

a circuit is capable of carrying at the one time several different radio-frequency bands, and each frequency band provides a channel for a separate conversation. The several conversations, although carried on simultaneously, are delivered separately at the distant end. By the use of the system, therefore, the carrying-capacity of a telephone circuit may be increased several times. That is to say, the application of carrier current enables several persons to hold conversations over the one circuit at the one time. Not only is the carrying-capacity of the circuit increased, but the volume of speech over long distances is considerably improved. Thus, in addition to enabling the Department to defer for many years the erection of additional toll circuits, the advent of carrier current gives to the public the direct benefit of greater ease in making long-distance communications. In the near future carrier current will enable a person in Auckland to converse with a person in Dunedin at any hour of the day or night with the same facility as if he were in the same city.

A detailed and technical description of the working of the carrier-current system is given at page 42.

INCREASE IN TOLL CALLS.

The outstanding feature of telephone business during the year was the increased use of the telephone for toll purposes, the total number of calls being over 10,000,000, representing an increase on the previous year's traffic of approximately 10 per cent. The toll revenue amounted to £442,896, an increase of over 11 per cent. While this greater use of the toll lines was stimulated to some extent by greater commercial activity and by the more extensive use of the telephone in the social life of the community, probably the largest contributing factors were the increased speed of service, the improved quality of speech, and the greatly extended range of service that has been provided during recent years. The toll revenue for the year exceeded the revenue derived from telegrams, the relative figures being—Toll, £442,896; telegrams, £404,565. Ten years ago the corresponding figures were—Toll, £169,550; telegrams, £316,099.

WIRELESS.

LONG-DISTANCE TRANSMISSION.

While there has been no remarkable development in wireless communication, the year has been notable for the steady progress in perfecting long-distance communication, particularly in regard to short-wave working. Outstanding instances of highly successful short-wave communication were the reception and rebroadcasting in New Zealand of news of the world's heavy-weight boxing championship in New York on the 27th July, 1928; the broadcasting of news of the Pacific and Tasman flights; and, most arresting of all, the establishment in January, 1929, of two-way communication between a New York station and an aeroplane flown by Commander Byrd in the Antarctic regions. Regular reception continues to be had at Awarua-radio of the transmissions from the Rugby high-power station. This is referred to at page 31. Except for occasions of atmospheric interference, there is little break in the continuity of reception of these signals.

BROADCASTING.

The service of broadcasting established by agreement with the Radio Broadcasting Co. of New Zealand, Ltd., continues to function satisfactorily, and is steadily developing as the public learns to appreciate the advantages of this modern branch of science.

A very interesting feature of broadcasting is the part that the earlier telephone art has played in the development of the broadcasting service. It may truthfully be said that much that passes for the triumph of radio is actually a product of the art of telephony. As broadcasting progresses, it is clear that the use of toll telephone-lines for relay purposes is bound to become more general. It is becoming obvious that much of the entertainment radio-listeners receive can be brought a considerable part of the way by land lines.