

VINTAGE RADIO

By JOHN HILL



A new life for a battered Astor

Not all vintage radios are highly sought after items. A mid-1950s 4-valve Astor can often be picked up for just a few dollars and is usually quite easy to repair and get going again.

Vintage radio receivers vary from those rare relics from the 1920s to the mass-produced plastic mantel models of the 1950s and 1960s, with a multitude of makes and models in between. Although some collectors specialise in a particular era or brand name, many collect whatever comes their way, regardless of age or whether it is housed in a timber, bakelite or plastic cabinet.

From a writing point of view, I like to produce a similar variety in my monthly column and endeavour to give my readers a mixed bag of stories about the many and varied aspects of vintage radio. It appears that a restoration story on a relatively late-model valve receiver is just as interesting, in its way, as a similar story on an older

and rarer set that few of us are ever likely to own. In fact, far more readers can relate to a late-model receiver because that is what most people are likely to collect.

It so happened that a particular repair came my way recently and it seemed to be a good one to write about for the simple reason the receiver is so ordinary and unspectacular. It was a mid-1950s 4-valve Astor mantel with odd control knobs and a smashed speaker grille – the sort of wreck that can be picked up at a garage sale for \$10 or less.

Apart from the broken cabinet, the receiver was in poor condition and although it supposedly “worked” when purchased, it made no sound other than a badly distorted whimper.

In fact, it was the type of set that one would normally buy for spare parts.

In this instance, however, the receiver was brought to me to be repaired. As the woman who owns it is a friend of the family, I really couldn't say no.

Of course, she realised when she bought the set that it needed a lot doing to it but thought that it would be no trouble for me to fix it because my magic wand can mend just about anything. Oh – such faith!

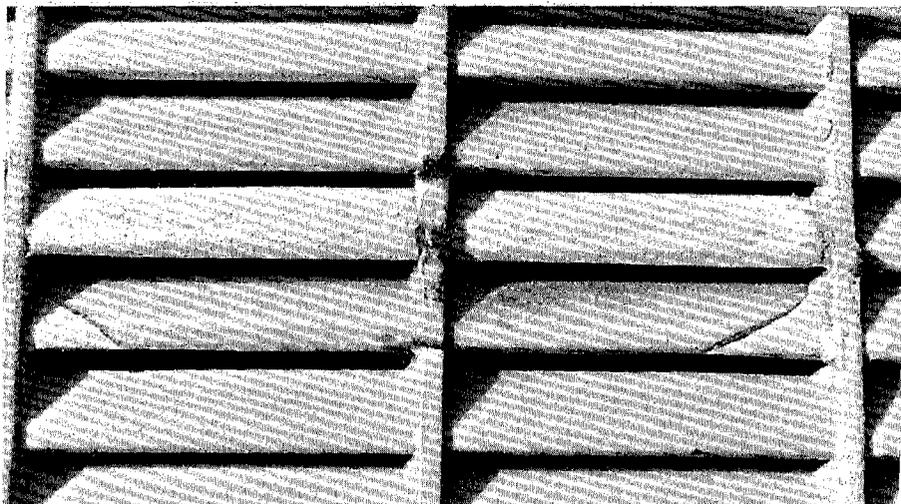
Grille repairs

I decided to attempt the broken grille repair first and it was fortunate that the damage was not as bad as it could have been. One broken piece had already been glued back in place while the other piece was missing. This meant that a new section had to be made and glued into position.

Finding something suitable from which to make a new grille part was the problem. Eventually, the handle of a takeaway plastic knife supplied the necessary material. It was shaped with a file until it wedged firmly into position, then it was glued in place. A couple of smaller fragments were then used elsewhere to fill in a few missing chips.

Although the broken grille louvres had been successfully replaced, the stark white plastic replacements stood out like a neon sign compared to the rest of the speaker grille. The repair area needed a touch up with a matching paint but obtaining the correct colour match was a near impossible task.

So instead of a match, a contrast was used, and the whole grille area was painted an off-white. The result was pleasing enough and at the same time disguised the repair area reasonably well. With the grille reconstruc-



The first step with the grille repair was to make up a plastic louvre to replace the missing one. The handle of a plastic knife was used for this purpose.

tion completed, the circuitry was next on the agenda.

