ANTIQUE RADIOS

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Servicing your antique radio

TO MANY OF YOU WHO HAVE GROWN up in this age of transistors and integrated circuits, the vacuum tube is a total stranger. And even some of us "older guys," have forgotten much about that old friend. But if you expect to get your antique radio working, you have to know a little something about the "antiques" inside it. In this month's column, we'll show you how to check tubes, and give you some other pointers to help you get your old radio back into action.

Testing tubes

Back in the early days of radio, any good radio repairmen kept a complete stock of tubes in his repair kit. To complement his tube assortment, the repairmen usually carried a tube tester, much like the ones shown in Fig. 1. Such units could test about 100 tubes of various size and pin configurations. The tester came with a tube chart on a single card that told the user how to set the various switches to test different tube types.

When restoring old radios, a tube tester is a handy instrument to have around, but it isn't absolutely necessary. Continuity checks can be used to see whether the tubes are usable. Such a test can tell you if the tube should be discarded, but not necessarily if it is good, and certainly not whether it's weak.

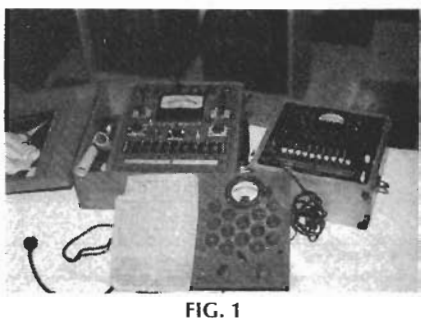

FIG. 1

Checking the continuity of old radio tubes can be done with an ohmmeter or simple continuity tester. Before you start removing the tubes, however, check to see if there is a tube-placement diagram either inside the cabinet or beneath it. A diagram can at least cut down on the problems that you are likely to encounter. If no placement diagram is found, you can make your own as you remove the tubes.

A word of caution: Make sure that the set is turned off and unplugged before removing any chassis component (the reason for that is obvious). Test all or as many components as you can with your ohmmeter or continuity tester.

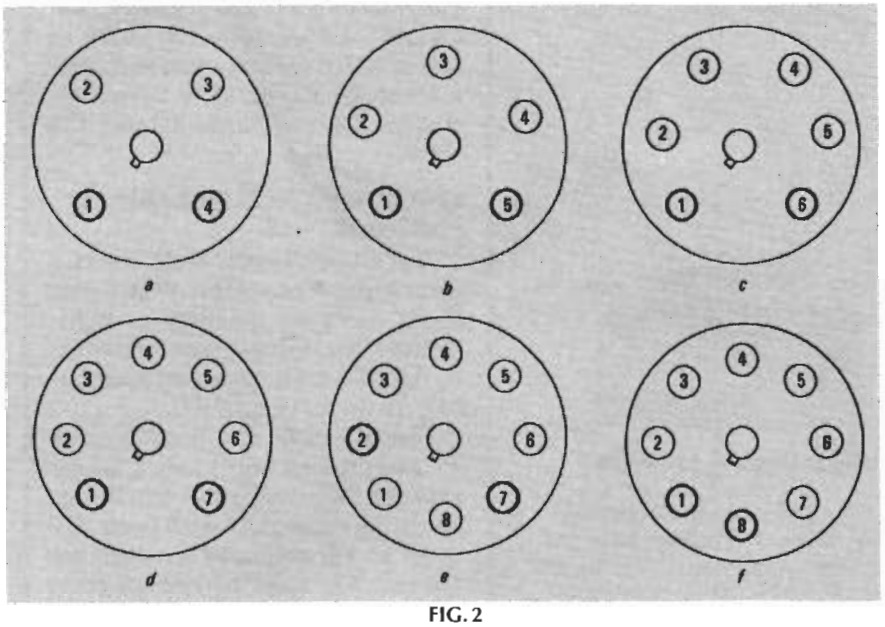

FIG. 2

Figure 2 shows some of the most popular vacuum-tube pin configurations. The pins shown in bold are the filament pins.

Using your ohmmeter, check for continuity of the tube filament. If there is continuity between the two filament pins, that portion of the tube is probably OK. Then check to see that there is infinite resistance (no continuity) between the other pins (elements). If continuity exists between two tube elements, or between a filament and an element, the tube is shorted, therefore it should be discarded. A shorted tube can knock out several other components.

There are, of course, components other than tubes in an old radio. Most of those, such as resistors, capacitors, and transformers, you are familiar with—they function just like their mod-

ern day counterparts. Their appearance, though, may be slightly different.

One of those differences in appearence should be noted here. Modern resistors use the banded color-coding scheme that we are all familiar with. Older units do not use banding, but they do make use of the same coding scheme. On those older units, the main body-color represents the first digit, the color of the tip of the resistor is the second digit, and the multiplier is signified by the color of a dot or band at the middle of the unit.

Also, the leads on older tubular electrolytic capacitors used a color-code, of sorts. In those, the black lead was usually negative, while the colored lead was positive.

Beginning in the early 1930's, some manufacturers have followed a standardized wiring color code. If applicable, that information might be found on the parts-location diagram. Be aware, however, that colors fade with time, and any repairs in the intervening years may have lead to different-color wiring being used. Thus, the knowing the wiring color code used in your set is likely not to be a great help, and it could be a hindrance (due to fading, those "tan" or "brown" wires may very well have started out being wires of a quite different color).

Troubleshooting the audio

Dust, corrosion, dampness, and time take their toll on old radios, and any one of those factors can cause your radio to fail to operate satisfactorily.

Operational antique radios have a wonderful tone that's quite unlike that of any of today's sets. If the volume in your set is OK, but the sound is horrible, all is not lost; it is often possible to restore your radio's good sound quality.

Hum is probably the most common problem found in the audio of old radios. It is most often caused by age and non-use. While an audible hum is present in all old sets, it should not be loud enough to be heard when the set is tuned to a station. An audible hum doesn't necessarily mean that there's a serious problem.

Scratchy sounds, during tuning, can almost always be traced to the plates of the tuning capacitor. The wafer-thin plates should mesh, but never touch. Dust can build up between the plates and cause distortion. Clean between the plates with a brush or vacuum cleaner.

Bent plates or foreign objects between the plates (paper clips, coins, etc.) are common problems in old radios that have been lying idle for many years. Corrosion on the trimmers can cause distortion or off-frequency problems.

Distortion in superheterodyne radios can often be traced to the IF transformers. Corrosion or damaged mica in the trimmers can upset the frequency and send assorted noises through the loudspeaker. Make sure that the metal transformer-shielding is firmly attached to the chassis.

Sometimes you'll hear a crackling sound coming through the loudspeaker, which may be due to arcing in the IF. To find out if that's what is happening, just turn off the lights, "crank" up the set, and look down the little hole on top of the IF shield. If you see sparks, you've found the trouble.

All the parts in the speaker assembly play an important part in the quality of the sound produced by old radios, including the diameter of the speaker cone. Torn speaker cones—a common occurrence to old radios—can be repaired with speaker cement. Of course, you can use tape to temporarily patch the cone, but tape can dry out and peel off, or cause distortion.

An off-center voice coil can cause a scratching noise whether the set is being turned on or off. The coil can be checked by lightly pressing the cone to see if its movement is smooth. If not, the speaker is probably damaged. That may have been caused by warping due to dampness, or by the speaker being dropped. On some early sets, the "spider" (the flat, springy object that holds the apex of the speaker's cone) can be adjusted to compensate for poor-quality sound. If there are no adjustments possible, then the speaker must be replaced. **R-E**