Post World War I Amateur Radio

A 1932 history of Australian Amateur Radio

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For some three years after the war the Australian experimenters were not allowed to transmit, although those in most other countries had only about one year to wait before they could make a start. This seemed hard at the time but in many ways it was a good thing. Not only did it give us plenty of time to thoroughly grasp the essentials of valve reception, but also time to realise the great advantages of valve transmitters compared to spark sets that were still in use in many other places. Furthermore it gave us two years in which to get used to tuning in weak signals from distant stations that would never have been attempted had we had local signals on the air that would have obscured the weaker ones. By that time there were a few low power transmitting valves on the market so that we had something with which we could do serious work.

Our early receivers were made to tune to 600 metres where the signals from the shore stations in all the Capital cities and on board the ships working with them, could be heard. Following these came the longwave sets that covered from about 3,000 to 20,000 metres and which would bring in the signals from the high power arc and alternator stations on the other side of the world. There was no broadcasting in those days, so that when A.W.A. put in the Marconiphone on about 900 metres, there was a rush to the "shorter" waves again. 2CM (Charles Maclurcan) obtained a permit to transmit on 1,000 metres shortly afterwards and then in Victoria, 3DP was granted a similar permit.

Reception of these stations kept us quiet for a couple of months and by then the re-organised Wireless Institute of Australia was making itself felt. Due to the efforts of its Executive, a few transmitting licences were granted under which we could work on wavelengths between 410 and 440 metres and from 250 metres down. It was on this small patch in the present broadcasting band that practically all our original work was done and although the noises made on it would have appalled our present trained ears, they showed sufficient improvement on those perpetrated higher up to include those working on the longer waves to come down.

The first interstate work on record was carried out between 3JU (Ross Hull) (who is now on the technical staff of the American Radio Relay League) and 7AA (the late Trevor Watkins, known the world over in later years as VK7DX). Early in 1923 some reports were received from a New Zealand station that signals had been picked up there from 2CM, 3MC, 3JU, 3BQ, 7AA and one or two others. But arrangements had been in hand for several months before this for the Trans-Pacific Tests, so that our transmitters were put aside while we did all in our power to increase the sensitivity of our receivers.

During the first test in May 1923 and the second in October signals from about 200 American amateur stations were logged in this country on the 200 metre band. This proved the importance of the 200 metre band so that when our transmitters were allowed to be put into action again, we did not bother with the small patch higher up, and our first decided step down in wavelength was made. Very naturally, when once we had proved that the signals from the higher powered

American amateur stations reached us with sufficient energy to be picked up and translated, we set out to put our signals over to them. 2CM, with the assistance of A.W.A., even went to the length of installing his outfit on the S.S. "Tahiti" and in company with 2DS (Jack Davis), "set sail" for America to find out just how far our signals were travelling. For the first four or five thousand miles everything was relatively simple and signals were exchanged nightly, but soon after that another factor started to make itself felt as our weaker signals became overpowered by the QRM from the 17,000 transmitting amateurs in U.S.A. 2CM however, was able to follow our signals right across and managed to get enough to recognise them while the "Tahiti" was in San Francisco harbour. That proved conclusively why we could not get any answers to our calls from stations there. The

Englishmen and Europeans were just as anxious as we were to establish contact with the Americans and it was evident that our only chance to do so was to go down even lower in wave-lengths. The difficulty was that the efficiency of valves falls off as the wave-length is reduced because the same inter-electrode capacity passes more and more of the energy as the frequency increases. There were no screen grid valves in those days so that any radio-frequency amplification was doubtful below 200 metres and on 100 metres the nominal radio-frequency amplifiers were just so much loss! For this reason the so called "low loss" receivers were designed and they consisted simply of a straight regenerative detector with coils of heavy gauge wire and good quality condensers. These receivers showed up to great advantage and the signals on about 120 metres were far stronger than with the old multi-valve sets that we had been using.

