"GETTING READY FOR THE A.W.A.
OLD TIME TRANSMITTING CONTEST..."

Drawing by W1CJD
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HOLCOMB, NEW YORK 14469

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COMING EVENTS

ANTIQUE WIRELESS ASSOCIATION

Old Time Transmitting Contest
Jan. 12-13, Jan. 15-16

Annual I, H.R.S./A.W.A. Meet
Apr. 16, Auburn, Indiana

Local Spring Meet, May 7
East Bloomfield, N.Y.

Rochester Hamfest, May 20-21

Upper Mid-west Meet, May 20-21
Minneapolis, Minn.

Annual Conference, Sept. 28-30,
Oct. 1-2, Canandaigua, N.Y.

Annual Business Meeting, Nov. 6

A.W.A. – B.V.W.S. MEET
IN LONDON, ENGLAND

Tentative plans are being made for a
joint meeting with the British Vintage
Wireless Society sometime in June.

A.W.A. members will join a group to
London where they will meet fellow
British collectors and historians. Al-
though plans are not firm at this writ-
ing, it would appear one day will be
devoted to a general meeting with pro-
grams and social activities and a one
or two day visit to the famous British
Science Museum. Complete informa-
tion in the March OTB, "C.B."

What's Coming Next!

in the “Old Timer's Bulletin”

History of the Vidicon
Building a Hazeltine set
Early Telegraph makers
The Regulator Tube
Universal ABC Eliminator
The DV-1L Tube
The HRQ Receiver
Armstrong’s Super-Regen set
History of Bliley Crystal Co.
A 1910 Receiver
plus much, much more......

Change In Address?

Mail information to the Treasurer
who handles current mailing list.
(NOT the Secretary)
L. A. CUNDALL, W2LC
69 BOULEVARD PARKWAY
ROCHESTER, NY 14612
Vladimir Zworykin, Television Pioneer, Dies at 92

Dr. Vladimir Kosma Zworykin, a Russian-born scientist whose achievements were important to the development of television, died Thursday at the Princeton (N.J.) Medical Center. He was 92 years old and lived in Princeton.

Dr. Zworykin, a naturalized American citizen who was also credited with spearheading development of the electron microscope, had served as director of the RCA Laboratories in Princeton. Since his retirement in 1954 he was an honorary vice president of RCA.

His other important work included development of early forms of the "electric eye," infrared image tubes first used in the Snookoscope and Sniperscope in World War II, and various forms of secondary emission multipliers used in radiation detectors.

**In Memoriam**

KAZUO IWAMA
President of Sony since 1976. He was 63 years old.

SOL TAIHOFF
Editor and co-founder of Broadcasting magazine.

LESLIE WARNER
Former Chairman of G. T. E. Mr. Warner was 71 years old.

DAN SEYMOUR
Announcer CBS

LOUIS DEAN
Pioneer announcer with WGO, CBS and NBC.

JULIUS SEEBAUGH
Pioneer programmer with CBS and WOR. Mr. Seeback was 84 years old.

DR. PIERRE MERTZ
Pioneer with AT&T and Bell Labs. 83 years old.

HARRY MARBLE
Longtime radio and TV announcer with CBS and WOR.

FRANK SINGISER
Announcer at WGY in late 1920s. Also WOR and NBC.

CHARLES WALTERS
Dancer and director of many well known movie musicals. 68 years old.

Max M. Jacobson, 83, NBC Radio Engineer

Max M. Jacobson, 83, a retired radio field engineer supervisor with the NBC Radio Engineering Department and a resident of Silver Spring since 1959, died of congestive heart failure Sept. 3 at Montgomery General Hospital. Mr. Jacobson was born in New York City and worked for NBC in 1939, then until his retirement in 1959. He was an amateur radio operator and a member of the Society of Wireless Pioneers, the Antique Century Wireless Association and the Antique Radio Association. Survivors include his wife, Margaret; three sons, Richard, of Chalfont, Pa., Arthur, of Bryn Mawr, Pa., and Michael, of Clinton, Md., and four grandchildren.

EUNICE RANDALL THOMPSON
Amateur radio lost a pioneer with the passing of WIMP. Her career covered employment with the Amrad Corp. and broadcasting over their station in the early '20s. In later years, she will be remembered for her intense interest in OOTC activities. A most warm and generous person. She will be missed.

Max (W3DUG) was a longtime AWA member. He contributed Material and assisted in the making the Association's most recent film show "The Thirties".

SILENT KEYS

Phil Haller, W9HPG
James Beaver, W3AHZ
Max Jacobson, W3DUG
Burton Noyes
Dexter Bartlett, C.A.A.
Clarence E. Dengler, W2LK
REPORT ON ANNUAL CONFERENCE

BIG FLEA MARKET....
..SEE OLD FRIENDS
TOP SPEAKERS...
AND MAKE NEW ONES.
A GREAT TIME!
AUCTION - WOW!

Summery days with a touch of autumn color and crisp nights greeted nearly 700 who traveled to Canandaigua for the 1982 Conference. For some, it was a 6 day occasion, since they arrived Monday and stayed through Saturday.

