The above picture was the first broadcast from station WEAR, Baltimore, Md., Aug. 4, 1922. Although technical details are missing, it is a safe bet it was the familiar setup of a self-excit ed oscillator with hinging modulation using either UV-202's or 203's, single button carbon mike and a flat-top antenna. On the table one can see some wet "B" batteries and just in front of the trans­mitter is a large Eveready "B". A good guess would be the high voltage was obtained from a MG set since there is a motor starting box in the foreground. Note the haywire and the crude floor mike. On the table in front of the "B" battery is an early RCA microphone transformer and barely visible behind the panel is seen the familiar RCA edgewound transmitting helix. Using a magnifying glass on the original print it was possible to make out the name of the monitoring receiver in the center of the table — a Kilbourne & Clark crystal set!

Many A.W.A. members participated in constructing and operating early BC stations, Ed Raser (W2ZI) pioneered in Trenton, N.J., "Ducky" Dengler (W2IX) in Rochester, etc. All this reminds
us of a story told sometime back by Dick Kaufman, KE2MR, in Schenectady.

The time was 1922 and the place Des Moines, Iowa. Dick had just switched from spark and was the proud owner of a modern CW ham transmitter using a single UV-202. For occasional phone operation he would insert a loop connected to a carbon telephone mike for absorption type modulation.

One evening after supper while operating the rig, the telephone rang --- it was the Managing Editor, Mr. Waymack of the REGISTER & TRIBUNE newspaper. He had been listening to Dick and wanted the loan of his transmitter as soon as possible. The reason: his newspaper was committed to go on the air and the parts for the transmitter had not been delivered. There was real urgency since there was the need to beat a rival newspaper (The MBB) as the city's first broadcast station.

By midnight, 4 hours later, the transmitter was on the air under the call WGF and history was made ! --- however, not without a problem. Dick's motor generator operated on A.C. and the mains downtown were D.C. After routing up a power company man to scout out a 110 v. D.C. motor, they were in business...

HOMEMADE MAGNETIC DETECTOR -- Another member accepted the challenge of making a magnetic detector. Jack Gray, W2JUV, recently completed one and reports it brings in the local BC station clear as a bell. Every effort was made to have it like an original Marconi. Jack was fortunate to obtain some fine iron wire for the belt. Outwardly, it looks very much like the real thing including a glass cover. Obviously, the spring motor would be difficult to duplicate. In this case an old phonograph motor does a nice job. In general, it is somewhat similar to the one made by W2BXX and W2QA.

To help the layman, the magnetic detector was the first practical detector of radio signals to follow the coherer at the turn of the century. Perfected by Marconi, it was used extensively in Marconi ship and shore installations until around WWI. Working on a hysteresis principle, a slow moving iron wire passes two horseshoe magnets and coil. We might add the Wire Recorder of a few years back is a distant relative.

Few of these beautiful instruments can be found. Here is a list of known original Marconi Magnetic Detectors in North America. Know of any others? We may have missed a couple:

Alright fellows-- what is it?? Jack Berman, WLBW, picked it up with some other wireless gear. He has had several good guesses but nothing positive. The support is a hollow glass tube.

A.W.A. SPRING MEET
Saturday Afternoon, April 27th

Host: Lauren Peckham

Location: Brehoport, N.Y. (between Ithaca and Elmira)

Schedule: Dinner followed by short talk and swap session.

Lauren's museum is most unique. In addition to a fine display of early radios and a recently acquired tube collection, he is also a collector of early phonographs, player pianos and organs. The latter can hold the visitor breathless-- and we mean just that: He dis-assembled a HUGE THEATER PIPE ORGAN and moved it into his home. After two years of work it is in operation. Need we say more? Advance dinner reservations are an absolute must. Please notify Link Hummel, 69 Boulevard Parkway, Rochester, N.Y. 14612.

- Smithsonian Institution, Washington
- Canadian Marconi Co., Montreal, Canada
- A.W.A. Museum, Holcomb, N.Y.
- Hi Houser, Trenton, New Jersey
- Earle Young, Rochester, New York

Value on collector's market? Somewhere between $350 to $800 depending on condition and whether it is British or Marconi type. (Photo of a "Maggie" can be found on front page of OTB, Vol. 4, # 1)
HONORARY DEGREE
DOCTOR OF SCIENCE

was recently conferred on A.W.A. member Charles Peterson (Rochester, N.Y.) by President Demarcy of Seattle Pacific College. Charlie's biography could cover several pages but of interest to us is after graduating from University of Washington (E.E.) he was in charge of the testing laboratory for Kilbourne and Clark (Seattle), a famous manufacturer of early ship wireless equipment used primarily on the Pacific Coast.

Many interesting experiences followed and eventually we find him in Cincinnati demonstrating a new type of loudspeaker to Powell Crosley Jr. With the help of Charles Taft, son of President Taft, a patent and manufacturing contract was drawn up with Crosley to manufacture the speaker --- the world's famous Crosley Musicone (1925). Within a year they were making as many as 3000 "Musicones" a day! The photograph shows Peterson checking his models with other makes including W.E., Farrand and Rola.

Charlie's inventive career continued, with Eastman Kodak Company being the last company and the one from which he retired. Almost forgot --- he started in ham radio (1905) using the call "CP" followed by 7CW, 7XJ, etc.

Congrats OT!
Old Time HAM-ADS

TRADE: Large collection of wireless magazines, books, callbooks and catalogs dating back to 1904. Want early wireless sets. Harry Cap, 190 Beach St., South Dakota, 57226.

WANTED: De Forest loading condenser # UCB-1500 or CS-1502, de Forest CV-1003 variable condensers with vernier if possible, ¼ inch slider for loose coupling. Also panels for de Forest unit set. Glen Angle, KZTAM, Clear Lake, Iowa.

WANT to swap old sets. Also interested in a Heath Kit crystal set. Write: Jack Allison, 9 Genesee Drive, Comstock, L.I., N.Y. 11725.

SNAP or pay cash -- want early photo cells, various types Arcturus tubes, WE-25 tube, de Forest "H", WJWW, 1402 S. Fourth St., Effingham, Ill.

WANTED: Early broadcast receivers particularly AK broadcast. Will be at W.N.Y. Hamfest (Rochester) in May. Write: Bill McPherson, VE3MM, 1066 Finch Ave., Pickering, Ontario, Canada.

INFO WANTED on Frank Gribes' "Baby Grand Duplex" receiver. Any info would be appreciated. Art Brittingham, Rte. 3, Box 671-B, Merritt Island, Florida 32952.

SNAP--need Remler drum dial and brackets. Also need late manufactured Raytheon X-99 tubes. Have items to swap. Russ Worthy, 389 West Main St., Bloomfield, N.J. 01247.

WANTED: Deskstand for SE and DB mike, ARRl handbooks 1 thru 5, SW-3 with coils, pre-1925 all-wave receiver. Art Peterson, W7CEB, Rte. 1, Box 20, Garfield, Washington, 99130.

