"A WINTER STORM...."
Change In Address?
Mail information to the Treasurer who handles current mailing list.
(Not the Secretary)
L. A. CUNDALL, W2LC
69 BOULEVARD PKWY
ROCHESTER, N. Y. 14612

AWA NETS (EST/ESDT)
PHONE (SSB)--3866 kc. Tuesday 8 PM
Mon.-Wed.-Fri. at 9:30 AM
Sunday -- 7242 kc. 12 Noon
Tuesday--14270 kc. at 5:30 PM
CW -- 3584 kc. daily at 4 PM
First Wed. each month at 5 PM
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   The Old HRO Receiver
   The Hammond Radio Museum
   Cutting & Washington Co.
   Identifying Horn Speakers
   The Astatic Condenser Mike
   Collecting RCA Tubes
   Regeneration in SW receivers
   The Type "D" Tuner
   Collecting Batteries
   The Radio Products Co.
   Wm. Housekeeper - Pioneer
   plus much, much more....

COMING EVENTS
ANTIQUE WIRELESS ASSOCIATION

Jan. 16-17, 20-21 AWA OT Contest
Mar. 20-21 ARRL North Carolina Convention, Charlotte, N.C.
Apr. 9-10 AWA Southeast Conference Charlotte, N.C.
Apr. 16-17 Annual IHRSA-AWA Meet Auburn, Indiana
Apr. ---- Annual CHRS/AWA Meet Los Altos, Calif.
May 1 Local AWA Spring Meet East Bloomfield, N.Y.
May 2 AWA Museum Opens
May 14-15 State ARRL Convention Rochester, N.Y.
May ---- Upper Mid-west AWA Meet Minneapolis, Minn.
July 17 Local AWA Summer Meet East Bloomfield, N.Y.
Sept. --- Annual Gaithersburg Hamfest, Maryland
SEPT. 29-30, OCT. 1-2 National AWA Conference, Canandaigua.
Oct. --- West Coast ARRL Convention St. Petersburg, Florida
Oct. 31 AWA Museum closes
Nov. 6 Annual Business Meeting
Nov. 20 Annual Worker's Xmas Party, Ionia, N.Y.

Dates and other events will be listed in the March Bulletin.

The Outlook

A new slide show will be presented at most 1982 Regional AWA Meets. It consists of pictures with tape commentary describing some of the more unusual radio museums in the States as well as several outside the Country. Both public and private exhibits are represented. Check your local AWA programs for time.

A different type show is also in the making: an entertaining production covering the 1930's. It may be finished in time for the 1982 Conference.
REPORT ON ANNUAL CONFERENCE

A GREAT TIME!  AUCTION - WOW!

BIG FLEA MARKET...--

TOP SPEAKERS...

..SEE OLD FRIENDS AND MAKE NEW ONES.

In spite of the late season date, our 1981 Conference was another success. True, the weather was a bit blustery at times, but excellent programming and a large flea market response overshadowed this handicap.

The outside flea market, in a new location, saw activity starting as early as Tuesday. The inside area also proved popular where smaller items were available. Participants were orderly and co-operative.

Surprisingly, attendance wasn't down as much as expected with most old standbys checking in by Wednesday along with many new faces. The event took on an international flavor with members from Switzerland, Japan, Norway and Australia -- the latter two having traveled all the way to the United States purposely to attend the Conference! We must also mention W7AHK and W7BCT who, with their wives, drove all the way across the country from the state of Washington to attend!

Programming featured two added talks not on the original program: Kaye Weedon (Oslo, Norway) gave a well-prepared paper on pioneer megwatt station at Malabar, Java, and an informal discussion on pre-1912 wireless. More on this later.

The Old Equipment Contest brought in the usual fine collection of gear with Ralph Muchow winning the "Best of the Show" with his rare WWI transmitter.

The General Auction (see next page) out-distanced all previous events in amounts paid and number of items sold. The Auction Committee is commended on an outstanding job. The success of the auction is important to the Association since 10% of the sales goes to the Museum Maintenance Fund.

The following members are to be congratulated for outstanding achievements in various fields:

* **Houck Documentation Award:** Alan Douglas (presented by Elliot Sivowitch, Smithsonian Institution)

* **Houck Preservation Award:** John Caperton (presented by Thorn Mayes, W6AX Foothills Museum)

* **Tyne Vacuum Tube Award:** John Stokes, Auckland, N. Z. (Presented by Bruce Robeson, AWA Tube Committee)

* **Elle Craftmanship Award:** Bob MacIntyre, VE4ZX, Winnipeg, Manitoba (Presented by Treas. Linc Cundall)

* **1981 OT Contest Award:** Charles Hinkle, K4TS (presented by Vic Clark, W4KFC, Hon. Sr. V. P. A.R.R. L.)

* **President's Award:** George Batterson, W2GB for 30 years of outstanding devotion and contribution to A.W.A.

Both evening dinners were occasions for good fellowship, relaxation and fun. Friday found Ralph Williams and Lauren Peckham handing out ribbons for outstanding equipment (to be listed in the March OTB) and David Peckham skillfully recreating the piano accompaniment to a hilarious silent comedy.

Saturday night was the big finale with all kinds of activity -- including Sid Prior and Mel Comer adding their considerable humor -- so necessary for every occasion. I might add, Mel went all out this time -- lotsa laughs.

Next year? Yes, we've booked the Sheraton for almost a month earlier: Sept. 29, 30, Oct. 1 and 2. Start planning now! (Note: The Sheraton will NOT accept room reservations until after Jan. 1)

(Continued on next page)
SUMMARY OF CONFERENCE AUCTION

(f) Fair, (g) Good, (vg) Very Good,
(e) Excellent. All sets without tubes unless noted as "w/t".

AK-10 (g)$240, AK-10 (e/w/t)$420, AK-20 (e) $49, AK-30 (g/w/t) $30, AK-33 (e/w/t) $35, AK-35 (vg)$35, AK-37 (w/t) $35.

AK-43 (w/spkr)(g)$40, AK-44 (w/spkr)(t) (e)$41, AK-84 (w/t/g)$95, Radiola II (w/t) (e)$185, Rad. 20 (e)$95, Rad. V (w/t) $40, Rad. 60 (w/t/spkr)(e)$75, Rad. V (w/t/g)$150, Rad. III w/bal. amp (g)$90.

RCA Mod. 60 (f)$25, Crosley 124 (w/t/g) $50, Ace (w/t)(g)$100, NR6 (w/t/vg) $50. NR5 (e)$42, Radiola 17 (w/t)(g) $47, Grebe CR-18 (g)$200, CR-9 (e) $350, RA tuner (e)$75, RADA (w/t/g)$100, Aeriola Sr. (w/t/g)$100, Tuska 224 (vg) $135, Super-tone (g)$40, Fada 6 (f)$30, Kennedy 110 (g)(needs re-wiring) $760, Kennedy 220 (w/t/vg) $360, WE 4D (w/t/vg) $360, WE 4B & 2B (w/t/g) $450, Pup (w/t) (e)$185, Pup (g) $155, XL-25 (g)$15, De Forest 9-panel (g)$60, DeForest D-12 w/loop (t) $150, Fada 7 (g)$39, Westminster RC (e)$130, Fresh Masterpiece (w/t/vg)$345, Sleeper 5-tube (w/t/spkr) $105, Roberts Reflex (w/t/g)$45, Magnavox AC-2 w/amp (g)$255, Spartin 6-66A (g) $5, Philco 37-61 (g)$50, Sentinel Book radio (w/t/g)$60, Bottle radio (w/t) (f) $35, Clock radio (e)$90, Halli. 538D (e) $35, Halli. S-11 Super Skyrider (e) $155, SW-3 (w/t/g)$85, Nat. 1-10 (g)$70, Super-PRO (w/b/g) $40, Lamp radio(f) $200.

Zenith 10-tube table (f)$30, RCA Victor Mod. 118 (w/t) $40, Stewart-Warner 140 (w/t/g)$25, Crosley AC consolation Mod. 801 (e)$80, Philco w/clock Mod. 51 (vg)$270, WE-7-A, 2A pwr, 10-D horn (w/t)(g)$150, Era (g)$40.

CRYSTAL SETS:
DeForest Mod. 600 (g) $200, Junior Grand xtal set (g)$200, Homemade coupler (e) $60, Aeriola Jr. (g) $150, Clapp Eastham pre-WW1 swing-arm slider type coupler (vg)$275.

LOUDSPEAKERS:
AK Mod. E (g) $20, Crosley Dynacone Mod. F (g) $30, RCA 106 w/pwr supply (vg) $15, Tower Ship spkr (g) $80, Soliddorf Mod. D (e) $65, Magnavox R-3 (e)$65, WE 3A horn & 55I driver (e) $55, WE 10D horn (e) $52, Dictograph horn (e) $65, Bristol horn (g) (92, RCA 100A (g)$20, Pacent cone (vg) $40, W. E. cone (e) $55, Burns horn $150.

TUBES:
Kino-lamp (g) $42, DeForest tubular T (vg) $85, WWI CG-1102 (g) $25, rare developmental UV-199 (g) $44, Emerson multi-valve (g) $55, 204A (open fila.) $15, 831 & 861 tubes (g) $55, UV-876 & UV-886 tubes (g) $17.

MISCELLANEOUS:
Magnet. tele, ringer (vg) $25, 330 issues of Radio News/Radio Craft, etc. $125, GR Type 213 aud. osc. $25, GR Type 358 wavemeter $30, 1/2 kw spark xmrtr w/ Thordar. xmfr. $165, Weston 676 tube tester (g) $20, Silverton wire recorder (f) $10, Webster Wire Recorder (g) $45, Jackson #115 tube tester $20, Jackson 41-B sig. gen $15, Cent. Scientific tangent galvanometer (e) $148, Hewlett-Packard VTVM 400 (g) $15, Instograph (e) $20, Riders X & IX $10, Mathiesen loop antenna in orig. box $130, Omniphotograph (vg) $85, Crosley adver. sign (f) $75, WE port. telephone (g) $50, Baldwin phones (g) $12, Cunningham adver. sign (g) $160, DeForest catalog No. E (g) $30, Riders I thru XIV (f) $60.

COMMENTS:
Obviously, all sales are not listed. It was surprising the number of items not sold either through lack of interest or owner had too high "minimum bid". In spite of this, total sales reached an all-time high. The auctioneering committee are to be congratulated for their excellent teamwork and Bruce Rolson for his nearly 4 hours of fast-paced auctioneering! Statistics: There were 242 bidders and 71 sellers, 255 items up for sale (not all were up to bid due to lack of time). Thanks for your help... Museum Maintenance Fund Committee.
RADIOLA III/IIIA MODIFICATION
by Richard Ransley, WA2TLR

Most present day owners of the popular Radiola III or IIIA assume that the only "correct" type of tube to be used is the WD-11. Not necessarily so! In 1925, the sales department of RCA issued a bulletin describing how the efficiency of the Radiola III family could be improved by the use of the Radiotron UX-120. The bulletin detailed how the receiver could be modified to accommodate this newly-introduced output amplifier tube.

Sales of the Radiola III began in mid 1924. This widely advertised set was no doubt one of the most popular of the Radiola series. Its affordable price of $24.50 brought radio into the homes of thousands of families. An optional balanced amplifier was available if the owner wished to obtain loudspeaker volume. Also marketed at the same time was the Radiola IIIA, which combined the III and balanced amplifier in one unit.

