

THE NEWSPAPER FOR
THE HOBBYIST OF VINTAGE
ELECTRONICS AND SOUND

off the Record

THE HORN SPEAKER

FAMOUS RECORD "VOICE" DIES
Marie L. Campbell who recited "Mary Had A Little Lamb" for Thomas A. Edison, died recently at the age of 103.
Edison chose Marie to make the record probably because her father, Theodore Carman, worked with the famous inventor. This original first record and also a recording made on her 102nd birthday are in the National Archives.

PHONOGRAPH MUSEUM
E. T. Drake with ANTIQUE PHONOGRAPHS of Martinsville, Indiana, is planning to open a phonograph museum to the public this summer.

STANDBY
A weekly magazine named STANDBY was issued weekly by the Chicago radio station WLS from 1935 to 1937. According to Bob Healy in the March 1973 issue of RECORD RESEARCH, "Chicago was undoubtedly the center of country music in the mid-west during the 1930's." STANDBY is a good source for country music research.

PHONOGRAPH AND RADIO MUSEUM
The Chapman Collection Automobile Museum is active in preparing a museum for radio and phonograph relics. Displays should be ready for summer visitors.

PHONOGRAPH SWAP MEET
Ken Woods wants to hold a phonograph and record swap meet in the Texas area. Texas collectors have needed a swap meet for a long time. His address is: 618 Inwood, Nacogdoches, Texas 75961.

A SIMPLE PHONOGRAPH.

This simple instrument, which is shown in perspective in Fig. 1, in section in Fig. 2, and in plan in Fig. 3, consists of mouthpiece, A, to which is attached a thin ferrotype plate diaphragm, B, by means of a good quality of sealing wax cement.

Upon the outer face of the diaphragm and at opposite ends there are guides, C D, for receiving the wooden strip, F, by means of a slight bearing surface to

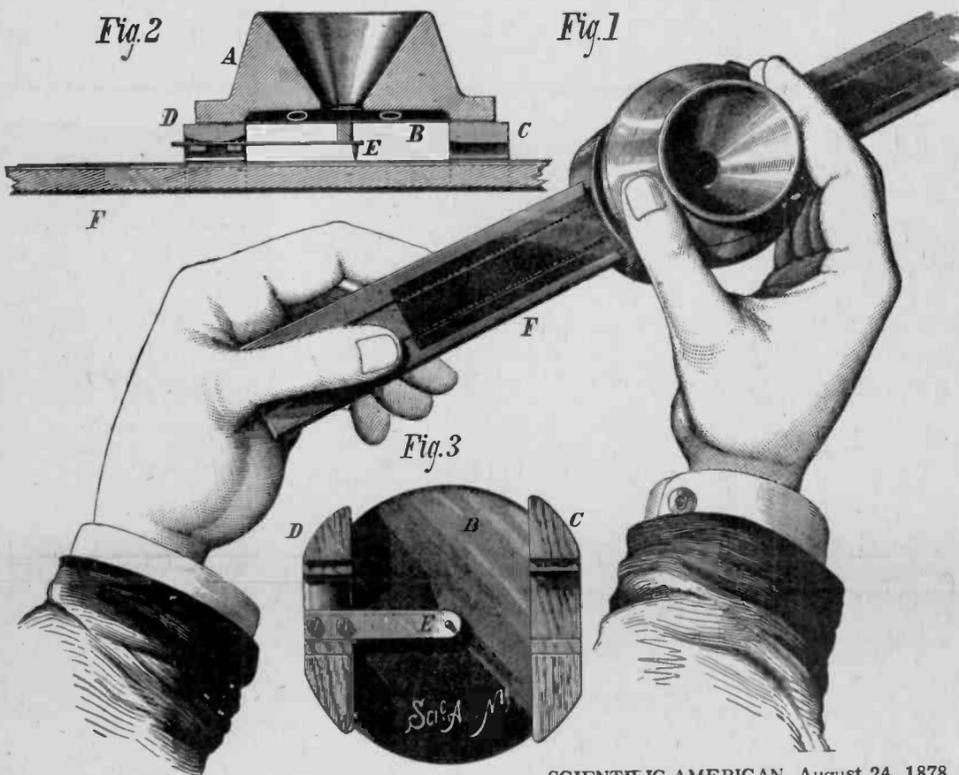
the strip. The guide, D, is rounded to receive the spring, E, which is secured to it by two screws, by which also the spring is adjusted so as to bear with more or less force on the small rubber block which rests upon the center of the diaphragm.

A needle, which is sharpened like a leather sewing needle or awl, is soldered to the spring, and is located directly opposite the center of the diaphragm. The guides, C D, are placed so that the median line of the strip, F, is at one side

of the needle. The strip, F, has four slight longitudinal grooves, two on each side, which are made with an ordinary carpenter's gauge. These grooves are located so that when the strip is moved through the guides, one or the other of them will pass over the needle. A piece of beeswax is rubbed over the sides of the strip to give it an adhesive coating for receiving the foil used in recording the sounds.

The foil, which should be rather heavy, must be cut into strips wide enough to extend beyond the grooves in the wooden strip. The foil is laid on the wooden strip and burnished down with the thumb nail, so that it will adhere. The strip thus prepared is placed in the guides, C D, and the needle is adjusted so that it indents the foil slightly as the stick is moved along.

By talking in the mouthpiece and at the same time moving the strip along with a smooth steady motion, the sounds are recorded on the foil. By passing the strip again through the guides, so that the needle traverses the same groove, and applying to the mouthpiece a paper funnel or resonator, the sounds or words spoken into the instrument will be reproduced. It is even possible to record the sounds on a plain strip of wood so that they may be reproduced. The engraving is about two thirds the actual size of the instrument.



SCIENTIFIC AMERICAN, August 24, 1878

A SIMPLE PHONOGRAPH.

A NEW TELEPHONE.

Mr. George B. Havens, of Lafayette, Ind., has invented a very simple form of telephone, which we illustrate in the annexed engraving. The instrument may be said to take the place of a telegraph key, being operated by the voice instead of the hand, and instead of a message being sent as in telegraph instruments, music is transmitted. It may be applied on any ordinary telegraph line.

The instrument may be said to consist of a metallic cylinder, resembling in size a quart pail, turned on its side, and attached to a block of wood.

By a reference to the engraving, A is the block or base in which the working portions of the instrument are placed. B is the metal sounding box, and may be made of brass, about the size of a quart measure, open at the end, C, and closed at the other end, which serves as a vibrator. In front of E is a metal standard, D, with a platinum-tipped regulating screw, which is in slight contact with the vibrator, E. The main wires, F, G, connect E and D.

The instrument is connected in the main telegraph line, the same as an ordinary relay, and tunes are hummed in the open end of the box, B, and heard from the armature of all the relays in the circuit. In this manner tunes have been sent, so Mr. Havens informs us, for over one hundred miles. In speaking of the instrument Mr. Havens says: "Only the armature of the relays in circuit vibrate. These vibrations are so rapid that the lever has no time to fly back and forth. Often,

by holding the relay lever down, the vibrations are much louder, and to find out if the music goes we use the regular key and telegraph instrument. I have also been able to telegraph the Morse alphabet with my voice, by making a long sound for a dash and a short one for a dot. We sometimes throw the relay magnets closer to the armature to make the sound louder."

SCIENTIFIC AMERICAN, August 7, 1877



HAVENS' NEW TELEPHONE.

on the Air

FIRST MEETING

The first meeting of the Antique Radio Club of America will meet at the Holiday West Motel (not Holiday Inn chain), Harrisburg, Pennsylvania, just off the Penn Turnpike, for Saturday, June 9, 1973.

Starting with an early radio contest, they plan to have a full program, which includes by all means a swap and sell session.

NILES TRAMMEL DIES

Niles Trammel, president and board chairman of the National Broadcasting Company, died at the age of 78.

His life spanned the golden years of radio. He started Amos 'n Andy on the air, introduced soap operas, and persuaded Ed Wynn, Eddie Canton, Al Jolson, and other greats to use radio as an entertainment medium.

Fibber McGee and Molly, Lum and Abner, Ma Perkins and Today's Children, were some of his other famous programs.

He pioneered the groundwork for the NBC television network.

ANTIQUY KEY DISCOVERY

When the City of New York bought the Brooklyn Navy Yard in 1966, collectors throughout the world were able to obtain the U.S. Government type J-7-A flame proof keys.

Walt Jackson, who now owns the last appreciable quantity of these keys, said that they were sold in 1931 for \$2.00 as government surplus.

Continued on page 2

LETTERS

EDITOR'S MAILBAG

Dear Jim Cranshaw,
First here is \$3.00 for a year of The Horn Speaker. Also recently I bought an Atwater Kent Model 40 radio. I would appreciate it if you could tell me where I could get some information on the radio including a wiring diagram and users guide.

Thanks,
S. W. Albert
106 W. Maple
Hadley, Mass. 01035

Mr. Cranshaw:
Enclosed please find our check for \$3.00.

Please renew our subscription to The Horn Speaker for another year.

We surely do enjoy it and also would like to say what a fine job you are doing.

I am sure you get all kinds of requests, but please keep us in mind.

Would like to see more on OLD CRYSTAL SETS and CONSTRUCTION DETAILS.

The amount of research you have to do must really be a large job.