SNAP German NORA Type X-62 receiver with Beastika on cabinet for early receiver. Need Stromberg-Carlson #3-A audio trans. and OMI radio fuse for S-C Mod. #1-B John Bargum, 403 Hamilton St., Roanoke Rapids, N.C. 27870.

SELL: Large quantity of early magazines such as Modern Electrics, QST, Wireless Age, etc. Also 88 copies IRE Proceedings. No reasonable offer refused. Send SASE for list. El Raser, WE2Z, 19 Blackwood Drive, Trenton, N.J. 08690.

WANT: De Forest items for memorial in de Forest's home town. Art Trauffer, 120 Fourth St., Council Bluffs, Iowa.

SELL or SNAP file of QST 1921 to 1954 and miscellaneous copies 1922 thru 1938. Also list of books. Looking for Magnavox -- horn only. Warren Green, W7JY, 7202 N. Mercer Way, Mercer Island, Washington 98040.

SNAP -- AK Mod. 854, de Forest D-01A tube and other items, Need loop antenna, 201-A tubes, Browning-Drake set. William Johnston, 365 Grant St., Sharon, Penna. 16146.


SNAP six early radio books for 1921 or 1922 U.S. Government Callbook (amateur) or Xerox copy of same. Don Gupplill, WI2AO, 17 Park Street Ct., Medford, Mass. 02155.

WANTED: -- Radiola VII-B, Croasley 4-29, "Radio Broadcast" magazines 1922,23 and 24. Have Aeriola Sr., Radiola R8 and lots of old magazines for trade or will buy. Paul Thompson, 2930 ½ De La Vina, Santa Barbara, Calif. 93105.


FOR SALE: complete set of "QST" magazines to March 1967, Mint condition. $125 FOB Syracuse, N.Y. to settle estate of W2AE. Write W4ID, callbook address.


FOR SALE: early broadcast receivers. Send SASE for list. John Drake, Box 507, New Canaan, Conn. 06840.

WANTED: -- Instruction manual for Grebe Synchrophase Type MJ-1 and a source for some OLA tubes. Madell Reynolds, K4AAD, 2204 Linde St., N.W., Huntsville, Alabama, 35810.
A.W.A. INFORMATION

MUSEUM HOURS: Open only by appointment. Best time is a weekday evening. Write or telephone:

BRUCE KELLEY 315-657-7489
LINK CUNDALL 716-663-0856

If neither are available, call George Batterson or Charles Brelsford (Rochester, N.Y.)

A.W.A. BULLETINs: Available ONLY to members as a news journal. Printed every 12 weeks and mailed in March, June, September, and December.

LETTREs: When writing to either Secretary or Treasurer -- please send a self-addressed stamped envelope for reply.

ANTIQUE WIRELESS ASSOCIATION
A.R.B.L. Affiliate

A non-profit amateur organization documenting the history and technology of wireless and the work of its pioneers.

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Club Station - W2AN

"THE OLD TIMERS BULLETIN"

A news bulletin printed for members of the Antique Wireless Association.

Editor: Bruce Kelley, W2ICE/QCP
Make-up Editor: Larry Triggs, W3Y9K

Annual Dues: (Including the "Old Timers Bulletin", certificate and other benefits) -- $4.75 per year payable to Club Treasurer:

Lincoln Cundall, W3WY
69 Boulevard Parkway
Rochester, N.Y. (14609)

Address all correspondence concerning Bulletin to: Bruce Kelley, Main Street, Holcomb, N.Y. (14609)

GREENLEAF WHITLIER PICKARD -- Harry Cap (Bridgewater, Mass.) obtained a book sometime ago from a nearby old timer who in turn obtained it directly from G. W. Pickard. The book has great historical value since it is a record of trials against others who were infringing on his crystal detector patents. In the back of the book are original notes and sketches in his handwriting from May 29, 1902 to August 28, 1906 -- relating to his experiments -- proving he was the original inventor of this type of detector. You've got something there Harry!!

CORRECTION: page 12, Vol. 8, #3 under heading "SHIP DX"... the correct magazine is ELECTRONICS ILLUSTRATED and not POPULAR ELECTRONICS....
From Wireless Sta. 8VX, 48 Glenwood Av. Buffalo, N.Y., Jan. 3, 1917

At 1045 P.M. Eastern time, we heard you calling—talking to 8VX.
Local—long distance QRM bad. QRM Little York sign very loud.
This is in confirmation of our short talk.
Hope to do better next time. Will write later.

We have a 70 ft. lat top, 6 wire aerial, spaced 3 ft., 45 ft. high, pointing North from lead in. Ground: 8 No. 14 wires connected to water and gas pipes in cellar. Own make 1 kw. closed core, 25 cycle, 20,000 volt transformer. Gap: 8, 1-4" brass points mounted on 11" circle on marble back, arm revolves with motor shaft. Oil Condenser, 20 8x10 plates in series parallel, adjustable. O. T.: Pancake type, 20 gage brass ribbon 5-8" wide, secondary 10 turns spaced 1-2", outside turn 13" diameter, primary 2 turns, coupling 4 1-2". 5.3 amps with H.W.A. in aerial ekt. Regenerative receiver. A description, as above, of your set would be greatly appreciated. #73"

WM. T. FRASER

EARIEST QSL CARD?

stirred up lively interest without any definite answer. Hal Dinger, W3KX, has a nice article in the Spark Gap Times on the subject with some history. Ted Duvall, ex-3DW, sent us some old qsl cards dating pre-WWII and since verification cards were becoming popular in some areas by 1916 or 17 but can be anybody's guess who sent the first one. The card above was received by Ted and is postmarked Jan. 3, 1917 and proves qsl cards were around before WWII. Others were dated much earlier.

DUNLAP SENIOR/JUNIOR -- while thumbing through a 1906 SCIENTIFIC AMERICAN I noticed an article on the Niagara Falls hydro-electric installation written by Orrin E. Dunlap. I hastily wrote Orrin congratulating him on the fine article written when he was a very young man. A prompt reply brought me up to date --- it was written by his father of the same name --- hence the reason for the "Jr." following his name in his numerous publications and books. While on the subject of "Scientific American", Orrin reminded me he was the Corresponding Editor in Charge of Radio for the magazine from 1925 to 1928! As most of you know -- he was also Radio Editor for the NEW YORK TIMES.

Mark this date on your calendar: SATURDAY, OCTOBER 5TH

CLASSIC FIND OF THE YEAR

To "Curly" England of Los Angeles goes the award for having added to his collection of classic receivers the "winner of the Year". What is it? A beautiful 1941 SCOTT SPECIAL COMMUNICATION receiver. It was considered the ultimate in its day! Why? Look at these specs: 28 tubes with P.P.P. 616's in output to 3 speakers. The receiver proper (all chrome plated) has 20 tubes with the remaining on a separate amplifier/power supply chassis.

