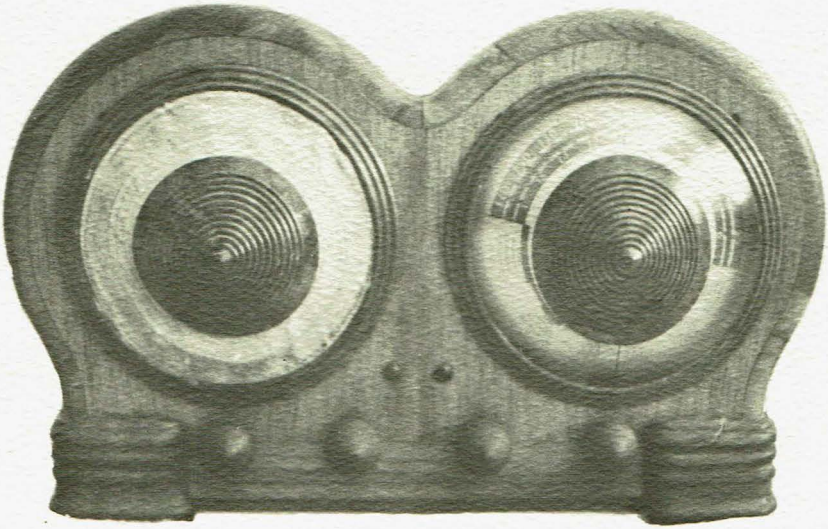
CHRS official
JOURNAL
VOL 7 JAN-DEC 1982



EMERSON BD 197

CHRS official
JOURNAL
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Paul Courtland Smith (1978)

The California Historical Radio Society is a non-profit corporation chartered in 1974 to promote the restoration of and preservation of early radio and radio broadcasting. CHRS provides a medium for members to exchange information on the history of radio, particularly in the West, with emphasis in areas such as collecting, cataloging and restoration of equipment, literature and programs. Regular swap meets are scheduled at least four times a year.

CHRS Official Journal is published by the California Historical Radio Society, Box 1147, Mountain View, California, 94042 - 1147. Membership correspondence should be addressed to Steve Setzer, Box 1147, Mountain View, CA 94042-1147 Articles and historical data for copying should be sent to the Editor, Herb Brams, 2427 Durant - #4, Berkeley, CA 94704

The CHRS Official Journal is published and furnished free to all members. The first issue (Sept. 1975) is still available for $3.00; other early issues are $2.00 each. Articles for the Journal are solicited from all members. Appropriate subjects include restoration hints, information on early radio broadcasts and personalities, anecdotes about the pioneers, etc. Anyone interested in assisting in producing the Journal should contact the Editor.

THAT WONDERFUL RADIO HORN SPEAKER

by Floyd A. Paul

The telephone earpiece was used to reproduce sound in the late 1800's and early 1900's. Its limitation was that each person wanting to listen had to use an earphone or put a headset on.

From 1910 to 1920 horn-type speakers were developed that allowed several people to listen to an electrical signal at the same time. Demonstration tests to the public of this type of speaker proved that tens or hundreds (and even thousands) of people could listen simultaneously to public address type systems. Then in 1921 and 1922 something else was happening. Radio was exploding into the home market. By 1923 Radio was "big time." The idea of listening to radio through an earphone left much to be desired. Many manufacturers sensed this and joined the rush to bring a radio horn speaker to the market. The development of the horn speaker had been timely, indeed. The horn speaker rapidly caught on as a companion device to the radio, allowing the whole family to listen to the radio together.

A typical horn speaker consisted of a weighted base containing the sound reproducer, or driver, with a vertical cone-shaped or goose-neck housing which had a flared opening, or bell. The sound originated from the driver, passed through the neck of the horn into the bell and then radiated outward. Various types of driver mechanisms were used, such as earphone, magnetic armature, or voice coil types.

In the years of 1923-1926 hundreds of radio horn speaker manufacturers sprung up. The boom was on and by 1926, when approximately 5,000,000 radio sets had been sold, the radio horn speaker was a common fixture in the home.

Horn speaker ads offered utopia. Ads read as follows: "reproduction is never tiring," "fundamentally a perfect tone reproducer," "tone is further clarified by hot currents of air coming from lighted bulbs" (from an ad for a horn table lamp speaker), "each note will be heard as though you stood beside the performer," the neck is curved like a saxophone, the most melodious of all instruments," "built to incorporate the principles of the violin and like that instrument--improves with age," "creates stationary sound waves which in turn quench those annoying radio noises."

Horn speaker manufacturing plants opened in most major cities and rushed their products to market. The small horn producer could not afford a design engineer nor were there many to be hired. Much design plagiarism occurred. Many manufacturers made their own horns, in total. Many bought parts from part suppliers and assembled the final horn speaker product. Miller Rubber Co. in Akron, Ohio who made bell units for RCA and other horn manufacturers claimed they made 41 different models of bells for various horn producers.

The horns and horn bells were made from many different materials. Some of the materials used were molded cloth fiber, hard rubber, cement, sea shells, wood, pressed wood, bakelite, plastic, aluminum, cast iron, brass, copper, paper mache, and sheet iron.

Some horn manufacturers made several sizes and shapes of horn speakers. The Magnavox Co., for example, made over a dozen different models. The Atwater Kent Mfg. Co. made one style of horn but introduced several size and color variations. Other manufacturers made one design, promoted the product until sales faltered (or perhaps some designs never sold well) then dropped out of the speaker business.

By 1925-26 a new type of speaker was being introduced to the public. This was the magnetic cone-type speaker, a forerunner of today's cone speaker. It offered greater volume and a better frequency response than the horn speaker although some of the early cone speakers were not much better than the horn speakers. Then, too, they were smaller and better looking than the horn speakers and so fit more easily with the other furnishings of the home. Some of these cone speakers are quite beautiful, mounted on carved bases or covered with a fancy grillwork.

By 1927 horn speakers were on their way out and gave way to the cone speaker. By 1928 it was difficult to find horn speaker ads in radio magazines. And in 1928-29 radio parts catalogs carried surplus horn ads. Horn speaker design carried over into the 1930's and later and is even used today in specialized applications such as tweeters in high fidelity systems and paging systems and theater usage where the high efficiency and directionality with which the sound is radiated is important.

In retrospect, during the years 1921-27 horn speaker statistics are staggering. There were over 305 horn speaker manufacturers, over 550 speaker models and probably over 5,000,000 horns sold and used. By 1930 the author estimates that less than 50,000 horns were in home use. The radio horn speaker filled a distinct place and need in the development of radio but gave way to technological improvements and evolution.

Today, the 1920's radio horn speaker has become obscure. It is a collectible item for some antique radio collectors. Some of the more common "big" name horn manufacturers' products are sought after. Names such as RCA, Magnavox, Music Master, Amplion, and Atwater Kent are among these. Smaller, relatively unknown horn manufacturers like Southern Toy Co., Yahr-Lange Inc., and Riley-Klotz Co. made one model, in rather small volume and they are hard to find. For every one of these smaller company horns in collector's hands there are probably 100 Magnavox or Atwater Kent horns.

Refs: "Horn Speakers," Floyd Paul, CHRS Journal, Vol. 4, No. 1, 1979.
"Early Horn Speaker Development," AWA Old Timer's Bulletin, Vol.17, No. 3, Dec. 1976.
"Loud Talkers," Walt Sanders, Radio Age, January, 1978.
"What Is a Good Loud Speaker," Fred Canfield, Radio News, August, 1928.