The III/IIIA were the first receivers to use the bakelite version of the WD-11, the dry cell tube developed by Westinghouse. The earlier brass-based WD-11 had been first used in the Aerola Senior receiver, introduced in 1922. The tube's oxide-coated platinum filament was rated at .25 amperes at 1.1 volts, and was intended for use primarily as a detector.

Not long after the introduction of the Radiola III, an increased emphasis was being placed on higher audio output power from receivers. To satisfy this need, General Electric developed the UX-120, intended as a final audio stage for sets equipped with UV-199/UX-199 dry cell tubes, also produced by General Electric. The Radiola 25 and 28 were among the first sets to use the UX-120. The improved output power was substantial.

It was for this reason that the RCA Sales Department issued Bulletin No. 6 dated December 11, 1925 — barely a year after the introduction of the Radiola III.

Owners of these sets could upgrade the performance of a receiver which otherwise would soon be rendered rather obsolete, with the

![Circuit diagram]

Figure 1 — Circuit connections for modifying the Radiola IIIA to use 3 UX-120 and 1 UX-199 tubes. This was one method recommended by RCA to improve performance.

(Continued on next page)
Figure 2 — Alternate method required two wiring changes. Adapters, of course, were needed for all tube sockets.

Figure 3 — Radiola III with 2 UX-199 tubes.
superior performing sets appearing on the market. Dealers, likewise, could use the bulletin as a sales tool for disposing of unsold Radiola III/III A inventory, which was still considered a most economical set.

The eight page bulletin offered two methods of modifying the sets.

Method I, shown in Figure 1, required no internal wiring changes, but rather the addition of a 6 ohm rheostat in the filament circuit. Battery setting controls, on the set, were already kept fully 'on' and the filament voltage was subsequently controlled with the external rheostat. The detector stage used a UX-199 which has the same 3.3 volt filament rating as the UX-120. Note the higher battery voltages required for the filament and plate supply.

Method II involved two internal wiring changes in the set. As originally wired, filament control of the balanced amplifier tubes and detector/first audio were independent of one another. The change placed both rheostats in series with all four paralleled tube filaments. Voltage on all tubes was controlled with either rheostat.

Radiola III sets likewise could be modified in either of two ways. The first method, Figure 3, used two UX-199s and was recommended for reception of signals from distant stations, where higher voltage amplification was desired.

In stronger signal areas an alternate method used the UX-120 in combination with a UX-199, which boosted loudspeaker output. The original +40 V amplifier plate supply has been increased to +135 V along with an increased "C" supply to properly bias the UX-120 tube.

These factory-recommended changes may easily account for Radiolas that occasionally turn up with adapter sockets and UX-199 and UX-120 tubes instead of WD-11s. Instead of promoting obsolescence, RCA, with its bulletin, actually extended the useful life of a popular receiver.

AWA NET

List

An up-to-date list of all AWA Net Members is now available. The list includes both CW & SSB participants and gives call, handle and QTH. Send SASE to:

Ken Gardner
42 Oakdale Ave., S.
New Hartford, N.Y. 13413
1896 ... Dr. G. A. Cardwell manufactured telegraph keys and sounders for Western Union Company, a factory in New York City.

1907 ... G. A. Cardwell founded the American Telegraph Typewriter Company with offices at 27 William Street, New York City, and a factory at Prospect Street, Brooklyn, New York.

1907 ... Allen D. Cardwell started working for his stepfather, Dr. G. A. Cardwell.

1908 ... Allen D. Cardwell Manufacturing Company started at Prospect Street, Brooklyn, New York.

From 1908 to 1944 Cardwell developed and manufactured variable air capacitors, telegraph sets, designed, manufactured and installed the first automatic stock quotation system at the New York Stock Exchange. During World War II, Cardwell developed the famous test sets: AN/TS173, 174, 175, and BC221.

1944 ... A. D. Cardwell sold interest out to Grenby Manufacturing Company, of Plainville, Connecticut, a manufacturer of machine tools and the Grenby cylindrical grinder. Grenby was owned by Carl Gray and Ralph Soby, whose fathers invented and founded the Gray Telephone Pay Station in 1885, which is used world wide. Cardwell Manufacturing Company moved to Plainville, Connecticut.

During the period of 1944 to 1952 Cardwell developed the facsimile equipment used by United Press International, the GMD meterological unit which is in use world wide for tracking weather balloons.

TYPE B
(Straight Capacity)

The all-time favorite developed in the early 1920's.

1952 ... Cardwell owners sold out to Chesapeake Industries, a holding company, taking back a mortgage on the entire factory. Chesapeake also owned Pathe Films and several other large factories.
THE CARDWELL TORODYNE CIRCUIT

IN developing the Toro-Tran for tuned radio frequency circuits, the Cardwell engineering staff has devised a circuit which affords the utmost simplicity in construction and operation and is designed to meet the standards of the best engineering, yet requiring the least number of parts to give as good results as any 5- or 8-tube receiver ordinarily constructed by the amateur.

The Cardwell Torodyne Circuit uses one stage of tuned radio frequency. By means of the potentiometer feature of the Toro-Tran, which nullifies tube and stray capacity by varying the voltage transferred to the preceding grid, a very convenient method of "neutralization" is secured. Owing to the low-losses of the Toro-Tran, the tubes will tend to oscillate when grids and plates are tuned unless a stabilizing element is introduced. The potentiometer gives this desired control and yet permits the tubes to operate at peak efficiency.

The second feature of interest is the use of a tuned plate on the detector—which increases the efficiency of the circuit tremendously by placing a high tuned impedance in the plate circuit and thereby forcing the tube to amplify at its maximum. As there is no magnetic feedback between the plate and the grid, and as the tube capacity (and all stray capacity) has been nullified, the circuit is not regenerative. At the same time it has all the advantages of regeneration.

The third feature of the circuit is the use of the new Cardwell Audio-Tran (audio transformer). This has such efficient amplifying characteristics that it will afford loud speaker operation on one audio stage. The Audio-Tran is a "compound" transformer which may be used in either high or low ratio stages or in push-pull circuits.

The Torodyne Circuit operates with indoor aerial, or outside aerial, if desired. The advantages of the Toro-Tran in rejecting stray and local signals are enhanced by use of smallerials and short leads throughout the circuit. Loops may be used for locals. Tuning is synchronous, and by means of Cardwell condensers (vernier type suggested) logging will be found to be extremely simple and accurate.

112-A—Radio Receiver
Price $30.00
Using detector; primary and secondary condenser; mahogany cabinet; range 200 to 750 Meters.

125-A—Radio Receiver and Amplifier
Price $125.00
Double Circuit, using primary condenser; detector; two stages of audio and one radio frequency.

For a brief period in the 1920's, the Cardwell Corporation manufactured a line of broadcast receivers and related components. Early Cardwell receivers are highly prized by collectors.
1956 --- Chesapeake Industries defaulted on the mortgage and the plant was returned to original owners.


1964 --- Cardwell purchased capacitor division of National Radio Company, Melrose, Massachusetts.

1964 --- Cardwell purchased Qak capacitor tooling.

1964 --- Cardwell purchased F. W. Sickles capacitor division at Chicopee, Massachusetts.

1967 --- Cardwell purchased Telerik Electronic Division, Lionel Corporation, Hillside, New Jersey.

1967 --- Cardwell purchased Lieco Incorporated, Syossett, New York, a manufacturer of microwave components.

1967 --- Cardwell purchased assets of Poly Repro Corporation, a manufacturer of microfilm reader printers.

1970 --- Cardwell purchased Pickard & Burns, Incorporated, Waltham, Massachusetts, a division of LTV Corporation. Pickard & Burns was started in 1911 by G. W. Pickard, the inventor of the silicone crystal diode, the forerunner of all transistors. Pickard & Burns manufactures submarine antennas, nuclear reactor temperature monitors, and antenna coupling equipment used worldwide.

1971 --- Cardwell purchased Hammarlund Capacitor Company, Mars Hill, North Carolina. Hammarlund is a famous name in radio receivers and variable capacitors. The name "HAM" is a tribute to Oscar Hammarlund, the founder, who came from Sweden, where he worked for the LM Ericsson Telephone Company. World War II saw thousands of Hammarlund receivers in use by the government.

The Taper Plate

Type "E" - - - -

The most unique and difficult condenser to manufacture. A "must" for the collector of variable capacitors.

1977 --- Cardwell purchased variable air capacitor division of Johnson Manufacturing Company, Boonton, New Jersey.

1973 --- Cardwell purchased E. F. Johnson variable receiver and transmitter capacitor division.

1980 --- Cardwell purchased Multronics, Inc., of Fort Lauderdale, Florida, a manufacturer of air inductors and high power switches used worldwide in broadcasting stations.

1981 --- Cardwell today manufactures over 15,000 different items under approximately 25 different brand names.
When the Japanese aircraft attacked Pearl Harbor, they were detected and tracked by the Army SCR-270 radar. However, radar was so new and unknown as to capability by the senior personnel that the information was, sadly enough, not utilized.

It is interesting to look back at this radar, designed when microwaves were a laboratory curiosity and megawatts of power were a concern only of major power stations.

The parameters selected for the radar were based more upon state-of-the-art in 1939-1940 than any real understanding of the radar equation. Surprisingly, for the type and speed of aircraft threats in that time period, many decisions made, were, in retrospect, good ones.

The radar was designed for a 150-mile range, but when located on a high site it frequently detected aircraft beyond 150 miles. The system consisted of two large van trucks, one containing a 32 KW engine generator and the transmitter high voltage power supply, the second being the operating van with the transmitter, modulator (called keyer in the early days), the water cooler for the transmitting tubes, the receiver and the display or indicator.

A stake body truck carried the antenna elements and a prime mover pulled the folded antenna tower and its drive for rotation.

The antenna consisted of a 40 by 20 foot array of dipoles, reflectors, shorting sections and trombone sections, all parallel line tubing. Somewhere around 72 elements. In the early days antenna people did not feel that you could preset the adjustments at the factory, so everything imaginable was adjustable. The tune up procedure was invented by the test technicians.

Westinghouse would ship the antenna elements in the stake body truck to the Westinghouse building on Port Hancock, New Jersey on Sandy Hook. Couse-Hinds shipped the tower. The technicians assembled the array, and then, as from Sandy Hook one could see across the water to Brooklyn, New York, they physically aimed the antenna at a large natural gas storage tank in Brooklyn.

One technician climbed the tower with a long wood stick, and, guided by shouts from the operator watching the scope in the operator van, banged away at stubs and trombone sections to maximize the signal. They were very happy when pretuned antennas were found to be possible by the engineers in Baltimore and these began to arrive at Sandy Hook. If that tank had been removed, they would have been without an antenna range!

From the transmitter to the base of the antenna ran a parallel line of ½ tubing, terminating in a one turn loop at the base of the tower, which coupled to a similar loop to allow feed of RF throughout 360° rotation. Thus, a resonant line with a current maximum at the tower loop.