Speaker repairs

In order to work on the speaker grille, the speaker had to be removed from the cabinet. This should have been a simple operation requiring the removal of four spring steel clips from the plastic studs they fit onto. Alas, two of the studs snapped off!

Removing the speaker revealed that whatever smashed the grille also damaged the speaker cone – it was torn from rim to centre. Repairing the split with silicone rubber (Silastic®) cured the problem and while such cone patch-ups aren't always the neatest looking repairs, they are effective and long lasting.

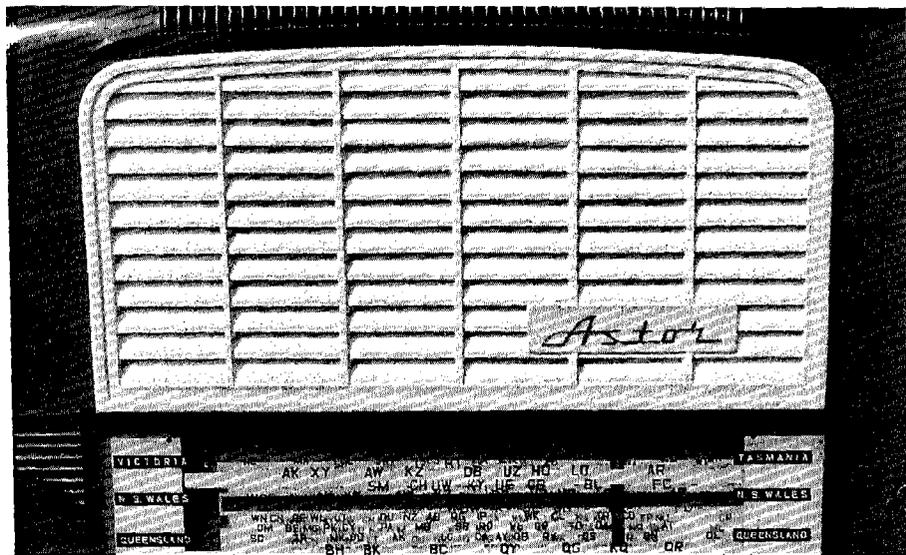
The speaker, by the way, is unusual in that it is a very small oval type measuring 125 x 75mm (5 x 3 inches), so replacement was not an option.

As an aside, most 4-valve receivers from the 1950s used 125mm (5-inch) speakers so it appeared that the little Astor might be at a disadvantage as far as a good sound reproduction was concerned. However, after the restoration had been completed, the midget Rola performed really well and the set's tonal quality was excellent.

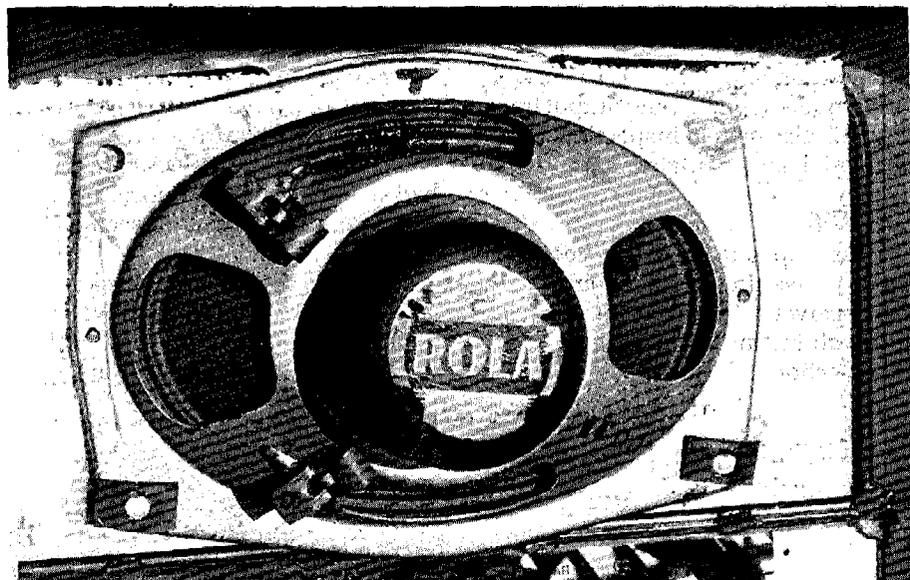
Original parts

Checking out the chassis revealed everything to be original and the state of the 40-year old Ducon paper capacitors was not good. They appeared to have been overheated, having bulged ends and droplets of solidified wax hanging from their undersides. Naturally, they were replaced and that, in itself, would have automatically solved a number of problems.

