More Early Experiences in Amateur Radio

By G. W. TONKIN (G5RQ, ex-TBX)* .

Following last year's National Convention and Bristol Group's N.F.D. hat-trick, Mr. Tonkin, who was one of the earliest wireless experimenters in Bristol, was invited to contribute these personal reminiscences of the early days of the hobby.

SO far as is known the first contact over the sea was made by Marconi across the Bristol Channel from Lavernock Point, Penarth, to the Flat Holms Island, a distance of 3½ miles, on May 11, 1897. This was closely followed by a similar success from Bath to Salisbury (34 miles).

Early Interest

It was in 1909 that I first began to take notice of the fact that it was possible to send signals without visible means of connection. I made a transmitter with a ¼in. spark coil powered by a 6 volt battery. Brass stair rods were used for capacities. For a receiver I used a Bramley type coherer which was made from iron filings placed between two electrodes in a glass tube with two more stair rods for capacities. With this device signals were sent and received across the dining room table. The date was February 3, 1909. On another occasion, a volt meter was successfully used as an indicator.

Later on, I found that two friends of mine—Reggie Cox and Norman Driver—were also experimenting and I joined forces with them. I can recall that we established communication between Cox's workshop and the coach house. On that occasion we used some sort of vertical aerial. Various coherers were used, one of which was a piece of mirror with a scratch across the silver back.

Licences

Things went on for about a year when I discovered that a licence was necessary. I pointed this out to my two collaborators who received the news with derision. Notwithstanding this, I applied for a licence early in 1910 and after much correspondence it arrived towards the end of that year, designating my station with the call-sign TBX. All experimental call-signs had an X in them, usually at the end. Cox and Driver followed my example and became CDX and DXX respectively.

There was one period when our licences restricted us to working certain specified stations and no others. We were glad it did not last long.

I was not the first in the field in Bristol, however, as Charles H. Tilsley had obtained a licence in June, 1905. He used a 4in. spark coil with the usual Bramley type coherer and succeeded in transmitting signals a distance of about one mile across Bristol. Unfortunately he knew no Morse and did not continue his experiments. What a pity! Other early experimenters in the area were Mr. Sharp (GSX) and Mr. Davis, grandfather of John F. Davis (G3GVJ), but I have no record of their activities.

No fee was charged for licences and there was no examination of any sort, but if an applicant was within 10 miles of the coast, power was limited to 20 watts. Elsewhere, as much as ½ kW was often permitted.

It was of course necessary to make most things. I even made a Bell type telephone wound with No. 47 wire to a resistance of 1000 ohms.

Ingsdon, Downside, Stratton-on-the-Fosse, near Bath

This picture taken in 1948 shows G5RQ at the operating position of his post-war amateur station.
(Photo by "Bristol Evening World")

On October 31, 1912, we had the opportunity of using a pair of commercially made transmitters and receivers at a bazaar in Bristol where we sent and received messages over a distance of 300ft at sixpence a time. This outfit was listed in the A. W. Gamage catalogue of 1907.

At about this time we began to use various combinations of crystals such as zincite/bornite, galena/graphite, zincite/copper pyrites, etc., for reception. Tuning was also started. Transmitter tuning helixes were made of ¼in. brass rod wound into a huge coil. Leyden jars made of thin glass tumblers and tin foil acted as condensers.

My first aerial, erected in 1912, was a four wire horizontal about 25ft high. A 1in. spark coil running off a 6 volt accumulator was used as the transmitter. As this entailed a lot of charging, I put the 105 volt a.c. mains into the primary of the spark coil, *via* the break and a bank of carbon lamps in series parallel and it worked! The then 93 cycles of the Bristol a.c. mains worked in perfect harmony with the break. There was a great deal of " try it and see if it works " in those days.

Although comparatively small receiver tuning coils were used for 200 metres, one had to make special coils for receiving commercial and government stations from 1000 to 30,000 metres. The coil for the latter measured 2ft long by 9in. in diameter.

A lot of time was spent in listening to these stations. Poldhu in Cornwall on 2800 metres sent news from the daily newspapers and a weather report. Paris transmitted time signals and news in French from the Eiffel Tower on 1680 metres.

Here are a few of the important stations with their call signs:—Clifden, Ireland (CDN); Nauen, Germany (POZ); Warsaw (WAR); Belgrade (RS); Sofia (FF); Budapest (HB); Prague (PRG); Constantinople (OSM); Moscow (MSK); Bordeaux (LY); Paris (FL); Norddeich (KAV). It will be noticed that the call-signs were often letters abbreviating the words. It was not until January, 1913, that a start was made to allot international prefix letters.

More Bristol people began to come on the air in 1913: Harry Griffiths (GXX); H. Lefebure (OIX);

Moineau (ABX); Alan Fawcett (ASX, now G2HQ); Bracher (OXR); H. S. Urch (DXP, now G6DJ); Davis (DXP); Stevens (LXS); Harrison (XBS) and Warry (XXJ).

On January 16, 1913, I had a contact with Cox from my home, a distance of half a mile—DX in those days.

Speech Transmission

Grindle Matthews was working between the grounds of the New Passage Hotel on the shore of the Bristol Channel and a launch at sea. He actually worked speech and created a great sensation in the Press. His co-worker was T. Ditcham. The telephony transmission was heard by Commander Hippisley at Ston Easton Park, near Bath, and by Thomas Ross in London.