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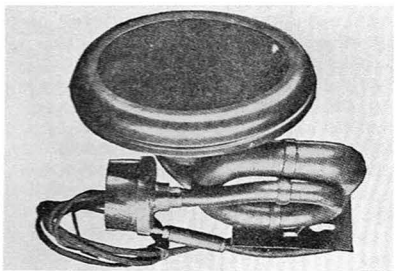
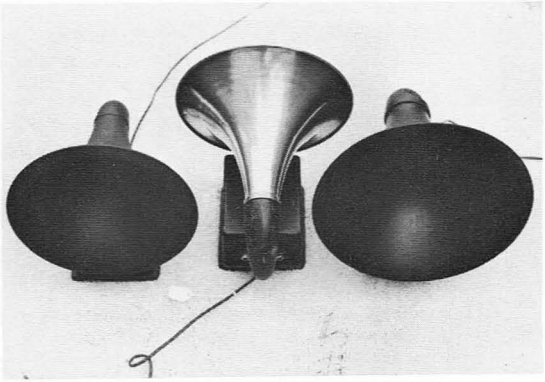
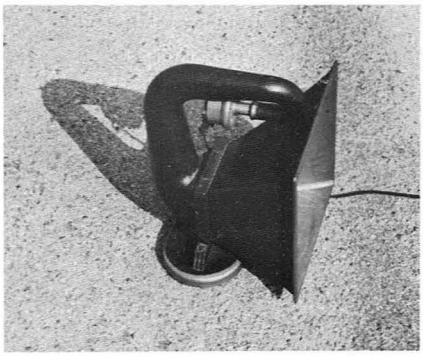


Westinghouse Loud Speaker

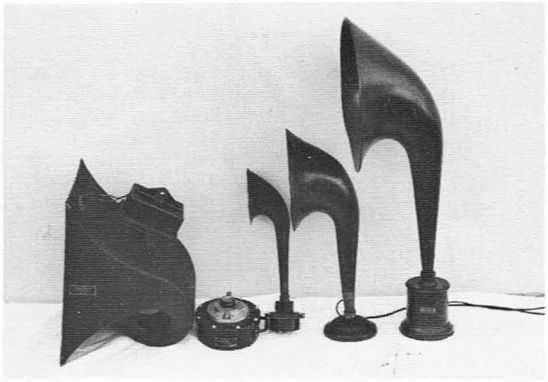


Dictograph Speakers:
Left: common later model, painted bell
Middle: early model, polished bell
Right: very late model, hard rubber bell



Ovenshire - this horn was one of the few made in Los Angeles

Amplion AR 19



Western Electric Speakers:
Left to right:
KS636, 555 Driver,
193W Driver - 1A horn,
521CW, 10D

Photos by Floyd Paul

THE RADIOLA CONCERT RECEIVER AND RADIOLA SPECIAL

by

Alan Douglas

Anyone who has restored a Radiola Special already knows this "secret": under its metal panel is the original Radio Concert Receiver panel. These two Radiolas are similar in many ways: cabinet, binding posts, variometer and bandswitch; and it's no accident, as the Specials were not built from scratch, but were made from unsold Concert crystal sets.

The Radio Concert Receiver was offered in the June 1922 RCA catalog "Radio Enters the Home," for $40. Competing with it in the same catalog were the Westinghouse Aeriola Jr. for $25 and the GE ER753 for $18. The only advantage of the Concert over the Aeriola Jr. was its wider tuning range--down to 2500 meters for NAA time signals--so it's easy to see why few were sold. They were never promoted in magazine ads like the Westinghouse or GE models. Furthermore, vacuum-tube sets could be had for the same price, or less, from other manufacturers. Wireless Specialty must have had a large unsold stock of these white elephants on their hands by late 1922.[1]

What to do? Some unknown engineer must have suggested converting them into vacuum-tube receivers, and that's what they did. The old cabinet needed only three holes punched in the back, for battery connections; the sliding lid that formerly covered the headphone compartment now gave access to the UV199 tube. The old variometer and bandswitch were usable with only minor rewiring, and removing the crystal detector assembly left room for a rheostat, small variable capacitor, and spiderweb coil. It was anything but elegant, and old W.S.A. hands must have winced at turning out such junk, but it did get rid of unsold stock. As a measure of how desperate they were: the Concert had sold for $40 but the Special (even with the extra manufacturing cost) was priced at $30.

Dating the Special is difficult, as I have never seen an ad for it, nor any mention on RCA price lists. As the instruction card gives tuning information for broadcast stations on 360 and 400 meters, it must have been made before May 1923 when stations were reassigned to other frequencies.[2] The UV199 tube was announced in December 1922 and available to the public in April 1923; engineering samples had been made a year earlier.[3] My best guess would put the Special at March or April 1923. If anyone has further information--advertising, price lists, anything at all--I would like to see it.

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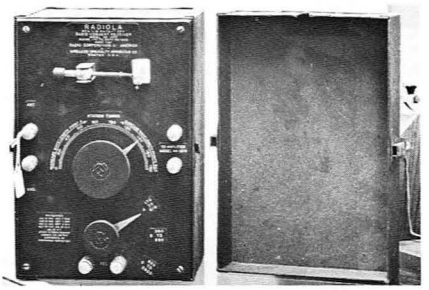
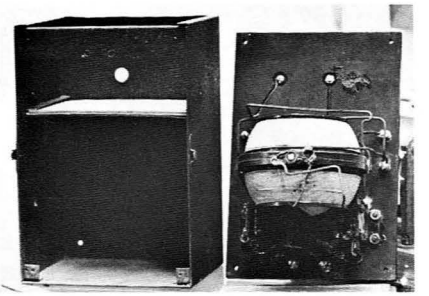
1. Another possibility is that Wireless Specialty may have been slow in producing the Concert Receivers, and none may have been available during the summer of 1922 in spite of their existence in the catalog.

2. "Stay Tuned," Sterling and Kittross (Wadsworth, 1978).

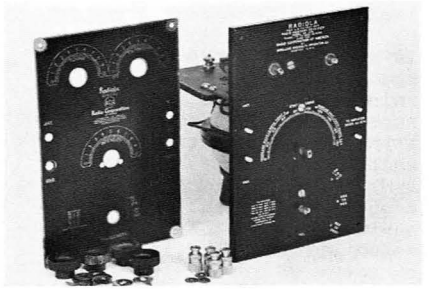
3. "Saga of the Vacuum Tube," Tyne.



