Novice Note Book

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ANTENNAS AGAIN feature in *Novice Note Book*, but I make no apology as this is a subject that dominates amateur radio. The best radio transmitter in the world is useless if we cannot radiate the signal it generates.

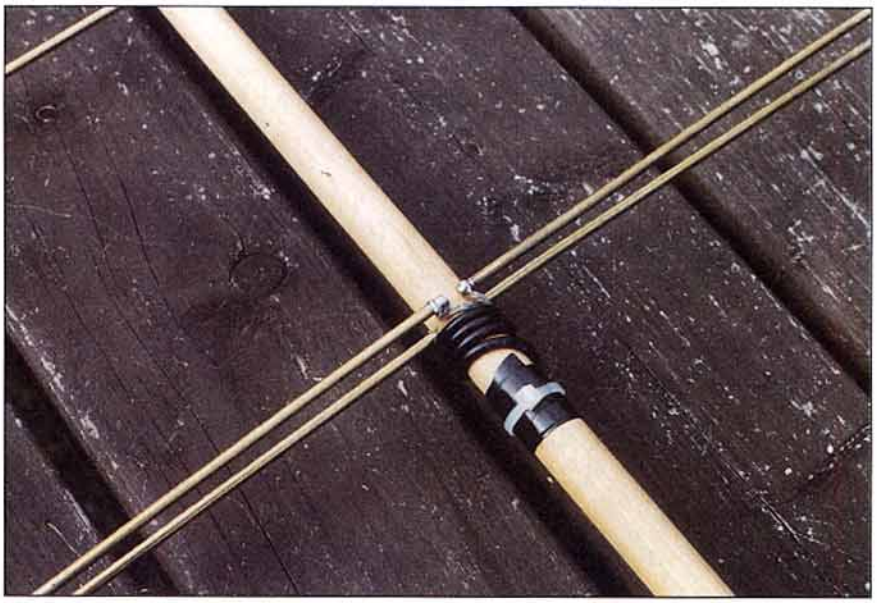
I have a requirement to contact three main areas all within five miles. They are the radio club three miles south of the home QTH, Dover town which is five miles to the South-west (but three hundred feet down in the valley with a mile to the valley edge) and the gliding club which is three miles to the North-west. Tests showed that handheld operation was possible from the home QTH to the two clubs but to the car in the town was very marginal.

A YAGI ANTENNA

WHAT WAS required was a high gain antenna on the car and a vertically polarised beam pointing towards Dover. The beamwidth of the antenna is wide enough to get a reasonable signal into the two clubs and coverage of the town.

I claim no originality for the beam in **Fig 1** as the dimensions were lifted from the RSGB *VHF-UHF Manual* [£8.93 plus P&P to members - see page 91 -*Ed*]. To keep construction simple I have used 3.2mm brazing rod for the elements and 15mm wooden dowel for the boom. The main advantage of the wooden boom is that the elements can be made a push fit into the wood and so require no further fixing. In fact, when the wood gets damp it will be virtually impossible for them to move as the wood will swell!

The boom should be carefully marked and drilled using a 3mm bit. The elements are cut to the correct length and the ends slightly tapered to help start them to enter the hole in the boom. However, before they are fitted it is necessary to construct the radiator element. The problem here is that it has to be inserted through the boom prior to bending! The way I did this was to bend one end, then push the rod through the boom and then bend the second end. To make the bending easy I heated the element at the point of bending. The element was bent around a 9mm drill to get the correct shape and correct spacing.



Home-made UHF Yagi showing driven element feed and balun.

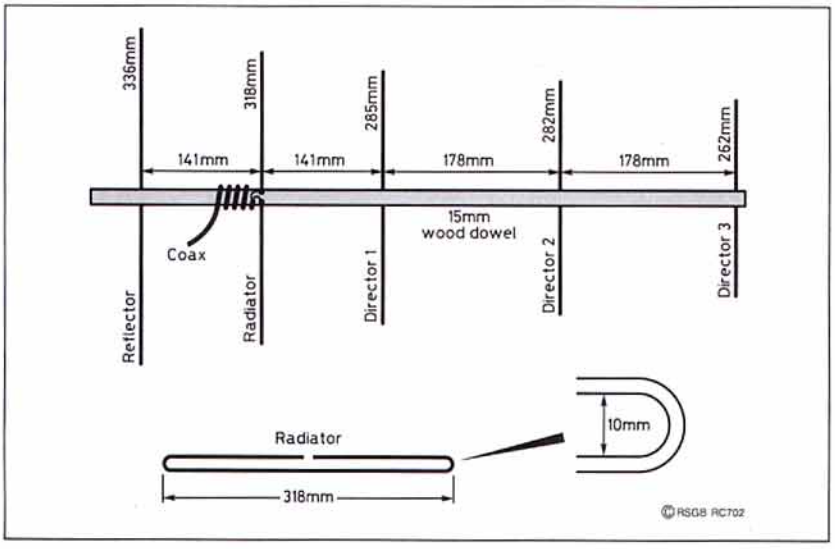


Fig 1: Dimensions and construction of a five-element 70cm Yagi antenna.

The overall length should be checked, and if necessary adjusted, using heat and a pair of pliers.

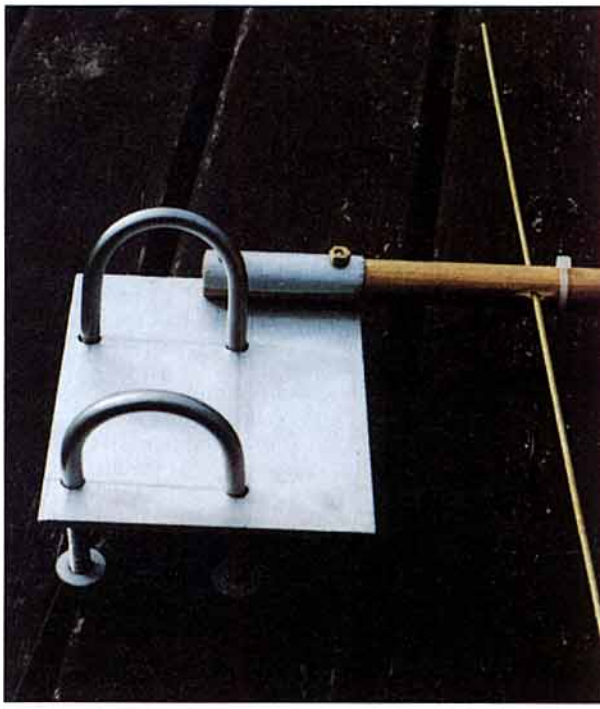
Having fitted the correct elements in the correct place it is necessary to add the feeder. I used a short length of thin 50Ω coaxial cable at the feedpoint where I have added a four turn choke balun wound round the boom to reduce unwanted currents on the outside of the feeder. The feeder is then routed back along the boom to a junction box where it connects to the coaxial feeder to the shack. On test the VSWR was found to be 1.6:1 on SU20 rising slowly with frequency. This was far better than expected so no experimentation was considered necessary.

FIXING TO THE MAST

AS YOU CAN SEE from the photograph below, I do not believe in buying a clip when I can make one from scrap! A piece of scrap aluminium, a couple of salvaged U-bolts and a scrap of aluminium tubing cut in half makes a very serviceable clamp.

HINT OF THE MONTH

THIS MONTH'S hint won't cost you very much. Green fibrous kitchen pan scourers make a good replacement for sponge for soldering iron tip cleaning. But for long life of the sponges never be tempted to use them dry. ♦



A cheap mast clamp can be made from two U-bolts and some scrap aluminium.