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the Milliwatt: QRPp

DEVOTED EXCLUSIVELY TO UNDER FIVE-WATT amateur radio

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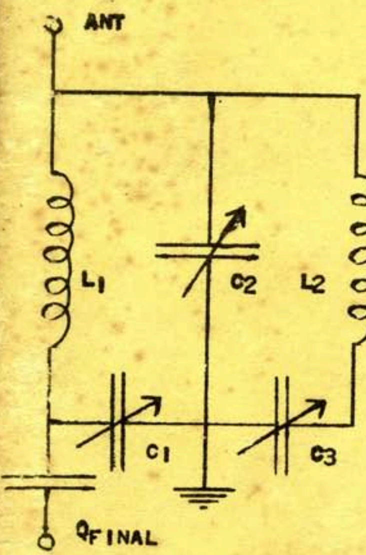

IN THIS ISSUE:

EXTRA! ZL2AFZ WILL BE MONITORING 14075 KC SPECIFICALLY FOR STATESIDE QRPP STATIONS. THURSDAY & SATURDAY, 0330 GMT (2330 EDST WED. & FRIDAY) STARTING JUNE 1ST.

competitive society, the big dog gets the big bone. A can console himself with calling only stations falling on the backside of B's KW/quad. Seems fair 'nuf. But is it?

Compare the two antennas first. The quad is +9 db in comparison to the dipole at points east; the rear lobe of the quad is 20 db less intense than the main lobe, or in reference to the dipole, some 11 db less in its rear lobe. So, our dipole will be +11 db relative to the quad at points west when the quad is pointed east. This comparison holds for equal powers to both antennas. But drop the power of the dipole to 125 watts, and the signal drops 9 db in all directions; A has lost 9 db with regard to B's rear lobe, and A it will be remembered had only +11 db advantage to begin with! In other words, B's KW/quad pointing east will only be 2 db below A at points west! And if we drop A to about 84 watts, A and B will be roughly equal at points west! And if A goes to 42 watts, B will have a 3 db advantage; to 21 watts, and B will have 6 db advantage; to 10.5 watts, a 9 db advantage; to 5.25 watts, a 12 db advantage! And that is off the rear lobe of B's quad!

This brings us back to the original proposition: that QRM on the hams bands is not due primarily to overcrowding, but to overkilling. Remember also that a big signal is a wide signal, especially in SSB operation, and even moreso in AM operation. In permitting American amateurs the unique luxury of KW operation, the FCC Commissioners assumed that we amateurs would be a rational group, using only the amount of power necessary to maintain contact. They certainly were optimistic humanitarians when they based the power level regulations on that assumption!

K8EEG/Ø

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Those Who Have Gone Before . . . A Challenge

17820 miles-per-watt! This is the amazing performance of L. G. Windom of Columbus, Ohio. How many amateurs have bettered this record, even with the latest and most-sophisticated amateur DX techniques? These remarkable results were achieved back in 1925-26, using the simplest and most direct methods--without benefit of transistors, high-gain beam antennas, or even superheterodyne receivers. AND it wasn't done on one of the long-skip, low-attenuation bands, but on 40 meters.

This achievement won for 8GZ (there weren't any 'W' or 'K' prefixes in those days) the Jewell Watch Award, and is briefly described in QST, July, 1926. The award was made by the Jewell Instrument Company, one of the leading electrical meter manufacturers of that era, to culminate a low power amateur communication contest which the company sponsored. The award was a first-rate watch, appropriately engraved.

