SUPER-HETERODYNE RECEIVERS

In the experimental radio field there is a great general desire to receive over long distances. While this is quite possible under certain conditions, it is also impossible under other conditions. Signals from a great distance are weak when picked up by a receiving antenna and it is necessary to amplify these signals at radio frequencies before rectifying and changing to audio currents. It is immediately thought that if the signal is very weak, it is only necessary to use a large number of amplifying units to raise the signal to a readable audibility, and this would be true if there was no static. Fig. 15 illustrates exactly what happens. Accordingly if the signal is weaker than the local static it is useless to try and obtain a readable signal through the use of considerable amplification. The proper way to afford long range reception is to increase the power of the transmitting stations, so that the received energy at a distance will be greater than the static. In the winter when static is at a low ebb, powerful receivers can be used for long wave reception. It seems that static is less prevalent at short wavelengths, 10 to 100 meters than at the longer wavelengths and for this reason it may become advisable to carry on broadcasting transmission on these lower wavelengths. The transmitted energy at these short wavelengths also seems to have greater traveling ability, as the short wave programs from E. Pittsburg and Schenectady are easily copied in Europe with one, two and three tube sets, under favorable conditions. Furthermore allowing 10,000 cycles per transmitting station, there is room for 600 different wavelengths between 25 and 50 meters, while there is only room for about 50 different non-interfering wavelengths between 300 and 600 meters.

These advantages point toward the use of short wavelengths in the near future. To facilitate the reception of short waves, it is suggested that all tuning coils in a receiver be provided with contact prongs and sockets, in this manner the coils can be easily removed and smaller inductances quickly inserted for short wave reception.

One of the best known methods of reception of short wavelengths is the Super Heterodyne system and the use of this system is described in detail in this chapter. It is pointed out that while it is possible to reflect tubes to perform double duty in this system, the disadvantages are greater than the advantages secured and is not recommended. It is thought that the experimenter desires the best and is willing to provide the extra tube or two to secure the maximum results. All the designs shown here are free from reflexing.

The Super-Heterodyne was not discovered by accident, it was the result of original thought to overcome a very difficult problem, the problem was the possibility of amplifying radio frequency currents at very high frequencies.

Each wavelength has a certain frequency; for example, 10,000 meters is a frequency of 30,000 cycles; 5,000 meters is 60,000 cycles; 2,500 meters is 120,000 cycles and 100 meters is 3,000,000 cycles. It is noted that as the wavelength decreases the frequency increases. When designing apparatus to use at these extremely high frequencies, the ordinary electrical engineering fromulae do not hold true. An instrument which may be a condenser at 60 cycles might prove to be a resistance at 3,000,000 cycles.

REALISTIC SET OF VIEW

How about reading as if you were listening to the first live broadcast of a war brought to you by the voice of H. V. Kaltenborn in 1936 of the Spanish Civil War close to Hendaye France? Remember this is the first live battlefield broadcast.

(Sound of machine guns) Those are the isolated shots which are being exchanged by the front line sentries on both sides of this Civil War. It is part of the battle of Iran.

(Sound of dug barking) Directly in front of me as I look through the dark of this midnight night is a bright line of fire rising from the most important single factory in the city of Iran. Late this afternoon, we watched a Rebel airplane circling overhead and dropping bombs. One struck directly into the center of the match factory which began to burn and which has since been blazing brightly so that the evening sky is lit up for a great distance around. To the left, along the road that leads away from the city of Iran, the road over which the Government forces have been maintaining their communications, I see two flaming automobiles, both struck by some sort of fire that set them alight. They have been taken off to one side of the road where they are now blazing away.

We happen to be straight in the line of fire. Fortunately for us, the bullets are all going high. Twice this afternoon while we were waiting for an opportunity to link up with New York, our wires were cut. And now finally we have put the radio machinery, the modulating devices and so on, inside of a house and I'm standing around one corner of the house with the microphone in the open but with a good thick mortar wall between me and the bullets that are constantly whizzing past. We can't understand why it is that the Rebels have arranged their fire in such a way that most of their bullets seem to go wild and pass over this farm and reach as far as the city and the streets of Hendaye. We have been cut off all day. While I have been talking we have just had word that perhaps if the fire continues to be quieted down, someone can come and call for us after this talk is done; but our endeavor to get away from here in the course of the day has been entirely in vain, because the Hendaye police declared that no one would be permitted to go out on the streets on account of this hail of bullets. They cleared all the streets of people after several were killed and a number of others injured.