Thanks to You
and for THE HORN SPEAKER
John C. Chenoweth
Engineered Prod. Co.
9130 Yankee Street
Miamisburg, Ohio 45342

Dear Sir:
I recently received the following type of radio:

STROMBERG CARLSON
Model # 601-B-602B
Batteries inside dated
Use before Sept. 1927

I would be very interested in knowing the history of this radio. The following parts are needed to get it in working order.

#5A-Cone Speaker
Insulated 2 amp. rectifier.
#2857 Tungar plus all the batteries.

Are these parts available?

I would also appreciate being able to locate a complete operating instruction book. Thank you very much for any help you may be able to give me. Value, etc.

Enclosed is my check for \$5.00 for subscription to Antique Radio Magazine. Please send me several of your latest back issues, plus new issues.

J. E. Fothergill
14223 Greenspan Lane
Rockville, Maryland
20853

Dear Sir,
Attached is a photo copy of the instruction card of The Horn Speaker which is part of my Radiola Super-heterodyne.

Among my collection of literature I have the original Radio Corporation of America Sales Booklet for 1924. The instruction book for the Radiola Super-heterodyne and a first edition of John R. Riders perpetual trouble shooter's manual.

I would like operating instruction for my Radiola 20 as well as operating instructions and battery wiring diagram for my Freed Eisemann Model 30N.

Perhaps I could exchange photo copies of my literature with someone for the information I need. Any help you can give me in this regard will be very much appreciated.

Sincerely,
Norman Metivier
6 Charme Road
Billerica, Mass. 01821

RADIO CORPORATION OF AMERICA

OPERATING INSTRUCTIONS FOR THE MODEL UZ-1325 LOUD SPEAKER

As shipped, the Loud Speaker is properly adjusted for normal operation. If, for any reason, the unit gets out of adjustment, it may be readjusted by means of the adjustment handle projecting through the slot in the base. Pushing this handle toward the left decreases the volume of sound, and pushing it toward the right increases the volume.

When making the adjustment for a given signal, the best procedure is to push the adjustment handle all the way toward the left, then slowly push it to the right until the signal strength is increased sufficiently, but do not push it so far as to cause the diaphragm to hit against the pole pieces—which will be evidenced by a rattling sound.

It should be remembered that the best adjustment of the Loud Speaker depends upon the magnitude of signal, which affects the amplitude of motion, or swing of the diaphragm. For a fairly weak signal, the adjustment handle may be pushed farther to the right than for a relatively strong signal. For average, all-around use, the handle should be kept about one inch to the left of the most sensitive position for weak signals. Adjustment to various strengths of signal will then not usually be necessary.

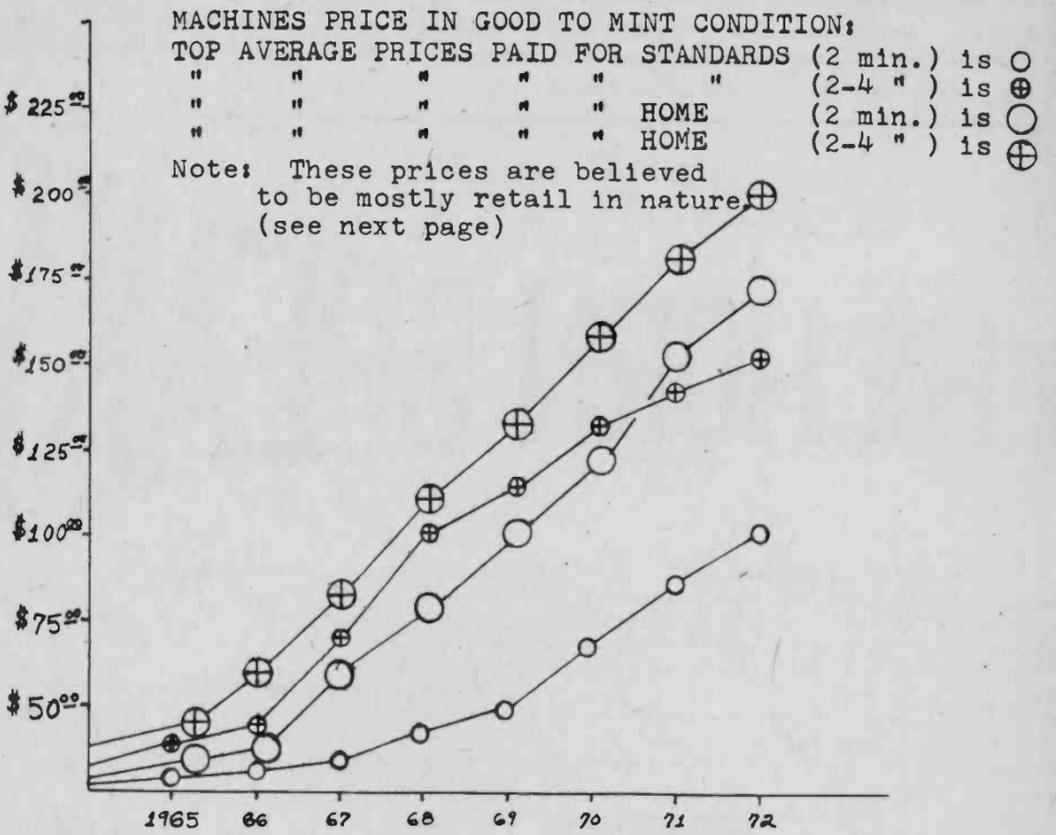
APCS PRICING SURVEY RESULTS

BY
L. O. Bargain and Hi Price

COURTESY: THE AMERICAN PHONOGRAPH COLLECTING SOCIETY

The first thing to understand is that we had to broadly categorize most of our machines. For example, the Edison Standard is classed as a 2 minute small horn machine and a 2-4 minute cygnet (gooseneck) horn machine. Victors will be classified something like #1-IV, V-VI, and the more rare machines individually.

Secondly, we had such a wide turnout with only a few persons failing to turn in their questionnaires. On many of the returns our fine members went beyond the call of duty and added extra information that we hadn't thought of in making out the form. e. g. One very kind and intelligent member listed machines under "Where Found" and divided the answers up to "field, collector, dealer, or antique shop." We only wish we had thought of this, too.



Continued on page 3

CBS 1943 Radio



4:45 PM AMERICAN WOMEN Meet America's gallant women. Hear how they help win the war.



7:30 PM THE JUDY CANOVA SHOW where the funniest things can happen . . . and do!



8:00 PM MAJOR BOWES Undiscovered talent comes to life as Major gives amateurs their chance.



12 NOON DICK POWELL in a new and breezy daytime musical show, with band and guest stars.



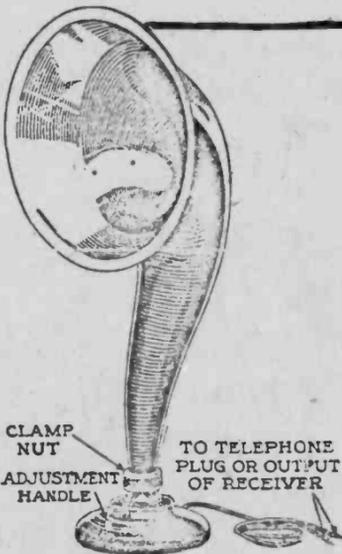
7:00 PM BIGTOWN . . . the exciting story of editor Steve Wilson and Lorelei, his lovely girl assistant.



10:05 AM LET'S PRETEND Best stories for Children dramatized. For 13 years a favorite.



8:00 PM YOUR HIT PARADE with Frank Sinatra, Mark Warnow's Orchestra and the 10 top tunes.



Dear Mr. Cranshaw,
I was given your address by Bill Breniman of the SOWP while trying to dig up info on a particular Atwater Kent Model 52 I purchased recently. I understand this set was made in limited quantity in 1928-29 when Kent was attempting to use up his magnetic cone speakers with the 1928 chassis. It is a metal receiver, floor model, seven tubes, typical 1928; 26-26-26-27-26-71A, 1100 AC. Particularly, this set was in MINT condition, when bought in 1971; not even dirty, even under the chassis. All tubes original (dated) with exception of 80 rectifier (dated 1934) set still works perfectly as when purchased. Can you supply me with any info on number of sets of this model built, and price when new, etc? I'd really appreciate it.

Also, I am interested greatly in your publication. I've never seen a copy, although I would like to very much. I have a large collection of early receiver boxes from 1918 to 1932. Most collected in recent years, all completely restored and in operating condition with a couple of exceptions. I am constantly looking for sources of tubes and other paraphernalia. Also, a lone wolf, I am searching for an organization to join. My personal "museum" has very few visitors, but I remain a dedicated collector encourager.

