



ANTIQUE RADIO CLASSIFIED

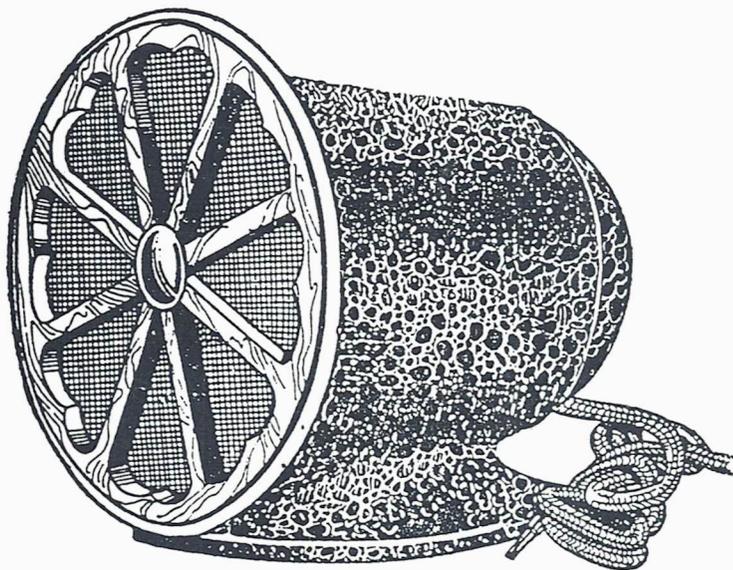


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FRESHMAN MASTER SPEAKER

A.R.C. — THE NATIONAL PUBLICATION FOR BUYERS AND SELLERS
OF OLD RADIOS AND RELATED ITEMS — PUBLISHED MONTHLY

ANTIQUE RADIO CLASSIFIED

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STAFF:

Publisher and Editor: John V. Terrey
Production Manager: Scott J. Young
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1/2 V	12 7/16 x 3 9/16	7 3/4 x 2 1/4	7 3/4 x 2 1/4	7 3/4 x 2 1/4	113.00	299.00	520.00	899.00**	33.00†
1/4	5 1/4 x 3 9/16	3 5/16 x 2 1/4	3 5/16 x 2 1/4	3 5/16 x 2 1/4	57.25	151.50	263.00	459.00	17.00†
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EDITOR'S COMMENTS

"Cybertravelers, ahoy. Yes, cybertravelers, you can... reach us... through America Online." A come-on from the latest computer publication? Not so. Instead, this edited quote leaped out at us from the June 1995 pages of the *AARP Bulletin*, just as we contemplated announcing that A.R.C. now has an electronic mail (e-mail) address — ARCMagazine@aol.com.

Of course, our offer of one computer service, e-mail, is only a fraction of those offered by AARP. Still, we like to think that we too can offer a service to older Americans, many of whom are just beginning to appreciate communication via computer.

Judging from the mixed mail we have received from our appeal for your input on this subject, some of you will revel in this news; others will see it as a "downer" or, at best, a dilemma, as one subscriber put it. But, we have concluded that we are already behind the times and that we must expand our services. As another reader wrote, "Our field centers around yesterday's technology, and it is not immune from today's." Many other comments appear in this issue in *On and Off the Internet*.

At present, we are implementing only e-mail. Since our address appeared on the Internet, we have received classified ads via e-mail, as well as requests for information and sample copies. When sending ads, ordering books, requesting renewals, etc. by e-mail or fax, remember that A.R.C. does not send bills, so study the "Fax & E-mail Procedures/Payment" section on the masthead before sending.

Please continue to let us know what you think of this new service, and what direction in Cyberspace, if any, A.R.C. should take in the future.

As an interesting aside, you might enjoy "Can computing change my life?" in the February/March 1994 issue of *Modern Maturity*. Fay Kramer, now over eighty years old, describes her transforming experience with SeniorNet, which introduces older adults to computer technology. P.S. The answer to her question is a resounding "Yes!"

Articles in This Issue. Our lead article is by staff member Dave Crocker who writes about his 1927 Freshman Master Speaker, a horn speaker similar

PRINTED WITHOUT COMMENT

A.R.C. has received reports from five individuals who have wired funds to Kent A. Ise and have not received the items promised. It is reported that he offers scarce items at reasonable prices and asks that funds be wired to him via Western Union.

A.R.C. asks anyone who has been offered items by Ise to report the details in writing or by fax to A.R.C., even if funds were not sent, so that we can assist in the investigation. Also, report the incident to Western Union and/or your credit card company, if involved. We understand that Western Union has a wire fraud investigation underway.

to the more familiar Utah Super Flex.

Part 3 of the Philco Survey, conducted by Ron Boucher and Ron Ramirez, covers the manufacturing details found on Philco cathedrals. An update on the Model 20 is also included.

Ian Sanders has written a fine article on three 1922 to 1926 crystal set types by British L.M. Ericsson. Although you do not have to go to England to collect British sets, the May National Vintage Communications Fair in Birmingham, England, is a good place to find them. Another is slated for December.

Professionally held radio auctions continue to be popular and two are reported this month — Estes Auctions' "Odds & Ends" in Ohio and Pro Auction's Snider collection auction in Illinois. And watch for the Henry Ford Museum vintage radio auction to be held by Estes Auctions on October 7, 1995.

This month Alan Douglas begins a series of articles on Vintage Test Equipment. Isn't it more fun (or is the word "challenging") to repair vintage radios with vintage test equipment?

Filling out this issue are three pages of *Photo Review*, a short article by Harold Iserning on substituting a Type 864 (VT-24) or Type 3A4 for the expensive WD-11, and the first forty questions of Dave Crocker's "Radio Broadcast Quiz."

Problems with Advertisers. Unfortunately, "Printed Without Comment" (see below) continues this month. Please read the May 1995 Editor's Comments for more details on this issue. Considering the very few complaints that we receive here at A.R.C. each month, it is obvious that we collectors are a pretty honest group. A.R.C. serves as a clearing house for complaints between our readers, so please let us know about any problems that you have not been able to resolve yourself.

Coming Radio Events. This month there are events in one-half of the fifty states, so I hope all of you will look for an event near you. The largest July event is Extravaganza '95 in Lansing, Michigan. Your plans for the rest of the 1995 season should include Radiofest '95 in August, the AWA Conference in September and the VRPS/AWA '95 meet in October. Look for us at all three of these meets plus the NEARC swap meet in July.

Happy Collecting

John V. Terrey, Editor

ON THE COVER

Our cover this month shows the Freshman Master Speaker as it was advertised in the January 1927 *American Boy* magazine. Dave Crocker's article on this horn speaker appears in this issue.

OOPS!

Our June 1995 article by Ron Frisbie contained the incorrect state for his town; Akron is in Pennsylvania. Fortunately, the correct Zip code allowed Ron to receive many delightful letters about his article.

WITH THE COLLECTORS

The Freshman Master Speaker

BY DAVE CROCKER

Many of us are somewhat familiar with the Utah Super Flex horn speaker, shown in Figure 1. It was made in Salt Lake City, Utah, and sold for \$14 in 1925.

Made almost entirely of a semi-hard rubber composition, this speaker is often referred to as the "Mushroom" or "Darth Vader helmet" speaker. Few have survived, possibly because of the brittle composition and just plain ugliness. In addition, the impossible disassembly characteristics discourage repairs to the driver. Any attempt at removing the bell usually results in chunks of horn bell material broken away! An open driver is "forever."

However, the Super Flex concept did not die! For in 1927, the Charles Freshman Company, Inc., of New York offered its Freshman Master Speaker, as shown in the announcement in Figure 2. This same speaker, alive and working, can be seen in Figure 3.

The Freshman Master Speaker's price was \$4 less than the original Super Flex, but its concept and design features were strangely familiar. At first glance it seems that the Freshman is the very same Super Flex unit lying on its side. Even the base looks identical. The exterior, with its dark brown, bumpy finish, duplicates that of the Super Flex.

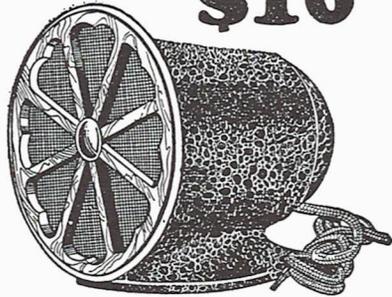
There are two slight differences — the Freshman horn section is ½-inch longer and the bell



Figure 1. The Utah Super Flex horn speaker, which sold for \$14 in 1925, is 8½ inches high and weighs 3 pounds.

A Powerful
LOUD SPEAKER!

\$10



**FRESHMAN
MASTER
SPEAKER**

Only 6 inches in size, artistic in appearance, the Freshman Master Speaker is an ornament for any room.

A triple reflex speaker with powerful unit, it has volume equivalent to a 24 inch upright horn and tone quality unexcelled by speakers costing many times as much.

**Sold by Authorized
Freshman Dealers Only**

CHAS. FRESHMAN CO., Inc.
Freshman Building
2626 W. Washington Blvd. New York
Chicago

Figure 2. A Freshman Master Speaker advertisement that appeared in the January 1927 issue of "American Boy" magazine.



Figure 3. Rear view of the Master Speaker. Note its resemblance to the Super Flex.

diameter is $\frac{3}{4}$ -inch wider than those of the Super Flex. One big difference is that the Freshman sported a wheel-like grille with spokes. Behind this grille is a fine mesh, gold-colored grille cloth. See Figure 4.

The speaker cord loosely exits the Super Flex from the bottom between the horn bell and the base. On the Freshman, however, the cord comes directly out through a hole at the dome.

Internally, both speakers use the same reflecting chamber system. Figure 5 shows the Freshman Master Speaker with the front cover off. Inside the horizontal bell is a tube leading directly to the fully encapsulated driver (without doubt, a Utah mechanism). The sound comes out of this tube and reflects off the bowl chamber fastened to the front cover. The sound then is directed to the inside of the dome and out through the speaker grille. Hence, "Triple Reflex," as the manufacturer called it, occurs.