(Sound of firing)

To enable long distance reception, radio frequency amplification is very essential. An ordinary Detector tube such as a Radiotron UV200, UV10A or UV199 requires a fairly strong signal to give good response in the telephones. As a matter of fact, if one signal applied to the detector grid is twice as strong as a second signal, the detecting efficiency will be four times as great on the stronger signal. Looking further, it will be appreciated that very weak signals will not be sufficiently strong to operate the detector tube at all, unless they are amplified to a larger order of magnitude first. The possibilities of amplifying these weak signals at long waves is an easy problem but to secure good amplification at frequencies over 200,000 cycles for more than one stage presents many difficulties.
All ordinary amplifying transformers designed for short wave work are only efficient over a very narrow wavelength band. For example, if the transformer is advertised to function over a range of 200 to 500 meters, it will be found that the amplifying efficiency is highest at one particular wavelength, say 350 meters. Each side of this peak, the efficiency drops very rapidly. In order to cover a wavelength range of 160 to 850 meters with such transformers, it would be necessary to have about 10 sets of transformers, each suitable for a narrow band of wavelengths.

Tuned Radio Frequency Amplification can be used to good advantage for short wavelengths. This system consists of a number of air core transformers, the grid circuit of each tuned with a variable condenser, to the wavelength that it is desired to amplify. However, in a three stage amplifier of this type it would be necessary to have three controls, as each stage must be in exact resonance with the incoming wavelengths. This disadvantage can be overcome ingeniously by mounting the three variable condensers on a common shaft and have them rotate simultaneously. In this manner the three stages are tuned through the use of one control. However, there is still a further disadvantage not so easily overcome. An ordinary inductance and variable air condenser in parallel will give a wavelength variation of approximately 2½ to 1. For example, a certain inductance in parallel to a variable condenser having a maximum capacity of 0005 M.F. will tune from a wavelength of 200 to 510 meters. The same condenser with a larger inductance would tune from 400 meters to 1,000 meters.

In order to cover a wide wavelength range with the tuned method of amplification, it is necessary to have more than one transformer. By mounting a variometer and a variable condenser on the same shaft, a wavelength ratio of 8 to 1 could be obtained; for example, 150 to 1,200 meters, but this would entail special complicated design to enable functioning as a transformer. Further on, tuned radio frequency amplifiers are treated separately, especially for use in connection with Super-Heterodynes.

Armstrong reasoned that if it was difficult to amplify a signal at high frequencies, why not change the frequency to a lower value where radio frequency amplification could be carried on very efficiently and without difficulties. This is exactly what the Super-Heterodyne does, the incoming signal which may be any wavelength from say 160 to 850 meters, is changed to a higher wavelength, say 10,000 meters and the amplification carried on at that advantageous wavelength. On first thought, one would think that the change would destroy the pitch of a spark signal, or the reproduction of voice, but this is not true. The Super-Heterodyne method of reception gives the nearest approach to perfect reproduction of broadcast entertainments obtainable.

The Super-Heterodyne consists of three important sections, each one of which may be very simple, or very elaborate. First, there must be a means of collecting the incoming signal, such as a loop connected to an ordinary detector circuit, and means provided to tune the loop to that signal. Second, there must be a source of oscillations, the frequency of which can be varied from, say, 300,000 cycles to 2,000,000 cycles. Third, there must be an efficient radio frequency amplifier, adapted to be particularly efficient on a pre-determined frequency, for example, 10,000 meters.

Before we describe the Super-Heterodyne action further, it might be well to describe the plain Heterodyne action. Fessenden discovered that if we had two independent sources of oscillations, each of a different frequency, there would be generated a third source of oscillations, the frequency of which would be the difference between the original two. For example, if one oscillator is working on 800,000 cycles and the second oscillator working on 801,000 cycles, there would be a resultant note of 1,000 cycles. Oscillations below a frequency of about 20,000 cycles are audible to the human ear. Oscillations above that frequency are inaudible.

Suppose, now, that a broadcast station is transmitting on 400 meters; this is equivalent to a frequency of 750,000 cycles, and that we have a loop tuned to this frequency and feed into a tube detector. Now, suppose we have a radio frequency amplifier adjusted to receive 10,000 meters (30,000 cycles) very efficiently, the input of this amplifier coupled to the plate circuit of the loop detector. Then if we adjust the local source of oscillations (oscillator) to 780,000 cycles or 720,000 cycles and couple same to interact with the oscillations in the loop, a third component of 30,000 cycles will be set up (an exact reproduction of the original signal) forced through the coupling device in the detector plate circuit and amplified at the radio frequency value of 30,000 cycles. At the end of the radio frequency amplifier must be placed a second detector tube to provide rectification to bring the signal to audibility. After the rectification, the signal may be still further amplified at audio frequencies.

