

A LOOK AT THE WORLD AROUND US

Spicing Up Life: Red-Hot Radio Returns

Okay, fellow QRPers and big-time fans of the fabulous '50s, get ready to relive those exciting days of yesteryear with a genuine glow-in-the-dark mini-station built just for fun. We are embarking on a lighthearted trip back in time to feature a super-simple receiver and transmitter guaranteed to put some real pizzazz in your hamming life and to bring a tear of joy to your eye in the process. This setup is so hot, in fact, I could not resist nicknaming it "Red Hot Radio" in honor of that famous product Tabasco® brand pepper sauce that has sizzled pallets nationwide for over 125 years. Yes, and both receiver and transmitter are complete with pill-bottle-wound coils, authentic-era vacuum tubes, and minimum high voltage for good, safe fun. Not only can this rig work DX like a little trooper, it can uncover how your hamming expertise has improved over the years—and how the operator rather than the rig makes the big difference.

Now is your golden opportunity to take a relaxing break from those modern digital dials,

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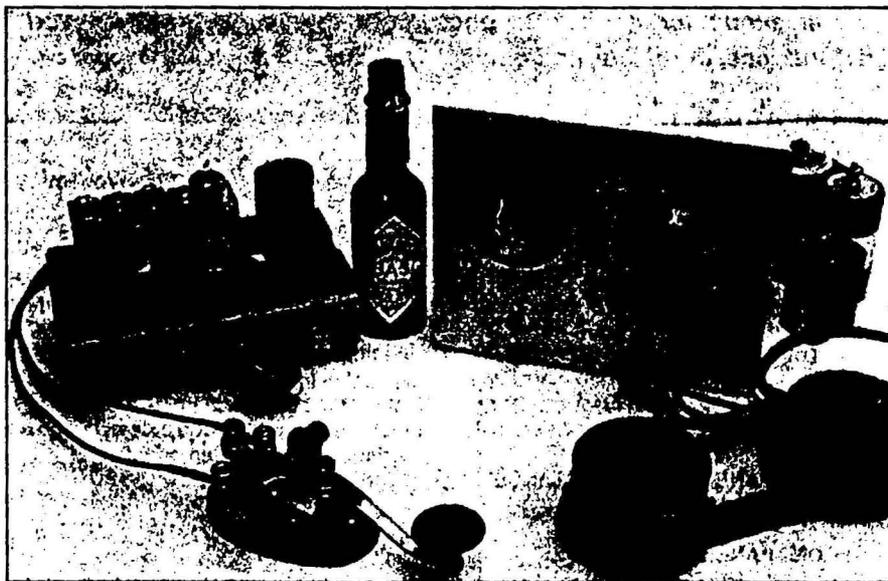
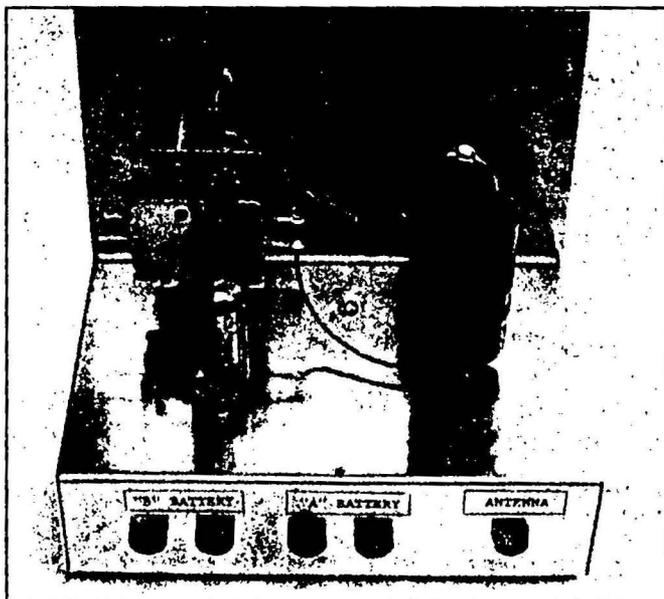
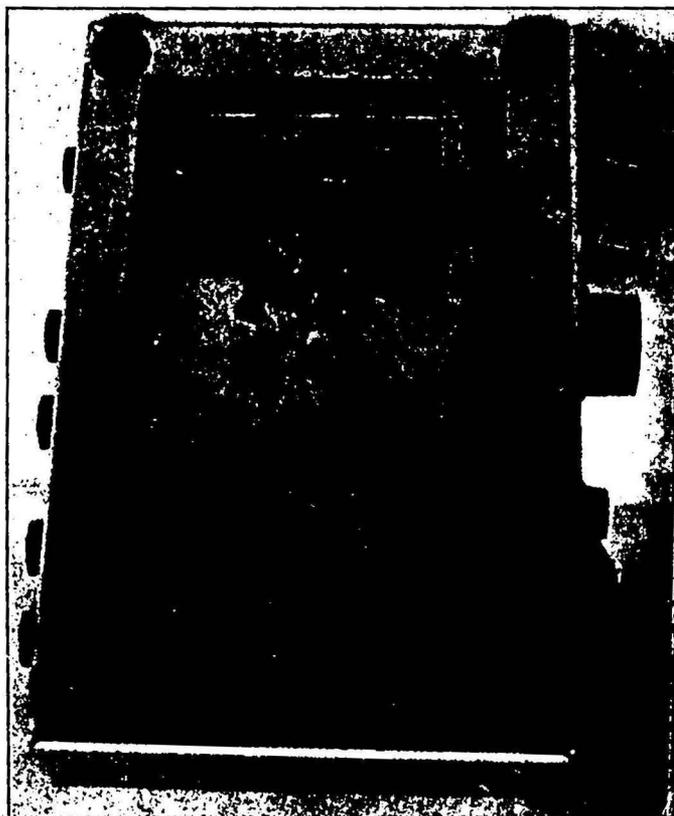


