

Preserving Australia's radio heritage

Vintage radio restoration Pt.2

Last month, we looked at some of the essential aspects of getting an old valve radio functioning again. This advice mainly concerned replacement of various electronic components, but repairs to mechanical parts and to the cabinet are also often required.

by JOHN HILL

Dials are one such mechanism and are a constant source of trouble to vintage radio restorers. Dials can vary from relatively simple units driven by a cord, to more complex gear and friction drive types. All require a full strip down, clean and assembly job if they are to run smoothly again.

Common problems encountered with

old radio dials are: broken dials or cover glasses, burnt out dial lamps, broken cords, goosed up gears, slipping friction drives and rusted or missing parts. There is usually much more to a dial repair than simply replacing the dial cord.

Cleaning dial parts is important and to do the job properly requires a brush

and kerosene. If the parts are carefully cleaned and re-assembled with a drop of oil or a dab of grease, the mechanism will operate smoothly once again.

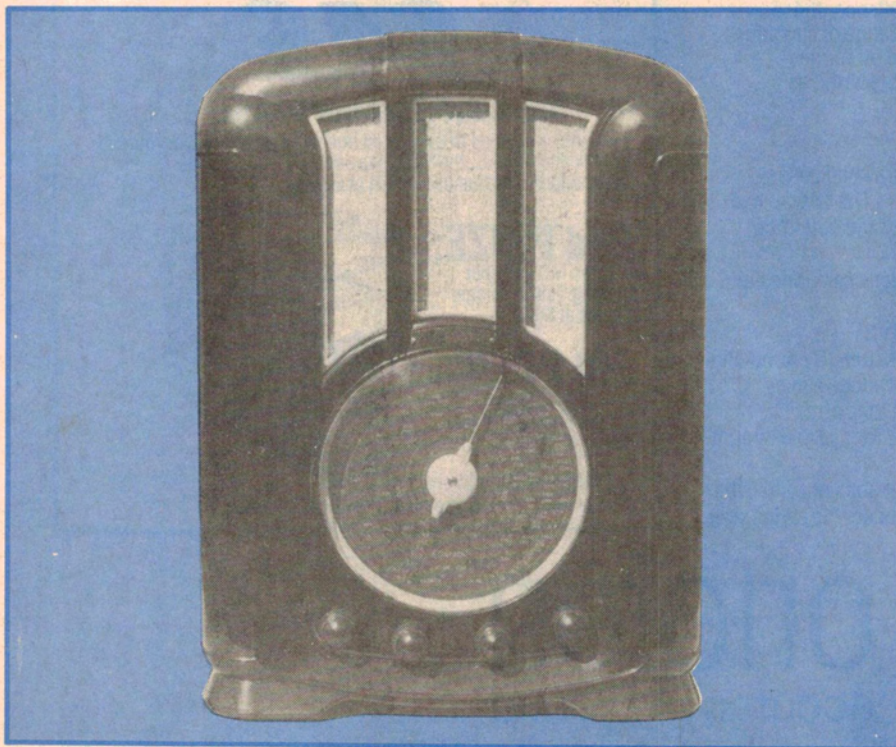
Some old dials are remarkably complicated. They have pulleys, cords, gears and even flexidrives to iron out misalignment between the dial mechanism and the tuner. It is therefore advisable to make a detailed sketch of the complete assembly before dismantling it. It doesn't have to be an oil painting, any rough old sketch will do. You are the only one who needs to understand it.

Don't rely on memory alone because it often doesn't help much when the time comes to put all the pieces together again.

Make sure that a dial sketch includes the path of the dial cord because some cord layouts are most involved and a sketch of the cord set up is indeed valuable. If the cord has broken it makes that task more difficult, but even with a broken cord, it is often possible to make a sketch of where the cord ran before it broke.

To give an example of the complexity of some dial set ups, I have an old 1939 Airzone five-valver that has the most elaborate dial mechanism I have so far encountered. It took approximately four hours to do the dial job, simply because there are so many bits and pieces.