73
Steven R. Danielsen
5342 DuPont Avenue, South
Minneapolis, MINN. 55419

Dear Sir,
I am completing restoration of a 1938 "Howard", made by the Howard Radio Company of Chicago. This is an A. C. set, model 307 serial # 307-555. Tuning the broadcast band and two shortwave bands—2.2-7.0 mc and 7-22 mc. I realize that this set is not very old, as radios go, but I have never heard of the Howard Radio Company. I was wondering if either you or one of your readers could give me more information on this company. Very truly yours, T. A. Mummert, 5240 Heatherdowns Toledo, Ohio 43614

Dear Sir:
I have collected about a dozen vintage radios, all in working condition except an antique which is called a "RAMWAY" Circa 1921 floor model having 5 tubes #201A tubes and was manufactured in Chicago, Ill. I certainly would appreciate hearing from you, and if possible, writing about ANY facts you may have about this set. I know the RAM in its names is initialed to mean Radio Assembly Manufacturers. Many thanks, Mr. Paul Thuring 150 Highland Cross Rutherford, New Jersey 07070

Dear Sir,
I have a table radio made by RCA Manufacturing Company, made around 1930. It is a Model 125 AM-SW. The SW side worked fine but the AM came in garbled, but now I can not get anything on it. The other radio I have is a floor model AM with jacks in back for a phono. It was made by the Victor Talking Machine Company. This radio played fine until a transformer on the amplifier got hot and melted. It supplies power to the tuner system, I believe, because the tubes will not light out. What I would like to find out is the approximate year these radios were made, also where I could get parts to repair these radios. Any information you can supply will be appreciated. Sincerely, Curtis Roberts P. O. Box 61 Thorndale, Pa. 19372

ANTIQUY KEY.... plus. "Since this is 1973, these keys are antiques," said Walt. He has been selling some of his remaining quantity to fellow collectors. Walt Jackson's address is: P. O. Box 19406, Dallas, Texas 75219.

Pricing Survey Results

On the previous page you saw the results of our survey and as you know all figures can be manipulated any way you want for it to go. Therefore, we must explain that the preceding page was the TOP AVERAGE price. What exactly is the top average price? It is a mathematical result of the plus and minus range on each side of a median price. e. g. If the largest number on a price curve paid a sum of \$100.00 for a certain machine then we use this as a median and establish a plus and minus of 20% for the purpose of averaging out the figure. This then becomes the top average price.

Why did we do this? If you could have seen the wide variances in prices paid you would understand. The prices for standards with small horn and 2 min. only mechanisms ranged from \$15.00!!!! up to \$125.00, and that was for 1972! I'd sure like to know about how to find some of the really great deals found by our fellow members. e. g. The average price was in this case around \$60.00. Cygnet horns must be getting hard to find because a machine with 2-4 min. gearing and such a horn runs the price average to about \$130,000.

Now on to the other Edisons. . . Once again we must emphasize that the prices were unbelievably wide spaced. The lowest prices for the Gem were about \$15.00 and we felt these were unrealistic so the same mean average price system was used. Likewise the low prices on Firesides were from \$45.00 to \$65.00 but where these bargains are being found is beyond us. Most likely they are from garage sales, flea markets, small antique shops, and other sources. Again, we only wish we knew of some of these bargains in our area (California)!

The last of the Edisons to be tabulated were the traditionally high priced Operas, Triumphs, and Concerts.

Have you noticed how the prices are stabilizing as we approach the more recent years? This is true of all the higher priced Edison machines and we suspect a similar trend will shortly develop with the less expensive Edisons also. Our first question was why this was so and we began to notice that all of the machines price rise started about 1965 and went up sharply to a peak where the price rise momentum has apparently run out or is leveling off and will stabilize shortly. Our theory is that in about 1965 several books were published that listed the prices way above what the collectors market held at that time. All of the antique shops begin to buy up machines

wherever possible. As a result the number of machines available from non retail sources dwindled. It's a matter of the old law of supply and demand. In antiques there is one saving grace where phonographs are concerned. As prices rise many persons stop buying and some even dispose of their collections. The demand drops and the prices stabilize. This is what is believed to be happening now. Therefore we see the rise thusly plotted from all of our available information. Please remember that the above curve was based on Edisons and that it is not really representative of the other machines. For example, the Victors are continuing to rise at sometimes unbelievable rates. Why? Well if you'll recall, Edi-

sons were made for thirty years with horns while Victors were made only for 6 to 8 years. Result, Victors are harder to find by far than the more common Edisons. And last, but not least, some mention must be made of the Edison Amberolas. There were 18 separate models of this class of Edison. The first were the very deluxe and high priced Edison Amberolas. In the middle were the cheapies (Amberolas made from left over parts of the old horn machines). Lastly, three styles emerged to end the Edison family of phonographs. These were the #30, the #50, and the #75. The general prices range as follows for the Amberolas:

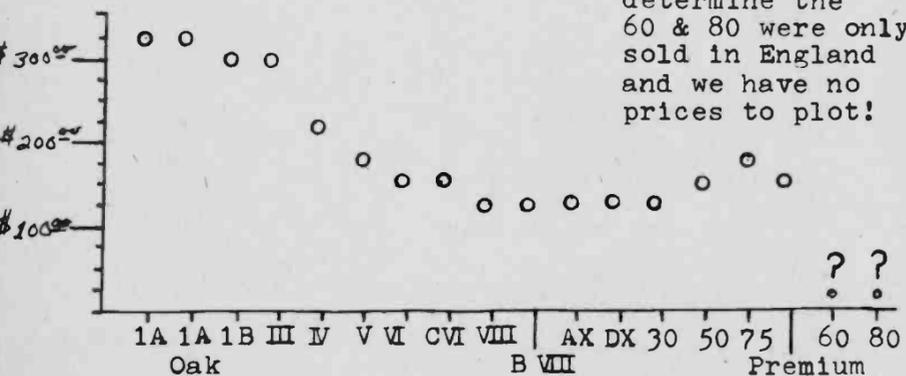
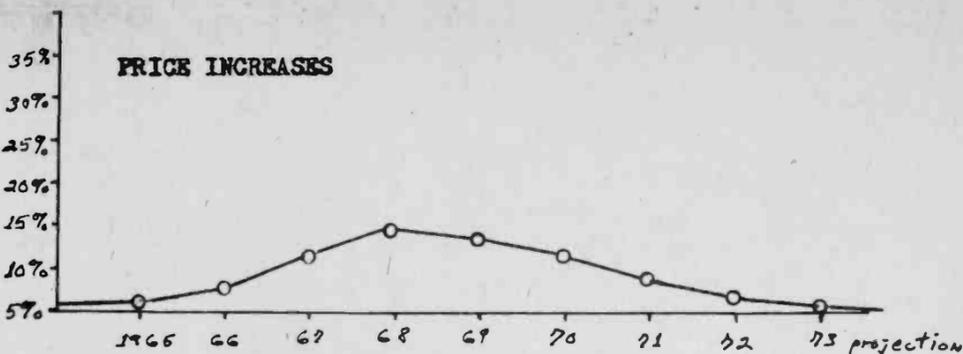
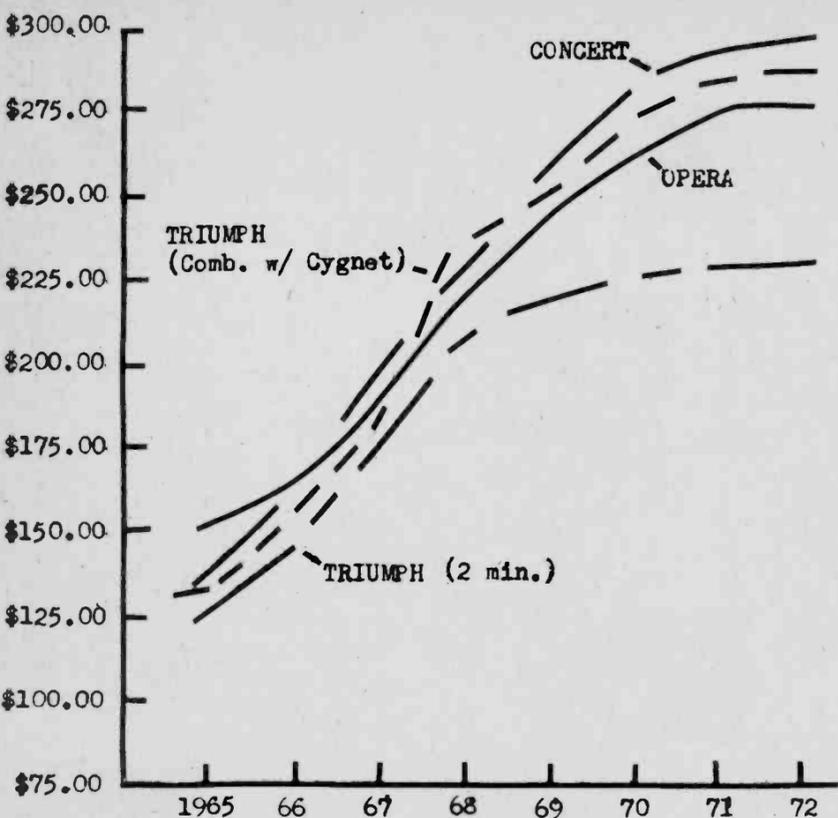
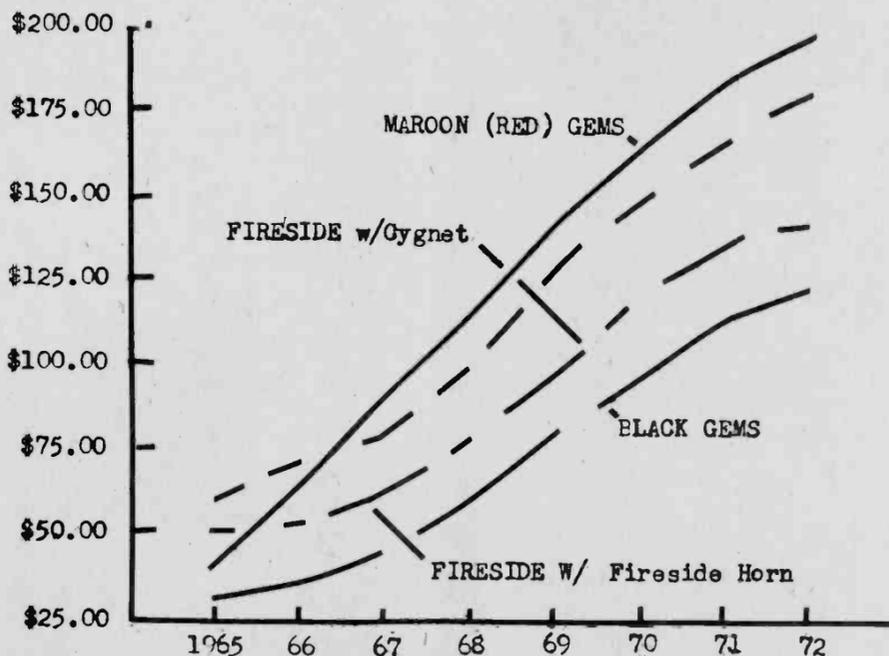
APCS PRICING SURVEY RESULTS PART TWO

