

# A PLAIN MAN'S GUIDE TO MASTS AND TOWERS

It is well known that the higher an aerial is raised above the ground, the better will be its performance. Ideally of course, we would all like to have our aerials mounted on top of a 120ft tower, situated on a hill. But alas most are not so fortunate and must make do with less ambitious aerial installations. However, even with a modest increase in aerial height above ground, there are a number of advantages to be gained. It is hoped that in this series of articles we can examine these advantages and explore some practical ways in which an aerial can be got aloft. Although this is not intended to be an in-depth study into aerial theory or tower construction it should give the less experienced some useful guidelines about selecting a suitable mast or tower and putting its erection.

Most radio amateurs today are buying commercially made rigs and aerials in preference to 'home brewing', something most did not so long ago. A look through any radio magazine will reveal a staggering amount of adverts for commercially made transceivers, amplifiers, add-on gadgetry and aerials. All of it very expensive, some costing a small fortune even by today's standards. So much so that the 'rig' has now become something of an investment to many radio amateurs.

However, where more mundane

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## Informed advice about selecting and erecting aerial towers

but never the less necessary items of radio hardware is concerned, such as, aerial masts and towers, the picture is often quite different. Many radio amateurs are content to operate their expensive rigs into an equally expensive aerial that is supported on an inadequate, makeshift pole either in the back garden or stuck on the side of a chimney stack. Poorly situated and relatively inaccessible, the aerials are left to fend for themselves. Even though the aerial may have been properly tuned to start with, left unattended for long periods the performance will gradually deteriorate to a point where the aerial has become virtually useless.

A typical QSO on the subject may go something like this.

"Got the new rig Fred, a real nice piece of gear, running it into the three ele boom on a 20ft pole in the back garden — loads up okay

with the ATU though the SWR goes high sometimes.

"Well with the linear on I get out okay, still I should have a look at the aerial. Trouble is, I can't get it down very easily so it tends to stay up! ah well one day..."

Unfortunately, no matter how good the rig or how much power is pushed out, how well the RF radiates will depend almost entirely on the performance of the aerial, particularly when transmitting. The performance of an aerial can be effected by a number of factors, such as its height above ground, its location, losses in the feeder cable, how well the aerial was tuned, surrounding terrain, impedance characteristics and its physical condition. So what has all this got to do with aerial masts? Quite a lot really.

Looking back at the situation outlined earlier the aerial was difficult to raise or lower when mounted on a 20ft pole. The neglected aerial gradually deteriorates in performance so that more and more power from the transmitter is wasted and less signal reaches the receiver in the reverse direction. In all, not a very satisfactory state of affairs.

The same aerial, mounted on a telescopic tiltover mast or tower can be quickly and easily raised up to a reasonable working height or lowered down to almost ground level