Oriole *'Warwick'* Model 71
W-K Electric Co.
Kenosha, Wisconsin
Circa 1926

The middle series of 5 tube radios made by W-K Electric Co. incorporating cathode follower RF amplifiers. This model had only one competitor using this technology, the newly introduced '*Cascade*' by the Nunn – Landon Co. of Milwaukee, Wis. W-K's Anthony Winther held a patent on the cathode follower RF amplifier circuit. Did Nunn – Landon steal the technology? Historians have yet to uncover a definitive answer.

From the collection of:
Robert Lozier – Monroe, NC
Kd4hsh@carolina.rr.com – 704-458-1076

Introduction

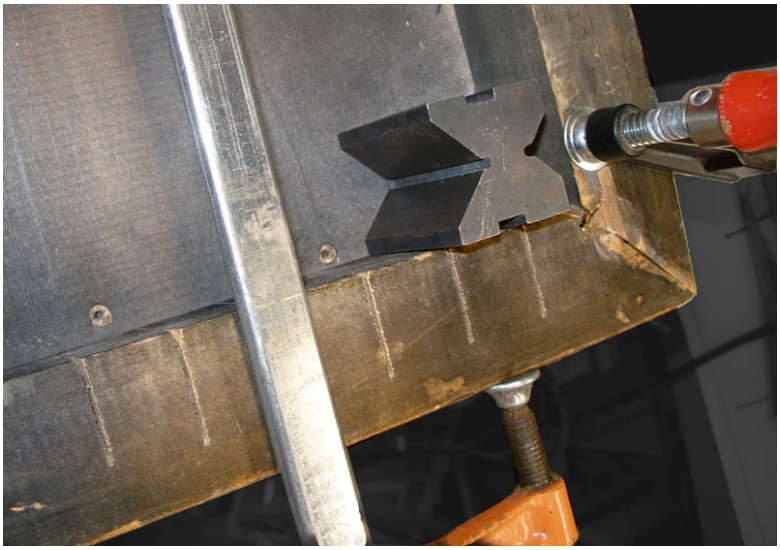
In 2014 and 2017, excellent articles by Joe Sousa and Ed Lyons appeared in the monthly publication *Radio Age* published by the Mid Atlantic Antique Radio Club (MAARC). Joe had recognized that the radios being built by the W-K Electric Co. of Kenosha, Wisconsin circa 1925 were unique in the market place because they employed cathode follower RF amplifiers. Joe and Ed recognized that the current history chronicles have missed documenting this usage and credit first use instead to engineers in the UK some ten years later. Cathode follower RF amplifiers would become important in the development of television and radar in the late 1930s.

The 2017 article featured the model 71 and I decided to set a search on e-Bay for that model. Within a day or so one pops up with a Buy It Now price of $90 plus some $45 for shipping. I click to buy it… Although I have been searching e-Bay for 20 years this was the first vintage radio I had ever purchased on line! It came in a huge box made up of several smaller boxes all taped together with seemingly miles of tape. It looked awful. The inside was stuffed full of all sorts of scrap packing materials and the job looked even more awful. BUT the packer knew what he was doing, the cabinet and internal parts were very well supported and the whole package could easily withstand rough shipping.

Evaluation of my new acquisition.

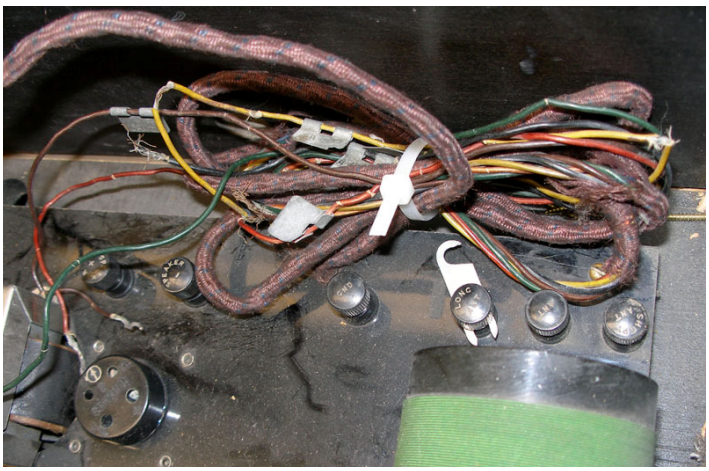
The cabinet finish was in reasonably good condition and I decided that I should try and preserve what was there rather than to strip and refinish. This original finish used a style of coloration that is not generally considered pleasing to modern eyes. There is heavy use of opaque shading lacquers that hide the grain and coloration of much of the walnut panels. BUT that was the style of the day in some cases so the original intent of the maker must be preserved if at all possible.

