# 10 METRES
# The Early Days

**Eileen Heightman, with the home built 10 metre receiver and associated equipment, operating G6DH, one of the earliest amateur radio stations to explore the 10 metre band.**

***The ten metre band has always been of special interest to SWLs and amateurs alike. Arthur Gee, G2UK, traces the early history of this band.***

My experience of this band goes right back to before WWII days in 1936, when Denis Heightman, G6DH, and his XYL built and ran as an experimental venture one of the earliest 10 metre stations to transmit regularly. In fact, the station was on the air every day, which enabled a lot of information on the propagation characteristics of this band to be obtained. It so happened that they started their 10 metre activities just at a time when '10 was open', they happened to hit a sunspot maximum! Ten metre equipment was not readily available at that time and both transmitter and receiver had to be home built. With the technology of that period, 10 metres was 'pushing it a bit' and great efforts had to be made to keep losses as low as possible.

## Wandering hand trouble

All sorts of problems arose in this field, which are quite unknown to present day radio enthusiasts. One of the worst — apart from that of keeping losses as low as possible — was that known as 'hand-effects'. This occurred through components — chiefly such things as tuning coils and variable capacitors, changing their characteristics due to the 'earthing' capacity from the presence of one's hands! So tuning dials had to be connected to their components via long insulating rods which kept one's hands and body sufficiently far away as to make this effect negligible.

Both receivers and transmitters used valves of course and the varying of voltages and current applied to these also produced frequency changes. So one way and another there were problems and the constructional techniques used on the lower frequencies had to be modified and adapted to overcome these difficulties.

## Early aerials

Coaxial cable had not come into amateur use then and the aerial system had to be fed with open-wire feeders, which presented their own problems with damage from weather being a constant hazard. These feeders were made up from 14 gauge copper wire separated by insulating spacers a couple or so inches long which were home-made from lengths of quarter inch wooden dowel rod, boiled in paraffin wax. Usual source — candles!

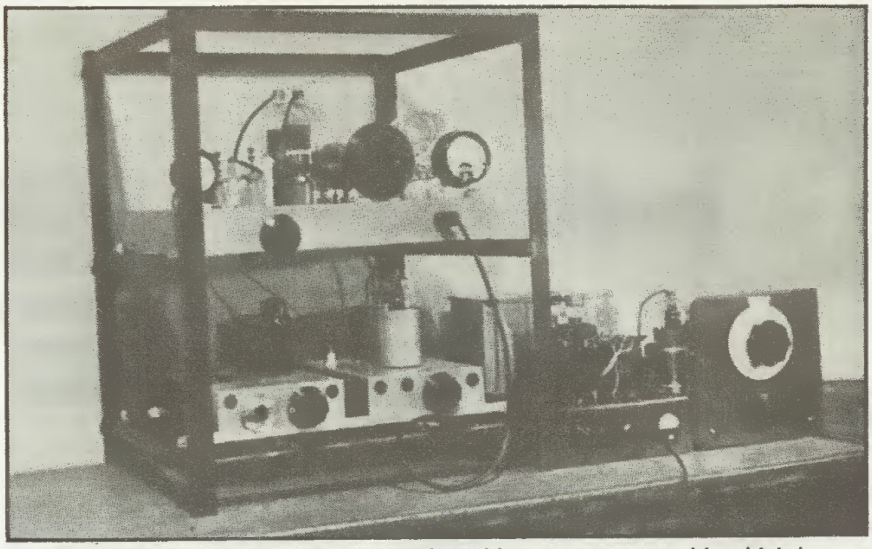
Various types of aerials were used, usually cut down versions of those used on the lower frequency bands, but rotary dipoles with reflectors and Yagi type beams soon became popular due their small size on 10 metres. Connecting open-wire feeders to these aerials and matching them up needed some cunning originality!