For a start, there is the normal cord from the tuning knob spindle to the drum that turns the tuning condenser through a 2:1 gear reduction that is complete with backlash eliminator. The reason for the gear reduction is because the dial pointer rotates through 360 degrees, while the tuning condenser only turns 180 degrees. Such a set up was common on radios of the 1930s. In addition, there is a flexidrive unit, several backing plates and support brackets, at least a dozen nuts, bolts and spring washers, plus the dial assembly itself with its protective cover and dial lamps.



This 1939 Airzone has a complicated dial mechanism consisting of 150 individual parts.

In all, there are 150 individual parts just for the dial mechanism!

Whilst the Airzone dial looks impressive, it is nevertheless a little over engineered for the job. When compared to a modern transistor radio with a tuning knob on the end of the capacitor shaft, the Airzone setup is unnecessarily complex.

Glass dials

Most dial glasses require attention and they usually need cleaning on both sides. Needless to say, the side of the glass which carries the station markings must be cleaned with care — great care!

The station call signs were usually placed onto the glass by using a transfer, although a stencil may also have been used in some instances. Some station markings are so tough, the dial can be washed under running water and dried with a towel. However, other dials are so fragile they cannot be touched with anything, otherwise the stations just wipe off the glass.

There are dials that really are this delicate and even a gentle rub with a cotton bud will instantly remove the station markings. The paint used to mark old dial glasses seems to degenerate with age into a powder-like substance which is easily dislodged.

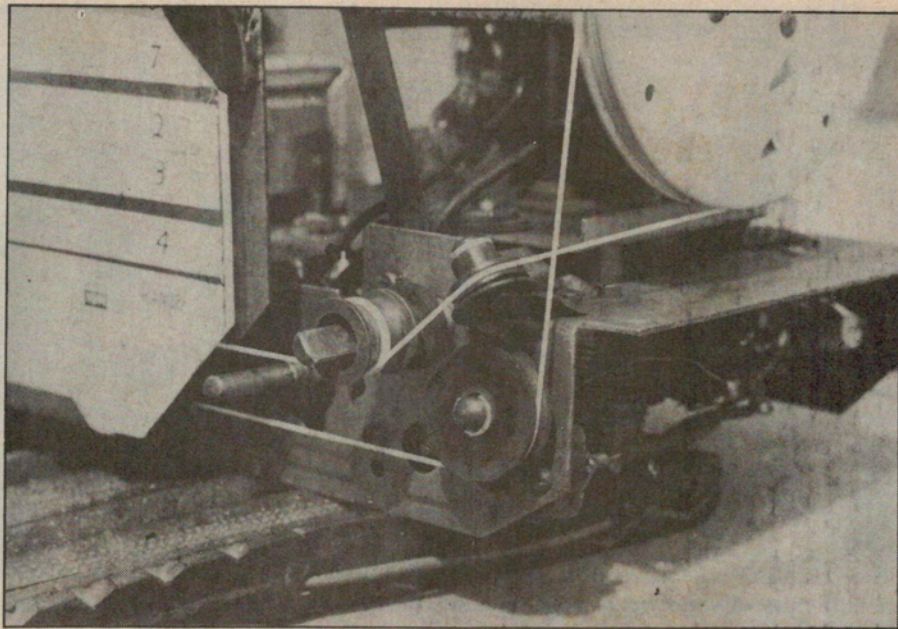
Not all dials are so difficult to work with but considerable care must be taken when cleaning dial glasses, otherwise the dial might be ruined. Unfortunately, both sides of the glass must be cleaned to bring back that new look.

A touch of paint on the dial pointer also helps the dial to look new again. It is simple little things like that which make a restored radio look the part.