By I. BENTAKEN & HUGH BETCHA

In article # 1 we reviewed the prices Edison phonographs have been commanding. Since this first installment came out we have received many letters asking what to do about machines that are not complete and this article is an answer. We also have a lot of mail telling us that many of the Edison prices have indeed come down if ever so slightly. Therefore, we surveyed several phonograph dealers and found that collectors were more reluctant to pay the inflated prices but that retail antique shops were getting more than ever on the basis that they could sell one phonograph to a non-collector for a living-room conversation piece. Confusing, isn't it!!!!

- SUBTRACT THE FOLLOWING IF YOUR FIND IS MISSING THESE ITEMS: (approximately)
- \$20 for a broken spring
 - \$10 for a crank (original)
 - \$50 for a common reproducer
 - \$25 for a small case lid
 - \$25 for a small horn
 - \$50 for a large original morninglory or cygnet horn
 - \$75 to - \$125 for a more rare reproducer
 - \$25 or more for case damage
 - \$10 or more for a missing governor
 - \$15 for an original crane
 - \$15 for a frozen mandrel bearing
 - \$15 for badly worn gears, half-nuts, and feedscrews
 - ????? for other items. . . we hope you get the idea here that these are only estimates and that the cost of the parts can always be outweighed by how badly you want the machine in question. IN ANY FINAL ANALYSIS THE TRUE VALUE OF THE ITEM IS THE PRICE YOU ARE WILLING TO PAY.

Reprinted through the courtesy of the American Phonograph Collecting Society, P. O. Box 5046, Berkeley, Cal., 94705



As far as we can determine the 60 & 80 were only sold in England and we have no prices to plot!



Now you can have an exact 1890 EDISON ELECTRIC LIGHT PLAQUE REPLICA as used when electric lights were first installed anywhere. . . You can MOUNT and DISPLAY this PLAQUE on any SURFACE because of its ADHESIVE BACK. . . just remove paper from back and mount as desired. . . All design and lettering are ENGRAVED and seated in black. . . A special process added to the GOLD-IN-COLOR Aluminum plate makes it impossible to CORRODE or OXIDIZE. . . Unlimited uses and ideas in the Antique field, makes an EYE-CATCHING DISPLAY, HUMOROUS, but serious. . . A fine gift for any occasion. . . ORDER NOW, ONLY \$4.95 Postpaid. . . MIDCO HS6, BOX 15370, LONG BEACH, CA 90815.

FLAME PROOF telegraph key, J-7-A, SASE, for further information, Walt's Emporium P. O. Box 19406, Dallas TX. 75219.



From a photograph made for POPULAR RADIO

THE COMPLETED SET

FIGURE 1: The author shows how to adjust the crystal detector while rotating the switch that controls the tuning.

HOW TO BUILD

AN EFFICIENT CRYSTAL RECEIVER

For local reception, the crystal set is still the simplest that will produce satisfactory results. Here is a re-creation of the famous Bureau of Standards receiver, brought up to date with a suitable wavelength range. The parts cost about \$5.00 (exclusive of the phones) and the approximate reception range is 15 miles.

By MORRIS S. STROCK

IN recent months the radio broadcasting services have been greatly improved. This development has been marked by a reduction of interference through the new assignment of wavelengths, a more uniform distribution of stations transmitting good musical programs (this includes the relaying of programs by wire before broadcasting)

*Published by permission of the Director of the Bureau of Standards of the U. S. Department of Commerce.

and a tendency for mediocre stations to discontinue transmission.

In the large communities there are now many thousands of people within a few miles of the Class B stations; from them comes a demand for simple receiving apparatus that requires a small monetary outlay. For this purpose a crystal set will give practically perfect reception.

A crystal set may be of rather

elaborate construction or it may be very simple without reducing its efficiency. Its cost is then much less than a set equipped with a low-voltage tube. Other points, often overlooked, are clearness of signal, absence of distortion, and no operating cost. Although the crystal is a relatively insensitive device, there is no justification in statements frequently made in radio articles, which give the impression that there is a definite limit to its receiving range. From a low-power broadcast station the reliable receiving range of a crystal set is, say five miles; in winter the same set may receive high-power stations from a distance of three or four hundred miles.

This article describes a crystal set of satisfactory performance. All structural details are given so that one need not be in doubt as to dimensions. Attention is called to the importance of good mechanical design. This requirement includes convenience of adjustment, rigid connections, permanent contacts, light, stable contact of the fine wire on the crystal, elimination of jar-

ring and vibration from the tuning controls, and protection of parts from injury.

The parts of the set are arranged so that the connecting wires will be short and direct, and losses from unused turns on the tuning inductor have been reduced by cutting down the total number of turns. A variable condenser or phone condenser is not used. The former sometimes gives a little better selectivity but at the expense of signal strength; the latter is not necessary for broadcast reception. There is no objection to the use of wood for a switch panel. Tests show that there is less power loss in dry wood at radio frequencies than in the average insulating material used in radio panels.

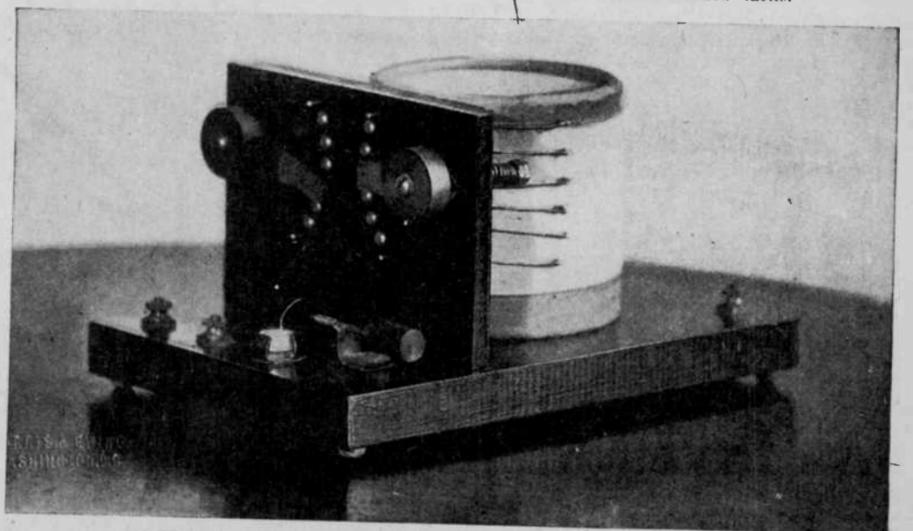
Parts and Material

The completed set is shown in operation in Figure 1. Figure 2 is a photograph of the set with cover removed. Figure 3 is a plan drawing and shows the parts and wiring. The list below names the parts used and gives the material required to make them.

A. BASE.

Required:

- One piece of seasoned wood, 8 by 5 1/2 by 3/4 inches;
- four rubber-headed tacks.



THE COMPLETED SET WITH THE COVER REMOVED

FIGURE 2: This shows what a neat-looking job can be made of the set if the experimenter takes the trouble to make every part as specified in this article.

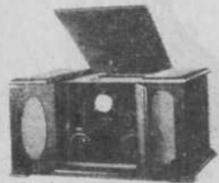


TRADE NAME: Echophone.
MODEL: V-J Console.
TYPE: Regenerative.
TUBES: Three.
BATTERIES: Not furnished but may be contained in cabinet.
CONTROLS: Two.
AERIAL: Outdoor and indoor.
PRICE: \$87.50 without accessories.
MANUFACTURER'S NAME: The Radio Shop, Inc.

TRADE NAME: "Echophone."
MODEL: 3.
TYPE: Regenerative detector and two audio.
TUBES: Three 199 type.
BATTERIES: Dry cell "A" and "B."
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: \$50.00 without accessories.
MANUFACTURER'S NAME: The Radio Shop.