In an earlier issue of QST, Larry Windom described the equipment that was to win him the award, along with some of the DX results he had achieved. These included all U.S. districts, Brazil, Australia, New Zealand, and others, all worked with a type 199 'peanut' tube at 75 volts and 4 ma. input. The circuit of the 8GZ rig and antenna used are presented in Fig. 1 & 2 below:

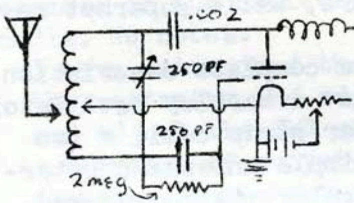

Fig. 1

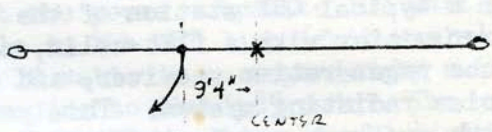

Fig. 2 ←— 67' —→

A type 199 'peanut' tube used in this rig is equivalent to a modern 6C4, or half of a 6AU7. The B+ RF choke would be a 2.5 mh type. The 199 was a direct-heated filament tube; modern tubes separate the cathode and heater. One interesting construction detail regarding the 8GZ rig is the tank coil: it consisted of 8 turns of #5 solid copper wire 4" in diameter! The Windom antenna had a single wire feeder that was tapped directly onto the tank coil for best output. 8GZ's Windom antenna was horizontal, about seventy feet above ground; it became a very popular type of antenna following 8GZ's article in a later issue of QST, and was used with great success at W9SCH and many other stations during the early 1930's. Because the single-wire feeder, along with ground, acted as a high-impedance transmission line, it carried only about one-tenth as much RF current as the half-wave antenna itself, and thus it lost relatively little energy by radiation. Using this setup, with 75 volts at 4 ma. input, 8GZ worked, among many others, a5BG in Adelaide, West Australia with 0.567 watts input total to both filament and plate, a distance of 10,100 miles. He also worked o-A6N, in Capetown, South Africa with 0.540 watts total input, which represents 15.28 KM/W. So, regardless of how primitive or simple the 8GZ setup may seem, it really worked! As far as I am concerned, 8GZ's achievements still qualify him as a QRPP Champ.

Of course, 8GZ was not the only such station on the air at that time. In an article in June, 1925 QST, entitled "The Low Power Report," log data from eleven QRPP stations is listed. Nine of these were in the U.S., one in England, and one in Switzerland. Power inputs reported range from 0.003 to 12 watts, and KM/W QSO's from .258 to 6.0 are listed. Two transoceanic contacts are listed: between England and Canada, and England and the East Coast. At first glance, this doesn't sound noteworthy, but these contacts were made on the 80 meter band using simple antenna-counterpoise systems, and the signals were received upon two (or at the most, 3) tube regenerative detectors. Even the Zepp antenna was three years in the future, while superhet receivers were almost a decade away.

The December, 1925 QST carries a complete description of a typical QRP station of the time: a Hartley oscillator transmitter with a flat-helix, copper-strip coil, a two tube regenerative receiver, and a simple antenna-counterpoise radiating system. This particular station worked, with apparent regularity, all U.S. districts, Puerto Rico, Cuba, England, Netherlands, France, Italy, Hawaii, New Zealand, Australia, and South Africa with usually less than ten, and never more than twenty, watts! How many owners of fancy, high-power rigs and high-gain beams can claim any more today?

Nearly every issue of QST during the twenties contained descriptions of QRP_p rigs, with comments on their relative successes. I'm wondering if ham radio will ever again become the true sportsman's hobby that it once was before the new general class hams could go out and pick a high-powered gadget off the shelf and blast away inanely. It's up to us to do something about it!

C. F. Rockey W9SCH

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W6OA to W1WMK on Less Than One Milliwatt

On March 21, 1970, at 1925 GMT, a 21.009 mhz. signal of less-than one milliwatt from the San Francisco Bay area was copied in southern New Hampshire. Propogation conditions reported by WWV at the time were N7. Equipment used in the test consisted of a Collins 32S3, Mars Model SW-10 SWR bridge, Waters Model 334 Wattmeter/Dummyload, and a TA-33 yagi. The procedure used by W6OA for determining RF power delivered to the antenna feedline is quite interesting and