Described in October, 1940 issue of RADIO & TELEVISION, it had all the advance features of a present day communication receiver with 9 band tuning range from 140 KC. (VHF) to 64,000 KC. (VHF) ! Some of the advance circuitry would even be unusual today. One should see the graphs on sensitivity, bandwidth, etc. Speaking of Scotts -- Earl says he has one more to go -- the one built in 1936 which had 40 tubes! Early Scotts usually had 12 tubes and as many as 33 in some of the "Philharmonics". Adding all the tubes in the various Scott receivers in his collection, he finds he has a TOTAL of 552!

COLIN B. KENNEDY -- who was he? When did he start his company? When did they stop manufacturing receivers? What happened to Kennedy? -- these and many other questions are frequently asked by A.W.A. members. If you have some of the answers --- drop a line to the Editor at Holcomb, N.Y.
Charlie Peterson (ex-7CW) dropped by the Office the other day and left a tube unlike any I had ever seen. Other than having acquired it back in the mid 20's he didn't have too much info on its origin other than the Crosley Corp. had considered using one in a receiver. Of interest, Charlie recalls they were going to have Arcturus manufacture them. Needless to say, nothing ever came of it. Now for the tube.

It is a HUTH Type PIAV.9 manufactured in Germany sometime around 1923 or 24 by Dr. Erich Huth. It has the conventional split 4 prong European base -- but the internal construction is where you find the difference. Instead of a grid -- it has another plate acting as the control electrode!

This sorta baffled us --- so a letter to Jerry Tyne brought what we wanted to know. He appeared quite familiar with the tube and called to our attention there was a picture of one in his SAGA OF THE VACUUM TUBE in the April, 1946 issue of RADIO NEWS. Unlike normal construction with the control element or grid between the filament and plate -- this tube had the input element in the form of another plate BACK of the filament! There is no question but what the tube would detect incoming signals but its amplifying characteristics are very questionable. This, undoubtedly, was the reason Crosley never used one commercially.

Jerry told us the Huth Company manufactured tubes during WI and eventually was taken over by Telefunken and C. Lorenz in 1926. Tyne also called to our attention that the tube was built very much in accordance with de Forest's U.S. Patent #841,387 applied for October 25, 1906, titled "Device for Amplifying Feeble Electrical Currents". De Forest, however, placed the plates equidistant from the filament. Huth improved the performance by placing the control plate much closer to the filament.

As an anti-climax, we visited Lauren Peckham recently -- and sure enough, there was a similar tube in his museum!

**Navy Raises Highest Tower in Southern Hemisphere**

Norm Barton mentioned in the last OTE (p.19) of having received our high power longwave station in Western Australia. VLF readers may be interested in more info on this huge installation.

The center tower is 1,271 feet high (higher than the Empire State Building) making it the highest in the southern hemisphere. Around the center tower are 12 smaller towers with an antenna system of 40 miles of wire and 60 miles of guy! Beneath the array (which is over a mile and a half across) is buried one million feet of copper cable serving as a ground. Normal power output is one million watts supplied by six 3 million watt diesel generators! It is believed to be the world's largest installation devoted entirely to VLF transmissions. Who will be the first AWA member in U.S.A. to receive the station?
CHARLES CLOSSON (San Jose, Calif.) placed a Fada 160, a Ware "X" reflex, etc. on the museum shelf. All told, Charlie has over 30 receivers plus misc. items such as WWI Signal Corp crystal set, etc. He reminds us to be on the lookout for the April, 1958 issue of RADIO ELECTRONICS if you want a fairly good run down on Gernsback activities and publications.

KEN CONRAD (W2IE) has been concentrating on collecting tubes of late. He has all those listed under RCA in the last QTH. Ken sees the de Forest 15 Unit Panel set should be finished by spring. Let’s hope he brings it to one of the meets.

JOE ANDERSON wants info circa 1917 on John Stone Stone reviews of the work of Lodge, Marconi, Tesla, Thompson and others. The article has been partially quoted in the past. Does any AWA member have knowledge of the original?? Write Lee at: Five Circle East, Minneapolis, Minn., 55424

JOHN SCHNEIDER (Custalil, N.Y.) is now up to 48 receivers plus... still no AK breadboard. John suggests sending a model to Japan and have them manufacturer "breadboards" in quantity for collectors here in U.S.A. !

DICK GERHACE (W7YH) has available circuits of many early sets. He wonders if there would be a market for duplicating such info? (Ed. note: Good idea... trouble and effort would be worth at least a buck per circuit providing Dick doesn’t run into copyright problems on later circuits...)

JOHN HURSTY is starting to build up a sizeable collection but finds it difficult to obtain information on some of the off-brands. As an example—he has an "Arbophone" TRF job made in Ann Arbor, Michigan. Anyone have info on this set? (403 Hamilton St., Roanoke, N.C. 27670)

LAUREN PREXHAM has on a semi-loan basis one of the finest collection of tubes seen for sometime. A few examples: new spherical audion in original box, French tubes, seldom seen UX-260, UV-196, etc. These tubes can be seen at the Spring Meet in April.

TED WOOLER (WALAMP) located an off-brand "Standardyne" receiver made in nearby Worcester, Mass., in mint condition plus a Crosley 51 portable in the original leather case. Ted also had lotsa fun with a "B" eliminator acquired in the same deal.

GLEN ANGLE (KOTAM) latched on a nice Wm. H. Duck Arlington loose coupler and has his eye on a Grebe CR-8 and 9. Glenn is doing well in collecting catalogs too... just added another Duck making total of 3 different ones...

JAMES STRIDER—collectors of several years back will be glad to know Jim is back in business again although not as an ardent collector as formerly. It will be remembered he founded an organization for those interested in primarily BC receivers. He is located at 321 W. Senner St., Somerset, Penna. 15501, and making observations at the nearby Airglow Observatory.

HARRY CAP has a Federal 220 and would like to know how or where it was used. It was not mounted in a conventional cabinet but possibly used in a phono combination or similar installation. Can you help him? 190 Beach St., Bridgewater, Mass. 02324

BOB FABRIS (Mipites, Calif.) does alot of cross-country flying and would like to visit various AWA members. In between, Bob located a nice 1932 R.F. Scott All Wave receiver..

COL. FRANK SHANNON (W3QR/K4GT) has another new QTH: 140 Ixion Avenue, Tampa, Fla. 33606. Frank finally found a copy of the novel "Nymph and the Long..." he sees, "Watta story, wow!"

JOHN CAPERTON (Louisville, Ky.) has been in there really pitching of late. John added a portion of Bill Traver's collection to his which included some rare pieces. He now finds himself looking for transmitting gear as well as BC.

BOB CLOUSER (Montclair, Calif.) swapped us with a lengthy list of new items in his amateur museum. The list included everything from DB mikes and flameproof keys to Harkness reflex receivers and rare French tubes. Who sees there’s nothing left on the West Coast? Good going Bob...