TRADE NAME: "Echophone."
MODEL: 4.
TYPE: One radio frequency, detector and two audio.
TUBES: Four 199 type.
BATTERIES: Dry cell "A" and "B."
CONTROLS: Two.
AERIAL: Loop or outdoor.
PRICE: \$75.00 without accessories.
MANUFACTURER'S NAME: The Radio Shop.



TRADE NAME: Echophone.
MODEL: F. Grand Console.
TYPE: Tuned radio frequency circuit.
TUBES: Five.
BATTERIES: Not furnished but may be put in cabinet.
CONTROLS: Two.
AERIAL: Loop.
PRICE: \$165.00 without accessories.
MANUFACTURER'S NAME: The Radio Shop, Inc.

TRADE NAME: "Emerson."
MODEL: Verdi combined phonograph and Powered Neutrodyne.
TYPE: Two radio, detector and two audio.
TUBES: Five.
BATTERIES: "A" and "B" needed.
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: \$150.00 without accessories; for phonograph and radio.
MANUFACTURER'S NAME: Washmuth-Goodrich Company.



TRADE NAME: Echophone.
MODEL: F. standard.
TYPE: Tuned radio frequency circuit.
TUBES: Five.
BATTERIES: Not furnished but may be put in cabinet.
CONTROLS: Two.
AERIAL: Indoor and outdoor.
PRICE: \$110.00 without accessories.
MANUFACTURER'S NAME: The Radio Shop, Inc.



TRADE NAME: "Eria Floor Console."
MODEL: Cabinet built-in loud speaker.
TYPE: Five-tube SuperFlex.
TUBES: Five.
BATTERIES: Storage "A" and 60 to 90 volts "B." None furnished.
CONTROLS: Two.
AERIAL: Outdoor or loop.
PRICE: \$270.00 without tubes or batteries.
MANUFACTURER'S NAME: Electrical Research Labs.



TRADE NAME: "Eria Portable Receiver."
MODEL: Portable built-in loud speaker.
TYPE: Five-tube SuperFlex.
TUBES: Five.
BATTERIES: Dry-cell "A" and "B." Not furnished.
CONTROLS: One.
AERIAL: Loop. Furnished with set.
PRICE: \$145.00 without tubes or batteries.
MANUFACTURER'S NAME: Electrical Research Labs.



TRADE NAME: "Eria Table Cabinet."
MODEL: Cabinet.
TYPE: SuperFlex.
TUBES: Three, four or five.
BATTERIES: Storage batteries for three and four-tube sets, dry cells for five-tube set.
CONTROLS: Two.
AERIAL: Outside with three and four-tube sets, loop with five-tube set.
PRICE: Three-tube, \$85.00; four-tube, \$95.00; five-tube, \$105.00 without accessories.
MANUFACTURER'S NAME: Electrical Research Labs.

TRADE NAME: Etherpho
MODEL: RX-4.
TYPE: Reflex.
TUBES: Two.
BATTERIES: None furnished provided for in set.
CONTROLS: Two.
AERIAL: Outside or inside.
PRICE: \$60.00 without a MANUFACTURER'S NAME phone Corporation.



TRADE NAME: Etherpho
MODEL: RX-3.
TYPE: Reflex circuit.
TUBES: Two.
BATTERIES: None furnished provided for in set.
CONTROLS: Two.
AERIAL: Inside or outside.
PRICE: \$45.00 without a MANUFACTURER'S NAME phone Corporation.



TRADE NAME: Etherpho
MODEL: TR-5.
TYPE: Two radio, detector
TUBES: Five.
BATTERIES: None furnished provided for in set.
CONTROLS: Two.
AERIAL: Outside or inside.
PRICE: \$60.00 without a MANUFACTURER'S NAME phone Corporation.



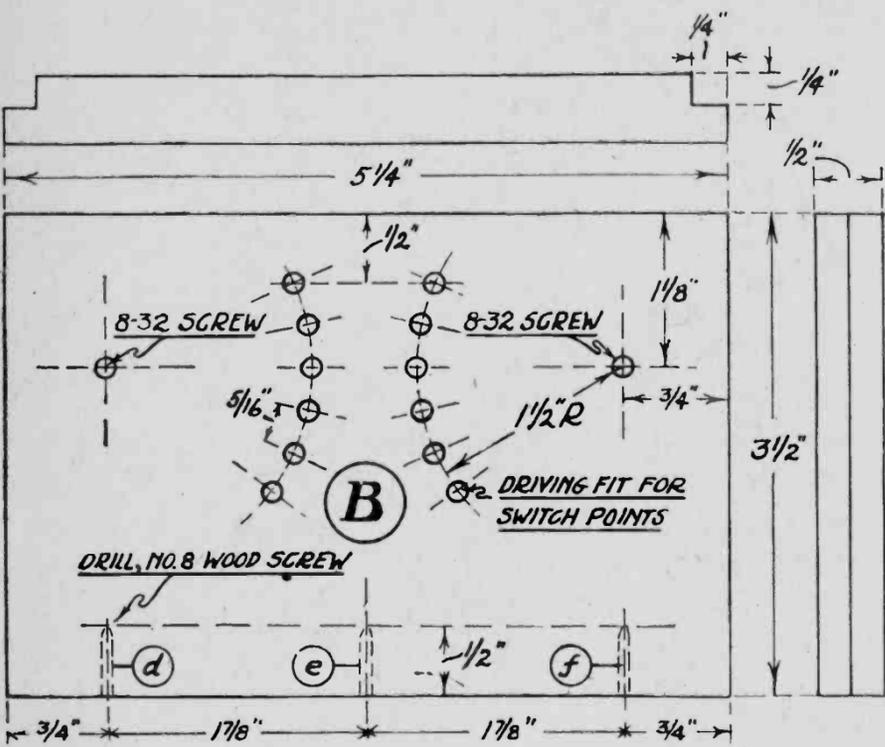


FIGURE 5

The dimensions of the switch panel and the drilling plan. This drawing gives the top, front and side views of the switch panel, together with the drilling data.

I. CONNECTING WIRE.

Required: Six feet No. 20 bare copper wire.

J. MISCELLANEOUS:

Solder, non-corrosive soldering flux, stain and varnish (free from carbon pigment).

Construction

A. BASE (Figure 4). All dimensions are given in the drawing.

B. SWITCH PANEL (Figure 5). The spacing of the holes on the arcs is important to insure smooth operation of switches when switch points and switch blades are made as specified. Before the holes are drilled in the base and switch panel, these parts and the cover should be given a suitable finish. A dark finish will harmonize well with the exposed metal parts.

C. COVER (Figure 6). All dimensions are given in the drawing.

D. TUNING INDUCTANCE (Figure 7). This is made by winding wire on a one-pint cardboard carton, which as purchased, will be too long for the space requirements of the set. It is shortened to the dimensions shown in Figure

7a by cutting off a ring from the open end and also from the cover, and is here shown bottom side up with cover in place. The carton is wound with 76 turns of No. 24 dc wire, starting with two small holes, b and e, and winding in the direction shown by the arrow. The wire fills the space between b, and the edge of the cover. In Figure 7 is shown the completed tuning inductance which has two terminals and ten intermediate taps. The terminals are made by forming the bare end of the wire into a small eye as shown. The intermediate taps are formed, while winding, by baring a 1/2-inch length of wire and twisting this into a small loop. The inductance may be dried in a warm oven.

E. TAP SWITCHES (Figure 8). A completed tap switch is shown in Figure 8. Two switch blades are cut from No. 24 spring brass sheet, as shown in Figure 8a, with the grain of the metal running the long way. The end widths of switch blades are important and the edges of the blades must be bent up as shown, for smooth operation. Two knobs are cut from a fiber rod as shown at e, Figure 8. Two springs, as shown at b, Figure 8, are formed by wrap-

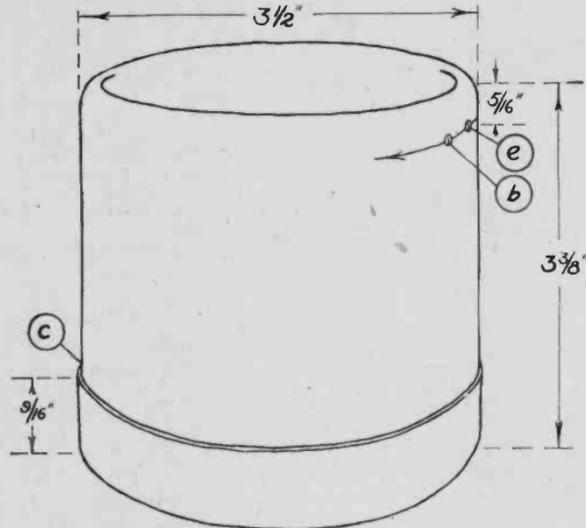


FIGURE 7A

How the container should be shortened by cutting off the end. This sketch gives the dimensions to which the tube should be cut down before starting the actual winding of the coil.

ping 10 turns of No. 20 piano wire around a 3/16-inch rod clamped in a vise. The switch is assembled upon an 8-32 brass machine screw c, shown in Figure 8.

F. SWITCH POINTS AND STOPS (Figure 9). The switch points are made from 12 brass pins with heads surfaced off with a file or in a lathe. This work requires accuracy to insure smooth operation of switch blades. The switch stops are made from four small brass pins.