The valves were checked next and the valve tester's neon quickly indicated an intermittent short in the 6BE6. Those valves often flash the shorts/leakage neon on my valve tester but, despite this, they usually function



A close-up view of the finished grille repair. The whole louvre area was painted off-white to disguise the repaired section. Although not a totally invisible repair, there were no complaints from the owner.

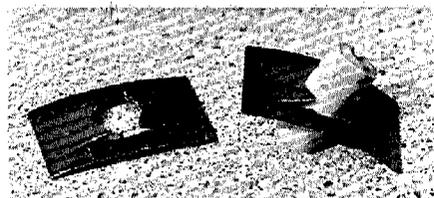


This is the miniature (125 x 75mm) Rola loudspeaker that was used in the old Astor. Note the missing retaining clips and the repaired cone areas at 12 o'clock and 2 o'clock. The cone repair was completely satisfactory.

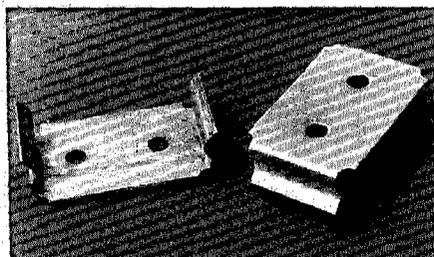
quite normally. The rest of the valves checked OK.

Numerous other items needed attention. The 200Ω back-bias resistor

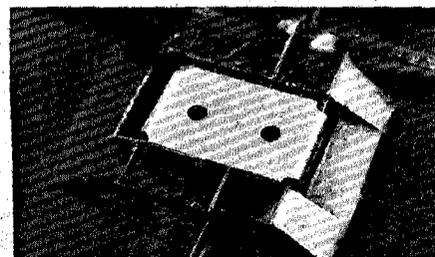
had split, a noisy volume control required cleaning, a new power cord was needed, the dial cord was about to let go, both dial lamps were burnt



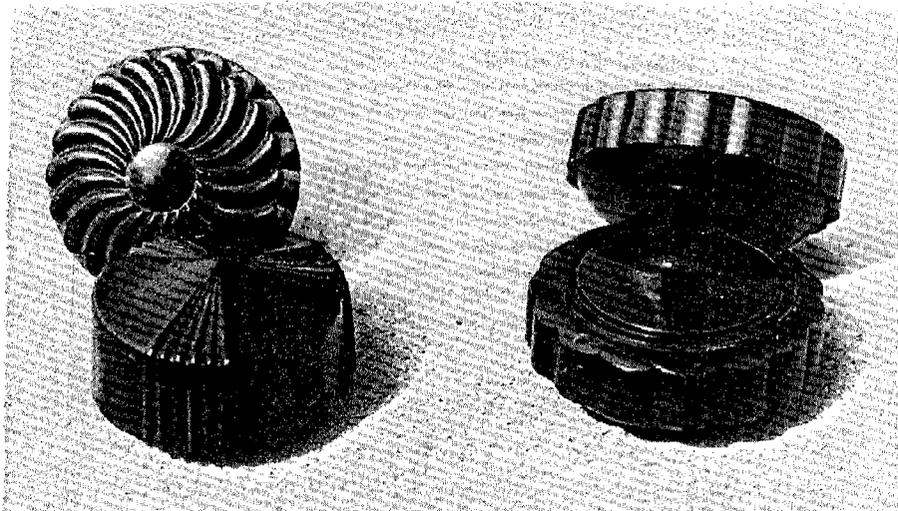
Spring-steel clips are used to hold the loudspeaker in place. As is often the case, the plastic stud breaks off when the clip is removed.



These two spring retaining clips are all that hold the cabinet together.



This view shows how the clips are fitted to the underside of the cabinet.



The two odd knobs at left were replaced with a pair of Radiola knobs which matched the maroon colour of the Astor cabinet perfectly.

out, and the chassis was just floating around loose inside the cabinet.

An ohmmeter check on other resistor values cleared them all as being well within tolerance. The intermediate frequency, power, and output transformers also passed inspection, as did the aerial and oscillator coils.

