

# A FOUR-BAND "UP AND OUTER" ANTENNA

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This antenna is a four-band version of my "Up and Outer" previously described in *SPRAT*. It covers 21 to 10 Mhz, and may also give a good account of itself on 28 MHz. It incorporates one important change from the original concept which used equal lengths in both legs. In checking the current in the two legs at the centre of the antenna, using small Christmas tree lamps in series with the two wires, the currents were found to be very much unbalanced. It was immediately realised that this was due to the very big difference in capacity to ground which existed between the vertical leg and the low horizontal leg. The latter was then trimmed until both lamps glowed equally bright, indicating equal currents in the two legs. To achieve this the horizontal leg had to be made 25% shorter than the vertical leg! As the capacity to ground of this leg will vary in different locations, it is suggested that it initially be made longer than 12 feet, then trimmed until equal current is obtained in each leg, using the series lamp method already mentioned. The antenna can be fed via either open wire line or good quality 300 ohm feeder. A balanced atu covering the required bands is essential, one suitable circuit being the "Classic Antenna Tuner" described on page 15 of *SPRAT* No. 59. Using this atu an swr of 1.1:1 was obtained on all bands except 18 MHz; unfortunately I have no transmitter for that band at the moment.

The great advantage of this antenna for those unable to erect a high, horizontal antenna is that it will give much better low angle radiation, and therefore much better DX, than a low horizontal antenna. Although erected close to a wood-frame cottage and surrounded by trees, my version has provided consistent coast to coast contacts on 10 MHz, and many DX contacts to other continents on 14 and 21 MHz, despite the very poor summer conditions we have been experiencing here in the USA. Note that if you are really stuck for height and space the top 3 feet of the vertical portion can be bent over at rightangles, and the horizontal portion can be bent even more drastically without any serious effect on performance.