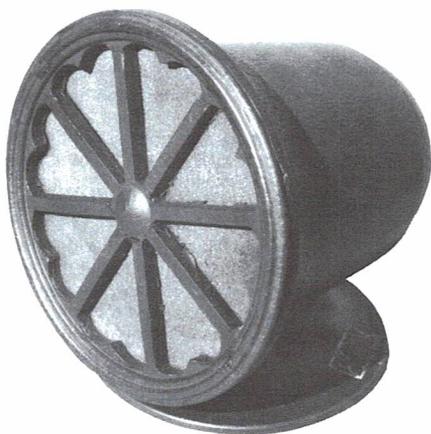


Figure 4. Front view of the Master Speaker. The grille design is quite similar to that of Utah's Supreme cabinet speaker which sold for \$25 in 1925.

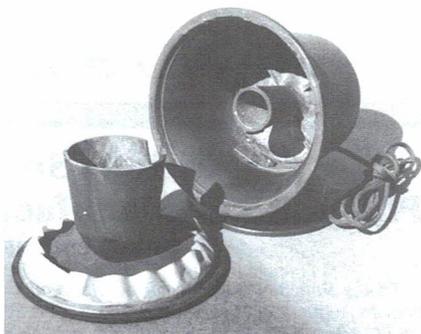


Figure 5. Internal view of the Master Speaker showing the sound reflecting chambers. Note: the white paper (tape) around the grille lid was factory installed for a better fit.

The bell (dome) is fastened to the base by the simplest of methods. A slightly curved metal tab is the main support. A bolt holds this tab and the main bell to the concave-formed base. Figure 6 shows the tab and the sculpted base. This assembly is intact inside the bell, as shown in Figure 4.

Why anyone would offer a new horn speaker in 1927, when the paper cone speaker was successfully replacing the horn, is puzzling. Maybe it was just a quick-fix scheme by Utah, working through the Freshman Co., to get rid of old stock parts. But, for those who were unaware that the Freshman Co. actually offered a horn speaker, we give you — the Master Speaker.

(Dave Crocker, 6 Raymond St., Sandwich, MA 02563)

Reference:

American Boy, January 1927.

Dave Crocker is a member of the A.R.C. staff and has been actively collecting radios for more than 24 years. Many of these years have been spent researching and collecting radios manufactured by the Crosley Radio Company.



Figure 6. Base and holding clip of the Master Speaker. The base material is the same semi-hard rubber material used to mold the horn bell.

RADIO SURVEY RESULTS

Philco Survey — Part 3 Philco Radio Manufacturing and Survey Update

BY RON BOUCHER AND RON RAMIREZ

This is Part 3 in a series of reports resulting from an August 1993 survey of Philco Models 20, 21, 50, 70, and 90. The first report was published in the July 1994 issue of A.R.C., while the second appeared in the May 1995 issue. In these reports the authors discuss serial numbers, dates stamped under the cabinets, and design changes in the chassis and cabinets. In this report, they examine the manufacturing process. In addition, they present chassis and cabinet dates for the Model 20 and some updated information on both the Model 20 and 21. (Editor)

While researching and compiling this Philco survey report, we inspected several Philco chassis, and it was an interesting exercise to try to learn about Philco's manufacturing techniques and controls by studying the products of their work.

It's obvious that the serial numbers were stamped in the chassis before the components were put in. The stamping process requires a lot of force, and there had to be something on the back side of the sheet metal to support it when the number was stamped — an "anvil." Because of this problem, the serial number had to be stamped before the components were installed. Stamping of the serial numbers was most likely done when the chassis pan was formed and the holes punched. A stamping tool would punch the number into the metal and index to the next number.

Since the machinery used in the chassis-making process was large, it was in Philco's best financial interest to make as large a production run as feasible before changing over to other models. If we could look at enough serial numbers, we would be able to see these production runs as blocks of numbers.

Our Models 20, 21, 70 and 90 also had the serial number stamped under the tuning gang. You can tell without lifting the gang, because inside the chassis you can see the mark left by the "anvil" that was used in the stamping process. Philco gave a 90-day warranty, and this additional stamping may have been a guard against fraud.

Meanwhile, the cabinets were being made in other plants. We found numbers written under and inside them. Most had a 4-digit number written in the cabinet under the chassis. This may have been a code that indicated a lot number or the date and shift that produced that cabinet. The location of these and other marks seemed fairly consistent. There were even colored chalk marks found inside the chassis. These may have been marks made by inspectors.

The most important mark for us, however, is the date under the cabinets. Some give the date

and year; some give the date in a format like this: "SEP 18 '8." Since there was a Philco furniture factory number 8, this must have been the way of indicating which cabinets were made at that plant. It looks as if the date was stamped before the finish was applied.

Philco needed more cabinets than it could make, so some production was farmed out to other furniture manufacturers. This practice also ensured that the Philco plants could remain busy even if production requirements declined.

We should be thanking Philco for stamping the dates under the cabinets and making it easier for collectors to determine when their radios were made; however, the folks at Philco had little interest in enlightening future generations in this way. This was all part of controlling the manufacturing process. If a group of cabinets had defects, it could be determined when and where the mistakes were made so the problems could be corrected.

Everything had some kind of number on it. For example, look inside the hole of a knob from a Model 20, 70 or 90. There is a number in there that tells you which section of the mold made that knob. If some knobs were defective, they could immediately determine where the problem was. The highest number I've seen is 30. That's probably how many knobs were made by each mold.

Philco got weekly reports from distributors, so the company could tailor its output to sales. Its success was largely due to good radios, made and sold efficiently with tight control of production. For this, Philco needed a system to keep track of its operation. These sales figures were used to determine production requirements — all this long before computers.

Philco installed a modern assembly line in 1929, and made a promotional film about it after it went into operation. The film is interesting to watch, especially when you consider that this was the assembly line used to manufacture the classic Model 90. All those chalk marks in the cabinets were made by the people in this film. In the film, we can see that the holes were punched in the chassis in several operations. One of these operations might have stamped the serial number.

It's odd, but on most of the examples we've seen, the stamp is deeper at the top than at the bottom. Perhaps a rolling motion was used, and the stamping head had more energy when it first made contact with the metal. We found one Model 20 in which the stamping machine stamped on the edge of the pan and almost missed the pan. Someone at Philco was having a bad day!

According to the film, there were 3 or 4 assembly lines producing chassis. A new chassis left

the production line every 30-40 seconds.

Philco became the most successful radio manufacturer of the early 1930s, and it was no coincidence. The company controlled costs very closely and tried to make the best product consistent with affordability. For example, look at a Philco chassis pan compared to an Atwater Kent pan. The AK pan is much sturdier than the Philco pan, but once you bolt it down to a cabinet, who cares? They are both equally rigid. We've used Philco and AK radios, and the Philco played better even with its less sturdy chassis and cabinet.

You can find all sorts of things written in these cabinets. One of our Model 70s has a green stamp in it that depicts 3 elephants with the words "Multiplied Strength" — an obvious reference to the plywood used.

Save a few pennies per assembly and multiply it by 1,000,000 and it adds up. Some might say that Philco was supplying a cheap product only to add to its "corporate profits." But making money is what kept Philco's people employed. By basing his or her purchasing decisions on price, the consumer

forces manufacturers into staying competitive.

We have an internal Philco report by David Grimes of the Department of Research & Engineering entitled "Analysis of Excess Costs Due to Home Radio Engineering Changes," dated May 21, 1937. One of the items listed was the scrapping of 10,000 bezels on all 1937 models because of "bad bezel buzz." The charge for the error was \$100. He warned that such errors could be avoided in the future with better cooperation between mechanical design and sales acceptance. \$100 divided by 10,000 is $\frac{1}{100}$ of a penny each. If you own a 1937 model Philco with "bad bezel buzz," then you may have a radio that got past Mr. Grimes.

If you have removed the chassis of a later model Philco, you may note the dates of manufacture on the power transformers and sometimes on the audio transformers. In later years, we find very high serial numbers which indicate that Philco didn't start a new serial number series each year. This may be due to the fact that the same chassis was used for several years, and

(Continued on following page)

Model 20 Update

The earliest Philco Model 20 Baby Grands had serial numbers in the 300,000 range. Last spring, we purchased a Model 20 in this range and found that it had been reworked at the factory. The original issue of the Model 20 had two trimmer capacitors, one of them mounted near the tuning gang. Philco found this design to be inadequate and changed it to three trimmers. Philco revised some of the existing chassis by removing the old parts and screwing three trimmers on the tuning gang.

You can spot these early remakes because the trimmers are round and about the diameter of a quarter. The later production versions have rectangular trimmers. In the retrofit you can see evidence of wires being cut under the chassis.

Model 20 Baby Grand (plain)

The Cabinet:

Design by Ed Combs, dated June 5, 1930.

Many 20 cabinets are stamped "Furniture plant #41." One of the alternate manufacturers must have been designated as number 41.

Cabinet Production Quantities:

Philco plant #8, starting 6/5/30	259,403
McCabe Industries	70,500
Schrantz	13,000
Imperial Phonograph	1,000

Model 20 Console:

The Cabinet:

Design by Ed Combs, dated June 24, 1930.

Cabinet Production Quantities:

Red Lion, starting 8/22/30	43,000
Schrantz	10,000
Prescott and Sons	15,000
Humphrey Furniture	2,000



Model 20 Deluxe

(Philco referred to this model as "Revised.")
First produced November 11, 1930, at plant #8.
Cabinet manufacturing cost: \$1.44

The Model 21 was not listed in the *Philco Furniture History* book.

There is some evidence suggesting that the follow-up Model 21 was originally intended to have been yet another version of the Model 20. One 21 cabinet had a label that said "Model 20" and included a statement at the bottom urging owners to use Philco tubes. This is the only 20 label yet found that has this tube notice on it.

