ANNUAL A.W.A. HISTORICAL AWARDS

The Annual Meet provided an opportunity to give awards for outstanding work in the field of historical radio. There were three recipients: 1.) Fred Parsons (W2EOM) for building in minute detail a replica of the famous Marconi South Wellfleet station and presenting it to the National Park Service. 2.) Frank Matula (W1MT) for original research in the history and issuance of amateur call letters and 3.) M.F. Ross (W6IS) for constructing equipment to make historical radio tubes and giving them to museums. In each case the recipient spent one to three years on his project and on completion freely gave his material to those interested with never seeking a monetary award. The above picture shows W1MT receiving his Award from A.W.A. Treasurer, Lincoln Cundall, W8QF.

Nat'l Historical Radio Convention

Other than for a couple minor problems everything ran fairly smooth. Total attendance for the Meet was approximately 160 which is quite an increase over the 37 who attended the first gathering in 1963! Most members stayed for the entire event; however, some only registered and were there but one of the two days.

On Friday night 25 members descended on Bill and Anne Laverty who live in nearby Lansdowne. Bill's collection was everything expected — a fantastic amount of radio equipment filling the entire basement and attic. Laverty is
somewhat philosophical about the whole business - - he can't resist a good buy and will sometimes take an entire collection. In turn, he sells some of the stuff - - but we personally don't think he is too far ahead financially when you consider all the trouble he goes through finding it, transportation, restoration and inconvenience. Frequently he has to take alot of junk without resale value. We're lucky we have someone such as Bill who will go to all this trouble.

His collection is mostly broadcast (which includes some real nice sets) but in addition there are some choice amateur and commercial gear.

SATURDAY MORNING: The Meet started with Link (W2QY) and Bill (K2NP) giving out badges and tickets. These two fellows deserve a big hand - - not only for the work involved but also because they had to miss a lot of good programming such as Howard Scrader (Princeton) who started the program with an excellent documented talk on the "Edison Effect and its relation to the development of the Vacuum Tube". Rare photographs and diagrams were projected on the screen indicating a tremendous amount of research on the part of the lecturer.

Next Charlie Henry (Chicago) took the stand and related information on the Titanic disaster. Again the audience was surprised how the speaker had "dug" for original authentic information which was unknown to the lay historian and reader. Tom Appleby (W3AX) collaborated with Charlie by relating his personal experiences at the time of the disaster. Tom was the wireless operator at the Marconi station in Philadelphia and Dave Sarnoff the operator in New York.

Tom was followed by Gerald Tyson (Bell Labs) who showed the group a replica de Forest audion and Fleming valve made by W6CB. As top tube historian, Jerry had no difficulty in explaining the difficulty the amateur would encounter in trying to make a workable vacuum tube - - let alone an exact replica of a pre-existing one!

SATURDAY LUNCHEON: was highlighted by Paul Godley introduced by Radio Club of America Historian Ralph Batchler. The group felt deeply honored by having this famous pioneer as their guest. Paul's remarks concerned the great need to preserve the work of men such as Marconi and Armstrong. Mr. Neatherly of the Institute welcomed the group and invited them to explore the many exhibits. The occasion also provided an opportunity to recognise members who had traveled considerable distance in order to attend. Old friends Bill Halligan, W9AC of Halligan Crafters and Roland Bourne, W1ANA, ARRL Curator received a warm hand followed by an opportunity to congratulate Du Moreau, WB6BBO, as the new YL Editor QST. Lou and her husband as well as W6AX and W6-YPM had traveled all the way from California to attend!

SATURDAY AFTERNOON: started with one of the most extensive demonstrations of early detectors ever seen in operation at one time. Bruce Boyd (W3QP) and Bill Melhuish (W3KKY) spent countless hours preparing working models ranging from a very early "carbon needle" to a magnetic detector. Through a switching arrangement it was possible to compare the sensitivity of the various detectors; however, it was agreed that one could not do this accurately because of unmatched inputs.

The demonstrations were followed with an illustrated talk by Frank Davis, Curator of the same science museum at Dearborn Michigan. Frank surprised the group with his well documented evidence
of Henry Ford's work in early radio. Mr. Ford not only had an elaborate broadcast station in the early '20s - but also displayed interest in the development of radio!

"Stu" Davis (W2ZH) then moved in and gave the members a brief background on the work of early telegraphers and the equipment used. This proved quite enlightening and brought up an interesting point - in spite of recent advancement in automatic sending, etc., present day technology still has some distance to go in some areas to beat the old time Morse telegrapher for reliability and accuracy.

A complete switch in program material was made when recent pictures taken by Prof. Wendon, K8IKO, on his trip to Europe were shown. Henry, after much difficulty, found the site of the once famous Trans-atlantic Marconi station at Clifden Ireland. The station was abandoned (and demolished?) after the Irish rebellion. All one could see was barren wasteland punctured by a few stone ruins overlooking the sea. It gave the appearance of an ancient city of another era.

Continuing along the commercial line, Peter Rossman played a tape he recorded during an interview with A.W.A. member Norm Burton of Sydney, Australia in which Norm amusingly describes his visit to a radio operator on a luxury liner. The operator, however, was no ordinary "sparks" - he was a British lord and the ship was catering to millionaires!

The afternoon program was concluded by Paul Watson's "Story of NAA" as told by Charles Brelsford, K2WW. The 'story' was complete - - from Fessenden's Brant Rock transmitter to the day the three famous towers were torn down - - a marvelous photographic and historical record.

SATURDAY EVENING: Our M.C. following the banquet was Lloyd Sherman to whom goes much credit for the success of the Meet since he engineered arrangements at the Institute. The first speaker was Tom Appleby, W3AX, pioneer wireless operator who had the distinction of not only having been on the air the greatest number of years - - but also having the first station in Philadelphia in 1899! Tom was followed by Clarence Tuska, former Director of Patents RCA, co-founder of A.R.R.L. and one time President of Tuska Radio Co. Lloyd then introduced Dr. LePage, W3CV, President of the Institute, who spoke of the need to retain historical material and records. On this matter he called to our attention the many fine exhibits within the Institute including items made or used by Samuel F.B. Morse and Benjamin Franklin.

The group then moved to the auditorium where they sat spellbound for 30 minutes as the "Golden '20s" raced across the screen at a rate of 12 seconds a picture. This was made possible by using automatic dual projection system with automatic dissolve control with stereo sound.

Comments - - quote: "The film show Saturday night was great!" - - Paul Godley. - - "The Golden '20s was a masterpiece and the sound track was terrific!!" - - - - Mel Comer. - - "I thought other A.W.A. shows were good but this one tops them all!" - - Jack Gray.

Credit for the show goes to many. If
Demonstration of early detectors by Rod Melhuish, W3KKY (left) and Bruce Boyd, W3QA.

you missed it — you will have another chance since it will be featured at the Annual Radio Night at the Ford Science Museum, Dearborn, Michigan, May 6, 1967.