The resonant line high voltage supply of 15 KV at ½ ampere was built in a cabinet about 5 foot wide, 4 foot high and 8 foot long. Components were so widely spaced internally that one could probably hold a party inside while it was on, and never touch high voltage. The rectifier tube, again specially designed by Westinghouse, type 531, had a copper base about 3 inches in diameter and 4 inches in length slotted to form fins. The glass envelope of 3 inch diameter was about 6 inches long terminating on the top with two long flexible filament leads. The base was the anode terminal and it fit into a ring socket mounted on the transformer high voltage bushings. A fan cooled these, and with this design there were no high voltage AC transformer secondary leads to worry about.

The transmitter itself was push-pull oscillator, with tuned plate lines. The plates were cooled by circulating distilled water, cooled in a radiator assembly in a separate cabinet with fan, pump and reservoir. Grids were strapped together and fed from the modulator. The filaments took about 100 amperes. Two specially designed tubes by Westinghouse, type 530, supplied the RF power. The glow from the filaments would light a large room, and the heat, while welcome in the van in the winter, made it unbearable in the South East Asian theater.

The duplexer would be described as a kluge of parallel lines, copper lined boxes, stub sections, and a glass enclosed tungsten spark gap which was the TR. The constant buzz of the gap and the various fans and pumps, as well as the 625-cycle background, made the operator's life rather unenviable.

The pulse modulator operated by holding the
strapped grids of the push-pull transmitting tubes at approximately \(-4500\) Volts, and pulsing them to 0 volts for the duration of the pulse. Generating the pulse was far different from today's techniques. The modulator was a box about 3 by 3 by 4 feet in size. Pulse repetition rate was set to 625 cycles, for that represented 150 miles round trip time. The circuitry started with an oscillator, amplified the sine wave, then squared it, then differentiated and clipped, and one had a crude pulse. This drove a pair of 450 TH transmitting tubes to further amplify and invert the pulse, and the output was the \(-4500\) volts with about a 10 to 15 microsecond pulse to zero. This went by way of a high voltage cable to the grids of the transmitter. Ten to fifteen microseconds was considered a narrow pulse in 1940.

The receiver was designed before people really understood noise figures, and used an experimental RCA tube, the A-5588A, an electron multiplier in an envelope similar to a large acorn tube. This generated noise. The receiver also suffered from a lot of poor filter capacitor in the plate power supply, but luckily they were plug-in capacitors and replacement, if one had spares, was fast.

The indicator was a classic. It used a standard 5 inch CRT, and the display was type "A". A crude goniometer, driven by a geared knob on the front, shifted phase of the 625 cycle sine wave, effectively moving the display horizontally so that a target pulse could be positioned under the center vertical index and the resultant range read from the dial. The index was a spring loaded wire stretched vertically across the face of the CRT.

Azimuth information to the operator at the indicator was supplied by another classic of simplicity. The antenna rotation and aiming was controlled by the operator, and the antenna itself was a 40 foot tower on a rotating base. Around the edge of the base were plates about 4 inches high with azimuth degrees. The operator looked through a small window in the van to read azimuth. Now this was not all bad, for horizontal beamwidth was about \(28^\circ\), and a skilled operator rocked the beam about a target to center it, thus he had some improvement in accuracy.

The parameters of the radar, while a combination of state-of-the-art for that time period and of what seemed to be pure guesswork turned out to be rather good selections. Frequency was around 106 MHz, adjusted by a simple wavemeter. This wavelength was not bad considering that all aircraft were propeller driven and the propellers made good horizontal reflectors.

The wide, by today's standards, pulse width meant a lot of energy in each pulse, which is the real parameter for range. Peak power varied from 100 to 150 KW.

Aircraft speeds were slow, and due to construction presented fairly large cross sections, thus tracking could easily be done manually.

Without the benefit of psychological human factors studies, the choice of an "A" scope presentation was ideal from a man-machine standpoint. As operators gained experience the detection of targets below the visible noise level was relatively easy.

Due to the design and construction, almost any good radio repairman or radio amateur could service the radar with the Link Frequency Meter, the Weston Volt-Ohm-Milliameter, and the Measurements RF signal generator supplied with the system. The radar was like a low Q system, it worked well whether peaked up or in a degraded condition. This is a contrast with some of today's systems where a primary standards laboratory is needed for alignment, slight degradation means complete shut down, and it takes a Ph.D. to adjust anything.

Members interested in early radar are invited to examine the Zahl tube at the AWA Museum. This tube preceded the magnetron and klystron. A gift from W6SAI (Elmac).
Many advanced collectors feel every collection should have a Crosley Pup, a Philco cathedral, an AK breadboard, maybe a Scott or Leutz—and to round off the collection, the most popular of early commercial receivers: an IP-501/501A/SE-1420. The latter are all about the same with slight variations.

First, let us read how former RCA historian George Clark described the receiver 40 years ago:

**Type IP 501A Designed by Bu. of Steam Engineering. Manufactured by Wireless Specialty Apparatus Co. for Radio Corporation of America.** So reads the name plate on one of the last of a remarkable series of radio receivers about which there is a most interesting history.

This particular receiver was intended for commercial service, as its name clearly indicates. However, it had a Naval origin, and the Company that made it had long experience in receiver design and manufacture.

The complete story behind this model takes us back to the early days of the wireless art. In 1907, the Wireless Specialty Apparatus Company, of Boston, Mass., made, among other specialties, an efficient, compact receiver designed by Professor G. W. Pickard. It was marketed under the designation “I-P-76, 1907 type.”

The prefix “I-P”, soon changed to “IP” by popular re-christening, was the identification mark for all Wireless Specialty products of those days. For example, there was the I-P-200 silicon detector and the I-P-306 audibility meter. The designation “76” was given to all receivers. Redesign took place every year, culminating in the “double-decker,” a short- and long-wave receiver of an upper-and-lower-berth form, in 1914.

The chief features of the Wireless Specialty design were a units-and-tens switch on the primary, and the so-called “untuned” secondary of the tuning system.
The former provided a means of cutting in one turn at a time on the units switch or ten turns at a time on the tens switch. The latter was an inductively-coupled secondary coil of fine wire, closely wound and hence with considerable distributed capacity, with a 5-point switch to cut in 20 turns or more per contact. This “tuned” the circuit by varying the natural period of the coil section in use.

The next series of developments belong to the Navy Department, Washington, where the writer, as the first Radio Aide of the Navy, began the design of new receivers for Navy service.

These models employed capacitative coupling of the so-called “Cohen” type, and were characterized by dials pre-calibrated in wavelengths, by bank-wound coils of litzendraht wire, and by heavy copper leads, covered with spaghetti, for all fixed inductors. This last was intended to prevent breakage due to vibration.

When the “Type Number” system of nomenclature was introduced in the Navy during the year 1915, receivers were given a different form of designation. This consisted of a series number, “the next number in line,” preceded by two letters and followed, where necessary, by an alteration letter.

The preceding letters were SE when the design was of Navy origin, or C, followed by the company letter, when the work was done by one of the civilian manufacturers. For example, the CM 994 was a product of the Marconi Company.

The designs of the IP series followed the earlier standard, with modifications as the art advanced and as other engineers brought new ideas into the Naval service. The coupling, in time, changed to combined static and magnetic — some remarkable results were attained by the correct use of this dual arrangement — and later was made magnetic only.

Better shielding and different forms of feedback appeared as new designs were added to the Navy list. Also, in time, special forms for use in aircraft were produced. As these newer types succeeded each other in service, the writer had less and less to do with the actual work, his duties having become more administrative. SE 143 was the last of his own design.

One of the subsequent series of Navy-designed receivers was SE 1420, in which the impress of Radio Aides Priess and

Rear view of the SE-1420C. The hole to the right of the rheostat was the location of the condenser switch.
Lester Jones was very evident. That was a medium-wave receiver, with a range of 250 to 6,800 meters. It contained a built-in audion detector with inductive feedback or “tickler,” to use a name of the writer’s coinage, and a two-step amplifier.

This receiver had greater sensitivity and selectivity, and less bulk and cost than its predecessor, the type 143. It was thoroughly shielded against external interference and undesirable interactions in the receiver itself. It was characterized by the Navy, in an official publication, as “the best receiver for general radio reception that the Service, and probably the world, has ever seen.”

This well-designed model was manufactured, in general, by commercial concerns to whom the detailed blueprints and built sets, and at the same time their experts received a little additional education in this class of work.

That the Company appreciated the worth of the design, and concurred in the Navy’s opinion of it, is shown by the fact that directly after World War 1 they redesigned the receiver slightly, as by adding binding posts and links in the primary, secondary, and tickler circuits for the possible insertion of loading coils, and offered the modified set for sale commercially as type IP 501. It was first advertised in a Wireless Specialty catalog dated 1919, and later appeared in the RCA catalog “Radio Enters the Home” in 1922. The price quoted there was $5.50.

RCA used it for some years particularly for marine service. The “A” modification, shown here in detail, came out in November, 1932. It differs but slightly from the original design, the main difference being the addition of an output filter.

![Basic circuit of SE-1420C](image)

(Does not show shielding, binding posts, switches, etc.)

According to the catalog description, the 501 type consisted of a two-circuit, inductively-coupled receiver with primary and secondary circuits shielded from one another by heavy sheet copper boxes. The range was 250 to 8,000 meters. The coils were bank-wound with high-frequency wire, as the illustrations show. Condensers were of the balanced-rotor type, with
heavy Bakelite discs for end plates. Varnished cambric tubing covered the heavy, rigid copper connecting wires. Tuning dials on the condensers were calibrated in 180 divisions on one half. The other half carried six semicircles, corresponding to the six positions of the switch-actuated pointers. They were used for hand calibration.

The foregoing is as descriptive of the SE 1420 as of its grandchild.

Although dated today in its appearance, this set is by no means a worthless relic. One of these has been in use by the writer up to recent years, and it gave as good service as when it was in its prime. While it does not measure up to current designs for specialized applications, the difference in efficiency, for the same class of service and frequency coverage, is not as marked as its great age might imply.

So much for George Clark's comments of 40 years ago. Let us look at it today.

The U. S. Navy version (SE-1420) was designed in 1918, an off-shoot of the SE-143 (IP-500), but not placed in full production until the following year. An equipment release shows the following companies manufactured the SE-1420 for the Navy:

Wireless Speciality Apparatus Co. - 400 sets
Sperry Gyroscope Co. - 300 sets
American Radio & Research Corp. - 400 sets
Quantities by W. S. A. under the IP-501 (A) label is not available.

The U. S. Navy Instructional Manual printed in 1919 (approved by Horle and Eaton of vacuum tube fame) recommends the use of these tubes: SE-1444 (Moorhead), CW-933 (W. E. Type "F") or a CG-890 (G. E. Type "G"). The more popular UV-201 (A) was used in the 20's.

Filament voltage was set by a rheostat to the proper current (amperes) by a meter on the panel. 30 to 45 volts was used on the plate. An interesting feature of these early receivers was the operator could switch to a crystal detector in event of tube or battery failure.

The original version had a range of 235 to 7500 meters. This was subsequently changed to 250 to 8000 meters. Loading coils would increase the wavelength to 21,000 meters.

The Navy made several modifications on the original design. Collectors will find the SE-1420, 1420C, 1420D, 1420E and 1420F are almost identical in construction with these exceptions:

SE-1420C - the SE-1420 with a fixed capacity bridging condenser;
SE-1420E - same as the 1420C with additional

(Continued on next page)

The last version of the series: The IP-501 A which saw commercial service well into the 30's. This set differs from the earlier models in that it has two stages of audio.
"crystal" binding posts and two sets of detector battery binding posts in parallel having no connections to the receiver circuits.