A typical arrangement of tubes for such a receiver would consist of a first detector, local oscillator, three stages of radio frequency amplification, second detector and two stages of audio frequency amplification, a total of eight tubes.

Considering the Heterodyne action in more detail to enable it to be thoroughly understood. Suppose we strike the note C on the piano in one of the octaves, we hear a certain note; now if we strike the note A we hear a different note and if we strike both together, in addition to the original notes being there, a third note is heard, due to the original two.

Referring to Figure 20. Suppose Oscillator No. 1 is generating oscillations at the rate of 750,000 cycles corresponding to a wavelength of 300 meters. Now, if the receiver is tuned to 750,000 cycles, there
LEUTZ

The classic radio on the right is shown to express the quality of radio that Charles R. Leutz, the writer of the surrounding super-heterodyne article, designed. These 1924 precision sets engineered by Leutz and constructed by a competent craftsman are the most coveted radio to collect. Unfortunately, or maybe not, Leutz had no license agreement to sell a complete unit.

of a Tungar rectifier transformer. In actual practice of radio telegraphy, one source of oscillations comes from the transmitting station and a local source of oscillations used to provide the difference in frequency. This difference is called a "beat" and the note, the "beat note."

The receiver can be made to oscillate to form the second source of oscillations, but it is obvious that if the receiver is to produce oscillations of a different frequency than the incoming wave it must be tuned higher or lower than the incoming wave. This means that the receiver cannot be tuned to exact resonance with the signal and there is a loss of signal audibility. During the change of frequencies, or heterodyning action, an amplifying action takes place known as the "Heterodyne Amplification," amounting to 100 or 150 times amplification or almost equal to one stage of audio frequency amplification.

It must be remembered that if the incoming signal is modulated, or has decrement, it is not necessary to employ any local source of oscillations for an audible signal and a good operator will never use an oscillating detector to receive radio phone broadcast performances. The oscillating detector not only interferes with the neighboring receivers, but will not give good quality of reproduction or stability.

Likewise in a super-heterodyne the radio frequency amplifier must not oscillate. When the amplifier oscillates, heat notes are set up due to the change between the amplifier frequency and oscillator frequency and this distorts the incoming signal. Oscillations are prevented by turning the potentiometer "Stabilizer" arm toward the positive side. A radio frequency amplifier tends to oscillate as the grids are placed negative, and maximum amplification is obtained at a point just below where oscillations start. A best adjustment for the relation between the filament temperature, plate voltage and grid bias potential will be found for good quality of reproduction. It is usually best to work the grids about 4 volts positive, corresponding to the potentiometer being placed 30 degrees in the increase direction.

It would be possible to operate with the radio frequency grid potential full to the negative side of the battery. The only advantage would be a reduction in plate current, but it would not give increased amplification. As this negative potential creates undesirable oscillations in the amplifier, it is necessary to compensate for this action. The oscillations are due to grid-plate coupling either in the individual tubes or even between the different tubes in cascade through the improper distribution of connecting wires. The tube capacity coupling may be neutralized by the Hazeltine method or several other methods that give the same effect. However, as just pointed out, this will not increase the amplification and on the other hand unless the transformers are of very special design, there will be a very noticeable reduction in the amplification obtained.
**Dial To Tune THEATER**

**VINTAGE RADIO LINEUP**

Timothy Templein accord in the SPONVAC RADIOGRAM reports, "In the Washington, D.C. metropolitan area, WAMJ-FM (known as '98.5 FM') is a public radio station that has had a vintage radio lineup on the air for some time. This January is the 21st anniversary of vintage radio broadcasts presented by John Hickman. His program, 'The Big Broadcast,' is currently on from 8 to 10 p.m. est both Saturday and Sunday evenings."

**RADIO SCRIPT WRITING COMPETITION**

American Radio Theatre (A.R.T.) is now accepting entries for their 1985 contest. Barbara J. Watkins in SPONVAC RADIOGRAM writes, "The prize of $500.00 is being offered to the best script submitted this year. Contest rules, writer's guidelines and samples of preferred script format for 1985 contest, write to: American Radio Theatre, 1616 West Victory Blvd., Glendale CA 91201. All requests should be accompanied by a stamped (20 cent), self addressed envelope (#10 letter size - 4 1/8" x 9 1/2").