FRANK NICHOLS (W4AXE) leans more toward amateur and commercial. He finally restored his rare 1910 receiver using an electrolytic detector. Missing was the 1st piece of Wollaston wire which cost him $3.00! A photo will be printed in the QTH showing some of the collection including a 1 KW rotary spk set....

TAYES ROAD (Utica, N.Y.) in search of more room is giving up part of his large collection; however, the interest is still there and we may see him at the next Meet.
TED HANNAH (K3CUI) is one of the lucky fellows to have found a copy of Gleason Archer's HISTORY OF RADIO TO 1926. Other books are Carnell's book on de Forest, and the "First Quarter Century of American Broadcasting" by Shurick. Ted also prizes a 4 volume set of RCA Victor Service notes. Equipmentwise-- he placed a Pilot 3 inch TV on the collector's shelf.

ROD SCHROCK (Somerset, Penna.) has a McMurdo-Silver he is restoring. Rod is faced with the same problem as many others-- where to find the circuit, I.F. freq., etc. Only suggestion is to check with well established radio service shops and try and talk them out of some old Riders Manuals. Then of course, old radio magazines pay off.

ED RASER (W2ZI) We were a little late in reporting Bill's latest "Safari" to the West Coast. Needless to say, he had a wonderful time and hit most of the top collectors from Southern Cal to Howard Fyle (W7OB) in the north. He did miss a couple, however, including Vance Phillips (W6GK) who was in Australia at the time.

BILL LAVERTY (Janescombe, Penna.) is still buying and selling. He is trying to restore an old Amrad and needs an original varimenter. New gear includes another Kennedy, a rare W.E. 4B super with tubes, etc.

TED PENN (Kansas City, Mo.) came in 2nd place in an "Old Time Radio Contest" sponsored by the 3 radio stations in K.C. He won with a 1922 Clapp Eastham. All sets had to be working. Ironical, but the owner of the FIRST prize set owned only one receiver-- whereas Ted has 25 sets in his collection....you just can't win!

EARL ENGLAND (Los Angeles) has not been heard from for sometime but he has been REAL busy. Look at this partial list: Navy SB-1012, Murdock Type CS-32 receiver, Northern Electric receiver using (5) W.E. 215-As, an Ultra Radio Frequency receiver amplifier Type 401 using six (6) Myer tubes mounted on the front panel! Good going Earl...

ROSS SMITH (Elkhart, Ind.) sent the AWA a nice color photo of Marion Armstrong at the Dearborn Meet. Winter has been slow for Ross but he did find a beautiful Magnavox horn speaker Mod. M-1 with gold leaf finish.

INSULATOR COLLECTORS?

How many members collect either antenna or pole/telegraph/telephone type insulator? How about a short article someone telling us what to look for...what is rare, etc..
On Review

**ELECTRONICS IN THE WEST** (The First 50 Years) by Jane Morgan, comes in FIRST PLACE as the top book this past winter. The words "Electronics" and "West" did not particularly excite this radio historian here in New York, so we did not get around to read it until February although it had been released earlier.

And here is where we were mistaken for a great part of the book is devoted to the work of old friends such as Lee de Forest, Haraden Pratt, Fred Kolster and Philo Farnsworth. Jane Morgan briefs the layman on the famous Federal Telegraph Company, tells about Jack Kaufman and Ralph Heintz, founders of Heintz & Kaufman, Bill Eitel with Rimsac and others.

The first chapter proved amusing and informative. It tells of the first ship-to-shore wireless message in the United States preceding Marconi's demonstration by one month (August, 1899) making another "first" for California. Most of the material is confined to activity around San Francisco including early amateur operation.

**ELECTRONICS IN THE WEST** will fill in some gaps in the amateur historian's library. We highly recommend this book. It is easy reading, well illustrated and reasonably priced. (Yes, there were a couple mistakes but nothing to get excited about....)

**PRICE:** $4.95

The National Press
850 Hansen Way, Palo Alto, Calif. 94304

**INVENTION OF RADIO** Edited by A.I. Berg of Moscow and printed in Moscow, 1964. Reviewed by Ted Hansen, K3CUI in the magazine TECHNOLOGY and CULTURE, July, 1967. This 284 page book appears to be the last word in proof that Alexander Popov was the inventor of radio. The premise and theme of the book are neatly summed up in the concluding sentences of the introductory summary:

"The documents contained in this collection show that a radio communications system was devised, publicly demonstrated and described in print by A.S. Popov considerably earlier than it was by others, including G. Marconi. The Russian scientist A.S. Popov is, therefore, the inventor of radio."

Ted does a scholarly job detecting and pulling apart their evidence and concludes Popov is not really -- "The Father of Radio"....(hi)

**VARIOMETER RADIO** by Art Trauffer in the January issue of RADIO-TV EXPERIMENTER. Another short article by Art. This time he tells how to build a simple receiver using an old fashion variometer. In fact, if a variometer isn't handy, he tells how to build one:

**THE ELECTRIC WORD** is the odd title of a book written by Paul Schubert in 1968. Don't let the title fool you when browsing in a second-hand bookstore for it is an excellent treatise on the history of radio. The author not only covers work of early pioneers but tells of progress during WWII and developments following with good info on longwave stations.

**VIP RADIO ENGINEERING** by Arthur Watt is a book for the advance longwave enthusiast. It covers not only VLF equipment but detail information on such subjects as meteorology and thunderstorm study, navigation uses, ionospheric research, etc. -- a book for the engineer. The price is $20.00 from Ferguson Press, 44-01 21st St., Long Island City, New York 11101.

IN THE 1900'S is the title of an article by Ormond Ruby in the Canadian magazine ELECTRON, January, 1968. The title is a little misleading since it accompanies another historical story in the same issue. Actually, the article is a nice review of our 1967 Dearborn Meet. Ormond plugs A.W.A. activities and bemoans the fact Canadians lack interest in historical radio. Good copy....

**CONTACT AT 660** by Peter Schroeder, W1PNY. This book was reviewed in our last OTS. Response has been quite favorable. The book is still available at the club's reduced rate. Send SASE envelope to AWA Secretary for discount envelope.

**ANTI-G RECEIVER** by Art Trauffer pub. in Jan./Feb. issue of ELEMENTARY ELECTRONIC magazine. Art tells how to take a small modern bedroom/kitchen type radio and mount it in a cabinet resembling an early one tube regenerative receiver. Very cleverly done--- it makes a good conversation piece and at the same time quite attractive.

**BINSWICK AC RECEIVER MOD.15** made about 1929. Have one? Write Bruce Kelley, Main St., Holcomb, N.Y. 14469
Above is a 2 slide tuning coil crystal set which appeared in ELEMENTARY ELECTRONICS magazine. The wood is solid walnut and the metal brass. Not having a Murdock No. 358 phone condenser, he fashioned one out of wood, painted it a dull black, hollowed out the inside and placed a small modern capacitor.