SUNDAY MORNING: Top programming was also scheduled for this day; unfortunately however, attendance dropped off for various unavoidable reasons. Thom Hayes, W6AX, briefed the group and played back a vivid account of a disaster at sea narrated by Dick Johnstone, old time wireless operator and manager of KPH. The climax came when the group heard actual spark signals tell of the disaster! Jack Gray (W8JDV) then took over and presented an excellent illustrated history of the old Grebe Company — and again we witnessed a tremendous amount of research and work on the part of the speaker. The "Valuation Panel" which followed added a new twist to the program (see writeup elsewhere). It proved quite popular and it was suggested we have another at the 1967 Meet.

SUNDAY LUNCH: provided an opportunity for the members to meet Dr. Bernard Finn, Curator of Electricity, Smithsonian Institution. The group enjoyed Barney's remarks concerning trials and tribulations of a curator as well as some of the perquisites (if one so desired) such as hanging pictures of de Forest and Armstrong smiling at one another!

The customary announcement was made at this time for the next 'Meet' — Frank Davis invited the group to hold the 1967
Left: Gerald Tyne holding deForest detector control box with W6IS replica deForest audion. Right: Howard Schrader with rare Marconi detector with W6IS Fleming valve.

Annual Historical Meet at the Ford Science Museum in Dearborn, Michigan which met with unanimous approval. Members then had the thrill of listening to a magnetic tape made by Hugo Gernsback especially for the occasion. Mr. Gernsback regretted his inability to attend and confirmed his interest in early wireless and the need to preserve artifacts and written material.

SUNDAY AFTERNOON: found Elliott Sivowitch (W2JXL/K3JRA) with an extensive display of early microphones and other historical recording equipment from the Smithsonian. Those who failed to attend the Meet Sunday really missed another top program.

Elliott's program and demonstration was truly professional and of unusual interest. Since time was running short and in the absence of a Contest Chairman, the Old Gear Competition was cancelled. This was regrettable since many items were on hand and three top judges had been selected: Roland Bourne (W1ANA), Wayne Nelson (W4AA) and Erv Rasmussen (W6YPM). The Auction, however, went according to schedule under the capable guidance of Bill Laverty. Much gear exchanged hands and we were told that some even was sold prior to the event. A "big hand" is given to Lloyd Sherman, Bill Laverty, Howard Schrader, Frank Atlee and others for the

Curators from National known Museums at A.W.A. Meet

1. to r.: Elliott Sivowitch (Asst. to Curator) and Dr. Bernard Finn (Curator) of the Smithsonian Institution (Washington) and Frank Davis, Curator, Ford Museum (Dearborn).
excellent display of equipment and tubes - a lot of work well appreciated!

And along this same line - - the gals certainly appreciated Anna Laravy's tour Saturday. In fact, some of the fellows even took the guided trip! Thanks Anne...

In retrospect: When most radio events in big cities throw $10 or $12 at you for registration and dinner - - the favorite question was..."How in the world could you fellows provide registration and THREE MEALS for only $11" ($10 for xyls) !!!!

Well, it wasn't easy! W2FY really sweat this one out and it almost broke the outfit---but final tally indicated we all broke even. The nice photos, by the way, were taken by Howard Scrader and W2HMK...

SEE YOU IN DEARBORN SEPT. 23, 1967 !!!!

PHOTOGRAPHS AT MEET -- we have 15 different kodachrome pictures taken at the National Meet which are available only in groups of 5 for $1. Pictures range from speakers to shots taken at banquet. If interested, send $1 and state preference - - we'll use final judgement what to send. (Delivery about 3 weeks).

Bruce Kelley, Main St., Holcomb, N.Y.

RADIO-EL&TRONICS -- January, 1967 issue will carry writeup on our National Meet. Buy a copy - - good reading. The Editor of this magazine, in case you don't already know, is our old friend Hugo Gernsback!

POPULAR ELECTRONICS magazine, October issue, page 68, carried a nice writeup on our National Meet which are available only in groups of 5 for $1. Pictures range from speakers to shots taken at banquet. If interested, send $1 and state preference - - we'll use final judgement what to send. (Delivery about 3 weeks).

Bruce Kelley, Main St., Holcomb, N.Y.

NEW A.W.A. FILM SHOW to be made in 1967 will cover the life and inventions of Maj. Armstrong. We have a soft heart for this famous pioneer and feel all amateurs should know of his work.

A.W.A. NET SCHEDULES

A.W.A. CW NET
3580 KC. 8 P.M., E.S.T.
1st Wednesday each month

WEST COAST OF CW NET
3580 KC. 8 A.M. Sat. and Sun.
4:30 P.M. Wednesday
(Pac. Std. Time)

A.W.A. PHONE NET
3898 KC. 38B 8 P.M. E.S.T.
2nd Wednesday each month
3898 KC. AM 12:30 Noon
each Sunday (W2AN)

BOB MERRIAM, W1NTE

speaker at Brant Rock Celebration

Sept. 24, 1966, was a special occasion in the Marshfield, Mass. area (and for that matter, all radio historians) for it marked the 50th Anniversary of Prof. Fessenden's first voice broadcast.

Using a modulated arc type transmitter and a 480 foot steel tower, Fessenden may have made the first "broadcast" in history at the Brant Rock site. Although others had used crude transmitters previously for voice transmission, it is believed this broadcast, which included the playing of a violin, was the first music entertainment.

The actual broadcast took place on Christmas Eve, 1906 and many pioneer wireless operators at sea were startled when he heard music coming through for the first time!

Bob Merriam, W1NTE (Curator of the New England Wireless Museum) had the honor of being one of the principal speakers as a plaque was installed commemorating the site.

CONGRATS TO LOU MORGAN, W3WRE/WB6BBO, for her appointment as QST YL EDITOR. Very active in traffic and Emergency Nets, holder of numerous appointments and awards, author of many articles, etc., it is not surprising she received the appointment. Of particular interest to the radio historian, however, is her devotion to early telegraphy and the history of communication. Her private museum houses one of the finest telegraph instrument and key collections in the country. We might also add - - she can copy Morse code - - an art that is rapidly disappearing.

Maybe by coincidence, but we think not, two other ARRL Officials - - W2ZI and W5FX (SCM Southern New Jersey and Michigan) are also key historians and collectors!!

QCWA GROUP ACQUIRES HISTORICAL COHERER

Several called to our attention the note on page 65 of the August issue, QST stating the QCWA had been presented the coherer MARCONI USED TO RECEIVE THE LETTER "S" ACROSS THE ATLANTIC. Various Marconi publications indicate that the coherer is a self de-cohering type - - NOT the conventional coherer using metal filings. This little item has tremendous historical value and is priceless.
The Collectors

JACK GRAY (W3JDV) is still picking up Grebe and Crosley receivers. New ones include a CB-13 and ACE 3B. Other new gear is a huge Duck loose coupler, an early Armat wavemeter, Clapp-Betham rec. trans. mounted on panel with two variomètres, etc.