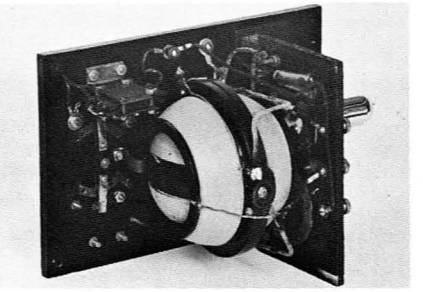
Original Radio Concert Receiver



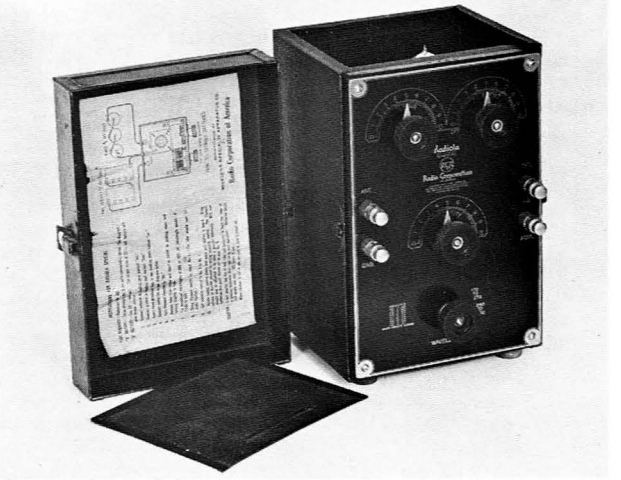
Concert interior



Radiola Special, with its panel removed



Special interior



Photos by

Alan Douglas

Radiola Special

THE MARCONIPHONE V2 REFLEX RECEIVER

by

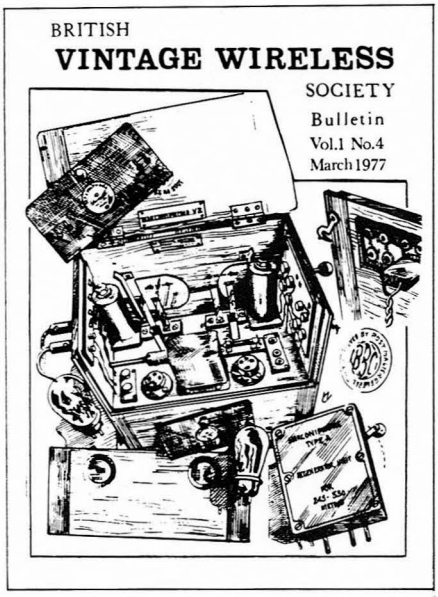
Dave Brodie

Why write an article about this vintage radio (1922)? Why does it have enormous appeal to the British collector and is considered a highly prized addition to any collection in the United Kingdom? At least three reasons come to this writer's mind: (1) the magic of the Marconi Name, (2) the fact that this was the second two-tube set approved for sale by the Post Master General under the regulations promulgated by the British Broadcasting Company, (3) last, but not least, the set uses the unique tuning arrangement peculiar to Marconi sets of that period whereby flat copper spades are brought across a flat stationary coil. This tuning arrangement is considered to be the design of C.S. Franklyn, a Marconi design engineer. It was used in several Marconi sets including the Crystal "A" and Crystal Jr. models, also the V1, V2, V3, V4, and the RB10 (the last is a one-tube crystal receiver-reflex type).

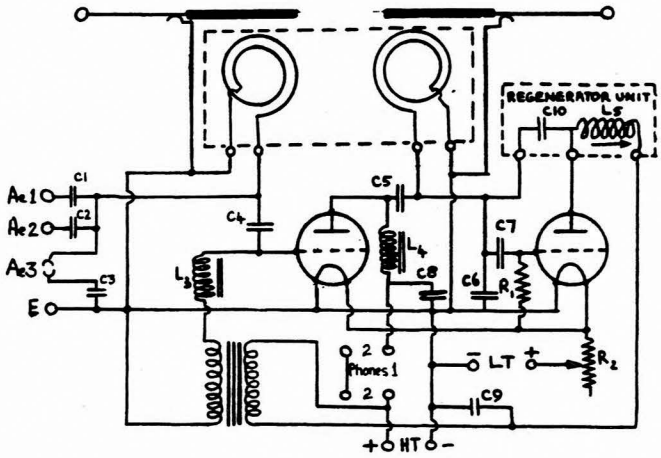
The V2 first appeared on the scene by means of an advertisement in the September 1922 issue of Wireless World. The set, as displayed, did not have the regeneration unit installed in subsequent models and there is some doubt as to whether or not the Company ever sold a unit without the regeneration feature. The first sets sold bore the registration number 2001, the preceeding number 2,000 having been granted to the General Electric Company for a two-tube set. The sale of the "improved" V2's with regeneration, required issuance of a new registration number (0175) which is the number found on all V2A's -a new model designation assigned by the Company. However, since number 2001 appears on some units having the regeneration unit, there is speculation that the Company, while awaiting receipt of approval of the new version of the V2, simply went ahead and continued to use the old number on sets equipped with regeneration.

In addition to the so-called spade tuning, the set is also unique in that no controls appear on the front panel other than the regeneration control which consists of a vertical lever attached to a plug-in regeneration unit. The aforementioned tuning spades are moved across the flat coil by means of rods which extend outside the cabinet left and right sides, and which have knob handles. An additional knob, located on the left side of the cabinet, is attached to a resistor which controls the filament voltage. Later models used a differential screw to move the spades rather than the original push-pull arrangement. The flat coils are referred to as range blocks and are of the plug-in variety. Eleven blocks were available to cover the range from 185m to 3200m. In addition, six different regeneration plug-in units were available to cover the various ranges. Usually, two range blocks were furnished with the set to cover 300m to 530m with one applicable regeneration unit. Normally, the V2 (V2A) used D.E.R. tubes having 1.8 filament voltage and 30-50 volts on the plates.

Marconiphone V2 Reflex Receiver



Photos by Bill Baker



Marconiphone V2

The accompanying circuit shows the first tube acting as an R.F. amplifier, the second tube as a detector with the audio output from the detector then being transferred back via the transformer and choke to the first tube which also acts as an audio amplifier.

The photographs of the V2A were supplied by our Bill Baker, W7IYY. You will recall that this set, which is a gem, won first place in the reflex category at our A.W.A./C.H.R.S. 1981 Meet. Bill's set is truly in mint condition and we thank him for contributing these photographs.

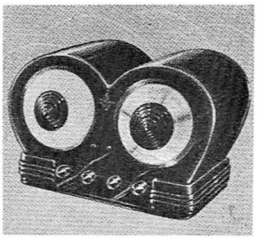
In addition, we provide an artist's sketch of the interior of this unique set which more clearly shows the spades, range blocks, regenerator unit and a portion of the filament resistor. The component between the sockets is the audio transformer. The regeneration unit and range blocks have been removed in order to show the interior more clearly.

In conclusion, I'll pass along a story which is considered to be authentic and which takes us back to 1926 or so, when the V2A's were fading from the commercial scene. A large number were sold off cheaply to make room for newer sets and they found their way to a shop in London where the merchant displayed them at greatly reduced prices. One of the Marconi Company's directors was horrified to see the sets so displayed and immediately arranged to repurchase the entire shipment at a substantial loss to the Marconi Company. He then arranged to end their lives in a more dignified manner-------on a bon fire!!!!!!!!!!!! No wonder they are scarce!!!!

Our thanks to the British Vintage Wireless Society for granting permission to use material on this subject which appeared in an article by Tony Constable in a 1977 issue of that Society's Bulletin. Our thanks also to that Society's fine artist who drew the sketch of the V2 included in this article.

COVER PHOTO

The radio featured on the cover is an Emerson radio, model BD-197 made around 1938. It is a typical five tube AC-DC superheterodyne with a ballast tube and 6A7, 6D6, 6Q7, 25L6 and 25Z5 tubes. It has an AM band and a shortwave band, 6-18 MHz. The Knobs are (left to right): four-step tone control, off-on volume, bandswitch, and tuning. There are two jewel lights in the middle, red for AM and blue for shortwave. These correspond to the colors used to indicate the bands on the main tuning dial. The dial is circular and rotates behind a celluloid cover with a fixed marker on the cover to indicate stations. Both the dial and the speaker grill protrude forward in a cone shape. The wooden back is marked "Cabinet by Ingraham, Bristol, Conn."



Count Alexis De-Sakhnoffsky, whose styling is frequently illustrated in "Esquire", is now designing sets for Emerson Radio and Phonograph Co., 111 Eighth Ave., New York City; illustrated is the first model, BD-197, a 6 tube ac-dc table set for American and foreign reception: Miracle Dial; $39.95

RADIO RETAILING, APRIL, 1938

The unusual shape of the set brought to mind Mae West (or perhaps, today, Dolly Parton) but perhaps the designer wanted to imitate the shape of the knobs which are round and pointed. Despite the odd shape the radio is rather attractive and the design features are well thought out; the dial is easy to read, the jewels indicate clearly whether AM or the shortwave band is on, and the speaker housing balances the dial in appearance. The radio is in fairly good physical condition but the cabinet was stripped when I got it so I don't know what its original coloring was.

PROPER BIASING IN BATTERY SETS

by

W. M. Pugh

One of the most frequent complaints of the old battery sets is their poor tone quality or distorted sound. If the set is receiving properly, in many cases the cause of the poor tone quality is improper biasing.

