

ANTIQUEN RADIOS

Portables

THIS TIME WE'LL TALK ABOUT BATTERY-powered (and three-way) portable radios. We'll discuss the origin and development of portables, as well as servicing hints. But first, let's take a look at a special radio/ phono combination set.

The antique of the month

The unique Philco (Model 46-1201) shown in Fig. 1 was very popular right after WWII. The quality of the cabinet of a new set was ho-hum, but it probably went for less than \$40 new. The one pictured needed some work and cost me \$10.

That Philco was popular not because of an unusual radio chassis, but because of its front-loading 78 RPM record changer. In fact, the chassis was really standard, but records could be played loud enough to allow dancing in a large room. Maximum volume had to be considered when buying a small record player back then.

The superheterodyne chassis has a 455-kHz IF and five loctal tubes. The 50X6 rectifier and 50A5 output tube are getting scarce, but there are still some around. A 7C6, 7A5 and 7B7 round out the tube complement.

Besides its unique appearance,

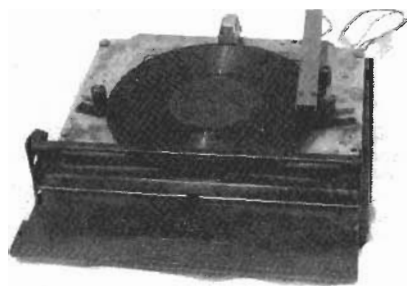


FIG. 1

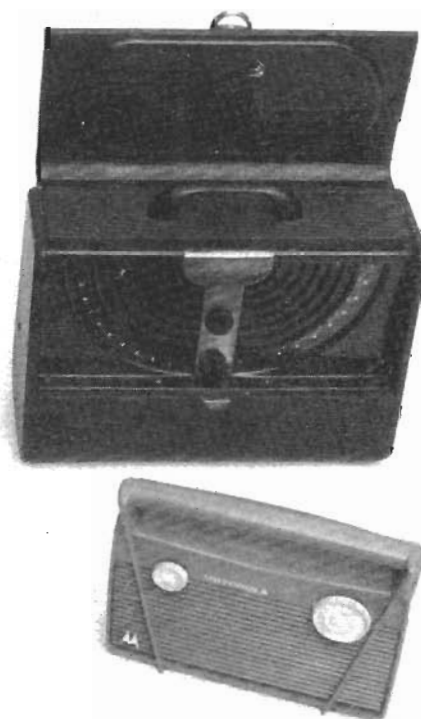


FIG. 2

the Philco is a valuable collectible because of its novel method of loading records. Of course, only one record can be loaded at a time. Loading is accomplished by operating a bottom-hinged horizontal door in the front portion of the cabinet.

Operation is controlled by a series of levers and springs attached to the door. After opening the door, the spindle retracts beneath the turntable, and the arm and the stylus are raised to free the record, which can then be removed and replaced by another. When the door is closed, the spindle comes up through the record and the stylus is placed gently on the edge of the record. Various adjustments

allow you to "fine-tune" mechanical operation.

Portable background

The mention of a portable radio brings to mind a tiny receiver that you can carry in your pocket or hang from the mirror of your VW. Portables eventually evolved in that direction, but, actually, the portable receiver goes all the way back to the first production radio.

Of course you never carried one of these early receivers in your pocket; two hands was usually the minimum. In the early days of radio, the word *portable* was used quite loosely.

Over the years, various incidents in history have caused sur-



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"one-step" dynamic filters—such as DNR, which will work with *any* program source (tape, disc, or FM), and the noise-reduction systems that require previous encoding of the program. Dolby B and C and dbx all operate by encoding the program *before* it is recorded and then decoding it during playback. Recording-induced tape noise is reduced by about 10 dB for Dolby B, 20 dB for Dolby C, and more than 40 dB for dbx Type II.

If you play a Dolby B tape without Dolby B decoding, it sounds as if it has a slight high-frequency boost. Dolby C tapes played with Dolby B decoding sound about the same as Dolby B played without decoding, and neither Dolby C nor dbx are suitable for listening without decoding.

Dbx has an additional advantage for the recordist: It extends the dynamic range of his deck to 100 dB or so, meaning that tape-overload problems are virtually eliminated—and that brings us to our next topic.

Dynamic-range enhancers

The most well-known products in this category are made by dbx, although many of the major Japanese manufacturers have had dynamic-range enhancers in their lines at one time or another. The dynamic-range enhancer is designed to compensate for the compression deliberately introduced during recording, mixing, and mastering. Recording and cutting engineers use compression to compensate for limitations in the recording medium they work with. LP records and tapes have problems at both ends of the loudness range; soft signals are likely to be buried under hiss, and loud signals at certain critical frequencies can overload the record groove, tape, or playback system.

FM broadcasters have similar problems. They're caused mostly by the FCC-mandated high-frequency pre-emphasis, and by the 20 dB or so loss in signal strength inherent in today's stereo-broadcasting technology. Most broadcasters use some kind of compressor to provide a reasonably "loud" signal while preventing overmodulation of the transmitter.

And the wide dynamic range of the compact disc has aggravated the broadcaster's overmodulation problems and made compression even more necessary.