Below is a real nice loosecoupler also made out of black walnut. Art comments, "that on a homemade job like this, it wasn't easy to get the secondary to slide smoothly on the rods without binding," We know what you mean Art....

1968 HISTORICAL RADIO CONFERENCE
October 5th
Smithsonian Institution
Washington, D.C.

ROLLA-ROYCE - Harry Snyder (WNVE) found while looking through some old magazines that early manufacturers liked to associate their products with elite car manufacturers. As an example: There was the "Rolls-Royce Tube Co." of Newark, N.J., an "ad" for the "Thorophone" loudspeaker compared it to the Rolls-Royce and a similar ad placed the Leutz receiver in the same category.....
Lee de Forest

Marie de Forest (widow of the late Dr. Lee de Forest) is now a licensed amateur and can be heard under the call W6EJR! She retains a keen interest in historical radio and presented Barry Goldwater the 1967 DE FOREST AWARD last September 9. (Tax Art Trauffer)

AWA Nets

PHONE

Every Sunday -- 4 P.M., E.S.T.
N. C. -- W2AN or W2QY
2nd Wednesday each month, 8 P.M.
N. C. -- W2ICE or W2JMW
3890 KC.

FIRST WEDNESDAY each MONTH
8 P.M., E.S.T.
3980 KC.
N. C. -- W2QY or K2MP

1968 HISTORICAL RADIO CONFERENCE

The date has been set -- the weekend of Oct. 5 at the Smithsonian Institution, Washington, D.C. Plans are being made to follow somewhat the same schedule as in the past: Friday Nite "Get-together", programming followed by Banquet Saturday and old gear "swap" or auction session Sunday.

Letters coming in indicate you want more illustrated talks and demonstrations. We already have several volunteers.... any more??

WILLARD "E" ELIMINATOR-- Ted, WAlABB, wanting to have his old BC sets operating under original conditions, undertook the job of restoring an old Willard "E" supply of the mid '20 vintage. Taking a dare -- he wrote the Willard Battery Company in Cleveland for info on the cells. After a lengthy wait, a nice letter was received from a fellow amateur, T. E. Burmeister, W8BSS, who worked for the company. Ted was told the electrolyte was just plain old fashion borax, the amount not critical as long as it was milky. The electrodes are aluminum and zinc.

Speaking of old power supplies -- when restoring -- a good tip is to disconnect the old filters and replace with a couple 40 or 80 mike modern capacitors (not condensers!). Remember, those old sets had a tendency to hum and condensers 40 years old are inclined to leak or short.

Come on fellows-- give the Secretary and Treasurer a break-- they work for nothing with limited time and funds. When writing and you expect an answer-- PLEASE include a SELF-ADDRESSED STAMPED ENVELOPE....

If you don't have a return envelope handy, at least place your full name, address, zip code somewhere in the letter.... how's about it??
The Thompson Tube & Lamp Collection

An outstanding vacuum tube collection in the mid-west is owned by member Vern Thompson, WJJW. He has been collecting for many years—in fact, he still has his first WD-11—a result of saving his pennies—and of course the filament is burned out! Altogether, Vern has 1500 mounted tubes plus 500 packed away in boxes. There are close to 200 lamps in the display with more on the way. In addition, the visitor can see a nice collection of old gear, but tubes and electric light bulbs come first.

QTH: 1403 South Fourth Street
EFFINGHAM, ILLINOIS 62401

RESTORING KENNEDY DIALS II -- At last we may have the solution on how to restore the dials on these famous receivers. Roland Matson, KIOKO, has had considerable experience in this field and promises to write an article in a future BULLETIN—a most welcome piece of news...

GLENN H. BROWNING -- a copy of the club’s last Bulletin containing the writeup on the BROWNING-DRake receiver was sent to Glenn which very much met his approval. Browning is an A.W.A. member. Now retired, he spends his winters in Florida and returns to Maine for the warm months.

MILITARY OPERATION IN 1904 -------
The German troops used wireless telegraphy during the Herero uprising in Southwest Africa as early as 1904. The equipment was mounted on heavy wagons drawn by 6 horses. Of unusual interest was the antenna: large Zeppelin type balloons which would lift a wire up to 600 feet in the air!

(Scientific American, Sept. 17, 1906)

HIS MASTER’S VOICE symbol for RCA and Victor is now on the way out according to Bob Samoff. “Nipper” the dog, will be replaced by the letters RCA in modern motif (?). . . . (Tax Joe Garcia)
This interesting patent/circuit was sent to A.W.A. by John Brookman, Saratoga, California. Any member ever see or hear of a receiver using this type of circuit without tubes? Stretching the imagination a little, one can almost see solid-state circuitry 40 years ago...
HOW TO TUNE IN A BROADCAST STATION

We happened to be poking through some old bulletins the other day and found one on the Kennedy 110 receiver printed in December, 1922. It appeared routine until we found several pages devoted on "how to tune in a broadcast station". It was hard to believe, but there were 3 pages on the subject. Since many of you may be a lucky owner of one of these fine sets, we reproduce part of the information just in case you wish to listen to your local BC station. Lotsa luck!

1. TUNING FOR A 500-METER BROADCASTING STATION.

Initial Settings:
- Numbers referred to for various controls shown in Figure 2.

1. Set the regeneration (Knob No. 4) at 8.
2. Adjust the element cheater to the proper point by turning Knob No. 5 to the right until the tuning sound is heard, then turning back to the left until this point ceases.
3. Set the coupling (Knob No. 3) between 1 and 3.
4. Turn the series-parallel switch (Knob No. 9) to the right to the parallel position (PAE).
5. Set the primary inductance switch (Knob No. 2) at point 3 (approximate setting in accordance with Table II).
6. Set the primary condenser (Knob No. 3) at 55.
7. Adjust the secondary inductance switch (No. 5) at point 1, at the left. (See Table II.)
8. Set the secondary tuning condenser (Knob No. 4) at 65 (in accordance with Table II).

Final Adjustments in Tuning to the Exact Wave Length of Nearby Broadcasting Stations on 500 Meters:

1. Adjust the secondary tuning condenser by turning slightly to the right and left of the position at which it was placed above, until the greatest strength of received signals is obtained. Leave it in this best position.
2. Readjust the primary circuit as follows (the former setting being only approximate):

   - Slowly turn the primary tuning condenser knob (No. 2) to the right and left until maximum signal strength is obtained. If no increase is found up to 100 as the knob is turned to the right, this indicates that still more wire (inductance) is required in the primary circuit. The primary inductance switch (No. 3) should therefore be turned one step farther to the right and the primary tuning condenser (Knob No. 2) then turned toward 0 until the best signal strength is heard. The primary is then tuned to the exact wave-length.

   - However, the signal strength increases at the primary tuning condenser (Knob No. 2) is turned to the left toward the point 0, this indicates that there is too much wire (inductance) in the primary circuit. Therefore, the primary switch (Knob No. 2) must be turned back one point to the left. The primary tuning condenser (Knob No. 2) is then turned to the right until maximum signal strength is obtained. The primary at this point is in exact tune with the transmitting station. When the primary tuning condenser is turned to the point that brings it into exact tune or resonance a dull click known as the "primary resonance click" is heard. This sounds somewhat like the oscillation click mentioned above.