RAY RAPP (W3BOC) is renewing his interest in old gear by picking up a G.R. wavemeter, an old Weston set tester plus lotsa old tubes. Watch out Ray -- the bug will bite you!

JACK NELSON (W2FW) although not an avid collector, he still likes old gear and will pick up an item now and then. Latest for Jack is an Aerilola Jr. crystal set, relay and key. W2FW operates a 1929 xmr on 3575 kc. -- he is thinking about touching up the crystal to hit net frequency of 3580. Not in general use is an ESCO MG set with 400 volt output.

H.C. SNYDER (W3WVX) is specializing in National products and has a real nice collection started. He is now looking for a NC-45, NC-100 and NC-200.

GEORGE STARR (Iatrobe, Pa.) in addition to collecting old gear, George looks for early books, documents and historical radio pictures. A recent list showed some very rare items in his collection which must have taken some real "diggin".

GENE KENIS added a rare Paragon RA-10 receiver and other gear to his growing collection. Gene had lotsa fun with his exhibit at the recent National Electronics Conference in Chicago--he exhibited, by the way, under the A.W.A. Banner!

MICHROW TUNER advertised in recent issue of OQR by W2ZI is now on J.A. Worcester's shelf in Frankfort, N.Y. He and Doc Hanselman (Chicago) are really building up some oldGetValueSet('title', 'The Collectors')collections -- how about some photos fellows?

BILL LAVERY just returned from a trip to Florida where he picked up some real old gear including a Grebe CB-9 and BOSW amp., a WE-6B super, and E.I. and Arnold coupler, WE 258 amplifier, several commercial detectors plus an E.I. electrolytic detector. In the transmitting line Bill added a quench Benwood rotary, one KW Thor. mxfr., oil immersed Thor. condenser, etc...nice haul...wat?

FLOYD IVONS is still picking up rare tubes such as a deForest "F" oscillation, handmade Cunningham experimental amp. tube, Bilvan valve AT-26, some Telefunken tubes, etc. We haven't heard yet about his Pacific trip but we're sure he has brought back some "goodies".

SERGE KRAUSS (Elkhart, Ind.) picked up a rare WWI French crystal set Model 1915. It has two detectors and an odd phone plug. Other gear for Serge includes a colorful spark coil and a de Forest F-5 with spare tubes in metal cans. Serge has a neighbor who collects Dusenbergs -- 13 to be exact! Here is an opportunity for collectors to tell the wives how lucky they are -- all you collect are cheap little old radios!

ED BASSER (W2ZI) broke down and bought a broadcast receiver -- a beautiful Norden-Hauck in mint condition. Ed is a connoisseur of rare commercial gear; however, we can understand why he weakened for the Norden-Hauck is a precision instrument and rare! Ed was under the weather for the "Meet" -- but he is now back on his feet, in fact, he recently took a trip on the "Delta Queen" down the Mississippi.

KEN CONRAD went over and visited a retired Great Lakes wireless operator recently. Result: Return trip with 200 lbs. of old gear with such items as an early CRL Zenith, spherical audions, 1915 Government call book plus all kinds of magazines of pre-WWII vintage - Wireless Age, Modern Electrics, etc. Almost forgot -- tucked away in the pile were issues of QST -- Vol. I, No. 1, 2, 3 and 4 !!!!!

JIM SOMMERVILLE (W9WFF) is concentrating on antique receivers of the '30s and has a real nice start with Hallicrafters -- SX-17, SX-23, SX-24, SX-42 and a SX-43. Then there is a big Howard receiver -- remember this one? In the National line there is a NC-100, NC-101X, a 1-10 super regen, etc. To keep pace with the old days he is building up a library of old wireless catalogs, books -- and even some "Radio Boys" series. For your information, Jim is on the Technical Consulting Staff, Allied Radio Corp. (Chicago).

FRANK ATKER (W3PI) picked up gear at the Meet plus some items from Ray Bark's estate including a Kilbourne & Clark crystal set, a small tube collection and a couple receivers.

INTERESTED IN UX-860 TUBES? Frank Pagano writes that on a recent trip over into lower Manhattan he visited Leeds Radio store and noted they were selling G.E. 860's for only $1 a piece...brand new! As you know, the 860 is the screen grid version of the 852 -- the latter, by the way, is REAL hard to find.

WANTING SECRETARY OR TREASURER? You can help the club treasury, reduce work and have your address corrected -- if you send them a return self-addressed stamped envelope...tks.
OLD TIME HAM-ADS

LOOKING for early vacuum tubes with tips, "Audions" with candlebarn base and old wireless books. Also want Fleming's book "Thermionic Valve, etc" (1st edit.) All letters answered. L.W. Schnedorf, W6EK, 610 Monroe Ave., River Forest, Illinois 60305

WANT Ultradyne 12, Melo Heald 11 and 14, Russ Worthy, 399 West Main St., North Adams, Mass. (01247)

FOR SALE -- Bound volumes of QST 1921 to 1950 inclusive to settle estate. Excellent condition. Please make offer. William Harper, W6TQ, 615 Prospect Blvd., Pasadena, Calif. (91103)


FOR SALE -- several broadcast receivers made prior to 1925 including Kennedy 110. Perfect condition. Write for info. Lloyd Amires, W4FW, 5790 S.W. 11th Terrace, Miami, Florida, 33156

FOR SALE -- Spherical audion with Model AJ-3 detector unit. Write for info and make offer. Edwin L. Erickson, Box 156, Althien, Minn. 56431

SWAP or buy: Armed type "C" spark coil, de Forest square panel units, de Forest P-300 Audion Ultra audion. Have a Kennedy 261/521 and a de Forest Interpanel set to swap for same. George Greene, 7612 Westmoreland, Clayton 5, Missouri

WANTED -- information or whereabouts of Richard Woodson (Dick). He was RCA ship operator. Last heard from on West Coast in 1936. Luther Grove, W3QH, 218 Green St., Mifflinburg, Penna.

FOR SALE -- copies of "Radio Age" and others. Also have 1920 Government Call Book. T. A. Previtt, WQUK, 2212 South Webster, Kokomo, Indiana

SELL or trade--spherical audion and other early tubes plus many broadcast sets. Send for list. John Brockman, 3751 Eise St., San Jose, Calif., 95111

FOR SALE--no reasonable offer refused--a Radiola Mod. 20 battery phonograph combination in perfect working condition and appearance. Must get rid of it. Ted Williams, W8TPD, 105 Elm St. Ypsilanti, Michigan

FOR SALE--a variety of tubes and bulbs, a Grebe CH-9, early test equipment and misc. parts. All in excellent condition. Will trade toward NC-45,100 or 200 National receivers. M.C. Snyder, W6KE, c/o KHUB, Fremont, Nebraska 68025


WANTED--early broadcast magazines. Buy of trade. Also need book "History of Radio to 1926" by Archer. Paul Thompson, 2930½ De La Vina, Santa Barbara, Calif.


