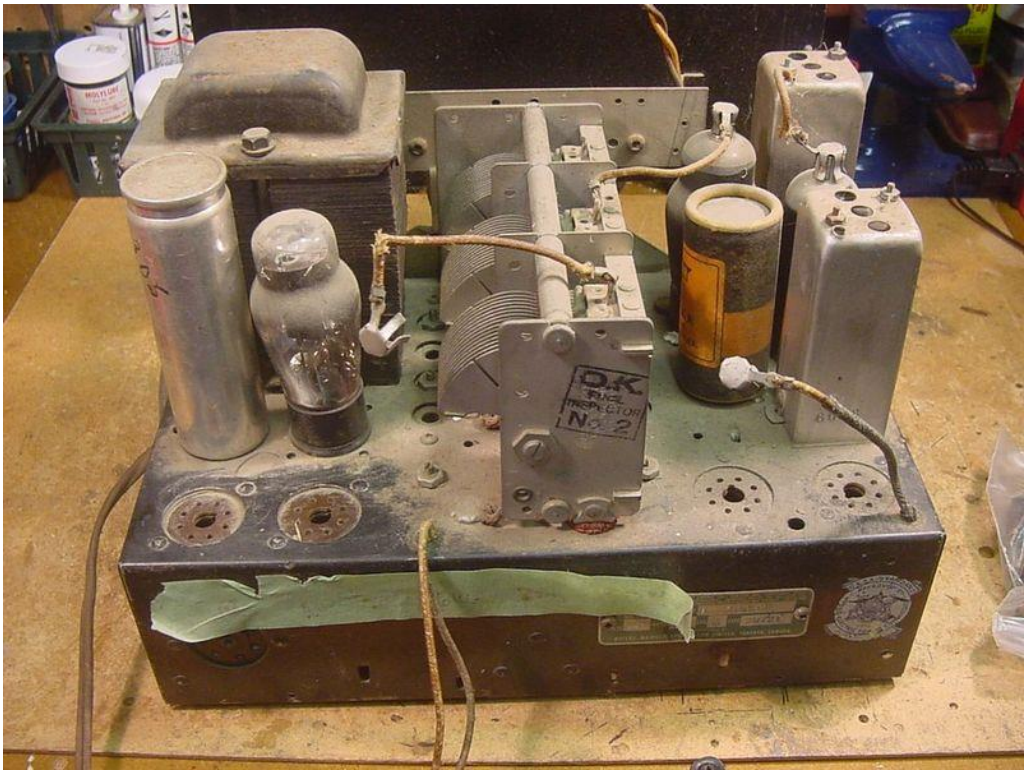
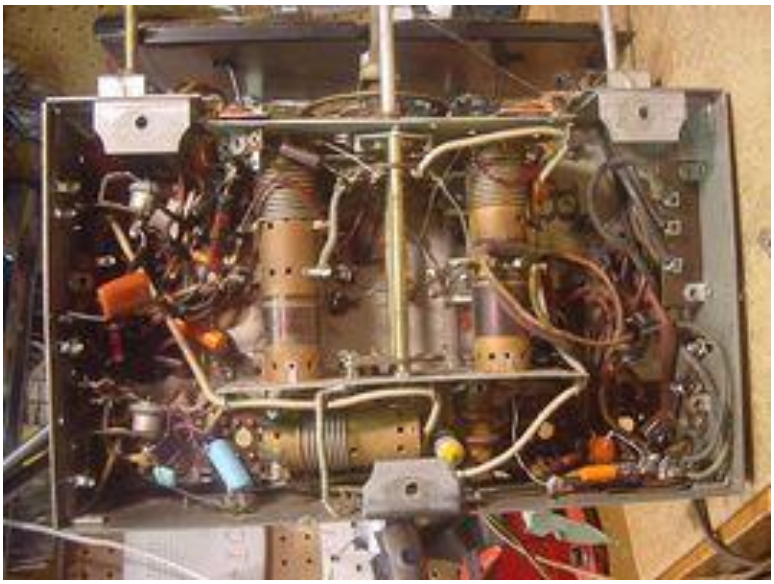
Restoration of a DeForest Crosley Model 870 – Gerry O'Hara