Date

What Was Going on at Philco:

January 31, 1930	296 combination designed by Ed Combs
February 19, 1930	77/96 lowboy designed by D. Roberts
March 18, 1930	296 Concert Grand designed by Ed Combs
March 27, 1930	Began producing 77/96 lowboy
June 5, 1930	20 Baby Grand designed by Ed Combs
June 24, 1930	20 console designed by Ed Combs
June 28, 1930	Began producing 20 Baby Grand
July 8, 1930	Began producing 296 Concert Grand
August 22, 1930	Began producing 20 console
October 10, 1930	111 Deluxe highboy designed by Ed Combs
November 1, 1930	220 combination designed by Ed Combs
November 11, 1930	20 Deluxe designed by Ed Combs
November 11, 1930	211 auto combination designed by Ed Combs
November 11, 1930	Began producing 20 Deluxe
November 13, 1930	Began producing 111 Deluxe highboy
November 22, 1930	Began producing 211 auto combination
December 6, 1930	Began producing 20 lowboy
December 22, 1930	Began producing 220 combination
December 31, 1930	Began producing 220 combination 2nd type
January 10, 1931	Baby Grand table designed by Philco Cabinet Dept.
January 15, 1931	70 Baby Grand designed by Ed Combs
January 20, 1931	90 Baby Grand designed by Ed Combs
January 31, 1931	Model A clock timer designed by Norman Bel Geddes
February 14, 1931	90 highboy designed by Ed Combs
February 14, 1931	90 lowboy designed by Ed Combs
February 26, 1931	270 combination designed by Ed Combs
February 27, 1931	Began producing 21 (later 70) Baby Grand
March 2, 1931	Began producing Baby Grand table
March 4, 1931	Began producing 90 Baby Grand
March 10, 1931	70 lowboy designed by Ed Combs
March 14, 1931	Began producing 70 lowboy
March 14, 1931	Began producing 90 lowboy
March 17, 1931	112 highboy designed by Norman Bel Geddes
March 17, 1931	Began producing 90 highboy
March 20, 1931	212 combination design by Norman Bel Geddes
March 30, 1931	Began producing 112 lowboy
April 1, 1931	70 highboy designed by Ed Combs
April 13, 1931	Began producing 112 highboy
April 15, 1931	Began producing 212 combination
April 15, 1931	Began producing 270 combination
April 20, 1931	370 lazyboy designed by Norman Bel Geddes
May 1, 1931	Philco bookcase designed by Ed Combs
May 7, 1931	Began producing 70 highboy
May 9, 1931	Began producing 370 lazyboy
May 10, 1931	2nd table for Baby Grand designed by Ed Combs
May 16, 1931	Began producing 2nd table for Baby Grand
June 19, 1931	Began producing Philco bookcase
June 20, 1931	50 Baby Grand designed by Ed Combs
June 29, 1931	70 highboy mahogany designed by Ed Combs
July 7, 1931	50 lowboy designed by Ed Combs
July 8, 1931	Began producing 50 Baby Grand
July 15, 1931	Began producing 70 highboy mahogany
July 21, 1931	Began producing Model A clock timer
July 29, 1931	Began producing 50 lowboy
September 30, 1931	570 grandfather clock radio designed by Ed Combs
October 15, 1931	Shortwave converter designed by Philco drafting room
October 22, 1931	51 Baby Grand designed by Ed Combs
November 1, 1931	112X designed by Ed Combs
November 10, 1931	Began producing 51 Baby Grand
November 14, 1931	Began producing 112X
November 16, 1931	551 mantle clock designed by Ed Combs
November 21, 1931	Began producing 70/90/4 shortwave combination
December 2, 1931	Began producing 551 mantle Colonial clock radio
December 18, 1931	90X designed by Ed Combs
January 12, 1932	Began producing shortwave converter
January 19, 1932	Began producing 90X
February 2, 1932	52 Baby Grand designed by Clyde Shuler
February 3, 1932	Shelf for 551 clock radio designed by Ed Combs
April 20, 1932	Began producing 52 Baby Grand

Table 1. Chronological listing of major activities at Philco between January 31, 1930 and April 20, 1932.

(Philco Survey, continued)

Philco didn't want two or three Model 60 chassis with the same serial number.

Table I tabulates "what was going on at Philco" in the early 1930s. You can see from this table that there was always something new coming out at Philco, even if it was only an old chassis in a new cabinet. Just about every month of the year is represented in this list.

References:

Philco Factory Film. Frankenmuth, Mich.: Encore Entertainment.

Philco Furniture History, unpublished internal Philco document.

Philco Service Bulletins, 1930-32

Radio Retailing, December 31, 1931.

Ramirez, Ron with Michael Prosis. *Philco Radio 1928-1942*. Atglen, Pa.: Schiffer Books, 1993.

U.S. Patent Office, Design Patent number 83,956. Wolkonowicz, John. "The Philco Corporation, Historical Review & Strategic Analysis," 1981.

Ron Boucher has been collecting radios since the late 1970s and specializes in radios of the early 1930s. He was an active seller in the 1980s but now sends out only an occasional listing of radios for sale. He is currently working on a book project.

(Ron Boucher, PO Box 541, Goffstown, NH 03145. Compuserve #72440,1356, or via Internet at: 72440.1356@compuserve.com)

Ron Ramirez has been collecting radios since 1974, when he was only 14. He began collecting Philco sets exclusively in 1990. He founded the Mid-South Antique Radio Collectors (MSARC) in January of 1992, and has since established an antique radio repair and book-selling business. His book on Philco, written with Michael Prosis and published in 1993, is a valuable reference for Philco collectors.

(Ron Ramirez, 811 Maple St., Providence, KY 42450, or via Internet at: r.ramirez9@genie.geis.com)

Tube Substitutions for the Type WD-11 Tube

BY HAROLD ISENING

There have been many substitutes suggested for the WD-11 tube. Two excellent candidates are the Type 864 (VT24) and the Type 3A4 pentode.

In order to get a substitute tube to operate well in an antique radio, it must have the same filament voltage and current as the WD-11. The radio's volume control rheostat is designed to operate with 0.25 amp filaments. By substituting the tube of the correct voltage, but of much lower current, the rheostat will have less control of volume. This happens to some transistor substitutions also.

THE TYPE 864 (VT-24 TUBE)

The 864 was developed in the early 1930s as a preamplifier for the new condenser microphones. It has most of the WD-11's characteristics and is internally stressed to eliminate the microphonics that plagued early condenser microphones.

I learned the facts about the Type 864 radio tube in a radio communications class at the Uni-

versity of Wisconsin in 1933. There we worked with samples of the new condenser microphones. The 864 tube characteristics were to be found in all vacuum tube characteristic charts of that date, and can be found in many later editions of the *ARRL Handbook*.

CONNECTING THE TYPE 3A4 PENTODE TUBE AS A TRIODE

In searching for another substitution for the scarce WD-11, I turned to the many other tube data charts. The data on Type 3A4 revealed it to be a perfect substitute. The amplification factor with the 3A4 connected as a triode was not available. I had to determine that with a test circuit in my shop.

The Type 3A4 has a 2.8-volt center-tapped filament. If the filaments are operated in parallel, we will have 1.4 volts at 0.2 amp or 1.5 volts at 0.25 amp, just like the WD-11. If the 3A4 pentode is operated as a triode with the screen connected to the plate, it will have an amplification factor of 5.0 compared to the WD-11 of 6.6 and the 864's 8.2. The internal capacities are very close. This is of no great moment in sets using WD-11 because they are not operated as neutralized RF amplifiers. Socket adapters can be made with WD-11 bases fitted with a seven pin miniature socket. Figure 1 shows the schematic for such an adapter.

I use 3A4 tubes as subs for the WD-11s in my Radiola III radio. The set operates identical as when WD-11s are used.

(Harold Isenring, 10850 Amy Belle Rd., Colgate, WI 53017)

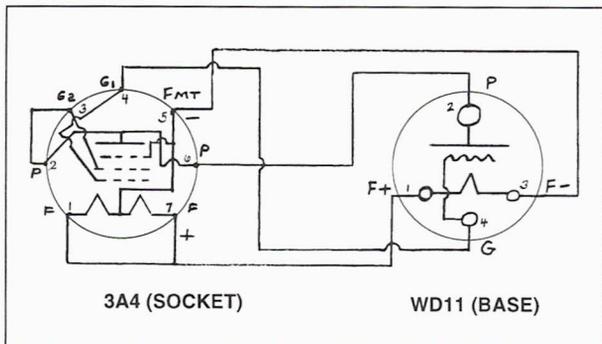


Figure 1. Schematic diagram for the 3A4 to WD-11 socket adapter.



Crystal Sets by British L.M. Ericsson (1922-1923)

BY IAN L. SANDERS

The British L.M. Ericsson Manufacturing Company, Limited, of Beeston, Nottinghamshire, was an early producer of valve and crystal receivers for the British broadcast market. In 1922-1923, the company produced three crystal set models — the 0/1002 (two types) and the Model 0/1050. The Model 0/1002 is particularly interesting, since its two types are quite distinct. They have a dissimilar panel, component layout, and detector style, and a different wavelength coverage. Nevertheless, they share the same Post-Office registration number.

In general, once a set had been approved by the Post Office and granted a registration number, the manufacturer was not permitted to make any design changes without sanction of the regulating body. Significant modifications to existing models would therefore require re-approval, and one would expect that a separate registration number would have been issued.

It is therefore unusual (although not completely unknown) for different receiver models to bear the same registration number. This is just one more anomaly in the fascinating and rather elusive Post-Office numbering scheme. (See my article in *The Old Timer's Bulletin*, Vol. 34, No. 1.)

MODEL 0/1002 (EARLY TYPE)

The original model bearing the catalog number 0/1002 was produced in late 1922 and is shown in Figure 1. The receiver is constructed in an oak cabinet with lid, measuring 8¾ x 7¼ x 5 inches. The front of the cabinet bears the BBC (British Broadcasting Corp.) approval stamp in black and gold, and the ebonite panel carries the Post Office registration number 280 and the serial number A 669.

