

Experts Investigate Coverage Problem

Recently the Radio Board appointed Mr. A. Gibbs, of the Post and Telegraph Department, and Dr. M. A. F. Barnett, of the Scientific and Industrial Research Department, to investigate and report on the question of providing adequate radio coverage throughout New Zealand. The accompanying article outlines some of the difficulties which it will be necessary to overcome before a dependable service can be guaranteed to every listener, and discusses alternative methods of securing this end.

ALTHOUGH Dr. M. A. F. Barnett, of the Scientific and Industrial Department, has only just returned from Apia, it is understood that in collaboration with Mr. A. Gibbs, chief telegraph engineer of the Post and Telegraph Department, the problem of radio coverage is already under investigation. At first glance the problems that beset the commission appointed for this purpose may appear to be theoretical rather than practical. But the commission itself, of which Mr. Gibbs and Dr. Barnett are the sole members, is the first to admit that all manners of difficulties await elucidation.

The problem before the Coverage Commission is to decide how best to locate radio stations in this Dominion so that every centre of population may have a worth-while signal. This does not necessarily mean that every centre will be within crystal range of a transmitter, but it must be fed with a signal that is not marred by fading; it must be fed with a signal sufficiently strong to enable worth-while valve set reception without interference from outside noises.

The members of the commission are well aware of the limitations of the average radio broadcasting station transmitting on waves between 200 and 500 metres. The average crystal range of the transmitting stations handed over to the Broadcasting Board is about five miles. Investigations by many authorities the world over puts the worth-while valve reception range of this type of low-powered transmitter at not more than 25 to 50 miles. Beyond 50 miles an area of acute fading exists extending to about 100 miles. Within that area fading is severe whatever the power and whatever the wavelength selected within the present broadcast range.

It will be seen, therefore, that increased power is by no means a sure method of ensuring adequate coverage. Beyond the 100-mile range it is possible to receive a fairly reliable programme from even the low-powered stations at present in use in New Zealand. Nevertheless, sensitive receivers are necessary to do so. Increased power would therefore put huge areas within easy valve range of the present stations, and at the expense of severe interference from those stations to listeners near by.

Although increased power of the stations as they stand to-day would undoubtedly enable many listeners to enjoy worth-while service, there would still remain those unfortunate listeners who, through no fault of their own, were within the 50-100-

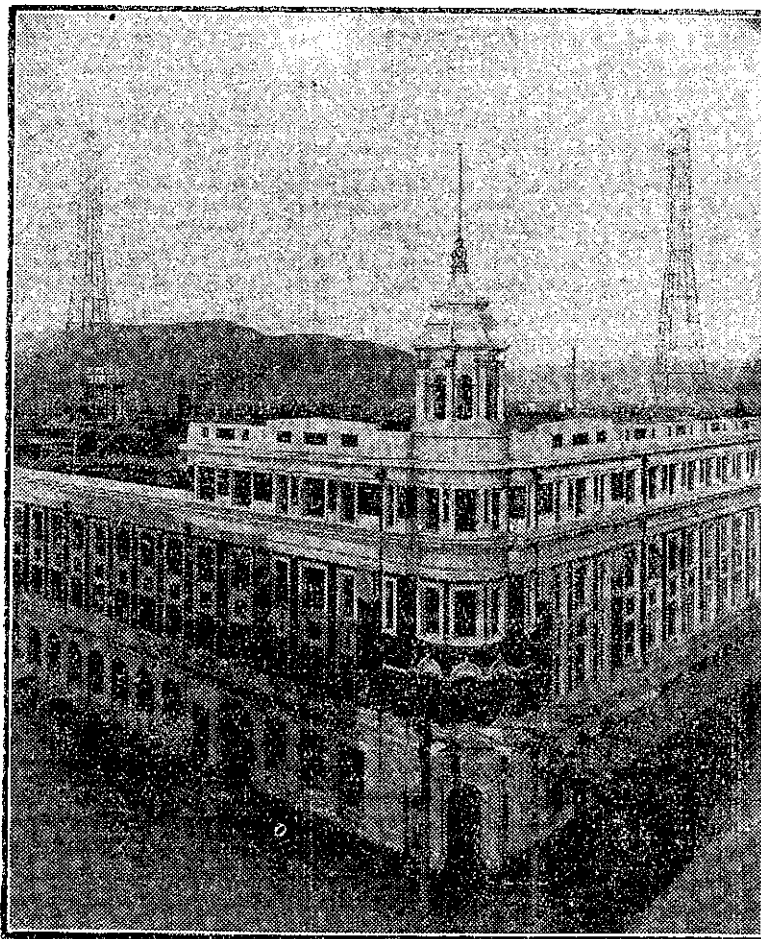
mile fading zone. Their only hope under those conditions would be to purchase super-sensitive sets capable of giving good results from transmitters some hundreds of miles away.

It is understood that the commission appointed to investigate how best to cover the Dominion with a hundred per cent. service has already considered the question of wavelength. It is well known that although the normal broadcast range of 200 to 500 metres inevitably has a 50-100-mile fading ring, stations which transmit on longer wavelengths, say, 1500 metres, have not this disability. Their first fading ring is pushed out to 300 to 400 miles. It would therefore be perfectly practicable to give a Dominion service from a high-powered long-wave station of this type. Indeed, this is exactly what has been done in England; for here sets are designed to cover the two ranges, 200-500 metres and 1000-2000 metres. Unfortunately, as something like 75 per cent. of listeners in New Zealand have bought American and not English-made sets, they would be unable to avail themselves of a Dominion long-wave station unless they either bought new receivers or made somewhat drastic alterations to their present ones. The obvious solution to our broadcast coverage problem has therefore come five years too late through no fault at all of the present board. It is by no means uncertain that the commission, nevertheless, may not see fit to make recommendations that involve a solution in this manner.

The only other solution that the commission has under serious consideration is to cover New Zealand by erecting low-power stations in bad areas fed with programmes from a main station. In this case land line problems will have to be investigated very carefully.

ALTHOUGH New Zealand has land lines second to none, it must be remembered that our air lines were never laid down with a view to their being used for broadcast feeding purposes. In order to ensure reliability, underground lines have been laid down for this purpose in England. Their one disadvantage is their huge cost, and the time they would take to lay.

Indeed, the commission will not necessarily advise the continued use of any of the present stations. It may be found after practical investigation and careful signal strength tests that a completely different layout of transmitters may give this Dominion a radio network calculated to be in the best interests of future (Concluded on page 24.)



The transmitting masts of 4YA. A large proportion of the energy radiated from all the YA stations is wasted over the ocean. Directional transmission has possibilities for New Zealand listeners.