

## Evolution of the Broadcast Receiver Part 1- Crystal and Regenerative Sets

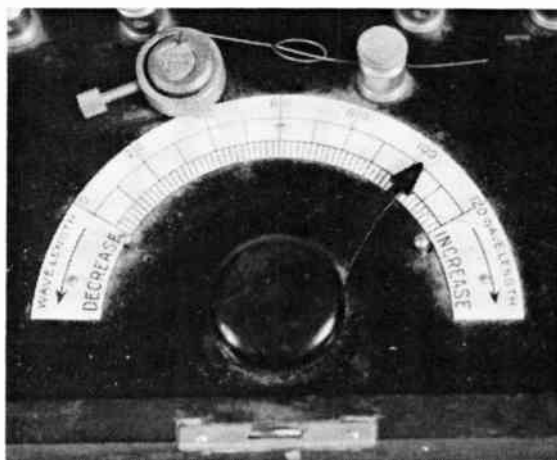
Welcome to the first issue of *The Radio Collector!* To start things off, we're going to begin a multi-part series designed to trace the history and development of the broadcast receiver. We'll be concentrating on consumer sets, the kind that first appeared with the dawn of public broadcasting in the early 1920's. And we'll cut off our coverage with the onset of World War II--when what I think of as the classic period of radio collectibles came to an end.

If you've been collecting for a while, this overview might very well give you a fresh perspective on our engrossing hobby. But if you're just starting out, the series will be an invaluable introduction to the "universe" of old radios that you'll be likely to encounter on your forays to flea markets, garage sales and swap meets. Knowing what to expect out there, you'll be in a better position to focus your collecting activities on types of sets that are most meaningful to you.

The most straightforward way to make some sense of the bewildering variety of models you'll be likely to come across is to take an evolutionary approach. We'll begin with the simplest early sets, then trace the path of radio development--discussing the improvements and innovations that followed and their effects on the appearance and operation of typical receivers.

### Crystal sets

Curiously enough, very early radio receiver design was based on solid-state technology. A semiconductor device, in the form of a chunk of lead ore (otherwise known as galena), was the most widely used detector of radio signals until made obsolete by introduction of the much more efficient vacuum tube in the early 1920's. Of course



*The galena (lead ore) and "cat's whisker" detector employed in early crystal sets represents the first use of semiconductors in electronics.*

as we all know, the tables were turned in the 1960's, when semiconductors in the form of transistors and diodes all but totally replaced vacuum tubes in receiver circuitry. You'll recognize a crystal set when you find one by the little chunk of galena ore, which is embedded in a small metal cup and contacted by a fine, springy wire known as the "cat's whisker." Before the start of a listening session, the wire was moved to different spots on the surface of the galena to find the location where signals were loudest.

You'd have to be very lucky indeed to come across a vintage crystal receiver at a local flea market or garage sale. By the time radio broadcasting had become well-enough established to create a mass market in receivers, crystal sets had been replaced by tube models. Hence, there just weren't that many serious crystal radios made.

Your best chance for acquiring a crystal set dating from the early days of broadcasting would be by purchasing it from another collector. Keep your eyes open at antique radio swap meets, and check the classified ads in publications such as this one. Expect to pay a good buck for your set, but be sure it's truly an early 20's model before shelling out. Crystal sets have fascinated electronic enthusiasts for years because of their simplicity and the fact that they operate without a power source. Novelty, or toy, versions of these sets (such as the units made by Philmore) were readily available well into the 1960's and maybe later.

### Regenerative sets

Despite the "free-power" advantage of the crystal set and its simplicity of operation, most serious listening during the decade of the 1920's was done with tube ra-

## The Radio Collector Volume 1, Number 1

*The Radio Collector* is published monthly by Marc F. Ellis, P.O. Box 1306, Evanston, IL 60204-1306. Annual subscription rates are as follows: via surface mail \$20.00 (U.S.), \$21.50 (Canada--U.S.funds); via air to other countries, \$35.00 (U.S. Funds). Editorial content copyright 1993 by Marc F. Ellis, except as otherwise noted. *The Radio Collector* and Marc F. Ellis are not responsible either for the outcome of any transaction resulting from the advertising in this publication or for any consequences of the application of our editorial content. Please note that subscription and advertising rates, as well as magazine format, are subject to revision at any time.

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dios operated by dry and/or storage batteries. Since tubes had the capacity to amplify signals as well as detect them, these radios were much more sensitive than crystal sets and could deliver much louder signals.



*"Regen" sets squeezed amazing performance out of one tube. Note pancake coils in feedback circuitry of Crosley 50. Rear one is adjustable.*

To obtain maximum efficiency, the amount of feedback had to be carefully regulated.

