VINTAGE RADIO

By Associate Professor Graham Parslow

Ekco Gondola 5-valve mantel radio

Ekco's Gondola set is keenly sought after by collectors because of its distinctively styled cabinet. But its circuit is very simple, resulting in a very spartan under-chassis layout. That makes it easy to work on – but this particular set was a wreck and needed a lot of restoration.

This radio was purchased from a fellow member of the Historical Radio Society of Australia who commented at the time, "I don't think that even you can bring this one back".

For me, there could be no greater challenge. It was a wreck but potentially, at the end of it all there was promise of another attractive mantel set for my collection.

The advertisement featured in this article from 1958 gives an insight into the market it was intended for. The radio pictured in the advert is tinted Florentine wine although the illustration does not depict the true colour. In reality, Florentine wine was a deep purple (burgundy), a common offering in the late 1950s from all major radio manufacturers.

My set for restoration was manufactured as the colour Café Tan and other colours were Adriatic Gold, Italian Ivory, Venetian Grey, Mediterranean Pink, Rome Red, Grotto Green, and Sorrento Jade.

These new brightly coloured plastics brought life into previously drab (cream) kitchens of the 1950s (for perspective, watch the first episode of the ABC series hosted by Annabel Crabb: "Back in Time for Dinner").

At a price of £26.5s, the Ekco Gondola mantel radio was aimed at middle-class housewives who aspired to giving their homes a "decorator touch". Accordingly, we see a cheery woman with an oar, rather than a gondolier, next to the radio. The raised bow and aft ends of a gondola are incorporated into the design theme of the radio's cabinet, justifying the claim "Inspired by the sweeping lines of Venetian gondolas".

It was made by Australian Electrical Industries, who also manufactured a wide range of electrical whitegoods under the brand name Hotpoint.

Fig.1 shows the details of the 5-valve circuit which is a conventional superhet. The local oscillator circuit feeding into the 6BE6 is a Hartley configuration using a tapped coil tuned by one gang of the tuning capacitor. The output load at the plate of the 6BE6 is the first IF transformer, IFT1, tuned to 455kHz.

Its secondary feeds the grid of the 6BA6 IF amplifier which drives the second IF transformer, IFT2. The top of its secondary is connected to pin 6 of the 6AV6 detector and audio amplifier. The bottom of the secondary is connected to pin 5 via a 5.6MΩ resistor. These two pins are the anodes of the two diodes in this valve.

The diode at pin 6 is the demodulator and the audio output appears at the bottom of the secondary of IFT2. It is filtered by capacitor C12 and fed to the volume control R5 via resistor R4. From there, the audio signal is tapped off by the wiper of R5 and fed via ca-