ATTENDANCE: Because of the recession, the Committee had doubts about attendance. Thus it was a pleasant surprise a few weeks before the event to see registration pick up. Total attendance, including "walk-ins," was around 700. Overseas members who planned trips to coincide with the Conference included Guy Biraud and his daughter Catherine from France. They were accompanied by fellow collector, John Scwierzynski from Lyons, France.

Other overseas visitors were Franz Monk and his wife Christine from Austria. Do come again!

From a nearby state was Reg Wushburne, first editor for "Radio-Craft" magazine (1929). He started his radio career working for the old Marconi Co. at Aldene, N.J. Reg came with Fred Schuman, also a former "Radio Craft" editor and later "Radio Electronics" editor. They fondly recall the days working for the one and only "H!"

PROGRAMMING: We've heard nothing but praise for the series of programs starting with Art Goodnow's engineering approach to spark transmitter operation as seen on an oscilloscope. Subject material for other talks covered a wide range of subjects all presented in a professional manner.

We're now looking for 1983 programs. Do you have a talk/paper/demonstration you would like to give? And for the ladies, a trip to the new M.W. Strong Museum in Rochester is being talked about.

FLEA MARKET: The huge flea market had an all-time high of 87 registrants. Aside from some slight criticism about one or two commercial ventures, it was a smooth operation with few problems. Remember the young fellow who directed parking? May we suggest you follow his instructions in the future, for he represents both AWA and Sheraton Management. He is an off-duty officer for the city police department.

Note: The Association has been advised there may be a cost increase in use of grounds and facilities for the '83 event. The Sheraton has overhead expenses (taxes and liability insurance) which obviously must be shared with the user. A charge for flea market space is common for hamfests and other events. We too may find it necessary in the future. See you same place, same time next year. .... Lauren and Bruce

Recipients of Conference Awards:

HOUCK AWARD (Preservation)
Fred Hammond, VE3HC, curator of Canada's outstanding radio museum.

TYNE AWARD
Lauren Peckham, well known tube historian and AWA OTB Tube Editor.

ELLE AWARD (Master Craftsman)
Lincoln Cundall, W2LC, Construction of United Wireless Type "D" Tuner

MATLACK AWARD (Early transmitter)
John Haught, K23BRK, excellent craftsmanship in making a 1930 transmitter.

OLD TIME TRANSMITTING CONTEST
Charles Hinkle, K4TS, 1982 winner.

PRESIDENT'S AWARD
Ed Culver, WA2JAA, for countless hours working on AWA projects.
OLD EQUIPMENT AWARDS
NATIONAL HISTORICAL RADIO CONFERENCE

CLASS 1. Crystal receivers
1st.-- United Wireless Type "D"  
      Jim Kreuzer
2nd.-- 1914 Clapp-Eastham set  
      Lauren Peckham
3rd.-- National Electric (NESCO) CN-113  
      John Caperton
Hon. Men.-- Thomas-Houston Bijou  
           Bob MacIntyre
Hon. Men.-- British Radionette  
           John Wiesner

CLASS 2. Regenerative receivers
1st.-- IP-501, Amplifier and manual  
      Dan Galdosz
2nd.-- DeForest T100 and P300  
      Ralph Muchow
2nd.-- Mignon RW-4  
      Lauren Peckham
3rd.-- Cutting & Washington Mod. 11  
      Douglas Furney

CLASS 3. Tuned Radio Freq. sets
1st.-- Transoceanic Golden Leutz  
      John Caperton
2nd.-- Operadio portable with modules  
      John Johnson
3rd.-- 3-tube Ware receiver  
      Chet Wisner

CLASS 4. Superheterodynes
1st.-- Murcury Super 10  
      James Wade
2nd.-- Supertone  
      John Caperton
3rd.-- Rader (homebrew)  
      Peter Yanczer

CLASS 5. Shortwave receivers
1st.-- Grebe CR-1  
      Ralph Muchow
2nd.-- SE-1012  
      Floyd Bennett
3rd.-- Pilotone Universal  
      John Caperton

CLASS 6. Speciality & novelty sets
1st.-- Grafton Lord Galena  
      Mike Batsch
2nd.-- Radio Keg  
      Clay Seidel
3rd.-- Radio Horse  
      Charles Bradley
Hon. Men.-- Felix the Cat  
           John Williams

CLASS 7. Detectors prior to Audion
1st.-- 1900 variant of Marconi mag. det.  
      John Williams
2nd.-- Marconi Marconi detector  
      Richard Brewster
3rd.-- 1909 Silicon detector  
      Floyd Bennett

CLASS 8. Shortwave converters
1st.-- Leutz Trans. Freq. Changer  
      John Caperton
2nd.-- Scott Type 20  
      Ed Taylor
3rd.-- AK Model 93  
      Ralph Muchow

CLASS 9. Tube transmitters
1st.-- Parallel 202's transmitter  
      Bill Holly
2nd.-- W.E. Police transmitter  
      Rodney Schrock
3rd.-- 1930 Breadboard  
      John Haught

CLASS 10. Spark Transmitters
1st.-- Marconi coast guard set  
      Ralph Muchow
2nd.-- 1915 Wireless transceiver  
      John Glisson

JUDGES: Ross Smith, Jim Troe, John Drake, Charles Day, Roland St. Louis and Ralph Williams

Congratulations to participants and judges for bringing together one of the finest displays of historical equipment in the country. Pieces on display this year were exceptional, making it difficult for judges to make decisions... even pieces that did not garner an award were far above average. Again, congratulations!