A large percentage of the tube radios in use during this period were of regenerative design. The regenerative set was a product of the fertile mind of legendary radio inventor Edwin Armstrong. It squeezed so much performance from a single tube that few regens had more than two.

The regenerative tube did double duty, functioning both as an amplifier and a detector of radio signals. But the real secret of its astonishing performance lay in its feedback circuitry. Part of the amplifier's output was coupled back into the input. The result was that the received signal could be amplified over and over again, resulting in tremendous gain.



*Crosley 50 was probably the most widely sold single-tube regenerative receiver of the early 1920's.*

This was usually handled through changing the relative position of two coils --one in the output circuit and one in the input. The closer together the two

coils, the greater the feedback.

With the coils too close together, the tube would go into oscillation--emitting a radio signal that would interfere with other radios in the neighborhood and creating an ear-splitting howl in the headphones. The idea was to reduce the feedback until it was just below this point, resulting in maximum amplification of the received signal.



*RCA Radiola III was more elegantly made than the Crosley 50 and boasted an additional tube that provided extra headphone volume.*

Among the common small "regen" receivers of the early 20's are the one-tube Crosley 50 and the two-tube RCA Radiola III. The RCA set's extra tube was an audio amplifier, providing more volume in the headphones. The less-common Crosley 51 also sported an extra tube for audio amplification. RCA sold an accessory two-tube "balanced amplifier" that could be added to the Radiola III to obtain speaker volume. Though RCA tended to use regeneration

*(Continued on Page Four)*

### BE A CHARTER SUBSCRIBER!

We have great plans for *The Radio Collector*, but we can't be successful unless we build some circulation. For that, we need your help, so here's an inducement to become a regular reader. If you send in a subscription to *The Radio Collector* between now and January 31, 1994, we'll consider you to be a charter subscriber. As such, you'll receive two coupons, each exchangeable for one "look-up" of schematic and servicing information for a radio of your choice. This is a \$10.00 value, equivalent to a rebate of half the U.S. subscription price. So let's hear from you soon!

## EDITORIAL

### OUR FIRST STEP!

Well here it is at last, Volume 1 Number 1 of *The Radio Collector*! To some of you out there in reader-land, our appearance on the market might seem to be spontaneous, just as a baby's first step might appear to a casual observer. Only a proud parent could really appreciate the developmental processes that had to take place before the momentous event could occur.

Actually, that's as it should be. Like any parent, I'd like folks to enjoy my offspring without too much sense of the considerable effort that it took to get it into circulation. However, also like any parent, I can't resist giving in to the conflicting impulse to talk a bit about the experience.

My decision to publish *The Radio Collector* stemmed from my activities as conductor of the antique radio column (now in its seventh year) for *Popular Electronics* magazine. The hundreds of enthusiastic reader letters received over those years convinced me that there are a great many new collectors out there avid for basic information on radio history, theory and restoration practice.

I felt that an entire magazine designed to fill this need would be welcomed and set about putting one together. That was late last summer, a couple of months before the Antique Wireless Association annual conference was to begin. I'd always wanted to attend that event, and decided to develop a pilot issue in time to introduce it there.

I made it, but not by much. Thanks to a Herculean effort by the printer, I was able to pick up the finished copies on the morning of the day I was leaving for Rochester. And working backwards from that point, I need to thank my good friend Bill Nelson for the "into-the-wee-hours" session required to set this publication up in Word Perfect; the many radio club officers around the country who sent me club information and classified ads to occupy the columns laid out for them in the back of the magazine; and my family for their encouragement and their forbearance

about the horrible messes on the dining-room table.

After reaching Rochester, I was greeted by the AWA officers with warmth and interest. They gave me and my little display a nice spot in the book fair, so I was able to talk with a lot of people about the new magazine and even sign up a few subscribers. And I signed up several more thanks to Lud Sibley, editor of the AWA's *Old-Timer's Bulletin*, who gave this publication a "plug" in the winter issue.

But enough about the past. I'd like to talk a for a moment about this issue and the people who have contributed to it. I ran into Paul Bourbin, writer of our *Vintage Book Reviews* column, while making calls to radio club officers in connection with the development of the pilot issue. Paul, who is Board Chairman of the California Historical Radio Society and a regular contributor to publications on vintage radio, gave me the

idea for the column and even offered to write it. I lost no time taking him up on the offer. Paul's first review enhanced our pilot issue and the second one appears on these pages.

I first encountered Ken Owens' work when I summarized his excellent *Old-Timer's Bulletin* article on Catalin radios in my *Popular Electronics* column. Ken later saw the announcement of my new magazine in OTB and sent an inquiry. One thing led to another and Ken has also agreed to write a regular column for *The Radio Collector*. He is very much in tune with what I am trying to accomplish in this publication, and feels a strong obligation to share his 50-odd years of radio experience with the new collector.

