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Silence is Golden

Recently, *Monitoring Times* reader Richard Graham wrote me concerning an old 1938 RCA Victor Master-Antenna Kit, which he had bought (unused!) at a yard sale. He sent along a copy of the installation instructions for the antenna, which included the drawing shown in Figure 1. One unusual feature of this antenna is that it has a "counterpose" noise-pickup element.

Why, you may well ask, would we have an element to intentionally pick up noise? Well, the noise picked up by the vertical pickup element, shown in Figure 1, was fed into a coupler and used to cancel out the noise picked up by the horizontal dipole elements of the antenna. At times, when the phase of the noise signal was adjusted properly at the coupling unit, a considerable improvement of signal-to-noise ratio was possible.

In the Good Old Days

Over the years we have had a variety of different attacks on the various kinds of noise that often plague our radio communications. Many hams and shortwave listeners are familiar with the diode-type noise limiters that were popular in shortwave radios in the 30s, 40s, and 50s. And how many of the old-timers among you have built the famous TNS (twin noise squelch) circuit for use with your shortwave receiver?

Another noise limiter that has been developed for the audio section of radio receivers is the noise gate, an old concept which still finds useful application on the shortwave bands, and, believe it or not, in electronic music amplification!

At the forefront of our continuing war against noise, we find that the current crop of top-of-the-line receivers all seem to sport noise blankers -- devices which chop noise bursts right out of the rf on its path through the rig. And, just recently, the Sprague Company has come out with a special IC chip that is totally dedicated to noise cancellation in radio receivers.

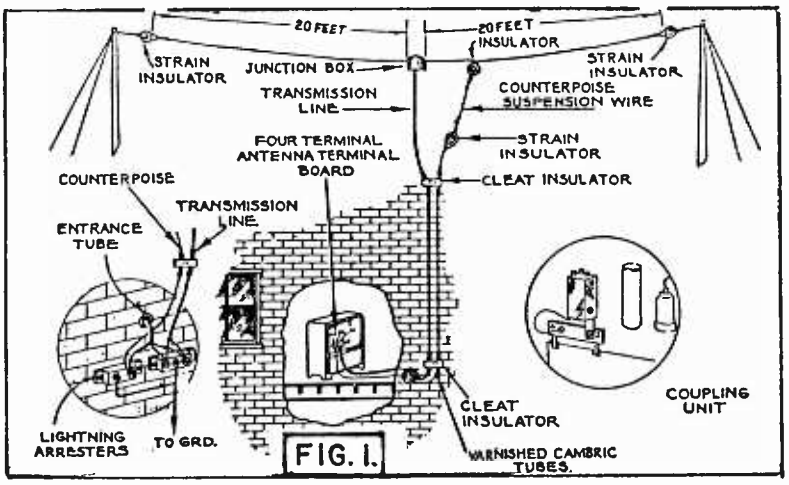

FIG. I.

Where Did that Masked Antenna Go?

But where have the noise-cancelling antennas gone? They were certainly more common in the early days of radio than now. I suppose that they became less necessary as noise-reducing resistor spark-plugs, coaxial lead-in cable, and noise filtering on home appliances became more common.

But radio communications is still plagued with noises from a variety of sources, and some of our new hi-tech appliances (light dimmers, speed controls, etc.) generate noises that weren't even on the airwaves in the 1930s. So let's take a quick trip back to those thrilling days of yesteryear, and noise-cancelling antenna systems.

Straight from the Horse's Mouth

The Jones noise-balancing circuit[1], used in the 1930s, is shown in Figure 2. The circuit in the RCA antenna system mentioned earlier is probably similar to this one. The Jones circuit is said to be useful in reducing power line noise, hash-type interference from appliances, and other continuous, buzzing noises. The noise antenna is oriented for maximum noise pick-up, and should be run parallel (but not too close!) to wiring in the house. A receiving antenna which provides a good signal level should be used for the signal antenna.

The center-tapped coil shown in Figure 2 is wrapped around the tuning coil of the first stage of your receiver. A four-turn, two inch diameter coil is recommended for the lower-frequency end of the shortwave band, with only two turns recommended for 10 and 20 meters. Your receiver input coil may be smaller than the older ones were, and you may want your coil diameter smaller than two inches. With the iron-core coils in use today, two to four turns may still be enough, even on the smaller forms we now use.

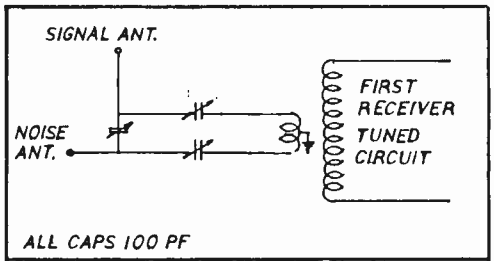

FIG. 2. JONES NOISE-BALANCER

If you don't want to dig into the innards of your rig, this circuit should also work with its center-tapped coil positioned around the tuning coil in your antenna tuner, if you happen to use one. Experimenting with the number of turns and coil placement is likely to improve performance of the circuit. One note of encouragement: patience and perseverance are said to be essential when working with noise-balancing circuits.

Antenna Farming

My friend Walt, W1KVK, says that winter always produces good antenna-weather, and I have to agree with him -- I always seem to get more antenna work done in the cold, snowy months! Anyhow, I did manage to get two antennas from the Ant Farm tested during the colder months: the G5RV and the Sky Raider. They are both excellent antennas. The materials and workmanship are first-rate and the performance is also top-notch. The G5RV, being larger, gave better signal-strength than the Sky Raider on many signals, however, both antennas give a very good account of themselves.

RADIO RIDDLES

Last Month: Last month I asked if you could tell what was the particularly revolutionary feature of the John Kraus's W8JK beam. This beam was the first of the compact, short-boom beams, represented today more frequently by the Yagi-Uda and cubical quad designs.

Well, that special feature was simply the shortened boom length itself. Boom length is the length of the antenna from the first element to the last element. Krause, after reading George Brown's article which predicted high performance for short boom beams, designed the beam which still bears his callsign as its name. This antenna, which was subsequently constructed by many, many hams the world over, was our introduction to the concept of today's smaller, short-boom beams.

This Month: There are two relatively common ways of reducing noise pickup by the way in which you use ordinary antennas. And there is another common trick for reducing noise pickup from the antenna lead-in, by the proper choice of cable. Can you give these three common antenna-related noise reduction techniques?

Find these answers, and much more, next month in your copy of *Monitoring Times*. Til then, Peace, DX, and 73.

REFERENCES
[1] *The Radio Handbook*, fifth edition, W.W. Smith, editor, Radio Limited. Los Angeles, California, 1938, pp. 161-162