## Polystyrene pioneers

Denis Heightman was one of the first to introduce polystyrene into radio equipment for these frequencies after he saw this material at a radio exhibition in Germany. It was very expensive but he managed to get some and try it out as an insulating low loss material. It proved to be 'fantastic' — compared to other materials available at that time such as glass, ebonite, waxed or varnished wood, etc. It had very good low loss insulating properties and could be worked easily, and because it softened at reasonably low temperatures, it could also be moulded. Denis had begun making components at his radio own workshop and he soon started making parts specifically for higher frequencies such as the 28MHz and 56MHz band, which was also being

explored at that time. Perspex as it became called, was so expensive that they actually collected up the turnings and 'sawdust', dissolved it in a solvent and sold this as a cement for fixing the coils and wires in inductances and aerial feeders!

Amateur radio transmitting activity thus far had been mainly on 80 metres, 40 metres and 20 metres and to a certain extent on 'top band'. This latter band was quite popular for 'local' nets. Quite good factory built equipment was available — mostly from America — covering these bands and of course good general coverage shortwave receivers were also on the market. But pretty well all the ten metre equipment had to be home built, so Denis's components were about the first available to the home-constructor which were specifically designed for the 10 metre band.



**The writer's 10 metre transmitter built from his pre-war gear, with which he got on the air as soon as amateur radio was permitted after the war.**

## Transmitter technology

Most of the communication on the higher frequency amateur bands was on CW, as SSB and FM were a post-war development. The transmitters were mostly crystal controlled; so to change frequency one had to change the crystal in the first stage of the transmitter. This crystal controlled stage was followed by 'doubler stages' which multiplied the crystal frequency up to the required transmit frequency, after which it was amplified by the power amplifier stage. From here the RF was fed via an antenna coupling system to the aerial using open-wire feeders — which were the main source of RF loss in the system! Whilst changing frequency usually involved changing the crystal, if you wished to change bands, plug-in coils had to be swapped as well!

As we have seen, 1935 was not only a period when interest in 10 metres was just beginning, but also turned out to be just at the height of one of the sun-spot maximum periods, giving stupendous propagation on ten metres. Once this was realised, interest in 10 metres rapidly developed and it became the band to go for! Those who have experienced good, solar maximum propagation conditions on 10 metres will know just how exciting conditions can be.

**The late Denis Heightman, one of the first 'polystryrene pioneers' and 10m experimenters.**

## Long range links

In those days, with the limited range one was used to on the lower frequency bands, nothing like it had been experienced before. New DX stations soon began to appear on the band and regular communication was possible to America to the west and India to the east.

There is an interesting story told that, in early 1948 when Mahatma Gandhi was assassinated, Eileen Heightman was on the air from G6DH. She was called by an American amateur who said rumours were afoot in the USA that Gandhi had been assassinated. Eileen called an Indian amateur she had just finished a QSO with, he made some local enquiries and found out that this news was in fact correct. Eileen passed the message back to the USA amateur who gave it to the American press. All through this newly discovered wonderful 10 metre band!

## Post-war developments

Ten metres developed steadily until the outbreak of WWII, when we all had our transmitting gear impounded. When the war ended, we got our gear back again and much had happened in the development of radio techniques during the intervening years. However, the solar cycle was once again near a maximum and 10 metres was again at the peak of its performance. When amateur radio was again permitted, we were restricted at first to using the 10 metre band only, but at least we were allowed to use up to 100 watts in the output stage — before the war most people were licensed for only ten or twenty-five watts and operated on 7 or 14MHz.

Most wanted to get on the air again as soon as possible and to make use of the new 100 watt limit. With the surplus equipment available after the war — particularly efficient valves — this was not too difficult a task, and one of the illustrations shows the rebuilt transmitter which I made for 100 watts, 10 metre output.

Receivers were home-built at first and the more skilful built some excellent superhet receivers specifically for 10 metres. There was much experimentation with aerials too, which provided lots of interest and new discoveries about the characteristics of the 10 metre band. As we passed out of the exotic propagation conditions provided by the immediate post-war solar cycle maximum, interest in 10 metres for working DX deteriorated, much as it has at present. For a while, 10 metres became used for local nets and was as lively as the 2 metre band is today — AM was used of course, and small, portable, though not quite hand-held rigs were built up for this purpose.

As the solar cycle moves towards another maximum and propagation on the 10 metre band improves, once again no doubt, it will become the favourite band for the DX enthusiast.