

# VINTAGE RADIO

By JOHN HILL



## Those never-ending repair problems

**This month, I have a couple of special repairs to discuss; you know the type – those nasty, hard-to-find problems that nearly drive you crazy trying to locate them.**

The first one was for a collector friend who had a 1938 dual-wave console type receiver with no maker's name on it. It was a well-made set with a big 12-inch electrodynamic loudspeaker and a magic-eye tuning indicator. It worked fairly well too – but only on shortwave. My job was to replace all of the original paper capacitors and get the broadcast band working again.

At first glance, it seemed an easy job – probably a dirty wave-change switch. Usually, the problem is reversed; the broadcast band works but the shortwave band doesn't. As the

wave-change switch may not have been used for the last 20-30 years, it is not surprising that the contacts become dirty and no longer make reliable connections.

On the other hand, I was a little apprehensive about some aspects of the job because someone had recently worked on the set. The original electrolytics had been replaced with modern 450V units and the dial light wiring had been altered. There is nothing worse than trying to troubleshoot someone else's mistakes.

The usual solution to dirty switch contacts is to give them a good squirt

with contact cleaner while rotating the switch back and forth. This treatment usually brings the dead band back to life again and all is well. But in this instance, no amount of contact cleaner made any difference.

Naturally, the next step was to check a few other components, namely the broadcast band aerial and oscillator coils. These checked out OK, so that turned my attention back to the wave-change switch again.

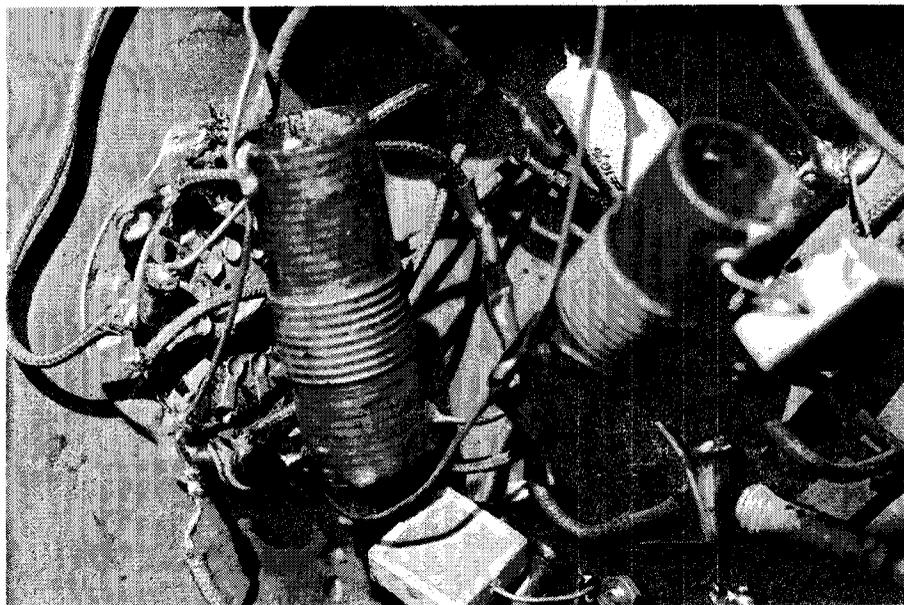
Prodding and probing at each individual contact revealed that the broadcast band would work when pressure was brought to bear on certain switch contacts. As Murphy would have it, these contacts were on the most awkward side of the switch to work on.

