

Mick Fitzpatrick and his wireless

This month's story is one that can quite literally claim to have the human touch. It begins with a chance discovery of a 1943 'Broadcast Listener's Licence' renewal form, which was stuffed inside a 1929 AWA Radiola model C54 'Battery Six' radio I had acquired for restoration. Curious, I decided to find out what I could about the original owner...

Y STORY BEGINS with the restoration of one of the many radios stored in my shed, awaiting time, money and occasionally, enthusiasm. It had been sitting on the shelf, gathering dust for nighon 12 years, and I decided that its turn had come.

Pulling it down and opening it up soon revealed that someone had previously had a 'go' at it. It was partly dismantled, with a few bits and pieces in a small cardboard box. Suspicion and despair prevailed...

After removing all the components, it was discovered that the thing was actually complete, except for merely a few 1/8" diameter AWA pattern nuts and bolts, and the two audio transformers. Fortunately, the same pattern nuts and bolts were used right until the 1950's, and many a post-war AWA with a smashed cabinet has been wrecked for parts. The nuts and bolts were not a problem.

The AWA 'Ideal' audio transformers were used in factory-built AWA's in the 1928-1932 period, and were also sold commercially to other manufacturers and to the home construction market. As luck had it, two of the exact part number were found in my 'spares' box of interstage audio transformers.

So the parts weren't going to be a problem after all. But among the collection of component parts was a faded Broadcast Listener's Licence, dated 1943. It was filled out in pencil, and issued to 'M. Fitzpatrick - Campbell's Forest'. The issuing Post Office was Bendigo, Victoria. I wonder...?

Of course, there is no actual proof that the Listener's Licence and the radio belonged to one and the same person. But I think you will agree, it's a pretty safe assumption. The only real way to find out would be to see if Mr M. Fitzpatrick was/is still alive. If he was, he would have to be aged at least in his eighties.

A check in the Bendigo telephone directory revealed that the Fitzpatrick clan is alive and well, and flourishing. Some 10



Fig.2: The set's early owner Mick Fitzpatrick, aged in his mid-20s, by courtesy of Mr Frank Crapper of Bendigo.

were chosen at random, and letters sent off in turn explaining my desire to contact 'Mr M. Fitzpatrick' or his descendants, to verify his original ownership of the old radio.

Yes, the replies came back, and several respondents identified the M. Fitzpatrick of

Campbell's Forest as 'Mick', who died in 1968 aged about 64 or 65 years. He was a bachelor, and from all accounts quite a character and a local identity. He did have a sister, who married a 'Mr Crapper'...

So it was back to the Bendigo telephone directory, to choose members of the Crapper family at random and send off more letters.

Again, there were more encouraging responses. A Mr Frank Crapper identified himself as Mick Fitzpatrick's nephew, and kindly provided the only photo of Mick Fitzpatrick — which would have been taken in the 1920s. I'm very grateful to Mr Crapper for his contribution. No-one recalls the radio as such, but "seemed to remember an old set of sorts; can't say if it worked or not!"

Mr Crapper also drove me out to Campbells Forest, and showed me the site of his uncle's farm. The room where he lived still stands, and is shown in the accompanying photograph.

Just why was the 1943 licence renewal form in the radio? It was common practice in those days to keep the licence with the radio itself, just in case the radio inspector called. (There was quite a stiff fine for not possessing the required listener's licence, which had to be produced upon demand.)

Perhaps during the privations of World War 2, the then obsolete fourpin battery triodes had given up and there were no replacements available.

The AWA Radiola Six used the most uncommon Marconi-Osram types DEL 410 in the first five sockets, and the power type DEP 410 in the output. (It is interesting to note that those types are very hard to come by today.)

Was the set deemed unrepairable at some time during 1943/44, and then relegated to the store room, only to be discovered when his estate was disposed of? How many times had it changed hands before I acquired it? Probably no one will ever know.

The radio itself

THERE ARE MARKED similarities between the AWA sets of the time and the Attwater Kents. The circuit is shown in Fig.4, and a photo in Fig.5. The metalwork is compact and L-shaped, housing the four tuning capacitors and the two audio transformers in the same arrangement as the AK's. The six

tubes are all lined up in a predrilled socket board interspaced with the coils, which was another feature of the AK's.

The circuit consists of a four-stage all triode TRF followed by two transformer coupled triode audio stages. It is about as user friendly as possible. There are only three controls; the one-dial tuning control, a filament rheostat for volume and a small variable capacitor of about 50pF connected across the first stage tuning capacitor.

Just why triode RF stages were still being used in 1929 is also a bit of a mystery. By then, the RF 'screen grid' valves were well and truly established.

The predominant US type was the UX-222, and there were plenty of British types by Mullard and Cossor in particular.

You will see that there is no attempt at neutralisation. RF stability is achieved by the use of grid stopper resistors, again another feature of the AK's, and the use of the filament rheostat. This control simply cuts down the emission, and hence the gain (and with it the tendency to oscillate) of the first three stages. The handbook for the C54 states that 'the RF transformers have a very restricted field, thus minimising feedback'.