The detector is of the conventional catwhisker/galena type with ball-joint adjuster. It is notable,



Figure 1. The early version of the Ericsson 0/1002 crystal set.

however, for its large size. Tuning is by a slide-coil arrangement covering a wavelength range of 350-600 meters. The advertised range was 15-25 miles.

In July 1923, the price of this model was five pounds, seven shillings, six pence (£5.375), complete with headphones and aerial equipment.

MODEL 0/1002 (LATER TYPE)

The second Model 0/1002, also bearing the registration number 280, is shown in Figure 2. The cabinet styling differs from the early version and is smaller, measuring 8 x 6 x 4¼ inches. The cabinet is again of oak with the BBC stamp on the front, but it is more ornate with an unusual circular latch



Figure 2. The later version of the Ericsson 0/1002 crystal set.

mechanism, while the characteristic "Ericsson" logo, is imprinted in red and gold on the lid.

The detector on this version is a glass-enclosed, catwhisker/galena type and incorporates a rotary vernier-type adjustment. This detector unit was later sold by Ericsson as a separate component, and received a very complimentary review from the staff of *Wireless World* magazine

in 1925. (See Box — "The Ericsson Crystal Detector.")

The tuning range was claimed to be extended to 300-700 meters, and unlike its predecessor, provision was made for the connection of an external loading coil to allow long-wave coverage. The Ericsson loading coil is of a rather unusual design, being enclosed in a wood cover and intended to fit inside the lid of the crystal set.

In *Vintage Crystal Sets*, Gordon Bussey also lists a Model 0/1002A which is described as having the loading coil incorporated. (It is not clear if the coil was actually mounted in the lid, or was simply included with the set as an accessory.)

The price of the later model was considerably reduced. In 1925, the set sold for one pound, seventeen shillings, six pence (£1.875), excluding headphones and aerial. The loading coil was available for an additional five shillings (£0.25).

A comparison of the under-panel construction of the two models is shown in Figure 3. The tuning coils and sliders are of similar design, and identical bypass capacitors were used in both cases; however, the component layout is different.

MODEL 0/1050

The Model 0/1050, introduced in 1923, was a miniature crystal set constructed in a turned and polished, circular, ebonite case, just two inches in diameter and 1.5 inches in height. The set carries the Post-Office registration number 5228.

The entire arrangement (including the catwhisker detector) was concealed inside the case, with

(Continued on following page)

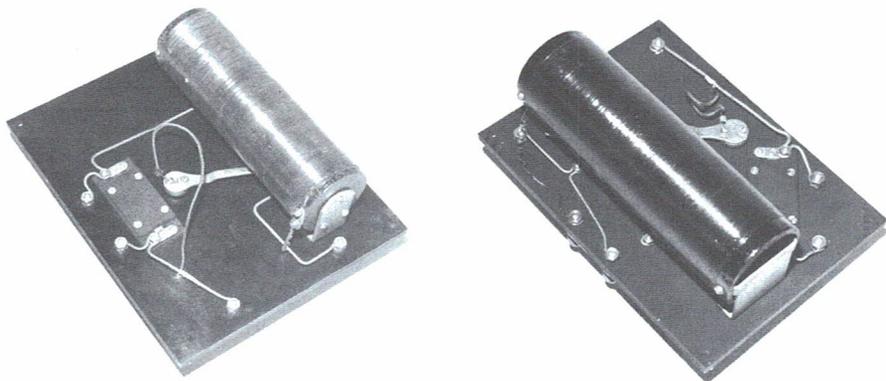


Figure 3. Underpanel views of the Ericsson 0/1002 crystal sets: earlier model (left), later model (right).

(Crystal Sets by Ericsson, continued)

the aerial and earth connections made to terminals mounted on the side. The tuning range was 300-500 meters, and the price (in 1926) was a very modest seven shillings, six pence (£0.375).

References:

Bussey, Gordon. *Vintage Crystal Sets*. London, England: IPC Business Press Ltd., 1976.

Constable, Anthony. *Early Wireless*. Kent, England: Midas Books, 1980.

Radio Bygones, No. 2, Oct./Nov. 1989, ISSN 0956-974X. (See illustration inside front cover).

Sanders, Ian L. *The Old Timer's Bulletin*, Vol. 34, No. 1, pp. 13-15, (Feb. 1993).

(Ian L. Sanders, 16725 Wild Oak Way, Morgan Hill, CA 95037)

Ian Sanders has been collecting and restoring early 1920's crystal and battery receivers since 1974. He specializes in British sets of this period, and would be happy to try to answer any readers' inquiries on this subject.

The Ericsson Crystal Detector

The British Ericsson Co. has introduced a new detector which is simple to adjust and is not fitted with a number of auxiliary controls which one sometimes finds on detector mountings, rendering the operation difficult. It is easily demountable giving ready access to the crystal. The contacts are protected by a glass tube.

Critical adjustment is provided by means of a fine thread passing through a ball, so that contact can be obtained with any point on the face of the crystal. A coarse adjustment is produced by a plunger action of an auxiliary stem which passes right through the threaded spindle and to which the cat-whisker is actually attached.

It is a robust form of crystal detector, sensitive and easy to adjust.

"New Apparatus," *Wireless World*, June 24, 1925.

Radio Broadcast Quiz

BY DAVE CROCKER

All of you old-time radio program experts can now put on your thinking caps. Presented here is a list of questions pertaining to radio broadcasting from the days before, and including, early television. When you have answered as many questions as possible, send them to Radio Quiz, c/o *Antique Radio Classified*, P.O. Box 2, Carlisle, MA 01741. Answers to the quiz, along with the names of any winners, will be published in a later issue of A.R.C. Here we go!

1. Who played the part of "The Man Called X"?
2. Who was the sponsor of "Baby Snooks"?
3. Who played the part of the Lone Ranger radio?
4. What was the name of the rich lady on "Blondie"?
5. Who sponsored "Tom Mix"?
6. Who was the sheriff on "Tom Mix"?
7. Who was Hop Harrigan's arch enemy?
8. What was the name of Hop Harrigan's aunt?
9. Who were the three adventurers on "I Love a Mystery"?
10. What vehicle was portrayed in the opening theme of "I Love a Mystery"?
11. Who sponsored "The Shadow"?
12. Who sponsored "Superman"?
13. Who sponsored "Straight Arrow"?
14. Who played the part of Dr. Christian's secretary Judy?
15. Who was the narrator on "Let's Pretend"?
16. Who sponsored "Let's Pretend"?
17. What was the senator's name on "Allen's Alley"?
18. Who were the two hosts on "No School Today"?
19. Who sponsored "Ma Perkins"?
20. What business did Ma Perkins run?

21. Name the house where "Our Gal Sunday" resided.
22. What was Sunday's husband's name?
23. Who told "Real Life Stories"?
24. How old was Helen Trent?
25. What was Helen Trent's boyfriend's name?
26. How did someone become a "LEMAC"?
27. What was Lorenzo Jones' wife's name?
28. What newspaper did Steve Wilson write for?
29. What was Steve Wilson's girlfriend's name?



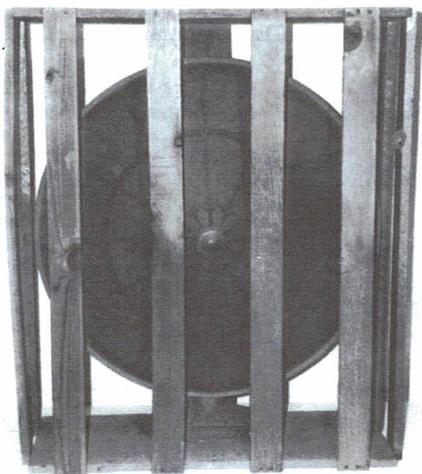
30. What was the name of the program Steve Wilson was in?
31. What TV show did Jerry Lester host?
32. What was the name of Sam Spade's switch board operator?
33. What was the full name of the Captain in "Time for Beany"?
34. What was the name of the Captain's boat?
35. What was wrong with Cecil on that same show?
38. What program starred a water commissioner?
39. What was his nephew's name?
40. Who sponsored "I Remember Mama"?



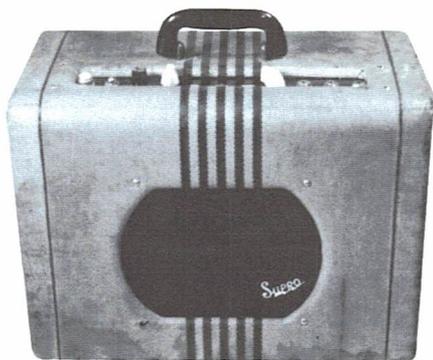
PHOTO REVIEW



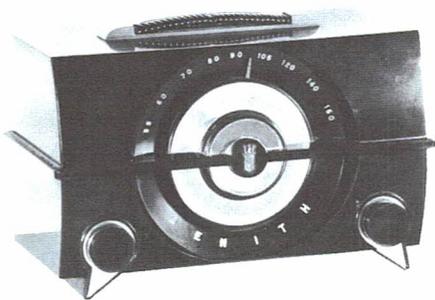
This column presents in pictorial form many of the more unusual radios, speakers, tubes, advertising, and other old radio-related items from our readers' collections. The photos are meant to help increase awareness of what's available in the radio collecting hobby. Send in any size photos from your collection. Photos must be sharp in detail, contain a single item, and preferably have a light-colored background. A short, descriptive paragraph **MUST** be included with each photo. Please note that receipt of photos is not acknowledged, publishing is not guaranteed, and photos are not returned.