As you'll see by reading the first installment of Ken's column, *Play it Again*, in this issue, he intends to offer a comprehensive series of articles interweaving radio set evolution, history, theory and restoration techniques. You may see some duplication of the subject matter I intend to cover in the front-page feature

articles, but I'm going to let Ken plan and schedule his column in his own way. If there is an occasional duplication, I'm sure you'll benefit from reading two points of view!

Another regular feature beginning in this issue of *The Radio Collector* will be *Company Chronicles*, a series of short "biographies" of classic radio manufacturers. The main reference source for these stories will be the definitive three-volume encyclopedia *Radio Manufacturers of the 1920's* (Published by Vestal Press, Vestal New York, and copyrighted 1988, 1989 and 1991 by Alan Douglas). Alan knows of this project and has graciously given it his blessing.

*Company Chronicles* will give the reader an excellent orientation to the major companies responsible for creating the radios we collect and love today. But our brief paraphrasing of Alan's material will in no way substitute for the encyclopedia itself—even if we were to cover every company in it (which is not our intention). You'll be reading only a smattering of the voluminous information Alan has packed into these books and won't be viewing the treasure-trove of beautifully-printed illustrations.

Finally, a word about the three-hole punch along the left side of this magazine. It's been put there because the editorial policy of this magazine is to print material of lasting value that will systematically enhance the reader's knowledge and understanding of our hobby. Save every issue and you'll build up an invaluable reference source that you'll use again and again in the years to come.

That's it for the time being, folks! But now that you've seen *The Radio Collector* take its first step, we hope you'll want to stick around and watch it grow!

Marc Ellis, Publisher and Editor  
*The Radio Collector*



*Radiola balanced amplifier was a desirable accessory for the Radiola III, enabling the little set to drive a loudspeaker.*

The minimalist design made possible by regenerative circuitry was a very attractive option --so earphone-only regens were very popular. These smaller regenerative radios used tubes such as the types 11 and 12, which had filaments that could be powered by disposable dry batteries. Plate and, when necessary, grid bias voltages were also supplied by dry batteries.

One mark of identification for regenerative sets of all sizes is the simplicity of their controls. Not

considering the filament rheostats (sometimes one for each tube) found in battery sets of this vintage, there are usually not more than two: a regeneration control (may be marked "amplification") and a "station selector" or "tuning" control. Many Crosley sets, however, also incorporated multi-contact "bandswitches," probably because their odd leaf-type tuning capacitors didn't have enough range to cover the entire broadcast band at once.



*Besides rheostat(s) for filament voltage, regenerative sets generally required only regeneration ("amplification") and tuning controls*

Enter the TRF

The regenerative receiver probably

would have been the dominant 1920's design if Edwin Armstrong had retained the patents. But, towards the middle of the decade, Westinghouse purchased the rights and held them very closely, making it very difficult for other manufacturers to obtain licenses.

As a result, many companies wishing to enter the lucrative broadcast receiver market had to turn to less efficient circuitry. In fact, it took three tubes (two r.f. amplifiers and a detector) to provide the same performance as a single tube connected as a regenerative amplifier-detector.

The two stages of r.f. amplification required three tuned circuits (coil/variable capacitor combinations) for proper operation. That meant that there were three tuning dials to be manipulated in order locate a station and tune it in at maximum volume. Such sets were called TRF (tuned radio frequency) receivers. We'll take a more detailed look at TRFs next month, when we continue our evolutionary look at the development of radio receivers. In the meantime, good hunting and happy collecting!

MARC F. ELLIS

## VINTAGE BOOK REVIEWS

*Books from the era when vintage radios were new! Look for them at swap meets, flea markets and used book stores.*

**MODERN RADIO SERVICING**, By Alfred A. Ghirardi. First Edition, 1935. Published by Radio Technical Publishing Co., New York, NY. 1302 pages. Hardbound.

This valuable and widely-read book is organized into four distinct parts. Part One covers "The Theory and Construction of Modern Service Equipment." Here will be found discussions of the four major types of test equipment then in use: meters, tube checkers, set analyzers and oscillators. The theory and operation of each type of instrument is explained and commercially available models are reviewed.

Part Two is concerned with "The Practical Servicing of Radio Receivers." This section deals with the "nuts and bolts" of receiver servicing, including preliminary tests, testing by voltage/current and resistance methods, component testing and repair, and special problems. The alignment of Superheterodyne and TRF receivers is also covered.