The RF trimmer is quite necessary.

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Fig.1: The original Listeners' Licence which inspired this month's story.

Depending on the type of aerial used, the loading effect could be quite different and quite apparent at different frequencies.

This antenna loading tended to detune the first stage, and each installation would be quite different. The solution was to incorporate a small 'trimming' capacitor across the first stage which would then be used to peak the tuning for maximum strength once it was on station.

Adjusting the filament rheostat also tended to de-tune the set a little, and the trimmer needed to be used for correction.

Reassembly

AS INDICATED earlier, the set was almost complete - even down to the factory label for the battery connections of the wiring loom. Unfortunately, the cable had been severed close to chassis, but enough the remained to join on a sevenwire cable used for wiring a car trailer. (This cable makes quite a useful battery cable for the old sets. It is cheap, already sheathed and nine times out of 10, there is a direct colour match for the battery cable of the particular radio concerned.)

The gangs and coils were assembled, and the rheostat and trimmer connected where necessary. Two audio trans-

formers were given a touch up with a spray can of auto touch-up paint in a similar colour to the original, and duly con-



nected. The three block-type paper capacitors measured slightly leaky, but were not replaced since adequate by-passing is provided for in the external power supply (solid state, of course!) The grid leak resistor, grid capacitor and anode capacitor of V4 were all within reasonable value, and left in circuit.

To the ininitiated, the coils may appear as a high impedance primary very loosely coupled to the tuned secondary. This is not so. The two coils of each assembly, often referred to as 'binocular coils' are the secondaries. They are wound as if on a continuous former, and at the half-way point, the former is cut in half and folded back on itself, whilst the winding itself is continuous. The primary is wound on a separate former and placed inside the earthy end of the appropriate secondary former.

This method of construction considerably reduces the stray field emanating from the coil structure. When used in conjunction with grid stopper resistors, the coupling between any two stages is sufficiently dampened to prevent oscillations.

As it happens, one item which was not repairable was the band for mechanical coupling of the tuning gangs. But fortunately, a replacement was available from Antique Electronic Supplies of Tempe, Arizona USA. Originally, the bands were riveted, but such small rivets are no longer obtainable. They were measured, drilled for the locating pegs on the capacitor drive drum, and the join was soldered. It is not original, but there are limits to any restoration project.

Getting it going

ONCE THE WIRING had been checked and the valves inserted, it was connected to a power supply and switched on. Yes, it did work, but it was accompanied by instability.

Here again there is a trap for young players. Many enthusiasts automatically assume the howling and squealing is caused by RF instability. But in radios with two or more audio transformers, the cause is often audio feedback caused by phase rotation as a result of incorrect connection of the audio transformers. As these transformers had unlabelled flying leads, they were connected up at random.

In this case reversing the primary connections of one transformer cured the problem. (Reversing the primary in both transformers merely maintains the same relative phase relationship.)

Yes, it now worked; but there was room for improvement.



Fig.3: Mick Fitzpatrick's 'hut' still stands, albeit now derelict, on the site of his parents' farm near Bendigo.

Alignment

IT'S NOT ONLY possible to align one of these sets, it is necessary! Just because there is only one trimmer as described does not mean that no alignment can take place.

The purpose of a trimmer capacitor is to



Fig.5: The restored AWA C54 radio in its cabinet.

slightly alter the capacitance of one gang section relative to another. In the in-line two- and three-gang capacitors with which most of us are all too familiar, this was obtained by compression trimmers mounted atop the gang — or, in the case of a dual wave radio, within the coil kit assembly.

In these old sets with separate gangs coupled by a belt drive, the technique is to tune a station at the highest frequency of the band. You then loosen the grub screws on the drum assembly for the last tuning stage, and slightly rock the rotor plates back and forth for maximum strength. The remaining three sections must not be altered during this process.

> Do this to each gang section except the first, which of course has its own trimmer.

Hey presto! What we have achieved is precisely the same as if a trimmer were individually fitted; we have altered the capacitance of one gang relative to its neighbour.

Its performance

CONSIDERING ITS AGE, the overall performance is surprisingly good. In Adelaide we have two AM band stations on 1395kHz and 1323kHz, and it is a test of any TRF set to be able to separate these two stations. The C54 is able to achieve this with a short antenna (5 or 6 feet) plugged into the 'Long Antenna' socket, and still provide sufficient signal input for full volume to be at a comfortable listening level on a horn speaker.

The audio quality is also surprisingly good, due in no small measure to the interstage audio transformers (plenty of soft iron!). When used with a modern permanent magnet speaker, both quality and volume are more than acceptable.

All in all, the C54 was a good performer in its day, and not bad by contemporary standards. But the attraction of this particular set was definitely enhanced by tracing the identity of one of its early owners. \clubsuit