The Committee is already working on the '83 Contest and may have the categories ready for the March Bulletin....

This is a Radio Christmas
SUMMARY OF CONFERENCE AUCTION

(f) Fair, (g) Good, (vg) Very Good, (e) Excellent. All sets have tubes unless otherwise noted.

RECEIVERS:
Radiola V (no tubes) ($e390, RCA "16" (vg) $60, Radiola 24 (f) $75, RCA Mod. 20 (e) $160, Radiola II A (no tubes) (vg) $100, RCA Mod. 20 (e) $35, Radiola III w/t (vg) and bal. amp. $140, Deforest Interpanel (vg) $100, Rely-O-Dyne (trf) (vg) $38, Homemade variocoupler receiver (e) $70, Freshman Masterpiece (vg) $50, National HRM w/pwr & 4 coils (g) $155, Arvin AC set (g) $12, IP-500 (need to replace socke) $600, AK Mod. 42 (f) $12, AK Mod. 44 (g) $20, AK Mod. 20 (e) $45, AK-35 (g) $15, West. RC (no tubes) $95, Philco "beehive" Mod. 20A (g) $37, Miraco trf (g) $35, Grimes Duplex (vg) $105, Spotleng 6 tube trf (e) $18, RADA (g) $15, Tridyn (vg) $90, Crosley 50 (e) $100, Crosley Ace 38 (g) $90, Crosley X1 (g) $20, Kolsterr TA (g) $16, BC-348 (g) $27, Zenith 908 (vg) $35, Aerola Jr. (e) $150, Fada 5-tube trf (vg) $65, Marti TA-2 w/6 Mc Cullough tub (e) $60, Philmore crystal set w/Acmc phones in orig. boxes (e) $240, Tuska Superdeyne 305 (f) $130, Mohawk 5-tube w/201's (g) $80, Acme Reflex (g) $65, SW-3 w/6 sets of coils (e) $160, NR-7 (e) $45, Thermodyne (vg) $20, Cleartone (vg) $75, Hall Melodyne (vg) $40, West. RC (e) $105, National 10-A (vg) $60, Grebe Sync. /sprk. (g) $140, Howard amateur rcvr. $50.

TUBES:
Tubular Audion (good fila.) $65, WD-II (bakelite) $23, North. Elect. R-215A (g) $14, Set of 3 Brightson in case $120, Myers audion w/mount $40, Myers in orig. box $50, 3 Myers audions in orig. cartons/mounts $65, Cooper-Hewitt mercury are $55, Mullard Type 'R' $35, TB-1 and VT-11 (g) $45, Osram S625 (g) $30, DeForest VT-4-B (g) $20, Audio-tron (l good fila.) $55, Audio-tron (2 good fila.) plus instru. sheet $100, (2) VT-1 in orig. boxes $30, (1) 126 and (1) 127 blue Arcturus $10, Alexanderson TV scanning tube $160.

MISC.:
Radio stand $50, Homemade loosecoupler $34, Gen. Rand. 514A resist. coupled amp. (vg) $35, Homemade spark xmr. (g) $95, Riders Manual XI $8, WE 7A amp. w/216A tubes (vg) $140, Marconi high voltage spark xmr. (g) $190, Early light galvanometer (f) $80, large rare Massie key circa 1908 $750, (4) early light bulbs $51, (2) 1929 & 1938 books on TV $45, Sig. Corp R-64 key (new) $10, Duck 5BB loosecoupler (g) $210, AK service manuals 1924 to 1932 $70, Edgewound xmr. helix $25, Carbonfila lamp (g) $5, WE db mike w/homemdae stand $60, 2-slide tuner (g) $25, Majestic "B" elim. ($20), Unmarked loosecoupler (g) $70, Radio lamp (e) $15, Weston voltmeter (g) $20.

COMMENTS:
The above is a partial list of sales. The trend followed the same as in previous years—early brand names dominating the high price range. Top dollar went for a DeForest Interpanel set ($900) which is about $100 over previous years. A rare and most unusual key sold for $750,—the most ever paid for a radio or telegraph key. There were some real good buys such as the 1P-501 for $600 (even though there was a need to wire in the tube socket). A similar set sold recently for $1800. Surprisingly, several nice items had no bidders such as a telegraph sounder for $12. Most sounders are currently selling for $20 to $30.
**QUEST: Did cone speakers come in many sizes and were all cones of similar design?**

**ANS:** 99+% of the cones in cone speakers were conical. They were used in both concave and convex positioning with respect to the listener. Some manufacturers used a push-pull arrangement with cones back to back (ACME - double cone). The picture shows three sizes of cone speakers.