   - If greater signal strength is desired from the receiver, the regeneration knob (No. 4) should be turned slowly to the right. As it is progressively moved to the right the signal strength will increase up to the point where distortion or roughness in the signal quality is encountered. The dial should then be turned slightly back to the left until the distortion is eliminated.

   - If there is another nearby station operating on a wave-length near that at which you are receiving and causing some interference, the coupling (Knob No. 3) may be turned to the left to a very low value, thereby greatly reducing the interference. When the coupling is thus "boomed" or reduced, the resultant signals may be somewhat weaker than before. They may be brought back to practically their original sensibility, however, by slightly returning the primary and secondary circuits and possibly slightly readjusting the regeneration. This point was mentioned in Section IX-2 on The Coupler.

Final Adjustments for Diistant Broadcasting Stations on 500 Meters:

1. Aiming the receiver for distant station is exactly the same as tuning to nearby stations except that the receiver should be in its most sensitive state in order to respond to the extremely small amounts of energy coming in. For the general directions, the experiments below should follow those given above under "Initial Settings."

   - In order to put the receiver in its most sensitive state, tune the regeneration dial (No. 4) to the right until the receiver is oscillating freely (well beyond the point where the dull click indicating oscillation is heard).

   - Readjust the secondary tuning condenser (Knob No. 4) by slowly turning the knob slightly to the right and left of its original position while observing the dial. The distortion or the voice from the broadcasting station is brought to its greatest intensity.

   - The whistling and distortion may now be eliminated by turning the regeneration dial (No. 4) to the left until the receiver is oscillating freely (well beyond the point where the dull click indicating oscillation is heard). This point is thus said to be "the secret of tuning to distant stations." As explained above, the purpose of permitting the set to oscillate while tuning the secondary is to accomplish this tuning while the receiver is in its most sensitive state and therefore most responsive to the weak signals from distant stations.

2. Readjust the grid condenser by trial to the value which gives the best signals.

Figure 2.
Wiring Diagram of Kennedy Type-110 Universal Regenerative Receiver. (Back View.)
BAKELITE PANEL?

Have you bought one recently? W2IEE paid $16.00 for one in order to restore his multi-panel de Forest receiver. So if you're not in the chips, here's a suggestion from Ted Woolner, WAIABP which is cheaper and will give you excellent results.

1. Determine panel size and purchase a piece of plexiglass. It may be had in 3/16 or 1/4" thickness. It comes with adhesive paper on both sides which can be stripped off easily after the holes have been laid out and drilled. It is not necessary to prick punch the holes as the paper will hold the point of the drill in place.

2. After all holes have been drilled, remove the paper backing and countersink all necessary holes. This can be done with a cabinet-maker's counter sinking tool that will fit into a hand drill. Remember that plexiglass will cut more easily than bakelite so don't bear on too heavily.

3. The next step is to spray a coat of black lacquer on the panel from one of those pressurized cans available at any paint store. Be sure and get the edges of the panel too. The lacquer will adhere well to the plexiglass but be sure to let it dry over night before trying to -- -

4. -- rub it down to a shiny, smooth finish with a small can of lacquer rubbing compound purchased at an automobile paint store. If one can wait for several days after spraying -- so much the better-- for polishing then seems to give a much better shine. A plain coat of Simonize automobile wax applied at this time -- and you've got yourself a real nice panel!

This panel may be even better electrically than the bakelite or hard rubber. Even the lacquer is a good insulator. And lastly, very little danger of cracking or splitting is encountered while drilling.

--Ted Woolner, WAIABP

HARTLEY OSCILLATOR type transmitter will be on the air abt the time you receive this bulletin. Pete Borsi sent the A.W.A. an exact replica of a mid '20 xmtr for the "gang" to try out hr at Holcomb. Experience has proven it the trick is to place an antenna tuner between the xmtr es antenna es run vy lo pwr...in this manner you mini­imize harmonic radiation es the lo pwr (abt 3 or 4 watts) on an UX-210 reduces the familiar chirp...

BOSTON SCALE & MACHINE CO.