WANTED TO BUY - 1 KW quench gap spark transmitter manufactured by Wireless Speciality Appar. Co. (See Vol. 5, #3 page 8 for photo). Philip E. Van, 3061 Northwood Drive, NE, Cedar Rapids, Iowa.

WANTED--De Forest items for permanent museum in De Forest's home town. Write Art Trauffer, 120 Fourth St., Council Bluffs, Iowa 51501

SWAP--All parts and tubes to make famous National Browning-Drake TRF receiver...want right-angle "bug" (like Mecograph) or "Ultimate." Tate Therreau, W6FX, 27209 W. Six Mile Rd., Detroit, Mich.

NEW MEMBERS --
WELCOME TO A.W.A.!

Treasurer Lincoln Cundall reports we have added over 40 new members since the last Bulletin. This is not surprising since there appears to be an increasing interest in all types of historical material with radio and electronics being no exception. Membership applications were quite interesting:

---about 2/3 were collectors or amateur historians...

---better than half were licensed amateurs...

---interests ranged from broadcast receivers, early amateur and commercial wireless, old books and magazines to astronomy and cars!

New members are invited to send in news items for the Bulletin and don't forget the "OLD TIME ADS" which are free providing the material is over 25 years old. We have the right to shorten copy and obviously are not responsible for any transaction. We believe the Federal Government frowns on fraud through the mails -- hi!

73, W2GB, President
A.W.A. ACTIVITIES

Oct. 11 Clarence Tuska presented a talk titled "Amateur Wireless to Amateur Radio - 1907/1922" at Princeton University. The A.W.A. loaned many of the pictures used in the talk.

Oct. 15 Hudson Division ARRL Convention, Tarrytown (N.Y.C.) A huge financial success since it was held outside the city. A.W.A. presented "The Golden Twenties".

Oct. 22 Annual A.W.A. Fall Dinner for Rochester area members. Unusually large turnout with some members coming as far as Pennsylvania.

Nov. 12 Annual Fall Meeting at K2JA. New Directors and reviewed Constitution for Incorporation.

COVER FOR BULLETIN -- Ted Duvall has contributed some real nice covers for the OLD TIMERS BULLETIN. They were distributed at the National Meet and the remainder brought back to Holcomb. We haven't quite decided as yet how to give them to the rest of the members. In the meantime, if you happened to be in town -- ask for one -- they make a nice binding for your OTs....

SOUTHERN NEW JERSEY Radio Assn. 50th Anniversary Banquet was a tremendous success. Speakers included John Huntoon, Clarence Tuska, George Grammer and Joe Welch from F.C.C. Phil Catena (W2JAV) had a fine display of old gear including a ½ kw. rotary spark set plus receiving equipment (KE2P).

CANADIAN MEMBER Bill McPherson, VE3CMM, writes that one of the greatest moments of his amateur career was when he had the opportunity of personally meeting Clarence Tuska at the recent AWA Meet. Until then, Tuska, co-founder of ARRL, was just a great name of the past!

Gene Kern's radio exhibit at the recent National Electronics Conference in Chicago. How many receivers can you recognize?

Sarnoff-Sixty Years

Over 1500 leaders of science, industry and government gathered in the Grand Ballroom of New York's famed Waldorf-Astoria the night of Sept. 30 for the 60th anniversary salute to Gen. David Sarnoff -- who is frequently called the father of American radio and television. Sarnoff started his radio career on September 30, 1906 as an office boy for the old American Marconi Telegraph Co. Top brass at the occasion included Lowell Thomas (Toastmaster), Frederick Kappel (Chairman of American Telephone and Telegraph Co.), Dr. Jerome Wiesner (provost and dean of M.I.T.), William Paley (Columbia Broadcast System) and Walter MacAdam (V.P. of IEEE).

Three national organizations joined forces to co-sponsor the "Salute to Sarnoff" -- The Electronic Industries Association (E.I.A.), the Institute of Electrical and Electronics Engineers (IEEE) and the National Association of Broadcasters (NAB). It was a gala occasion with several A.W.A. members present!

ATWATER-KENT INSTALLATIONS -- As an A-K distributor in 1926, Mel Coner had the opportunity to install a Model 35 in the home of Mr. and Mrs. Thomas Edison (West Orange, N.J.). Edison, being deaf, never appreciated the receiver, but Mrs. Edison enjoyed it very much.

Of interest, the A-K Co. presented their 2 millionth receiver to President (elect) Herbert Hoover in 1928.

REPAIR CATACOMBS? It is a tough job to repair catacombs in the RCA superhet's of the mid 20's but Frank Pagano has done so several times. First: make note or identify all terminal wires, then unsolder. Place catacomb on hot plate or use torch until wax becomes fluid-- use caution as this stuff can give a nasty burn. Then--- d'min wax, destroy seals and remove top plate and you're ready for repairs. Lota luck!

Historical equipment is always an "eye-catcher" and this occasion was no exception. In fact, it ended up on CBS-TV evening news broadcast!
was the date for the first large NETWORK broadcast -- WIC -- originating in the old Waldorf-Astoria (5th Ave. and 34th -- site of Empire State Bldg.) There were 25 stations in the network and the program lasted for 4 hours and 25 minutes!

If you think we have TV spectaculars today -- look at this lineup of talent for the occasion:

-- Will Rogers and Mary Garden
-- New York Symphony with Walter Damrosch
-- Weber and Fields
-- Tito Raffo (Metropolitan Opera)
-- Dance Bands: George Olsen, Ben Bernie and many others....

Other debuts:

-- Eddie Cantor -- 1926
-- Rudy Vallee, Amos and Andy -- 1929

Top comedians on the air in 1932:

-- Jack Benny, Elwynn, Jack Pearl and Groucho Marx with Bob Hope and Jimmy Durante following in 1933!

Boy! -- it sure is hard to believe but all of this was 35 to 40 YEARS AGO (Thx Jose Garcia)

RE-STORING OLD DIALS ? ---- when the white lettering begins to flake out or turn dirty yellow -- take a tooth pick and clean out the filler. Wipe clean. Then take a white crayon and work firmly in the depressions. Next take the side of a small piece of wood and scrape off the excess crayon (do not use metal because it may scratch the bakelite). Finally, take a cloth and gently remove the remaining crayon -- and you have a new dial! (Suggest you try different types of crayon -- some are better than others.)

Anyone have ideas how to restore satin finish dials such as on the Kennedy receivers ???

DE FOREST MUSEUM out in Council Bluffs, Iowa, has added several new items for display including de Forest Reflex F-5 and de Forest D-12 broadcast receivers plus a WAI de Forest crystal set receiver -- the latter indirectly from Mel Comer who told Frank Hilberg (Patent Attorney, DuPont) about the Museum. Art Trauffer (Curator) and others have asked us (A.W.A.) for copies of photographs printed in the Old Times Bulletin.... sorry...but we do not have the facilities to make reprints at this time.... In addition, many of the photographs we use are returned to the owner.