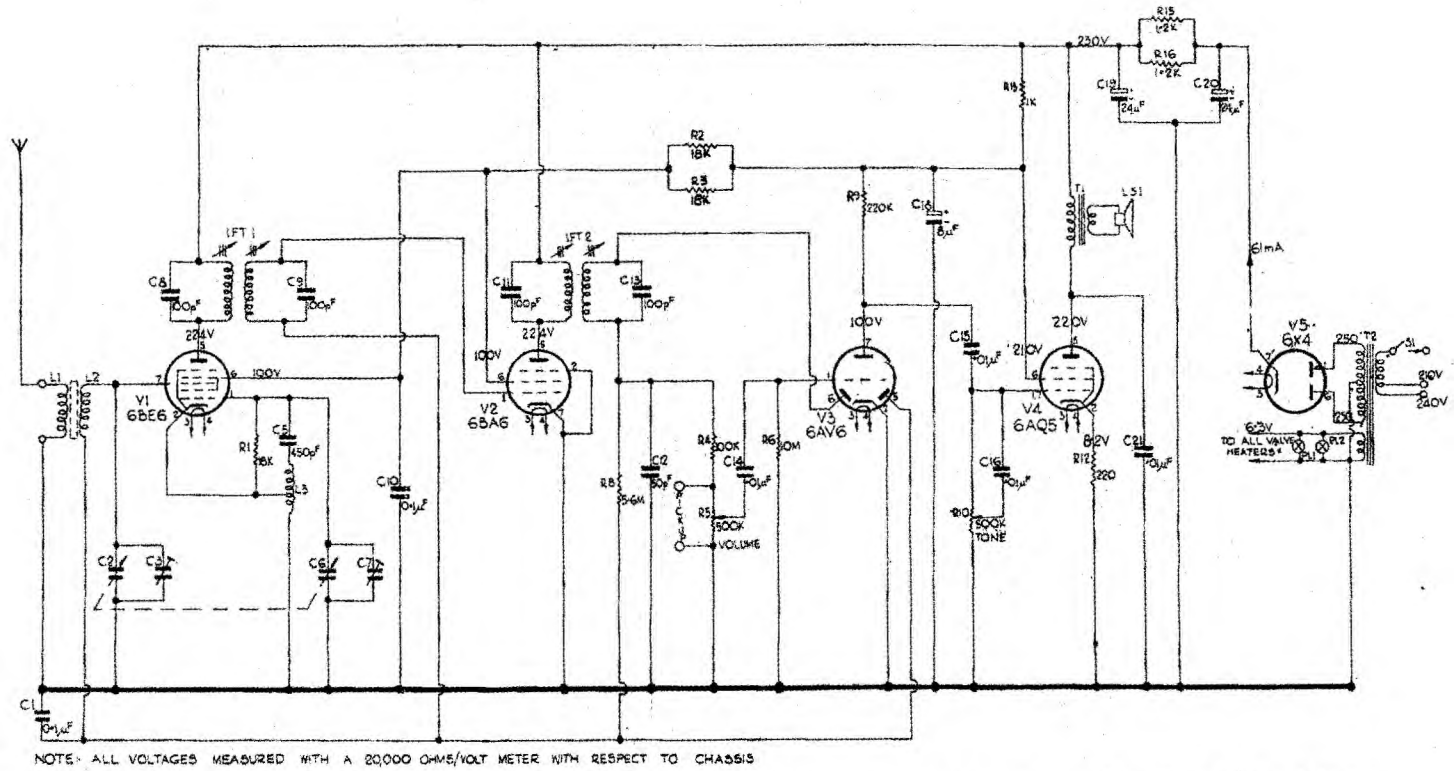


Fig.1: the circuit of the Ekco Gondola is a basic superhet with a very low component count. Note that pin 5 of the 6AV6 is a tiepoint for the 5.6MΩ resistor R8. The associated diode with pin 5 performs no signal detection.

pacitor C15 to the grid of the 6AQ5 output pentode. Capacitor C16 and potentiometer R10 provide a simple treble cut tone control.

The demodulated output of pin 6 of the 6AV6, appearing at the top of secondary of IFT2 is also used to derive the AGC voltage.

It is filtered by the above-mentioned 5.6MΩ resistor and the 0.1μF capacitor C1. The AGC acts on the grid of the 6BE6 via the secondary of the aerial coil and on the grid of the 6BA6 via the secondary of IFT1.

That being the case, what part does the diode at pin 5 of the 6AV6 valve play?

In fact, it does nothing. The pin 6 diode both demodulates the audio and generates the AGC voltage. It connects the "top" end of the IFT2 secondary to ground when that end is positive, which means that the "bottom" end of the secondary assumes a negative DC level – the demodulated audio and the AGC voltage.

The pin 5 diode is merely used as a connection point for the 5.6MΩ resistor. Typically other sets using the 6AV6 use one diode to do demodulation and produce the AGC and connect the second diode to chassis.

The final valve in the signal path is the 6AQ5 pentode. It is running in Class-A to drive the audio output transformer and there is no negative feedback around the stage. Interestingly, the loudspeaker impedance is only 2.5Ω.

