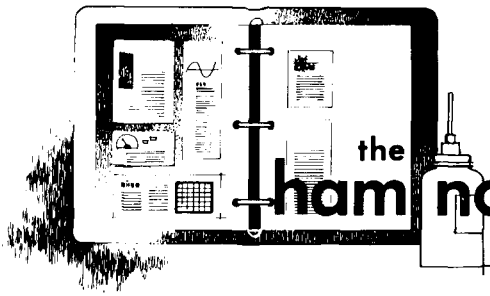
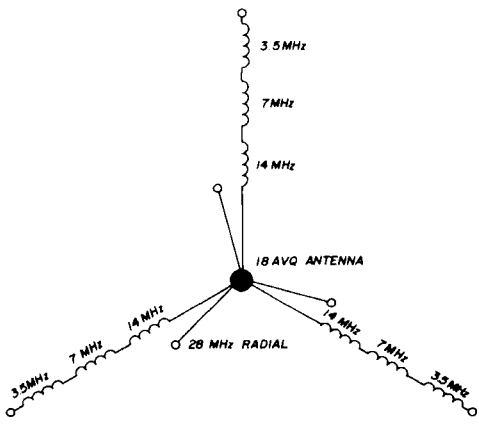


the ham notebook

multiband ground-plane

Although the popular Hy-gain 18AVQ multiband vertical antenna is designed to be mounted on the ground, it can be used as an elevated ground plane. All that is required is a suitable arrangement of inductance-loaded radials that provide resonance on each of the amateur bands.

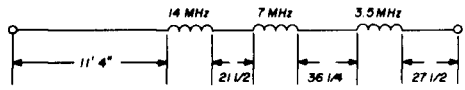


radial loading coils

14 MHz	29 turns no. 20, 1.5-inch diameter, 16 turns per inch (Air-Dux 1216T)
7MHz	46 turns no. 18, 2-inch diameter, 16 turns per inch (Air-Dux 1616T)
3.5 MHz	94 turns no. 18, 2-inch diameter, 16 turns per inch (Air-Dux 1616T)

fig. 1. The Hy-Gain 18AVQ multiband vertical can be used as a ground-plane antenna by using a system of inductance-loaded radials.

JA1QIY reports excellent results with the system shown in **fig. 1.** The radials shown in **fig. 2** provide high performance on 3.5, 7, 14 and 21 MHz; a separate set



NOTE: SEPARATE 28-MHz RADIAL IS 8' 4" LONG

fig. 2. Construction details for the loaded radials.

of radials is used for ten meters. The radials permit the antenna to be put above surrounding objects where it can do the most good. If the radials are allowed to slope away from the 18AVQ they can also be used as guys. With the radials sloping away from the antenna at about 45°, the antenna provides a relatively good match to 50-ohm coaxial cable. The dimensions in **fig. 2** are for the cw end of the band, but with a little cut and try, equal performance can be obtained on the phone bands. The multiband swr of the JA1QIY antenna is shown in **fig. 3.**

JA1QIY has reported excellent DX performance with this antenna, particularly on 80 and 40 meters. On 80 he has worked Soviet Russia, Korea, Okinawa and the Philippine Islands; on 40 he has been able to work into the United States

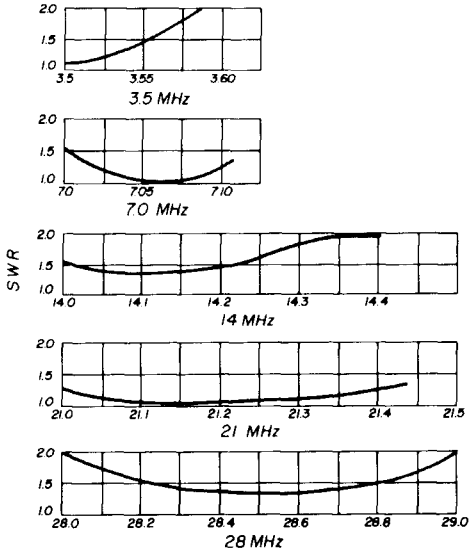


fig. 3. Swr performance of the multiband ground plane. Loaded radials were designed for the cw end of each band.

and Canada, no small feat with relatively low power.

In the original version of this antenna each of the radial loading coils is mounted around a length of phenolic rod. However, ceramic strain insulators could be used for more strength and better performance in wet weather. The 28-MHz radials are spaced a few inches away from the low-frequency radials.

multitester

Although most ham shacks have at least one volt-ohmmeter or vtvm, a low-cost utility multitester can fill in when you have to make simultaneous voltage and current measurements. The multitester in **fig. 4** covers the most useful voltage and current ranges and uses a low-cost 1-mA meter movement. The multiplier and shunt resistors, and diode are mounted on the selector switch, a Centralab PA1001. All resistors can be 5% carbon composition types, although for higher accuracy 1% precision resistors should be considered. However, to keep the cost down, carbon composition resistors provide acceptable accuracy for most purposes. R1, the 100-mA shunt, consists of 5-feet no. 36 wire wound around a high-value resistor. The 1-mA meter is an imported unit, such as the Lafayette 99F50528.*

*Available from Lafayette Radio Electronics, 111 Jericho Turnpike, Syosset, L. I., New York 11791. $2.95 plus postage; shipping weight, 12 ounces.

silver/silicone grease

A common problem with station ground systems is corrosion at the main ground connection. Some amateurs try non-conductive grease to eliminate this corrosion but this leads to improper grounding conditions. Silver/silicone grease is prepared by Technical Wire Products, Inc. (427 Olive Street, Santa Barbara, California 93101) for use on knife switches in power substations. However, it is useful to amateurs who want to protect their ground-system connections from corrosion and resultant loss of effectiveness. The silver/silicone grease is water repellent and is available in 2-ounce tubes (part number 72-00016) or 1-pound jars (part number 72-00015). For more details on this grease, write to Technical Wire Products, Inc. for a copy of Data Sheet CS-725.

Bill Welch, W6DDB

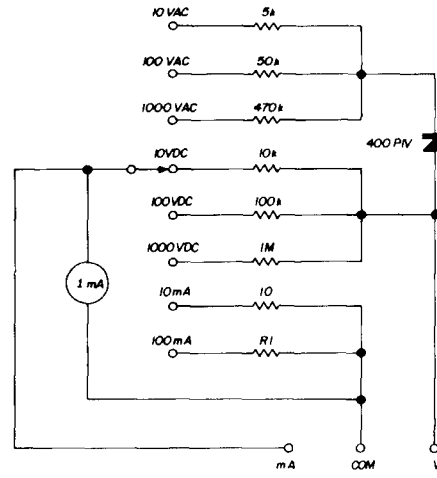


fig. 4. Simple utility meter. R1 is 5 feet no. 36 wire wound around high-value resistor.