Crystal Radios are Like Beer
by Brian R. Page, N4TRB

For some time the impression has been growing in me that there really does exist an infinite variety of crystal radio sets. That suspicion has now been abundantly confirmed by a visit to the annual conference of the Antique Wireless Association (AWA).

The annual convention is unlike any other hamfest or swap meet. True, there is a flea market; but the merchandise is almost exclusively old-time radios plus their parts & pieces; and the swap meet is hardly the main focus of the four-day event. The honor of center stage would go to the auction or perhaps the competition, or maybe the conference speakers. It might even be the banquet. Suffice to say that the AWA convention is a unique experience in the world of radio aficionados. But let's get to the matter at hand: crystal sets.

The AWA is all about old-time radio and crystal radios, of course, were present at the creation. As such, throughout the four days of the conference, I had plenty of opportunity to see a large number of crystal sets, some being superbly restored for competition (where they had their own category) along with quite a few offered in auction. The competition radios were a sight to behold while the prices fetched by those in the auction were nothing short of breath-taking. From the perspective of complexity or parts count, it's hard to imagine how a little radio that easily fits into the palm of your hand could be worth several hundred dollars. Yet, such prices were typical! Any thought I had of raising my little bidding card was quickly demolished by the first couple of sets that came up for auction. I was out of my league after the first few seconds of bidding!

I have a theory about the sky-high prices paid for these little radios by collectors. The xtal set collectors appreciate crystal rigs for the same reasons we do: crystal sets are radio reduced to its bare essentials. Not only that, even with a sparse parts count there is incredible variety in how those few parts are combined. Crystal radios are like beer: barley, water, hops and yeast – just four ingredients. But *how* they're used makes all the difference. So xtal sets have been around since the dawn of radio; and as this *Journal* proves, we have yet to exhaust all the possibilities for their creation; and there seems to be no end in sight for what we can learn about their technology.

Figure 1
This compact and stylish Radiola was from the collection of the late Larry Babcock, a noted antique wireless collector and author. It's identified as a Type "C" Wireless Receiver, 1922, from Rugby, England. Note that it offers two separate crystals and a switch to select between the two. Also, the instructions in the lid include tips on tuning for Morse code transmissions. This detail reveals that the set is from the days of spark transmitters because continuous wave (CW) transmission cannot be received on a crystal set since the carrier isn't modulated. Spark, on the other hand, is a damped wave with modulation components and would sound like rasping or a dull buzz.

Figure 2
This Audiola dates from the early 1920s and is housed in a beautifully finished natural wood little cabinet. Interestingly, the switch on the front allows the choice of two bands, 150-600 meters or 1000-3000 meters.

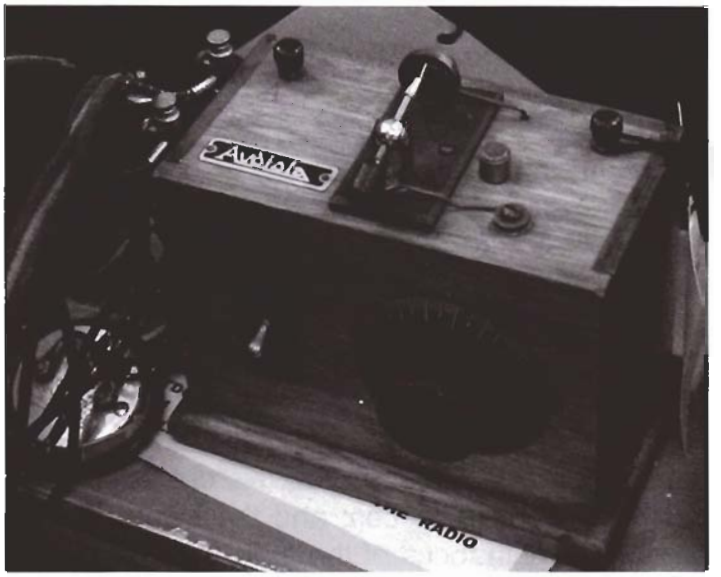


Figure 3
This compact set was offered for sale in the flea market and is a bit of a mystery. It was manufactured by The Rippner Brothers under the brand "Monarch Automotive Accessories." So is it an early car radio? More likely, the Rippner Brothers used their manufacturing capabilities to cash in on the radio craze. Nevertheless, it's fun to imagine this sleek little radio mounted on the dash of a Model T.

