

balance of twenty-eight, totalling 55 hours 33½ minutes, included flash-overs due to lightning, hay blown on lines, broken binders, birds across arresters, and faults in oil circuit-breakers. One interruption, lasting 34 minutes, was due to loss of excitation at the power-house, and affected all lines.

LINE-TESTING.

During the year the routine work of testing live lines was continued, and the following is the result of same:—

Live-line testing, 50 kv. Lines.

Line or Section.	Insulators Defective.	Percentage Defective.	Date of Replacements.
Horahora—Mystery Creek	31	3.92	12th April, 1927.
Horahora—Claudelands	20	8	13th April, 1927.
Mystery Creek—Te Awamutu	15	3.97	1st May, 1927.
Waiorongomai—Waihou	6	2.91	23rd January, 1927.
Horahora—Arapuni	28	11.38	17th July, 1927.
Waikino—Aongatete	1	0.15	12th June, 1927.
Mystery Creek—Te Awamutu	7	1.6	18th September, 1927.
Horahora—Waikino (Huts 1-6)	16(a)	9.37	29th September, 1927.
Horahora—Claudelands	13	1.08	12th and 13th October, 1927.
Waiorongomai—Waihou	16	7.84	8th January, 1928.
Horahora—Waikino (mountain section)	75(b)	6.56	Christmas, 1927.
Horahora—Arapuni	10(c)	3.9	..

(a) Strain; six replaced; (b) strain; thirty-four replaced. Replacements on these strains were made in those cases where more than one disc showed defective.

(c) Replacements on this section are being held over until it is convenient for Arapuni to do without power at present being used on the power-house installation work. Live-line testing revealed a total of ten as above.

No live-line “changing” has been carried out up to date. Now that the new building at Claudelands is finished, an oven will be fitted for drying purposes and changing operations on the live line will commence.

On the 110 kv. construction lines running at 50,000 volts there has not been any testing carried out.

WAIKAREMOANA POWER DEVELOPMENT.

The original portion of this plant, which was erected in 1922, partly in anticipation of the major development and partly to supply power to the Wairoa Power Board, was operated by that Board during the first nine months of the year, but in January, 1928, was taken over by the Department and operated by its own staff. The financial results for the year ended 31st March, 1928, are as follows:—

Operating capital	£ 123,040
Annual capital charges (interest and depreciation)	8,367
Operating costs	413
Revenue	5,073

leaving a loss of £3,706 on the year's operations. This loss does not take into account the value of power used on the construction of the main scheme.

Major Scheme.—Construction work on the headworks of the main development of 40,000 kv.a. is dealt with more fully in the Engineer-in-Chief's report. The headworks and power-house were nearing completion at the end of the year, and it was hoped to make a start on the erection of the plant in the station in September. Erection of the outdoor switchgear was commenced early in January, and at the end of June substantial progress had been made. The 110 kv. and 50 kv. lightning-arresters were completed, the 50 kv. oil circuit-breakers assembled, and the 50 kv. air-break switchgear nearing completion. Of the 110 kv. air-break switchgear, the steelwork and all switches have been erected and busbars strained up; final connections are now being made. The erection of the 110 kv. oil circuit-breakers is in hand. The seven 110 kv. transformers have been transported to site and placed in position on their foundation-pads. The drying-out of these transformers will be put in hand as soon as they can be handled by the 50-ton crane in the transformer-house. The 50 kv. transformers are also on site, being stored near the unloading-crab until they can be dried out and placed in position.

The erection of the main transmission lines to Napier and Gisborne has been pushed ahead. At the end of June 270 of the 278 towers on the Napier line had been erected and 133 towers wired. The Napier—Waikaremoana telephone line has been erected for a distance of 50 miles. On the Gisborne line considerable difficulty has been experienced in the transport of line material to site, owing to the rough nature of the country and the amount of wet weather experienced. To the end of June 69 miles had been erected and a start had been made on the stringing of cable. The insulators on the power-house—Wairoa line have been changed in preparation for an increase in operating voltage on this line from 11,000 to 50,000 volts when the main generating station commences supply.

ELECTRIC-POWER BOARDS.

Amendments to the original Act, based on the results of experience, were passed in 1919, 1920, 1921, 1922, and 1923. The legislation was consolidated and amended in the Electric-power Boards Act, 1925.

The development of the reticulated areas of Electric-power Boards has made substantial progress during the year. There are now forty-three districts constituted, and thirty-five actually carrying