The very small speaker is a NA-ALD and is 4” in diameter. The large pedestal speaker is a Stromberg Carlson 5-A standing 35” high with a 15” diameter cone and 22” diameter sounding board. Note the weighted iron base stabilizer. The third speaker is a Victor Talking Machine Company VS-1, “Lumiere” and has two cones (front and back) which are pleated of a rather thin parchment. It has a volume control on top of the cabinet.

**QUEST:** Were horn speakers built into and made an integral part of a system which included an amplifier?

**ANS:** Magnavox made amplifier modules A1-R and A2-R, out of which a neck and bell unit protruded. Victory Radio-Electro Company made an audio module out of which a straight neck and bell protruded and Thompson Manufacturing Company made a radio out of which a goose neck and bell protruded.

Western Electric made an amplifier 14-A which contained a three tube amplifier (Continued on next page)
Early loud speakers reveal both the beginning of an important technology and the responses made by entrepreneurs such as Atwater Kent to the business opportunities presented by radio fans who wanted to listen without the encumbrance of earphones. The speakers offer an intriguing subject for examination and evaluation by collector/historians who can use the perspectives of time and technology in doing their studies.

The authors, Floyd Paul researching early horn speakers, and Ralph Williams studying the Atwater Kent Manufacturing Company, found common interest in considering that Company’s first offerings to the loud speaker market. This article considers in some detail Atwater Kent’s response to the demand for loudspeakers by looking at his initial series, the metal horns.

When did Atwater Kent enter the market? How well did he do in the business? How did he exit from this segment of loudspeaker production? The first and third questions are answerable from analysis of contemporary records. The answer to the middle one comes from evaluation of the speakers themselves and forms the main body of this article.

The time of Atwater Kent’s first entry into the speaker field is best revealed by looking at the numbers assigned to the parts from which the speakers were assembled. The Model M horn was assigned Part No. 4460 and the bell was assigned Part No. 4210. For comparison, the Model 10 Radiodyne was assigned Part No. 4340. The M horn was announced at the same time as the Radiodyne, November 1923, with production early in 1924.

This is partially verified by the availability of the Type 5V (No. 4437) and 6C (No. 4438) phonograph attachments in mid-1923. These units contained the operating electromagnetic elements of the type M sound unit. The phono units were marketed while the mechanical parts of the speakers such as bells, horns, and bases, were being designed and introduced to production.

The Atwater Kent factory earned substantial profits by manufacturing well accepted radio receivers and loud speakers for sale to the very selective American customer. That Atwater Kent made successful business choices between product performance and cost is evidenced by his increasingly large share of the radio market starting with the Model M loud speaker and the set it complemented, the Model 10.

Among all horn manufacturers it is believed that Atwater Kent made and sold as many or more horns than any other producer. The only runner up and certainly a major producer was Magnavox. Magnavox primarily made horns while Atwater
Kent made radios and, as an ancilliary item, made horns.

In a survey made by author Paul in 1981, with listings from 56 collectors reporting on 829 horns, AK horns numbered 107 while Magnavox numbered 104. This approximate ratio of one eighth of all horns reported when applied to the estimated 5,000,000 horns in use by the end of 1926, indicates upwards of 600,000 AK horns sold to the public. This accords approximately with 800,000 AK receivers sold through mid 1926.

Table 1 – Key Horn Parameters

<table>
<thead>
<tr>
<th>Model</th>
<th>Base Dia.</th>
<th>Bell Dia.</th>
<th>Base</th>
<th>Materials</th>
<th>Neck</th>
<th>Height</th>
<th>Logo</th>
<th>Color</th>
<th>Neck to Ball Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>8 1/2</td>
<td>14 3/4</td>
<td>steel</td>
<td>steel</td>
<td>iron</td>
<td>21 1/2</td>
<td>Green</td>
<td>B/F</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>8 1/2</td>
<td>14 3/4</td>
<td>steel</td>
<td>steel</td>
<td>iron</td>
<td>21 1/2</td>
<td>Green</td>
<td>B/F</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>8 1/2</td>
<td>14 3/4</td>
<td>steel</td>
<td>steel</td>
<td>iron</td>
<td>19 1/4</td>
<td>Brown</td>
<td>B/F</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>8 1/4</td>
<td>14 3/4</td>
<td>iron</td>
<td>steel</td>
<td>alum</td>
<td>22 1/4</td>
<td>Red</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>8 1/4</td>
<td>14 3/4</td>
<td>iron</td>
<td>steel</td>
<td>alum</td>
<td>22</td>
<td>Red</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>8 9/16</td>
<td>14 3/4</td>
<td>iron</td>
<td>brass</td>
<td>alum</td>
<td>25 1/4</td>
<td>Red</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>7 1/4</td>
<td>12 1/4</td>
<td>steel</td>
<td>steel</td>
<td>iron</td>
<td>16 1/4</td>
<td>Red</td>
<td>B/F</td>
<td></td>
</tr>
</tbody>
</table>

Notes: G, H, L & R Logos (nameplates) are located on the bell. M Logos are located on the base of the neck. All dimensions are in inches. Neck to ball measurements should be within 1/4”.

To aid the collector in identifying AK horns, Table 1 shows key parameters and major feature differences of AK horns. Such items as base diameter, bell diameter, heights and logo emblem colors are listed.

