

EXPERIMENTAL WIRELESS

and The WIRELESS ENGINEER

A Journal of Radio Research and Progress

VOL. II, No. 17.

FEBRUARY, 1925.

MONTHLY.

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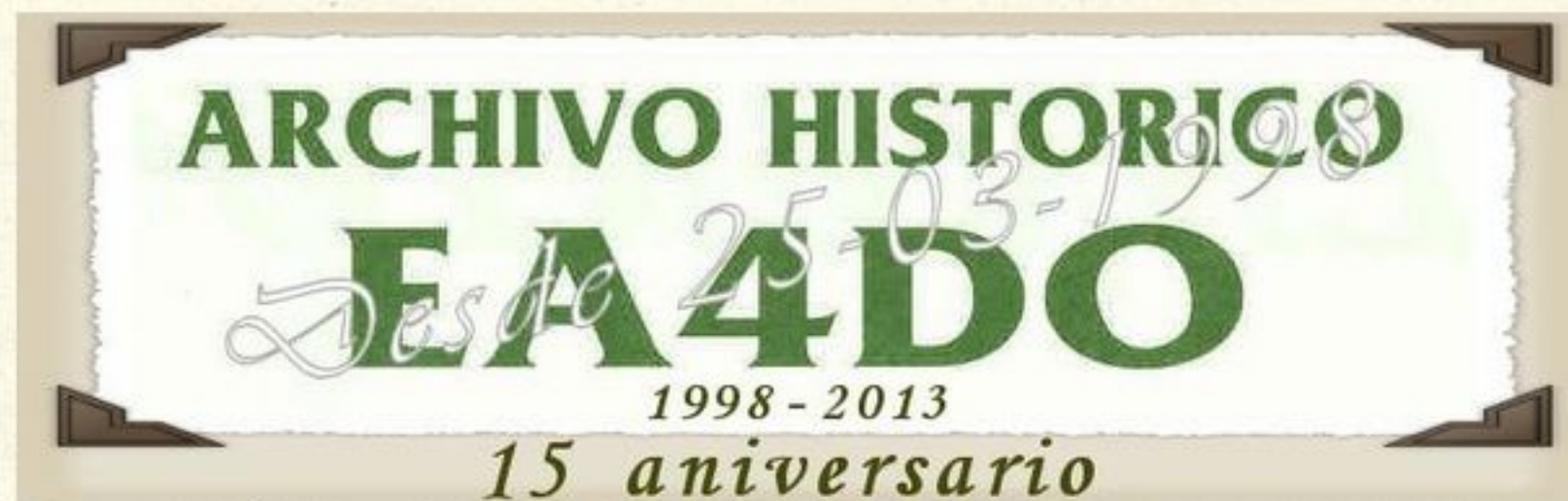
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SUBSCRIPTION RATES.

"Experimental Wireless and the Wireless Engineer" is published on the first of each month. Single copies, 1/-; post free, 1/3. Annual Subscription (U.K. or abroad), 15/- post free.

Editorial, Advertising, and Publishing Offices : DORSET HOUSE, TUDOR STREET, LONDON, E.C.4.
 Telegrams: Cyclist, Fleet, London. Telephone: City 2847 (13 lines).
 COVENTRY: 19, HERTFORD STREET. Telegrams: Cyclist, Coventry. Telephone: Coventry 10 (5 lines).
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A Year Ago.

By *Léon Deloy (F8AB)*.

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Our contributor—the well-known French amateur who was one of the pioneers of short-wave transatlantic communication—reviews the work that has been done in the same direction since his success.

IT is just over a year since there was established the first short-wave transatlantic communication, which took place between amateur stations—that of my friend Mr. F. H. Schnell, at Hartford, Connecticut, and my own station at Nice. This achievement created considerable excitement at the time, and the news rapidly spread through the world, the most startling point at that time being that the communication took place on about 100 metres, a wave-length which up to that time had been considered incapable of reaching long distances. The immense possibilities of long-range work with these short waves were immediately appreciated, and both Government and commercial stations busied themselves in studying on the new lines. The time now seems opportune to indulge in a short review of the results of this development. First, however, it is necessary to see what was the position a year ago, and

how those early experiments of ours were carried out.

