

General work included assistance with the layout of proposed schemes and the analysis of both the practice and performance of penstock painting.

*Substations.*—Co-ordination of the arrangements to meet present needs and the planning for future requirements resulted in the following decisions and arrangements being made.

A second transformer bank is to be installed at Te Awamutu for the winter of 1952 and, by 1954, Hangatiki is to be converted to an 110 kV. substation by tapping off one of the Arapuni—Ongarue 110 kV. lines. As New Zealand Forest Products, Ltd., have decided to erect a pulping-mill near Tokoroa an additional point of supply is to be given to the Thames Valley Electric-power Board at Kinleith and supply will be tapped off near Lichfield. The proposals for Lichfield Substation were consequently modified; the transformer bank and two-bay structure ordered for this substation are now to be installed at Edgecumbe and Tauranga respectively. The transformer bank at Southbrook is to be replaced in 1950, and the substation converted to 66/11 kV. by 1954. Pending the completion of the 220 kV. substation a temporary 66/11 kV. substation is being erected at Islington to supersede Smith's Road and Harewood Substations.

Preliminary investigations were made into the proposal for a new 110/11 kV. substation at Huntly for the winter of 1955, and into the possibilities of a complete reconstruction of Masterton Substation about 1954. Detailed consideration was given to the future requirements of the Gisborne area.

Arrangements were made for the temporary installation of a further transformer bank at Kaitaia, for the temporary transfer to Maungatapere of a synchronous condenser from Stratford to improve voltage conditions until 110 kV. supply is available, to meet switchgear requirements at Dargaville by transfer, for two feeders to supply the Railways Department for traction purposes at Pahautanui, and for a temporary substation at Waverley. It was also agreed to give the South Canterbury Electric-power Board extra feeders at Timaru involving modifications to the existing switchgear and control board.

Contracts were let for indoor switchgear at Maungatapere, Wellsford, Mount Roskill, Hangatiki, Edgecumbe, Tauranga, Hawera, Patutahi, and Gisborne; for outdoor switchgear and structures at Kaikohe (aluminium structures), Te Puke, Aongatete, Pahautanui, and Inangahua; for transformer banks at Wellsford, Mount Roskill, Ngongotaha, Matamata, Tauranga, Gisborne, Stoke, Islington, and Papanui; for O.C.B.s at Edgecumbe, Maungatapere, and Addington; for 220 kV. and 110 kV. aluminium structures, 110 kV. switchgear, 220 and 110 kV. lightning-arresters, and 110 kV. potential transformers at Haywards; for aluminium extensions to 110 kV. switchgear structures and equipment for metering the total Auckland Electric-power Board load from Penrose, Mount Roskill, Otahuhu, and King's Wharf, at Penrose, and for control equipment for the second synchronous condenser at Hororata.

Tenders were called for switchgear structure extensions at Mount Roskill, O.C.B.s at Tauranga, transformer bank at Mangahao, three regulating transformers at Khandallah, 25-ton crane at Gisborne, and for 66 kV. structure switchgear and 45-ton crane at Papanui. The Ministry of Works called for tenders for the new switchroom building at Lichfield.

Design work and detailed drawings were completed or nearly completed for the Otahuhu, Bunnythorpe, Haywards, Studholme, Gore, Edendale, and Invercargill Substations, and for the extensions at Halfway Bush. Detailed design proceeded for Maungatapere and Edgecumbe, and Head Office work was completed for Longburn and Fernhill. The layout of the new 22 kV. switchgear building outdoor extensions, and modifications to the control room at Penrose were well advanced. Drawings were prepared for the 33 kV. structure at Mangahao using steel work from Coleridge, and modifications to the structure at Matamata were planned to accommodate the transformer bank now on order. In conjunction with the Ministry of Works, building drawings were advanced for Papanui, Stoke, Penrose, and Ongarue.