Fig. 1—Red-hot radio for sure! This zestful QRP setup consists of a one-tube regenerative receiver, Baldwin earphones, 500 milliwatt 1S4 transmitter, Speed-X key, and genuine Tabasco® brand pepper sauce for flavor. Station is completely battery powered. (Thanks to Paul McIlhenny for permission to reference McIlhenny Company's famous Tabasco® brand pepper sauce.)



▲ Fig. 2—Rear view of the regenerative receiver showing layout and mounting of components. Pill-bottle coil form is raised above chassis by long screw with metal spacer.

Fig. 3—Under-chassis view of receiver. Wires from coil pass through rubber grommets. Single terminal strip attached to coil mounting screw simplifies wiring. →



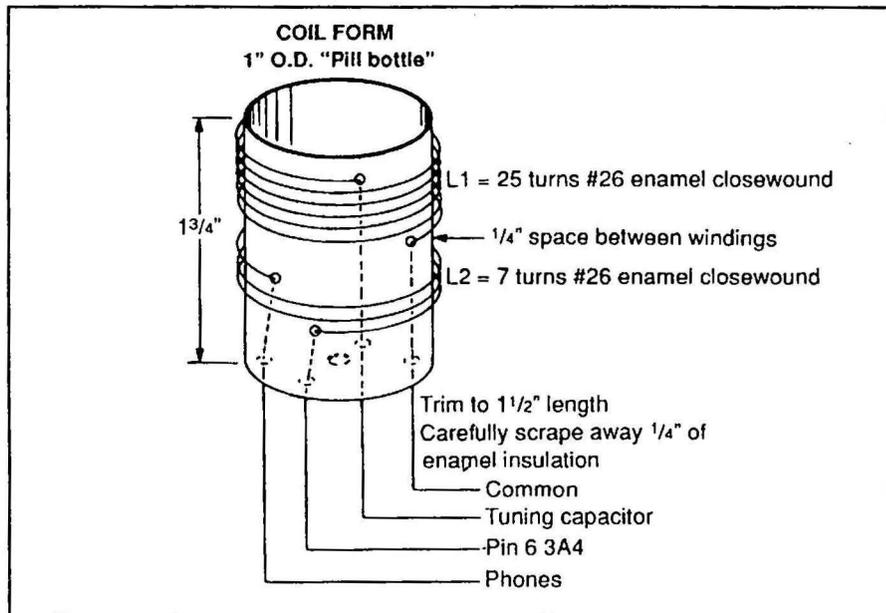


Fig. 6- Coil form and winding details for receiver, compliments of W8WVM.

