



RADIO NEWS



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Ever Changing Radio

WE know of few things that change and progress as rapidly as radio. The art which is only 25 years old, has in this period of time changed much more rapidly and more radically than any other art or science. If we look at the development of the electric lighting, the electric telegraph, the electric telephone, we are struck with the fact that there have been a great many modifications, and changes are still going on; but there never have been any quite so violent and radical as those which we have witnessed in radio since the art was first developed.

Take, for instance, the telephone, which has not been greatly changed in the last 15 or 20 years, nor has there been much improvement made. The same is the case of electric lighting, which art has become so stabilized that there have been no radical changes during the past 15 or 20 years, if we except the invention of the tungsten lamp.

When, however, we look back upon radio of 25 years ago, and compare it with what we have today, it is almost impossible to make comparisons. At that time, we had the spark transmitters. First we had Marconi's spark coil; then we graduated to the transformers which still gave us a spark. After a while we added the rotary spark gap and still later our commercial companies put out the Goldsmith generator, which in turn, after a few years, was displaced by the Alexanderson generator which is still doing service at the present time. When from 100 to 500 K. W. is required to hurl signals across oceans, the Alexanderson generator is doing valuable work; its doom, however, has already been sounded.

Dr. Langmuir recently developed a power vacuum tube where a single tube can take care of 50 K. W., a tremendous energy. These tubes are being built right now, and as they are made of quartz, are not only vastly cheaper than the cumbersome alternator, but are ridiculously small when compared to the present-day generators.

We may safely predict that in another 15 or 20 years our present-day trans-Atlantic stations will have their machinery housed in small rooms, the maximum size of which will be about 25' by 25'. We all know that the trans-Atlantic stations of today have large power plants and require vast buildings to house all the machinery; this will soon be a thing of the past. There is no question that our next generation will see a trans-Atlantic station where the entire power equipment is no larger than an ordinary office desk. As a matter of fact, the new Langmuir power tube, which handles 50 K. W., is not much larger than a desk drawer. Of course, we still need machinery to develop the electric current, but the day is surely coming when, by means of a bank of tubes of this kind, and some other appliances, the power will be taken from the ordinary lighting circuit, thus doing away with generators.

When Marconi first started out, the wave-length of his apparatus was not more than 20 to 30 meters. From that time on we have increased the wave-length of our transmitters more and more, until the wave-lengths of the various trans-Atlantic stations have run up to as high as 20,000 meters. Then recently, the broadcasting stations gradually reduced these high wave-lengths until at the present time 360 meters is used. Marconi is now not only going

back to his original short wave-length, but is even "going it one better" by reducing the wave-length of his new apparatus to one meter and less.

He found that by means of this very short wave-length it is possible to direct a beam of waves in any direction desired by means of a reflector; such short wave-lengths carry just as well as the longer ones. Indeed, he reports that with the one meter wave-length, audible speech has been transmitted for over 20 miles. Great and wonderful things in radio will be accomplished in wave-lengths below one meter.

What wonders there are in store for us when we begin to send out radio waves of a few centimeters or even less, no one can foretell. The low wave-length is as yet not explored and presents vast and astonishing possibilities.

When radio was young, we spoke of the ether as a medium for the propagation of the radio waves. We were sending messages through the ether which was thought the universal medium in which the waves were propagated, but lately our scientists have become wary of mentioning the ether. They find that the ether no longer is necessary for the propagation of electro-magnetic waves, but that one can imagine waves being hurled through an absolute void just as readily. Once we become entirely emancipated from the ether make shift theory, radio will no doubt progress even more than it has in the past.

Tesla has always maintained that radio waves do not travel above the earth, following the curvature of the earth, but rather go through the ground. He has steadfastly maintained that all radio waves pass through the earth and water and that if we must have an aerial, the latter acts as a condenser. Slowly our radio scientists are becoming convinced of the truth of this, and if proof were needed, we would only have to point to the Rogers underground aerial, now in use. The day is coming when no aerial will be used, and this day is not as far off as some believe.

The make shifts of using the lighting system as an aerial will be forgotten ten years hence. We will simply attach our receiving outfits to the ground or radiator and reception will be as good or better than that obtained today. Even now, use is made of condenser aerials consisting of a number of large plates and the ground. All these things, however, are make shifts and when the time comes for us to use nothing but the ground, there is no question that our radio circuits will be revolutionized considerably.

Regarding our apparatus, we need not mention how they keep changing; evidences of this are so apparent. The tendency seems to be for radio receiving apparatus to become smaller and smaller as time goes on. The day of the vest-pocket radio outfit is surely coming as the public insists on smaller and smaller apparatus. Just where all this change will stop, no one can foresee. It seems to be a hopeless task to standardize the radio business, and it may be generations before the art finds itself and becomes settled, as are other arts and industries.

It seems certain that the present conditions of changes and more changes will continue for at least ten years and perhaps longer.

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