Tourist Department for Sanatorium, bath-buildings, offices, and residences, 475; and for street-lighting, 424.

Substantial belt-guards have been constructed and erected at the generator-station; also metal troughs for protecting the main belts from flood-water, so that all possible provision is now made against accident or damage in this direction.

In order to facilitate the work of running both alternators in parallel, a rearrangement of the switching and controlling apparatus has been made. In connection with this work an automatic machine has been designed and built by Mr. White, the electrician, for coupling and controlling both sets. The apparatus is now in daily use, and the work of running the plant is easily done by one attendant. Prior to the installation of this gear the work, though performed by two men, was difficult and unsatisfactory.

The weather throughout the year has been very favourable, and no trouble has been caused by floods or lightning. All the working portions of the installation have been periodically overhauled, and with the exception of the internal parts of the turbines, which are difficult to protect from the erosive action of the water, the whole is in good repair.

The fees for lighting collected during the year amounted to £544 19s. As a number of consumers incurred liabilities while the works were in the hands of the contractors the previous year, which liabilities have been paid and included in this £544 19s., the amount does not exactly represent the income from the works for one year. This amount does not, of course, include any charge for lighting the baths, Sanatorium, residences, offices, and other buildings belonging to the Tourist Department, nor for street-lighting.

The engineer advises that the full output of the present generator-plant, delivered in Rotorua, is sufficient to supply a total of 2,000 eight-candle-power lamps; and, although the total now connected is never in use at one time, a diagram of the station load shows that 60 per cent. at least of the total must be provided for.

The following figures show the percentages of lighting in constant use:—

Private installations	...	2,357	8-candle-power, at	50% of total connected	=	1,178.5
Tourist Department	...	475	"	at 80%	"	= 380
Street-lighting	...	424	"	at 100%	"	= 424

Total 8-candle-power lamps
connected ... 3,256

Total in use = 1,982.5

As the small margin is all that remains for future extension, the plant is practically fully loaded, so that, without taking into consideration the need of a spare set in case of emergency, the question of increasing the generator plant requires immediate attention in order that power may be available for lighting additional houses and streets and for lighting and heating the new bath-buildings.

Every care is taken to anticipate and prevent a breakdown. The works have been running steadily for over two years, and there has not been any stoppage or delay through failure of the generating plant. The engineer states, however, that there is now no provision for accidents or overhaul to either of the sets, and should anything occur to disable any portion of the generator plant much inconvenience would result. Under the present conditions of working no preparation can be made to avoid this, as both sets are in use every day of the week. To provide for accidents or overhaul, I am advised that a spare set is required, consisting of one 50-kilowatt alternator and exciter, with switchboard panel and fittings, and one Waverley turbine complete with beltings and fittings. A further excavation would have to be made, and the dynamo-house and flume extended