The museum finished restoring a DeForest Crosley Model 870 ('Greig') in May, 2009. This model has a Rogers Chassis Type 8M-721 fitted - a 7 tube superhet dating from the 1938-39 model year. This set was 'found' in three pieces: the chassis (rough and minus some tubes), the cabinet (rather rougher, but miraculously containing a plastic bag with the knobs and other hardware in it) and the dial glass (pristine), under a plastic canopy and lean-to shed 'somewhere in Agassiz', BC, back in 2007. It set Gerry O'Hara back $30 - maybe a little high for a 'scrapper', but he thought it had potential and really liked the dial glass markings and shape.

The cabinet was taken to the SPARC museum in Coquitlam, BC, where it was stripped down (by dry scraping). Water damage had warped the frame and weakened the glue, and some sections of the veneer had parted from the top of the set. The frame was re-glued and missing/damaged sections of the veneer replaced. The cabinet was then sanded with 600 grade 'wet n dry' lubricated with lemon oil, and then given several coats of shellac, each being rubbed down with super-fine steel wool. Once the grain was filled with the shellac, three coats of clear lacquer were applied all-over the cabinet.

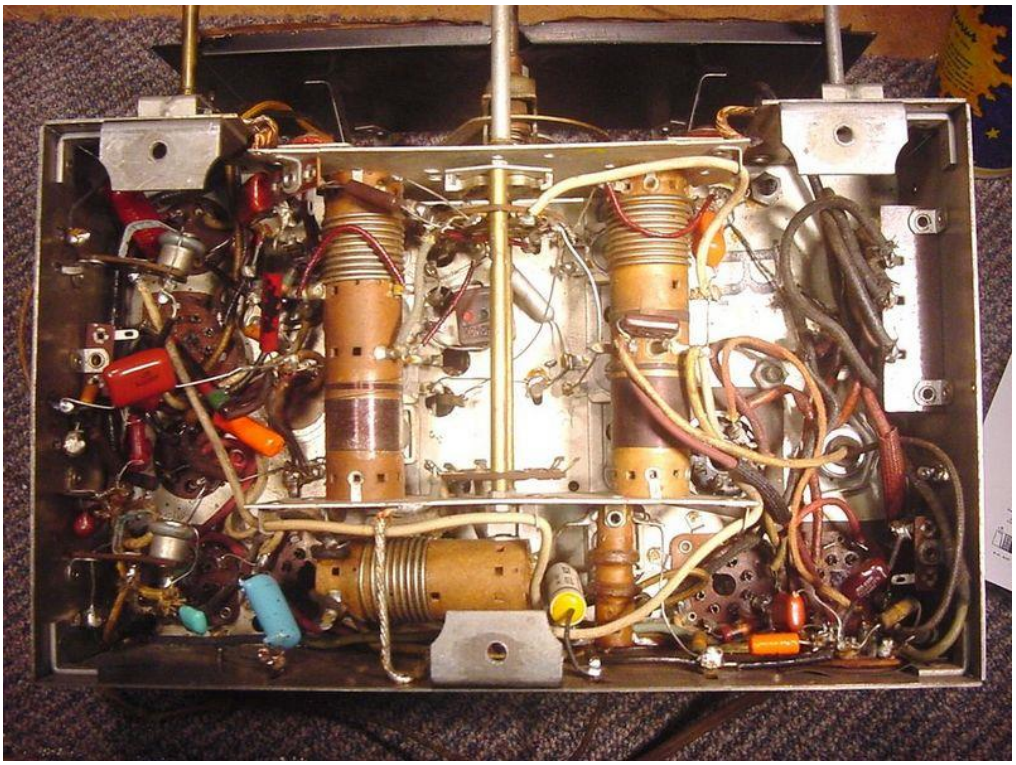
The main body of the cabinet was then masked-off, and the sides, dial cut-out and edges of the speaker fretwork given several coats of dark brown-tinted semi-gloss lacquer. The remainder of the cabinet was then given three coats of brown-tinted lacquer, followed by several coats of clear semi-gloss lacquer over the entire cabinet. This seems like a lot of work, but was necessary to replicate the tones and lustre of the original finish. The wooden knobs were stripped of their old finish and also given several coats of dark brown-tinted lacquer. This process took several weeks, working on Sunday afternoons and occasional Thursday evenings for Gerry, with Pat Jones providing expert help and advice.