WIRELESS INSTITUTE OF AUSTRALIA members recently heard an illustrated talk on early radio by our Associate Norm Burton. Norm is still pursing his interest in real long waves and is trying to track down some info he read concerning transmissions on 56,000 meters!! He also heard about a station in Cartagena, Spain who broadcasted speech and music back in 1923 on a wavelength of 12,000 meters. This, as you might guess, poses quite a technical problem for when you convert wavelength to kilocycles and start thinking in terms of amplitude modulation with two sidebands -- see what we mean ??

CRYSTALS FOR OLDTIME CW NETS -- we have at A.W.A. some very fine 80 meter crystals. They are of commercial type -- not the cheap amateur variety. Each has been checked and accurately calibrated to either 3520 or 3580 kc. They are mounted in large holders with long type pins. The donor of these crystals feels the proceeds should go to a worthy cause. If interested, make out a check of $5 to:

BOYSTOWN, BOYSVILLE, ST. MARY'S or ST. AUGUSTINE'S

The Amateur Radio Clubs at these various schools will be the recipient and the amount deposited to their account. State choice of frequency and send check to A.W.A., Holcomb, N.Y. Since they are non-profit organizations, your contribution is tax deductible.

MARK THE DATE -- SEPT. 23

FOTO ON OPPOSITE PAGE
Marconi Wireless Station "BF" (1914) at the foot of Michigan Ave., Buffalo, N.Y. Originally the old United Wireless Telegraph Co. installation, it employed a 2 KW de Forest spark system. Note the big "coffin" (transformer) on the floor and the leads going up to the rack of Leyden jars. Atop the condenser rack can be seen the OT -- the coupling of which can be varied by sliding the inductance up or down on two rods. The spark gap must be in the box like inclosure at the upper left.

Of interest, the A.W.A. has an identical U.W. Co. rack of jars. (See Vol.6, No. 2, upper left corner of page 1.)

Photo from Charles Barker, former employee of U.W. Co. and American Marconi.
"MARCONI, MY FATHER" is the title of a book written by Marconi's daughter and can still be found in bookstores. Pete Rossmann recently found copies in a Detroit store. (published by McGraw-Hill in 1969). We strongly recommend this book for your library. Very well written with illustrations, it tells the reader the intimate life of Marconi -- personal and business.

MASSBORO BOOKS, 131 Varick St., New York City, N.Y. (10013) is a large clearing house for over stocked books. Suggest you get on their mailing list. We've been picking up books from them for several years. Books run about 1/2 price. The latest three were:
- Samuel F.B. Morse - $1.00 ($3.75)
- Hans Ederstedt - $1.00 ($1.75)
- Betty Green - $1.98 ($5.75)

DOVER BOOKS is another clearing house. We plan to list in a future issue what we consider the top 12 books for the radio historian....suggestions?

AUDIO TRONs -- sounds crazy -- but Temp Campbell, W6ELW (Oakland) bought a dozen 2 filament Audio tron tubes over 50 years ago. He used a couple of them and saved all the rest. He found them the other day and sent one to W6AX, W2ICE and a couple other friends. Temp recalls the tungsten filaments were very easy to burn out -- so new ones such as these with good filaments are rare!

A TOWER IN BABEL by Erik Burnow. "A History of Broadcasting in the U.S. to 1933." (at all bookstores $8.50) This is the latest book (released in November) available to the historian interested in the development of broadcast stations, systems, programs, etc. Highly recommended although technical info is limited. (WJAW and K3CUI)

8 POINT SPARK WHEELS are still available from W6FX. They are a replica of Benwood's 8 point rotor of 1920 and really sings with a nice 240 cycle note. The casting are available at $5 each and you finish the inside mounting surface--- or $15 plus shipping for complete job. Gap has 6 1/8" O.D. with 3 1/16" I.D. (Tate sent us a color pix which we can't reproduce). Write: Tate Thetraen, W6FX
27209 W. Six Mile Rd.
Detroit 40, Michigan
After long deliberation, we herewith present the best audion manufactured today in the United States. Of all the detectors in use, none present the accumulation of advantages offered by the Audion, the "Electro" model being designed from the result of long and extended experiments. While the crystal types of detector present many advantages, they have the one great defect of not holding their adjustment, especially on receiving from a nearby station. The Audion, not only ranks, as the highest in sensitiveness, but possesses that much sought for characteristic, stability of adjustment. Loud signals do not affect the adjustment, and, on the contrary, seem to improve the sensitiveness. When receiving from loud or nearby stations, the light will be noticed to flicker in the bulb, and the signals can thus be read without the use of a telephone receiver, this feature being found in no other detector. Signals received by the Audion are extremely loud, and most stations in the vicinity of the receiving station may be heard with the phones three feet or more from the operator's ears.

The "Electro" Audion, consists of a vacuum bulb containing two filaments of tantalum, connected in series with a lead taken off at the connecting point of both filaments. One filament is used at a time, and at the exhausting of one filament, the other may be resorted to. This gives double the life which is obtainable from other audions. The filaments are used on 4 volts, which may be obtained from storage battery or dry cells. The bulb also contains a wire which is bent in a zig-zag form, and called the "grid." A small sheet of nickel foil is also contained in the bulb. It is behind the grid and the metal foil. Under normal conditions, the current from a 30-35 volt battery connected with a telephone receiver has great difficulty in passing through the heated vacuum space. However, on reception of the wave trains, the current from the battery passes through the vacuum and produces an audible sound in the receiver. The audion is the most suited detector for wireless telephony owing to its faithful reproduction of every wave. The 30-35 volts required for the telephone receiver circuit, may be obtained from 6 to 7 flash light batteries.

Inasmuch as the current used is practically zero, a set of these cells will last for a long time. The apparatus is connected as shown in the diagram. In this instance a loose-coupler is shown, giving the set the maximum degree of selectivity. The rotary rheostat is also used, our No. 5000, which is very suitable for this purpose in regulating the filament current. The flash lamp dry cells are also shown connected in series with the telephone receiver.

IMPORTANT: On account of the great manufacturing difficulties we do not guarantee the Audion. We carefully test each and every one but cannot take back Audions under any circumstances whatever.

Full instructions given with each instrument. Size of base, $\frac{5}{4}$ in. x $\frac{3}{4}$ in. Height, $\frac{3}{4}$ in.

MOUNTED ON SOLID OPAL GLASS BASE.

No. 8200 The "Electro" Audion as described and illustrated......$5.00

Early de Forest Audion advertisement from E.I. Catalog. Hugo Gernsback was one of the first to recognize the value of the triode. Collectors are paying as high as $25 for an E.I. catalog — depending on year and condition.