After the war, wireless amateurs were much more numerous in all countries than had been the case before. Most of them had been engaged in wireless work during the war, and were anxious to continue experimental work after demobilisation. After considerable hesitation, most of the Governments involved ended by assigning to amateurs a band of wave-lengths for transmission somewhere between zero and 200 metres. It seems fairly obvious that this band was thrown to amateurs like a bone is to a dog, because it was considered practically useless for serious work at more than a few miles. While we saw on every side giant commercial stations with dozens of masts hundreds of feet high, and aerials a mile or two long, the unfortunate amateur—limited to 200 metres for wave-length and a kilowatt of input power in France (in most

cases 10 watts in Great Britain)—was forced to devote his attention to getting the maximum efficiency from his station. The success of many amateurs was remarkable, and by means of endless patience and hard work, they succeeded in covering hundreds and then thousands of miles. As a general rule, professional engineers of the commercial companies were very sceptical. "What!" they said. "The amateur talks about crossing the Atlantic on 200 metres? He must be entirely ignorant of the laws of long range transmission." However, it was done. Amateur signals made themselves heard across the Atlantic. But in spite of steady efforts extending over three years, and experiments between the amateurs of U.S.A. and Canada on one side, and all Europe on the other, two-way work was never successful on the wave-lengths of 200 metres or thereabouts first used. It was only when some of us tried 100 metres that success came.

These short waves then had proved that they could cover considerable distances, but it still seemed hardly probable that they could be used for commercial purposes. Firstly, their range by day was very low; and secondly, even at night they were subject to curious fading effects which often made it extremely difficult to take down a complete message. I had always had confidence in the shorter waves by some sort of instinct, and when my station succeeded in being the first French one to be heard in America—one other European station beat me by two days—I was using 195 metres, although my licence allowed anything up to 300.

In May, 1923, I happened to be listening to a signal sent from Paris on 45 metres. I received this at Nice on a single valve with such strength night and day that it made a great impression upon me. Next month, in June, I heard even more strongly experimental transmission by Poldhu on 94 metres. I was so much impressed that although I was due to leave Nice for the summer within three days, I hastily rigged up a transmitter for 100 metres, and made some experiments. Signals were received very strongly at all hours, and from that moment I decided to attempt transatlantic work on 100 metres as soon as I returned to Nice in October.

During the summer I made a short tour of America, where I found wireless workers nearly as sceptical as here on the possibilities of short waves for any useful work. In

fact, one specialist in short-wave work told me that he was absolutely convinced that they could never cover more than 500 miles or so. There were, however, some amateurs who were rather more optimistic, and eventually it was decided that we should make some experiments. On my return to Nice on October 28th I began immediately to reconstruct my station to work on 100 metres. Preliminary tests were carried out with England, whence I received reports of extremely strong signals. I then decided to try forthwith to get across to America, although my station was not really ready, and I could only just use 500 watts. I cabled to Schnell to tell him that I would be calling for an hour on the night of November 25th and 26th. On the first attempt he got me perfectly; the next day I passed him two messages, and by the 28th he had completed a 100-metre transmitter so that he could reply to me, and we were in touch all night, working with the greatest ease. An English amateur who heard this first transatlantic conversation wrote to me later:—

"It was really striking to see how easily the two of you were working, while at the same moment high-power stations were making desperate efforts to keep up regular communication, without result."

Schnell and I will never forget this morning of the 28th November, 1923, during which we succeeded at last in what had been for us the task of years. Hiram Percy Maxim, President of the American Radio Relay League, said during a speech which he made some months ago at Paris: "It may be difficult for others to grasp the emotion which we felt when we first heard in America the signals of 8AB."