Part Three, titled "Specialized Service Problems," covers all-wave receivers, high-fidelity (yes, they had it then) sets, and marine and auto radios. Other chapters discuss such diverse topics as reducing electrical interference and selling yourself as a radio servicemen. Part Four contains tube characteristic charts and an excellent index.

Test equipment collectors, and those looking for insights on how to operate vintage test equipment which (as is common) has become separated from its documentation, will find Part One of great interest. Part two is a very fine treatise on troubleshooting. It's thorough and clear, containing many useful servicing and repair methods.

Part Three will be useful to you if you happen to be working on one of the types of sets discussed there, or are trying to deal with electrical interference problems. Of course, interference problems caused by TV or FM transmitters are not covered. The tube charts in Part Four are helpful, but similar material is available in many other publications.

*Modern Radio Servicing* is a fine book for anyone who needs a good reference book on serious radio servicing. It requires only high school math, but Ghirardi expects his readers to have a working knowledge of electricity and radio theory. Those without such a background might like to precede study of this book by reviewing "Radio Physics Course" (Radio Technical Publishing Co., New York, NY, Second Edition published 1933) by the same author. It's an excellent introduction to theory for the beginning collector, and will be reviewed in this column next month.

Conducted by Paul Joseph Bourbin  
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## INFORMATION EXCHANGE

*Need information about some aspect of our hobby? Ask your question here free. Got the answer? Please send it in! All correspondence will be conducted through this column so that it can be shared with other interested readers.*

### Answers to Questions

**Q** I know that the filament voltages of early battery tubes (such as 5 volts for the 01-A and 1.1 volts for the 11 and 12) were designed to be compatible with auto storage batteries or various combinations of dry cells. But how were the operating voltages for the heaters or filaments of early a.c. tubes determined? Many seem to have unusually low values (such as 1.5 volts for the 26; 2.5 volts for the 24A and 27). Others (such as the 71-A and the 80) operate at 5 volts like the 01-A. The reason can't have much to do with the power source, since transformers can be made to give any desired voltage. And, in any case, why didn't the set designers make it easy on themselves and set all these tubes up for a single, standard voltage? (Harry Benzinger, Tampa, FL)

*Editor's Note: This question drew two excellent responses. What follows is a composite of both.*

**A** As Harry pointed out, the 01-A had a filament voltage of 5 for compatibility with the 6-volt lead-acid storage battery commonly used to light it. When the battery was fully charged, putting out a voltage of slightly over 6, a rheostat in the filament circuit was cut in to reduce the voltage appropriately. As the battery began to discharge and its voltage dropped, the rheostat was gradually adjusted to offer less and less resistance so that the filament voltage could be kept constant at or near 5. The nearly-discharged battery could still provide a usable 5 1/2 volts for a reasonable amount of time. So choosing a filament voltage of 6 made it possible to operate the tube over most of the battery's discharge cycle.

The filament design of the type 80 full-wave rectifier, which was used for many years in the power supplies of a.c. receivers, evolved from that of the battery tubes. Hence the 80 operates at 5 volts.

The type 71-A was originally developed for service in battery sets, and a 5-volt filament rating was the obvious choice. As it happens, the type 71-A performed its function as a final audio amplifier just about as well with a.c. on the filament as with d.c. So it was used--five-volt filament and all--as the power amplifier for most of the early a.c.-operated sets.

The type 01-A general purpose amplifier, however, could not be used in plug-in radios. It generated an unacceptably loud hum with a.c. on its filament. in

designing a "substitute 01-A" for a.c. sets, engineers discovered that the hum effect could be minimized if the current drawn by the filament was carefully matched to the filament voltage. They got the best results with a 1.5-volt filament drawing 1.05 amps, and used that configuration in their new tube, the type 26.

The 26 functioned well as an r.f. or a.f. amplifier, but caused too much hum when used as a detector. So tube engineers came up with the type 27 for use in detector circuits. The filament of the type 27 did not directly supply the electron stream required for the tube's operation. Instead it heated another element, the cathode, which, in turn, generated the necessary electrons. The "heat inertia" of the cathode made the electron stream more constant, tending to isolate it from power supply oscillations.

It would have made sense to design the 27's filament for the same voltage as the 26's. But in order to supply enough heat to get the cathode up to temperature, the type 27's filament required more power--just about three times the wattage of the type 26. Providing that wattage at 1.5 volts would have required to filament to draw an excessive amount of current, requiring expensive heavy-gauge wire in the filament circuit.

So the filament needed to be operated at higher voltage. But going back to the battery-set standard of 5 volts apparently would have made the 27's filament assembly too fragile. So a compromise value of 2.5-volts was decided upon. And 2.5-volts became the standard value for the filaments (or "heaters," as they were now called) for the expanding family of cathode-type tubes.