KEEP THE BULLETIN GOING
send us current news items on museums, collections, old gear, magazine, book and newspaper articles concerning early radio and its pioneers, activities...
BROADCAST RECEIVER A-V-C CLASSIFICATION

Broadcast receivers using tubes can be broken into three categories. One will find some overlapping plus models that just don't seem to fit into any particular class -- the criteria, however, is usually the year the set was made.

"A" (Antique) Class 1920-21-22-23

Since broadcasting started in 1920 -- this is where we begin. Receivers in this group are usually regenerative with 1 to 4 tubes. One may find an occasional reflex as well as one with a stage of RF (tuned or otherwise). The exception, of course, is the early Leitz super-set which came out toward the end of the era. In general, the ANTIQUE (A) receiver can be identified by one of the following features:
- UV type tube sockets, tubes projecting through the panel or 'peep' holes, a rheostat for each tube, projected type knobs, earphone jacks for each stage, tapped inductance switches and binding posts on front panel. Some of the real early sets (circa 1920-21) were made in separate units -- one for RF/Dec. and another cabinet housing the audio section, etc. Remember -- crystal sets, amateur and commercial receivers (such as the IP-501, etc) do NOT fall of receivers.

"V" (Vintage) Class 1924-25-26-27

This is the great neutrodyne era -- the old 3 dialers using 201As! Of course there are exceptions such as the Radiola superhet series using 199's in the detector, the 1 tube Crosley "Pup" etc. In general, "V" Vintage receivers were massed produced, battery operated (or "A" and "F" eliminators), binding posts now in rear, used cone or magnetic speakers, had power tubes in output such as 120 or 112A, etc. One could also include in this group some of the prime domers of the era such as Leitz, Federal, Kennedy and Grebe models which were made specifically for broadcast use.

"C" (Classic) 1927 and later

With few exceptions, all receivers in "C" Classic group are AC operation. A "Classic" is NOT an ordinary broadcast receiver -- it is one designed for the discriminating listener. Most Scott receivers are a "C", certain Stromberg-Carlsion models, Silver-Marshall, National, etc. One might even include the famous Hallicrafter DD-1 (1937) diversity receiver in this group. Postwar "Classics" are rare -- an example would be the Scott Model 16A or 500B.

As mentioned earlier, there are some borderline cases. We would like to hear from members and get their thoughts on the subject. In the meantime, let us try and use the "AVC" system for identification.

HISTORICAL MATERIAL
REQUIRED

The City of Fulda in Hesse, West Germany, is building a museum to honour Karl Ferdinand Braun, famous scientist and wireless pioneer.

Prof. Braun's daughter-in-law is endeavoring to obtain as much information as possible to turn over to the Curator of the new Braun Museum. If you have or know the whereabouts of original material, papers, etc. relating to Prof. Braun, would you kindly write her?

MRS. KONRAD F. BRAUN

POTTER LANE

KINGSTON, RHODE ISLAND

NEED FOR NEW TUBES - - - ? We received an interesting letter from Don Rathke out in St. Louis who like many others have questioned at times the need for the large variety of tubes and transistors. To prove his point, he took a Model 21FL Admiral television receiver and substituted 18 semi-antique tubes and the set worked perfectly! In some incidents it was impractical to make a change such as with the 1B307 HV rect. or 616 osc./mixer. Examples: 2A5 for 6V6, UX210 for 684 (vert. output), a 53 or 27's for 6937, etc. Other than changing the sockets or filament voltages, no great modifications were necessary except re-alignment and changing a couple of resistors. We might add, however, don't start substituting UX210s for 6H4s . . . you will run out of room . . . !!!!

RESTORING OLD TELEPHONES - ? Listed below are the addresses of two small firms who specialize in supplying all kinds of parts for telephones -- from magnetos to mouthpieces. In addition, they offer a wide variety of complete units such as old fashion wallphones, imported French desk sets, etc.

Telephone Engineering Co.

Simpson, Penna., 19407

Lewin's Antique Telephones

5215 W. 77th Terr.

Prairie Village, Kansas, 66208
Following is a brief story of the Atwater-Kent Radio Co. No attempt has been made to go into detail about certain models or construction of the equipment—all of which can be found in service manuals. Instead, the reader can learn a little about the founder and the history of the company—one of the largest manufacturers of battery broadcast receivers in the world.

Frank Atlee—KEPI

Atwater Kent was born in 1874 and attended Worcester Poly Tech. In 1902 he opened a small electrical manufacturing business in two rooms on North 7th Street, Philadelphia where he made pocket voltmeters for use by Telephone Company employees. His business expanded so much that by 1912 he moved and occupied an entire building in the same neighborhood. By now he was making electrical parts for automobiles and in 1914 he was awarded a medal by the Franklin Institute for his invention of a device called "Unisparker"—apparently an ignition distributor for automobiles of that vintage having two to six cylinders. Along about this same time he also developed a reliable ignition system for the Model T Ford.

With this background in electrical products it is not surprising that he turned to radio after the war (1919). For a short time the Atwater Kent Manufacturing Co. made both radio as well as his other products. Increasing business made it necessary to move in 1922 from the downtown address to a larger factory on Stenton Ave. (Germantown, Penna.) By now (1923) he was making a large variety of parts which could be assembled by the home constructor to make into complete sets.

In late 1923 Kent announced for the Christmas season the sale of a complete 5 tube receiver made up of parts mounted on a board. This was the famous Model 10. Shortly thereafter (Spring, 1924) he added the Model 9—a 4 tube set. Both, of course, were regenerative and were distinguished, as were all A-K sets, for beautiful finish and fine workmanship as well as excellent performance. Kent took a personal interest in the appearance of his products both inside and outside and insisted on perfection! By the end of 1924 it became apparent that a cabinet model was desired by the public. The answer was the well known Model 20—a 5 tube neotrodyne which was equally successful in sales.

Each year saw an increase in volume of sales and popularity of A-K's products with the peak year in 1927-28 when 900,000 sets were sold! These consisted mostly of the A.C. Models 37, 38 and 40 which was in great demand by the public since they did away with the bulky batteries or the A & B eliminator if one were fortunate enough to have A.C. mains.

The year 1928 was also memorable because of a visit by Professor Theremin of Russia who attempted to sell Kent the patent and manufacturing rights to his electrical musical instrument The Theremin. Mr. K experimented with the device in his lab for sometime but was not convinced of a sales market. 1928 also was marked by another visitor—Miss Helen Keller. Mr. K presented Miss Keller with a special made magnetic speaker which enabled her to enjoy music through her fingers by placing them on
Frank Atlee (K2PI) and his collection of A-K receivers. Others were added since the picture was taken.

the vibrating cone.

A-K did not wish to make console receivers since the company was primarily a manufacturer of metal and bakelite products, however, competition from Majestic in 1928-29 forced him to take some action. In 1930 he announced a console set with dynamic speaker which he called the "Radio with the Golden Throat". But times were changing -- the stock market crash of late '29 had greatly decreased the interest in high price instruments and with competitors beginning to make small table models at low prices with marginal profits, Kent no longer had the market... New sales management and streamlining of the organization did not help too much. Result: Mr. K lost interest in the business and spent more time with his hobbies of collecting grandfather clocks and antique automobiles. By June 1936 the plant was closed down for good, but not before the entire factory together with the name and goodwill was offered for sale at a price of eleven million dollars.