### Unused contacts

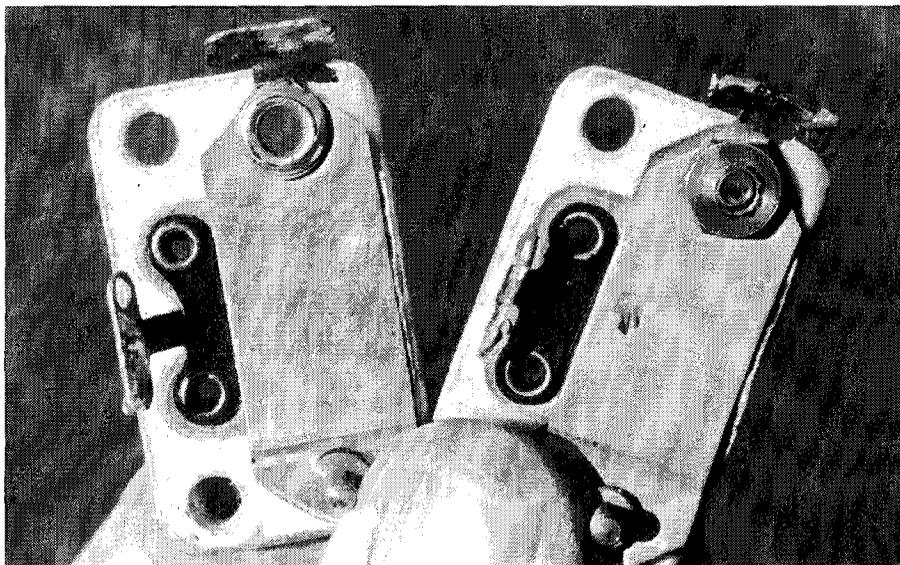
Fortunately there were two other unused sets of contacts on the switch. They were originally used to switch the dial lights so that different sections of the dial would light up depending on the position of the wave-change switch. This dial wiring had been disconnected at some time in the past and rewired to a common circuit that lit all the lamps, regardless of the position of the wave-change switch.

Nothing is ever as simple as it first appears. After disconnecting the leads from the faulty section of the switch, I soon discovered that they were too short to reach the alternative contacts. All three wires had to be extended by joining on extra lengths. Success at last! On completion of the change over, the receiver worked on the broadcast band – but not for long. After three or four switch operations, the broadcast band went dead once again.

At this stage, I decided to check each set of contacts on the wave-change switch with a multimeter. This



Access to the far side of the wave-change switch in the old console receiver was not easy. The troublesome switch contacts were bypassed by using an unused section of the switch.



**The troublesome padder capacitor (right) compared to a similar undamaged unit. A small nut & bolt proved to be an adequate replacement for the broken rivet. The author had not encountered this sort of problem before & it took quite some time to locate.**

showed that there were no faulty contacts and each set cut cleanly in and out of circuit. After double checking, the wave-change switch was given a clean bill of health.

By now, I was in a quandary. What seemed a straightforward job at first had developed into quite a puzzling mystery. There had been a fault in the switch but after fixing it another problem had arisen somewhere else.

### **A puzzling intermittent**

Then came the big breakthrough. I dropped a pair of pliers on the workbench and the set burst into life. There

was a loose contact somewhere and it did not take much of a jolt to trigger it on or off.

The mysterious loose connection was so sensitive it was hard to locate. The slightest tap anywhere would send static-like reverberations through the speaker. Tapping the broadcast band oscillator coil can seemed to have the most effect so the can was removed to see if there was something shorting out inside. Nothing – all was in order and by this stage everything had gone quite dead.

A pair of long-nose pliers was then used to wrench all the wiring joints

(insulated handles of course). This seemed to indicate that the trouble spot was in or around the padder.

The receiver had a typical 1930s padder – one of those white porcelain ones as fitted to so many old sets. But how often does one find a defective padder?

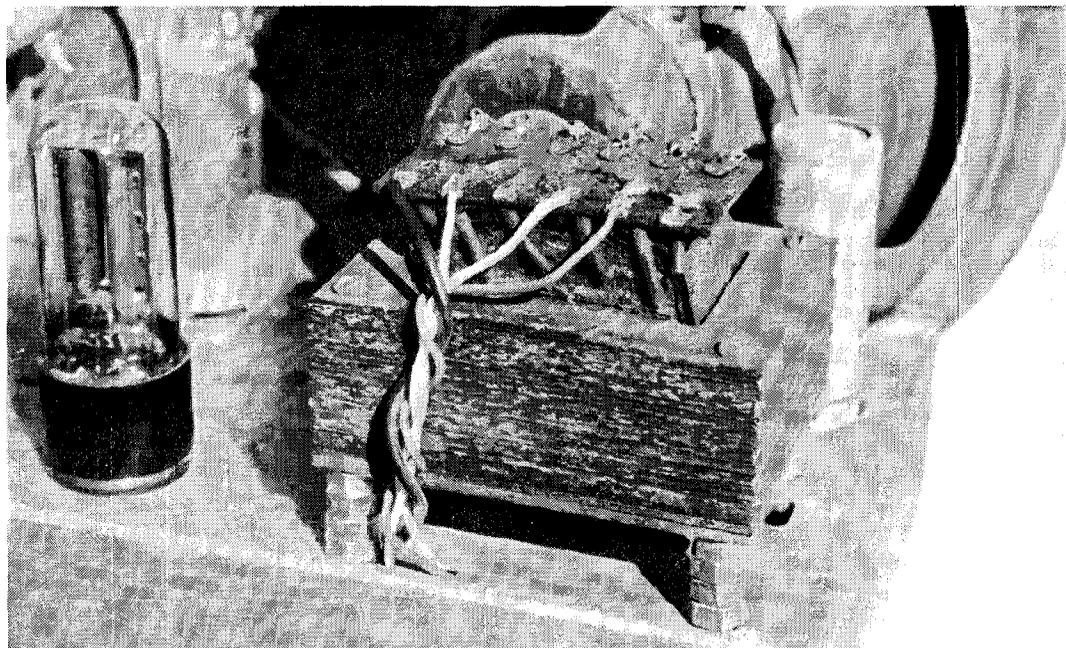
Well, this was one such time! The tubular rivet that holds the moveable plate to the body of the padder had broken and had let the plate come adrift. This wasn't very noticeable because the wire that was soldered to the loose part was short and thick and held everything in place fairly well. The rivet head was also still in place and everything looked normal.