Testing

After replacing all the necessary parts it was time for a tryout. While the receiver worked, there was very little volume and an incredible amount of distortion.

Distortion in a valve radio can often be caused by a leaky coupling capacitor from the plate of the driver stage to the grid of the output valve. This allows the plate voltage to be applied to the control grid of the output valve, thus biasing the grid positive instead of negative. As the little Astor had just had all of its old capacitors replaced, a faulty coupling capacitor seemed unlikely.

However, a voltmeter check of the output valve's control grid revealed a high positive potential. The coupling capacitor was replaced but the situa-

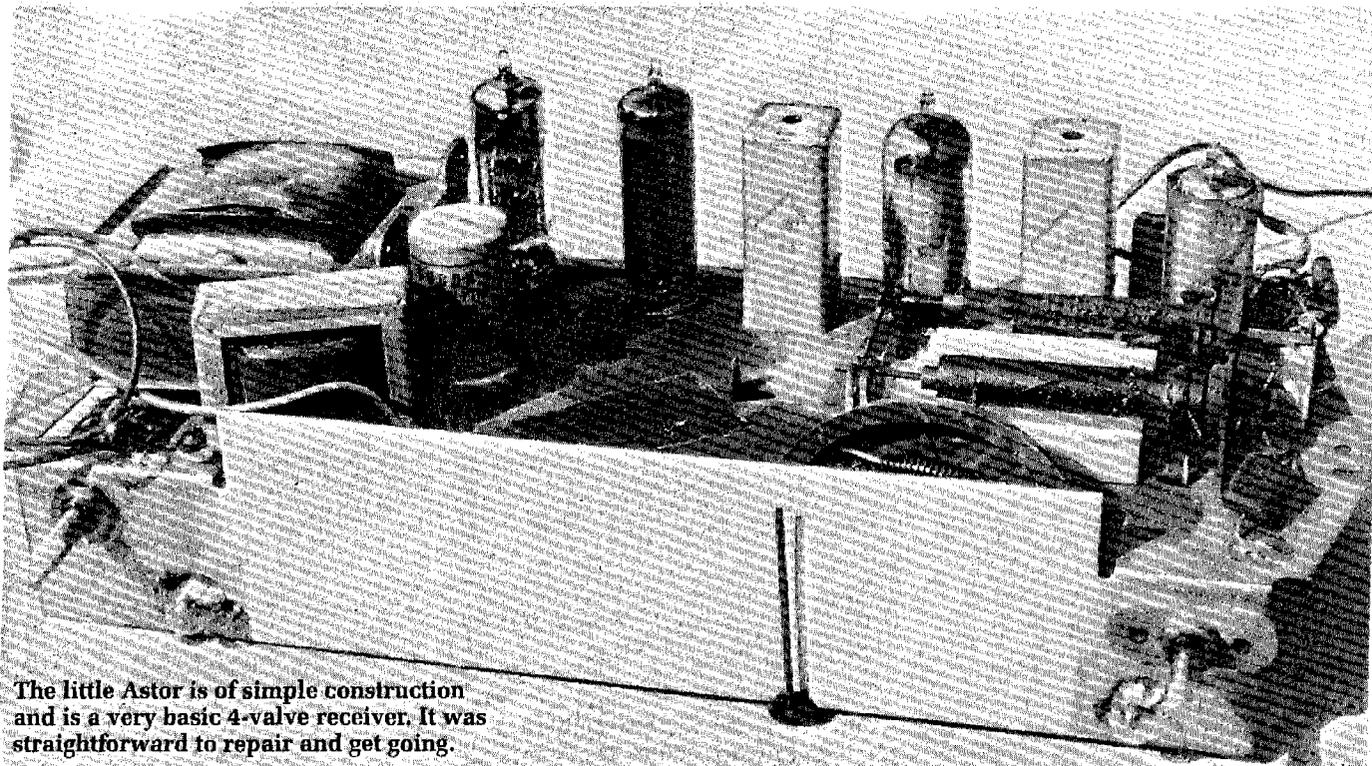
tion remained the same – the control grid was still positive!