There was one structural problem in the base of the cabinet that I determined must be fixed. The base is bordered with four heavy mitered moldings of walnut. Unfortunately one had developed a severe warp and being so robust, one mitered joint could not possibly be pulled back into alignment. Fortunately the sides of the cabinet were only held by nails and four screws and let go fairly easily, this made it relatively easy to remove the base and extract the warped molding.



I determined that what was required was to make seven deep cuts across the back of the molding using my band saw. That weakened the molding enough for me to twist the molding back to straight. Once aligned, veneer strips coated with glue were forced into the saw cuts and allowed to dry. The mitered joint could now be joined. This disassembly did damage part of the base finish, so the entire base was refinished. Not a difficult task because there was no evidence of the shading technique used on the rest of the cabinet.

W-K used hard wired battery cables in their 1926 & 27 radios. The battery cable, although fragile, is still good enough to preserve.



The fraying of the Rayon braiding was repaired using cotton embroidery floss saturated with Dritz brand *FrayCheck* PVA glue. It did take a while but again I think it is important to preserve as much of the original materials and methods as possible.

I was happy to discover that the two audio transformers have good windings. Being such a technically interesting radio, I was eager to test drive it for daytime and then nighttime DX.

A 2 mfd. 'B' battery bypass capacitor made by Potter Manufacturing was found to be dead shorted. I extracted the shorted guts and installed a modern film capacitor. In retrospect I should have simply disconnected the failed part and hidden a modern part nearby.

The only other repair was to the ingenious regeneration rheostat assembly. There was a single cracked connection of the resistance wire right at the termination of the wire. Gaining access for repair proved quite a challenge. With this write-up there is a copy of the July 2017 *Radio Age* description of this fascinating implementation of regeneration.

Clean-up of the chassis was straightforward. My usual applications of Go-Jo waterless hand cleaner with cotton balls and gauze pads held with surgeon's forceps did the trick in a few hours.

As I cleaned the chassis prior to testing, I found myself being really impressed at the elegance of the mechanical design for the unique RF transformers and the regeneration control. (See large Photo Gallery view.) It is one thing to come up with a circuit that works in prototype and another to figure out a practical way to make parts in quantity. Undoubtedly deft fingers of skilled ladies were put to the task of the delicate, precision work of coil winding but once the process was defined properly the work could be done reasonably trouble free and probably not much more time consuming than the RFTs in more conventional radios of the day.

I noted that the designer placed the three RF coils at the absolute maximum distances available on the chassis and they are each mounted in orthogonal relationship to the other two. There is virtually no indication of hand capacity in the operation of any controls.

While I was in no position to set up this radio alongside another contemporary set such as the Grebe Synchrophase or Browning-Drake 5R for A/B comparisons; I was favorably impressed with this Oriole '*Warwick* 71' over all performance. (At least over the frequency range below 1,100 kHz. that I could use at my QTH.)

In the daytime there are three AM radio stations in Monroe, NC at 1060, 1190 & 1430. The 4 and 5 kW transmitters of 1060 and 1190 are just 1.6 and 0.9 miles from my QTH. (1060 is a daytime only station.) My 'antenna' is an abomination that due to my property layout could not have been placed in a worse orientation even if that had been the design objective. It is only a nominal 20 ft. off the ground, running under 60 to 70 ft. tree canopy, just 80 ft from power poles and a total length including lead-in of just 50 ft.

The net result is that in the daytime there is no way to do any weak signal work above about 1.0 MHz. Daytime weak signal work below 1.0 MHz. is possible but there is so much RFI. The longest 'DX' heard was WLWL (770 kHz. daytime only) in Rockingham, NC – 5 kW – omni directional at 58 miles.

One morning at 1:30 AM I got up to do my usual 'old man's thing' and went out to the shop for a listening session. A rare, rare occasion for me in my old age. With 1060 off the air I could do some DX work. RFI levels were considerably less. WHAS 840 Louisville, WBBM 780 Chicago and WABC 770 NYC were brought-in with full volume once I started to add regeneration.

Thanks to the wonderful technical analysis done by Joe Sousa, the commentary of Ed Lyon and the research done by the late Greg Hunolt we have fascinating insight into what many vintage radio

collectors might have passed over as just another mid 20s. TRF. It is ANYTHING BUT ORDINARY !

What more would I like to know? I would certainly like to see a biography of Anthony Winther and Mark Kindt. What special skills enabled them to sort-of think outside the box of mid 20s radio circuitry? My searches indicate that neither were licensed radio amateurs although one newspaper article of 1924 says otherwise. Did they get exposure to military communications in WW-I? Was either an alumnus of the University of Wisconsin – Madison? (At the time well regarded for their Physics, Electrical and Chemical departments.) If you have any information to share please contact me at:

kd4hsh@carolina.rr.com.

Photo Gallery

Note how shading of cabinet panels obliterates all but the center of the faces. This fashion was not very common in the mid 20s but there were indeed other makers doing this.

See fold-outs for views of the top and bottom of the chassis.

Advertisement from *Radio Broadcast* – November 1926

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