However, after removing the padder and replacing the broken rivet with a small nut and bolt, my problems were over. I have never encountered a faulty padder before, so there is always a first time for everything.

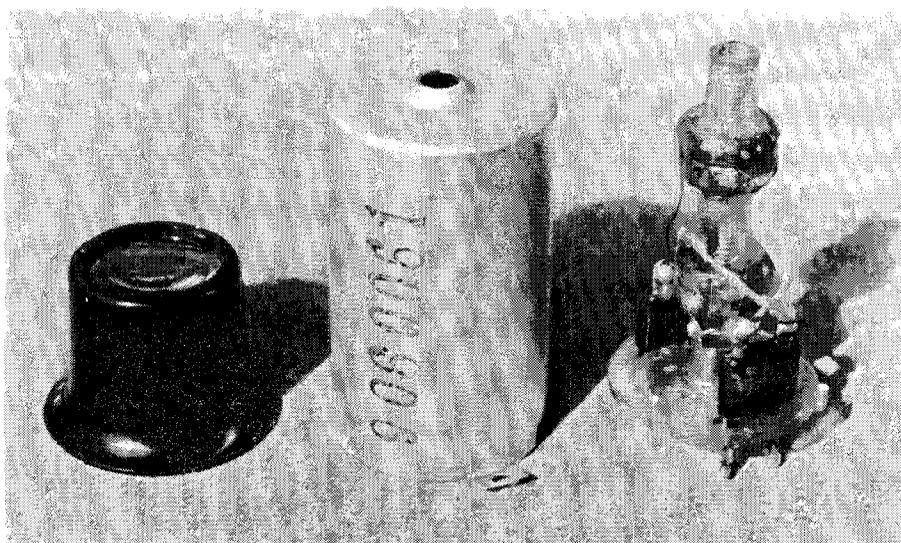
### **A dangerous repair**

The next problem was one that made me feel ill when I saw it. It was the most dangerous and irresponsible repair I had ever seen and who ever did the job should be lined up in front of a firing squad and shot!