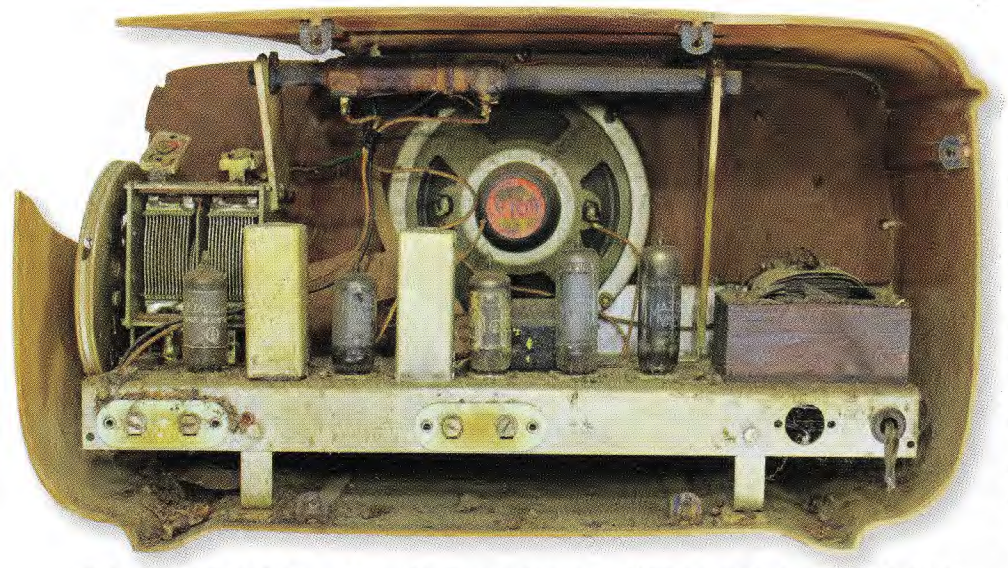
The power supply is also quite basic, with the 6X4 full-wave rectifier having only two 24μF electrolytic capacitors (C19/20) with paralleled 1.2kΩ resistors (R15/16) instead of filter chokes, as would have been the case with earlier sets.

This very simple circuit is evidenced by the spartan under-chassis layout. It almost looks as though half the point-to-point wiring and passive components are missing; they are not.

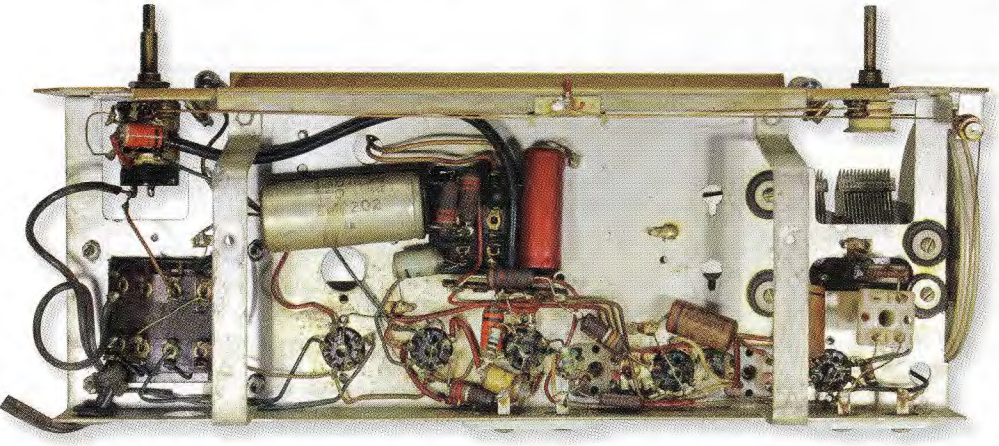
Electrical restoration

The first task was to remove the rather sad and sorry cabinet. While the topside of the chassis was pretty dirty in appearance, the underside was quite clean.

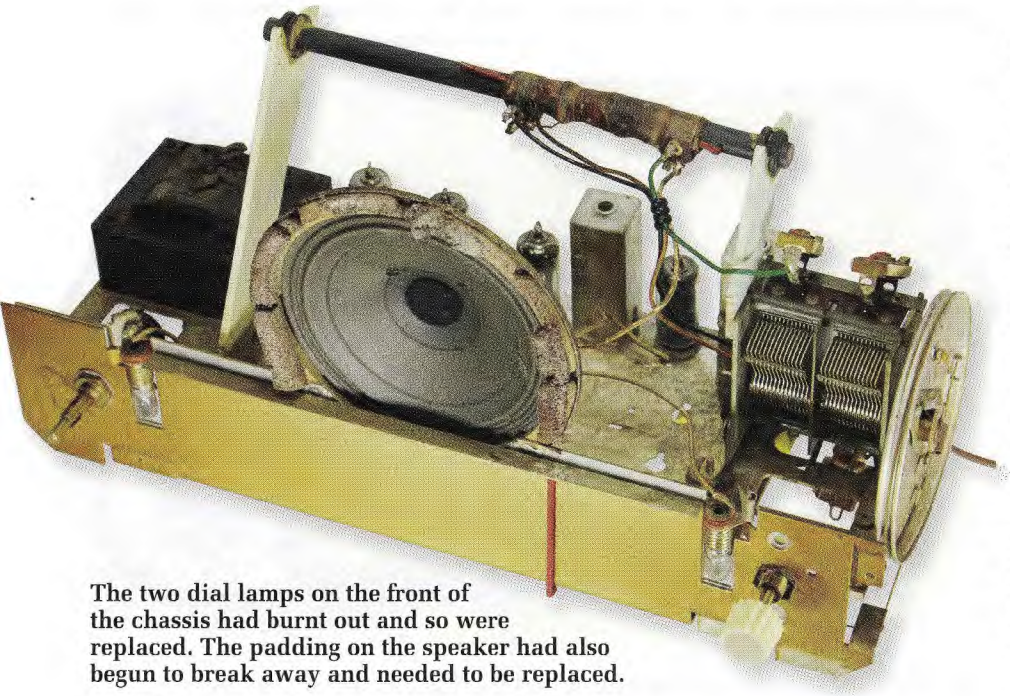
The plastic case had seen better days, and the dial had minor fractures.