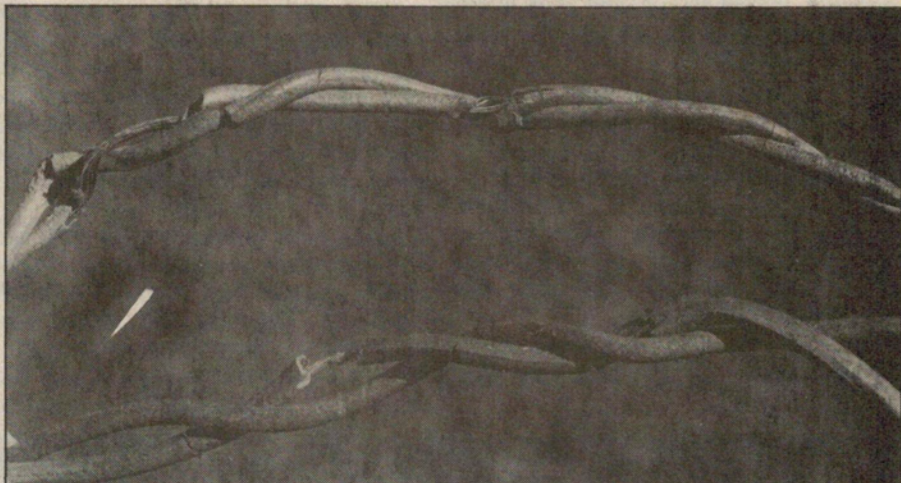
Many old radios have broken dial covers. Some covers are glass, while others are celluloid or like material. These dial covers often crack and discolour and replacement is the best way to go.

Although the majority of dial covers are shaped (not flat), a flat replacement doesn't look out of place and one wouldn't know the difference unless very observant. Let's face it: a flat, clean dial cord is better than a discoloured and cracked one, even if it is nicely shaped and contoured.

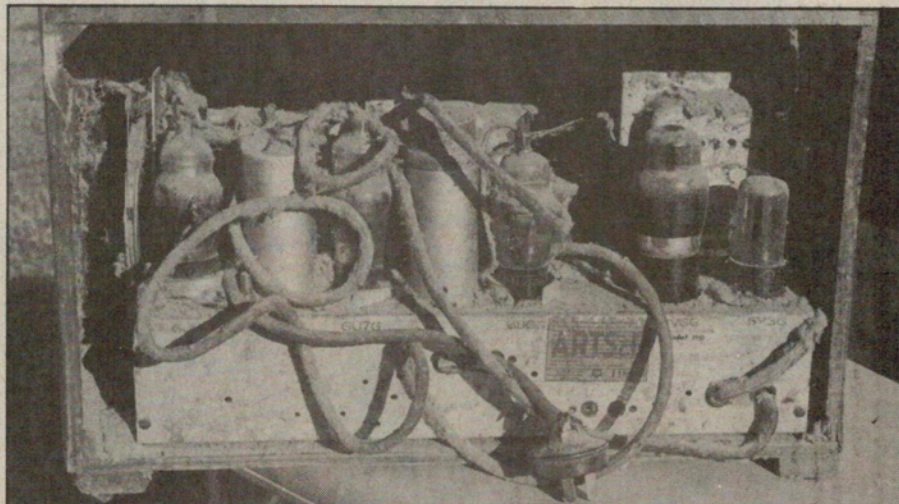
Glass is difficult to cut and, unless one has mastered the art of cutting it, acrylic sheet is a much easier material to work with. Acrylic is obtainable in many thicknesses and 2-3mm is ideal for radio dials. Once again, a replacement dial cover helps to give an old set that new look and a restoration can fail in its overall effect unless the dial is given the



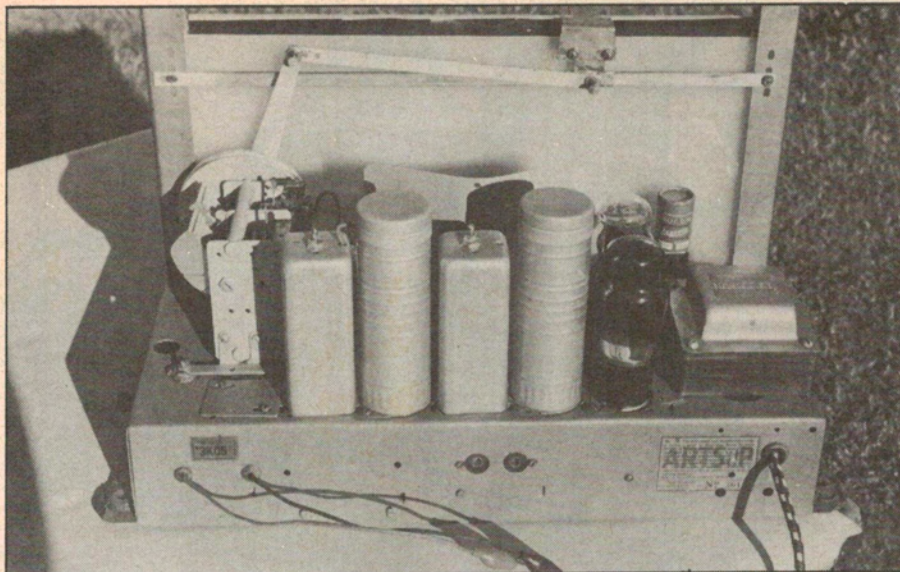
Dial cords can be difficult to replace. A layout sketch is a good idea that can save time and frustration.