**SPECIFICATIONS**

- **Power:** 100 watts, with overload protection.
- **Tuner:** Single band, AM/FM, AM 530-1600 kHz, FM 88-108 MHz.
- **Frequency:** 99999 kHz, with an accuracy of 1%.  
- **Amplifier:** 75 to 125 watt, single tube.

**February, 1925**

A 5-tube tuned Radio Frequency Set
Review

WHAT ARE THEIR MEMORABLE SONGS?

Compiled by
Neil and Esther Howard Graham

Have you sometimes wanted to look up a bandleader, singer, or other entertainer to find out what his theme song was or what song he was most associated with? Or maybe you wanted to know what instruments he played or what particular talents he was noted for. Sometimes you might even be curious about when and where he was born or when and where he died. Finally, here is one book with alphabetical listings that will answer these and many other questions for over fifteen hundred bandleaders, singers, composers, lyricists, and other show-biz personalities, starting with Irving Aaronson and ending with Bob Zurke. Not only are the big "name" bands included, but also lesser-known and territorial bands, smaller instrumental and singing groups, vocalists, composers, lyricists, entertainers, and personalities that deserve to be remembered for their signature songs. Certainly your Bob Hopes, Jack Benny, and others deserve to be included, as do the Harlem Globetrotters, their "Sweet Georgia Brown," and even the Indianapolis 500, for its opening with "Back Home Again in Indiana." What Are Their Memorable Songs? is indeed a comprehensive guide to the music of years past. Compiled by Neil and Esther Howard Graham, it is a treasure that will be enjoyed by anyone who thrilled to the sounds of the big bands and have their own store of musical memories.

Vantage Press, Inc.
316 West 34th Street, New York, N.Y. 10001

Leonard, Jack
Marie (w/Tommy Dorsey) vo
Leslie, Ray (Ray Leslie Snead) d dancer B
B 8-18-07, Bath County, VA
Nola (his own favorite)

Levant, Oscar
B 12-27-06, Pittsburgh, PA
D 8-14-72, Beverly Hills, CA
Lady, Play Your Mandolin (cm., 1930)

Levine, Henry (n/n "Hot Lips")
B 11-26-07, London
Basin Street Blues (as leader of combo on show "Chamber Music Society of Lower Basin Street")

Leviner, Dave
B 10-28-08, New York, NY
Daydreams (cm., 1934)

Lewis, George
B 7-13-1900, New Orleans, LA
D 12-31-68, New Orleans, LA
Burgundy Street Blues
Just a Closer Walk with Thee (w/Bunk Johnson)

Lewis, Jerry (Joseph Levitch)
B 3-16-26, Newark, NJ
Rock-a-bye Your Baby with a Dixie Melody

About the Author

Neil Graham is a retired civil servant who has been interested in music all his life. As a member of the Panhandle Fiddlers, he broadcast for a few years over radio station WHKC in Ohio. He has also entertained at many community functions, including the Biennial Chicken's Ball and Kiwanis programs in San Carlos, California. Esther Howard Graham is a legal secretary who has also actively pursued music as a hobby, playing the guitar and singing. Neil and Esther met in 1972, and their mutual love of music soon led to their marriage. They furnish much out-of-print music to people who can't find it elsewhere, and their music library consists of thousands of records and tapes, sheet music, legal fakebooks, and an excellent collection of reference books. The Grahas currently live in Arizona.

service & repair

CH. XXII TESTING INDIVIDUAL RADIO COMPONENTS

ALFRED A. GHIRARDI, B.S., E.E.

Fig. 22-4—A calibrated "resistor indicator" which may be used for determining resistance values, and for miscellaneous other uses.

22-18. Resistor Indicator.—A rather novel little device which finds many uses in the daily work of the radio service man is illustrated in Fig. 22-4. Essentially, it consists of a wire-wound resistor. A slider moving over the resistance element enables any part of the total resistance to be selected. In other words, it is a large potentiometer—and it is calibrated directly in ohms by the manufacturer. The "ohms" scale may be seen in the illustration, along the top of the enclosing case. Two ranges of resistance are available, 100 to 10,000 ohms and 10,000 to 100,000 ohms. The resistance element is protected from accidental overloads and consequent burn-outs by a small fuse which may be seen mounted at the right end.

Although this "resistor indicator" has many useful applications where a calibrated adjustable resistor is necessary, there is one that is particularly important. The service man is called upon to service many receivers in which the resistors are not color coded at all, or are color coded according to some individual manufacturer's system instead of to the standard-RMA code.

