

The Short-Wave Era

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ONCE more a silent, but nevertheless most important revolution is making itself felt in radio. These periodic revolutions in the art of radio are a novelty no longer, but occurrences to which the careful observer has become quite accustomed. Only a short year ago, the radio art began to turn away from battery operation of sets and started to electrify them. Late last year, still another revolution brought the complete A.C.-operated set.¹

During the past few months, a new era seems to have opened in what will be known hereafter as the “Short-Wave Cycle.”

Not that short waves are something new in radio; quite the contrary. This work goes back to 1908, when amateurs first began to converse with each other, by dots and dashes, below 200 meters. The amateurs have kept at this ever since, without making much, or any, impression upon the general public. The reason for this lack of interest, of course, is that, in order to operate either a short-wave transmitting set, you had to be conversant with the “code”; and this is something at which the general public has always balked.

To the average radio listener, to the radio fan, and to the set builder in general, dots and dashes are so much noise and “static,” not to be taken seriously at all. Of course, these listeners lose the best part of radio through not being able to understand or work code, and miss many of the thrills that the amateur enjoys in deciphering a message that comes from the Antipodes. Yet, the general radio public, in spite of all its love of novelty, is quite apathetic to these possibilities

¹Before AC-powered sets were introduced in 1927, which could be plugged into a wall outlet, radios had to be powered by either rechargeable wet cell batteries, or dry cells that were simply discarded and replaced once they wore out. So-called “battery eliminator” sets were mediocre at first, until the RCA Radiola 17 went on the market, the first AC set to be mass produced.

and the amateurs have failed to gain very much ground. But of late the broadcast listener is becoming very much interested in short waves; not because he wishes to listen to code and its dots and dashes, but because *he can now receive broadcasts on his loud speaker or headphones* from practically any country throughout the entire world.

A reader in New South Wales, Australia, writes us that while he was writing his letter he was listening to WRNY's short-wave transmitter, 2XAL, on a three-tube set; and had to turn down the volume, otherwise he would wake up his family. All this at a distance of some 10,000 miles! Yet 2XAL, it may be said in passing, uses less than 500 watts; a quite negligible amount of power, as power is rated these days.

The radio set manufacturers for the past few years have claimed vociferously that the day of DX fishing and long-distance records is past. In their hearts, the manufacturers knew that this is not the case, but that the truth is, the average manufactured set is poor for long distance and is constructed primarily to receive local stations and others not more than 100 to 250 miles away. Manufacturers stress an assertion that set owners no longer wish to receive long-distance signals, on the theory that such reception never is good. We might take issue with the manufacturers on that score and point out that, with the average manufactured set, distant reception is usually not good; but, *if you have a really good set, distant reception certainly is good*. Hence, sooth to say, the set manufacturers to the contrary, the public is still interested in bringing into our everyday, humdrum existence the thrill of covering great distance. If this were not so, how otherwise explain the sudden and tremendous popularity of short-wave broadcast reception?

During the past six months, every time RADIO NEWS ran a constructional article on a short-wave receiver, set builders and radio fans have responded in the ratio of three to one, compared to those following up the regulation broadcast-set articles. In other words, there still is a thrill in getting distance; because no set builder builds a short-wave receiver unless he is interested in receiving broadcasts, within 100 to 200 miles of a short-wave transmitter, the usual short-wave receiver is hopelessly inefficient, on account of the so-called "skip-distance" effect.²

It is quite the thing now for the radio fan to own one or more broadcast sets for the usual upper-wavelength broadcasts on 200 to 600 meters, and also a separate short-wave set which brings in broadcasts from 20 meters up to 200.

And as time goes on, the interest in short waves is becoming greater and greater. It may well be said that we have as yet not scratched the surface. Technicians believe that in due time all broadcasting will be done on short waves; everything seems to point that way. Already many stations are operating two transmitters

²Amateurs discovered the skip or skywave phenomenon in the early 1920s: that lower-frequency radio waves can be reflected off the ionosphere, beyond the curve of the earth's horizon. For more on the ionosphere, see **Signaling to Mars**.

simultaneously; one in the upper waveband, and the other in the lower waveband. These stations in doing so are simply staking out their claims for what is to come in the future; and the recent scramble for short waves for television purposes points unmistakably in the same direction.

Most radio engineers today are convinced that the final solution—unless an entirely new invention comes along—of television rests in the lower-wave spectrum. Companies and individuals have been awarded licenses to broadcast television on the lower wave channels and, unless a new invention does come along pretty soon, most of the television broadcasting will be done on these lower waves. Such developments, of course, like all revolutions of this kind, are slow and orderly; but they are revolutions nevertheless.

It would not surprise me at all if, during the next five years, the broadcasting of both sound and sight will be done completely on short waves; and the upper wave-channels from 200 to 600 meters gradually abandoned, as fast as we can learn more about the short waves.³ At the present time, the only thing that stands in the way of universal adoption of short waves is the skip-distance effect. Take, for instance, 2XAL, broadcasting on 30.91 meters; within 200 miles of New York, the reception is poor. Beyond this distance it becomes better and better, the further you get away from the transmitter. This is one of the problems that has yet to be solved and, when it has been solved, there is little doubt that all stations will move down into the short-wave part of the spectrum.

In the meanwhile, it is encouraging to note that the radio broadcast listener and the radio set builder have become more and more impressed with the importance of the short-wave situation. The movement is assuming greater proportions every month, and it will not be long before the set builder will desert the upper wavelengths entirely, and construct only short-wave receivers, to the exclusion of all others.

Mr. Hugo Gernsback speaks every Monday night at 9 P. M. from Station WRNY (326 meters) and 2XAL (30.90 meters) on various radio and scientific subjects.

³Short waves are generally classified as 1.6 to 30 MHz. In the United States, 200 to 600 MHz is now allocated exclusively for federal government use. Digital over-the-air television is broadcast from 470 to 512 MHz. For a browsable visualization of current frequency allocation, see <http://reboot.fcc.gov/spectrumdashboard/>.