Rubber covered insulation deteriorates with age. Replacement of such sections of wiring is most essential.



A typical valve radio prior to restoration. A good many hours of work is required to bring such receivers back from the grave.



A fully restored radio, ready to go back into the cabinet. Note crank used to move dial pointer.

full treatment. The dial is the focal point of the whole set and if it looks second rate, then the set will also look second rate.

The wiring of the dial lights is something that should also be checked for often the insulation has broken down and the low tension can short out on the chassis somewhere. Insulation breakdown is common when natural rubber has been used, for it becomes hard, cracks and falls off, leaving the wires bare and vulnerable.

Replacing dial globes while the dial is being worked on could also be a wise move.

Restoring the chassis

Valve radios are either fully open or partly open at the back (for cooling) and, as a result, dust and grime finds its way into the set. Cleaning away the dust and rubbish frequently reveals rust and other forms of corrosion on various components, including the chassis. This makes the set look quite unsightly.

Some parts polish up quite OK and the aluminium cans and valve shields usually respond well to the wire brush treatment. Retaining the natural aluminium look is better than painting over the top of it. However, the chassis and other steel components are inclined to

rust and require some form of paint work to enhance their appearance.

It is here that the radio restorer must decide whether he will leave the set in its original condition or touch it up with a coat of silver frost or whatever.

In some cases, the original surface cleans up quite well and can be rejuvenated by lightly rubbing with a lint free cloth dipped in the touch up paint. A touch up of this nature is often more appropriate than a complete repaint job for it looks clean and tidy, but not that new looking that it has obviously been repainted. One could perhaps reduce the value of an old radio by over doing the paint brush routine.

Loudspeakers

Old loudspeakers can also give their share of trouble and some are in a sorry state to say the least.

The most common problem is a torn or damaged speaker cone. Being made of paper, the cone is easily damaged and most old speakers have a rip or two in them somewhere. Even silver fish eat holes in speaker cones.

This type of damage can be repaired by gluing the rip together again and "Silastic" or similar seems an ideal repair agent for sick speaker cones. Silastic adheres well to the paper and is quite flexible if it needs to flex. Whilst there may be other effective means of fixing speaker cones, Silastic is quick, convenient and appears to be long lasting.

One way out of speaker trouble is to simply fit a modern speaker of similar size but, once again, this ruins the originality of the set. Whether this is important or not is up to each individual collector.

Personally, I strive to keep my sets as original as possible and if a speaker has to be replaced, it is usually replaced with a similar speaker. Electrodynamic speakers offer greater problems in this regard, and an exact replacement is not always possible.