And 2.5-volts remained the standard until a the special needs of auto radios and of a.c.-d.c. sets resulted, respectively, in the development of a large family of 6.3-volt tubes and of a variety of types rated at even higher voltages such as 12, 25 and 50. (Alan Douglas, Pocasset, MA and Ken Owens, Circleville, OH)

### Questions Awaiting Answers

**Q** The volume of many antique a.c.-operated radios will abruptly increase or decrease when a lamp or appliance is turned on or off elsewhere in the house. Can anyone explain? (S. Weller, Skokie, IL)

# PLAY IT AGAIN!

*A No-Nonsense Course in Radio History, Evolution and Repair*

## SETTING THE STAGE

I am happy to be associated with Editor and Publisher Marc Ellis in the expectation of making *The Radio Collector* a success. We both know that the best way to do it is by holding your interest with useful information.

During the past few years, I have found that many people who would like to restore antique radios have been put off because they haven't been able to acquire the necessary technical knowledge. Since the advent of transistors and integrated circuits, vacuum tube technology has become obsolete and is no longer taught. There are still books available, especially on the used market, but most tend to be too advanced for beginners.

Yet there is tremendous satisfaction in making a radio that has been silent for half a century play again. There are lots of people around who will restore your sets for a price, but I'd like to help you become a "radio expert," save the money, and have the satisfaction of doing the job yourself.

Now let me introduce myself. I became interested in radio during World War II when I was around the age of 12. It was exciting to listen to the BBC broadcasting news to the far corners of the British Empire, via short wave, during the London Blitz and the Pacific War. I began to read everything I could find on radio and pestered the local ham operators with my questions. After the war, I knew enough about radio to start a repair business with a friend.

Parts had been very hard to get during the war, so nearly everyone had a broken radio. The only radio repairman in town was overwhelmed and didn't mind the competition at all. He even offered the use of his test equipment for difficult cases. We fixed hundreds of sets, and made good money, until we graduated from high school and went on to college.

I became a professional research chemist and enjoyed a career with a major corporation. During my

chemical career, I maintained my interest in radio and electronics. After retiring in 1985, I began to wonder if any of those grand old sets I had worked on years ago were still around. To my delight, there were, and I began to collect. I soon found that I was not alone. There are lots of collectors and a number of organizations and publications which cater to them.

The oldest is the Antique Wireless Association, Box E, Breesport, NY 14816. Their mission is the research and preservation of wireless history. They publish a quarterly journal, *The Old Timer's Bulletin*, to which I have contributed a number of articles. Dues are \$12.00 per year.

A publication to which every serious collector should subscribe is *Antique Radio Classified*, P.O. Box 2, Carlisle, MA 01742. It is a monthly magazine containing articles of interest to the collector and restorer. Primarily, however, it is a marketplace for those seeking or selling radios, parts, information and literature. If you need scarce parts, this is the place to look. Subscribers can run one ad per month free of charge. A subscription is \$29.95 per year.

Now what are my goals in this column? It will not be a basic electronics course, but a practical repair course. You will have to learn Ohm's law, and the other basic electrical concepts, on your own. I plan to include enough history so you will appreciate the romance of early radio.

I will give you theory in small doses at appropriate times so you will understand what goes on in a radio. If you don't know what's happening in a radio, how can you fix one? I will spend some time on tubes because newcomers know little about them and have a lot of misconceptions. When we finish, you should be very comfortable with tubes and secure in your knowledge of how they work.

I will discuss the tools, reference books and test equipment you will

need. I will tell you where to get tubes and parts for antique radios and how to substitute modern parts when necessary. I will divide the circuits in a radio into logical, easily understood blocks and show you what they do, what their most common problems are and how to troubleshoot and repair them.

Along the way you more advanced collectors may get bored, but I hope to throw in enough tips from nearly 50 years of experience to hold even your interest! Bear with me. I think we have a duty to pass our knowledge on to the younger generation.

Let me close with a personal opinion which our Editor may not necessarily share (*He does, Ed.*). Researching, preserving and publishing the history of technology is a respectable area of scholarship. Collecting, preserving and restoring the products of technology is an essential part of that history. The true collector believes in these goals. If your first concern is "What is it worth?", please don't become an antique radio collector. Make your fast buck selling junk bonds and leave my hobby alone.

I am not criticizing the honest antique radio dealers. They perform a valuable service by locating and restoring radios for those who can't. They run a legitimate business and are entitled to their profit. Watch out for the sharpies and speculators, however.

As we go along, I invite readers with repair problems to send me their questions and I will try to answer them individually. Frequent questions will furnish material for future columns. Please include a SASE if you want an answer.