The interior of the case was littered with leaves, dirt and who knows what else that had managed to find its way inside.



▲ At lower left, the 2-core mains wire is anchored by a knot in the chassis. This was replaced with a properly anchored 3-core cable.



The two dial lamps on the front of the chassis had burnt out and so were replaced. The padding on the speaker had also begun to break away and needed to be replaced.

Fortunately, most of the small capacitors were Ducon Styroseal type with polystyrene dielectric (manufactured at the huge Ducon plant in Villawood, Sydney). To this day, they are noted for very high insulation resistance (typically around $10^9\Omega$) and certainly did not need to be replaced.

Only three electrolytics are used in the entire circuit and these did need replacement. Two of the wax-impregnated paper capacitors (C1/10) were also replaced.

The original 2-core mains flex was anchored by a knot inside the chassis; that's the crude way it was done in those days.

This was replaced by a 3-core cable which has the benefit of providing an earthed chassis. The new cable was properly secured to the chassis when it was installed, as this is good practice.

The two blackened dial lamps were replaced and then it was to time switch on without the valves being installed. All was well so the valves were fitted. The next power-up showed stable power consumption of around 43W, as expected from the service manual

But nothing could be tuned in. Touching the pick-up input at the rear of the chassis produced a healthy hum from the speaker so the audio section seemed to be fine. When measuring the plate voltage of the 6BE6 mixer, an encouraging crackle was produced from the speaker when a prod was applied.

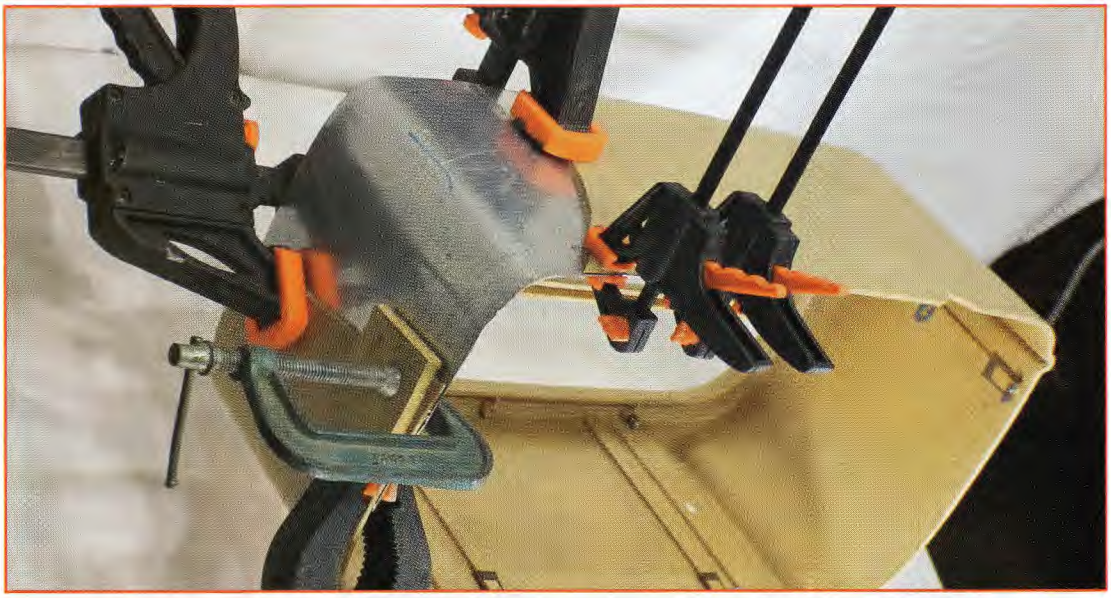
There are not a great number of possibilities for failure before this point, but Murphy's law ensured that I took the longest route to finding the answer.