Meanwhile Gerry worked on the chassis. This is an interesting one, sporting a Rogers tube set, including two half wave rectifier tubes (2X3s) in place of the more standard full-wave rectifier (eg. 5Y3) found in sets of this era. The rest of the tube line-up is a 6K7M (RF amp), 6J8M (mixer/oscillator), 6K7M (IF amp), 75M (detector/AGC/1st AF) and 41M (output). The chassis was given a good cleaning - it was painted black at the factory so there was no rust present - and the tuning mechanism - a friction clutch - cleaned of old

grease and decades accumulation of filth. The bearings were then re-lubed with a little light machine oil.



The circuit includes two bias cells (1 volt 'button cells', providing fixed bias in place of the more usual self-bias provided by using a cathode resistor and grid leak resistor), these providing delayed AGC and bias for the first AF amp in this chassis. The bias cell holders had already been modified to take standard modern (1.5v) button cells (as used in watches and hearing aids), so these were replaced with a couple of new cells in as the ones fitted measured only a fraction of a volt. Someone had already had a go at recapping the chassis - by the looks of the replacements this had been done within the last 15 years or so - all polycarbonate or Mylar types, but strangely the electrolytics had not been replaced - these were very leaky and well out of tolerance, so these were replaced, leaving the old electrolytic can and cardboard casing above the chassis for cosmetic purposes only. Several resistors were tested and these were found to be within tolerance so all were left as found. The transformer tested ok as did the loudspeaker field coil, though the speaker wiring was frayed and had to be replaced. The missing Rogers tubes were sourced from Phil Mijo at the Canadian Vintage Radio Society (CVRS) , except the two 2X3 rectifiers and the 75M. The set had a single 2X3 fitted on arrival, but locating a second proved elusive. Becoming impatient after a week or so of completing other repairs on the chassis and having the cabinet ready, fitting a couple of silicon diodes/current limiting resistors (1N4007/150ohm) as a temporary 'fix' was considered, but after some thought, the 2X3 rectifier sockets were re-wired slightly and a 5Y3 rectifier tube fitted in one of the sockets instead. Another SPARC member, Gerry Taylor, provided some 6Q7's to try in place of the 75M duo-diode-triode.

The set powered-up ok when brought up slowly on a variac, but at first only the output stage seemed to be working. Voltages were checked throughout the set and all seemed ok. A little signal-tracing soon found the problem: the previous restoration efforts by 'anon' had connected the (replacement) coupling capacitor from the grid of the output stage to ground instead of to the anode of the first AF stage! Once

this was corrected, stations came rolling in on both the Broadcast Band and Shortwaves. A slight, but annoying hum was present when the speaker was mounted in the cabinet (inaudible when on the bench) – this was later traced to the glass-bodied 6Q7 that had been fitted - when a metal-bodied 6Q7 was installed the hum went away (figures, as the original 75M would have had a metalized envelope). While the chassis was out of the cabinet again while troubleshooting the hum, an in-line fuseholder was installed (with a 1.5Amp fuse fitted) in the power transformer primary, the rubber mounts on the tuning gang support bracket replaced (using rubber grommets of the correct dimensions), the dial glass cleaned and some heat-shrink tubing added to tidy up some frayed cloth covered wire ends on the wires going to the tube top caps. An alignment check was then carried out on the two wavebands, with only a slight tweak to the upper end of the shortwave band being needed. Four small cork pads on the cabinet feet completed the restoration.