radio coast stations, and in fact in most of the smaller and many of the larger wireless coast and ship stations all over the world. The development of other methods of transmission such as the arc, the valve, and the high-frequency generator are destined to replace spark methods by reason of their greater efficiency and economy of operation. Valve transmission has recently been adopted for all the new stations required for the Imperial wireless chain, and it is claimed among other advantages that the greatest efficiency will thereby be attained. Moreover, valve transmission is peculiarly well suited for use in connection with wireless telephony to which the spark method of transmission does not lend itself. The principal advantage of the spark method for use at coast stations engaged in communication with ships is that a less complicated and more robust type of wireless receiver can be used aboard ship than would be necessary if the coast station were equipped with more modern apparatus. This advantage is gradually disappearing with the introduction of more stable types of receiving circuits and apparatus designed for reception from modern transmitting-stations.

It should be pointed out that older countries are gradually becoming more exacting in their demands upon shipping with regard to the compulsory installation of wireless apparatus and the extension of the prescribed hours of watch. In this connection the New Zealand legislation under which the Marine Department requires ships to be equipped with wireless apparatus and determines their status as to hours of watch is comparatively lenient.

The practicability of establishing wireless-telephone stations in such situations as lighthouses and the remote island dependencies of New Zealand received careful investigation. While such communication is quite practicable under certain conditions, it was found that development work along these lines had not yet reached that degree of finality which could be desired. Most of the wireless-telephone equipments that would otherwise be suited for such situations lack that robustness and freedom from complications which are essential to the successful operation of wireless telephony at isolated stations by an untrained personnel. Rapid strides are, however, being made in this direction. I am keeping in touch with the same, and confidently anticipate being able shortly to make definite recommendations. To enable the Post and Telegraph Laboratory to carry on research work in this fast developing branch of radio science I have secured a limited amount of apparatus to enable experimental work to be done.

The radio station at Awanui, by reason of its semi-isolation, is comparatively more costly to run than would be the case if it were situated nearer to the main lines of communication and the main centres of civilization. Its situation is such that it is easily vulnerable from the sea, which is an undesirable feature when it is considered that this is our most important long-distance transmitting-station, and is responsible for maintaining communication with Samoa and the Cook Islands. This is a subject which, while abroad, I discussed with a number of interested authorities, and it was generally recognized that if placed, say, in the centre of the North Island, near to the Main Trunk Railway, its reliability of operation, particularly in time of war, would be greatly enhanced, and at the same time the station would be brought closer to the main centres. This would be a distinct asset both from the point of view of annual charges and of linking up the station with the principal land lines of the North Island. If New Zealand is ultimately to form an efficient link in the Imperial wireless chain this station will have to be modernized, and such an occasion might well be regarded as a favourable one for its removal to a less vulnerable locality.

SYSTEM OF CHARGING FOR TELEPHONE SERVICE.

The New Zealand system of charging for telephone service, based on conductor length, or, as it is termed, "by the nearest practicable route," is unique in that it is not used in either Europe or America. In discussing rates with a prominent telephone official in the United States I explained our system of charging to him. He seemed amused, and asked me whether the same system was adopted for all public-utility services. For instance, he asked whether a person living near a gasometer got his gas at a cheaper rate than one living two miles from it; also whether a consumer adjacent to the electric-power station paid less for electricity than the others located some distance away.

Before going abroad I was of the opinion that "measured rate" was the most equitable one for telephone service, but after careful study of the various systems in Europe and America my opinion has changed.

Measured rates are the exception rather than the rule in the American telephone service. Expert opinion is divided on the subject, but is generally in favour of flat rates for small towns and residential areas. Opinion has been influenced by the fact that the introduction of machine-switching is facilitated by the existence of a flat rate.

Whilst it is desirable to maintain the principle of measured-rate service—namely, to charge for service on a quantitative basis—it cannot be overlooked that existing systems of recording and collecting the charges are cumbersome, expensive, and more or less unreliable, thus causing disputes which waste time and money making inquiries. It involves not only complex accounting, but also increased capital expenditure, maintenance costs, and traffic charges. To equip all the subscribers' lines in New Zealand with meters would cost something like £90,000.

Measured rate is in vogue in New York, but the American Telephone and Telegraph Company's officials informed me that wholesale introduction of automatic telephone switching will no doubt cause them to materially revise their policy, and the result will probably be that flat rate on the zone system will be adopted, measured rate being retained only for business connections in large multi-office areas having, say, over fifty thousand lines.

The flat rate on the "zone" or "area" system is generally the most popular in the United States, with both companies and subscribers. Los Angeles Exchange, with as many as eighty-five thousand subscribers connected with it, charges for service under this system. The system referred to, briefly