

A Classic Contest entry

by **Peter Chadwick G3RZP**

This story starts back in the days of WW2. My father, G8ON, was one of the 'Voluntary Interceptors' in the days before he was called up into the RAF, and after he was invalided out. The receiver he was issued was an HRO, together with some S. G. Brown headphones, and that HRO had (I believe only the VI ones did) a vernier scale. This was a curved, engraved segment of brass, which allowed the reading of the scale to 0.1 division. When the HRO went back at the end of the war, the vernier scale didn't - neither did the headphones.

8ON was impressed by the HRO performance. His previous receivers were the Everizone, which was a UK pre war amateur receiver, characterised by him as useless, and an Eddystone Short Wave 2. He bought a second hand HRO that had been in private hands through the war - not being war surplus, it came with bandspread coils - and its power supply and speaker. Not the National ones, but the ones from Webbs Radio, who were the importers pre-war. And the vernier scale got fitted. Over the years, the 6D6s got replaced with miniature valves, and as was the way, the HRO got a bit butchered. Plus the paint started to peel, so in a flush of enthusiasm, I decided on a restoration. With no suitable valveholders or screening cans, it wasn't going to be too easy to do a proper restoration, and so I went to an octal line up, similar to the HRO5. Except I took advantage of the better performance of some of the later metal octals, so it has a 6SG7 RF - 6SK7 RF - 6AC7 mixer - 6J5 HF Osc 6K7 IF, 6SQ7 DET/AVC/AF, 6SJ7 BFO/product detector, 6V6 output and a VR150 stabiliser. Repainted, including the dial - haven't got that quite as good as I'd like, and had problems getting the white filling right in the engraving.

Incidentally, because the old AM receivers were designed for several volts at the detector, a product detector using the original pentode BFO and the IF signal coupled by a small capacitor to the suppressor grid works very well.

An interesting point was the tracking, or lack of it. I measured the gang, and using the marked values of padding capacitor, found it would only give 2 point tracking. This was interesting, as 3 point tracking was very new when the HRO was designed, but by early 1939 when this one was built, three point tracking was well established. So in the rebuild, we now have three point tracking - especially as some of the moulded mica padders were out by 50%.

Having done the Rx, it seemed that a suitable transmitter for a matching station would be an interesting



exercise, and it could be a two band affair making it suitable for a 'classic' station to enter the RSGB Low Power contest.

A search in the garage produced a couple of cabinets, one 17 inches wide by 10 high by 12 deep, and one about 10 high, 8 wide and 10 deep for a power supply. Plenty of rust cure turned the rust into black phosphate, and grey Hammerite covers a lot of sins....A look through the various junk boxes produced an Eddystone 'half moon' dial (like the Panda Cub or the LG300) and the case of a TU5B, albeit with a lot of holes - it had seen service in a number of projects since its original stripping for parts in 1947!

Cutting and bending aluminium soon produced the necessary chassis work, (so easy when you have workshop facilities!) and the transmitter took shape. 6SJ7 VFO on 1.75MHz, doubling to 3.5 in the anode. Tuned circuits in the anode and the grid of the following 6AG7 buffer/doubler arranged to have anti-resonance at 1.75MHz to reduce spurious outputs. 807 PA with 300 volts on the anode, a pi network, and 10 watts out. One item uncommon in the 50's was key controlled changeover, but it has advantages. If the relays are 'energise to receive', and are high voltage types, the load on the HT line stays pretty constant. So a 6V6 drives the relays, a 6SL7GT acts as a Schmitt trigger to give the necessary delay, and a VR54 (EB34) is the steering diode. There's a small neon, for DC coupling, and a VR105 as a standoff voltage source. Regulation for the RF stages is provided by a STV280/40 multi gap regulator (actually, a VS68).

The 6SJ7 and 6AG7 are 1960's manufacture for the US Army: the others are all WW2 manufacture - older than I am. The power supply uses a wartime 5Z4G with a choke input filter: the transformer and one of the chokes came from G3HTA, who was going to dump all his old valve type transformers and chokes in the local rubbish tip! Originally, the power supply

was to use a 5Z3, but I omitted to check the HT line for shorts. I had a lead trapped under a bracket putting a direct short on, and switching on didn't blow a fuse, but did blow (spectacularly!) the 5Z3 - and with no spare left, it had to be changed.

The only 'new' parts were the metal, the screws nuts and hankbushes, paint, chrome plated handles, and the SO239 and the BNC sockets for aerial connections..... The mechanics were pretty easy, including the right angle drive for the band switch. That actually uses modern stuff - some plastic bevel gears bought at Longleat for 10p each!

Firing up presented one interesting problem that I've never met before - insufficient VFO radiation to be able to net! I had to arrange for the 6AG7 to have power on as well.

So I set up this 'classic' station on a table in the lounge, where it was duly admired by the XYL, and had a few QSOs before the contest. There wasn't time to build an OZ7BO el bug, so I used my father's Vibroplex, and a 1915 double current line telegraphy key in parallel for keying. Seemed to work fine.

The contest was fun, and 80 wasn't too bad. However, the HRO selectivity performance really did leave a lot to be desired by today's standards. 40 was

worse, because of the greater band occupancy, although the HRO was meeting its specs (such as they are!). I made about 47 QSOs on 80 and 45 on 40: each band was sued for three hours.

It's a 'classic' station from the 1950's and although great fun, I can well understand why contest scores and scoring rates are so much higher today than 40 or 50 years ago. Such niceties as having to net before calling someone, and the pretty poor selectivity of the HRO make life quite interesting. Judging by the reluctance of many of our local club members to use a transmitter that needs tuning up, I suspect they wouldn't touch this station with a barge pole!

And no, it isn't still set up on a table in the middle of the lounge.....