AK made three different colored, wrinkle-finished horns. The most common color by far was dark brown, the color used on M, H, L & R horns. A few horns, including the M & R were finished in black. The G horn was green in color. The bell and base were a light olive green and the neck was a darker and more classic green color.

Model M horns came in several heights and Table 2 identifies these height differences. It is believed that the first model M horn was 25” high and was finished in black crystalline. A design change brought out two shorter M horns with a lower base height for the shorter of the two horns, the 22 1/4” one. The two shorter horns had a neck length of 15”. A boss on the bottom of the neck (directly behind the nameplate) distinguished it from the 25” high horn whose neck was 17” in length.

To the left of the collector in identifying AK horns, Table 1 shows key parameters and major feature differences of AK horns. Such items as base diameter, bell diameter, heights and logo emblem colors are listed.

AK made three different colored, wrinkle-finished horns. The most common color by far was dark brown, the color used on M, H, L & R horns. A few horns, including the M & R were finished in black. The G horn was green in color. The bell and base were a light olive green and the neck was a darker and more classic green color.

The 22 1/4” horn used the boss for drilling, spot facing, tapping and the use of a set screw to lock the neck to the shorter base which had a slot in the base support stud. The 23” design did not drill and tap the neck boss and it did not have a slot in the base stud post.

A 25 1/4” high, black crystalline M horn in author’s Paul horn collection is believed to be a prototype or part of a short early production run because it has a brass (copper) bell and brass base retainer housing that the bakelite driver earphone unit

Fig. 2 Left to right: Models "R", "L", "G" and "H".
Table 2. Model "M" Horn details

<table>
<thead>
<tr>
<th>Part No.</th>
<th>M</th>
<th>L</th>
<th>R</th>
<th>H</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horn (Whole Speaker)</td>
<td>440</td>
<td>465</td>
<td>4800</td>
<td>7730</td>
<td>8270</td>
</tr>
<tr>
<td>Bell</td>
<td>210</td>
<td>4680</td>
<td>7678</td>
<td>7719</td>
<td>8366</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>253</td>
<td>4853</td>
<td>4521</td>
<td>4522</td>
<td>4523</td>
</tr>
<tr>
<td>Dia. Gasket (Rubber)</td>
<td>353</td>
<td>4866</td>
<td>4524</td>
<td>4525</td>
<td>4526</td>
</tr>
<tr>
<td>Dia. Adj. Spring</td>
<td>354</td>
<td>4850</td>
<td>4525</td>
<td>4526</td>
<td>4527</td>
</tr>
<tr>
<td>Dia. Washer (Steel)</td>
<td>3501</td>
<td>7573</td>
<td>7573</td>
<td>7573</td>
<td>7573</td>
</tr>
<tr>
<td>Bass Pin (Felt)</td>
<td>2111</td>
<td>4933</td>
<td>4934</td>
<td>4935</td>
<td>4936</td>
</tr>
<tr>
<td>Gooseneck</td>
<td>4645</td>
<td>4864</td>
<td>7701</td>
<td>8345</td>
<td></td>
</tr>
<tr>
<td>Bell Holding Screws</td>
<td>4649</td>
<td>4649</td>
<td>4649</td>
<td>4649</td>
<td>4649</td>
</tr>
<tr>
<td>Cord</td>
<td>4659</td>
<td>4689</td>
<td>4659</td>
<td>4659</td>
<td></td>
</tr>
<tr>
<td>Base only</td>
<td>7874</td>
<td>7876</td>
<td>7877</td>
<td>7878</td>
<td>8362</td>
</tr>
</tbody>
</table>

Profile of top of Base of M horns

This dimension 2 1/8 for all bases

screws into. Brass and copper would hardly be a planned production material when cheaper and more cost effective metals were available.

A series of shorter horns followed the M design. Cost savings were realized when the L, R, H & G came onto the market utilizing a punched steel base instead of a cast iron base. Also the bell attachment to the neck was simpler and easier to assemble. The R horn was the smallest (height and base diameter). The G & H were taller than the L.

To provide the collector who is intent upon identifying further similarities and differences among the AK horns, Table 3 is given. It lists a variety of detail parts which made up horns. The part numbers were taken from September 1926 and August 1928 AK part listing catalogs.

Atwater Kent used a sequential numbering scheme for all of his manufactured products. (See OTB 14-1-30 for detailed listing of radio dates.) It is easy to see from that listing where the horn part numbers fit with respect to time. Table 3 shows the approximate start of production on the several horns.

In the survey of horns mentioned earlier in this article 56 collectors reported a distribution of the 107 AK horns as follows: (All brown unless noted) 34 were H, 32 were M, 27 were L, 5 were R, 4 were black M and 5 were green G.

When and why did Atwater Kent turn away from the horn as the means to reproduce radio sound? What came next? From this vantage of history we know that the paper-cone, magnetic-driver speaker replaced the horn. But why? The forces to which Atwater Kent responded when he brought the horns to market were technology, performance and cost had again taken a big step forward and so did he.

Horns were sold with sets up to Model 35 in late 1926 and early 1927 when the type E cone speaker became the preferred product. The horns had enjoyed a relatively long life as radio products went in the 20's, having been offered for about three full years.

