

All goods and material purchased or manufactured for the Engineering Branch of the Department are subject to laboratory tests before being released for use, and this has resulted in goods and material of only the highest quality being brought into use. The nature of the services provided by the Department requires that the risk of breakdown be kept at a minimum, and the freedom that it enjoys from such interruptions is largely due to the exhaustive tests of material and equipment undertaken at the Department's laboratory. The methods of line-construction, &c., are constantly being investigated, and every opportunity is taken to effect improvement in method and economy in first cost. A recent result of tests of various classes of wire for leading in to telephone subscribers' premises has led to the adoption of a new method, which will result in marked economy owing to the much longer life of the new wire proposed to be used over that previously in use.

During the year experiments have been conducted by the laboratory staff with high-speed radio transmitting and receiving apparatus and the use of machine-printing telegraph apparatus in connection therewith. It has been demonstrated that signals from the Baudot printing telegraph can be transmitted by radio just as effectively as by line telegraphy. Successful experiments have also been made in high-speed Morse radio communication with Australia. These experiments have a practical bearing upon emergency high-speed radio communication between the North and South Islands.

Some time was devoted by the radio section to such matters as the improved short-wave services between New Zealand and the Pacific islands, the establishment of short-wave communication at Wellington Radio, and the prospects of radio-telephone service with countries overseas.

In connection with the dislocation of services by the earthquake the laboratory was able to render considerable assistance in the provision at short notice of telegraph and telephone equipment to facilitate the restoration of services. In this connection effective use was made of temporary short-wave low-power radio transmitters to replace the regular means of communication.

In the telephone section further studies have been made of the system of multiple toll dialling between automatic exchanges, and the extension of such system to enable subscribers at a distant automatic exchange to be dialled through an intermediate exchange without the intervention of an operator at the latter exchange. Consideration has been given to such matters as improved types of internal intercommunication apparatus, hand-microphones for use with automatic telephones, and the conversion of manual exchanges to automatic operation.

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