SE-1420F – same as the 1420C but with adjustable bridging condenser switch.

SE-1420D – same as 1420E but with adjustable bridging condenser.

The bridging condenser switch is the adjustable knob located to the left of the rheostat which allows the operator to select various by-pass capacities around the headphones. It was eventually replaced with a fixed condenser of .007 mfd.

The non-military version (IP-501) was released by W. S. A. shortly after the War (1919). The IP-501A, released in early 1922, had two additional stages of audio. Prior to this, it was necessary to have an out-board audio amplifier as noted in the SS AMERICAN LEGION radio room.

Rear view of the IP-501A. Note the panel is shielded. Both primary and secondary coils are banked wound with Litz wire. The three tube sockets are at the far left.

The radio room of the SS AMERICAN LEGION in the early 20's. Note the IP-501 at left with 2-stage audio amplifier mounted on top. The transmitter is a ½ kw, 500 cycle quench gap set made by E. Simon of New York. (Photo from W4ZB/W4ACG)
RARE REPLICA COMPONENTS AVAILABLE

Members restoring early receivers are finding it increasingly difficult to replace damaged or missing parts. Roland Matson, KIJKO, has retired and as a hobby, is making a wide variety of components some of which are pictured below. He prints a catalog available for $2, refundable on the first order of $10.

Crystal Set Kit—Includes: 1 Round Crystal Cup, 1 Hexagon Crystal Cup, 1 Galena and 1 Silicon Crystal, 4 Catwhiskers

Box for RJ4 (Mahogany or Oak) Corners are Splined and Glued, and comes with Rubber Feet.

RJ9 Tap Switch Assembly (with 3 taps, Unpainted)

Panels and Cabinets for Crosley Models 50, 50A (Amp.) 51, IV (Amp.), 2 Step Amp., Crosley V, Ace V, and 52.

Main Tuning Condenser Dial.

Wood book Condenser Plates, with copper foil and insulator

Curved Dial Condenser Plate

DE FOREST AUDION
U.S. PATENT NOS.
836,070 838,071
878,577 878,578
AND OTHER PATENTS.
DE FOREST RADIO TEL. & TELECO., N.Y., U.S.A.

Audion Nameplate

WM J MURDOCK CO.
CHELSEA, MASS.

Murdock Nameplate

Square "Sunburst" Nameplate

Crosley Nameplate (metal)

Atwater Kent Green Paint
Atwater Kent "Golden Lacquer"

Cabinets for Clapp-Eastham Models HR and HZ

Crosley Binding Post Caps and complete units.

ATWATER KENT RECEIVING SET
MODEL 20 PATENTS
PHILA. PA. PENDING
USE ONLY 3/4 AMPERE TUBES

Model 20 Nameplate

Model 2A Twin Detector Crystal Unit, ready for mounting on board

ROLAND MATSON'S
ANTIQUE RADIO PARTS SUPPLY
New address: Rte. #35 RFD #1
Kennebunk, Maine 04043

19
A BRIEF HISTORY OF BRITISH RECEIVING VALVES

by F. Lyons and L. Peckham

The thermionic valve, which made broadcasting and television possible, was first mass produced in England during WW I in the years 1914 to 1918, one of the early British valve-manufacturing firms being the General Electric Company Limited.

The type “R”, used by the military, was patterned after the French T. M. high vacuum valve, two tubes nearly identical in appearance with the most obvious difference the insulating material used to support the base pins.

At the conclusion of the war in 1918, the “R” valve was one of the few tubes available to radio experimenters. It required 2.8 watts to heat its pure tungsten filament and was not very satisfactory as a high-frequency amplifier. The main reason for this was the comparatively large capacitances that existed between electrodes. One of the first tubes to help solve this problem was the so called “test-tube” valve known as the V.24 and QX, widely used by the Marconi Company. (A photo of the V.24 may be seen on page 223 of Tyne’s Saga.)

Early British tubes with pure tungsten filament were known as bright emitters. The current varied from 0.7 A to 1.5 A as supplied by a 6 volt storage battery. A valve was needed which could be operated from a single secondary cell. Such a valve was the Osram D. E. R.; the initials are for Dull Emitter Receiving. The great advantage of this new tube was that its thoriated tungsten filament required only 0.35 A of current at 1.8 V.

Many attempts were made to produce indirectly-heated valves (for AC operation) and as was the case in the United States, the year 1925 saw great activity in this field. The first practical commercial type produced in Great Britain was the K. L. 1., a radiation-heated triode.

Unlike the double-ended Kellogg AC tubes produced in this country, the K. L. 1. had a special 5 pin base with the extra pin mounted in the center of the other four. The elements were mounted at a 45° angle as was the case of some other European AC tubes of that time.

Due to the high cost of valves in the early days of broadcasting, an interesting dual filament valve was produced by the Nelson Electric Company Limited of London. Known as the Nelson-Multi D. E. 2, this triode had several filaments which could be controlled by a built-in switch as shown in Figure 1.

Separate filaments could be selected so the valve could be used as a detector or amplifier. The scissors switch also allowed the two filaments to operate in parallel, and the tube then became a power amplifier with 120 volts on the plate.

Of interest is a very similar tube manufactured by the Apco Company of Providence, Rhode Island in 1925-1926. The Apco Twin Tube contained two sets of 201-A type filaments. When the first filament failed, the second one could be brought into service by slightly unscrewing one of the base pins so that a switch arm could be moved from one contact to another.
MORE ON YANKEE

Members indicate an interest in the transmitter at the AWA Museum once used by Capt. Johnson on his fame "Yankee". The OTB noted that the vessel was a schooner. This is incorrect. The original Yankee WAS a schooner which Johnson sold at the outbreak of the War (1941). Following the War he bought a new ship...this time a brigantine (1947) which was christened the same.

The new Yankee left Gloucester, November 2, 1947, for its maiden worldwide voyage... with the TDE transmitter. Information filtering in tells us that in later years, Johnson may have sold the brigantine for a smaller vessel (also named Yankee) which he used to explore European waterways. Movies were taken and shown on TV...more info ??

COLLECTING RECORDS

Somehow, collecting phonograph records and radios are related...maybe they both provide entertainment and depend on electronics for operation. I find record collectors also specialize. A friend in Canandaigua has nearly 10,000 78's... all pre-1940. He specializes in jazz, blues and dixieland. The quantity impressed me until I heard of a James Walsh who donated 40,000 different records to the Library of Congress...all dated BEFORE 1825!

On this same subject, I just read something interesting. Several record companies make their master disc at half-speed with the master tape also at half-speed. Why? Seems the cutting head doesn't respond as well on high notes (mechanically) as on the lower ones. After the master disc is cut...pressed, of course, play at normal speed....

THIS BUSINESS OF HERTZ

I still receive letters from members with derogatory remarks concerning the trick pulled on the communication industry a few years ago when frequency was changed from "cycles" to "Hertz".

Sure, it is nice to recognize Heinrich Hertz but I am inclined to agree with the dissenters.... why change a worldwide nomenclature established at the turn of the century?

To make matters worse, even the abbreviation is burdensome (i.e., kc. to kHz.). I feel it was an asinine decision and while I am OTB editor, I will on occasion use "cycles" which has a meaning......
THE CARTOONS

in the OTB have brought many comments. They were, of course, drawn by the master cartoonist and former AWA member, Phil Gildersleeve, W1CJD, now a Silent Key.

He was a frequent contributor to QST for many years replacing 8UZ of earlier days. The story of W1CJD and 8UZ was beautifully told (and illustrated) by Roland Bourne, W1ANA at the 1971 Conference.

Dick Waddell tells me that Gil was a commercial operator on various ships of United Fruit Company's great White Fleet. Many of the QST cartoons were sketched while he was at sea.

HARD TO BELIEVE

On two recent occasions I received packages via UPS followed by a letter the NEXT day! Both were sent the same time. How come United Parcel is faster than First Class mail? Maybe the recent postage hike will correct the situation.

And more. Last week I was at the local post office to mail a member an extra Bulletin. Since he was in no hurry for the copy, I decided to send it 3rd class. How much? About the same as first class. The good old PO Dept. sure plugged the gap on that one.... (Note: 3rd Class presorted has a much lower rate....)

HISTORICAL REFERENCE

I have a pile of old radio magazines near my bed which I read a few minutes each night. It keeps me abreast of latest developments...50 to 60 years ago. Thumbing through the Sept. 22, 1928, issue of RADIO WORLD, I found this headline,

"Philo T. Farnsworth, age 22, claims elimination of scanning disc for TV. He hails from Utah but is experimenting California. The receiver uses a cathode ray oscillograph."

The article was written by James Millen.

SMITHSONIAN

My annual trip to the Smithsonian found me envying their priceless collection of very early artifacts -- the kind you read about. The current display includes a Voltaic pile (1805), a Henry trough battery and a collection of crude motors and generators circa 1830-1860. The same area had an unique exhibit of galvanometers and other weird looking meters. In all this impressive display was a scale model of Karl Jansky's radio telescope antenna... the one mounted on Model "T" wheels.

Ray Hutt, AA4SI escorted me around. Of course we visited Elliot up on the fifth floor where we could barely see him at his desk buried behind a huge pile of books.

Almost forgot... another exhibit was a rare photophone setup showing voice transmission on a beam of light... experiments starting in the late 1800's with Alexander Graham Bell and ending with present-day multi-channel fibre optics....

Going to be in Washington next year? Visit the Smithsonian where they will have a 1932 remote broadcast setup (display) to celebrate F.D.R.'s 50th Inaugural year (1932-1982). Max Jacobson provided information for the display.

SUPERHET MYSTERY SOLVED

Page 5 of Sept. '79, OTB shows a mystery Radio superheterodyne using the familiar catacomb unit (circa 1925). The owner, Larry Babcock, has been trying without success to identify the set.

He brought the receiver to the Museum one night in August, and after

A.W.A. BADGES

The large orange badges worn by members at radio meets are again available. The badge has a large plastic window and insert on which the wearer writes his name and other identification. A masthead and old radio call letters surround the opening. Available @ $1.25 at "meets" or $1.50 by mail ppd.

Lincoln Cundall
69 Boulevard Parkway
Rochester, N. Y. 14612
Dear Bruce,

Here's a short extraction from an early issue of "Electronics" magazine (1933) which discusses the first application of the Edison effect in making an electron relay device. It was done in 1883 which is considerably before experiments with the diode valve by Fleming, et al., if my memory bank is correct.

73, Bill, W6SAI

Dr. Frank J. Sprague's 75th anniversary, recently widely celebrated, has recalled many early developments in electricity, not the least interesting of which is his own experiment with an electronic voltmeter in 1883.

Dr. Sprague had been in Brockton, Massachusetts, in charge of the first underground three-wire Edison station when the Pearl Street Station in New York failed, due to an overload feeder resulting in a successive failure of "safety catches."

On hearing of the failure at Pearl Street, he telegraphed his opinion of the trouble, and Edison promptly called him to New York to solve the overload problem, which he did successfully. About this time he apparently took up the development and test of the first electronic potential indicator, as shown in the reproduction of Dr. Sprague's drawing, made on December 27, 1883.

The sketch showed a diode comprising a platinum anode with a galvanometer coil in series, the anode voltage being supplied by the positive side of the d.c. lighting system. The negative leg of a carbon lamp filament acts as a cathode when incandescent.