Studying the circuitry more closely revealed a 100pF silvered mica capacitor connected between the plate of the 6AQ5 output valve and its control grid, via a 47k Ω stopper resistor. This capacitor is designed to apply a small amount of negative feedback to the control grid of the output valve, to improve the audio frequency response of the receiver. It was reasonable to assume that this mica capacitor was faulty and it was!

Removing the capacitor immediately cured the distortion problem and the set sounded normal – but not for long. After about a minute or two, the distortion returned and the volume faded to almost nothing.

At this stage, I recalled the short indication when testing the 6BE6. The valve was replaced and that fixed that problem – no more distortion and stable volume. A new 100pF capacitor was also fitted in place of the faulty one and repairs were nearing completion.

There was still one remaining problem with the receiver – it was full of whistles. The 6AD8 IF (intermediate frequency) amplifier valve was replaced and that eliminated the birdies, so the valve obviously had some sort of an internal fault or a shielding problem.



The little Astor is of simple construction and is a very basic 4-valve receiver. It was straightforward to repair and get going.



The finished Astor mantel receiver looked quite presentable. It's not the sort of receiver that collectors would fight over but its owner was very pleased to have it restored to working order.

An alignment session peaked the IF transformers and aligned the aerial and oscillator circuits. That completed the restoration except for a few minor details. One of these details was the mounting of the loudspeaker. It has already been stated that two of the

mounting lugs broke off when removing the speaker's retaining clips. This is not an uncommon happening with this method of mounting and can make remounting the speaker difficult.

Perhaps the easiest way out of this situation is to glue the speaker back in place but this should be done with care. Some modern glues can be rather tenacious, so use them sparingly in case the speaker has to be removed some time in the future. Also, it is advisable to fit a grille cloth to minimise the accumulation of dust and fluff that builds up between the bottom of the speaker cone and the speaker baffle.

Checking mica capacitors

Perhaps some comment should also be made regarding that leaky mica capacitor. The faulty capacitor was the only silvered mica capacitor in the receiver. As time progresses, more and more of these capacitors give trouble and need replacing but it is not always easy to detect faults in mica capacitors.

When checking the suspect capacitor with a multimeter set to the ohms x 1000 scale, the meter needle showed not the slightest deflection. To many vintage repairers this would indicate that the capacitor was not leaking or shorted and not the cause of the problem. Not necessarily so!

When the same suspect capacitor

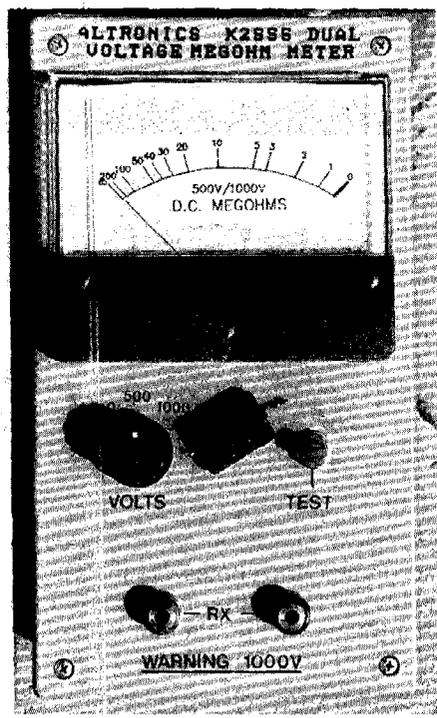
was checked at 500V using a megohm meter, the meter reading was about 0.5MΩ and that sort of leakage is quite unacceptable under the conditions in which the capacitor operates.

Leakage and resistance might be regarded as two different effects. A good component will measure the same whether checked on a multimeter at 3V or a megohmmeter at 500V. But leakage in a faulty component can increase with voltage. Which is why capacitors that work under high voltage conditions should be checked for leakage at high voltages.

In conclusion, this somewhat undesirable wreck of a radio was brought back from the dead and is once more an operative and useful receiver.

With its repaired and painted speaker grille it has little appeal to serious collectors but its owner was absolutely thrilled with the transformation. The little Astor now has pride of place in her bedroom and is looked on as a treasured possession.

This only goes to prove that beauty is in the eye of the beholder. What may not appeal to some can be simply wonderful to others. SC



A megohmmeter test on the suspect mica capacitor revealed a serious leakage problem. Capacitors which work at high voltages should be tested at high voltages.