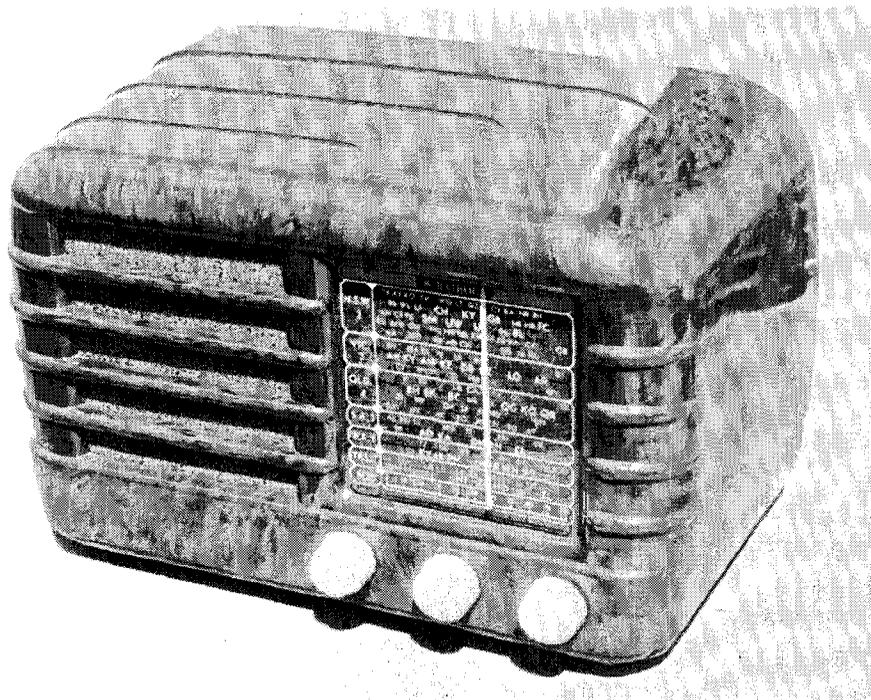
The repair involved a power transformer change-over where a considerably different unit to the original was used as a substitute. While the transformer's voltages were OK, the mounting method used was dreadful. All the transformer connections were above chassis, completely unprotected



**Oh what a feeling! – if you happened to touch those transformer connections. The near side row of connections are for the 240V primary winding. It's a very makeshift repair that has been done without thought or consideration for the well being of others.**



This intermediate frequency (IF) transformer has been repaired by bridging a corroded lead-out wire. Similar problems are also often found in the aerial & oscillator coils of old radios & are enough to stop a set dead. A satisfactory repair can usually be carried out on such coils, although it can be a fairly tedious job.



A 5-valve Radiola receiver from the early post-war era. A common problem with this model is a "rattly" loudspeaker, caused by the cone detaching itself from the frame. Fortunately, this problem is usually repairable & a replacement loudspeaker is not necessary.

and within easy reach of an unsuspecting victim.

As shown in the photograph, the nearest row of connections are for the 240V primary winding. What a lethal booby trap!

Any repairer who had even the slightest regard for his customers would have mounted the transformer properly. The guy who did this job

simply couldn't be bothered to cut the necessary rectangular shaped hole in the chassis so as to accommodate the replacement transformer in the correct manner.

As radio repairers – vintage or otherwise – it is our responsibility not to make repairs in such a manner that they are a danger to others. Whether a qualified person or not, only a half-

wit would do a job that has the potential to kill.

## IF transformers

On another tack, I have recently had a run on faulty IF transformers and, in every case, it was easier and possibly quicker to repair the transformer, rather than scrounge around looking for a suitable replacement.

In the case of the unit in the accompanying photograph, corrosion in one of the leads rendered the bottom winding open circuit. It is often possible to bridge the break with a piece of copper wire and the unit will function once again.

If repairing a transformer that uses Litz wire, a thick piece of joining wire would be better than a thin piece. If it is an earlier type of transformer using single strand copper wire, then it doesn't matter much what gauge of wire is used.

These fiddly repair jobs are often in the microsurgery class and a small soldering iron tip and a low-powered magnifying glass are handy tools to have. Good light comes into the equation too!

A repair of this nature will frequently solve an IF transformer problem. It is always advisable to disconnect the transformer and remove it from the chassis before doing any further work. Attempting the repair while the transformer is on the chassis is usually quite difficult.

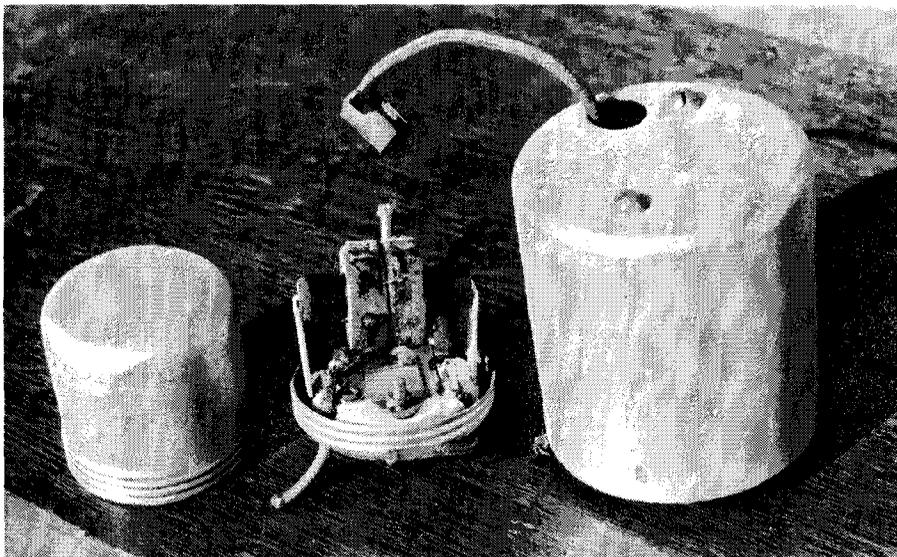
It should also be mentioned that exactly the same problem is often found in aerial and oscillator coils and they usually respond to similar treatment.