The 6BE6's control grid measured 0V and was subsequently found to be shorted to earth. Well, that would clearly explain the non-performance of the radio.

My first suspect for the earthing was a connection between the two coils on the ferrite rod but isolating the connections showed no short. The second suspect was a short between the secondary of IFT1 and the metal case. Again, isolating the secondary showed no shorts to earth.

Looking at the circuit diagram of Fig.1 showed only two other logical possibilities; the tuning gang or its trimmer (C3). At a first glance the tuning gang's trimmer had been pushed down, although it was seemingly intact.

It took a closer sideways inspection



An aluminium sheet mould was clamped to the case, forming the template for the 2-part epoxy filler. Multiple applications of the epoxy filler were needed due to the curvature and thickness of the case.

to see that the trimmer adjustment screw had been pushed into the tuning gang and had shorted the gang. The same impact that damaged the case probably pushed on the trimmer to short it.

After some judicious bending to remove the short, happiness prevailed. From that point, the radio performed pretty much as expected and its alignment was fairly close to being optimum.

Cabinet restoration

Who knows just how the cabinet had arrived at this sad state of dilapidation? Apart from being dropped or maybe having something dropped onto it, plenty of leaves and dirt had found their way into the radio through the non-original ventilation space.

Broken or missing knobs are relatively common for this model but encouragingly, the highly stained knobs were intact. They were treated to sustained ultrasonic cleaning and came up well.

The grille cloth was dirty and very greasy, possibly as a result of being used in a kitchen. Fortunately it came up like new after a detergent wash. The Ekco badge needed a touch-up with gold paint.

The empty case cleaned up well using automotive degreaser and then came the intellectual task of devising a repair strategy.

The complex sculpting of the missing section was the biggest challenge I had yet faced in repairing a plastic case. Taking a cast from the intact section was not the answer because the sides are mirror images.

The strategy was to cut and shape an aluminium sheet to overlap the edges of the breaks and provide the basic contour of the case. Then Araldite was used to glue the contoured plate in place inside the cabinet.

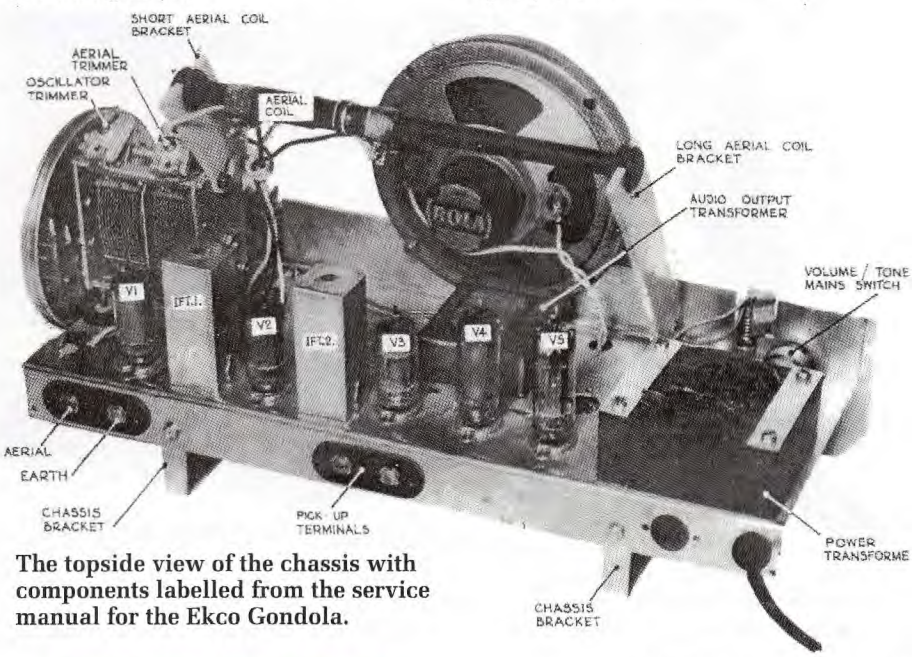
2-part epoxy car body filler was then applied in three major applications. Multiple applications were needed because of gravity. Much like preparing for pouring cement on a building site, form work was created for each of the front, top and side sections.