There were no takers. The employees

--- ABOUT OUR AUTHOR ---

Frank Atlee, K2PI (ex-3FA) was employed by the Atwater-Kent Company from January 1923 until April, 1933. Frank is an active radio amateur and historian. He owns a fine collection of early radio equipment and in his spare time edits a local radio paper.

who had been with the company for many years were awarded several months pay and many found employment with Philco, RCA or one of the other radio manufacturers.

After closing the plant, Kent moved to Hollywood, California and bought a palatial estate where he soon became known for his lavish entertainments. In the fall of 1948 he became ill and was hospitalized with a virus infection and complications. He died March 4, 1949 at the age of 75. In his memory, he established the Atwater Kent Museum on North 7th Street, Philadelphia --- a museum primarily centered around marine history. Admission is free and is maintain---
CIRCUIT USING ONE STAGE OF RADIO FREQUENCY AMPLIFICATION AND DETECTOR. ATWATER KENT UNITS EXCLUSIVELY

- Type 11 Tuner
- Potentiometer
- 1 Rheostat
- Stage No. 1 R-F Transformer
- 1 Standard Socket Detector Unit
- 1½ volt tube, may be used if desired. Outside post of dry cell corresponding to minus

ATWATER KENT MOUNTED VARIOCOUPLER

When using a Variocoupler with radio frequency amplifier, this type of circuit is recommended.

CIRCUIT USING TWO STAGES OF RADIO FREQUENCY AMPLIFICATION AND DETECTOR. ATWATER KENT UNITS EXCLUSIVELY

- Type 11 Tuner
- Potentiometer
- 2 Rheostats
- Stage No. 1 R-F Transformer
- Stage No. 2 R-F Transformer
- 2 Standard Sockets
- Detector Unit
ed by a fund he setup as a foundation. A full column story concerning the closing of the business appeared in an issue of Time magazine, June 1936. So ended the career and business of a pioneer manufacturer. The radio collector can't help admiring the clean beautiful sets made by A-K - a credit to the founder....

Of interest to the radio amateur - - Clarence Tuska of A.R.R.L. fame was Patent Attorney for the Atwater-Kent Co. Tuska later became Director of Patents for RCA.

**DESCRIPTIVE LIST OF ATWATER KENT RECEIVERS**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Model No.</th>
<th>Tubes</th>
<th>“Open” or Board Type Battery Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>4052</td>
<td>4</td>
<td>Type “11” tuner, 1 stage fixed R.F., det. and 2 stage amp. unit, potentiometer control.</td>
<td></td>
</tr>
<tr>
<td>4066</td>
<td>5</td>
<td>Type “11” tuner, 2 stages fixed R.F., det. and 2 stage amp. unit, potentiometer control.</td>
<td></td>
</tr>
<tr>
<td>4040</td>
<td>10</td>
<td>Two stages tuned R.F., 3 variable condensers, 3 R.F. transformers, detector, 2 stage unit and potentiometer. Gray-green condensers.</td>
<td></td>
</tr>
<tr>
<td>4445</td>
<td>9</td>
<td>One stage tuned R.F. amp., 2 tuners and det. 2 stage unit, potentiometer control.</td>
<td></td>
</tr>
<tr>
<td>4333</td>
<td>5</td>
<td>Type “11” tuner, 5 stages fixed R.F., det. and 2 audio—all tubes in one metal container.</td>
<td></td>
</tr>
<tr>
<td>4090</td>
<td>10</td>
<td>Two stages tuned R.F.—3 var. condensers, etc., same as No. 4340, but different wiring.</td>
<td></td>
</tr>
<tr>
<td>4550</td>
<td>5</td>
<td>(10B has 3 tap ant. switch.) Similar to 4340. Brown conds., with battery cable attached.</td>
<td></td>
</tr>
<tr>
<td>4550</td>
<td>5</td>
<td>(10B has 3 tap ant. switch.) Same as 4550, but black variable condensers.</td>
<td></td>
</tr>
<tr>
<td>4650</td>
<td>12</td>
<td>Two stages R.F., det. and 3 stages audio—3 variable condensers, cable attached.</td>
<td></td>
</tr>
<tr>
<td>4600</td>
<td>10</td>
<td>Similar to 4340 &amp; 10B 4550-4560. No pot. One R.F. rheostat only for both R.F. tubes. Similar to 4620, but with switch to control last audio stage, and no potentiometer.</td>
<td></td>
</tr>
</tbody>
</table>

**Cabinet Type Battery Sets**

- Two stages tuned R.F., large cabinet, 5 dials, 3 pt. ant. tap switch, 2 rheostats.
- One stage tuned R.F., large cabinet, 3 dials, 2 pt. ant. tap switch, 2 rheostats.
- Same as 4640, but in “deluxe” cabinet, with feet.
- Small mahogany cabinet, 3 dials, tap switch, battery cable attached.
- Same as No. 7570, but with sockets and rheostats for 3-volt dry cell tubes.
- Same as No. 9170, but with “UX” type sockets and other refinements.
- One tuning dial, small mahogany cabinet, two rheostats, 3 stages R.F.
- Metal cabinet, tubes inserted from bottom—one dial, one rheostat, ship-type name-plate.
- Long cabinet, one dial, two rheostats—4 stages R.F. double R.F. transformers.
- Small mahogany cabinet, one dial, ant. knob, two rheostats, double R.F. transformers.
- Large deep mahogany cabinet, several metal shielded compartments inside, one dial, antenna adjusting knob, 2 rheostats.
- Similar to Model 20, but gold panel.
- Similar to Model 35, but gold panel.

**A.C. Sets—Using “A.C. Tubes”**

- 9300  36  6 and rect. Small mahogany cabinet, same as Model 33; Type Y (metal), A.C. power unit goes with Model 36 set.
- 9500  37  Metal cabinet contains set and power unit, 3 stages R.F., 1 dial, 1 volume control knob, ship-type nameplate.
- 9400  30  Same as Model 37, but double R.F. transformers and 4 stages R.F. amp., 1 dial.
- 9800  40  Same as Model 37, metal cabinet, but black dial and volume knob and other minor differences; modernistic nameplate.
- 9850  42  Same as Model 40, but with automatic voltage reg., half foot, dial in 5 divisions.
- 9900  44  Same as Model 42, but with double R.F. transformers, 4 stages R.F. amp.
- 9930  52  Console type—metal stand, speaker in base, antenna and ground leads supplied; set chassis same as Model 42.