Dr. Sprague does not recall other than an experimental use of this device— but it is nevertheless of interest as one of the forerunners of the present day vacuum tube.

Close-Up

much examination and discussion by several members present, it was agreed it could be an experimental pilot model of the Radiola 24.

In appearance, it looks like the "24" except that the loop antenna was built in the door. Unlike the smaller "26" portable, the loop was imbedded in the door and could not be swung independently for directivity. It would appear the final product was the "24", which has a rotating loop (removable) mounted on the top.

TUBE EXHIBIT

A letter just received from Bro. Pat, W2GK, included a descriptive list of his 30 large vacuum tube panels at Manhattan College, NYC. The exhibit now includes an extensive display of early TV as well as tubes of WWI period. The exhibit, in the school's engineering library, is possibly the largest vacuum tube collection in the world...

DID YOU KNOW ---

that McMurdo Silver was a radio amateur who started in 1912 and held the call 8VM before WWI? He became W8VM in the 30's and at one time was 2BEA.

A TELEPHONE CONVERSATION

"Hello, is this the Antique Wireless Association?"

"Yes, can I help you?"

"I have a rare two-tube receiver made by Armstrong in 1914. How much is it worth?"

"Maybe. Describe the tubes."

"They're like all early radio tubes, silver coated inside with a smooth round top."

"I'm sorry, but I am inclined to think your set was made in the 1920's. Further, Armstrong never manufactured a receiver. If you look closer you'll find 1914 is a patent date."

Silence. Another dream of riches shattered. Yes, this has happened several times... 73, --- BK
HISTORICAL REVIEWS

CLUBS

AWA reviews historical material in publications printed by the following organizations:
New Zealand Vintage Radio Society
10/29 Owens Road, Auckland 3, N.Z.
British Vintage Wireless Society
14, Victoria Ct, Kingsbridge Ave., London, W3 9AH England
California Historical Radio Society
Box 1147, Mountain View, California, 94040
Southern California Antique Radio Society
6368 San Diego, California 92117
Indiana Historical Radio Society
933 N. Audubon Rd., Indianapolis, IN 46219
Northwest Vintage Radio Society
P.O. Box 02379, Portland, Oregon 97202
Vintage Radio & Phono Society
P.O. Box 5345, Irving, Texas 75062
Mid America Antique Radio Club
4031 West 97th T err., Overland Park, Kansas 66207
Antique Radio Club of America
23 E. Warf Road, Madison, Connecticut 06443
Niagara Frontier Wireless Association
Box 68, Station H, Buffalo, NY 14214
Society of Wireless Pioneers
Box 530, Santa Rosa, California 95402
Morse Telegraph Club
1149 Weber Street, Union, N.J. 07083
Old, Old Timers Club
1417 Stoneybrook Ave., Mamaroneck, NY 10543
Quarter Century Wireless Association
1409 Cooper Drive, Irving, Texas 75061
Radio Club of America
Box 2112, Grand Central Station, N.Y.C., NY 10163
(Note: Many of the above organizations are regional or highly specialized in character and have restricted membership qualifications.)

MAGAZINES

AWA reviews historical material in the following magazines:
QST (A.R.L.L.) (Subscription: $25.00)
225 Main Street, Newington, Connecticut 06111
HAM RADIO (Subscription: $16.50)
Greenville, N.H. 03048
“73” (Subscription: $25.00)
Box 931, Farmingdale, N.Y. 11737
“CQ” (Subscription: $14.00)
76 N. Broadway, Hicksville, N.Y. 11801
RADIO ELECTRONICS (Subscription: $13.00)
Box 2520, Boulder, Colorado 80322
AUDIO (Subscription: $13.94)
Box 5318, 1255 Portland Pl., Boulder, Colorado 80322
COMMUNICATION NEWS (Subscription: $15.00)
124 S. First Street, Geneva, Illinois 60134

CEPAK and CECO

To OTB Editor:

Here is additional info for AWA re: the story of CEPO and Triad Tubes by Alan Douglas in the December 1980 OTB.

In 1942 William Cepak (CeCo) and Arthur Lynch, W2DKJ, (N.Y. rep for National Company) organized the Quartz Crystal Corporation of America based upon award of a contract from Radio Marine Corporation of America, a division of RCA. They were to supply 8000 crystal units within a specified time.

Cepak and Lynch knew very little if anything about crystal manufacture, but as with tube operation, they hired someone who did. I had been in the crystal manufacturing business for some years operating under the name of R. E. Nebel Laboratory.

Arthur Lynch, being a good friend of mine, and Cepak came to me for assistance with their project. Lynch lived on Long Island, Cepak in Providence and they would meet at my establishment in Brooklyn to confer.

I produced many of the crystal units for them and I believe they eventually filled the contract. Arthur Lynch retired to Florida in recent years and is now a Silent Key. I have no idea of the whereabouts of William Cepak.

73,
Dick Nebel, W2DBQ

AWA Old Time Transmitter Contest

Don’t forget the dates:
Sat. Jan.16 - Jan. 17
Wed. Jan.20 - Jan. 21
EVERYONE invited to participate. You need not have an old time transmitter to join the fun. See details elsewhere in the Bulletin.

ATTENTION — ATTENTION — ATTENTION

Please do not write AWA if you feel your Bulletin is late. The Bulletins are usually mailed sometime during the first two weeks of the month. If your mail is 3rd class, it may be held up for an indefinite period at your local PO Distribution Center and not delivered until near the end of the month.
STEREO SYSTEM

100 YEARS AGO
Review: "STUDIO SOUND" Sept.'81
Clement Ader was, for his time, a most amazing person. He patented the first bicycle with rubber tires (1868), devised a steerable balloon (1870), and in 1890 made a winged flying machine powered by a steam engine!

Of interest to radio historians is his venture into the telephone field. At the Paris International Exhibition of Electricity (1881), our inventor installed a battery of microphones along the footlights of the Theater Francais.

Wires were run to the Exhibition Hall, where listeners, holding separate earphones to each ear, could listen to sounds from the stage. Thus, the first stereo was born! -- Ken Huggins

NEW MEMBERS

who are (or were) with electronic communication or industry:

Robert Wahlstrom (K4UY/9AHH/9RC)
Marconi/RCA/W. U. Tel./T. R. T.
Bob Nicholson State Communication Sysyem
Howard Parish (W4IEO) Stat. WBGE, W0ZK, WOAB, WELB, WDHN
Scott Johnson, Producer radio/TV
Charles Fisher, Chief Development, Sigma Instrument, Inc.
Bradley Mitchell (WB8YGG) General Electric Co.
Milton Roth, Fed. Aviation Agency, Stat. KG-EJ/KARK, Wilcox, etc.
John VanDuyne (W1COA/W2MLX)
DuMont Labs, Westinghouse Corp.
John Winang (W2ALGE) Bell Labs
Elias Etheridge (K4IX, W3HAE, W9RGN)
Naval Electronics, Commercial oper.
Richard Guth, Gen. Electric Communication
Fred Kleppick, Westinghouse Corp.
Neil Lewbel, Station WCKR
Joe Pettengill (N2BC) ITT, Bell Lab, Fairchild, etc.
Richard Seaby (WA3YJO) Sudbrink Broadcasting Co.
Al Balling (ex-8AC, 8DS, W8ALY)
Stat. WHAM, WROC, WOKR

EARPHONE DEVELOPMENT

Kaye Weedon (Blommenholm, Norway) collects early earphones (headsets). He is most interested in the very early types and wants to know about their electrical characteristics. It would appear (from pictures) the first earphone for radio was a single telephone receiver of low impedance. This soon evolved into a more sensitive unit for wireless telegraphy by winding more turns around the magnet. When were the first double units with headband made for radio and by whom?

OMISSION in last OTB: Under Results of OT Contest, the lineup for W1PEG was omitted on final makeup sheet. Should read-- W1PEG 704 pts., 6L6 MO, 807, PP838, 300w. (60, 40), 6L6XO, 6L6, PP809, 120w. (20) TX. National HRO RX. Typographical error had W9HF as HE. Sorri Om.,....

Warren Wheeler (W0REQ/W8VOX, W0ANA), Stat. WHAM, Univ. of Denver
Robert Burns, Stat. WMCR, WRUN, and WPBL
Nicholas Oland (W2DSE/W2GWL)
Erco Radio Labs
Luther Schaeffer, Station WGGO
Harold Burt (W8UIK/KL7ZM) Stations KENI, KHOW, and C. A. A.
Pau Mooney (K4KRE) Electronic design Eng., A. M. F. Inc.
Howard Andrews, Bell Labs
Louis Nordiner (W1GNW/W2NPP)
Broadcast engineer
William Roberts, Stat. KLCH, KNBA, KVOI, KORK, KOLO
Maurice Tremblay, General Elect. Co.
John Porter (W2MCM/WA6RMW)
RCA weather Radar
Ted Osborn, Station WVBR
Don Turrell (ex-K3QMV) Stat. WDFM
Harold Heinaman, US Naval Commun.
Austin Farrell (W2BXE/WA4RTR)
MIT Radiation Lab
Michael Schade, Johnson Controls, Globe Receiver,
Hardy Trolander, Pres. Electronic Instrument Co.
Dr. Richard Dollinger, Dept. of Elect. and Computer Eng., State Univ. N. Y.
Wm. Porter (W2MLJ/W5NCX)
Stat. KMUS
OLD TYME HAM ADS

Send copy to: DICK RANSLEY
17 SHERIDAN ST., AUBURN, N.Y. 13021

Deadline for next issue is: JAN.15, 1982
See previous OTB's for RULES. Keep ads short. Repetitious and/or commercial ads will NOT be printed. Sorry.

WANTED

--need for Kennedy 521 amp: 1 tube socket,1 audio (open ok),2 rheostat knobs; Also speaker for an AK84; and panel for Tuska 224. J. N. Ligday, 675 Hillside Lane, Stillwater, Minn. 55082

--AK Coupled Circuit Tuner #3752 or one type III Tuner #4051. Will pay a premium price for mint or excellent condition. Have 2 AK variable condensers #4165 for sale, no dials. Raymond Barker, Box #355, Badin, NC 28009 Telephone (704) 422-3373

--a good clean National SW-5 receiver and a set of plug-in coils for SW-3 and SW-5. Also want variometers and variocouplers especially the molded and wooden types plus any two or three circuit tuner. Roland Watson, 35 RDF#1, Kennebunk, ME 04043

--Brass Pounder Mar-April '77, Jan-Feb '76, Mar-April '76, May-June '76, July-Aug '76 and any before Jan '76 edited by Harwell West. Perry Piper, West Liberty, KY 62475

--coils for Hammarlund Comet Pro and National SW-5 and 3. Buy receiver and coils. One Comet Pro DDW coil for trade. Howard Hill, KE6AZ, 4117 Lymer Dr., San Diego, CA 92116

--Scott Philharmonic, Napier console preferred. Dick Howe, 9318 Wickford, Houston, TX 77024 (713) 660-9945-cad collect.