When mixed, the filler flows under gravity for about ten minutes before becoming viscous enough to hold shape. All sections were set proud of the final profile.

Initial shaping was done with an angle grinder, followed by finer profiling with abrasive papers. The intermediate result was a cabinet without the side-bar, just a smooth rounded contour.

A piece of MDF board (chosen because it has no wood grain) was profiled to create the side-bar then held in place with Araldite. Epoxy filler was added to blend the MDF with the cabinet. A Dremel shaping tool added the finishing touches to the contours.

The photograph showing the near-final case repair also shows some darker pink blotches. These blotches were created by the application of filler to the Swiss-cheese-like air holes that inevitably appear in the epoxy filler.



The topside view of the chassis with components labelled from the service manual for the Ekco Gondola.

VENEZIA

Inspired by the sweeping lines of Venetian gondolas

... to give your home the "decorator touch"

EKCO

New mantel radio "Gondola"

... in subtle, singing Mediterranean colours

So new, so different. Designed with the sculptured look to enhance your present decorating scheme, be it modern or traditional. Soft, sweeping lines, inspired by Venetian gondolas. Subtle, singing colours to glow like jewels in any room setting. Perfect big-set reception to enrich your listening, from Elvis right through to Elgar. All this is yours for a little £26/5/-, in the new, new Ekco 5-valve "Gondola" mantel radio, latest proud addition to the world-famous Ekco family.

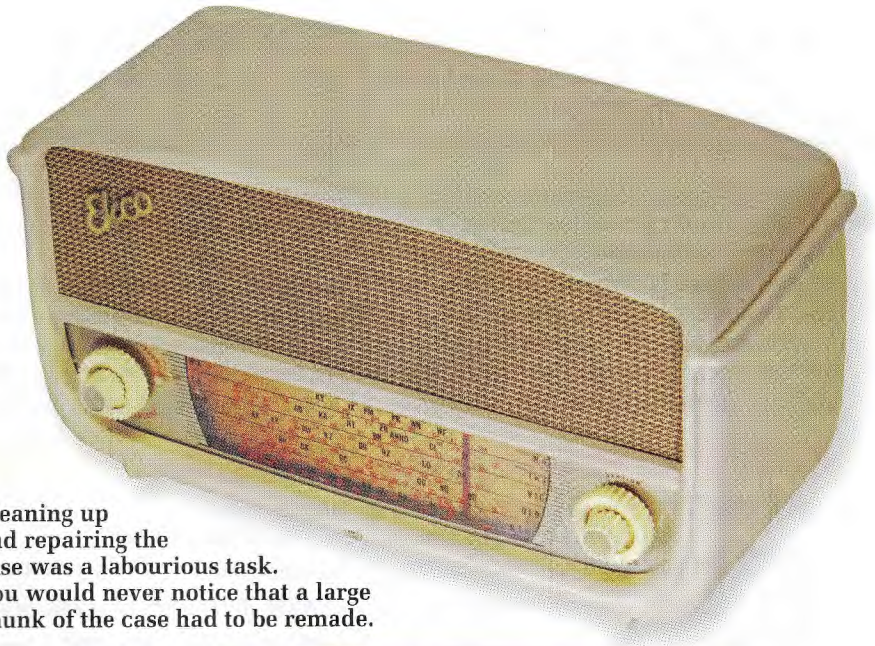
In these modern colours: Adriatic Gold, Italian Ivory, Venetian Grey, Florentine Wine, Mediterranean Pink. Also available in Rome Red, Grotto Green, Cafe Tan and Sorrento Jade.