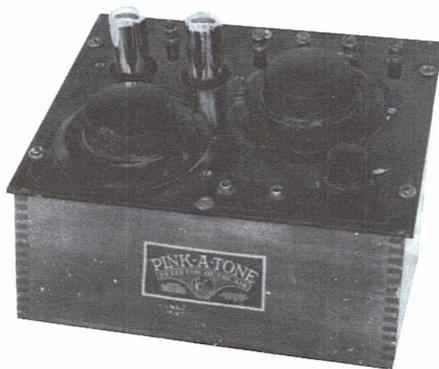
METRO CONE – This 22-inch cone speaker was manufactured by the Metro Electric Co., Chicago, Ill. It was found bolted into the original shipping crate, and is still in perfect working condition. (*Gary Watkins – Belton, MO*)



SUPRO AMPLIFIER – This early 1940s Supro amplifier was made by the Valco Co. of Chicago, Ill. The covering is tweed, and the sound comes through a 10" Jensen field-coil speaker. The tube types are (1) 5Y3GT, (2) 6V6GT, (1) 6SC7, and (1) 6SQ7. (*Bill Hall – Grand Haven, MI*)



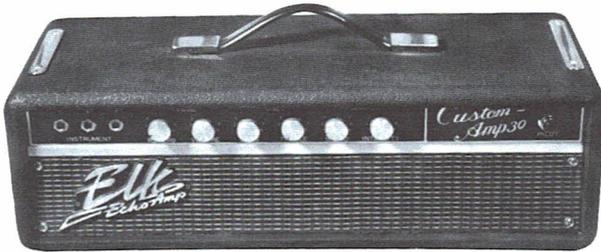
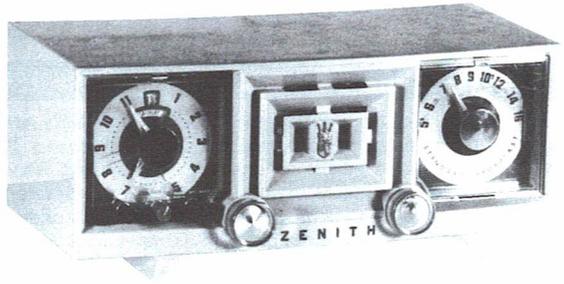
ZENITH MODEL J 615 – This 1952 black plastic standard broadcast table radio has good sound quality due to the relatively large speaker mounted behind the dial. (*Robert Bailey – Jacksonville, FL*)



PINK-A-TONE "DETECTOR OF THE AIR" – Introduced in 1925 and manufactured by the Sunbeam Radio Corporation, this reflex TRF receiver uses two C-299 tubes. (*Bart Rydzinski – Winchester, IN*)

PHOTO REVIEW

ZENITH MODEL T-522V – This 1950s clock radio has a day/date feature on the clock. The radio tunes standard broadcast and is in a cabinet of bright pink plastic. (*Robert Bailey – Jacksonville, FL*)



ELK ECHO AMP — CUSTOM AMP 30 – This amplifier was built in the 1960s by Miyuki Ind. Co., Ltd., in Japan. Of the seven tubes in this amplifier, one is a Type 6CA4, and two are Type 12AX7. The rest are unknown. If you can shed any light on this tube layout, please write to A.R.C. (*Bill Hall – Grand Haven, MI*)



RCA MODEL 280 – This 12-tube lowboy has unique volume and tone control backlighting. The lights climb vertically when the volume or tone is increased. A tuning meter is located above the dial. The stylish cabinet has horizontal tambour sliding doors. (*Jim Sabo – San Jose, CA*)



CATHEDRAL MODEL UNKNOWN – This uniquely styled, early 1930s radio sports a brass tuning dial and bezel, as well as brass coarse- and fine-tuning knobs. The tube complement of this compact, 4-tube set includes Types 24, 35, 47 and 80. Please write to A.R.C., if you can identify this set. (*Bart Rydzynski – Winchester, IN*)

PHOTO REVIEW



BROOK HIGH QUALITY AUDIO AMPLIFIER – Made by Brook Electronics of Elizabeth, N. J., this audio amplifier has 5 inputs, playback curves for RCA Victor Orthophonic, RCA Victor New Orthophonic, AES, Columbia LP, European, and London FFRR records. It uses 8 tubes, including two 2A3 output tubes. (*Jon Andreasen – Newton, NJ*)



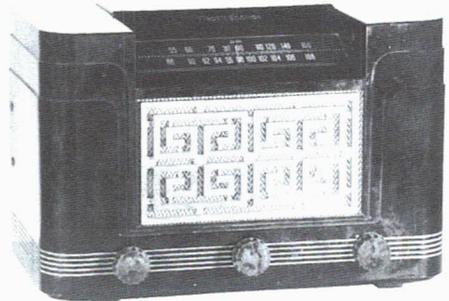
ZENITH MODEL 6-D-628 – This standard broadcast table radio is in a walnut veneer case and was found in an old TV-radio repair shop. (*Robert Bailey – Jacksonville, FL*)



DELCO MODEL R-1231A – Although the styling of this set is unconventional, the circuit design is very conventional. The tubes used are the common 12SA7, 12SK7, 12SQ7, 35Z5GT, and 50L6GT. (*Bart Rydzinski – Winchester, IN*)



RCA MODEL TT-5 TV – Found in an attic, this 1939 tabletop TV has a 5" screen and 5 channels. Although made without audio, it has an audio modification and speaker built in. (*Jon Kummer – Bayside, NY*)



WESTINGHOUSE MODEL H-204 – This 1948 AM/FM radio has Art Deco styling with an oriental twist. (*Robert Bailey – Jacksonville, FL*)



AUCTION & MEET REPORT

Estes "Odds and Ends" Vintage Radio Auction Medina, Ohio — April 8, 1995

CONTRIBUTED BY RICHARD ESTES

Estes Auctions held a vintage radio auction at the Seville Auction Barn in Medina, Ohio, on April 8, 1995. This is the second "Odds and Ends Sale" — a sale of items that do not quite fill the requirements of the company's regular radio auctions and of parts of small collections.

Over 200 lots were sold with a total sale of just over \$8,000. In addition to the items listed below, many other items were sold in box lots ranging from \$2 to \$25. Many plastic and wood table radios were sold in the \$5 to \$20 range, while pieces of test equipment at \$1 to \$20 crossed the block.

Ninety-four bidders from five states had a good time and hauled home many "treasures." Among the bidders were several teenage buyers just getting started in this hobby. They made many purchases at this sale and were happy with the help the other collectors offered them. As Richard Estes said, "This is the reason we love this field of collecting — the people are the best!"

The following is a representative list of the items sold.

e=excellent, g=good, f=fair, p=poor,
unk=unknown, NT=no tubes

Admiral 64-K5 radio/phono, f.....	\$23
Admiral 244 table, g.....	12
Airline 62-336, f.....	38
Airline WG-1637, g.....	15
Atwater Kent 20, NT, f.....	35
Battery set kit, f.....	30
Coca Cola bottle AM radio.....	15
Crosley 36AM table, f.....	10
Crosley 51, NT, g.....	50
Crosley 56TJ table, g.....	20
Crosley 56TW table, g.....	25
Crosley comic book.....	5
Detroit 436, f.....	15
Edison diamond disc records, (12), g.....	15
Eico oscilloscope, g.....	25
Emerson TV radio sign, g.....	45
Freed-Eisemann NR-5, NT, f.....	40
General Electric 518-F table, g.....	20
General Electric T-101 table, g.....	5
General Electric T-165 table, g.....	10
Hallcrafters S-38, f.....	35
Hallcrafters TW-100, g.....	18
Hand key J-38.....	10
Howard amateur receiver, f.....	40
Log-O-Dyne, case only.....	5
Orion 12 transistor radio, g.....	10
Pathé cylinder record, g.....	15
Philco 580, f.....	12.50
Philco aerial kit, f.....	10
Philco drum speaker, f.....	10
Philmore crystal set, plastic.....	30

Polaroid film box transistor radio, g.....	5
QST magazines, box.....	10
Quali-Tone horn speaker, f.....	55
Radio & TV News, (15).....	5
Radio Boys books, choice.....	10 ea.
Radio knobs, box.....	13
Radio picture, Uncle Ezra.....	8
Rider's manual, Volume 12.....	15
Sherwood amplifier, f.....	35
Supreme tube tester, wood case, f.....	15
Tower ship speaker, f.....	95
Trav-Ler 5170 table, g.....	18
Tubes, 01-A, (5), g.....	20
Tubes, 01-A, duds, (12).....	5
Tubes, 80 ST, (10), g.....	28
Tubes, 807, (2), g.....	5 ea.
Tubes, Arcturus 27, (2), g.....	8
Tubes, UV-199, (4), g.....	20
Victor needles, package.....	3
Victor record book, 1922-24, g.....	38
Western Union tin sign, new.....	11
Wireless message book, g.....	10
Zenith G-511 table, g.....	18
Zenith H-725 table, g.....	25
Zenith L-721 table, g.....	15
Zenith Y-513 table, (2), g.....	12, 13

Estes Auctions has been selected to conduct a vintage radio sale for the Henry Ford Museum in Dearborn, Michigan, on October 7, 1995. The sale will include all types of early radios, speakers, transmitters, receivers, amplifiers, tubes, early crystal sets, etc., many of which are rare. Watch for a summer catalog at major radio shows and for advertising in A.R.C. and other publications. Mark your calendars for a once-in-a-lifetime opportunity to add to your collection.

For more information about this and other Estes radio auctions, contact Richard Estes Auctions, 7404 Ryan Rd., Medina, OH 44256. (216) 769-2992; fax (216)769-4116.

A warning: Auction prices are not current values. A listing such as this cannot adequately include the condition of cabinets, chassis, transformers, tubes, the operating status of the set, and the inclusion of incorrect, restored or replica components, etc. Auction prices are the result of the excitement of the auction process, the skill of the auctioneer and the specific interests of the participants. Nevertheless, auction prices serve as useful references and as another element in the value determining process. The possibility of error always exists, and if we are notified, corrections will be reported.