--National FB-7 coil set B; also other plug-in coils for National receivers. F.R. Tesche W6NC, 135 Sharene Lane #12, Walnut Creek, CA 94596 Telephone (415) 943-1684

--new tubes in boxes: 2A4, 2B1, 2B6, 2A7 and 2A7, also RDER manuals and indexes. Vinny Shea, 6 Rocky Ridge Road, Easton, CT 06612

--paper mache horn section for Stromberg Carlson horn sprk; square driver for Magnavox M4 spkr; Amplion AAL chest type speaker-any condition. Gilfillan model 20, 25, 30, 40 or 50 battery radio. Will purchase or trade British horn sprks. Alan Brehaut, 22A Cain St., Timaru, New Zealand

--Atwater Kent model 9,10 or 12; diagrams for Kotel circuits; af transformer for Freshman Masterpiece 1924. H. Krugler, Nellenstr. 2, CH-8304 Wallisellen, Switzerland

WANTED

--Cutting and Washington receivers & literature (ads, Manuals, etc.). Also always looking for Kellogg 401 tube sets (early ac) and 20's portables. Mel Rosenthal, 507 S. Maryland Avenue, Wilmington, DE 19804

--AK9, AK12, DeForest SCR54A, Federal 59 or 61, Grebe CR3, CR6, CR9, Paragon DA2, III, Radiola I, R5, Tuska 225, 228, Industrial Radio Ultra 400, Mercury; Leutze. Have cathedrals for trade. David Shanks, 115 Baldwin St., Bloomfield, NJ 07003 Tel. (201) 748-8820

--AK model 80 cathedral. Charles Green 1303 W. 42nd South, #3, Wichita, KS 67217 Tel. (316) 524-7306.

--Operating manual and tube testing data for Jackson Model 537 dynamic tester. Buy or rent-copy-and return. Ed Brinker, 112 E. Chandler Rd., W. Palm Beach, FL 33406

--Manuals and/or schematics for Dumont 304 H screen and Precision Apparatast 832A multimeter. Copies ok or I will duplicate if necessary. J.W. Gleich, 64-10 Woodbine St., Ridgewood, NY 11385

--SW-3 receiver and coils wanted by novice collector. Also information on this set appreciated. Have 1916 Marconi and 1928 Callbooks. Tom Blair, 302 Cedar, Maple Shade, NJ 08052 Tel. (609) 779-8833

--Tuning condenser for Zenith 1R, 3R, or 4R receiver; also want RME 69 receiver. Have Mackay 128A 55-650 kHz and National HFS 28-250 mhz receivers for trade or sale. Clarence Fillley, 1109 South 2nd St., Hamilton, MT 59840

--Amateur radio QSL cards or confirmations prior to 1930 for old time display. Dave, Noom, 19 Honeywood Cr, London, ON, Canada M5Y 4P3

--Seeking a listing of Vibroplex serial numbers and years made. R.W. Randall, KB4RE, 1283 Lakehurst Rd., Livemore, CA 94550

--National AGS or NC 2-40 C/D receivers, working or junker. Also radio catalogs from the 1930's. John Nagle, 12330 Lawers Rd., Herndon, VA 20171 Telephone (703) 620-3066

--Tubes for foreign sets, also WD11's and large Telefunken tube radios; small AK broadboard or AK9 and must be complete. James Notar, 1100 Welsh Rd., Ambler, PA 19002 Call evenings (215) 646-3631

--Paragon DA-2 and 10-P units in any condition; Paragon RD-5, RB-2 and A-2 units in any condition. Have over 10,000 tubes on hand. Send SASE for list. Rick Weibe, 309 Belvidere Ave., Washington, NJ 07882
Western Electric Type E1 telephone handset. Was used in early '30s and can be identified by the "angle shade" on the transmitter cap. Also is stamped "EL". Gary A. Micancik, 226 Henry Avenue, Manchester, NH 03101

Colonial Globe AC set, looks like World Globe, any Pehoe early AC sets and any early ceiling or table fans. Richard Cane, 8391 N.W. 21st St., Sunrise, FL 33322 Tel. (305) 741-6838

Zenith 8-S-154 or Zenith chassis 5801 to fit floor model (tubes not needed); Also need wiring diagrams and information on a 9 tube Murlitzer set, with no model number shown; also want wiring and color code info on Majestic model 70B power pack to radio. Doug McManus, 752 Blossom Rd., Rochester, NY 14610 Tel. (716) 288-1436

r.f. transformer for Federal 58-DX; also #2 green small r.f. for AK breadboard. Have new Federal rheostats in trade for 58 xfm and a Radiola III to trade for the AK xfmr. Also have quantity of 1926-1965 tubes. B.M. Abbott Jr., 4 Bunker Hill, Richardson, TX 75080

Grebe WORK components, I have the cabinet, front panel, rheostats, knobs and one set of front binding posts. Need all other parts. Bill Hurni, W3HT, 329 Evergreen Dr., North Wales, PA 19454

BC 312, 334 or 224 receiver. Dale L. Martin, 2021 153rd Ave SE, Bellevue, WA 98007

Aerola Sr. Amplifier in decent condition with or without tubes. Any help appreciated. R.J. Reinoed, 260 River Road, Winthrop, MA 02152

QST magazines for Dec. 1915, all 1916, Jan 1917, Aug-Sept. 1919, Jan-Feb. 1920. Paul Kluewe, Box 84, Manchester, NH 03105

QST's in permanently bound (sewn-in) volumes. Red or maroon, bound six issues per book, two books/year. Single year or run. Neil Friedman, 6616 River Trail Court, Bethesda, MD 20817

Table model cabinets for Philco 16B and 630. Need knobs for Philco 90, 91, 116B, 118870, 650, 37-84, 16B and 6B. H.F. Schnur, 115 Intercept Ave., Charleston, SC 29405

Remler amplifier for Infredyne receiver; f.f. Transformers by Victoreen, Remler and Erla. Want good transformers, appearance not important. Rodney K. Schrock, 402 Lincoln St., Somerset, PA 15501

any Cathedral radio from early '30s in good working condition. Tony Schluhe, 129 Taylor St., Kenkanna, WS 54130

cabinets for Federal 58 and Radiola IV. Also tuning condenser for Kennedy V. Joseph A. Szbat, 412 Main St., Coraopolis, PA 15108


Audio transformers and doughnut coil for Magnavox one-dial radio. Also front panel (or entire cabinet) for Radiola 25 and connector piece which fits on bottom of loop antenna. Lid for Crosley model 51 with label. Greg Farmer, 4711 Chestnut Rd., Minneapolis, MN 55421 Tel. (612) 571-6002 evenings

Radio News magazine 1922 or earlier as well as TV magazines prior to 1940. Also Kennedy 281 & Amp. Larry Babcock, 8095 Centre Lane, E. Amherst, NY 14005

Radio Retailing magazines 1924-1928, preferably bound. F. A. Paul, 1545 Raymond, Glendale, CA 91201

Request service data on Type CAY-46077-A hi-freq receiving set or RMB-5 made for US govt. in WWII. Also service data on tube testers and VOMs made between 1925 and 1945 by Weston, Hickock, Jewell, Supreme and others. Frank Krantz, 100 Usage Ave., Somerdale, NJ 88083


Wireless Improvement Co. audion control box 1920-22. Catalog or any information on this company would be appreciated. Alan Douglas, Box 225, Pocasset, MA 02559

Information, parts or buyer for a 1914 Zenith IR "radio phone" ham receiver. Dean, KA6ONP, 7800 2nd #8, Stanton, CA 90680

For Sale/Trade


Several galena crystal holders, dials, transformers, etc. SASE for descriptive list. Julian Jablin, W8JWI, 9124 Crawford Ave., Skokie, IL 60076

Hammarlund HQ-100 and National NC-300 with crystal calibrator. Both in mint condition. Make a reasonable offer. Also have original Ferris test equipment for sale. Marc Glaser, 50 Colgate Drive, Plainview, NY 11803

Kolster Model K-43, AK type 89 and Sparten consoles. Complete set of Riders Manuals (1-23) and large stock of tubes. Will not ship or sell single tubes. Alex Black, 102 Mineola Drive, Syracuse, NY 13224
Radiola model 67 complete with tubes but no cabinet $75. Combination 864/WD11 custom adaptor $6.75 prepaid; ESCO mg set 110 vac motor, 5000v,200mwc generator $100. Don Whitemore, 36 Masterton Rd, Bronxville, NY 10708
--radios from 20's and early 30's for sale. State wants. Frank Vailancourt, Ox Bow Road, Hinsdale, NH 03451 Tel. (603) 256-6208
--battery sets and miscellaneous. Send Large SASE for list. Want Paragon Audio xfrm; binding post knobs for Kodak or Michigan; Federal vernier control knob, horn only for Utah, Peerless. Perfectone bases. EV-RAD-LABs, Queen, Ideal Radio Labs gear wanted. Rick & Jean Ammon, 2306 Covert Ave., Evansville, Ind. 47714
--radio, TV and other related literature, some from early part of century. All original material. Send Large SASE for list. Herman Fothe, 10 Jackson St. Sloatsburg, NY 10974
--many old tubes to sell or trade. I collect tuning eye tubes. Send SASE and list of your wants. Prompt reply assured. George L. Muggleton, 116 Oakland St., Fall River, MA 02720
--QST's 1930-38. Best offer or prefer to trade for early Crosley radios. Manson Houmes, 338-20th St. NW, Cedar Rapids, IA 52405
--large collection of radio magazines. Send $1 & SASE with 2 stamps for list. Also for tube list send SASE, meter list send SASE. Mrs. A.R. Marcy, 461 Third Ave., Sea Park, So. Patrick Shores, FL 32937
--National HRD table model receiver with 6 coils 5 to 30 MHz. Includes manual and power supply all in excellent condition. $195. F.O.B. Charles Klawitter, 4627 N. Bartlett Avenue, Milwaukee, WI 53211
--National AGS-X all original with power supply, speaker, coils, extras, set tubes, manual, original owner paper in National rock & in working condition. Like new. Al Canning, 6B4HAK, 6 Camella Dr., DeBary, FL 32713 Telephone (305) 668-0437
--2A3 tubes will sell or trade entire lot for Nutron Solodyne, Sodion Detector, Speed Triple Twin or other rare tubes. Donald Pathke, PO Box 832, East St. Louis, 6116203
--HRD R394S, Rider Vol. 1, vintage technical books, variables, verniers, loose coupled, neu trodynes, AT-1, Ford spark coils. Send SASE for list. R. Cohen, 13913 Hayward Place, Tampa, FL 33624
--AK model 20 $45 less tubes; Philco #60 cathedral works & cabinet perfect $65; Kolster 60 in excellent condition $55 less tubes; Philco #89 cathedral works & fine cabinet $70. Many more sets of 20's & 30's, SASE for complete list. Gary Hill, 1507 Ridge Ave., New Castle, PA 16101 412-664-9335
--SW3 model 2 receiver complete with power supply and 12 coils in coil case, 1.5 to 21 MHz. Trade for Crosley Pup or ?. Eric VonGrimmstein, 410 N. Earl Ave., Lafayette, IN 47904 Tel. (317) 463-7834
--complete radio museum must be sold includes 150 mounted tubes including DeForest. 29 radio chassis and 30 old radios including AK's, Crosleys, speakers, earphones, variometers, variocouplers many in original boxes. Pickup is necessary, no separate sales. $2. for list & pictures. Martin Peterson, 1311 West Fifth St., Winona, MN 55987
--vintage RCA test set $150 sig. generator & #151 scope, $70 negotiable. Dumont #274 oscillograph, $12 and includes spare 884 chyratron. You pay shipping. Scott Todd, 2911 Simpson St. Roseville, MN 55113
--AK type L chassis being disassembled for parts. State your needs. Chassis used in models 70, 74 and 76 sets. A. Smith, Stonehedge, Lincoln, MA 01773 Tel (501) 259-9351
--several Grebe CR series receivers in very nice condition for sale or trade. Urgently need National NC-5 converter in any condition. Charles Byrnes, 1201 Sycamore Terrace No. 102, Sunnyvale, CA 94086
--Hammarlund PRO-310. 5-35 MHz, 1uV sensitivity, xtal calib., retubed, realigned with manual in excellent condition $125. Want Meissner signal shifter. Also desire info on Radio Engineering Labs and REL-278 receiver. John Crowe, 22605 Independencia St., Woodland Hills, CA 91364
--complete set Old Timers Bulletins, mint condition, in file boxes $200. Also tubular Audion with two good filaments, make offer. Willis L. Otto, W6DCC, 2009 West 10th St., Davenport, IA 52804
--Four WD11 tubes with good filaments, DeForest and other tubes. Also have radios, books, magazines and parts. SASE for list. Harry Barry, 30 Bond St., Bridgewater, MA 02324 617-697-8643
--antique and pre-WWII radios and misc. SASE for list. Robert McFarland, 3720 Dewsbury Rd., Winston-Salem, NC 27104
--trade Stewart-Warner model 300 (working) for Hamilton clock in heavy brass case approx. 3 inches in diam. with small seconds dial. Have other 5 tube radios. Jim Grant, 2635 Central Park Ave., Evanston, IL 60201 312-869-4737
ALL IS NOT LOST
In an emergency, when a replacement tube is not handy, I have found that a tube can sometimes be made operable by gently tapping it. The best way to do this is have it in a tube tester to check results. Tap until meter shows a good reading. Although this approach may work sometimes, the elements will ultimately come apart.
--- Chris Golodich, KA2MGI