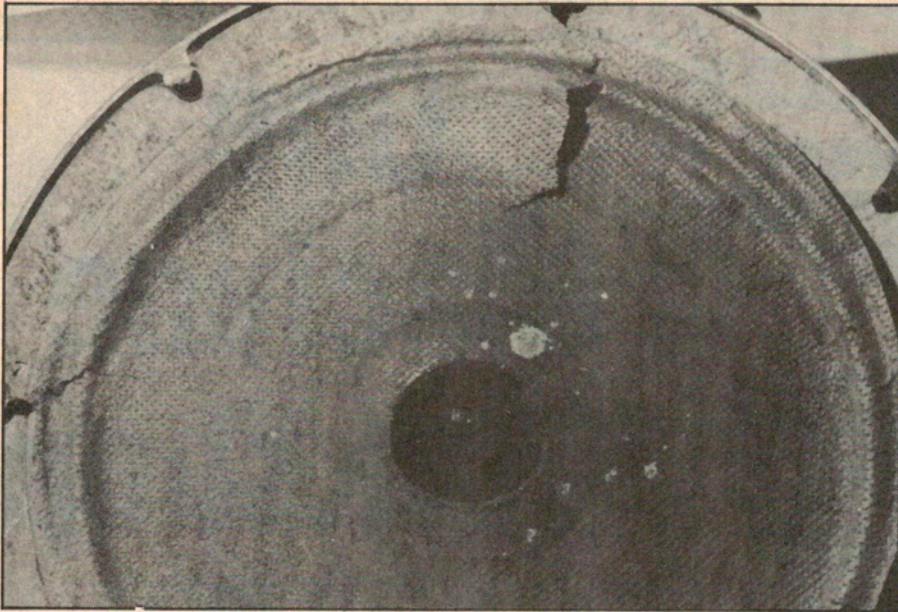
Electrodynamic speakers come in two varieties — reasonable ones and terrible ones. There is also a third type; they are the ones with burnt out field coils that don't work at all.

If a speaker gives a poor reproduction, which isn't uncommon with electrodynamics, it can be replaced with a permanent magnet speaker, although there is a bit more to it than that.

When switching from electrodynamic to permanent magnet, there is a little matter of the field coil which must be retained in some form or other. The field coil is the high tension choke and it can be replaced with a separate choke



A small wire brush and a can of paint can help clean up a grotty chassis.



Torn loudspeaker cones can be repaired even when in this condition. "Silastic" does the job quite well.

of the same impedance or a high wattage resistor. Even the original field coil can be used if it is detached from the speaker and placed in some inconspicuous part of the set.

Cabinet restoration

Depending on one's interests, a restorer may favour the radio repairing aspect of the hobby, or he may prefer the cabinet restoration side of it. Personally, I hate restoring wooden cabinets and only wish I knew someone who would do a good job for a reasonable price.

Restoring timber cabinets is nothing but a lot of hard work. The first step is to fill all the split and loose joints with a wood glue such as "Aquadhere" so as to tighten up the frame. Most old cabinets were glued together using animal glue (the old hot-pot technique) and, after four or five decades, the glue lets go and the cabinet becomes very rickety.

The next step is to fix any raised blisters or lifted sections of the veneer. Blisters are repaired by first cutting a slit in the them so as to get some glue inside. Once this has been done, the

blister can be clamped and left to dry for 24 hours. A webbing clamp is a most useful tool for this purpose.

Then comes the loathsome job of scraping off the old varnish. In some instances, the varnish scrapes off easily because it has deteriorated with age and is only loosely attached to the surface veneer. When the varnish is more firmly attached, paint stripper is the best way to go.

When using paint stripper, it is a good idea to use it sparingly and not saturate the woodwork as there could be a long term chemical effect on the wood fibres. There are special "antique" paint and varnish removers available and it may be wise to use such products as a precaution.

After the old varnish has been removed, it is advisable to inspect the cabinet for dents and apply steam to those areas as it helps to swell the depression back to normal again.