Furthermore, a circuit diagram of such a receiver, with all resistor values marked on it, may not be available. If a resistor in such a receiver becomes open, or shorted, etc., the service man has no simple way of finding out what size replacement resistor should be substituted for the faulty one, for he is unable to measure its correct resistance. The correct value of replacement resistor can be determined quickly, however, by disconnecting the faulty resistor from the circuit and inserting this "resistor indicator" in its place. The receiver is then turned on, and the value of the resistor indicator is varied until the voltage drop across the indicator is the same as that which should exist across a good resistor of proper value normally connected in the circuit. From the position of the arm, the value of resistance that should be used may be read directly. If a replacement resistor of the correct value is not at hand, this resistor indicator may even be used to permit temporary use of the receiver until the proper resistor can be obtained.

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ART PLASTIC
By Andrea DiNoto

Taken for granted for years and long considered the very symbol of everything tacky, plastic has undergone a Renaissance of sorts over the last decade. Post-war plastic design—tableware, jewelry, furniture—is turning up with amazing regularity at leading antique shops and auctions. In fact, auctions devoted solely to plastic collectibles are not uncommon. These mass produced artifacts of machine age America now enjoy a new vogue among designers and collectors throughout the world and are the subject of a stunning new book published by Abbeville Press.

ART PLASTIC: DESIGNED FOR LIVING presents the best in classic plastic jewelry, fashion accessories, vanity items, housewares, cameras, radios, furniture and, of course, toys. In her informative and accessible text, Andrea DiNoto introduces even the general reader to the complex history of plastics, which dates back more than one hundred years to the invention of celluloid.

With the invention of plastic in 1909, the modern area of plastics had begun, but it was not until the 1930’s that designers realized plastic’s potential outside of industrial zones. Only plastic could be molded to any shape or form in an infinite variety of bold colors. (The word plastic, incidentally, is from the Greek plastikos, to mold or form).

The 250 rich illustrations, more than 100 in striking color, represent the most fantastic plastic, including the classic shell chair by Charles Eames, colorful tableware by Russel Wright, streamlined radios of the 1930’s, and even the staple of many post war kitchens, Tupperware. Ranging in style from Art Deco to Pop and in function to the purely whimsical, the items pictured in this elegantly designed and lavishly produced volume show the versatility, strength and sheer beauty of plastic.


Dear Jim,
I see it is time to renew again. As you can see I have moved again to Tampa Bay area. I am about 4 blocks from Bush Gardens. I have collected a few tube sockets, brand new, packed 200 to the box, a total of 2,000 made of bakelite, 4 prong with 4 holes for mounting on a wood base made by BBX. They make good trade stock. Also, a few speakers and some telephones. And some HALLICRAFTERS S-76, S-40, two S-22R, SX-42, NATIONAL HF5 no power supply. These sets make for trade as I do not collect AC sets. . . .

Julius Pilger
K2KOB
2000 E. Seward Street
Tampa, FL 33604

Dear Jim,
I hope you had a very good year as far as finding equipment is concerned. This spring I obtained a fair condition JPS1, SE6420 for only $25.00. In September I found a rare AK breadboard 4066, an untuned receiver for a very good price and two weeks ago at a local auction I purchased two AK breadboard receivers, an AK R horn and an AK phone unit. Unfortunately, a dealer there knew what they were but I still got the whole lot for a fair price. The whole lot was advertised as an AK table top radio. I expected to see a cathedral radio so the find was a pleasant surprise.

James P. McKinnon
Bridgewater, New Jersey

Dear Mr. Cranshaw:
First of all, today, I was given an old radio that might have been discarded. While looking for tubes, a man gave me a Silvertone model 4556, table radio, circa, 1936. He said, "It cost me $50.00." He explained that someone left the radio and something else
WANTED

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in front of his shop door at night
and the police called him thinking
it was a break-in. In his haste
or something, to come and investi-
gate he lost his wallet, con-
taining $50.00. And so he gave me
the radio.

I have since cleaned it up,
inside and out, and will send it
to a friend in Erie, Pennsylvania
to repair.

My other radios are:
Our family's 1939 Zenith
console; a 1940 (I think) Zenith
console; a 1933 Atwater Kent model
246 table radio, newly repaired; a
circa, 1928 RCA Radiola model
A-33, a set in a metal chest,
which then fits in a console cab-
inet with the usual speaker
mounting, recent minor repair; a
1924-5 RCA Radiola model AR-812,
a battery operated set, with a 1926
Radiola model 100-A speaker, and I
just sent the works and speaker to
my friend; a circa, 1950 Magnavox
model 245-M radio-phonograph con-
sole combination, and just re-
ceived the works of this back re-
paired; a Phillips table model
AM-FM-SW bought recently for $3.00
in a thrift store and sent to my
friend this week, which looks like
an expensive set, and also, a
circa 1919 Brunswick Uitona, a
phonograph, which with a three way
producer head, plays 78's,
Edison's diamond discs and thin
vertical-cut records as used on
old pathes, it is recently re-
cconditioned.