BACKED BY AUSTRALIAN ELECTRICAL INDUSTRIES PTY. LIMITED MAKERS OF FAMOUS Hotpoint APPLIANCES

AE.37.FPC

The advertisement in question from Women's Weekly, August 6th, 1958, from: https://trove.nla.gov.au/aww/read/222706

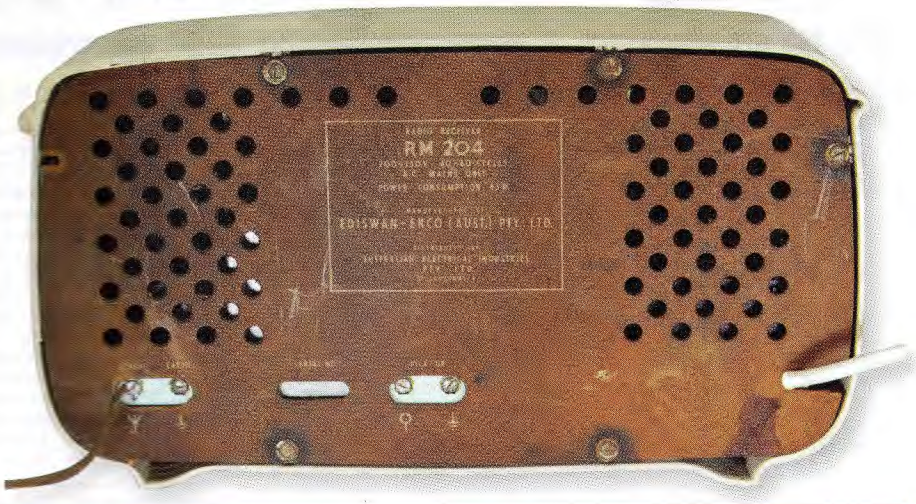
The side-bar was made from a small piece of MDF. The blotches in the hardened epoxy were due to air holes.



Cleaning up and repairing the case was a labourious task. You would never notice that a large chunk of the case had to be remade.

These holes are not gas released during the epoxide reaction with the amine setting agent. The chemistry of the setting is an addition reaction without by-products. The gas holes are air that mixes with the filler when the two parts are blended.

The whole repaired case was undercoated then sprayed with Dulux semi-gloss Paperbark enamel paint. The result is a fair match to the original. I shared the outcome of this repair with some radio mates and was well repaid for the restoration effort by the complimentary feedback. The most succinct response was "OMG!".



Ekco and Hotpoint history

The Ekco brand derives from its founder's name, Eric Kirkham Cole. In the 1930s Cole began making valve radios in the UK that were technically excellent and visually distinctive.

The 1934 Ekco model AD65 is a collector's classic. WW2 led to the Ekco company manufacturing advanced communication and electronic guidance systems. After the war, the company turned to manufacturing white goods under the corporate title of Associated Electrical Industries (AEI). The Ekco Gondola radio featured here also has an AEI logo on the front at the base.

However, the Australian AEI is subtly different to the UK company name. The rear panel of the Gondola radio proclaims "Manufactured by EDISWAN-EKCO (AUST) PTY LTD, distributed by AUSTRALIAN ELECTRICAL INDUSTRIES PTY LTD".

This company was registered in 1956 with an authorised capital of £1 million and based in Sydney. The Ekco UK company put up part of the capital and the rest came from General Electric US.

The Ekco Gondola was only manufactured and sold in Australia. Radio production was a minor focus of the company because the main focus was to manufacture variants of the successful UK Ekco range of television sets.

As proclaimed in their advertising, the Gondola radio was manufactured by "the makers of famous Hotpoint appliances". The Hotpoint brand had an interesting origin in the US, starting as a niche electrical product.

Before internal electrical heating, clothes-irons were heated on a stove-top or similar heat source. With electrical heating it became possible to raise the front of the sole plate to a higher temperature than the rest. This "Hotpoint" was avidly welcomed by housewives. Eventually Hotpoint became part of the General Electric conglomerate.

Prior to 1956, radios sold in Australia for GE were branded AGE/Hotpoint/Bandmaster and were made by AWA. Australian General Electric (AGE) withdrew from Australian Electrical Industries because American anti-trust legislation required GE in the US to divest itself of the Australian company. Consequently, the UK company EDISWAN-EKCO became the owner, although it seems that AEI were still permitted to use the Hotpoint brand.

This brief history has been collated from several sources. Although I believe the information is accurate, any corrections would be welcome.

The Ekco Gondola is a radio I had aspired to collecting for some time. This one has now joined my short list of favourites. **SC**