G. CRYSTAL DETECTOR (Figure 10). In Figure 10 are shown the assembled parts of the detector. These are: a clip b, holding a mounted crystal c; an 8-32 screw d, and nut e; a fine wire (catwhisker) f, wrapped around a rod g, and secured by a drop of solder h; a knob i; a rod-holder j; an 8-32 screw k, and a nut m.

The clip is cut and filed from No. 24 spring brass sheet as shown in Figure 10a, and bent into the shape shown in Figure 10. All brass sheet must be bent with caution, the bends being made slowly and kept well rounded.

The catwhisker is an 8-inch length of fine springy wire wrapped 20 times evenly around the rod g, and secured by a drop of solder h, so positioned that when the rod is placed in the holder the lateral movement will be equal to the diameter of the crystal. The fiber knob i, is forced on the other end of the rod.

In Figure 10b are shown the dimensions of the rod holder, cut and filed from spring brass sheet, so that the grain of the metal runs with the narrow tongue. When bent carefully into shape it appears as shown at j, Figure 10.

H. BINDING POSTS (Figure 11). Each binding post is made up of an 8-32 brass screw, two washers, square brass nut and a thumb nut taken from a dry cell. A groove b, is filed in two of the nuts to facilitate connections of telephone-receiver terminals.

How to Assemble the Set

Four rubber-headed tacks are driven into the corners of the bottom of the base as indicated in Figure 4. The panel (Figure 5) is laid face up on two supporting strips and the 12 switch points are forced into the holes, caution being observed to have the surfaces of all the points in the same plane.

The tap switches are placed in position as shown in Figures 3 and 8. The switch blades are bent as shown by the dotted lines, and when forced down upon the switch points by the spring b, final adjustments are made to secure smoothness of operation. The nuts f and k, are then locked.

The panel (Figure 5) is mounted by three wood screws passing through the base and into the holes d, e, and f. It then appears as shown in Figure 3.

The detector parts (shown in Figure 10) are loosely mounted—in the positions shown in Figure 3—the screw d, being cut off so that it will not project through the nuts. The four binding posts—shown in Figure 11—are then loosely inserted in the base (Figure 3). Connecting wires—shown in Figure 3—of No. 20 wire are run from the two rear binding posts up through two holes b (Figure 4) in the base, looped around and forced between the washers



TRADE NAME: "Fada."
MODEL: 160.
TYPE: Two stages tuned radio, detector and two audio.
TUBES: Four.
BATTERIES: "A," 6-volt storage; "B," 60 to 90 volts.
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: \$120.00 without accessories.
MANUFACTURER'S NAME: F. A. D. Andrea, Inc.



TRADE NAME: "Fada."
MODEL: Neutro-Junior.
TYPE: One-stage radio, detector and two audio.
TUBES: Three.
BATTERIES: None furnished. "A" and "B" needed.
AERIAL: Outside.
CONTROLS: Two.
PRICE: \$75.00 without accessories.
MANUFACTURER'S NAME: F. A. D. Andrea, Inc.



TRADE NAME: "Fada."
MODEL: Neutro-Lagrand.
TYPE: Two tuned neutralized radio, detector and two audio, built-in loud speaker.
TUBES: Five.
BATTERIES: Furnished.
CONTROLS: Three.
AERIAL: Outside and inside.
PRICE: \$270.00 complete with built-in loud speaker.
MANUFACTURER'S NAME: F. A. D. Andrea, Inc.

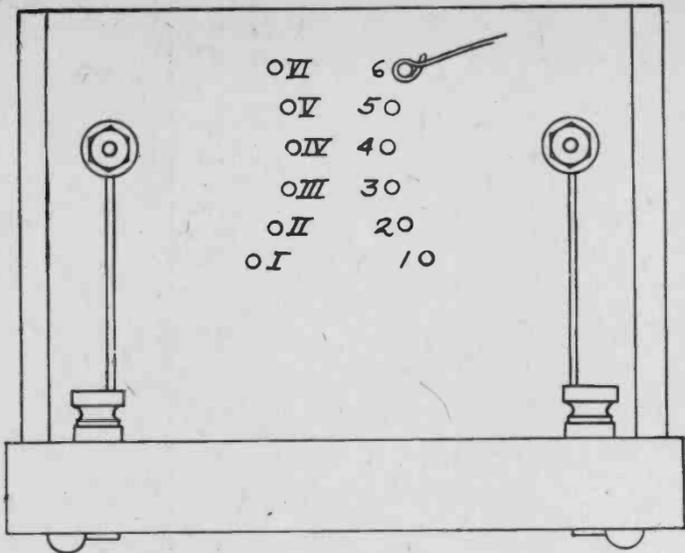


FIGURE 12

Assembling the panels and the switch points and binding posts. This is a view from the rear and shows how the switch points are forced into the holes drilled for them in the upright panel, and how the wire taps are connected one to each switch point. The two switch blades are connected by a wire to the two binding posts on the base.

g and p (Figures 3 and 8) back down through the base and thence connected to the left phone binding post and the screw securing the rod holder in place. One short length of wire connects the remaining phone binding post and the crystal. The wire ends are secured by looping around between the washers on the bottom of the base; the screws are then tightened until the nuts on top of the base become rigid. Before the crystal clip and rod holder are permanently secured in place a burr is formed on the edges which come in contact with the wood by bending down these edges slightly.

Twelve short lengths of No. 20 bare copper wire should be soldered to the switch points where they project through the rear of the panel as shown in Figure 12.

The cover of the tuning inductance is tacked to the base equally distant from the edges and one-half inch from the rear of the panel. The inductance is fitted into the cover and secured by glue or varnish. The location for the taps will be determined by referring to Figure 3. Tap 1 (Figures 3, 7, and 12), will be directly below switch point 1 (Figure 12). The twelve wires from the switch points (Figures 3 and 12) are formed into neat curves, cut off to the proper length so that they may just be inserted in the inductance taps, and soldered in place using a very small soldering iron and a small amount of solder. Switch points in Figure 12 are numbered to correspond to taps in Figure 7. Point 1, being most inaccessible is first soldered to tap 1.

The parts of the cover, shown in Figure 6, are fastened together with glue and brads (or small screws) forming the completed cover which gives the set the finished appearance shown in Figure 1.

How to Operate the Set

The antenna is connected to the right-hand rear binding post. The ground wire is connected to the left-hand rear binding post, thus bringing the phones near ground potential. The antenna wire is shown in Figure 1. An inspection is made of the mounted crystal to see that it is held firmly by the clip; the extreme end of the catwhisker should then be given a sharp diagonal cut with a pair of scissors.

Adjusting the set involves two operations:

(1) Securing a sensitive contact of the catwhisker;

(2) Tuning. By means of the knob the point of the catwhisker is brought down lightly upon the crystal. The right switch blade is rotated slowly over its points and at each new position the left switch blade is rotated two or three times over its points. This operation explores all the inductance turns, two at a time. If there is no response in the phones, operations (1) and (2) are repeated and local stations should now be heard. Finally, when the switches are set at the most advantageous position, a more sensitive adjustment of the detector may be obtained by lifting the cat-

B. SWITCH PANEL.

Required:
One piece of seasoned wood, 5 1/4 by 3 1/2 by 1/2 inches; three No. 8 wood screws, 1 1/2 inches long.

C COVER (top removed).

Required:
Four pieces of seasoned wood, 1/4-inch thick;
one piece, 5 1/2 by 5 1/8 inches;
two pieces, 4 3/8 by 3 1/2 inches;
one piece, 4 3/4 by 3 1/2 inches;
brads or small screws.

D. TUNING INDUCTANCE.

Required:
One one-pint carboard carton;
two ounces No. 24 dcc copper wire.

E. TAP SWITCHES.

Required:
No. 24 (B. and S.) gauge spring brass sheet, 1 by 2 inches;
two knobs cut from one-inch fiber rod;
18 inches No. 20 (B. and S.) gauge piano wire;
two 8-32 brass machine screws 2 inches long;

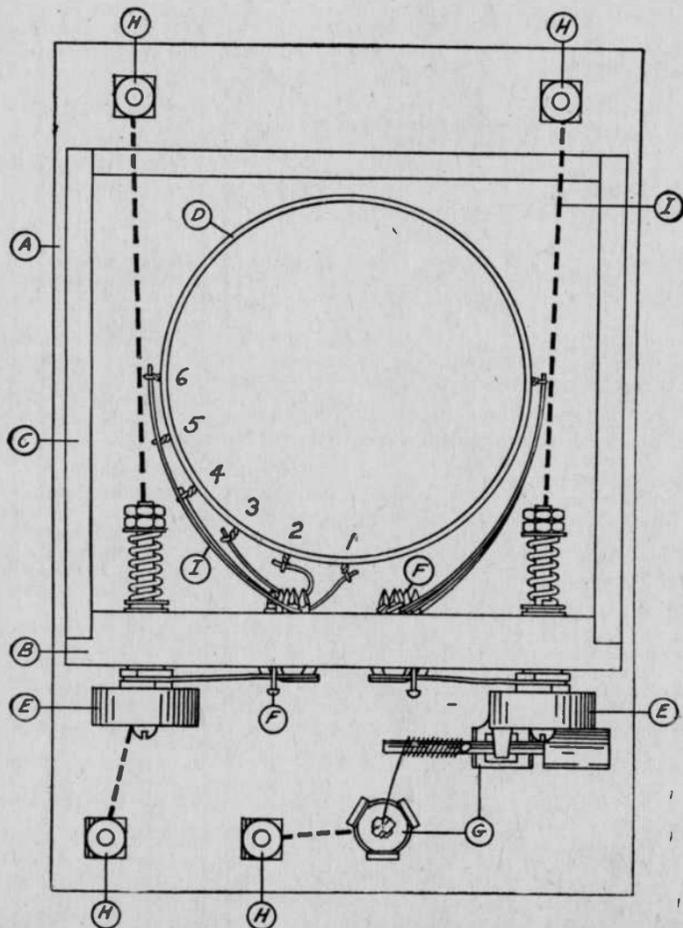


FIGURE 3

The working drawing of the set. This layout diagram shows the relative positions for all the instruments, as seen from above. The parts are designated by letters which reappear in the text and list of parts.