I will be looking for two
tubes in the AR-812. I don't find
any numbers on them, but it's a
good bet that they are WD-11's.
And if you can't find it locally,
a no. 55 tube for the Atwater
Kent. (I found a no. 47, 56, and
57 tubes for it— the latter
number of which my friend said was
week.

For the 1939 Zenith, the
triangle shaped, ivory plastic
tabs which are labelled voice,
bass, normal and matching ones for
station call letterson the oppo-
site side (some of them). For the
1940 Zenith, the pushbutton
station selector apparatus are
inside the pushbuttons and has a
proper ivory plastic off-on volume
knob with a 2 on it.

I have always loved radio,
the instrument and the medium;
lamenting the loss of drama and
entertainment of radio before
1950.

Will be looking forward
to any information.

James A. Nervick
1150 Westland Road
Mt. Dora, Fl. 32757

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FOR SALE: 2 SETS OF RIDER MANUALS; 1 TO 22 AND 1 TO 10 ADDED PLUS UP TO 2 TO 19. — FRANK BRESSLER, 3RD STREET, BAXTER SPRINGS, KS 66713.

FORTY YEAR COLLECTION TUBES. SASE LIST OF TYPES REQUIRED AND PRICING QUOTES. LEY, 4141 KRUPP DRIVE, EL PASO, TX 79902.

FOR SALE: MUSIC MASTER SPEAKER. REST $100.00. A.K. 355 C. SPEAKERS HTER SAME SUPPLY w/ 125.00 A.K. 46 IN секретаря, cabinet, rest. $250.00 Crossleys, superhet and other radio tubes for sale. SEND SASE for list. OLD RADIOS, 634-A West North Avenue, Flora, IL 61859 (618) 662-7056.

FOR SALE— INTERESTED IN 2 OR MORE OF THE SAME TUBES, TUBE TYPES, SUPPLIES. SASE FOR LIST. NO SASE, NO SASE.

FOR SALE— UNTESTED, PICK UP ONLY, WILL NOT SHIP. SCOTT LABS, CHICAGO 800-B CHASSIS AND POWER UNIT, NO SPEAKERS $75.00, E.H. SCOTT RED OX 4 BAND BC AND SM REC HAVE $75.00 EACH MADE FOR NAZI, TYPE OMI 465-555-A RADIO, 15 TO 60 $100.00, HALLCRAFTERS 508 $150.00, MARCONI 6 BAND, MADE IN ENGLAND, PRE WWII, NEEDS REPAIRS $65.00, KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

FOR SALE— CATHEDRAL, BATTERY AND A.C. RADIOS, SEND SASE. J. ALBERT WARREN, BOX 279, WAVEY, PA 18471.

DI CRYSTAL, ONE TUBE sets, kits, plans, handbooks, coils, supplies. Oscillogra tube catalog. Catalog $1.00; none free. Laboratories, 1477 H, Garden Grove, CA 92642.

FOR SALE — CRYSTAL, PARTS, SCHEMATICS, AND SPECIAL POWER SUPPLIES. SASE FOR LIST TO: Les Locos, 1528-76 Monument Blvd., Concord, CA 94520.

FOR SALE— ALL UNTESTED, PICK UP ONLY, WILL NOT SHIP. SCOTT LABS, CHICAGO 800-B CHASSIS AND POWER UNIT, NO SPEAKERS $75.00, E.H. SCOTT RED OX 4 BAND BC AND SM REC. HAVE $75.00 EACH MADE FOR NAZI, TYPE OMI 465-555-A RADIO, 15 TO 60 $100.00, HALLCRAFTERS 508 $150.00, MARCONI 6 BAND, MADE IN ENGLAND, PRE WWII, NEEDS REPAIRS $65.00, KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

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ANTIQUE CLASSIFIED is the new "National Publication for Buyers and Sellers of Old Radios and Related Items - Published Monthly." Since the first issue in September 1984, A.R.C. has attained rapid growth and acceptance by collectors all over the country. With the largest listing of classified ads of any old radio publication, A.R.C. was started to serve the needs of the collector in the buying and selling of radios and related items, and to serve as a national unified forum for collectors in the hobby.