See you next month, when we'll take a brief look at the beginnings of radio and the people who made it possible.

Ken Owens  
478 Sycamore Dr.  
Circleville, OH 43113

# COMPANY CHRONICLES

*Brief Biographies of Classic Radio Manufacturers*



If we could survey all collectors and historians to determine the most beloved brand name of radio's golden age, Philco would probably be the hands-down winner. For some reason, the brand seems to have acquired an unusually strong friendly and "homey" connotation. The picture of a family "gathered around the living room Philco" is called up again and again in works of fiction and non-fiction dealing with the 1930's. And if you don't believe that the classic Philco cathedral is one of the most popular radio designs ever created, I invite you to see how many times you can spot its familiar image in the antique-radio related advertising pieces now on your desk and workbench.

But besides being a "friendly" radio company, Philco was also known for its hi-tech innovations. Its "Mystery Control" radios, "Music on a Beam of Light" phonographs and living-room disc recording equipment fascinate the radio collecting community now as much as they did the radio buying public for which they were created. For these reasons, then, it seems very appropriate to kick off our "Company Chronicles" column with a Philco biography.

Philco was organized in 1906 to make storage batteries for electric vehicles, its familiar brand name being an acronym for "The Philadelphia Storage Battery Company." As gasoline edged out electricity as the motive power of choice for cars and trucks, one of Philco's competitors, the Exide company (also Philadelphia based), got and kept the edge as a supplier of original equipment batteries. However, Philco's effective marketing tactics gained it a significant piece of the replacement business.

The growth of the radio industry, beginning in the early 1920's, gave Philco the opportunity of getting in on the

ground floor of a brand-new market--storage batteries for powering radio receiver filaments. Seizing the opportunity, Philco tackled the new market and developed \$4.7 million in sales by 1924. Later, the company diversified in the radio area, adding battery eliminators (known as "Socket Powers") to its line. By 1927, sales amounted to \$15.4 million.

The introduction of the a.c.-powered radio in the late 1920's made Philco's batteries and battery eliminators obsolete. But the company had penetrated the radio industry with an established name and a network of dealers. So it decided to stay on--moving to the manufacture of complete receivers. Philco made the change in a careful and methodical manner, beginning as a radio *assembler*, purchasing engineering services and components on the outside. Eventually, it brought engineering and major component manufacture inside, enlarging the plant and converting it to full assembly-line operation. Philco's aggressive marketing tactics and careful manufacturing controls made it a sales leader, gaining third place in the industry (behind Majestic and Atwater Kent) by the end of 1929 and first place by 1930.

Over the next 10 years, Philco dominated the radio industry, but in 1939 it began to diversify into other household appliances. Later, as a result of wartime government contracts, Philco expanded into basic research and actively sought government business. During the 1950's, profits declined and Philco sold out to Ford in 1961. In 1974, because of tough Japanese competition, Ford sold the Philco Consumer Products Division to GTE-Sylvania, retaining the Aerospace Division. In 1981, GTE sold the Sylvania Consumer Electronics Division to North American Phillips.

*The information for this Company biography was obtained from Alan Douglas' three-volume encyclopedia "Radio Manufacturers of the 1920's," published by The Vestal Press, Ltd., Vestal, NY and copyrighted 1988, 1989 and 1991 by Alan Douglas.*

## CLUB DIRECTORY

*Send us basic information about your vintage radio club for free inclusion in our permanent directory. The directory will appear in Vintage Radio from time to time as space permits. Be sure to contact us when your listing requires updating!*

### NATIONAL ORGANIZATIONS

Antique Radio Club of America (ARCA). Quarterly publication: The Antique Radio Gazette. Regional chapters, regional and national conventions. Dues \$12.00. Contact ARCA, 300 Washington Trails, Washington, PA 15301.

Antique Wireless Association (AWA). Quarterly publication: The Old Timer's Bulletin. Regional and national conventions. Dues \$12.00. Contact AWA, Box E Breesport, NY 14816.

### REGIONAL ORGANIZATIONS

#### CALIFORNIA

California Historical Radio Society (CHRS). Two journals, one audiotape, membership directory and occasional newsletters yearly. Regular swap meets, exhibits and open houses. 24-hour hotline (415) 978-9100. Dues \$15.00. Contact CHRS, P.O. Box 31659, San Francisco, CA 94131.

#### INDIANA

Indiana Historical Radio Society (IHRS). Meets four times a year in different areas of Indiana. Quarterly bulletin. Dues \$10.00. Contact Paul S. Gregg, 725 College Way, Carmel, IN 46032-2041.

#### MARYLAND

Mid-Atlantic Radio Club (MAARC). Monthly meetings. Monthly newsletter. Dues \$15.00. Contact Joe Koester, 249 Spring Gap South, Laurel, MD 20724.