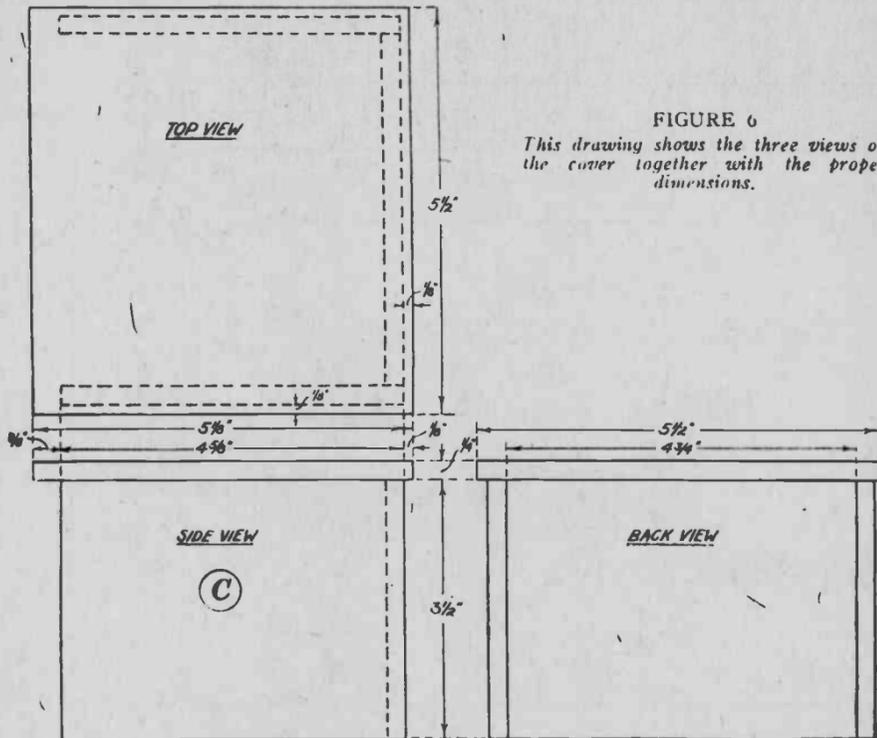


FIGURE 6

This drawing shows the three views of the cover together with the proper dimensions.

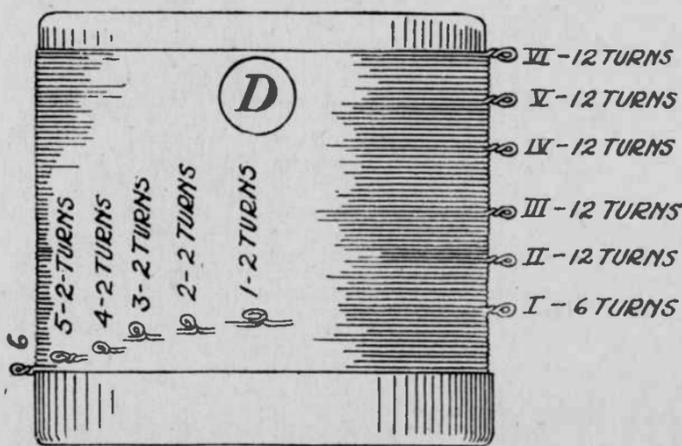


FIGURE 7

The completed inductance coil made on a pint-size container. This drawing shows the correct way to make the taps with the spacing between the taps indicated.

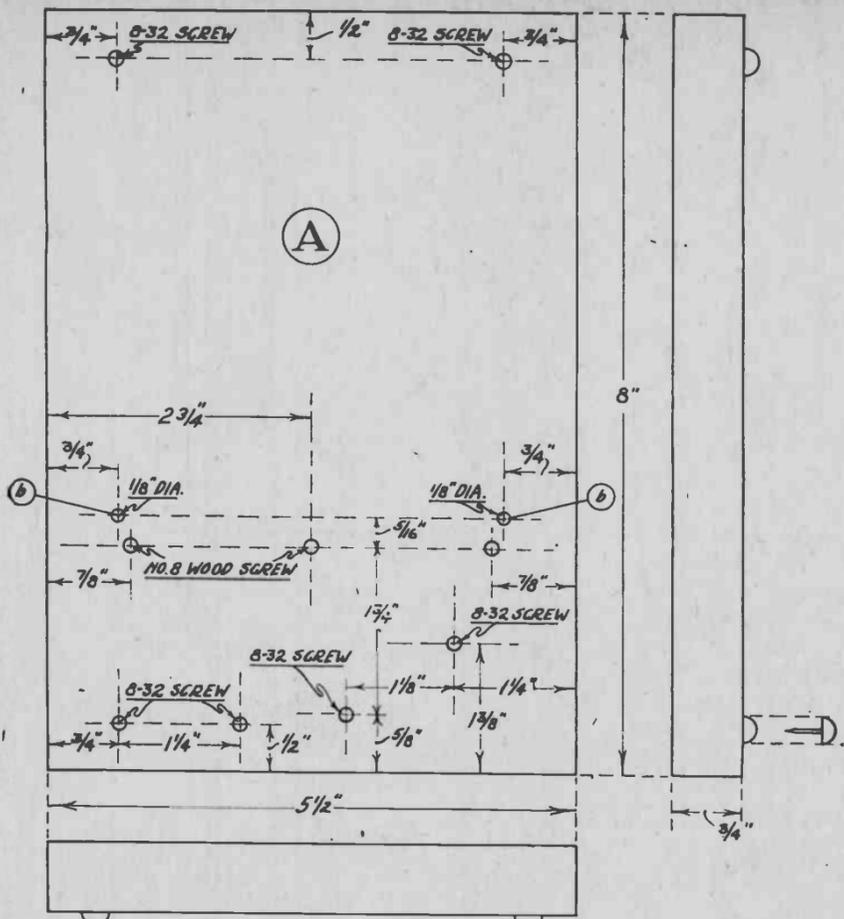


FIGURE 4

The dimensions of the base and the drilling plan. This drawing gives the front, side and top views of the base, together with the drilling data for the holes for the screws that are used to mount the instruments and binding posts.

eight 8-32 brass washers;
four 8-32 square brass nuts;
four 8-32 brass hexagon nuts.

F. SWITCH POINTS AND STOPS.

Required:
12 brass pins 1/8 to 3/32 of an inch in diameter and 3/4-inch long;
four small brass pins, 1/2-inch long.

G. CRYSTAL DETECTOR.

Required:
One galena crystal mounted in a block of Wood's metal 1/2-inch in diameter and 1/4-inch thick;
No. 24 (B. and S.) gauge spring brass sheet 2 by 2 1/4 inches;

eight inches of fine springy wire;
one 3/32-inch brass rod two inches long;
one 3/8-inch fiber rod 5/8-inch long;
two 8-32 brass machine screws one-inch long;

four 8-32 brass washers;
two 8-32 square brass nuts.

H. BINDING POSTS.

Required:
Four 8-32 brass machine screws, 1 1/4 inches long;
four 8-32 square brass nuts;
four 8-32 thumb nuts from dry cells;
eight 8-32 brass washers.

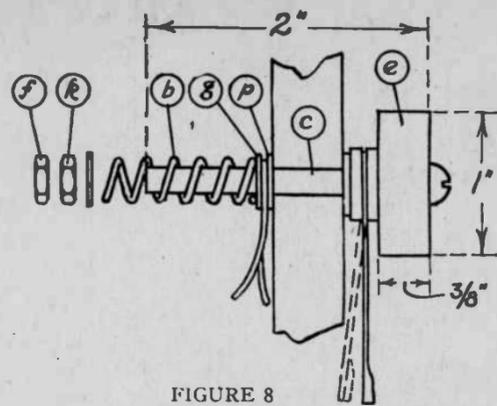


FIGURE 8

Details of the top switch for wavelength control.

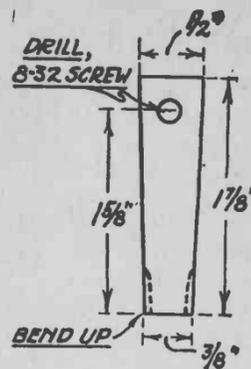


FIGURE 8A

How to cut out, drill and bend the switch blades.