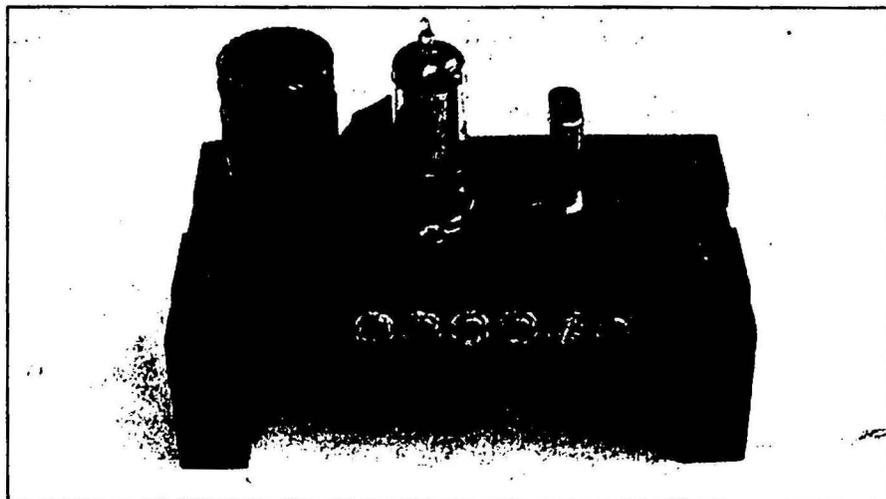


Fig. 7- Rear view of 1S4 transmitter showing layout of main parts. Photo was shot before unit was completely assembled.

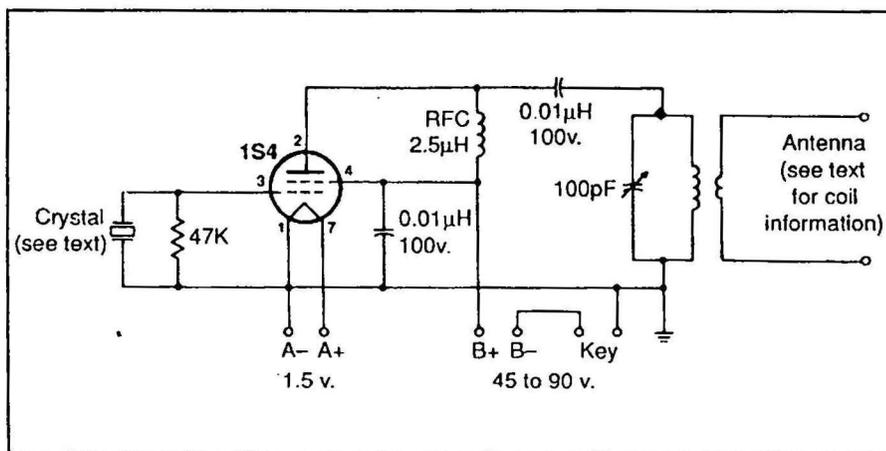


Fig. 8- Circuit diagram of 1S4 transmitter. Tube socket, coil form, capacitors, and resistor like those used in receiver can also be used in this low-power gem.

of old-style 2000 or 3000 ohm headphones (also available from Antique Radio Supply Company, 6221 S. Maple Avenue, Tempe, AZ 85283). As a slightly less efficient compromise, you can substitute a small Radio Shack 273-1380 transformer and connect a modern 8 ohm earphone to its secondary winding. The headphones act as the tube's plate load; that is why a high resistance is required.

The pill-bottle coil form is supported by a screw and metal spacer arrangement. Holes around the support spacer are fitted with grommets to pass coil wires below the chassis. Cut these coil wires precisely, pull them taut, and then solder them to the terminal strip for good receiver stability. Coil winding details are included in fig. 6. My band of preference is 30 meters, so I removed 4 turns from L1 to raise coverage up to 10.200 MHz. Notice, incidentally, L1 and (tickler) L2 are wound in the same direction. Follow that guide, and the little receiver should "gen" with no problem.

Initial setup of the receiver is a snap. Connect an antenna, earphones, and batteries (two series-wired "C" cells are fine for the filament, and two series-wired 9 volt batteries work dandy for the plate), and then increase the regeneration pot until a rushing noise is heard in the earphones. If you do not recognize 80 and 40 meter reception by randomly "tuning around," use a modern general-coverage rig to spot the receiver's regeneration signal. Then make a vernier dial calibration-to-frequency correlation chart for future reference. The receiver is surprisingly sensitive, so get psyched for some red-hot radio DXing!