The dynamic-range enhancer reverses the compression process by making soft signals softer and loud signals louder. Since the enhancer has no way of knowing what the original dynamic range was, it is designed to make educated technical guesses under user control.

Earlier, I suggested that part of the confusion about processors probably derives from the fact that there is some overlap between their functions. In the case of the dynamic-range enhancer, making the soft signals softer helps the signal-to-noise ratio because hiss falls into the category of a soft (if unwanted) signal.

Next time we'll cover the most popular, and the most misunderstood signal-processing component—the equalizer. **R-E**

ges in the popularity of the portable receiver. For example, a natural disaster such as an earthquake causes an upsurge in portable-radio sales so that those affected can maintain contact with the outside world.

Another example of how external events affect the radio industry was the boom in sales that happened during the early 1960's, when many people built fallout shelters. Plans were abundant in magazines and newspapers, and many homeowners were busy planning and building their own fallout shelters. And a portable radio was considered to be at least as important, if not more so, than many other types of equipment and supplies.

Probably there are still thousands and thousands of those tube-type portable radios from the 1930's, 1940's, and 1950's standing by in those abandoned fallout shelters, alongside the soda crackers and canned water. I only hope that someone remembered to remove the batteries.

Types of portables

During the 1930's, 1940's, and 1950's, a portable radio referred to a completely self-contained receiver with a carrying handle. You could strut down the street carrying the box by the handle. Music would emanate from the box to the amazement (and envy) of everyone. Owning a portable was an easy way to gain instant popularity, because wherever you went you were asked to bring your radio. Several Motorola portables from different eras are shown in Fig. 2.

By the 1950's, the word portable came to mean anything with a handle on top. But it really meant nothing, especially in the phrase *portable TV*. The so-called portable still required AC power, and, although it could be moved, doing so was not something one undertook lightly.

Also, the handles were notoriously weak, and after enough of the flimsy handles broke off (and TV's dropped to the floor!) the handles were eliminated. Then the consumer carried his "portable" TV from room to room in his arms, like a crate of oranges. Actually, many of those 1950's TV's (with

their metal cabinets) were deadly and shouldn't have been carried at all.

Backing up a little, by the mid-1920's manufacturers knew that radio would continue to be a big industry for years to come, because it promised to alleviate the boredom and loneliness of dreary days and long winter nights. The problem was that, in the summer, listeners drifted (pun intended?—*Editor*) away from their radios. Trips to the beach and vacation resorts didn't include a cumbersome radio. But the challenge was taken up by the industry.

By the late 1920's, what was known as the summer slump in radio sales was coming to an end. High-powered radio stations and better-designed portable receivers gave broadcast stations a year-round audience. The increasing popularity of automobile receivers also increased that audience. Although some groups suggested that the driver might be distracted while tuning (or listening to) an auto radio, their worries went unheeded. Also, the noise coming from an automobile, especially a touring car (like a four-door convertible) could be a nuisance. Of course, the auto radio did survive, and it still is a nuisance at times.

Radios were destined to go in places other than boxes and cars. In 1930, at a winter boat show in New York, many boats large and small featured custom-installed broadcast radio receivers. Some were modified home receivers. Being familiar with early radios, as well as boats and motors, I'd have to say that that was a bold step for the industry. Dampness, RFI from the engine's ignition system, as well as the pounding motorboats are subject to, all played havoc with these early receivers. I can still see 01A's rolling around the deck as a boat pounds across Sheepshead Bay.

It was usually suggested that the radio be placed as far from the engine as possible. That, of course, was a problem on a small boat with the engine amidships. It was also recommended that a separate battery be used to heat the tube filaments. In addition, magnetic, rather than dynamic, loud-

speakers were mostly used, to conserve power.

A modified home receiver used on a boat still needed an antenna and a ground for proper reception. One or two lengths of antenna wire stretched the length of the boat (above the mast spar, to avoid tripping over it) brought reasonable reception with one of the better radios.

Providing a ground was slightly more difficult. Trailing a 25-foot length of wire in the water behind the boat was one solution. Of course, a steel-hulled boat didn't have a grounding problem. But grounding to the metal strut that supports the prop shaft, or to the prop housing, resulted in a noise problem. Probably the best grounding solution was to affix a metal strip to the outer hull, below the water line, and attach the ground line from inside the hull.

How well those pioneer boat receivers worked under actual conditions is questionable. However, I'm sure that those radios put on a magnificent performance while the boat was on the showroom floor.

Restoration and repair

Portables suffer from many of the same problems as non-portables, as well as from a few of their own. First, portable cabinets are often designed to withstand more abuse (and weather) than their stay-at-home counterparts. A damp soapy rag is often all it takes to restore that type of box to acceptable condition.

Servicing a batteries-only portable will likely be fairly simple. However, servicing a three-way portable (one that runs on AC, DC, and batteries) may be somewhat more difficult, because of the extra components required to obtain three-way operation.

If you've never owned a tube-type three-way portable radio, you may be confused as to how to switch between AC and battery power. The switching is necessary because you can't operate from batteries while plugged into the AC line. Many radios have a similar switching arrangement. To operate the set from batteries, the line cord must be unplugged from the AC source and then plugged into