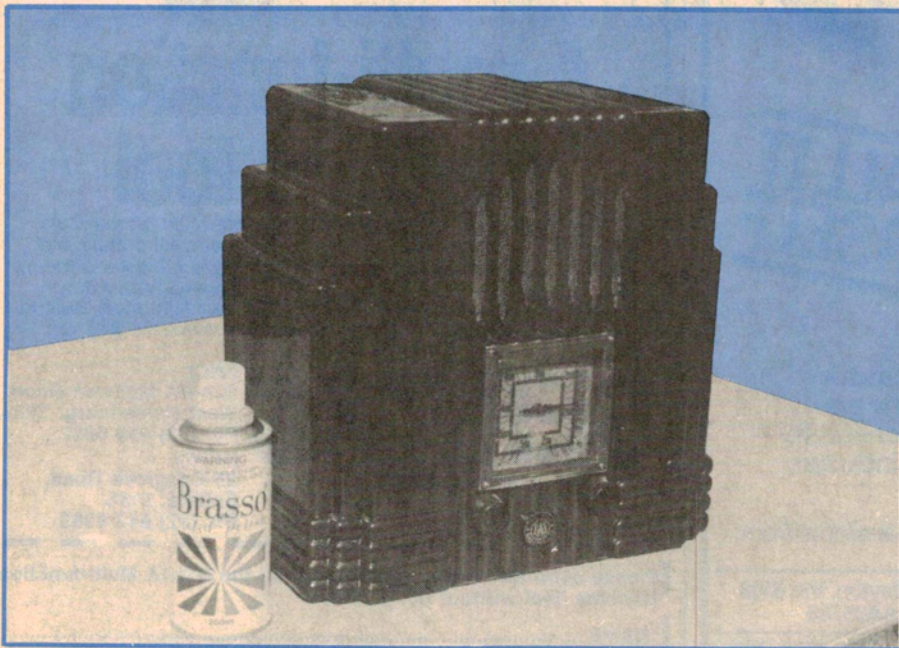
Sand papering is next on the list and the more time spent smoothing out the surface, the better will be the final result. However, great care must be taken when sand papering because the veneer on the cabinet is less than 1mm thick and to sand through the veneer is to ruin the cabinet. Course sand paper should be avoided due to the depth of the scratches it produces.

When properly sanded and dusted down, the inside of the cabinet should be painted. Black or clear are the most common treatments and if the paint or lacquer is mixed 50/50 with turps, it will soak into the wood and produce a relatively flat surface finish.

Most old wooden cabinets were clear lacquered on the outside, with odd parts painted either black or chocolate brown so as to contrast with the rest of the cabinet. This is a very good effect and the easiest way to reproduce it is to do the paint work first, then lacquer over the lot.

The lacquer can be applied using either a brush or a spray can, depending on available equipment and the quality of the finish required. If using a brush, the brushmarks can be smoothed over with 1200 grade wet and dry paper after the lacquer has dried. An ultra thin coat of Scandinavian oil applied to the surface will add a semigloss effect. A few follow up coats of oil will further enhance the surface finish.

There are many ways of finishing a wooden cabinet; none are easy and all take hours of scraping and sanding. Of course, the more cabinets one does the more proficient one becomes. Doing



"Brasso" metal polish is ideal for cleaning up old bakelite cabinets such as this mid 1930s Radiola.

cabinets in twos or threes can save time if a mass production approach is preferred.

Plastic cabinets

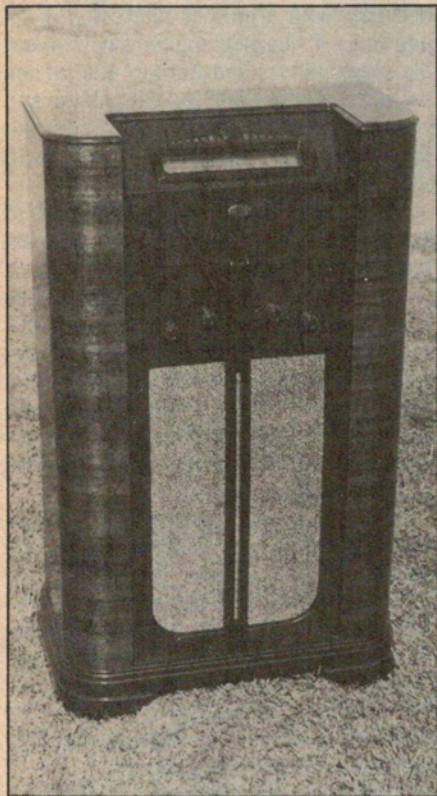
Plastic and bakelite cabinets are much easier to restore and about two hours work will see most of these cabinets looking shiny and new again.

A good starting point with a bakelite cabinet is a thorough scrub up with hot soapy water, both inside and out. A toothbrush and a small nail brush are useful for getting into awkward corners and deep grooves.