#### MICHIGAN

Michigan Antique Radio Club (MARC). Quarterly newsletter. Quarterly Swap meets. Yearly convention. Contact MARC, P.O. Box 585, Okemos, MI 48864 or call Jim Clark (517) 349-2249.

#### MISSOURI

Antique Radio Collectors and Historians of Greater St. Louis (ARCH). Monthly meetings. Monthly newsletter. Dues \$10.00. Contact Charles Juedemann, 262 Churchill Ln., Ballwin, MO 63011.

#### NEW JERSEY

New Jersey Antique Radio Club (NJARC). Monthly meetings. Biannual swap meets. Dues \$10.00. Contact Kathleen Flanagan, 92 Joysan Ter., Freehold, NJ 07728.

Society for Preservation of Antique Radio Knowledge (SPARK). Monthly meetings. Monthly bulletin. Quarterly newsletter. Quarterly swap meets. Dues \$12.00. Contact Harold F. Parshall, 2673 South Dixie Dr., Dayton, OH 45409. Phone (513) 298-4044 days; (513) 268-2909 evenings.

#### OKLAHOMA

Oklahoma Vintage Radio Collectors (OKVRC). Monthly meetings. Monthly newsletter. Spring and fall swap meets. Write OKVRC, P.O. Box 72-1197, Oklahoma City, OK 73192-1197, or call Karen McCoy (405) 722-0595 or Jim Collings (405) 755-4139.

*(Continued on Next Page)*

## CLUB DIRECTORY (CONT.)

### OREGON

Northwest Vintage Radio Society (NWVRS). Monthly meetings. Monthly newsletter. Dues \$15.00. Contact the Society at P.O. Box 82379, Portland, OR 97282-0379.

### TEXAS

Vintage Radio and Phonograph Society (VRPS). Monthly meetings. Monthly and quarterly publications. Annual auction, convention. Dues \$13.50. Contact VRPS, P.O. Box 165345, Irving, TX 75016.

### WASHINGTON

Puget Sound Antique Radio Association (PSARA). Monthly meeting/tail gate swap meet. Monthly publication. Yearly "show and tell" contest. Yearly major swap meet. Permanent museum. Contact PSARA, P.O. Box 125, Snohomish, WA 98291-0125.

### WISCONSIN

Western Wisconsin Antique Radio Collectors Club. Bi-monthly meetings. Five newsletters, two swapmeets and two mall shows yearly. Dues \$12.00. Contact Dave Wiggert, 1611 Redfield St., La Crosse, WI 54601.

## CALENDAR OF EVENTS

*Planning an auction, swap meet, convention or show? Send us a brief rundown for a free announcement. Include date, location and contact information for the event. Plan on getting the information to us two months in advance for timely insertion of your item.*

**January 29.** Society for Preservation of Antique Radio Knowledge Mid-Winter Swap Meet. DeVry Institute of Technology, 1350 Alum Creek Dr., Columbus, Ohio. Free admission. 8 a.m. - 1 p.m. I-70 Exit 103 B. Contact Gil Zalewski (614) 866-0094 or Harold Parshall (513) 298-4044 days; (513) 268-2909 evenings.

**February 19.** Indiana Historical Radio Society Winter Meet. Holiday Inn, Southeast, 5120 Victory Lane, Indianapolis, IN. I-465 Emerson Exit 52. Contact Bob & Inez Shuck (317) 849-0381.

**February 26.** New Jersey Antique Radio Club Swap Meet/Flea Market, Hightstown Country Club Ballroom, Hightstown, NJ, 8 a.m. - 1 p.m. NJ Turnpike Exit 8, then east on Rt. 33. Pre-registration required. Contact Jim or Ruth Whartenby (908) 271-7701.

## TRADING POST

*A Clearinghouse for Buyers, Sellers and Swappers*

### WANTED

Booklet (original or reproduction) detailing operating instructions-and any other information-for Grebe Synchrophase Seven. Des. Higgs, 0590 Sansum Park Dr., Sidney, B.C., Canada V8L5B5. (604) 656-0675

Phono assembly for Zenith console (6-S-305). Same unit as in Rider's 10-32, Sears 4796. Owner's manual for "Conar" meter (Nat. Radio Inst.). Knob for Philco Transitone 53-564 (maroon center). Operational chassis for Pacific 321-36 or will purchase junk set for parts. F.V. Bernauer, 1503 Admiral Nelson Dr., Slidell, LA 70461. (504) 649-5453

Reward: I will pay \$25.00 to the first person to call me with an original dust jacket for Alan Chapman's "Radio Boys on Signal Island." Tom Pamula (814) 864-9106 before 11 am or after 10 pm. Collect calls ok.

