

## Easy Operation of the G5RV Antenna on 160 Meters

Flip a switch and the G5RV becomes a vertical with capacitive top hat suitable for Top Band.

**Martin Huyett, K0BXB**

At the end of World War II, Louis Varney, G5RV, was itching to get back on the air as soon as the government gave word. In fact, he had his antenna already designed and erected when UK amateurs were allowed back on the air in February 1946. It was a multiband job and covered all the HF bands of the day — that is, 80, 40, 20 and 10 meters with the exception of 160 meters. In spite of problematic operation on the newer bands that would be introduced over the years, the antenna became a classic and is known simply by his call sign — the G5RV (see Figure 1A).

Varney first described his antenna with a workaround for 160 meter operation in an article in the July 1958 issue of the 1958 *RSGB Bulletin*.<sup>1</sup> The workaround involved connecting the two legs of the 34 foot matching section at the station end and feeding them against a good ground connection. The importance of a good ground radial system to the performance of a vertical monopole cannot be overemphasized. The subject was well covered by Rudy Severns, N6LF, in the March 2010 issue of *QST*.<sup>2</sup> Reconfiguring the G5RV this way turns it into a 34 foot vertical with a 102 foot capacitive top hat.

Well, the rub for me was reconfiguring the feed line — it was just too much of a procedure and ended up being a deterrent to getting onto 160 meters. It occurred to me that since the matching section came into the shack, I could use a DPDT switch to change between the standard G5RV and the top hat vertical configuration.

### Design and Construction

Since Varney's original paper shows the antenna being driven by either the balanced output of an antenna tuner or an unbalanced coax (Figure 1A), I decided to take my chances with my 100 W automatic antenna tuner, which has an unbalanced output. Figure 1B shows how I connected the unbalanced output to the switch box with a six foot piece of RG8X coax. If your antenna tuner has a balanced output or you are using a balun, you should use the wiring scheme in Figure 1C and replace each SO-239 connector with a pair of screw connections.

Constructing the switch box was straightforward.

ward. Since the earth ground would have to be switched for the vertical configuration, keeping the shells of the SO-239s isolated from one another was a key design requirement. To accomplish this, I cut two 1½ inch square, half inch thick wood blocks and drilled a ½ inch hole through the center of each to accept the back side of a SO-239 connector mounted onto the block face. Before mounting the connectors, I soldered short in-

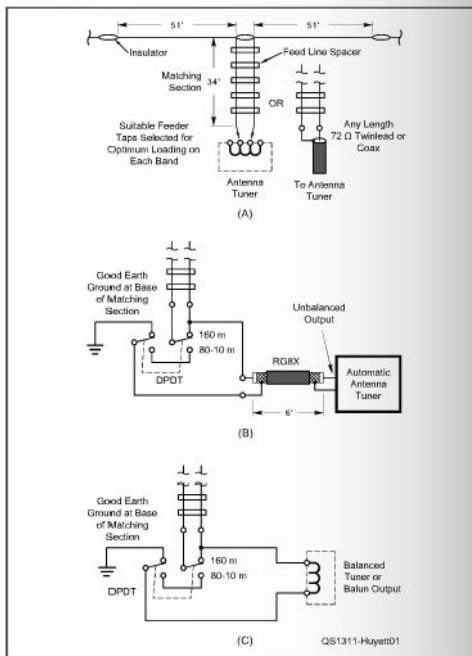


Figure 1 — At (A), the G5RV multiband antenna. At (B), the author's installation where the G5RV is driven by an unbalanced antenna tuner. At (C), suggested wiring schematic when the antenna is driven by a balanced source.



Figure 2 — Completed G5RV switch box.

ulated wires to the ground and center of each to connect to the switch. I then cut pieces of sheet metal 3 x 1½ inches to connect the two end blocks together physically but not electrically. In one of the sheet metal plates I drilled a hole to mount the DPDT switch. In another I drilled a hole for a ground terminal. I then mounted the plates to the blocks forming a neat little box (see Figure 2). [Alternatively, a small plastic box could be substituted by

amateurs wishing to forgo the metal work. This would also alleviate any potential problems associated with high moisture content of the wooden end blocks. — Ed.]

I have had a number of CW contacts using the switch box to configure my G5RV for 160 meter operation. I even worked several stations on the QRP ARCI Top Band Sprint with the setup using 5 W.<sup>3</sup> Now, working

Top Band is as simple as any other band — I simply throw the switch, hit the tune button on my antenna tuner and QSO away!

### Notes

1. Varney, G5RV, "An Effective Multi-band Aerial of Simple Construction," *R.S.G.B. Bulletin*, July 1958, pp 19-20. (Available on the CD-ROM accompanying *The ARRL Antenna Book*, 22nd Edition.)
2. Severns, N6LF, "An Experimental Look at Ground Systems for HF Verticals," *QST*, Mar 2010, pp 30-33.
3. QRP ARCI (low power Amateur Radio Club International), [www.qrparrcl.org](http://www.qrparrcl.org).

Martin Huyett, K0BXB, was first licensed in 1955 as a high school student in Topeka, Kansas as K0BXB and now holds an Amateur Extra class license. He has a BS degree in Electrical Engineering and worked several years as an engineer before moving into management. He recently became Executive Director of Aramaic Bible Translation which is translating the Bible into five modern Aramaic languages. Martin has been an active ham most of his life. His special ham radio love is practical technical activities including homebrewing things he designs himself, as well as others' ideas and kits. You can contact Martin at 7735 Big Pine Lane, Burlington, WI 53105 or via e-mail at [k0bxb@arrl.net](mailto:k0bxb@arrl.net).

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### Strays

#### AARA Celebrates its Centennial

The Albany Amateur Radio Association (AARA), arguably one of the oldest Amateur Radio organizations in the United States, celebrated its 100th anniversary last year. Founded in late 1912 as the Hudson Valley Wireless Association, the avowed purpose of the new organization was, "to further the exchange of information and cooperation between members; advance the general interest and welfare of Amateur Radio; and provide services to the community when needed."

The centennial was celebrated at the 2012 AARA Annual Dinner

held at the Pinehaven Country Club in Gaillardland, New York, where the ARRL presented a plaque to the club to commemorate the event. Shown receiving the plaque are (left to right) AARA Treasurer and Master of Ceremonies, Saul Abrams, K2XA; AARA President John Fritze, K2QY; former



Hudson Division Director Joyce Birmingham, KAZANF, and ARRL Chief Executive Officer David Sumner, K1ZZ.

#### I would like to get in touch with...

...Amateurs with radar expertise who can assist in the development of a ground-level tactile radar imaging system for the visually impaired. Contact Dr. Marco Bietto at [drmbietto@verizon.net](mailto:drmbietto@verizon.net).

### Feedback

In "Hands-On Radio," October 2013 *QST*, in the formula at the bottom of page 63, left column, the second line should read:  $Z_c = Z_1 Z_2 / Z$ .