Vintage Radio Auction Jerseyville, Illinois — April 22, 1995

COMPILED FROM INFORMATION CONTRIBUTED BY OMAR A. SNIDER

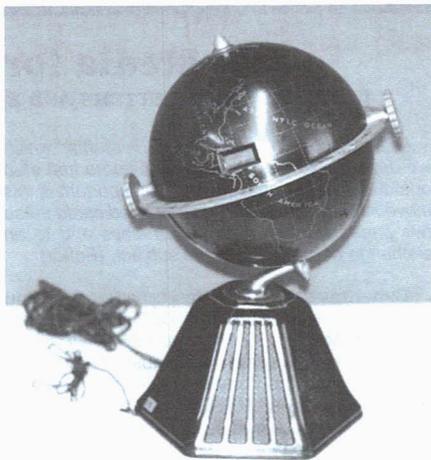
On April 22, 1995, about 80 percent of Omar Snider's radio collection, 60 years' accumulation, was sold at the Pro Auction Company in Jerseyville, Illinois. Michael Prough was the auctioneer. Bidders came from several surrounding states, as well as from Illinois. An A.R.C. ad prompted 34 mail and 12 phone responses. Of the 59 registered bidders, 39 made purchases.

Nearly 300 items were sold, including boxes of parts, new-in-box IF transformers, TV chokes, TV flyback transformers, etc. Brown Bakelite sets of the 1940s and early 1950s sold for \$15 to \$25, while portable sets went for \$12 to \$35. Highlights of the sale included a Colonial New World globe radio selling at \$350, a Silver-Marshall SM440SG at \$280, and a Philco Model 90 at \$350. Both the seller and the auctioneer considered the auction to be a success, and a future one combining smaller collections is in the planning stage.

The following is a short representative list of items sold.

e=excellent, g=good, f=fair, NT=no tubes, WT=with tubes

Airline 54BR midget, brown burl plastic, e \$43
 Amplifier/phonograph, portable, early '30s25
 Arvin 444 midget, ivory metal, works, g65
 Barker and Williamson 5100B ham transmitter .20
 Colonial New World globe speaker, on stand,
 crack at base350
 Delco R116, wood, p25
 Delco R1231, brown candy, g60
 Emerson 578-A, walnut color, e28
 Fada B45-19, dark marbled plastic, crack in
 corner, g80
 General Electric J54, marbled brown plastic, e 20
 Howard 482 FM tuner, g13
 Jewel 956, brown mottled plastic, g11
 Metrodyne Super 5, NT60
 Neo-Dyne, chassis only, g130



This Colonial New World globe speaker on a stand sold for \$350.

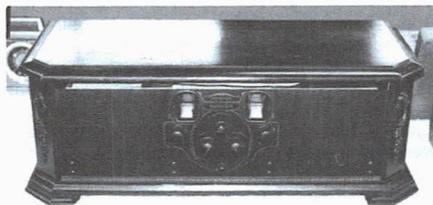
Philco 37-61 cathedral, WT, g140
 Philco 46-350 portable, g23
 Philco 90 cathedral, WT350
 RCA 61-1, brown plastic, g30
 RCA UZ1325 loudspeaker180
 Silver-Marshall SM440S0 laboratory model, e 280
 Silvertone midget, brown metal, g45
 Silvertone 1045A portable radio/phono, g50
 Silvertone 2001 midget, brown metal, e40
 Silvertone 4726 battery set, wood cabinet35
 Silvertone midget, ivory metal, g45
 Thompson horn speaker110
 Trav-Ler 5002, brown plastic, g25
 Truetone D3840 portable, black, g18
 Tubes, 01-A, (6)55
 Westingale battery set, NT80
 Zenith 5-S-320B, dark wood, g50
 Zenith 8-G-005YT Trans-Oceanic, g65
 Zenith 60601M portable, 1942, g23
 Zenith Universal portable, w/wave magnet, g 40

(Omar A. Snider, 421 West Fletcher, Jerseyville, IL 62052)

(The Pro Auction Company, 1001 W. Carpenter St., Jerseyville, IL 62052)



This very nice Philco 90 sold for \$350.



This Silver-Marshall SM440S0 laboratory model has a coffin design.

ON AND OFF THE INTERNET

New Media for Old Technology

COMPILED FROM LETTERS AND E-MAIL RECEIVED FROM OUR READERS

As announced in the "Editor's Comments," which we urge you to read, A.R.C. is taking a first step onto the information highway. So important is this move into the future that we have dedicated these two pages to explaining the process and to an exchange of thoughts on the subject. (Editor)

"Cybertravelers, ahoy. Yes, cybertravelers, you can...reach us...through America Online." This edited announcement in the June 1995 *AARP Bulletin* seems worth repeating because many of our readers fit into the same wide ranging age and interest categories of AARP members. If AARP finds that computerized services appeal greatly to its audience, then we too must be on the right trail.

For those of you who are unfamiliar with computer services, we offer the following introduction to e-mail and the Internet. For those of you who have no intention of signing on to the Internet or even of buying a computer, we offer assurance that we will balance the interests of all in deciding on what new services we will offer.

E-mail and The Internet

Sending an e-mail message is very similar to sending a fax — both are transmitted over the telephone network. To send a fax, an individual places a message in a fax machine, pushes a few buttons, and makes a telephone call to A.R.C.'s fax machine. The letter is scanned (similar to a television picture) and is transmitted over the telephone network to A.R.C. The original image is reconstructed on paper by A.R.C.'s fax machine.

With e-mail, the sender transmits a message that is in his computer. He still utilizes the telephone network, and at A.R.C., the message appears in our computer, and we then print it out.

A major difference is that instead of calling A.R.C. directly, the sender, via his computer, calls and sends the message over the telephone lines to a computer service such as America Online, CompuServe, etc. The service stores the message. We call the service, using our computer, and retrieve the message. If the sender uses a computer service different from ours, his service forwards his message to our service via the telephone network. These computer services joined together by telephone lines are called "The Internet."

E-mail is only one of many services available using today's technology. As the comments we print here reflect, some of you are against all change, some see it as inevitable, and others want it all now. I believe that some combination of new technology services will be a benefit to all A.R.C. readers. And, as you will see from the following comments, much of it is already being utilized in the antique radio community — and by AARP too. (Editor)

From Doug Heimstead of Fridley, MN:

A Dilemma... and a Vote for America Online!

Boy, do you have a dilemma! You realize that you need to take a bold step into the Information Age, and you need to do it as fairly as possible for those who choose not to, or are unable to, take advantage of the new services you are going to propose. You are going to walk a fine line.

I want to use all of the new services you can provide. Put me down for a "yes" vote. At the very least, you need to provide us with an e-mail address. I prefer on-line for two reasons: 1. I am at my keyboard just about every day, and it's really simple to submit an ad, a book order, an editorial comment, etc. 2. It doesn't cost me anything. 3. You can send me a response, just as inexpensively and conveniently.

If you choose to go with an on-line service, I vote for America Online. It's up-to-date, the least expensive, and may soon overtake CompuServe as the most popular on-line service.

From Rod Phillips of Philadelphia, PA:

Pro-CompuServe

Glad to see you on-line! However, I would suggest you consider CompuServe. "The Collectibles Forum" now has a radio/electronics section that is doggone active!!! That's where I heard about your being on-line!

From Dennis Smith of Trenton, MI:

Computers and Radios Don't Mix

Regarding your proposal to use other methods of distribution for A.R.C., I am opposed to the idea. I do not have a computer, nor do I have access to one. In talking with many antique radio hobbyists, I find that most are averse to modern technology, and even those who accept modern media, such as e-mail and computers, find that they don't mix with our hobby. We don't even have touchtone phone service at home and don't see any need for it.

I think you will find that only the "big buck" dealers will benefit from your proposal. Please don't help them — they are hurting the hobbyists already. "No" to the proposal.

From David V. Gonshor, Littleton, CO:

Don't Jump into Net:

Thanks for getting on the Internet. However, I want to caution you about the unreliability of news groups in respect to promptness of postings. My experience is that the Internet is no better and probably worse than the U.S. Postal Service (USPS). Sometimes I get postings within hours of origination; other times, postings have been up to a week late!

Keep up the good work, and please don't jump into an electronic version of A.R.C. until you know it will be an improvement over the USPS system.

From Paul Bourbin of San Francisco, CA:

Low Tech Goes High Tech

Did you know that there is an international swap meet going on right now? The information superhighway promised by President Clinton is already here and running, and it's called the Internet. The best part is that all you need is a computer and a modem to join in, and you do not have to get up at dawn to participate.

A part of the Internet that is of interest to our hobby is called the Usenet Newsgroups. The most pertinent to our hobby is called "rec.antiques.radio-phono." Here, you will find hundreds of notes, called posts. It is like having a bulletin board that can be read (and posted) by people all over the world. Some of the posts are for sale or wanted ads; others are informative. This information is of interest to collectors, historians and appreciators of vintage home entertainment equipment. While the name implies vintage radios and windup phonographs, early tube televisions, early tube hi-fi equipment, wire and early tape recorders and other tube-type home entertainment devices are also discussed.

Other groups of interest are: "rec.radio.swap" primarily for ham gear; "rec.audio.high-end" and "rec.audio.marketplace" for vintage hi-fi collectors (transistor equipment too); "sci.electronics.repair" for electronic repair from postwar tube radios to equipment made yesterday; "rec.radio.shortwave," for shortwave listeners, and for general radio information, there is, oddly enough, "rec.radio.info."

For those who have access to the Internet's World Wide Web, a myriad of ham groups and information are available via the following address: <http://buarc.bradley.edu/www/vl-ham.html>.

The Internet can be a fun way to enjoy your hobby, enrich your collection, and meet a lot of nice people who share your interests. The best part is that it can be done at the time and place that is best for you. See you in Cyberspace!