of Boston made this receiver in the early 20's and now part of John Drake's collection. The detector and 2 step audio are on top with HF section below.
<table>
<thead>
<tr>
<th>Model</th>
<th>Name</th>
<th>Year</th>
<th>Description</th>
<th>Approx. Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-1</td>
<td>None</td>
<td>1951</td>
<td>6 Tubes, Tuned Radio Frequency.</td>
<td>$39.95</td>
</tr>
<tr>
<td>S-17</td>
<td>Skyrider</td>
<td>1936-1955</td>
<td>1.3 to 43 Mc., IF 465 kc, 7 tubes, includes speaker and BFO.</td>
<td>$59.95</td>
</tr>
<tr>
<td>S-37</td>
<td>do</td>
<td>do</td>
<td>do</td>
<td>$78.00</td>
</tr>
<tr>
<td>S-7</td>
<td>Skybuddy</td>
<td>1938-1936</td>
<td>545 kc to 16 Mc., 5 bands, IF 465 kc, 5 tubes, includes speaker.</td>
<td>$20.00</td>
</tr>
<tr>
<td>S-8A</td>
<td>Starlight</td>
<td>1937-1938</td>
<td>545 kc to 45 Mc., 5 bands, IF 455 kc, complete, 25 tubes.</td>
<td>$50.00</td>
</tr>
<tr>
<td>S-9</td>
<td>Skylark</td>
<td>1937-1936</td>
<td>545 kc to 43 Mc., 5 bands, IF 455 kc, 9 tubes, with speaker.</td>
<td>$20.00</td>
</tr>
<tr>
<td>S-10A</td>
<td>Ultra Skyrider</td>
<td>1936</td>
<td>5.6 to 70.5 Mc., 4 bands, IF 1600 kc, 10 tubes. Less Speaker.</td>
<td>$99.95</td>
</tr>
<tr>
<td>S-10</td>
<td>do</td>
<td>do</td>
<td>Same as S-10, with crystals.</td>
<td>$114.50</td>
</tr>
<tr>
<td>S-11</td>
<td>Super Skyrider</td>
<td>1936</td>
<td>535 kc to 38.5 Mc., 5 bands, IF 465 kc, 11 tubes, less speaker.</td>
<td>$85.70</td>
</tr>
<tr>
<td>S-12</td>
<td>do</td>
<td>1936</td>
<td>Same as S-11, without crystals.</td>
<td>$79.50</td>
</tr>
<tr>
<td>S-12</td>
<td>Skyrider Commercial</td>
<td>1936</td>
<td>110 kc to 15.5 Mc., 8 bands, IF 1600 kc, 12 tubes, less speaker, Same as S-12, with crystals.</td>
<td>$99.95</td>
</tr>
<tr>
<td>S-14</td>
<td>Skybirel</td>
<td>1936-1938</td>
<td>545 kc to 38.5 Mc., 5 bands, IF 465 kc, 7 tubes, less speaker.</td>
<td>$71.75</td>
</tr>
<tr>
<td>S-15</td>
<td>do</td>
<td>do</td>
<td>Same as S-15, with crystals.</td>
<td>$65.50</td>
</tr>
<tr>
<td>S-16</td>
<td>Super Skyrider</td>
<td>1937</td>
<td>500 kc to 68 Mc., 5 bands, IF 465 kc, 10 tubes, less speaker.</td>
<td>$99.95</td>
</tr>
<tr>
<td>S-20</td>
<td>do</td>
<td>do</td>
<td>Same as S-15, with crystals.</td>
<td>$99.95</td>
</tr>
<tr>
<td>S-21</td>
<td>Super Skyrider</td>
<td>1937</td>
<td>545 kc to 62 Mc., 5 bands, IF 465 kc, 13 tubes, less speaker.</td>
<td>$129.50</td>
</tr>
<tr>
<td>S-17</td>
<td>do</td>
<td>do</td>
<td>Same as S-17, with crystals.</td>
<td>$137.50</td>
</tr>
<tr>
<td>S-18</td>
<td>Sky Challenger II</td>
<td>1938</td>
<td>545 kc to 38.5 Mc., 5 bands, IF 465 kc, 12 tubes, less speaker, with crystals.</td>
<td>$79.00</td>
</tr>
<tr>
<td>S-19</td>
<td>do</td>
<td>do</td>
<td>Same as S-18, with crystals.</td>
<td>$80.00</td>
</tr>
<tr>
<td>S-19</td>
<td>Sky Buddy</td>
<td>1939</td>
<td>540 kc to 37.5 Mc., 3 bands, IF 455 kc, 3 tubes, with speaker.</td>
<td>$29.50</td>
</tr>
<tr>
<td>S-20</td>
<td>Sky Champion</td>
<td>1939-1944</td>
<td>540 to 34 Mc., 4 bands, IF 455 kc, 8 tubes, with speaker.</td>
<td>$49.50</td>
</tr>
<tr>
<td>S-22</td>
<td>do</td>
<td>1939-1945</td>
<td>540 kc to 43.5 Mc., 5 bands, IF 455 kc, 9 tubes, with speaker.</td>
<td>$60.00</td>
</tr>
<tr>
<td>S-23</td>
<td>Sky Blider 5-10</td>
<td>1939</td>
<td>540 kc to 34.5 Mc., 2 bands, IF 1600 kc, 8 tubes, with speaker.</td>
<td>$68.50</td>
</tr>
<tr>
<td>S-22</td>
<td>Skydier</td>
<td>1939</td>
<td>540 kc to 34.5 Mc., 2 bands, IF 1600 kc, 8 tubes, with speaker.</td>
<td>$68.50</td>
</tr>
<tr>
<td>S-24</td>
<td>Super Skyliner</td>
<td>1939</td>
<td>540 kc to 34.5 Mc., 2 bands, IF 1600 kc, 8 tubes, with speaker.</td>
<td>$68.50</td>
</tr>
<tr>
<td>S-25</td>
<td>Sky Star</td>
<td>1939-1945</td>
<td>540 kc to 42 Mc., 5 bands, IF 455 kc, 13 tubes, less speaker.</td>
<td>$94.50</td>
</tr>
<tr>
<td>S-26</td>
<td>None</td>
<td>1940</td>
<td>27.5 to 143 Mc., 3 bands, AM/FM, IF 25.25 Mc., 15 tubes, less speaker.</td>
<td>$195.00</td>
</tr>
<tr>
<td>S-27</td>
<td>None</td>
<td>1942</td>
<td>36 to 165 Mc., 3 bands, AM/FM, IF 25.25 Mc., 15 tubes, less speaker.</td>
<td>$195.00</td>
</tr>
<tr>
<td>S-28</td>
<td>Super Skyliner II</td>
<td>1941</td>
<td>540 kc to 45 Mc., 6 bands, IF 455 kc, 15 tubes, less speaker, with crystal.</td>
<td>$179.50</td>
</tr>
<tr>
<td>S-28-A</td>
<td>do</td>
<td>1944</td>
<td>540 kc to 37.5 Mc., 4 bands, IF 455 kc, 8 tubes, with speaker, batteries, and antenna. Portable. AC/DC.</td>
<td>$225.00</td>
</tr>
<tr>
<td>S-29</td>
<td>Sky Express</td>
<td>1942</td>
<td>540 kc to 37.5 Mc., 4 bands, IF 455 kc, 8 tubes, with speaker, batteries, and antenna. Portable. AC/DC.</td>
<td>$225.00</td>
</tr>
<tr>
<td>S-30</td>
<td>None</td>
<td>1945</td>
<td>220 kc to 3.0 Mc., 5 bands, IF 175 kc, 6 tubes, with lamp, less speaker, radio compass.</td>
<td>$134.50</td>
</tr>
<tr>
<td>S-31</td>
<td>None</td>
<td>1949</td>
<td>540 kc to 51 Mc., 3 bands, AM IF 455 kc, FM IF 4.5 kc, 8 tubes, rack mounted, AM/FM tuner.</td>
<td>$74.50</td>
</tr>
<tr>
<td>S-31-A</td>
<td>None</td>
<td>1960</td>
<td>AM/FM Amplifier, 25 watts, 6 tubes, Fidelity 1 DB from 40 to 15,000 CPF.</td>
<td>$40.00</td>
</tr>
<tr>
<td>S-32</td>
<td>None</td>
<td>1950</td>
<td>5 to 42 Mc., 2 bands, IF 455 kc, 13 tubes, less speaker.</td>
<td>$149.50</td>
</tr>
<tr>
<td>S-32</td>
<td>None</td>
<td>1950</td>
<td>Consists of a 14-tube Panoramic unit mounted in same cabinet with SX-28-A.</td>
<td>$74.50</td>
</tr>
<tr>
<td>S-36</td>
<td>None</td>
<td>1962</td>
<td>27.8 to 143 Mc., 3 bands, IF 5.25 kc., 15 tubes, less speaker, AM/FM.</td>
<td>$307.50</td>
</tr>
<tr>
<td>S-36-A</td>
<td>None</td>
<td>1944</td>
<td>Good, version of S-36.</td>
<td>$307.50</td>
</tr>
<tr>
<td>S-37</td>
<td>None</td>
<td>1962</td>
<td>150 to 210 Mc., 1 band, IF 10 kc., 15 tubes, less speaker.</td>
<td>$91.75</td>
</tr>
<tr>
<td>S-38</td>
<td>None</td>
<td>1962</td>
<td>540 kc to 32 Mc., 4 bands, IF 455 kc, 4 tubes, with speaker, replaces S-28-A Skybuddy.</td>
<td>$47.50</td>
</tr>
<tr>
<td>S-39</td>
<td>None</td>
<td>1962</td>
<td>Variations of S-38.</td>
<td>$49.50</td>
</tr>
<tr>
<td>S-40</td>
<td>None</td>
<td>1955</td>
<td>Modified SX-28.</td>
<td>$225.00</td>
</tr>
<tr>
<td>S-40A</td>
<td>None</td>
<td>1949-1950</td>
<td>Eight tube plus rectifier with internal speaker. Frequency range 550 kc to 44 Mc.</td>
<td>$160.00</td>
</tr>
<tr>
<td>S-40AU</td>
<td>None</td>
<td>1949-1950</td>
<td>Eight tube plus rectifier with internal speaker. Frequency range 550 kc to 44 Mc.</td>
<td>$160.00</td>
</tr>
<tr>
<td>S-40B</td>
<td>None</td>
<td>1950-1955</td>
<td>Seven tube plus rectifier with internal speaker. Frequency range 550 kc to 44 Mc. for operation from 115V, 60 cycle AC.</td>
<td>$99.95</td>
</tr>
<tr>
<td>S-40BU</td>
<td>None</td>
<td>1950-1955</td>
<td>Seven tube plus rectifier with internal speaker. Frequency range 550 kc to 44 Mc. for operation from 115V, 60 cycle AC.</td>
<td>$99.95</td>
</tr>
<tr>
<td>S-41</td>
<td>Skyliner Jr.</td>
<td>1966</td>
<td>350 kc to 30 Mc., 3 bands, IF 455 kc, 6 tubes, with speaker.</td>
<td>$56.75</td>
</tr>
</tbody>
</table>
One of the highest developments of detecting apparatus known to science is the Audion Detector.