Dave's Mighty Milliwatter

Finding just the right transmitter to complement Arnold's receiver proved to be a formidable challenge. 6V6's were passed by because the tube was too large and the required plate voltage was too high. 6AQ5's were considered, but they were still a tad taller than the (receiver's) 3A4, and their related circuits were a mite fancy. Then while digging through my old Novice books and notes, I found a long-lost diagram of the little 1S4 transmitter shown in figs. 1 and 7. The 1S4 (and its 3 volt brother, the 3S4) were used in audio output stages of many portable/battery-powered radios of the '50s. They work with 45, 67, or 90 volts on the plate, draw miniscule filament current, and are low priced. Perfect! I do not remember who gave me this circuit or if I originally found it in a magazine. The only hand-scratched reference on its sheet is "A QRP record-setter during the early '50s." Enough said. Resurrecting this little classic today is like finding and fixing up a Nash Metropolitan!

I really should have built the transmitter on a small aluminum chassis to match the receiver, but some beautifully finished wood strips Arnold sent me a year earlier begged for recognition. A quick placement check of hamfest-obtained parts confirmed everything would fit perfectly with the wood frame's top strips spaced $\frac{5}{8}$ inch apart, so assembly was begun and completed in a couple of hours (short-term projects are so nice!).

The transmitter's circuit diagram is shown in

Flash!

Thirty meters continues to be the ideal band for QRP, and your cooperation will ensure it stays that way. Last evening, for example, a QRPer tried call after call to reach a DX station through a (mild) pile-up. The DX station struggled, listening intently, while everyone actually paused. No luck. The DX operator asked the QRPer to stand by for better propagation while he worked a few others. Five minutes later the DX station recalled the QRPer, copied him while others again paused, and made a successful QSO. You could actually sense everyone on frequency giving a cheer for the QRPer. May such congeniality never fade!—K4TWJ

fig. 8, and it is a basic crystal-oscillator unit with no complexities. There are less than a dozen parts in the whole transmitter. Old-style FT-243 or newer sealed-case crystals can be used without worry of fracture from high grid current. And another one inch pill bottle can even be used as a coil form. I purchased all the parts to build this delight (except the crystal) at a local hamfest—one-stop shopping—for a total cost of \$6.00. I should have picked a 3S4 so it could run off two C cells like the receiver, but I have always been partial to the 1S4, and the original record setter used a 1S4. The only crystal socket I could find would not accept large-pin FT-243 crystals, so I bought two banana jacks and parallel-wired them to the smaller socket. Using this arrangement, either type crystals can be plugged in and used without fumbles.

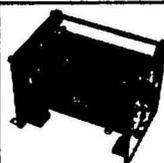
The plate/tank coil can be wound with number 18, 20, or 22 wire. Using a 70 or 100 pFd tuning capacitor, a coil of 25 to 28 turns works well for 40 meters or 20 to 22 turns works fine for 30 meters. After some experimenting, I found the best antenna pickup/coupling coil to be 6 or 7 turns of number 16 or 18 insulated wire wound over the center of the plate/tank coil. Experiment with your own unit for maximum output positioning.

Firing Up The Combo

Ah, now we arrive at the final and most exciting step—getting on the air. Connect the 50 ohm coax from your mile-high dipole to the transmitter's antenna coil (include an SWR bridge or field strength meter for tuning). Then connect to the receiver a single 50 or 100 foot long wire positioned away from, and at a right angle to, the dipole. Bingo! Full QSK operation! Now while monitoring the signal on a modern receiver (and without an antenna connected to that receiver), key the transmitter and adjust its plate tuning capacitor for maximum output consistent with best tone quality. Double check to ensure the 3A4 receiver is set on the same frequency (you can hear its regeneration on the receiver, too), then switch off your modern receiver and enjoy red-hot radio at its best.

Good luck, good QRP DXing, and let's QSO on 30 meters some night soon!

73, Dave, K4TWJ



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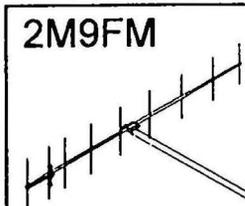
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