**Direct Current (110-Volt) Sets**

- 9910  41  Metal cabinet contains set and power unit, 3 stages R.F., detector, 2 stages A.F. (last stage “push-pull” type, 2 tubes, one mounted on right-hand side of power unit), Filaments in series. Chassis similar in appearance to Models 37, 40, 48 and 52.

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**ATWATER KENT**

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JACKPOT!! ---ever dream of finding a box full of real old gear and have the owner casually say "You can have the whole works for a couple bucks"?..... Well, this happened to Mel Comer, Ardmore, Penna., recently.

Mel went over to see a fellow who had two old battery broadcast sets for sale. During the conversation the fellow mentioned he also had some old parts -- would he want them too? He then dragged out a large box on top of which was a nice loose-coupler. Removing the coupler Mel came on a pile of honeycomb coils under which he found an early E.I. Coherer!! Hesitantly he removed the coherer and some other material and found a Clapp-Eastham dual detector and a beautiful slide tuner! -- and then at the bottom lay an E.I. Audion Control unit with an early pickle tube -- unlike anything he had ever seen before!!

Scattered around in the box were old papers and a log which indicated the original owner had bought an electrolytic detector June 30, 1906, a carborundum and silicon detector plus a magnetic detector in 1907. The log also proved interesting. On June 9, 1915 he heard his first voice signals on wireless. In November, 1915 he wrote a letter to E. Armstrong and in April, 1917 he was told to dismantle his station!

Oh yes, Mel bought the two old broadcast sets and threw them away as soon as he got home.....

**FLAT TOP ANTENNA AT K6DX** ---Harry sent us a recent picture of his beautiful 4 wire flat top antenna circa 1923. Unfortunately, the several wires don't show too well for reproduction but it does provide an opportunity to plug this type of antenna. First, if you're using old time equipment --- transmitter or receiver --- and you want an authentic setup --- you just have to have either a multiple wire flat top or cage type antenna. Of the two --- I think you'll agree, the flat top is the easiest to construct. Next --- a multi-wire radiator of any kind is more efficient than a single wire and it has broadband effect --- we use one here at W6AT.

**WB6TQO** --- on 40 and 80 meters --- don't let the new call fool you --- it is our old friend Dick Johnstone, old "RF" from KPH! His program at the Meet covering the "SS ON THE SS CONGRESS" was so well received that he and WBAX are thinking of making another --- this time on the "SS CITY OF HONOLULU" which burned and sank in mid-ocean enroute from Los Angeles to Honolulu, Oct. 12, 1922.
S-14 CATHODE RAY TUBE

Small cathode ray tube in glass envelope similar to both of usual 6-U power tube. Equipped with single set of detector grids. Designed for such uses as voltmeter, ammeter, and resistance indicator.

**MAIN CHARACTERISTICS:**
- Filament Voltage: 3.6 volts
- Filament Current: 0.6 ampere
- Amplifying Voltage Electrode Sensitivity: 0.1 mV per volt

**Stock No.: T2-2**

**Price:** $10.00

---

ARCTURUS WUNDERLICH TUBE

From purpose tube; Detector, Amplifying, Auditory Control and Control in one tube. Designed so that it shall not load the input source as is the case with double diode tubes. The tube, therefore, fully sensitive, selective and proper automatic volume control setting was not retained with the Wunderluch tube. It permits increased output from low input impedances. High level A.C. Amplified A.C. control bias to handle any range of input signals. Much greater undistorted output. Further improvements in the quality of reproduction. Possibility of inter-changing set operations.

Stock No.: T2-11

**Price:** $1.80

---

SPECIAL 3 AND 5 VOLT TUBES FOR SPARTON AND KELLOGG SETS

In addition to being used in Sparton sets, these tubes may also be used in Kellogg, McMillan, Mohr, Day-Fan, March, Cenixon, Bell, Waugh, Work, Franks, Shumen, Bausch & Lomb, Minneco, Cuneeda, Liberty, Mosc, Supervisory and Case. Available in Sparton A.C. Amplifier, 5 volt Alumix, 3 volt Alumix, 3 volt A.C. Amplifier, 3 volt A.C. Amplifier B and C, American (Spartron & Kellogg Type) 5 volt Alumix, 3 volt Alumix, 3 volt A.C. Amplifier, 3 volt A.C. Amplifier B and C, American (Sparton A.C. Amplifier).

Stock No.: T2-11

**Price:** $1.80

---

3 VOLT TUBES SOVEREIGN—TYPE 375

These tubes were purchased direct from the Sparton Company for low internal capacity. These are 3 volt general purpose tubes with A.C. leads going into the top.

Stock No.: T2-0

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CoCo AND SONOTRON Type 375

A set of 3 volt tubes with A.C. leads going into the top. These tubes are used in Sono and C. C. connections which will contain side plates.

Stock No.: T2-24

---

WESTERN ELECTRIC TUBES

VT-1

Used in U.V. reflector. Voltage 75 volts, plate voltage 43 volts. Used as anode of No. 100 tube. Pack of 3 tubes to customer.

Stock No.: T2-11

Price: $3.25

---

VT-2

Used in U.V. reflector. Voltage 75 volts, plate voltage 43 volts. Used as anode of No. 100 tube. Pack of 3 tubes to customer.

Stock No.: T2-11

Price: $3.25

---

102-D


Stock No.: T2-11

Price: $2.95

---

RECTIFIER CHARGER BULBS

25 Day Guarantee

For replacement in all new and old power centers and Radios 26 and 1 amp. Model.

Stock No.: T2-11

Price: $1.25

Stock No.: T2-24

Price: $1.25

Stock No.: T2-26

Price: $1.25

Stock No.: T2-28

Price: $1.25

---

UX-200 DETECTOR TUBE

Specially designed U.D. Base Detector Tube drawing a special price.

Stock No.: T2-11

Price: $3.00

---

TRANSMITTING AND POWER AMPLIFYING TUBES

These tubes carry a 90 day guarantee from date of purchase. Ratings same as R.C. A. Type.

Stock No.: T2-11

Price: $1.60

Stock No.: T2-24

Price: $1.60

---

Sylvania, PHILCO TUBES

These Sylvania tubes are special tubes used in Philco receivers.

**Type**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>$1.00</td>
</tr>
<tr>
<td>40</td>
<td>$1.00</td>
</tr>
<tr>
<td>41</td>
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<tr>
<td>42</td>
<td>$1.00</td>
</tr>
<tr>
<td>43</td>
<td>$1.00</td>
</tr>
<tr>
<td>44</td>
<td>$1.00</td>
</tr>
</tbody>
</table>

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UX-216-B RECTIFYING TUBE

This well known Radium UX-216-B is a half wave rectifier. It is equipped with the well-known long life rugged Filament. Used in most sets where high voltage rectification is required. Two UX-206-B's may be used for half wave rectification.

Stock No.: T2-11

Price: $1.15

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Page from a "depression" radio catalog -- note writeup on the Wunderluch tube and the prices for the VT-1 and VT-2... Also note 50 UX-200's for $3.00 !!!