

Substations

Melling.—Owing to the growth of load in the Hutt Valley district it was necessary to provide for a new bank of transformers at Melling. The Department had available a 15,000 kv.a. bank which was removed from service at Penrose. Although the bank was considerably larger than was called for by the immediate requirements at Melling, it was nevertheless decided to utilize it rather than embark on new capital expenditure.

The transport presented some unusual features. Owing to the dimensions exceeding the railway gauge it was necessary to ship the transformers from Auckland to Wellington by sea. At the Wellington end the main Hutt Valley Road could not be used on account of the low overbridges. The transformers were therefore transported across the harbour. The operation was contingent on the weather, but this held good throughout, and allowed of the four transformers being shipped across on three consecutive days.

Bunnythorpe.—A new panel with the protective equipment and operating-switches for the oil-circuit breakers controlling the transformer-banks was installed.

Hawera.—The construction of the substation buildings, which was commenced late last year, has been completed and the 11,000-volt switch-gear and other necessary equipment installed.

Masterton.—Owing to the rapid increase in the load taken by the Wairarapa Electric-power Board, it was necessary to install additional transformer capacity at this station during the year.

Woodville.—During the year synchronizing equipment was installed at this station to enable Mangahao and Tuai stations to be paralleled without interrupting supply to Mangamaire and Masterton.

Dannevirke and Waipukurau.—The new relay equipment installed at these substations last year was tested and the portion giving protection against earth-faults was put into service.

Napier.—The damage sustained by the substation buildings during the earthquake of February, 1931, has now been made good, so that all apparatus and buildings at this station, except the synchronous condenser, are now back to normal. The condenser suffered no serious damage, and it is intended in the near future to transfer it to Stratford, so repairs have been deferred in the meantime.

IV. GENERAL.

Practically all the construction work done during the year has been the completion of work commenced last year.

The operation of the system has been improved considerably, due to the new relay system installed last year, the erection of synchronizing-gear at Woodville, and by the work of the live-line gang.

It was necessary to call on the standby plants only on three occasions. During these periods the Wellington City Council plant supplied 101,427 units and the New Plymouth Borough Council plant 47,254 units to the system.

The maximum load on the system was 47,980 kw., and the units output during the year was 241,969,796. The annual load factor was 57.6.

The results of the year's operations are analysed in Table VIII and the connected load in Table XI.

LAKE COLERIDGE ELECTRIC-POWER SUPPLY.

The year ending 31st March, 1933, marks the 18th year of operation of the Lake Coleridge undertaking and again the financial results are very satisfactory despite the general economic depression.

ANNUAL RESULTS.

The capital outlay of the scheme at the end of the year was £2,053,883, being an increase of £251,386 on that of the previous year, this increase including lines and equipment built in anticipation of the Waitaki scheme and now being supplied with power from Lake Coleridge.

The total revenue for the year was £213,345, as against £218,196 for 1931–32, representing a decrease of £4,851, and being the first occasion on which such a decrease has occurred. After payment of all charges including interest and depreciation, the net profit for the year amounted to £41,764, this amount being allocated to sinking fund and General Reserve Fund, the respective amounts being £20,539 and £21,225.

Table XV gives particulars of financial results and load records, and Table XVI shows the analysis of capital outlay for years 1931–32 and 1932–33.

The total cost per unit generated and purchased was 0.310d., an increase of 0.083d. on that of the previous year, this being due to increase of interest on capital and depreciation of 0.048d. and of 0.036d. in operating-expenses. The actual increase in operating expenses is £20,535, of which £14,249 is represented by the cost of operation of the Diesel standby plant, and £4,181, representing additional cost of overhauling and maintaining transmission-lines. The details of operating-expenses are shown in Table XVII.

Table XIX gives details of gross financial results of the distribution of energy for the Lake Coleridge scheme and of those supply authorities and consumers supplied by the scheme.

CONNECTED LOAD.

The total connected load as shown in Table XVIII was 218,539 kw. at the end of the year, being an increase of 3 per cent. over the previous year's figures, but representing a further drop in the percentage annual increase.