Most collectors use the lowest plate voltage on their sets, hoping thereby to save the speaker, audio transformers, and the tubes. My experience has confirmed that most sets will perform well on much lower plate voltages than recommended for the set. For example, a five tube (01A's) T.R.F. may recommend 90 to 135 volts for the B supply in the last audio stage; however, the same performance can be had with 67 volts. Here is where one must try different bias voltages for the C supply, sometimes as low as one, two, or three volts, depending on the B voltage and the set. My experience has shown that one should have a variable C bias supply and establish the bias voltage that produces the best signal, both in loudness and clearness of tone. Believe me, one who has not tried this is in for some real pleasant surprises, as the performance of the battery set, even in its best condition, can often be improved considerably.

THE EDISON INSTITUTE

by

Dave Brodie

When discussions among antique radio collectors touch on the subject of museums, one is certain to hear references to the "Ford" Museum. This is understandable since it is generally accepted that this Museum houses one of the finest displays of radio and communication equipment in this Country. However, when the origin and nature of this Museum is explored in some depth, we find that the "Ford" Museum is much, much more than an exhibition of communications equipment.

The Henry Ford Museum, together with the adjacent Greenfield Village, combine to form The Edison Institute which is incorporated as a non-profit educational institution. Founded during 1929 by Henry Ford, the Village and Museum are the most-visited private museums in the United States with visitors numbering over 1.7 million each year. The entire complex encompasses 260 acres, of which the Henry Ford Museum occupies 14 acres. This gigantic structure houses the Decorator Arts Galleries and the Hall of Technology. Herein we find the development of American culture over a span of 300 years.

The Hall of Technology features exhibits related to Transportation, Communications and Lighting, Agriculture, Power Machinery, Home Arts etc. As radio collectors, we would undoubtedly spend most of our time viewing the Communications and Lighting Collection which provides a representative view of the development of communications and lighting including telegraph machines, printing presses, cameras, typewriters and other office equipment, motion picture equipment, phonographs, radios, television sets and one of the largest exhibits of pre-electric lighting devices and incandescent lamps in the world.

The remaining acreage is occupied by Greenfield Village which is an assemblage of almost 100 structures, many of which have been moved to this site from as far distant as England. Here will be found the Thomas A. Edison buildings, six of which were dismantled, moved and reconstructed intact from their original site at Menlo Park, New Jersey. Other Edison-related properties were similarly brought from Fort Myers, Florida, West Orange, New Jersey, Ontario and Michigan.

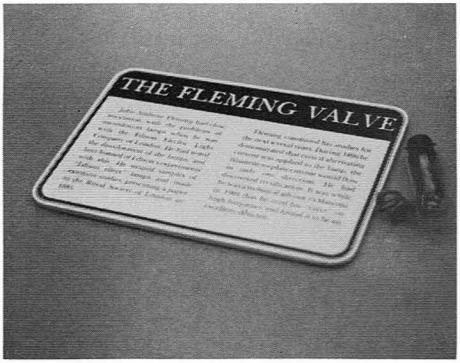
This all-too-brief summary of The Edison Institute must, however, include a few words as to the incredible relationship which existed between two of the most famous American inventors, Henry Ford and Thomas Alva Edison. Their close relationship began in 1896 and was both personal and professional. Edison strongly encouraged the younger Ford to continue work on his gasoline-powered vehicle. Throughout the years Ford and Edison worked and played together. Ford experimented with special Edison batteries and Edison, with financial assistance from Ford, experimented with rubber substitutes, and so this remarkably close connection continued. As Ford, an inveterate collector, developed his ideas for a museum of Americana, he decided to include an overview of the works of Edison. In further tribute to his lifelong friend, Ford named this entire complex in his honor.

The formal dedication of the Edison Institute took place on October 21, 1929 at which time Henry Ford stated, among other things, "It is to be an institution of learning for young fellows and old fellows, for everybody who wants to know the greatness of our Country and what has made it great."

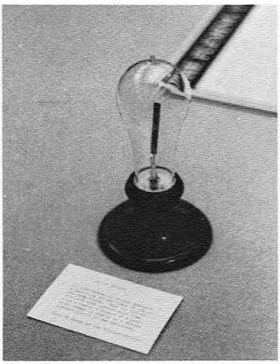
The Institute is located in Dearborn, Michigan and is readily accessible from nearby Detroit by freeway. The Institute is not a part of the Ford Motor Company nor the Ford Foundation.

We are deeply indebted to the Henry Ford Museum and, in particular, to Mr. David E. Wojack (Office of Public Relations) for his assistance in providing material for this article and for personally providing his photographs of selected items on display in the Communications Collection.

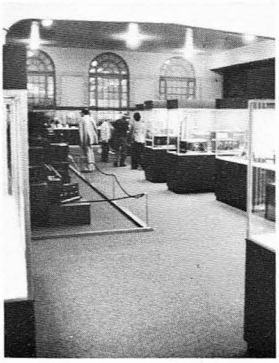
The preceding article was inspired by C.H.R.S. member Larry Chambers (the greatest old radio hunter in Tennessee). A few years ago Larry toured the Institute and obtained several books which he lent to the editor to facilitate writing this article.

