



aerial, a system which provides its own ground image. Fig. 1 describes such a system. The bottom tapped loading coil steps up the resistance from the 50 ohms characteristic of the handtalkie to the several thousand ohms of the centre loaded halfwave dipole. Since the circulating currents into the handtalkie casing — and hence into the body — have been reduced by an order of magnitude, the system losses are reduced to minimal proportions. The perceived portable performance boost is dramatic. You can purchase ready made halfwave aeriels for 70cm, but you will probably have to make your own for 2m use.

up a beam aerial system for the first time: how much gain for how little money. It is a perfectly respectable attitude but there are other factors to take into account. For instance, what *kind* of gain do I want? Will my rotator take the weight and the windloading? Will the thing fall to bits in the first Autumn gale?

Kind of gain

It goes without saying that everyone wants the most gain that money can buy and I am not going to go against that view. Fig. 2 shows a plot of aerial gain against the number of elements for both simple Yagi and quad aeriels. When it comes to assessing performance, the precise method of manufacture is relatively unimportant. It is the number of elements that counts. However there are other ways of

achieving gain which have distinct performance advantages.

Stacking of aerial arrays leads to increased gain at the rate of 3dB for each doubling of the number of aerial arrays. Dependent on how they are stacked (either side by side or on top of each other) the resulting radiation polar diagram can show distinct advantages over a single big Yagi or quad of the same nominal gain.

Fig. 3 shows the polar plot of a typical 6-element Yagi. The maximum forward gain will be around 9dB but the beam width — typically in the region of 40° — will be substantially the same in both the horizontal and vertical planes. With this pencil type of beam, you have to point the aerial fairly accurately to realise the system gain. This is fine providing that you know exactly where to look for a station. However,

Beam Aeriels

There are usually only two criteria for people who are putting