In Bristol we had local QSOs and swapped ideas much as we do now on Top Band. The *English Mechanic* and the *Model Engineer* were the only publications which gave any " gen " on wireless. It is true that the *Marconigraph* (the organ of the Marconi Co. which became the *Wireless World* in April, 1913) was an excellent monthly but it mainly recorded the doings of operators and gave descriptions of their stations.

DX At Last!

As yet no-one in Bristol had succeeded in getting his signals outside the city. Then came Maurice Child (NWX) who set up a Wireless School in Baldwin Street with a ½ kW Marconi quenched spark marine set. The first time he used it on the air he blotted out all the telephones in the city! He certainly got out for I worked him myself from the station of the late Rev. C. E. Doudney (DXK) of Bath. Doudney's aerial, incidentally, stretched from the top of his church spire to the Vicarage!

There were several stations around Bristol that we could hear but try as we would we could not reach them so I decided that something must be done about it. Those near to us were Commander Hippisley (HLX), Claude Wilcox (WUX), Warminster; O. H. Bayldon, Newton St. Loe; Russell Clark (THX), Abergavenny.

At last, on April 10, 1914, I had my first QSO with HLX, a distance of 15 miles, using an oil-filled transformer I had bought to replace my one inch spark coil. It stepped up the 105 volts a.c. mains to 4000, 6000 and 10,000 volts. Soon afterwards, I put my signals over to WUX at Warminster—34 miles. This was the longest distance I worked before the 1914 war broke out.

Some of the great men in radio held experimental licences at that time: Dr. W. H. Eccles (EWX); Dr. Erskine Murray (MUX); Dr. Ambrose Fleming, inventor of the thermionic valve (UCX); Philip Coursey (GYX); Sir Henry Norman, Assistant P.M.G.; Wilson Noble (NBX).

I should like to conclude with a story showing the incredulity of people in those early days. Once I was passing Ston Easton Park in a char-a-banc and I told the lady sitting next to me of my contacts with HLX. When I had finished she said, " Yes, but it's only a toy, isn't it "!

A Wide-band V.H.F. Transformer

ON the v.h.f.s it is often required to couple a 300 ohm balanced line to 75 ohm coaxial feeder or *vice versa*. The normal method of effecting such a transformation of impedance and at the same time changing from a balanced to an unbalanced condition is by means of a coaxial transformer known as a " balun ". This device is, however, frequency sensitive and effective only over a narrow band centred on its design frequency.

The transformer to be described is designed to match a 300 ohm balanced source to a 75 ohm unbalanced output over a frequency range of 40 to 235 Mc/s with an insertion loss of not more than .4 db and a standing wave ratio not exceeding 1.3 : 1. The present model is suitable only for use with a receiver or very low power transmitter, but it should be possible to design a transformer on similar lines capable of handling higher power.

From Fig. 1 it will be seen that two bifilar-wound coils are so connected that, looking into the 300 ohm end two coils are in series while the other two coils are in parallel and form the 75 ohm unbalanced output.

To achieve the specified performance it is important that the windings on the two ¼ in. polystyrene rods are as nearly alike as possible. Each former carries two windings of 30 s.w.g. enamelled wire so arranged that the turns of one coil lie midway between the turns of the other, the winding pitch of each coil being twenty-four turns per inch.

Some experimental work is at present going forward with a view to modifying the design for operation at 420 Mc/s and if this is successful details will appear in the BULLETIN.

Attention is drawn to the fact that the transformer is the subject of a patent, and although there is no objection to the idea being employed by individuals for their own use, the device may not be produced commercially without permission having been granted by the patentees.—W.H.A.

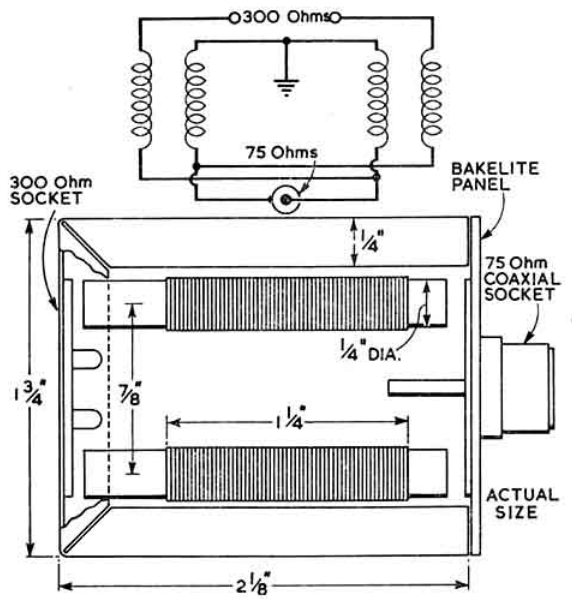

Fig. 1. The wide-band v.h.f. transformer. In the circuit diagram the earth sign indicates a connection to the case. The mechanical arrangement is shown in the lower diagram. Each former carries two windings, each with a pitch of twenty-four turns per inch. The chassis is constructed from 20 s.w.g. brass bent into channel form ⅛ in. deep with ¼ in. lips. A " U " shaped piece of sheet brass, with a hole cut to clear the 75 ohm socket forms the outer case, and is secured by two 8 B.A. screws at the 300 ohm socket end.