Besides the large listing of classified ads, there are display ads from dealers providing services and supplies, along with interesting articles written by other collectors in the hobby. If you wish to be kept abreast on the latest collecting trends in the old radio hobby, then a subscription to Antique Radio Classified is the answer. Published monthly, 12 issues per year, the cost for a subscription is only $15.00. For only $1.25 an issue, you can see what is happening in the radio collecting market, as well as being able to run a free 20 word classified ad per issue. Still not convinced?, then send for a sample copy at $1.50 ppd.

ANTIQUE RADIO CLASSIFIED, 9951-9 SUNRISE BLVD, CLEVELAND, OHIO 44133
WANTED

VINTAGE ABBEY ROAD, 1200 South 28th St., Auburn, WA 98001.


WANTED: KARLSON SPEAKER ENCLOSURE IN RELATIVELY GOOD CONDITION. MARK SKINNER, 1420 ANNA ROAD, PELIN, IL 61556. (309) 353-1882.

WANTED: BRASS OR FANCY decorated panelized radios, fancy cathedrals, horns in excellent or mint condition. 1 tube sets and WD 11 tubes. Rod Stidham, 4011 South 28th St., Auburn, WA 98001.

SCOTT COLLECTOR NEEDS SCOTT 12 dial parts, escutcheon, knobs and cabinet. Wanted to buy Scott Philharmonic. Denis Yanko, 410 North Summit, Oconomowoc, WI 53066, (414) 965-5641. Collect after 5:00 p.m.

WANTED: VERY GOOD R.C.A. MODEL 103 SPEAKER. WILL PAY $90.00 FOR SPEAKER. IT IN MINT CONDITION. LET ME KNOW WHAT YOU HAVE. WOULD LIKE TO BUY THE BEST ONE I CAN GET. QUOTE YOUR PRICE AND CONDITION. RON HURCICK, 915 CRANE, DEARBORN, IL 60115.

SCOTT: SCOTT RADIO COLLECTOR wants to purchase Scott Philharmonic, any version. Also, would anyone with a Scott Napier Console, please contact me. I have a question concerning it. Denis Yanko, (414) 965-5641. Collect after 5:00 p.m., 410 N. Summit, Oconomowoc, WI 53066.

SPHERICAL OR TUBULAR AUDION, #5514 transmitting tube, top for Radiola 100 speaker. Early light bulbs, will buy or trade for tubes. Harbeck, 13408 Westwood Ln., Omaha, NE 68144.

WANTED: 1924 GOLDEN — LEIJH 9 tube Super Philyene. also, any information on Raven Radio 12 tube superhet. Duane Bylund, 5133 West 5400 South SLC, Utah 84118, (801) 967-6987.

WANTED: SOURCE FOR ASTATIC OR RCA CARTRIDGE AND NEEDLE FOR 1930's RCA PHONO. DAVID HAMMON, 1117 EAST FIRST STREET, LONG BEACH, CA 90002

BURNS PYRIN SHELL AND RADIOCA UE-1320 LOUDSPEAKER, DIAL FOR PHILCO 57-61. DALE WILSON, 105 1ST STREET WEST, JORDAN, MN 55352.

(612) 492-6338.

WANTED: 1 TUBE SETS, CRYSTAL SETS, GREGE OR EQUIPMENT. RAY GARNER, ROUTE 1, BOX 330, BIG SANDY, W. 38221.

ELECTRO- MEDICAL AND QUACK DEVICES, BOOKS WANTED. INTERESTED IN FLOOR MODELS AND IN DEVICES WITH MULTIPLE RODS RESPONDING RADIOS BUT WHICH ARE NOT RADIOS. I AM ALREADY SATURATED WITH VIOLET RAY DEVICES, SIMPLE 40 BATTERIES. PLEASE DESCRIBE AND PRICE, OLE LINDON, 1606 DORCH ROAD, CLEVELAND, OH 44121

WANTED: W.E. ELECTRON TUBES. I buy most everything the Japanese buy, plus a lot more they don’t bother with. I pay more, pay faster and I’m easy to contact. Call or write with anything of interest. Charles Drippe, 4031 Mason Road, El Monte, CA 91731, (818) 444-7079

WANTED: ANY AND ALL INFORMATION on the "Radio-Pen" facsimile receiver by John V. L. Hogan, August 1934 Radio News. Anyone who owned and operated it? D’Arcy Browerigh, P. O. Box 292, Chelsea, Quebec, Canada, JXK 1NO.