DIAL CORDS
When restoring one of the old "synchronized" belt-driven sets (like my AK-35), you may find the bronze drive belts have been damaged. In order to restore the original belts to service, the damaged holes must be soldered together with a thin sheet splice of bronze copper. Heated and hammered wire will serve to bridge the hole or tear.

As the soldered splice has very limited flexibility, new drive holes must be drilled (or awled) into the belts in such a manner that the splice can "track" back and forth between (not around) the flywheels.

The method for determining where to tap the new holes is rather simple. Shut all condensers. Place the splice just beyond the bottom (or top) center of the drive flywheel so that the splice moves away toward the dolly flywheel when the condensers begin to open.

The belt should be placed around the flywheels with its edge touching the studs, but not on them. Pull traction on the dolly flywheel and mark the belts for stud position.
--- Bill Taylor, Unionville, Pa.

HOLE IN BAKELITE PANEL
Break off part of an old 78 rpm record, heat and carefully force section into unwanted panel hole.
When wax cools, smooth by file and sandpaper. Be careful not to scratch panel.

Phono Scratch Filter

Members who like to play old 78 rpm records may find this simple circuit of value since it reduces high frequency response by only a small amount and eliminates a great percentage of record surface noise. --- R.A.

RESTORING
an old receiver or early piece of equipment? If so, write and tell us about it. We're interested in "Short Problem Solvers" as well as detail restoration projects....
TIME TO GET READY FOR OT CONTEST

Once again all AWA members who are radio amateurs are invited to participate in the Annual Old Time CW QSO Party. You need not be a "speed king" or have old equipment to join the fun although the latter is encouraged. See Sept. OTB, p. 18 for types of receivers and transmitters the fellows use. Members in the 5, 6, 7 and 8 districts are DX to the gang back East -- so try to be on for awhile.

OBJECTIVE: Contact the greatest number of AWA members. When calling, use: "AWA AWA AWA de W2AN" as an example. On contact, exchange year of equipment, such as "TX 36" for a 1936 xmtr and "RX34" for a 1934 receiver. Send "Mod" for modern postwar gear.

DATES: Saturday Jan. 16, 2300 Z to Sunday Jan. 17, 2300 Z.

Wednesday Jan. 20, 2300 Z to Thursday Jan. 21, 2300 Z.

RULES: A station will be scored only once on each band. No cross-band contacts. Non-member contacts will not count. Stations NOT submitting logs will not count.

POINT MULTIPLIER:
2 for stn using 1939 or earlier TX
2 for stn using 1939 or earlier RX
4 for stn using 1939 or earlier TX/RX
5 for stn using 1939 or earlier TX/RX
where the TX is 20 watts or less and the RX is a simple 2 or 3 tube regenerative receiver.

SCORING POINTS:
1 for qso with 1940 or later station.
2 for qso with 1939 or earlier TX or RX.
3 for qso with 1939 or earlier both TX/RX

FREQUENCIES: 3580 to 3600 kHz.
7040 to 7050 kHz. and 14070 to 14080 kHz.
plus or minus qrm. Concentrate on 20
and 40 meter qso's on the hour. Stay
off W1AW!

Score sheets will be sent to all former participants in early January. Newcomers: write W2BGN for sheets.

SEND LOGS TO:
Ken Gardner, W2BGN
42 Oakdale Ave., So.
New Hartford, N. Y. 13413
BEFORE March 31st, 1982

OT XMTR AT K4DE

Pictured is Don Mead, K4DE operating his 1931 20-watt transmitter during the 1981 OT Contest. The xmtr consists of a 47 xtal osc. driving a 210 rf amp. The antenna tuner is in the foreground. At upper right is the National FBXA superhet with a SW-3 (on top) used as a pre-selector to give a better image. Other pixs were received of OT xmtrs including the kb layout at W1BVL. Dick's OT xmtr consisted of a vfo driving 807 to 814 rf final... a professional looking set mounted on metal chassis covering all bands!
ANOTHER XMTR FOR OT CONTEST

The circuit shown is another OT transmitter for the amateur who would like to get on 40 and/or 80 meter CW. The information is from a pre-war RCA Transmitting Tube manual and can be dated anywhere from 1936 to 1939 depending on components and tube type in final. The 809 can be replaced with almost any triode of the period with appropriate bias change.

Note that it is a straight-thru circuit - no doubling. This allows low grid current on the crystal which is desirable if one plans to use a small postwar tube which can't stand much abuse. This means that if you wish to work both 40 and 80, you will have to have a set of coils and transformers for both bands.

Condenser and resistor values are not too critical. For convenience, one can mount components on a breadboard. Note that R7 in rf amp provides a bias so you can key the oscillator cathode (J2). If you have a few old meters in the junkbox, forget the meter switch S3.

Most members will also want to use existing power supplies or components of 300 to 400 volts for the osc. and 600 to 1000 volts on the final - thus eliminating power supplies as noted.

One important item, however, be sure and use two 6.3v, filament transformers because one leg of the 6L6 filament must be tied to the cathode for keying (cathode tends to approach SG voltage when key is up.)

-----Lotsa luck...

TRANSMITTER CONSTRUCTION

Tuning Adjustments

Initial tuning adjustments should be made with plate voltage removed from the 809. This can conveniently be done by temporarily removing the plate-cathode connections from the 819's, or better yet, by disconnecting the high-voltage d-c lead between C1 and C2. The plate current of the 6L6-G, in resonance, should be 30 ma., and the corresponding 809 grid current should be approximately 25 ma., with no plate voltage on the 809. The oscillator is exceptionally easy on the crystal, inasmuch as it is used only for straight-through operation. The conventional 60 ma. pilot bulb in series with the crystal is omitted, since it would not indicate excessive grid current under any condition of tuning or mis-tuning.

After the 809 stage has been neutralized by one of the methods outlined in Transmitting Circuit Facts, plate voltage may be applied to the 809 through a 1000 ohm, 50-watt protective resistor. The 809 should now be tuned to resonance and a lead applied before boosting plate voltage to the normal value. With 1000 volts on the 809, C6 will rise over when tuned to resonance unless the tank circuit is kept loaded. For optimum output, the 809 should be loaded until its plate current is 100 ma., maximum at resonance. Grid current should then be approximately 25 ma.

After experience has been obtained in operating the transmitter, it should not be necessary to insert a protective resistor each time it is tuned. By very carefully tuning C1 so that the 809 grid current is very low, it is possible to find the resonance point for C6 without difficulty, and to keep the 809 out-of-resonance plate current within reason. Then, C6 can be tuned for optimum output and C1 "touched up".
SIGNAL HILL AND MARCONI
by Dermot Whelan

This is an interesting typewritten report on the first trans-Atlantic transmission, (the letter “S”), which took place at Signal Hill, Newfoundland, in 1901. The author gathered information which covers early history of Signal Hill, site of Cabot Tower, as well telling about pioneer broadcasting at nearby St. John’s, Newfoundland.

I had a misconception corrected. I had always assumed the location was given the name Signal Hill because of the Marconi experiment. Not so. It was named Signal Hill in the 1800’s since it was a look-out for incoming ocean vessels.

When a ship was seen in the distance, an observer at the tower would visually (later by landline) notify the towns folks at the base of the hill. Hence, Signal Hill.

Another revelation. The famous Cabot Tower, so frequently seen in the background as Marconi struggled with the kites, was not the building which housed his equipment. The gear was in a nearby hospital building!

Reviewed by Carl Zeigler

JOHN REINARTZ
August ’81 Ham Radio
by Leonard Spence, W46CBQ

One of the best biographies I’ve read about an amateur pioneer. Considerable research is evidenced by the material and pictures in this article.

Spencer tells about John’s early childhood, the first trans-atlantic contact, the MacMillan expeditions and much more. The amateur builder immediately associates Reinartz with the famous tuner bearing his name – one of which I saw in the AWA Museum and is described in the September OTB.

Reviewed by Carl Zeigler
On Review

THE GREAT STAR FLEET
(SOWP Journal, Bristol Bay Issue)

This particular issue of the Journal covers the great Alaskan salmon fishing fleet of sailing vessels and their wireless operators. Absorbing reading even for land-lubbers and non-radiomen. I particularly enjoyed the story by Gerald Whittaker, W6FC, about his trip on a six-masted barkentine - a ship built in 1875 (!) which was still sailing in the 20's. Radio equipment: Deforest one-tube receiver with honeycomb coils and a ¾ kw. rotary spark set.

AWA member Earl Korf (K2IC) relates further adventures in Alaskan waters. Historical documentation at its best. (Copies to non-members at $4 each. See address elsewhere in OTB.)

Reviewed by R. Allen

EARLY DETECTORS
by Robert Staplesford
MAARC "Broadcaster", Sept. 1981

The author appears quite knowledgeable on the subject of early detectors. In addition, he is a craftsman since he constructs and makes operational the equipment he writes about.

In this particular issue of the "Broadcaster", he tells about the Italian Mercury detector, sometimes confused as a coherer. This is the type used by Marconi at Signal Hill to receive the letter "S" in 1901. Bob not only describes its operation but tells how to build one!

The same article describes construction and operation of a magnetic detector. A real challenge. Here the author gives an excellent description how this puzzling device works. Excellent copy, well detailed with sketches and photographs.

TESLA

Another new book has been written on Nikola Tesla which should be of interest to Tesla Buffs. Margaret Cheney, the author, has done much research on the subject and ties her work with contemporary inventions.