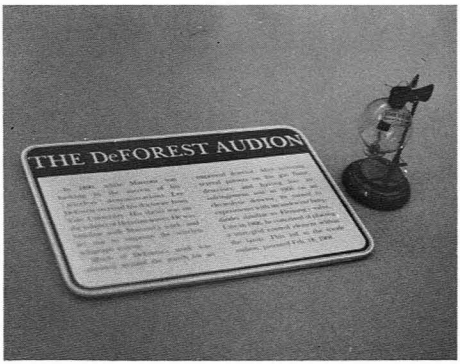


1904 Fleming Valve

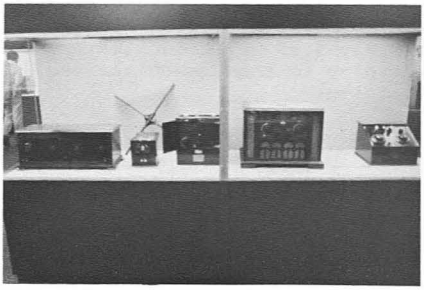


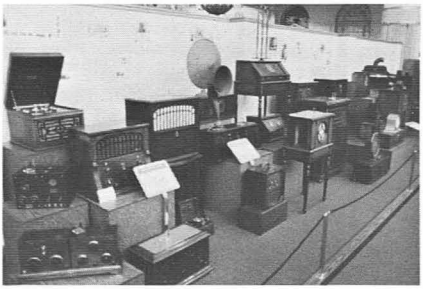
1883 Edison Effect Bulb

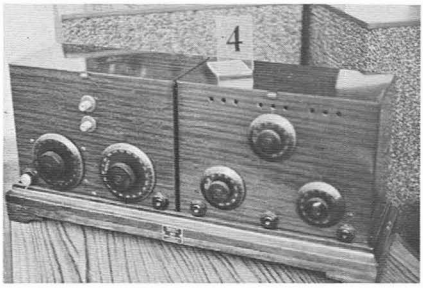




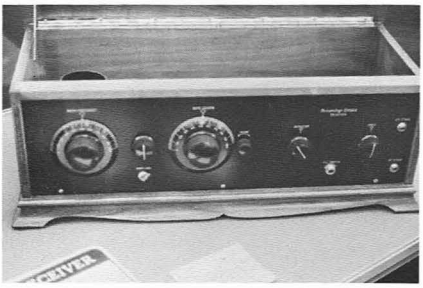
1906 DeForest Audion



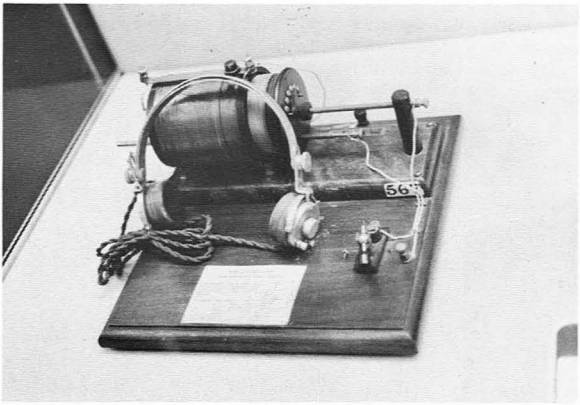




1923 Radiola V Model AR 885

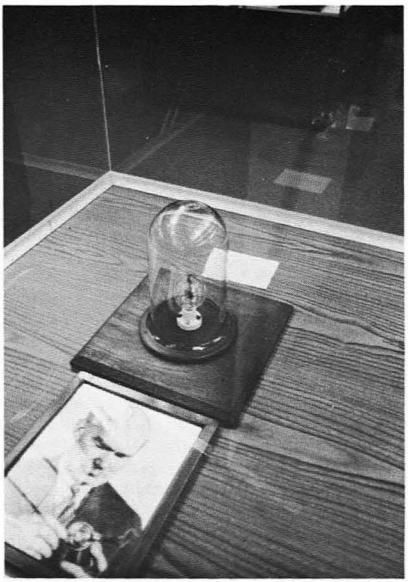


1925 Browning Drake Battery Radio Receiver

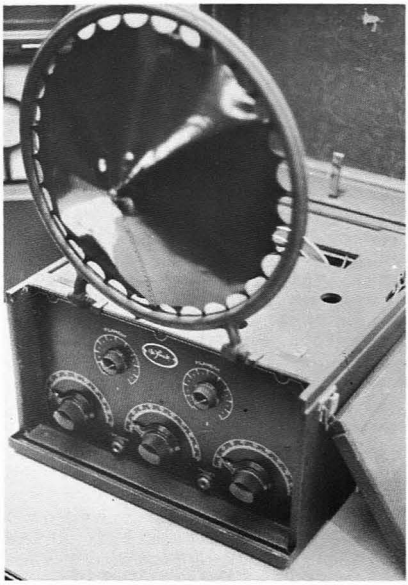


1912 Murdock Wireless Crystal Radio

1908 DeForest Radiophone Transmitter, Singing Arc Type



DeForest Spherical Audion



DeForest Portable Radio

1922 Aeriola Grand Type RG

A REPAIRMAN

by

H. Brams

"Hello? You want to speak to Herb Brams, the antique radio repairman? Yes, that's me. You say you have a Philco cathedral radio that's not working? Sure, bring it in; I'm sure that it can be fixed." And so another radio starts on the road back to life. My customers are always surprised to hear that I spend full time repairing old radios and they ask how I got into such a strange field. Here is my story.

I have always had a vivid imagination and as a child I liked listening to music, looking at pictures, or reading books. One day, when I was about ten, my older sister brought home a crystal set that she had made at school. I looked at this strange contraption, with its big coil of wire, sliding brass contact and galena crystal and catswhisker, but it didn't look like anything special. Then I put on the head phones and diddled with the slider and the crystal and, all of a sudden, I heard -- The Lone Ranger! My God, this thing was alive! Moving the slider to different positions, I could get music or news or comedy programs. I was enthralled. There was something magical about radios. From then on I was an avid radio listener.

A few years later my father sent me to a private school. Life there was rather strict; they didn't allow you to have radios. They felt it would interfere with your studies. I missed my old radio friends and so started thinking about how to make a radio for myself. The challenge was to build something small enough to be hidden away in my pocket but sensitive enough to pick up all the stations clearly (this was in the days before transistor radios were readily available.) I started with a crystal set, then made a one-tube regenerative set, then a superregenerative one, but they all were unsatisfactory in one way or another. My interest in radios slackened and I became interested in high fidelity equipment instead.

I went on to college and then to graduate school, studying biochemistry. In the laboratory, there was plenty of electronic equipment which would, on occasion, break down. With my knowledge of electronics, I could usually repair these myself and so not interrupt my work. One day, another worker told me he had an old radio that didn't work and asked if I would take a look at it. I said I would, and so he brought it in. It was an old cathedral radio and it looked very strange to me. I took the chassis out and found that there were no mysterious old parts in it, just ordinary resistors, capacitors, coils, and transformers. These were easy enough to check, and I found several defective components, mainly capacitors, which I replaced. After I had made these repairs I plugged in the set and it worked. Surprisingly, it played extremely well. My friend was very happy. He told me he knew of many people who had old radios that didn't work and who couldn't find anyone to repair them. My interest was aroused. I wondered what other old radios looked like, what kind of circuits they used, how well they played and what they sounded like. I decided to put an ad into the local paper--Antique Radio Repair.

It is now seven years later. I have repaired about five hundred sets, mostly AC sets from the late 20's to early 40's. It is a full-time occupation and I average about two or three sets a week. I have never lost interest in fixing them; the feeling that there is something magical about a working radio has never left me. It still is a thrill to plug in a completed set and to hear it come alive.

It has always seemed strange to me that people could have collections of non-working radios sitting around lifeless like so many orange crates. To me a radio isn't a radio unless it's a radio. I want to know how well it works, what it sounds like, and what unusual operating features it has. Therefore, it has always been my policy that I should not just get the sets working, but to examine all parts of the set, replace all defective or doubtful components, and to put the set into the best possible working condition that I can. As a result, stations come in clearly and without static, shadow meters and magic eye tubes work, motorized dials spin with ease, pushbuttons bring in selected stations right on the nose, and muting circuits effectively suppress interstation noise. The set once more is a radio. As you can see I take professional pride in my work, and this policy has paid off. Out of the five hundred or so sets that I have fixed, only about five or six have ever come back requiring additional work, that usually being replacing a burned-out tube or noisy volume control. It is interesting that, after being restored, all the sets, even little four tube TRF cheapies, work surprisingly well. The best-playing sets seem to be the medium-priced ones. Very fancy sets seem to be too sensitive and pick up a lot of noise, and high fidelity sets often don't sound very good; they have an overpowering "auditorium" type sound.

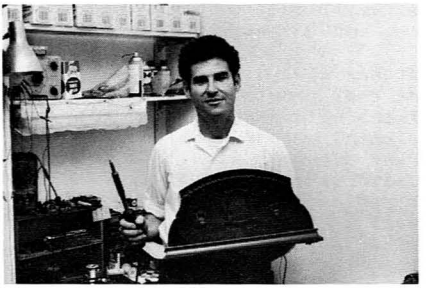
If there is any fly in my ointment it is the conflict between preservation and improvement. It is very tempting to take an old TRF set, add an automatic volume control circuit to prevent blasting on strong stations or change the detector to a diode type to improve the sound quality. However, under the influence of several dedicated collectors I have come around to the opinion that preservation is the right goal. The original characteristics of a set are unique and should not be "improved" upon. They are of historical value and if one wants a better-playing set, then why not go out and buy a modern transistor radio? The sets should play as they played originally.

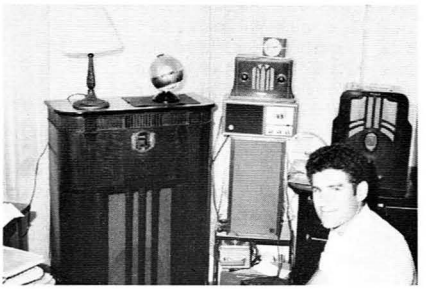
Therefore, I try to leave the outward appearance of the chassis unchanged, not removing the old filter cans or drilling holes in the chassis to mount parts underneath. Similarly, I modify the circuit as little as possible. I even go to the trouble of using brown cloth-covered line cord on the older sets to restore the original appearance. The underside of the chassis is a different story. Very few people will see this part of the set and since the set may need servicing at some later time, the goal I aim for is ease of servicing. Let's be frank: in most old radios the wiring and parts layout under the chassis is one god-awful mess. If the owner of an old radio ever had to take his set to a local TV repair shop for repair, they wouldn't even know where to begin. I could write a whole book on techniques to make servicing easier but let me mention just a few basic principles

here. Rearrange parts to put them close to the tubes they are associated with. Arrange them so that they follow their electrical order in the circuit. Leads should be as short as possible and go directly to the next associated part. Use terminal strips to mount the parts, mounting the strips in the original holes in the chassis. Leave the parts exposed rather than putting them in original containers so that they will be easily identified as to their location in the circuit and will be accessible for future testing or replacement. Use color-coded wire for the various high and low voltage lines, AVC, antenna wire, etc. Use modern metallized-film capacitors - these take up much less room and are easier to install than the old molded-paper types. Initially, this approach may take more time than usual but after a little practice it facilitates the rewiring of a set enormously. It is astonishing how well the underside of a chassis can be cleaned up, and the result is a nice open chassis with plenty of space to work in and placement of parts that shows their electrical order in the circuit - truly a work of art!