We take liberty herewith to introduce ourselves as being a long established importer of antique mechanical music. ALWAYS WANTED: VINTAGE AND ANTIQUE RADIO, HORN SPEAKER, VINTAGE T.V., CATHEDRAL RADIO, GRAMOPHONES, PHONOGRAPH, POLY PHONE, JUKE BOX, CRYSTAL SESENTIONS, MUSICAL BOXES, TYPEWRITER, SEWING MACHINES, TELEPHONES, WESTERN ELECTRIC AUDIO PRODUCTS, AMPLIFIER, DRIVERS, HORN AND SPEAKER SYSTEMS, ANY SPARE PARTS, OLD CATALOGUES AND FOSTER, AND ALL OTHER OLD MECHANICAL ITEMS. TOP CASH PRICES PAID, whole collection or single items. We will travel any where to collect, if you have them in hand. Please contact us with prices and photograph to: MR. PIPET W. POULDF, 9 Sothton Rosn Road, Kolq toey, Bangkok 10110 Thailand. Tel. 266-9547.

RCA AND AC A.K. CATHEDRAL in very good to mint. AC A.K. Kiel parlor table with original finish, with or without chassis; 5 Zenith knobs for farm radio, page 191 F.O.S., Jeff Vance, 1819 West Rovey, Phoenix, AZ 85015.

WILL PAY IN WD11’s or cash for: (1) Crosley 59 chassis, working or non, (2) Radiola 26 battery box, (3) Pre-1924 DeForest items, (4) WD items, (5) 1920’s portables, (6) Radio station RF transformer for superhet. Rosenthal, 507 S. Maryland Avenue, Wilmington, DE 19904.

WANTED: PLUG-IN COILS, 4-5-6 PHONOGRAPH TYPES, WITH GOOD WINDINGS, TYPES OR SEGS. BOB WEIDE, 4178 CASIN STREET, OCEANSIDE, CA 92056.

VU METER for Roberts Reel to Reel Tape Recorder Model 1920H or PT Part No. 54-13. Cecil E. Wallace, 1345 Oak Meadows, Dallas, TX 75222.

ATWATER KENT AK5, AK10, AK12, MAGNAVOX R2, R3, MEARON CRYSTAL SET, WILL PAY HIGH PRICE IF GOOD CONDITION. 102 KOKOHIGHTS, 316-13 YAMAGUCHI, TOKOROYAMA-SHI, SATIMA-KEN JAPAN.

AAA WANTED: I PAY SAME PRICES for all tubes listed by Japanese’s ad and also look for Western Electric, Mixers, Consoles, Drivers, Transformers, Horns, Speakers, Parts, Etc., and Old Thanny Speakers and McIntosh, Marantz Tube Type Amps. Tel. (818) 576-3642. David, PO Box 832 Monterey Park, CA 91754.

WANTED: VERY GOOD ATWATER KENT model "E" speaker. Quentin Galbraith, 4303 Kingsway, Farmington, MN 55026

WANTED - WANTED BUYERS (CASH) FOR A 45 YEAR ACCUMULATION AND COLLECTION OF OLD RADIOS, SPEAKERS, TUBES, PARTS, TEST EQUIPMENT, METERS, SERVICE MANUALS AND RADIO PAPER, MAGAZINES, A FEW TRUCK LOADS NO LISTS BUYER TO REMOVE AND TAKE ALONG. KRANTZ, 103 EAGLE AVENUE, SCHENECTADY, N.Y. 12303. (509) 783-0400.

NEEDED: A COMPLETE ORIGINAL MAGNETIC "pickup", in as good an original working condition as is possible, for the electronic restoration of a 1929 R.C.A. Victor model no. RE-45 combination radio/phonograph. David E. Smith, 460 Cortez Drive, Florissant, MO 63031-4121.


WANTED: PILOT AC SUPER WASP WITH COILS, MUST BE IN GOOD CONDITION. CASH OR TRADE ATWATER KENT BREAKDOWN COMPONENTS. BOB HERRING, 404 WAINE, 4178 CHASIN STREET, OCEANSIDE, CA 92056.


WANTED: TUNING CONDENSER for Philco model 60, also tuning dial and knobs. (715) 825-6744. Russell Schoen, RAI, Box 224, Clintonville, WI 54929.
ATTACH PHOTO HERE
the cost is $5.00
FIRST 20 WORDS FREE

Top-Ten All Time Standard songs
as listed on a national TV program in 1982:

1. Stardust (1931) 
2. St. Louis Blues (1914) 
3. September Song (1938) 
4. Body and Soul (1930) 
5. Summertime (1935) 
6. Stormy Weather (1933) 
7. All the Things You Are (1939) 
8. Someone to Watch over Me (1926) 
9. Blues in the Night (1941) 
10. Somewhere over the Rainbow (1939)