Cloth headphone cords. Charles Juedemann, 262 Churchill Ln., Ballwin, MO 63011. (314) 256-3727.

Rectifier and output tubes for early 30's German "Volksempfänger" VE30lw. Requires (6)354 and L41605/164. Also need RENS 1284 for 3 tube Mende. Would appreciate help in identifying and dating Mende and obtaining schematic. Set is very similar to Volksempfänger in appearance and size only made of wood. Other tubes are RGN1064 and RES964. Would like to hear from pre-war German radio enthusiasts. Don Nordenholt, 1509 Cliffbrook Dr., Plano, TX 75075. (214) 423-9175 (home); (214) 783-2784 (work).

Black Kurtz-Katch vernier dial (need the knob and shaft); Jewell pattern 135 d.c. voltmeter 0-5 or 0-8 volts, or any other two inch hole

rear mount d.c. voltmeter. Paul Bourbin, 25 Greenview Ct., San Francisco, CA 94131.

Chassis and speaker for a Lyric Model S-7 cathedral. I have a great cabinet and need the innards; Escutcheon and glass dial cover for E.H. Scott Philharmonic; Scott cabinet for all wave 23 Imperial or Philharmonic; Sparton chassis for my "Bluebird." Joe Koester, 249 Spring Gap South, Laurel, MD 20724. (301) 725-4229

Promotional plastic car/AM radios from the mid-60's. Jerry Becker, 3331 Larry Drive, Plover, WI 54467. (715) 341-7610

Freshman radios, Polydyne radios and any related advertising. Will pay a reasonable price for nice sets. Dave Wiggert, 1611 Redfield St., La Crosse, WI 54601. (608) 784-2096

DeForest D-7 receiver, antenna not needed. George Potter, 2069 Sienna Trail, Lewisville, TX 75067. (214) 315-2553

### FOR SALE

Westinghouse H126 white refrigerator, \$85.00; Zenith R7000-1 Transoceanic, three to choose from, \$100.00, \$150.00, \$185.00. All plus UPS charges. Victor Marett, 3201 N.W. 18 St., Miami, FL 33125. (305) 634-9569

Original operator's manual for B.K. model 3020 sweep-function generator. Will sell or swap for "Conar" meter manual. (See my ad under "Wanted"). F. V. Bernauer.

E.H. Scott Model 800-B in nice original-finish Chippendale cabinet, 24 tubes, AM/FM/Phono, very good chrome, completely restored with all new capacitors, plays well, good record changer and cartridge. The last of the "real Scotts," \$500 or comparable trade; Pre-war Midwest console, 17-tubes, 5-bands, electric motor tuning, phono under top lid, multi-colored dial, good condition; 1938 Zenith model 12S266, robot dial, motor drive; 1939 Zenith Model 9S367, great art deco styling, louvered bottom; 1940 Zenith Model 7S462, rare bookcase cabinet, with 6 shelves and 2 drawers. Joe Koester, 249 Spring Gap South, Laurel, MD 20724. (301) 725-4229

Tubes: 26 - \$5, 27 - \$4, 24A - \$3, 71A - \$9, 80 - \$9, 81 - \$5, 112A - \$10, 807 - \$7, 1625 - \$3, 120 - \$12, DUD 201A's \$1.50 ea., DUD 99's UV & UX - \$1.00 each. George Potter, 2069 Sienna Trail, Lewisville, TX 75067. (214) 315-2553

## YELLOW PAGES

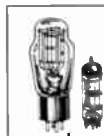
*Products, Publications and Services*

SERVICE DATA AND HARD TO FIND PARTS Original SAMS Photofacts, TSM, CB, MHF, TR and AR. Manufacturer's Data, FREE Catalogue. A.G. Tannenbaum, P.O. Box 110, East Rockaway, 11518. Phone (516) 887-0057. 24 hour FAX (516) 599-6523.

Reproduction knobs: Zenith, Philco, Crosley, Atwater Kent. Send business size SASE for price list. Bill Harris, 1513 Bellechase Dr., Roanoke, TX 76262.

Regency TR-1 radio schematic. Reproduction of the original factory blueline. \$3.75 postpaid in tube. Paul Bourbin, 25 Greenview Ct., San Francisco, CA 94131. (415) 648-8489

*The Collectors Guide to Transistor Radios* provides complete descriptions and current values of over 2,000 models. 5 1/2" X 8 1/2" soft cover; 256 pages; over 400 full color photos. Special offer: save shipping charges by ordering directly from the authors (\$15.95 postpaid). Marty and Sue Bunis, RR1 Box 36, Bradford, NH 03221.



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