Title: TESLA, Man Out of Time
Author: Margaret Cheney
Publisher: Prentice-Hall
Price: $16.95

NEW BOOK BEING WRITTEN

Word has been received that John Stokes' book on radio tubes and valves may be published by Vestal Press sometime in 1982.

Unlike Gerry Tyne's Saga, this book will cover the history of tube development right up to the 1970s though the main coverage is of the period 1930-40.

The book is intended to complement rather than compete with Saga and for this reason duplication of material has been held to a minimum; furthermore, the subject has been treated in a different manner. More on this later.

SOME GOOD BOOKS

An excellent source for books covering historical radio and collecting is Vestal Press. Here are just a few they have to offer:

- MOST-OFTEN-NEEDED
  - A FLICK OF THE SWITCH
    1926-1938 DIAGRAMS 1930-1950
- STROMBERG NEUTRODYNE RECEIVERS
- CROSLEY RADIO CATALOG
  1921-1932 RADIO COLLECTOR'S GUIDE
- RCA RADIOLAS, RADIOTRONS, AND ACCESSORIES
- 1927 RADIO ENCYCLOPEDIA
- VINTAGE RADIO 1887-1929

In addition to those listed, Vestal has in stock "Radio Enters the Home" and "Early Wireless" -- both reviewed in the OTB. Send for their large illustrated catalog which lists everything from player pianos to antique automobiles. Fascinating reading. ($2 handling and shipping charge, refundable.)

THE VESTAL PRESS
320 N. Jensen Road
P.O. Box 97
Vestal, New York 13850 U.S.A.
MARYLAND

John Nagle, K4KJ reports the Annual Gaithersburg Hamfest (held in September) topped all previous events for attendance. AWA can thank Stu Meyers (W2GHK), General Chairman, for inviting us and John for setting up and handling the AWA booth.

Several AWA members including John's wife were on hand to help. The list includes AA4SI, W3BY, W3KUH, W4JT and K4TS. As at other hamfests and ARRL Conventions, the display booth was a favorite meeting place for old timers and collectors. A wide variety of material could be seen ranging from spark gear to classic receivers.

Quick reference to:

RECENT ORIGINAL ARTICLES
of interest to radio historians

Crosley "Precision" 1-tube set
MAARC "Broadcasters" June '81
1941 Report on Radio Servicing
NVRS "Call Letter" Aug. '81
The CG-1787/SE1444 Tube
SCARS July, 1981
Restoring Speaker Cones
SCARS July, 1981
1932 40 meter transmitter
CHRIS, Vol. 5, No. 3 & 4
Brief History of BTH Company
CHRIS, Vol. 5, No. 3 & 4
The A-K Model 70 Receiver
NZVRS, Aug. 1981
Experimental Wireless (Early detectors)
MAARC "Broadcasters" June/Sept. '81
Early Telegraph Makers
MTC "Dots & Dashes" Sept. '81
BH Rectifier Tube Substitute
IIRS Bulletin, Sept. '81
Louis Hazeltine (biography)
ARCA "Gazette" Summer '81
Steinite Story, ARCA Gazette, Sum. '81

GRIMES REFLEX
Any member have a Grimes Reflex receiver...or information on same? Anders Widell (of Sweden) would like information. How about a short article by someone?

CLARENCE TUSKA HONORED
A tribute to AWA member Clarence appears in November, 1981 QST. Tuska's important and wide ranging contribution to radio is represented significantly in the ARRL, which he co-founded.

W2AN ON THE AIR
Another W2AN station is now on the air. It is a complete station made up of Collins equipment donated by W3SW consisting of a KWS-1A and 75A-4 all in mint condition. Present operation is confined to 40 and 80 meter SSB and CW. Credit for the installation and operation goes to Bill Shaw, W2HYN.

..... vy fb job OM!..... the....

CONGRATULATIONS!
to the new officers of QCWA (Quarter Century Wireless Assn.) both of whom are AWA members:
President: Stu Meyer, W2GHK
Vice-President: Leland Smith, W5KL
QCWA is the largest old time fraternal organization in the world with well over 15,000 members.

SILENT KEYS
Karl Klein, WD6DOW
Phil McCrum, W1CRP
Don Guptill, W1AOG
Harry McConaghy, W3SW

ATLANTIC CABLE
The article in the June OTB describing the cable station in Newfoundland prompted John Adams to donate an item to the Museum which he has treasured for many years -- a section of the original Atlantic Cable. This historical artifact is now on display in the large telegraph glass showcase.

WRITING AWA? Send SASE for prompt reply.......

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**RECENT RADIO and ENTERTAINER OBITUARIES**

**Harry McConaghy**
Former Engineer Helped Develop Navy Equipment

Harry A. McConaghy, 71, a retired civilian engineer with the Navy Department who was active in amateur radio organizations, died Saturday at his home in Bethesda after a heart attack.

He came to this area in 1960 and worked for the Navy's Weapons Development Bureau, where he helped design Navy electronic equipment, before retiring in 1970.

Mr. McConaghy was a member of the board of the American Radio Relay League from 1970 to 1979, and was a member of the Quarter Century Wireless Association. He was a member of St. Paul's Lutheran Church in Washington.

He was a native of Camden, N.J., and a graduate of the University of Pennsylvania where he earned a degree in electronics engineering. He was a radio broadcast station engineer in Pennsylvania in the 1920s and 1930s.

He served as a Navy aviator in the Pacific during World War II, and was a retired commander in the Naval Reserves. He joined the Navy Department as a civilian research engineer in Pennsylvania after the war.

**HARRY MC CONAGHY, W3SW**
Better known as Connie-Mac, W3SW was ARRL Director for the Atlantic Division for many years. A stanch AWA supporter, he attended all activities and contributed to the Museum. He will be missed.

**ELLERY W. STONE, EX-I.T.T. OFFICIAL**
Rear Admiral Had Served U.S. as Military Commissioner in Italy After the War

Ellery Wheeler Stone, a retired rear admiral who served with the Allied military government in Italy and was a former executive of the International Telephone and Telegraph Corporation, died Friday at Mountainside Hospital in Montclair, N.J. He was 87 years old and lived in Nutley, N.J.

At the time of his retirement from I.T.T. in 1959, Admiral Stone was a vice president of the corporation and a chairman of several subsidiaries, including the American Cable and Radio Corporation and I.T.T. Europe. He was a director of the corporation from 1943 to 1968.

He served on the Allied Control Commission in Italy from its establishment in 1944 until its termination in 1946. He was chief commissioner during the latter half of its existence. In 1947, President Harry S. Truman commended him for his work on the commission.

He was born in 1894 in Oakland, Calif. He studied engineering at the University of California. He served with the Navy as a lieutenant from 1917 to 1919 and maintained his reserve commission between the wars.

He was named president of the Federal Telegraph Corporation in 1934, holding that position until the company was acquired by I.T.T. in 1931. After that, he held executive posts throughout the I.T.T. system. He was the author of "Elements of Radio Communication."

He returned to active naval duty in 1945, as a captain. He was promoted to rear admiral while on the Allied Control Commission and received Distinguished Service Medals from the Navy and Army. He rejoined I.T.T. in 1947.

Admiral Stone is survived by his wife, Heldo, and daughter, Marina. He will be buried in Arlington National Cemetery.

**First Leg of Bell Lightwave System Begun**
The first leg of the world's largest laser-powered telecommunications system, which ultimately will link the Washington, Philadelphia, New York and Boston metropolitan areas, has been started by the Bell System, in what AT&T Long Lines Vice President Richard Jacobsen calls "entering the age of photonics—carrying communications on pulses of light, rather than as electrical signals."

The 611-mile system's first section, between Washington, D.C. and New York City, is expected to be operational in 1985. The second leg, from New York to Cambridge, is scheduled for service in 1984.

The all-digital system initially will be capable of carrying up to 80,000 simultaneous telephone conversations on the half-inch fiber-optic cable.

**Lowell Thomas, 89**
The death Saturday of Thomas, possibly the most influential broadcaster in the English-speaking world, closed a chapter in the history of electronic journalism. Thomas suffered a heart attack while sleeping at his upstate New York home in Pawling, his secretary said. He was 89.

Thomas' radio sign-off — "So long until tomorrow" — became a nightly ritual for tens of millions of people.

Thomas first went behind the microphone in 1923 at station KDKA in Pittsburgh. Recruited by CBS President William Paley, Thomas began daily weekday radio broadcasts in 1930. His last regular broadcast was in May of 1976 at the age of 84 on the CBS radio network.

Thomas was the first person to broadcast from a ship, from an airplane, from a coal mine and from a submarine. His reporting took him to both poles and virtually everywhere in between. He befriended every president from William Howard Taft to Gerald Ford.
NEW EQUIPMENT
in A.W.A. Museum
(sets, parts, magazines, books, etc.)

W1RW, WLPNY, KL6KO, W2OK, K2AH, W2TE, W2ZI,
W2QO, W2TR, W26LG, W2SPJ, K26LG, K26KM,
W4ZU, W6SAI, K8SVJ, VE5HC, John Adams,
John Drake, Lloyd Jury, Peggy Paret, Herb
Morgan, Morris Groder, Don Morey, Dr. Walter
Corey, Hal Voorhis

Note: Much of the new items listed is
software (books, catalogs, magazines).
This material will eventually go into
the Association's reference library
located in the new storage facility--
a vast storeroom of information.....

A late acquisition is the FM receiver
once used to monitor transmissions
from Maj. Armstrong's pioneer Alpine,
N.J. FM station.

It is believed the receiver was design-
ed by Maj. Armstrong and built by REL.
It is a gift from the wife of Dr. Walter
V. Corey.

Saga of the Vacuum Tube

The large glass showcase currently
displaying miscellaneous tubes will be
replaced next spring with a permanent
exhibit of tubes from "Saga of the Vac-
uum Tube". Each tube will be identi-
cified by a "Fig. No. . . . " from Tyne's
book. This will enable tube historians
and visitors to properly check each
tube in detail with the book. Several
copies of the "Saga" will be available.

A.W.A. HISTORICAL MUSEUM
East Bloomfield, N.Y.
Bruce Kelley, Curator

Museum Hours:
Sunday ——— 2 to 5 P.M.
Wednesday ——— 7 to 9 P.M.
May through October
Open to groups by appointment
Tele. (716) 657-7489
Free Admission
Museum Telephone:
(716) 657-6260

RECENT MUSEUM ACQUISITIONS

Several interesting pieces of old gear have
found their way to the AWA Museum since
the last OTB. In the receiver line are several pieces
from George Rose (K2AH) including the large
Model "L" Leutz super-het mentioned in OTB
(20-2-22). More on this later.

In addition, George gave the Association a
2-tube heterodyne unit made in Paris, France,
(circa 1917) which tunes from 200 to 20,000
meters.

In July, Fred Hammond (VE3HC) left a
mint Canadian Mercury Super-10 at the
Museum. This set is impressive with its (10)
W. E. 215A tubes and plug-in coils. Another
donation of entirely different character came
from Morris Groder: a large collection of
unique slide rules many of which were designed
for radio and electrical engineering use.

Note of Thanks

The 1981 Museum attendance
was an all-time high. Thanks
to the many members who gen-
erously donated equipment for
display and to volunteer guides
who donated their time.

-- AWA Museum Committee