By now you are probably thinking "This guy must have a fabulous collection." No, strangely enough, I have never become a collector. I like to see what different sets look like but I just don't want to keep them around for any length of time. Perhaps the fact that I live in a small studio apartment and can't help seeing them around me all the time explains my peculiarity. Familiarity breeds contempt, as they say. My own personal taste is for radios of the middle and late 30's, especially Philco radios, but I like any set that looks unusual or has unusual features. I like battery-operated farm sets because they are usually large (to hold the batteries) and are a challenge to get working. Lately, I have also become interested in plastic radios.

And now, let me show you my apartment.





Photos by Geo. Durfey

FEATURED SET

by

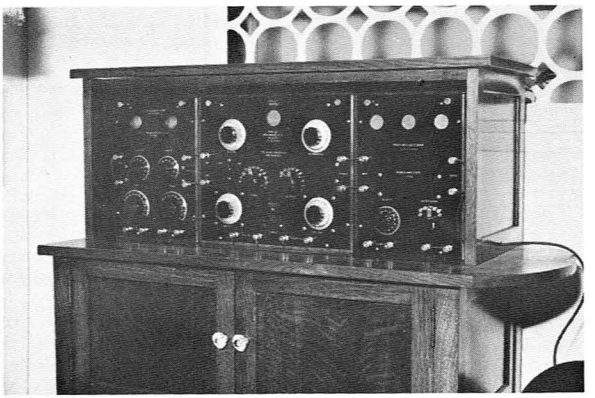
Jim Cirner

The set shown below was made by the Colin B. Kennedy Co. around 1922. It is a type 220. The set is a regenerative one and consists of three units: RF section, tuner, and AF amplifier.

The RF section, model 221, was made by the Radio Specialty Shop, Oakland, Calif., for the Kennedy Co. The circuit is the same as that for the normal Kennedy RF amplifier and uses two 01A tubes. It was custom packaged in the standard Kennedy case but the panel layout, knobs, and terminals are all different. The tuner, type 220, is the same as the Kennedy type and uses one 01A tube. It was made in San Francisco. What is unusual is the AF amplifier, model 250. I believe that the amp was custom-made for whoever ordered this set. The tubes it uses are three Western Electric 216A's. The circuit is the same as the W.E. 7A amplifier, the only difference is that a rheostat was added to control the filament voltage. The amplifier was packaged by the Radio Specialty Shop using all Western Electric parts. The panel was custom-made to conform with the Kennedy panel design.

The set is housed in an attractive oak cabinet made up specially for the radio, with a sliding glass door to cover the radio and large compartments below for the batteries. When found, the set was in nearly perfect condition and had the calibration chart for the 220 section showing it had been calibrated 6/6/22. The set has now been restored and is in operating condition at the present time.

The set was found in a large Salvation Army store a few months ago, having been set out on the floor only that morning. How the set was found and purchased involves a series of near-incredible chance happenings that makes quite a story in itself. However, the whole experience only reinforces the idea that the only way to find radios is to go out and look for them.



RESTORATION HINTS

by H. Brams

An Antique Finish

Many inexpensive radio cabinets were made of a cheap light wood. Once the dark finish has been stripped off one has the problem of trying to make the cabinet dark again. Wood stains often do not give a dark enough effect. One can obtain a fairly satisfactory dark finish by dipping a wad of cloth in dark brown paint or lacquer and dabbing it on the cabinet to create a mottled or marbelized effect.

Buzzing Power Transformers

If a power transformer buzzes audibly, tighten all the screws on the transformer. Installing a fiber shim can quiet a buzzing lamination. If buzzing persists, remove the transformer from the chassis and dip it into a can of freshly-prepared epoxy-resin. Remove the transformer, let it drain, and set it on an aluminum sheet for a day or so to allow the resin to harden.

Replacing Filter Capacitors

When replacing filter capacitors in a set, be sure to disconnect the old capacitor. Otherwise, it may short out at some later time. Mount the capacitor away from any power resistors as the heat produced from them can severely limit the life of the capacitor. Similarly, if the capacitor is connected to a power resistor, leave the lead to the resistor as long as possible to reduce the amount of heat transferred to the capacitor.

Mounting a Chassis into a Cabinet

After replacing a chassis into its cabinet it is often difficult to line up the screw holes in the chassis with those of the mounting shelf. Insert a long narrow screwdriver blade through the shelf and move the chassis around until the blade passes through the holes in the chassis. It then is very easy to push the mounting screws through the shelf and have them catch on the threads of the chassis. Similarly, with speakers, line up two of the speaker holes with the mounting screws. This greatly reduces the chance of puncturing the cone with the remaining screws while trying to line them up with their respective holes.

Insulating with Heat-Shrink Tubing

Use heat-shrink tubing to cover and insulate splices in wire. The tubing can be shrunk by carefully rubbing a hot soldering iron along the length of the tubing. If insulation is crumbling off a wire, unsolder one end, remove the old insulation, slip a piece of tubing over the wire, and resolder.

Speaker Grill Cloth

A good substitute for speaker grill cloth may be made by obtaining a loosely-knit fabric used for lining dresses and stiffening it by spraying it with lacquer or by soaking it in wood stain and letting it dry. Most regular fabrics are too closely-woven to let the sound through.

Inoperative Superheterodyne Radios

If an apparently normal superheterodyne radio fails to tune in any stations, measure the oscillator grid voltage. A normally-operating oscillator should have a negative grid voltage.

Fixing Vernier Drives

A Philco vernier-type tuning shaft was slipping and would not turn the tuning condenser shaft on which it was mounted. Degreasing the assembly to increase friction did not help. The problem was solved by filing down the base of the outer metal cup that pressed the three ball bearings against the inner tuning shaft. This allowed a new portion of the inner surface of the cup to press against the bearings.

Non-Deflecting Magic-Eye Tubes

Very often a magic-eye tube will not deflect well because the one megohm resistor in the socket has burned out. There are two main types of eye-tube sockets commonly encountered. The first is made by Amphenol and consists of a plastic socket pressed into a black metal shell. The socket may be removed by inserting a wide blade screwdriver between the socket and the shell and twisting to separate the two pieces. Spraying a lubricant around the shell will make the job easier and reduce the possibility of cracking the socket.
The other type of socket, more frequently encountered, is made by the Hugh E. Eby Corporation and consists of one piece of plastic. To disassemble this type, remove the fiber insert that covers the metal pin contacts by placing the socket face down on the table, inserting the tip of a narrow blunt screwdriver through the back of the socket and pushing or tapping the screwdriver until the insert comes out. Take care to hold back the wires to the socket so that the socket terminals inside stay in place. Carefully unsolder the resistor and replace it with a one megohm ½ watt unit, making sure it is arranged like the old one and not shorting to any adjacent terminals. Also replace any badly deteriorated wiring to the socket. Make sure the resistor is seated down into the socket as far as it will go and that all contacts are seated in their respective places. Take the insert, note that it has a key, and press it firmly back into place, using both thumbs, until you hear it snap in.