Figure 1 shows the "M" family of horns. Figure 2 shows the shortest, "R" followed to the right by the L, G and H.
A VINTAGE TRANSMITTER FOR OPERATION
IN THE 1980'S
by Bill Hurni, W3HWT

I would like to tell you about a transmitter project which I used in the 'Old Time Transmitter Contest' of 1982. I decided to build a transmitter out of the twenties; however, I was concerned that the rig I finally decided upon would be capable of operating on today's bands without causing TVI or getting me a pink slip.

To fulfill these requirements, I decided that the transmitter would have to run low power and would be used only on the low bands such as 80 or 160 meters. Since I did not want to be crystal controlled, an MOPA circuit would be desirable to achieve acceptable stability. After a search through my collection of QSTs, I came upon an article in a 1928 issue of QST that described what I had in mind. This article was excellent in that it gave enough detail, including pictures, so that I could build the transmitter the way someone would have built it in 1928.

I had little trouble collecting the necessary parts. The board is a piece of cherry from a local planing mill, and the copper tubing for the coils came from a plumbing supply house. Figure 1 shows the details of coil construction using the tubing 0.032". The original electronic components I collected from my own junk box and from friends.

The 80m. coils have an inside dia. of 2 1/2" and 1 3/4" for 40 meters. The antenna coils (L4) are the same diameter and about 1/3 number of turns of L2. unless an antenna tuner is used with coax line-- then only 3 to 4 turns.

As seen in the circuit diagram (Figure 2) the set uses an MOPA circuit with a 210 oscillator and a 210 amplifier. The diagram shown, however, is incorrect. A correction was subsequently printed showing a grid leak across capacitor C8 in the oscillator circuit. It is a 10,000 ohm, 10 watt unit.

No definite parts layout was presented in the article. However, using the pictures and measuring things of known dimensions in the pictures, I was able to calculate the size of the board and determine the original layout with a fair degree of accuracy. I felt it important to do this in order to make the unit as authentic as possible.

Back in 1928, the amateur radio fraternity had still not settled on the best way to key a transmitter, so the experimenter was left to his own devices as far as keying was concerned, although a reference to discussions on the subject was given (1). I reviewed several references (1, 3, 4) and tried some of the recommendations presented, such as keying the cold end of the amplifier tank coil, but was unhappy with all of them for various reasons. I finally ended up keying the oscillator.

I approached this method with grave doubts but it gave the cleanest note and provided the most convenient method operationally since it totally shut down the transmitter during key-up conditions. I inserted the key in the cathode tap of the oscillator coil. Tone reports from 7 to 9 were received which I felt was quite acceptable considering the rig in question. I attribute the variability in tone report to kindness (bless those who gave me a 9!) and transmitter adjustment, something which is totally foreign to today's amateur.

The neutralization capacitor setting was fairly critical to good tone reports. One old timer whom I worked about a week before the contest remarked after I described my rig, "Well, it sure sounds like a 1928 transmitter!"

Power was provided by a simple bridge rectifier power supply using the output of the bridge to supply the amplifier and taking the voltage off the center tap for the plate of the oscillator. No voltage regulation was used for the oscillator. I used 6.3 volts for the filaments of the 210s instead of 7.5 volts as the 6.3 volts was available from the power transformer used. The slightly lower filament voltage did not seem to effect operation of the transmitter. I ran the set with about 600 volts on the amplifier and 300 volts on the oscillator. The oscillator drew about 25 mils and the amplifier about 50 mils.

The rig is reasonably stable considering its construction. Wanting to build a vintage rig, I resisted the temptation to make modifications to improve its performance. I did not find drifting to be a problem at all. I did however find that a very heavy and sturdy table was required to keep the fre-
FIG. 2. THE CIRCUIT OF THE TRANSMITTER ILLUSTRATED ON THESE PAGES

C1, C2—500-μfd. receiver type variable condensers.
C3—350-μfd. ditto.
C4—50-μfd. midget condenser.
C5—2000-μfd. fixed by-pass condenser.
C6—1000-μfd. filament by-pass condensers.
C7—250-μfd. coupling condenser.
C8—250-μfd. fixed oscillator grid condenser.
C9—1000 μfd. oscillator stopping condenser.
R1—Center tap resistors—50-or 100-ohm resistors or Christmas tree lamps.
R2—100-watt, 10,000-ohm grid leak used to drop plate voltage for oscillator.
R.F.C.—Three sections each of 50 turns of 30 gauge d.c.c. wire wound in 1/8" plots in a 1" former and connected in series. The usual tubular chokes should be equally satisfactory.

frequency of the oscillator from swinging due to mechanical oscillation set up in the oscillator coil.

Even with this precaution, the excitement of a distant contact and the resultant pounding of the brass a bit too hard caused swinging. I finally solved the problem with a piece of masking tape across the top of the oscillator coil! The only other difficulty was zero beating another station. Even with a 4-inch knob on the 500 m mf variable capacitor, it did not take much movement to cover a lot of kHz.