From Merrill Mabbs of Rapid City, SD: Mixed Feelings About Internet

I have mixed feelings about A.R.C.'s taking the information superhighway. I believe the move is inevitable, and it will happen. If not A.R.C., then other user radio collectors will take advantage of such a powerful medium. Trading, buying and selling radios already takes place on the Internet and always will. With the new resource, more of us will be glued on-line, possibly daily, to satisfy our radio needs.

But for many years to come, there will be a market for the group that are not computer users (and will never be), that love to collect radios and will post classifieds only through the mail.

If you do post your ads to be available by computer, the mailing of A.R.C. could still be timed against network release to assure fairness to all subscribers, so that the days of watching for the mailman, planning your days around the arrival of A.R.C., trying to get the jump on the bargain buys and hard-to-finds, would continue. And personally, I would really miss this whole experience, as well as the hard copy in my hands.

So, it all boils down to how far your own individual collecting disease has progressed and how often you will need a radio fix! You may have no choice but to buy a PC and jump on-line!

From Mike O'Brien of Springfield, MO: No to All Services!

I have been professionally involved with computers in the publishing business since 1977 and am an enthusiastic explorer of the Internet. Nonetheless, I must urge that you abandon any thoughts of distributing A.R.C. electronically. Here are some reasons for this plea:

1. I hunt, collect, restore, and listen to old radios as an *escape* from the pressures of today's workaday world. I seek refuge and comfort in the pages of A.R.C. Heck, I even enjoy the way the pages smell! An ink-on-paper magazine, delivered via the hand of my friendly postman, is most appropriate for this hobby. 2. A great deal of the hobby's joy is derived from meeting and learning from old-timers, many of whom are intimidated by computers. 3. Electronic delivery would emphasize the competitive and commercial aspects of the hobby — too dang'd efficient and business-like for any but beady-eyed speculators and hoarders.

Let me hasten to add that I will remain a faithful subscriber no matter what the format. Please know that your service is very much appreciated by hillbillies out here in the Ozarks.

From Robert Perlstein of Medford, MA: On A.R.C. Via Electronic Media

Putting A.R.C. onto some sort of handy electronic medium has merit; however, I would not post the current issue, but rather older issues for reference purposes. If current issues were to be published electronically, I fear it would be necessary to search the classified ads by computer. A.R.C. is meant to be read by human eyes, not a computer search program. I consider A.R.C. to be not only an advertising magazine, but also a reference source for radio topics, which are very informative and which I wish could be expanded. I save all of my back issues of A.R.C.

To be honest, my use of a posted A.R.C. would be limited. For business purposes, the fax machine seems to work as well as e-mail and is probably cheaper. However, I guess an electronically posted A.R.C. would make duck soup out of finding all the asking prices of AK 35's from A.R.C.'s inception to the present.

From Bill Forg of Huber Heights, OH E-Mail and "Snail Mail" — Both Desirable

This is a response to your inquiry about distributing A.R.C. electronically. I would love to see at least the distribution of the classified advertisements and the auction results e-mailed out, or at least obtainable (i.e. downloadable) from Internet. For the cover art, articles, larger ads, and coming radio events, I would still prefer to receive them via snail mail (USPS). As for ad submittals, purchases, etc., via e-mail, that would be great.

From Bruce Tanner of Okemos, MI: Welcome to AOL and The Internet

Welcome to AOL (America Online) and the Internet! There is much activity on AOL as well as on CompuServe (CIS). You might want to peruse the "Collectibles Forum:Radio/Electronics." While you are at it, you could have a page on the World Wide Web and let us peruse your goodies on line. That is the real coming thing. I think we are going to develop a Web page for the Michigan Antique Radio Club over the next few months.



VINTAGE TEST EQUIPMENT

Vintage Tube Testers — Part 1

BY ALAN S. DOUGLAS

Tube testers were supposed to have followed vacuum tubes into oblivion by now, but for those of us who still live in the past, testers are as necessary as ever. New ones haven't been manufactured for years, so we must keep the old ones running. This is as good a time as any for a series of articles on their care and feeding.

Tube testers generally fall into two classes — emission and mutual conductance — the first measuring the cathode condition and the second, the tube's performance as an amplifier. Emission testers were considerably cheaper, so they were usually bought by hobbyists or wannabee servicemen, while anyone who could afford one bought a mutual-conductance type.

An early emission tester, manufactured by the Jewel Electrical Instrument Company, is shown in Figure 1. The Hickok Model 6000A mutual conductance tester is illustrated in Figure 2.

Neither type is perfect (a power output test is considered best for some tubes, and no commercial instrument will do that), and the emission tester isn't nearly as bad as some claim. But, mutual-conductance testers are now so easy to find and cost so little more than emission testers that it doesn't make sense to nurse an old Heathkit along, if you do very much tube testing. But, you might keep the emission tester around for when your Hickok decides not to work.

I'm proposing to cover several topics in an open-ended series, in no particular order, because I'm not that well organized, and because I'm looking for feedback from readers. I'd especially like to hear from anyone who worked at Hickok or Weston or was involved in tube-tester design. I also want to know more about Hickok's history.

CALIBRATION

Just to prove I'm covering topics in random order, the first one is how to calibrate your Hickok tester, or more properly, how to assure yourself that your instrument is working (because if it isn't, there's no way to cover repair of all the different Hickok models in one article). I've seen several ads in A.R.C. asking for help on this problem in recent months. Since all Hickoks (that I've seen) use the same basic circuit, the same calibration procedure is valid for every model.

The Hickok circuit works by applying a known AC voltage at 60 Hz to the grid, and measuring the resulting AC current at the plate; the ratio of the two is by definition the mutual conductance (if resistance is E/I , then conductance is I/E). Now, since the grid signal is always the same (usually 5 volts), the plate-current meter can be calibrated



Figure 1. An early emission-type tube tester.

directly in conductance units. For instance, 5 milliamperes AC, divided by 5 volts, equals one millimho, or 1000 micromhos (yes, I know the mho is now officially called the Siemens and that transconductance is preferred to mutual conductance, but I like Hazeltine's original term).

The plate current is balanced out with a bridge circuit, for which Robert Hickok got a patent in 1948. To make matters a bit more complicated, the entire circuit is fed with rectified AC, not pure filtered DC; however, the effect is the same.

The calibration procedure is to apply a known AC current to the plate circuit to see whether the meter agrees. The first step is to find the normal grid-signal voltage. Set up your tester as if you were running a 6L6 (dial settings are H-S-5-3-4-8-1 for many Hickoks), but don't plug in a 6L6. Set the bias dial to zero, push the Gm test button, and measure the AC voltage between pins 5 (grid) and 8 (cathode) of the octal socket. For the 3,000 Gm range, it will be either 5 or 2½ volts (for late models).

Now connect a 120-volt isolation transformer or a step-down transformer with a secondary rating of at least 50 volts RMS in series with a known resistor between pins 3 (plate) and 8 (cathode) of the octal socket, as shown in Figure 3.

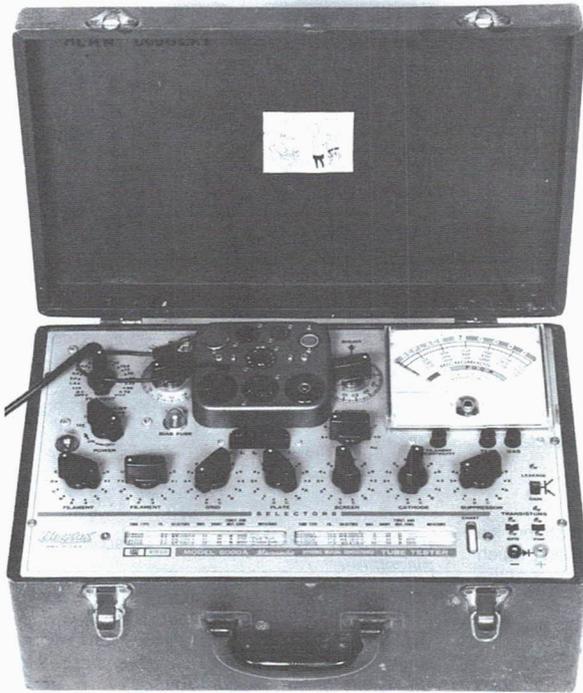


Figure 2. A Hickok Model 6000A mutual conductance tube tester.

This transformer should be run from a Variac to give exactly 50 volts, and the resistor should be 10 K ohms, producing 5 mA, but other combinations will do; the factory test for one Hickok model called for 30 volts and 6 K ohms. This transformer/resistor circuit substitutes a current source for the tube under test.

Assuming you have exactly 5 mA, your Gm meter should be reading 1,000, for a grid signal of 5 volts (if your meter reads backward, reverse the transformer phasing). If it doesn't read 1,000, you're in trouble, but it probably will be pretty close. Don't forget to set the line voltage to the red mark, as this will affect the grid signal. Small adjustments in meter sensitivity can be made by

shifting the position of the meter's curved steel plate, which functions as a magnetic shunt.

While we're discussing the internal workings of Hickoks: they have two rectifier tubes, a 5Y3 or similar vacuum tube type to provide the basic high voltage, and an 83 mercury-vapor tube for the balanced-bridge Gm indicator. Check the high voltage by measuring between pins 3 and 8 on the 5Y3 with the Gm button depressed; it should be 150 Vdc with a 250 K ohm load. Screen voltage, from pin 4 to pin 8, should be 130 Vdc. These are average values of full-wave-rectified sine waves, not pure DC.

The Type 83 mercury tube was used because of its low and constant (5-volt) drop over the entire AC cycle. A vacuum rectifier is not suitable, but the 83 can be replaced with a pair of silicon diodes and two 10-ohm resistors, mounted in an old tube base. The schematic diagram for a solid-state substitute is shown in Figure 4. Figure 5 provides a comparison between the Type 83 tube and its solid-state replacement. This solid-state substitute performs exactly like the Type 83 in several different Hickoks tried so far.