Alignment Tips

When you align a TRF or superheterodyne radio, set the tuning condenser at a point where no station is received. Connect an AC VTVM with a 0-30 volt scale between plate and ground of the output tube. In this way a good peak can be obtained without an ear-splitting howl from the speaker. If the set is in good condition, simply clipping the lead of the signal generator to an insulated part of the antenna or converter grid lead (if the set has an RF stage) will provide enough signal for alignment. In older sets it may be necessary to connect the generator output through a small capacitor (about 47 mmfd) directly to the RF or converter grid. If the IF frequency is known, set the generator at that point. For sets of the mid-30's and later, this is generally 455 kc. Earlier sets commonly used 175 kc or 260 kc. If the IF frequency is not known, increase the frequency of the generator

upwards from about 125 kc. If a peak is heard, turn the tuning capacitor back and forth. If the peak is tuned out, it is not the correct IF frequency. When the correct IF peak has been established try turning the generator to twice the frequency. If the signal is still heard, the true IF frequency is the new one; on the former frequency the set had been responding to a second harmonic of the frequency of the generator. In all cases, especially with sets that have low IF frequencies, it is important to make sure that the correct IF frequency has been found and the set is not just tuned to a station frequency or harmonic of the generator. If the correct IF frequency has been found, the signal will be heard regardless of where the tuning condenser is set.

Cleaning Speakers

Electrodynamic speakers often have small bits of metal in the voice coil gap causing a raspy or buzzing sound. Gently push the cone in near the center. If you hear scratching sounds there is dirt in the gap. This can often be removed by blowing in compressed air from the front of the speaker. If this does not work it may be possible to remove the cone from the frame and clean the gap. Unsolder the voice coil wires from the frame. Remove the screw that holds the center of the cone to the pole piece. Remove the screws holding the retainer that holds the outer edge of the cone to the frame. If the edge of the cone is glued to the metal frame, try softening the glue with acetone. Carefully lift the cone out. Run pieces of scotch tape around in the gap to catch the tiny slivers of metal that may be present. Make sure that all of these have been removed and also that no pieces are stuck to the voice coil on the cone itself. Replace the cone in the gap in the same position as originally. Cut four strips of thin cardboard and insert them in the gap outside the coil. This is to center the coil in the gap. Replace all the screws and remove the strips. Determine if the voice coil is rubbing by pressing down on the center of the cone and listening for rubbing sounds. I also tap the cone lightly with the eraser end of a pencil and listen for buzzing sounds that indicate unglued areas.

If the cone cannot be removed from the frame by the above methods, cut the cone out around the rim. Make a substitute outer suspension from a ring of ¼ in. sheet gray polyurethane foam and glue it to the cone with Duco cement. Replace the cone in the gap and insert spacers as before. Glue the outer edge of the foam to the metal speaker frame. This method should be used only as a last resort since the lifetime of the foam is probably only 5-10 years.

Speaker Repair

A frequent problem of old radios is a rattling speaker. If this is simply due to a small tear in the cone, the torn edges can be reattached with a small amount of glue. If a small portion of the cone is missing, graft in a piece of paper from a junked speaker and glue it into place. Don't use tape of any sort to repair a cone, for it will invariably dry out, rattle, and eventually fall off. A good glue for speaker repair is the Wilhold aliphatic resin (White) glue.

Often, someone has attempted to "fix" a rattling speaker by wadding up some cotton or

newspaper and jamming it in between the speaker frame and back side of the cone. This eliminated the rattle by severely limiting the excursions of the cone but had the disadvantage of seriously reducing the audio quality of the speaker. If this is the case, remove the obstruction by carefully sliding it out sideways. The cone will probably have been deformed, with a prominent "bubble" where the obstruction had been. Using an eye dropper full of water, carefully soak the bubble and lightly press the cone back into its original shape. Then dry the cone with a hair blow dryer. After the cone is dry, try to find out what caused the rattle in the first place.

A common cause of rattling speakers is that the outer edge of the cone has become unglued from the metal basket. This can be found easily by pressing up and down on the speaker gasket (the ring covering the outer edge of the cone) or by lightly pressing up and down on opposite sides of the cone and noticing whether there is any up and down movement of the gasket with respect to the basket rim. Some speakers do not have a gasket, making it easier to determine where the cone has become unglued. Once a loose spot has been found take a syringe full of GC Speaker Cement, insert the needle under the loose edge and inject a small quantity of glue between it and the basket rim. Be careful not to get any of the glue on the flexible edge of the cone or it will stiffen the cone suspension. Allow the glue to dry, using clamps as needed. An alternative to GC Speaker Cement is aliphatic resin glue (white glue); however, do not use any epoxy glue, Eastman 910, or weatherstrip adhesive. These glues are difficult to remove if the speaker has to be reconed.

If it is necessary to repair the flexible outer edge of the cone, do not use any of the above-mentioned glues. Instead, use GE Clear Silicone Rubber. On extremely dry or cracked edges apply a very thin layer of the rubber over the entire edge. It is very important that it be applied as thinly as possible to avoid stiffening the suspension and thereby decreasing the efficiency of the speaker.

Often there are problems associated with the "spider" - the device at the center of the cone, either inside the cone or outside it, that centers the cone in the magnetic gap. Many speakers used paper outside spiders. These are affected by humidity much more so than the fiber or phenolic spiders. They become misshapen, causing the cone to be displaced inwards or outwards. As a result, the cone may strike the pole piece on heavy bass passages or more power will be required to drive the speaker since the voice coil is not seated fully in the magnetic gap. If this is the case, use the eye dropper and moisten both the paper spider and the entire outer flexible edge of the cone. Remove the voice coil dust cover with GC speaker cement thinner or, if necessary, by cutting it out with an Exacto knife. Carefully install three or more speaker shims at equal distance around the perimeter of the voice coil and then center the cone in its proper position so that the spider appears level. The shims should hold the speaker in the correct position. Carefully dry the speaker with the blow dryer, then remove the shims and replace the dust cover.

When mounting the speaker in the cabinet, do not over-tighten the mounting nuts. This may warp the basket causing the voice coil to rub, and it can cause the ornamental mounting screws to crack the cabinet speaker grille.
For complete reconing of speakers, the following place is recommended: S.R.S. Enterprises, 2409½ Colorado Ave., Colorado Springs, Colorado 80904. Send the speaker by UPS.

Repairing Open Windings

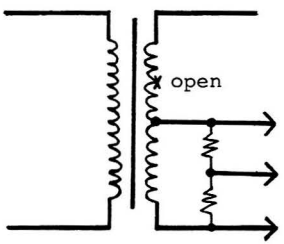
Open windings in coils and transformers is a common problem but repairing these is not as difficult as it appears. The following method is effective in a high percentage of cases. Disconnect the leads of the open winding. Attach the output of a regulated variable high voltage power supply to the winding. Slowly increase the voltage, while monitoring the current. At some point the broken ends of the winding may arc, welding themselves together. The current through the coil will jump but is limited by the regulator tube in the power supply to about 100 ma. In any case, turn the voltage down and then turn it up and down several times to see if the weld is permanent. Also measure the resistance of the winding to be sure it has the correct value.

Occasionally the primary section of an RF or oscillator coil will be open. These are usually non-tuned sections consisting of about twenty turns of wire on the outside of the coil form and so are easily rewound if these cannot be restored by the shock treatment. Remove the coil and locate the terminals for the open section. With a pin, carefully lift up the end of the wire and start unwinding it.

If the break is near the end, you may only have to resolder the wire to the terminal; a few less turns will not greatly affect the performance of the coil. Sometimes, however, a corrosion spot has developed and many breaks are present. In this case unwind the entire section, noting carefully the number of turns involved and the direction of winding. Then rewind the section with wire of similar size, winding in the same direction with about the same number of turns. Scramble winding appears satisfactory. Secure the new section in position with melted paraffin wax. Carefully scrape the insulation off the ends of the wire with a knife or very fine sandpaper and resolder the wire to the terminals.