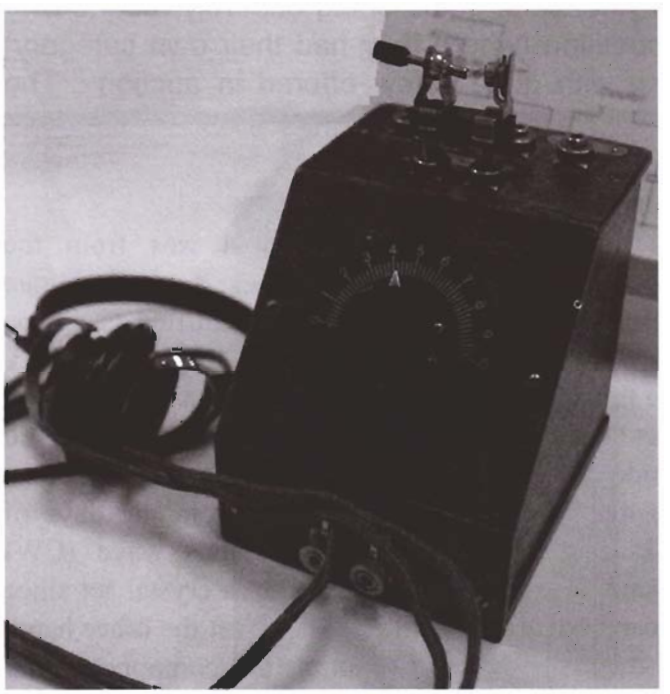
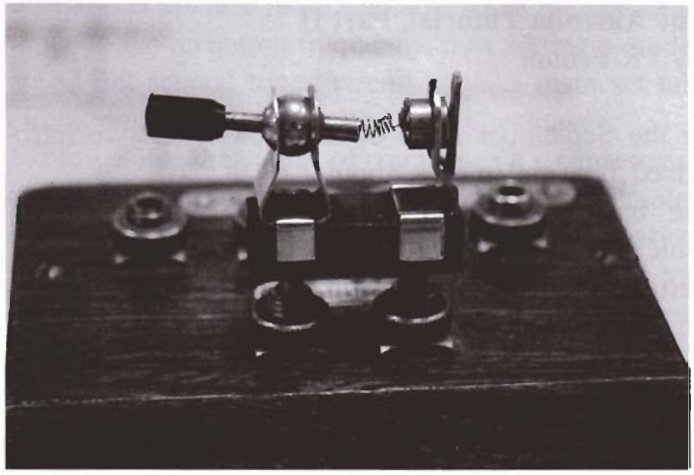
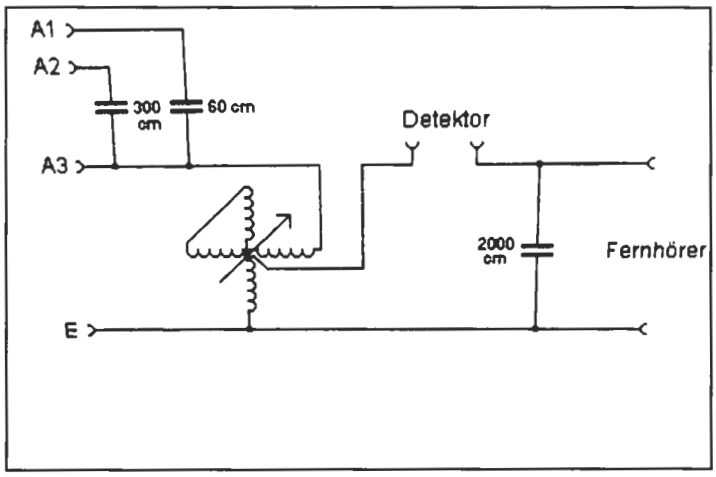


Figure 4
(A) This rare 1923 Telefunken "A" model won a blue ribbon for Benet Svensson.

(B) An interesting feature of this Telefunken set is the entire crystal cat whisker is a subsystem that is plugged into the top of the radio. If inclined, the own presumably could have a number of favorite crystals to suit conditions and desired sensitivity.





(C) The circuit is fairly straight-forward with three options for capacitive coupling of the antenna along with inductive coupling providing selectivity adjustment with a coil attached to the tuning knob that rotates inside of a larger coil.

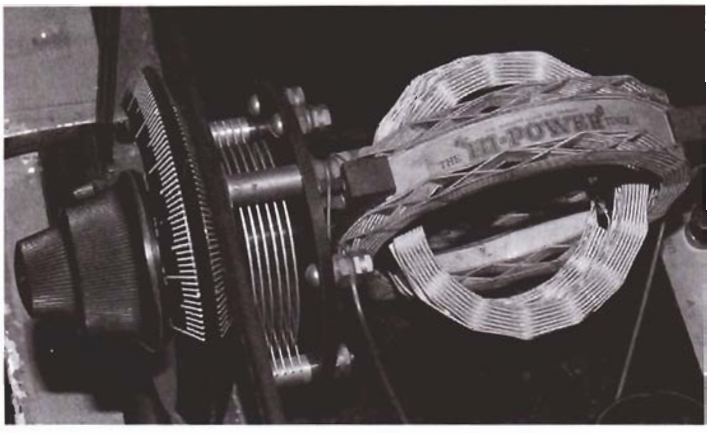


Figure 5
The vast majority of the radios at the AWA Convention were, of course, tube radios but the crystal set enthusiast can learn something even from these advanced rigs. For example, here is the nested coil arrangement from a 3-tube LarcoFlex receiver. The controls for the variable capacitor and the tuning coil are co-axial. The outer knob varies capacitance while the inner knob rotates one of the gorgeous "Hi-Power" basket-weave coils manufactured by the Barnett-Lloyd Company of Chicago.

Figure 6
This one-tube Loewe Radio OE-333 receiver solves the coil coupling problem with elegant simplicity. The outer coil is simply hinged and provided with a little knob so the operator could vary the distance between it and the primary coil. This little radio was a contest entry by Robert Lozier, KD4HSH.