While any Hickok tester can be "calibrated" perfectly, don't expect different models to give identical readings on the same tube being tested. As noted, the tube is not being operated under DC conditions, but it is being cycled from zero current to about 1½ times the average current. It's a valid test and tends to weed out tubes with marginal cathode emission. However, it is not the way tubes are normally used in radios, and no two tube testers will stress the tubes in quite the same way. So, don't think that a particular Gm reading means very much, no matter how nice it looks on the meter, and don't toss out a tube because it reads a little low.

Incidentally, it's often useful to try reducing the heater voltage by one step to see how much the

(Continued on following page)

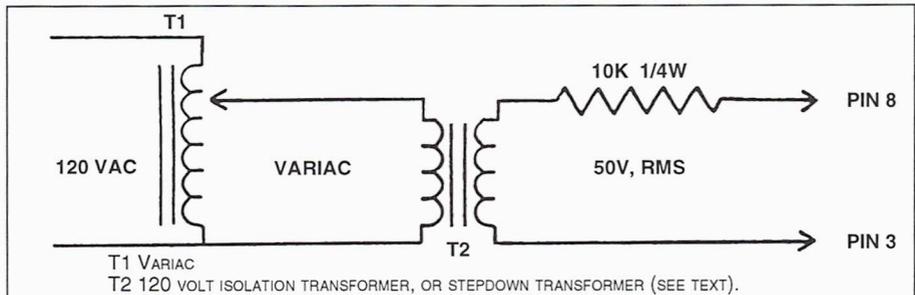


Figure 3. Schematic diagram for a source of currents.

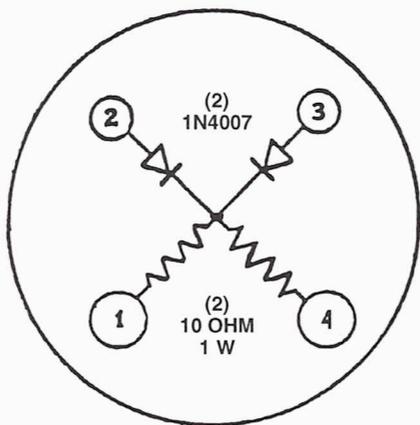


Figure 4. Schematic diagram of a solid-state substitute for a Type 83 tube.

(Vintage Tube Testers, continued)

Gm reading drops. It shouldn't drop at all, but if it does, this is an indication that there isn't much extra cathode emission left, and the tube is at the end of its useful life.

(Alan S. Douglas, PO Box 225, Pocasset, MA 02559)

Alan Douglas, an electrical engineer, has been interested in old radios since the age of ten. His extensive collection includes a library of 5,000



Figure 5. A Type 83 tube and its solid-state replacement.

radio-related books and magazines, now occupying a special addition to his house. He has written well over 100 articles and papers for radio and engineering publications. His books, "Radio Manufacturers of the 1920's, Volumes I, II, and III," are highly regarded resources for the radio collecting community.

IN THE MARKETPLACE

Play Things of Past — Catalog #4

Play Things of Past of Cleveland, Ohio, has just released its latest catalog titled "Catalog #4," a supplement meant to be used with Catalog #3. This new, 32-page catalog is jam-packed with over 4,000 entries, including the following: radio parts and tubes for the radio restorer, over 1,600 radio magazines, and 950 listings for radio books, catalogs and literature. Catalogs #3 and #4 are priced at \$3 each or \$5 for both, postpaid. They may be ordered by mail or phone from Gary B. Schneider, Play Things of Past, 9511 Sunrise Blvd., #J23, Cleveland, OH 44133. (216) 251-3714.

Play Things of Past also has a retail store where various large items such as radios and other vintage equipment are sold. These items are not available by mail order. However, they may be viewed on Wednesdays and Saturdays, or at other times by appointment, at Play Things of Past, 3552 West 105th St., Cleveland, OH 44111. (216) 251-3714, days; (216) 582-3094, nights.

A.R.C. has reviewed this catalog and finds it to be a valuable addition to a collector/restorer's library as a source of hard-to-find parts and literature, as well as a good reference and price guide.

PLAY THINGS OF PAST
CATALOG #4 Price \$3.00
(A SUPPLEMENT TO CATALOG #3)

MAIL ORDER/RETAIL SALES - Vintage radios, tubes, parts, literature
Buy - Sell - Trade - Service Vintage Radios, Phonographs, Jukeboxes, Televisions

<p>RETAIL STORE Play Things of Past 3552 West 105th St. Cleveland, Ohio 44111 216-251-3714</p>		<p>MAIL ORDER Play Things of Past Gary B. Schneider 9511 Sunrise Blvd., #J23 Cleveland, Ohio 44133 216-582-3094</p>
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LARGEST VARIETY OF RADIO ITEMS

CLASSIFIED ADVERTISING POLICY

ONE FREE 20-WORD AD for subscribers in each issue; additional words are 22¢ each. See details below. Classified ads sent by mail, fax or by any other method must be received (not just postmarked!) by **Noon Eastern Time** on the classified ad deadline date to guarantee inclusion in the current issue. Late ads are held for the following issue. Please enclose correct payment with all ads. Stamps or cash are OK for small amounts. (Canadian and other foreign advertisers, please see "Payment" on page 2 for methods.) "Free words" cannot be accumulated from month to month; free words must be requested when ad is submitted.

Faxed & e-mailed ads: Please see additional information on the inside front cover.

When including ads with other A.R.C. correspondence, write the ads on a separate piece of paper. Include SUB# with ad. Ads may be sent in advance; but, write each ad on a separate piece of paper and indicate the month (or successive two months) you want the ad to run.

To minimize our typing errors: Please write legibly. Use both capital and small letters. Do not use a dash between words. Carefully write the following numbers and letters (especially in model numbers) since some can look alike; for example 1, l and I (the number one, the capital i and the small L.) Also: 0, O, o, Q and D; r and n; 6, b and G; V, U, u, v and Y; A and R; 5, S and s; 2, Z and z. We try to correct spelling errors, so when using an uncommon word or manufacturer which we might mistake as a more common word or manufacturer, note it so that we do not "correct" it. Editor's annotations are in [brackets].

Advertising is accepted only for early items related to radio, communication, etc. All items must be described fairly; reproductions, reprints and not-original items must be so identified. Advertisers must agree to respond promptly to inquiries and orders, to resolve problems promptly if the buyer is not satisfied, and to comply with a buyer's refund request on unaltered returned items.

The publisher reserves the right to edit ads without notification to the advertiser and to reject ads for any reason. Names other than the advertiser will be edited out of ads. Ads with non-radio-related items will be returned or edited unless the non-radio-related items are for trade of radio-related items, or they are incidental to and appear at the end of an otherwise acceptable ad. The publisher is not responsible for errors due to illegibly written ads or for any other reason.

Clubs: Since club activities receive free coverage on the *Coming Radio Events* pages, the free 20 words may not be used for club activity ads. See inside front cover for additional information.

CLASSIFIED AD DETAILS

Deadline: NOON ET- 10th of the month!

Classified ads must have a standard heading such as **WANTED, FOR SALE, FOR TRADE, FOR SALE/TRADE, SERVICES, MESSAGE, HELP, AUCTION, MEET, etc.** This heading is the only bold or all-capitalized words allowed in the ad. Capitalize only manufacturer names, model names, etc. This standard ad format makes scanning the ads easier.

Before writing your ad, please look over the ads in a recent issue of A.R.C., and try to write your ad in the same style. Full name (or company name) and address is required in all classified ads; we will add it if you forget.

To encourage varied content of the ads, the same classified ad may be run only once per issue and for only two consecutive months. (To run an ad longer, use a boxed classified or display ad.)

Classified Ad Rates per Month

Subscribers:

First 20 words: **FREE***

22¢ per word for extra words over **20 plus**

10¢ per word for a shaded ad (count all words including free words).

* Subscribers may take 20 free words on only **one** ad each month.

Non-Subscribers:

38¢ per word **plus**

10¢ per word for shaded ad.

Please do not forget to send in the extra 22¢ per word when your classified ad runs over the free 20 words; your payment will be appreciated, and it will help to keep A.R.C. healthy.

BOXED CLASSIFIED AD DETAILS

Deadline: 1st of the month!

Boxed classified ads can run unchanged for three months or more. No words are free. Ads may be shaded and may include bold and all-capitalized words freely. The ad need not begin with "For Sale," etc. Minimum run is 3 months, prepaid. Discount: 10% for 6 months; 20% for 12 months.

Boxed Classified Ad Rates per Month

Nonshaded ads:

33¢ per word for all words,* none free, **plus**

10¢ per word for each bold word **plus**

10¢ per word for each all-caps word.

Shaded Ads (All words are bold at no charge):

44¢ per word for all words* **plus**

10¢ per word for each all-caps word.

Non-Subscribers:

Add 20¢ per word to above costs.

*Three words can be bold-all-caps at no extra charge.

PHOTO & DRAWING DETAILS

**Deadline: 1st of the month
for all ads with drawings or photos!**

Drawings and photos are encouraged as the response to your ad is much larger and the reader knows better what you want or are selling. Send in your drawing or photograph, and A.R.C. will reduce it or enlarge it as needed.

Photo and Drawing Rates per Month

\$14.00 per month for each photo or drawing

(If ad is canceled, this amount cannot always be refunded.)

CHANGES & CANCELLATIONS

Please check your ads carefully before sending them in. Once ads are received, it is not always possible to refund the amount sent, pull the ad or make changes.

IMPORTANT — COUNTING WORDS — IMPORTANT

The **standard headings:** WANTED, FOR SALE, etc., count as **one word** each time used in an ad. **Name, address** and (one) **telephone number**, count as **6 words**, regardless of length. Ham call letters and business name can be included in the 6 words and do not count extra. Full name (or company name) and address is required in all classified ads. Each additional word, abbreviation, model number or number group, extra telephone numbers, fax, e-mail, etc. count as one word each. Hyphenated words count as two words.



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**CLASSIFIED AD
DEADLINE JULY 10th
Noon Eastern Time**