Occasionally, the coil form itself has absorbed moisture, allowing high voltages to leak into the grid circuits. In this case, bake the coil for about an hour at 110° C, then dip it into melted paraffin wax. If the coil cannot be restored, substitute a RF choke for the winding and couple the signal into the good part of the coil with a small (about 47 mmfd) mica capacitor.

If half of a center-tapped grid winding on an audio transformer is open, the remaining half may be converted to center-tapped operation as shown below.



Resistors are 100K - ½ W

PUBLICATIONS

by

Dave Brodie

Early Wireless-Constable:

All orders received by me to date for this instructive and enjoyable publication have been filled. I congratulate the many members who took advantage of the substantial discount given to C.H.R.S. by the distributor during the last two years. However, the time has arrived to close the books on this project and no more orders will be accepted by me. Those of you who now want a copy should contact the U.S.A. distributor, Sterling Publishing Co., Inc. at Two Park Avenue, New York, 10016. The regular retail price is $19.95.

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Seventy Years of the Vacuum Tube - John Stokes

The author is a member of the New Zealand Vintage Radio Society and Editor of that rapidly growing Society's Bulletin. Some of you may recall that the author was presented with the "Tyne Award" by the A.W.A. for outstanding contributions to vacuum tube history.

We have been waiting expectantly for this publication which originally was planned to more or less be a complement to Tyne's SAGA. It is now my understanding that coverage extends through the "Seventies" but also provides information on early tube development. I have been further informed that the book will be soft cover and that the cost will be around $20.00.

Bits of Wireless History - G.J. Gray:

This publication was covered in the December 1981 issue of the Journal. I have made several attempts to contact the Curator of the Gray Museum which is now in Cincinnati and was originally located in Mason, Ohio. I have received no responses to my letters which is not only discouraging but also unfortunate as I strongly feel that this book should be re-issued. I solicit the assistance of our members in finding out the address of this Museum and any pertinent information which would help me make a direct contact. Let me know if you have any leads. I will follow through.

****

Early Detectors - R. Stapleford

This book is heralded as being the most complete book on the subject of detectors yet written. I am attempting to locate the publisher and, more important, whether or not a U.S. distributor has been established. Apparently there will be a limited distribution as the price quoted to me is in the area of $40.00 per copy. I discussed the book with Bruce Kelley and he was quite enthused with the copy he had received. The content merits further inquiry as the publication not only delves into the history of detectors in depth but also provides details for construction and operation of a magnetic detector together with explanations as to how this puzzling device works. More later on this book.

1982 AWA/CHRS ANNUAL CONFERENCE

MAY 1, 1982

CONTEST RESULTS

Class No.

1 Crystal sets:
- 1st British Vinco — Dave Brodie
- 2nd IP-500 — H. Eckhard
- 3rd Home-Brew (New) — F. Camenish

2 Regenerative sets (Battery)
- 1st Grebe CR8 — A. Patmore
- 2nd Townsend — H. Meyer

3 TRF Sets (Battery)
- 1st DeForest Portable — L. Rayner

4 Superhets (Battery)
- No entries

5 Wireless:
- 1st DeForest Panel Multi-wave — E. Schneider
- 2nd Kennedy — J. Cirner

6 Tube Transmitters
- 1st Xtal osc. and amp — H. Meyer
- 2nd 59 ECO-46 Amp. — R. Rinaudo

7 AC Sets:
- 1st Federal Orthosonic — R. Boyles
- 2nd Sparton 62 — A. Patmore
- 3rd Troy (Mirror glass set) — E. Sage

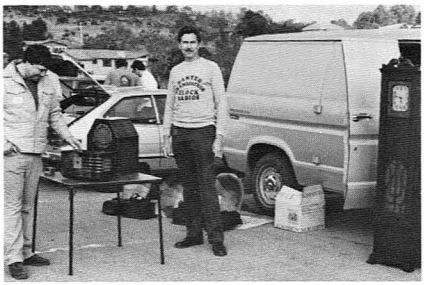
8 Homebrew (New):
- 1st Regenera- tive Set — E. Schneider

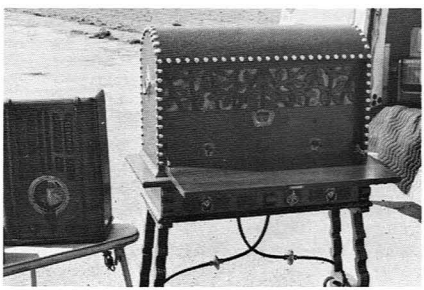
9 Homebrew (Old):
- No entries

10 Loudspeakers:
- 1st West.Elec. 517W — L.Rayner
- 2nd Rola — R. Boyles
- 3rd RCA 103 — K.Zander

BEST OF SHOW--De Forest Panel Multi-Wave----Owner-E.Schneider

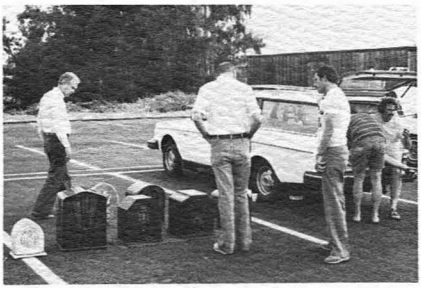
MAY SWAP MEET

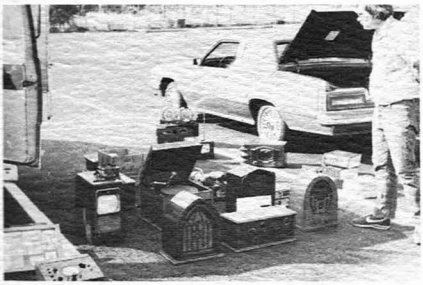




Photos by Geo. Durfey

AUGUST 1982 CHRS SWAP MEET

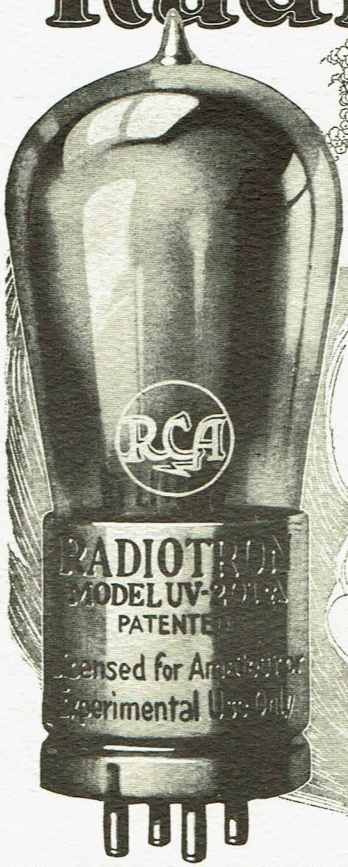


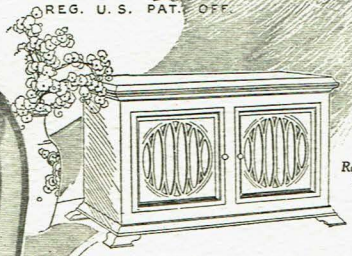


Photos by Geo. Durfey

Radiotron

REG. U. S. PAT. OFF.





Radiola IV

In high quality receiving sets, vacuum tubes—the heart of their fine performance—carry the name **Radiotron** and the **RCA** mark. Be sure to look for this identification when you replace your tubes.

RCA

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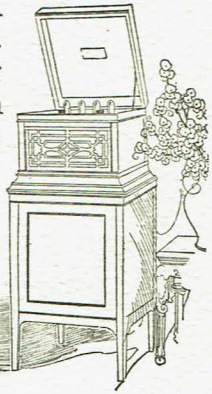

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