3BQ was, by that time, well equipped with apparatus from the prizes awarded to him for the Trans-Pacific Tests, and many weeks were spent trying to raise stations in U.S.A., on about 120 metres. The trouble was that they were spreading down over there just as fast as we were so that the QRM always seemed to be ahead of us. Then, in Autumn of 1924 the news came through to us that F8AB in France had at last managed to work with the Americans across the Atlantic and we re-doubled our efforts! The static in the States during their Summer was evidently too much, but in our early Spring we heard the glad news that the New Zealand station 2AC and CB8 in the Argentine had bridged the Pacific with a good two-way contact. This was followed soon after by several other New Zealand Stations working this Argentine and then some stations in U.S.A.

Then on November 2nd, 3BQ made some further alterations that reduced the wavelength so far down that none of the existing wave-metres would check it and it was necessary to put in larger coils in order to bring the wavelength up to 87 metres. This was considered low enough to be below any of the Yank QRM. The New Zealanders reported the signals as the strongest that they had heard from any of us, so that night another attempt was made to get across to the U.S.A., and at last it was successful. 6AHP in California answered the first call and our isolation was broken at last. The signals were soon reported to be strong, even on the East Coast of America, so an attempt was made to get through to England round the other way by working in the early hours of the morning. This again proved the wavelength suitable and on the morning of November 11th. Mr. Simmons of 20D at Gerrards Cross, Buckinghamshire was heard answering the call. In a couple of weeks several other Australian amateur stations were tuned down to about this wavelength and most of them succeeded in working with both U.S.A. and England.

It was not until February 10th of the following year (1924) that telephony was tried and 2OD reported several phrases intelligible at the first attempt! From then on new stations in new countries were constantly coming through and being worked with relative ease. This soon became

monotonous and attention was turned to improving of our signals. Wavelengths much further down were tried and showing better results as the frequency became higher. But this indiscriminate use of the lower waves was causing QRM again, so it was decided internationally that the Americans should work between 37 and 42 metres; the Englishmen and Continentals between 42 and 45 metres and the rest of the world between 32 and 37 metres. It was certainly on these waves that the strongest DX signals were ever heard. The twenty metre band was tried out and was found capable of transferring good signals between here and England in our evenings, but most of the stations remained on about 34 metres.

Early in 1926 an international arrangement was made by which break-signs should be used so that it would be possible to tell at once in what part of the world a station was situated. Thus the first letter "0" stood for Oceania; "E" for Europe; "N" for North America, etc., and the second letter stood for the country. So all our stations used the prefix OA. This immediately avoided all the complications that were arising from stations in different countries having the same call sign.

That same year both OA 3BQ and OA 6AG starting experimenting with quartz crystals to control their transmitters; the former with local quartz plates that he ground himself and then latter with imported ones. The resulting signals were so pure that many of the other experimenters became dissatisfied with their outfits and followed their example. The result was that shortly, practically all were C.C. (crystal controlled) and the QRM was again greatly lessened.

Then came the Washington Conference that was to provide shortwave channels for all the Commercial Companies that were clamouring to make use of these new traffic paths. At this Conference the amateurs were restricted to much narrower channels than they had even ever considered before but, fortunately, we were given about twelve months in which to prepare. It was then that the existing wave lengths were set aside for us and on January 1st 1929, we had to have our transmitters working on frequencies either between 14,000 and 14,400 K.C., 7,000 and 7,300 K.C., or 3,500 and 4,000 K.C. It was here that previous experience with crystals became of great service because we were able to grind them accurately enough to set markers at the top and bottom of these bands so that other stations would know just where these band edge frequencies were.

The Washington Conference also provided us with wide channels even lower in wave length, and again the crystals were used to decide just where these channels were. The ten metre band, that has, as yet, only been used successfully in a few isolated cases, due to the changing conditions on the shortwaves, but which is likely to be of great use to us in another few years, was one of these. Because its frequency range measures from 28,000 K.C. to 30,000 *K.C.* , there is room in it for about four times as many stations as can be fitted into the normal brcadcast band from 250 to 500 metres.

Another of these bands, commonly known as five metres, extends from 56,000 to 60,000 K.C. and though very little has been done on it yet in this country, it is becoming extremely popular in U.S.A.. Again, because there is so much room in it, it lends itself so well to 'phone transmission without much chance of interference being caused to local broadcast listeners.

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