can be fed in parallel without altering the feed impedance, but remember that any of the three bands, two of the dipoles will have a very high impedance and only one will have a low impedance. The result of these in parallel is to lower the feed impedance only very slightly.

Trap Dipoles

Another way of making a dipole function on more than one band is by the use of traps. A trap is no more than a parallel tuned circuit which, as readers may recall from their RAE class, appears as an open circuit at the frequency of resonance. **Fig. 7** shows the layout of a 20/15/10m trap dipole although, as with the previous example, any other combination works equally well. On 10m, the first set of traps appear as an open circuit so only the centre part of the aerial is used. On 15m, the RF passes through the 10m traps and the next section of the aerial comes into use. The whole of the length of the aerial is used on 20m, remember though that trap dipoles will be somewhat shorter than their single band counterparts because the coils in the traps act as loading coils on the lower frequencies in use. In most cases, the shortening will not be too great; but with traps having a high L/C ratio it could be significant. Note that any shortening of an aerial results in its usable bandwidth being reduced, and on the lower frequencies this might be important.

There is no reason why one dipole could not have traps for each of the amateur bands, and thus give all-band operation. Unfortunately this approach has some snags. Firstly, given traps with a very high Q coil, there will be some slight loss. The lower frequency bands would suffer as the RF has to travel through several sets of traps, each adding its own slight loss. The loading effects of the traps, means that an all-band aerial would be considerably shorter on the lowest frequencies used and the resultant narrowing of the bandwidth may mean the aerial can only be used over part of a band with low VSWR.

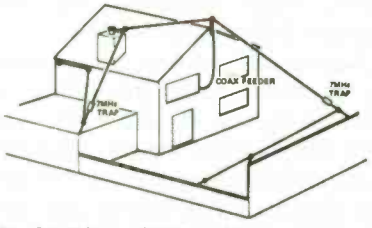
Although trap dipoles can be made to operate on any combination of frequencies, 80 and 40 metre operators often refer to their aerial as a trap dipole without qualifying the term any further. What is generally inferred in such cases is an aerial of the type shown in **Fig. 8a** which is basically a two band aerial for 80/40m. I say basically because it is *apparently* possible to get a reasonable match on all the 80 to 10m pre WARC bands by carefully selecting the L/C ratio of the 7MHz traps. The word apparently was chosen deliberately because personally I have never managed to achieve it at my QTH. It probably comes down to being able to get the aerial up in the clear.

This trap dipole gives a very good account of itself on the 80 and 40 metre bands, but because the aerial is shortened by the traps on 80m, it will only cover most of that band not the whole of it. The VSWR rises slowly enough though for a simple ATU to be used for the band edges if needs be. The aerial is commonly referred to as a 'KW trap dipole', an 'Isle of Wight trap dipole', or a 'W3DZZ'.

Another aerial for the 80 and 40m bands is often referred to as a 'compressed' trap dipole. The principle is the same except a large L/C ratio is used in the traps. This results in a somewhat shorter length (**Fig. 8b**) at the expense of a much reduced bandwidth on 80m, with only about 75kHz between the 2:1 VSWR points. At least two companies manufacture an 80/40m compressed dipole of the dimensions shown, and the 40m section allows 15m operation albeit with some VSWR.

Open Wire Feeders

Dipoles can be made to cover a



My 80/40m dipole with no balun low height and many bends still worked well. I connected the coax inner conductor to the 'leg' of the aerial going down the garden.

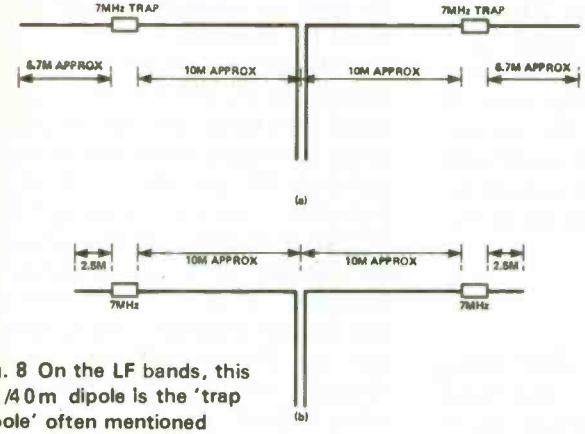


Fig. 8 On the LF bands, this 80/40m dipole is the 'trap dipole' often mentioned without any qualification. Yet by increasing the LC ratio of the 7MHz traps, the length can be compressed but at the expense of the bandwidth on 80m.

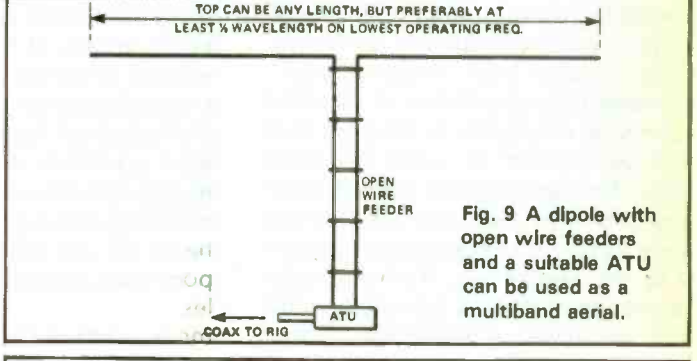


Fig. 9 A dipole with open wire feeders and a suitable ATU can be used as a multiband aerial.

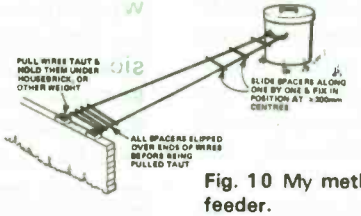


Fig. 10 My method of making open wire feeder.