All those who were present at this first experiment understood immediately the enormous effect which it was going to have on long-distance communication. From that moment I expressed the conviction that in less than five years the commercial traffic between Europe and America would be carried out entirely on short waves. Most people thought that I was exaggerating the practical possibilities of this system. I had on the other hand underestimated, and only about five months later commercial telegrams were being exchanged between the old and new worlds in this manner. But let us return again to November 28th, 1923, and continue our notes on the progressive development of short-wave work.

That same morning, after having been working for an hour with Schnell, I received a signal from Reinartz, who had hastily brought down his wave-length to 100 metres, and had got over to me at the first attempt. During the following days, numerous stations came down to 100 metres, both American and Canadian, then English and other French stations, till finally Dutch and Italians. This wave-length of 100 metres seemed to be almost magic; stations which had for years been making fruitless efforts to cross the Atlantic, succeeded immediately on the short wave. One could maintain communication with powers of 20 to 30 watts, and the most remarkable fact was that in this work one did not get the periodic fading which had hindered work on 200 metres.

Immediately, official and commercial wireless engineers interested themselves in the question: the saving which might result from short-wave low-power working could not be neglected. For example, a high-power station with a range of 10 000 miles or so would probably be of many hundred kilowatts, with an enormous aerial. The capital expenditure on it would very likely be half a million pounds, a large staff is required to run it, and the cost of supplying energy is heavy. On the other hand, a short-wave station of equal range could very likely be set up at the cost of £20 000 or £30 000, its staff would consist of one or two, and the consumption of power would be at the rate only of three or four kilowatts. In France, the Ministry of War, and then that of Posts and Telegraphs, were much interested in my work, and shortly afterwards the Eiffel Tower undertook a series of transmissions on short waves with the idea of accumulating scientific data on the propagation of these waves. In England, the Marconi Company took up again the transmissions from Poldhu, and in a few months succeeded in making telephony heard right to the Antipodes, with the result that the Australian Government decided immediately on the construction of a short-wave station to communicate directly with England. In America, all the great commercial companies, and also the Navy, devoted much energy to the study of short waves, and in Italy Signor Ducati, the first Italian amateur to succeed in transatlantic working at 100 metres, was asked by

the Navy to install a two kilowatt station of this kind at Rome and another on a warship which was crossing to South America. It was enabled to keep in direct communication with Rome on 100 metres during the whole of the journey. In France and Germany the great commercial companies experimented on direct traffic with South America with 100 metre waves, and in most cases it was found that Buenos Ayres received easily short-wave messages from France with only a few kilowatts behind them, while, at the same time, it could not receive long-wave signals sent with a power of several hundred kilowatts.

During all this time, amateurs the whole world over, were using these waves, and communication was established between different continents with extraordinary ease. Recently, as we all know, there has been regular communication between Europe and New Zealand, and a certain amount of work with Australia, using a power of a few hundred watts and apparatus capable of being housed completely in a small cupboard. This is evidently only a beginning. Modern short-wave work is only a year old, and the enormous progress which has been made in this short time gives us great hope for the future. The most important thing is to increase the range by day, but the solution to this problem is well on the way. Already we have succeeded on many occasions, and it seems that by the use of shorter waves still, between 80 and 30 metres, one may have permanent success, and, in fact, find work easier by day than by night. The consequences of this revolution in communication will certainly be of great importance. Certainly it will shortly permit a reduction in the tariff for commercial telegrams to a small fraction of what it has been hitherto. Practical telephony between the most distant parts of the earth should now only be a question of months. Direct touch between a ship or airship and its port will be possible wherever the ship may be, and, lastly, there is the enormous avenue of private communication with friends across the world. Let us hope that this last application of short-wave work will have the important influence that one would expect in bringing peoples into touch with one another, and making future wars impossible.