This class of detector has a number of advantages peculiar to itself; two of its most prominent features being its reliability and extreme sensitiveness, seldom, if ever, equalled by crystal or other types of detector. Its adjustment is almost instantaneous, and is unaffected by mechanical or electrical disturbances.

Each instrument is complete in itself, and all connections are plainly marked on the box. Tests conducted by the United States Bureau of Standards show this instrument to be remarkably sensitive (Bulletin, Bureau of Standards, Vol. VI, No. 4, p. 540).

The R. J. 4 type is now furnished with a five-point battery switch in place of the three-point switch shown in the illustration. As there is nothing to lose its adjustment, not only is the annoyance of frequent attention avoided, but the novice can not fail to secure its satisfactory action at the first attempt and always be certain of freedom from detector troubles.

These detectors require for their operation either a four or six-volt storage battery or three dry cells; but for best results a storage battery must be used. Each detector is tested before shipment, and is guaranteed to leave the factory in first-class condition.

To get the very best results the following instructions must be followed explicitly.

Do not connect over six volts storage battery to the binding posts marked + and —, and note that the positive pole of battery is connected to binding post marked + and negative pole of battery to binding post marked —.
The two-point switch lights the filament of the lamp, and before turning this on see that the rheostat switch is on the "in" position. Then adjust the rheostat until the lamp burns at normal brightness. Then adjust both battery switch and rheostat until signals come in with maximum sensitivity.

Never keep the lamp burning when not using the instrument. After once adjusting the detector as above, it is only necessary to throw the two-point storage battery switch on and off to place the detector in and out of service, and other adjustments need not be disturbed.

In connecting up the Audion Detector, connect the grid to G and the wing to W as marked below the binding posts. The grid is the zigzag wire, and the wing is the plate, and if the bulb is capped the green wire leads to the grid and the red to the wing.

Each bulb has two filaments, so that after one burns out the other may be used, thereby doubling the life of the bulb. To connect in the second after the first has been consumed, wind the little copper wire tight around the brass base of the lamp underneath the rubber band.

If too much battery current is applied between the grid and wing, a blue glow will appear in the bulb, causing a decrease in sensitiveness. This glow can be removed by readjusting the five-point switch on the R. J. 4 or the six-point on the R. J. 5.

Never burn the filament at excessive brilliancy.

It makes some difference which of the two terminals marked "tuner" is connected to either terminal of the receiving transformer, and these connections should be reversed to observe which connection gives the louder signal.

The Audion One Step Amplifier
This instrument is particularly designed for telephone and telegraph amplification up to five to ten times original intensity. It will render signals easily read, which would be otherwise entirely inaudible, and also will so increase the volume of sound that much looser coupling than usual may be employed, thereby cutting out interference, which it would otherwise be impossible to do.

This amplifier while particularly adapted for use with the Audion Detector may be used with any detector with good results. Please note, however, that the amplifier is not itself a detector and can not be used as such.

**PRICE LIST**

R. J. 4 Audion Detector, as illustrated .............................. $ 18.00
R. J. 5 Audion Detector, as illustrated .............................. 25.00
P. J. 1 One Step Amplifier ........................................... 65.00
P. 2 Two Step Amplifier ............................................... 300.00
P. N. Audion Detector, licensed for commercial work ........... 50.00
4-volt 30 ampere hour storage battery .............................. 5.00
6-volt 60 ampere hour storage battery (recommended by us) ... 12.00

**Audion Bulbs for Renewals**

With all De Forest Audion Instruments we recommend the use of "Hudson Filament" bulbs, the life of which is from three to five times that of the ordinary filament.

They can be furnished with R. J. 4 Detectors at an additional cost of $1.50, and with the R. J. 5 at an additional cost of $2.50 in place of bulb regularly supplied. Audion bulbs are sold only as renewals, and upon the return of old bulbs, and are furnished in two grades, S or Standard, and X or Extra Sensitive. The same two grades are also furnished with the Hudson Filament.

Renewal Bulbs, S grade, each ................................. $ 3.50
Renewal Bulbs, X grade, each ................................. 5.00
Renewal Bulbs, S grade, Hudson Filament, each ............. 5.00
Renewal Bulbs, X grade, Hudson Filament, each ............. 7.50
Renewal Bulbs, Amplifier, each ............................... 7.50
Renewal Bulbs, Amplifier, Hudson Filament, each ........... 10.00

**THE FIRST POPULAR TUBE DETECTOR**

Many requests concerning the famous de Forest RJ-4 and RJ-5 prompts us to reproduce the original writeups so you will know what to look for -- and we say look for they are extremely rare. These detector units were popular with amateurs in the early teens and to the best of our knowledge were the FIRST tube receivers ever manufactured for general use --- a real collector's item. The "RJ" means "Radió Junior". We really can't understand why there are not more of these units around since they were listed in several catalogs and magazines. The used, the spherical audion, in comparison, is not to difficult to find. The present day value of a RJ-4 in good condition is between $75 to $100. If the nameplate is missing the value drops to maybe $40...interesting? The RJ-5, made more for commercial use, may be worth somewhere around $100 to $125. For the layman, the RJ-4 is only a box to hold the batteries with filament rheostat, switches and socket -- you had to provide the RF section!