The transmitter took about a year to complete with the collecting of parts, building, testing out various methods for keying and debugging. It is hard to believe that something this simple would require debugging but it did. As usual, it was a race to the finish line with the rig in final form about one week before the Old Time Transmitter Contest.

During that final week, I made a number of contacts which convinced me that everything was going to work. I found no TVI with my own television and I could not detect any harmonics on a local receiver. A 245 foot end-fed wire was used for an antenna in conjunction with an antenna tuner which probably helped to keep the harmonics down. I have used the rig only on the 80 meter band for reasons stated previously. Figure 3 shows the completed transmitter.

The contest has come and gone. I worked many stations all over the country and had a very enjoyable time, as I always do. Now the rig sits on a shelf by a window in my collection of early gear. I keep hoping the sun will help give it 60 years of aging in two or three! What I have learned about early amateur radio from this project is something

(Continued on next page)
Figure 3. Transmitter with aluminum pot cover removed. Experienced proved shield over oscillator was not necessary for satisfactory operation.

I could not have gained by reading QST or by questioning the few old timers that are still with us. I encourage any of our members with an interest in early ham radio to tackle such a project as a most rewarding one.

References:

A "General Call" ... But the General Doesn't Answer
AMATEUR RADIO
Editor: Ken Gardner, W2BGN
42 Oakdale Avenue S., New Hartford, NY 13413
All correspondence requires SASE for reply

AWA OLDE TYME 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 older gear will increase your score. See page 10 of the Sept. OTB for types of receivers and transmitters used in the 1982 Contest. Members in the 5, 6, 7 and 8 districts and all VE's are DX to stations in the East, so try and operate as much as possible.

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 "TX36" for a 1936 xmt and "RX34" for a 1934 receiver. Send "Mod" for modern postwar gear.

DATES: Wednesday, Jan. 12, 1983 at 2300 Z to Thursday, Jan. 13, 2300 Z and Saturday, Jan. 15, 2300 Z to Sunday, Jan. 16, 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 MULTIPLIERS:
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 TX is 20 watts or less and 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 qrn. Concentrate on 20 and 40 meter qso's on the hour.

LOG SCORE SHEETS
Score sheets will be sent to all former participants in early January. Bud Hall, K2LP is acting Assist. OT Chairman. Newcomers should write Bud for score sheets: Bud Hall, K2LP Brookside, N. J. 07026
One of the first popular AC receivers released by RCA in 1928-29 was the TRF 17 and 18 with variants such as the phono models 7-11, 7-25, 7-26 and distant cousin 33.

They all had the same basic circuit: (3) 226's RF, 227 Det., 226 Aud., 171A Output and 280 rectifier. A study of the circuits shows the slight differences. Note the resistors in the 226 RF grids which were replaced with neutralizing coils in the 18.

I have found the pot (used as volume control) in the untuned RF stage can be troublesome and should be checked. Also, since all tubes are low voltage, high current, it is always wise
to work each tube up and down in the socket several times to insure clean wiper contacts.

It is a heavy set for a table model (they don't make them that way anymore) but I find the wooden cabinets always sparkle with a little polishing. I am told many radio amateurs rescued the power supplies when they were junked in the 30's for their low-power transmitters.

The restorer will usually encounter a little hum, and the metal hood over the dial light is invariably missing. An example of the first popular AC receiver, it's one all collectors should try to acquire.

— Chas. Willet

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**GALENA GALORE**

*D. K. deNeuf, WA1SPM*

Until the vacuum tube came along it was pretty much agreed that the best device to intercept radio waves was the crystal detector, which actually operated as a rectifier. As early as 1874 Physicist Braun noted that certain pairs of crystals, when arranged so that only a small area of surface was in contact, offered high electrical resistance to the passage of currents in one direction, while permitting them to readily pass in the other direction.

There are a number of minerals in crystal form which will act as detectors, among them being Galena, Iron Pyrites, Silicon, Molybdenum, Bornite and Chalcopyrites. Some operate with a wire or other metallic contact and others require a combination of two crystals — one in contact with the other.

Probably the most popular and widely used crystal was Galena (PbS) — also called lead sulphate, sulphur of lead, or lead ore. (Incidentally the word "sulphur" allegedly is derived from Sanskrit meaning "enemy of copper"). Galena as a detector required a very light, stiff and clean wire of copper, brass, or platinum for contact (nicknamed "Cat-Whisker" because of its similarity in size and appearance).

Very little pressure of the Cat-Whisker on the crystal was required. Any sort of mechanical jar or vibration would usually move the catwhisker contact off the chosen spot on the crystal, requiring re-setting. Manually finding the best "spot" (strongest signal) on the crystal required some degree of dexterity and patience. The best "spots" were often near the edges of the crystal — probably where most impurities existed.

Crystallography is a study in itself, but suffice to say that Galena is characterized by its surprisingly great weight. It has a pure lead-gray color but with a metallic luster, similar to silver. In its native state it forms into cubical or octahedral crystals which rather readily cleave off into squares.

Sizes from that of a small pea to that of a kid's marble were usually chosen for detector purposes. Galena needed to be replaced frequently when employed as a crystal detector because it gradually lost its "sensitivity" when exposed to the air — presumably from oxidation. Galena usually passed a positive current better than a negative one at a ratio of about 10:1.