## Loudspeaker repairs

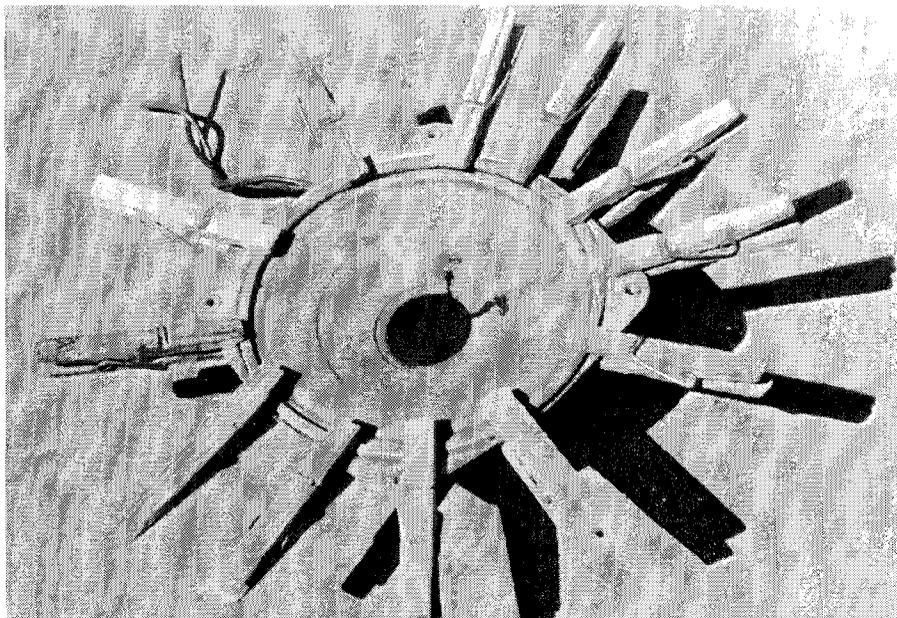
My final tip involves repairing those "rattly" loudspeakers that are so common in early post-war AWA Radiolas. The problem is caused by the speaker cone detaching itself from the frame, allowing it to buzz, rattle and produce distorted sounds.

The speakers at fault include both electrodynamic and permag (permanent magnet) types covering from about 1946 through to the late 1950s.

The first step in the repair process involves removing the speaker from the set. This amounts to a little more work than one might initially expect, because the whole front of the receiver has to be removed and that includes the dial and grille cloth.



These intermediate frequency (IF) transformers are from mid-1930s radio receivers. It is often easier & quicker to repair these items than look for replacements. A visual check with a magnifying glass will soon locate a corroded section of lead-out wire.



An old loudspeaker can often be salvaged simply by gluing its cone back into position using a suitable adhesive & a handful of clothes pegs. Detached cones are a common problem in post-war Radiola mantle radios.

Once the speaker is out, the problem is obvious and in bad cases the cone is free of the frame all the way around. The remedy is simple – glue the cone back where it belongs. Use a rubbery type of contact cement (eg, Selleys Kwikgrip<sup>®</sup>) and hold the cone in place with clothes pegs until the glue has set – see photo.

Often a bit of manoeuvring is required to position the cone centrally and a spot must be found where the cone moves freely without the voice coil fouling on the magnet.

While the speaker is on the workbench, it is a great opportunity to clean the dial glass (be careful not to remove the markings) and, if necessary, fit a new dial cord and grille cloth. If the grille cloth is fitted to the cabinet instead of to the cardboard speaker mounting baffle, it gives easy access to the speaker if it needs to be removed or replaced at some time in the future.

That's it for Vintage Radio this time. I hope you will join me again next month. **SC**