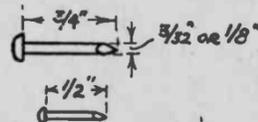


FIGURE 9

The dimensions for the switch points and stops.

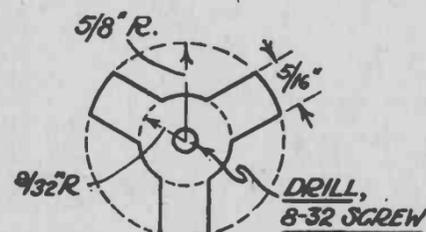


FIGURE 10A

How to drill and bend the clip for holding the crystal.

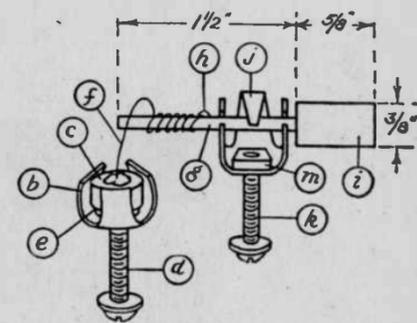


FIGURE 10

The complete detector assembly, showing the general arrangement of all the parts used.

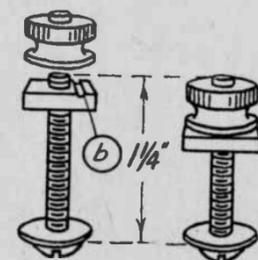


FIGURE 11

Sizes for the binding posts.

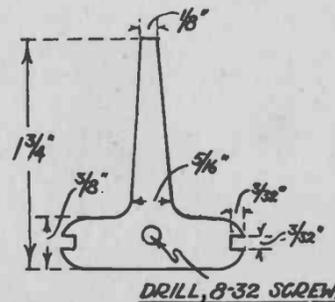


FIGURE 10B

The way to make the rod holder is shown here with the dimensions for drilling and shaping.

whisker and replacing lightly in various positions.

As the switch blades are moved up the wavelength of the set is increased. When the left switch advances one point the tuning inductance turns are increased by two. When this switch reaches point 6 the turns are increased somewhat less than two by advancing the right switch one point and returning the left switch to point 1. Thus, in tuning, as the successive turns are cut in, that part of the process which requires shifting both switches, will give a smaller wavelength increase.

The antenna may be a single wire 80 feet long (or two wires 50 feet long) and about 30 feet high. If the antenna is too large the number of inductance turns required to receive the shorter broadcast wavelengths will be so reduced that the signal strength will also be decreased. In this connection, most effective results will be obtained by keeping the antenna clear of obstructions and adjusting its length until signals from the longest wave broadcast station are heard with the switches near the upper points. With this set the writer obtained good reception from a Class B station two and a half miles distant, using a small indoor antenna, but such an antenna is not recommended for a crystal set.

A telephone head-set having a resistance of

2,000 ohms or more will give good results. Reception from a considerable distance will be more satisfactory if phones priced above the conventional standard be used.

As the crystal is the life of the set, emphasis is laid upon the importance of securing a good one, which should not only be sensitive to weak signals, but which should give response from local stations at most random positions of the catwhisker. The crystal may be kept covered when the set is not in use, but after a time its surface may become insensitive. It may be cleaned with alcohol or soap and water and a clean brush.

The input terminals of a two-step, audio-frequency amplifier may be connected to the phone binding posts of this set and good volume of sound will be obtained from local stations. The use of the crystal detector gives signals of maximum clearness.

POPULAR RADIO, December 1923

VALUABLE TIPS FOR THE BEGINNING RADIO COLLECTOR, BOTH FROM A COLLECTING AND TECHNICAL VIEWPOINT

By Brent Dingman, MIDCO

There are many phases to radio collecting, but they will all lead to the radio itself at some point. These tips were experienced by myself just being involved in this hobby and I hope they are helpful to you the Beginning Collector.

COLLECTING AND RESTORING can be fun and you will have a conversation PIECE THAT WILL KEEP people talking to you till wee hours of the morning, and THAT WILL EXTEND INTO YEARS! Any item like the radio when invented or manufactured was not meant to be collected. People who saved them from a technical viewpoint liked the circuits, size shape,

company etc. and now the collectors who kept the early CRYSTAL SETS AND ATWATER KENT MODEL 10 Breadboards can command a good price. Because the word Atwater Kent was a common household word a few years back, it is carried over to the beginning Radio Collector who wants an A-K (as we call them); you can consider this starting from the top. Unless the beginning collector has unlimited funds, he can get very discouraged....

BUT DON'T YOU. YOU CAN GO TWO DIFFERENT ROUTES.

One way is pick up a wooden radio of the 1940-50 years, (there is enough for everybody) locate the model and try to secure the history behind it. THE MAIN ADVICE I CAN GIVE YOU IS THE WORD PATIENCE. Once people find out you have a few radios, they will give you theirs, then YOU WILL FIND YOURSELF IN THE RIGHT PLACE AT THE RIGHT TIME (because radios are now your hobby) PATIENCE and you will pick up that Breadboard or radio of your choice. If you are in this hobby to make a fast dollar, FORGET IT YOU WILL WASTE YOUR TIME. NOW IS THE TIME TO GET INTO IT.

Route TWO is if you worry about NOT HAVING ANY TECHNICAL EXPERIENCE, FORGET THAT ALSO. Without any experience you can still restore, build, and work on the old Breadboards or Battery-operated sets. WHY? Because they were very simple and in the experimental stages at that time. All you need is PATIENCE and research, contrary to what some experts might tell you. You need some research, NOT GO TO A TECHNICAL INSTITUTE as advertised in magazines unless it becomes your occupation. HERE is what is nice and interesting about Radio Collecting. If you want to learn the technical part, THEN THE ONLY WAY TO GET STARTED IN RADIO IS TO BUILD A CRYSTAL SET. Then advance to the one-tubers and up. YOU WILL RELIVE RADIO HISTORY AND APPRECIATE THIS INTERESTING HOBBY MORE. These sets you can build for practically Nothing. How many other hobbies can you do this in?

Radio News for January, 1925

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FLAME PROOF telegraph key, J-7-A, SASE for further information. Walt's Emporium, P. O. Box 19406, Dallas TX 75219.

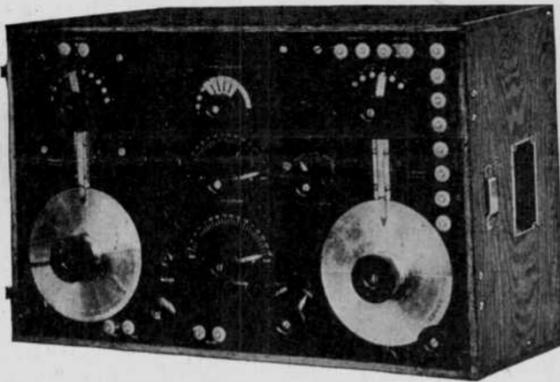
FOR SALE: Radio equipment, send SASE for list. John Kuzma, 20 Union Place, Bloomfield, N. J. 07003.

OLD TUBES for sale, write for list. SASE please. J. W. F. Puett, 3008 Abston, Mesquite TX 75149.

THE DIRECTORY of Antique Radio Collectors is now available. Write to: James Fred, R. 1, Cutler, Ind. 46920 for details.

FLAME PROOF telegraph key, J-7-A, SASE for further information. Walt's Emporium, P. O. Box 19406, Dallas TX 75219.

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WANTED

WANTED Western Electric 594A Loud Speaking Telephone. Also other Western Electric sound equipment and tubes. John Schretzmayer, 140 Southern Blvd., East Patchogue, New York 11772. ✓

WANTED: Crystal Radio Receiver Schematics from early 1920's, including details of construction, wire sizes, etc., also Tesla coil, Jacob's Ladder, etc. G. Seidel, 1201 Powell St. Norristown, PA 19401, Pho: 215 275-6333.

WANTED Gilfillan GN-5 Chassis complete or near. Radiola 25 cabinet and Loop Antenna. Need three WD-11 tubes, three battery terminal nuts for 1922 Westinghouse page 106. Cecil Bounds, Pine Springs Rte., Carlsbad, N. M. 88200.

WANT to buy Regenerative Receiver using one or two UX99 in good condition, homemade or commercial, circa, 1924. J. S. Stover, 511 Akard, Dallas TX 75201. 214 ✓ 741-1696.

WANTED: IP500, 501, 501A Kennedy or Renartz equipment. Also Remler dial with paper scale. R. Carroll, 48 Wayne Blvd., Madison, N. J. 07940.

WANTED: December 1926 issue Citizen's Radio Callbook. Need not be perfect. Edward Crosby, 441 Cedar Ave., East Greenwich, R. I. 02818.

WANTED: Cathedral styled radio e.g. Philco 20 or Crosley 148. George Miller, 6537 Turner Way, Dallas TX. 75230. ✓

THE HORN SPEAKER

May 1973



BOOKS

THE FABULOUS PHONOGRAPH

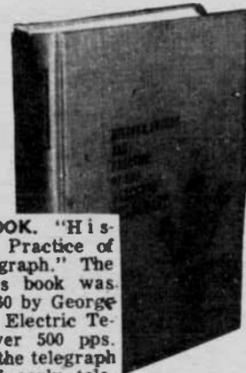
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