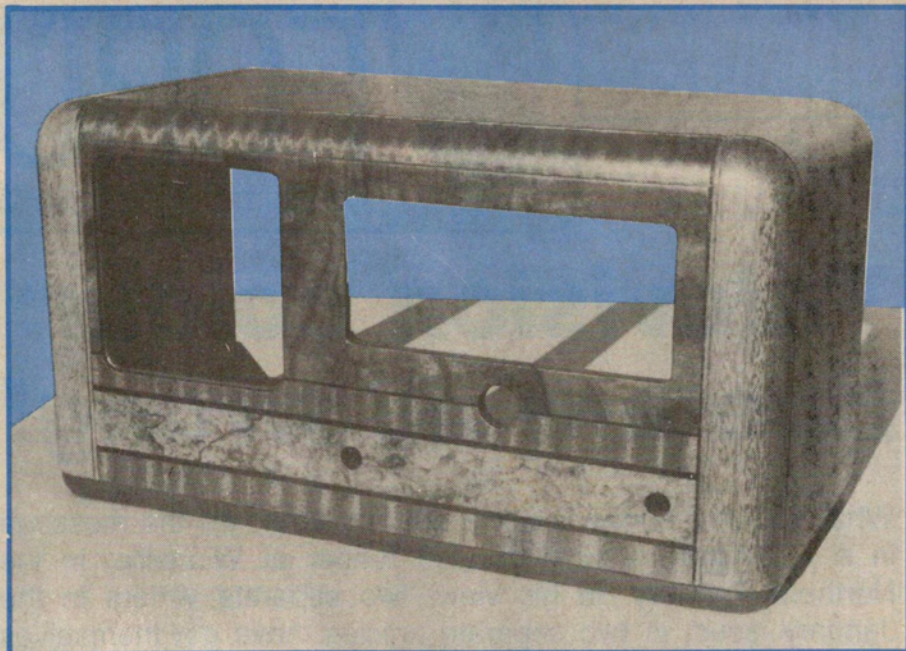
When clean and dry, check for any cracks or splits and, if there are any, repair them with a drop of super glue. Now comes the hard work.

The dull finish on the cabinet can be completely brought back to new by a hard rub down with "Brasso" metal polish. A hard rub means just that. What's required is plenty of Brasso, a firm pressure and an hour or so of rubbing. If sufficient effort is put into the job, bakelite and plastic cabinets will shine better than new.

Deep scratches can be a bit of a problem and they require a lot of pressure and rubbing to make them fade just a little. Perhaps gentle use of fine wet and dry paper could help in some instances,



Timber cabinets, as used for this old Air-zone, require a lot of work to restore them to their former glory.



This HMV cabinet combines several contrasting timbers. They don't make them like this any more.

but the colour and texture of the material may change if rubbed down too deeply.

The "Brasso" treatment is also ideal for the control knobs and these too can be made to shine as if they were new. Special care must be taken to clean the knobs before polishing and a scriber point and toothbrush are handy tools for digging out the rust and grime that settles in the grooves over a period of time.

"Brasso" is truly a wonder treatment for many old radio parts and another bit that responds well is the plastic dial cover that so many old radios have.

Dial covers appear to be made of either celluloid or cellulose acetate, the difference being that celluloid discolours to a yellowish tint, whereas cellulose acetate remains clear. However, as both materials are soft plastics, they scratch easily and, over a period of time, become almost opaque. Careful rubbing with a soft cloth and "Brasso" will polish away the scratched surface and restore the dial cover to as new condition once again.

Great stuff, that "Brasso"!

Conclusion

As the author of these valve radio restoration articles, I hope that I have inspired some readers to do something about Grandpa's old radio that has been in the shed for the past 20 years.

If you have a valve radio, you will find that restoration is an interesting and rewarding experience that will pro-

duce a very good radio set. If you don't wish to restore the set, then pass it on to someone who does. Whatever you do, don't dump it. Once that happens, that particular example of radio history is lost forever. E

Ian J. Truscotts ELECTRONIC WORLD

For all your components!
Test gear, data books.
Huge range of active
and passive components.

FLUKE Multimeters
Amidon Ferrite Products

Are you pulling out your
hair trying to find parts
for the PLAYMASTER
AM/FM tuner kits???

Give us a call! We have most
parts (incl. semi's) in stock.

30 Lacey Street,
CROYDON, VIC. 3136
Ph: 723-3860/3094

Mail Orders Welcome