While the vacuum tube replaced the old crystal detector for many years, WW2 gave renewed life to the use of crystals for high frequency work such as radar. Like tubes, they could be employed to detect, modulate, rectify, and amplify in the form of diodes and transistors and do it better than tubes could at such frequencies.

In the early 1920s many hams, including the writer, used to obtain their supply of Galena by mail directly from lead mines in the Rocky Mountains at a cost of something like $1.00 for a couple of pounds of crystals — postpaid, no less!!
bered highways went into effect and with it the need for maps. The main source of maps was your friendly gas station. The gas crunch and high printing costs of the '70's have just about eliminated the "freebies".

The value of old oil company maps varies tremendously depending on year, condition, contents and local demand. Road maps from 1920-1930 generally sell somewhere between $2 to $6. 1930-1940 average $1 and $3. Road guides (booklets) before 1930 sell for as much as $30.

**HARD TO BELIEVE**

Members are again requesting loan of AWA historical slide shows (with tape commentary) for club programming. As noted in previous Bulletins, the shows have not been available for the simple reason AWA has had difficulty in having them returned.

On several occasions the Association has had a third party pick up the material from the offender and mail it back to Headquarters at our cost!

The Committee has come up with a solution. Several programs will be available providing the borrower deposits in advance the cost of the show. The amount will vary from $100 to $400. (Movie films will NOT be available.) The deposit will be returned when the slides and tape are safely returned. Write for information.

**THIS BUSINESS OF HERTZ**

I still receive letters on the subject "cycles vs Hertz". Those in favor remind me that Hertz is specific and indicates "cycles per second". On the other hand, Bob Billings says he never heard of anyone confusing 110 volts, 60 cycles as being "cycles per month, etc." I do have to agree with Don Sutherland (ZA2AJL), a most knowledgeable historian, that at times one needs to be specific and define a frequency such as "Hertz". However, in a recent letter he laments that confusion exists with the term even in learned circles (?). He cites an example in an Australian Government publication which repeatedly specifies, quote: "---consists of tones 1,000 Hertz per second"... and

(Continued on page 20)
Arthur Wehnelt & His Wonderful Cathode

by Thomas H. Briggs, Orefield, Pennsylvania

Electron tube engineers have used the oxide-coated cathode for 75 years. It has generally been known also as the Wehnelt cathode. Behind every innovation there stands a man. Who Wehnelt was, and what he accomplished are questions which merit more than passing thought. Strangely, the literature on electron tubes and oxide cathodes has been completely silent concerning this man and how his famous invention came about.

Arthur Rudolph Berthold Wehnelt was born in Rio de Janeiro, Brazil, on 4 April 1871. He died in Berlin on 15 February 1944, having seen hundreds of millions of radio tubes produced as a result of his invention. His father, who was an engineer and factory owner, doubtless provided him with inherited talents in scientific and practical aptitudes. He studied physics first at the University of Berlin and then at the University of Erlangen, where he received his doctorate in 1898. There he remained until 1906. While there he made his famous oxide-cathode discovery. In 1906 he moved to the University of Berlin as a full professor. In 1926 he became director of the Physics Institute, before returning in 1938.

Wehnelt was well known for his studies concerning discharges in rarified gases, cathode rays, canal rays, and X-rays. In later years he became involved in development work on tubes for X-rays and oscillographs. He also distinguished himself with work in photo-electric and secondary emissions, mass spectra, and the thermal conductivity of metals.

Just these contributions were sufficient to brand Wehnelt as a deep thinker, a patient and practical experimenter, and well into the advanced areas of physics. Such was the man who followed a minute observation to the conclusion, a habit which resulted in his greatest contribution. Note that at that time no radio tubes existed. Even the application of the “Edison Effect” as a wireless detector by Fleming was still two years away.

In 1903 Wehnelt was checking Richardson’s work concerning emission of electrons from hot bodies. He was using a hot platinum wire to decrease the drop in cathode potential in a gaseous discharge. Suddenly he observed a tell-tale bright blue glow as cathode rays were emitted from small areas of the wire at unusually low temperatures and with exceptionally low anode potentials. He assumed that impurities had lodged on these small areas, and thought them to be metal oxides from the stopcock grease of his vacuum system.

At this point most workers would have continued with the original experiment, without digressing to determine more about the “impurities”. Not so Dr. Wehnelt. He made detailed follow-up tests with many substances. From these he determined that the oxides of the alkaline earth metals in particular gave the best electron emission. Thus was born what became the barium/strontium/calcium oxide-coated cathode, used almost universally during the life of the industry.

Arthur Wehnelt

Why did Wehnelt become so excited by emission from these “impurities”? It had been known from the work of Hittorf and Crookes that cathode rays could be deflected magnetically or electrostatically. However, because of their high velocity the power required to deflect them was not conveniently available.

With more copious emission at lower anode voltages, these slow speed electrons could be deflected with far greater ease. For purely scientific work this was easily recognized as a real boon. Practically, less heater power was needed, also.
Continuing, Wehnelt showed that Richardson's equation was valid for pure metals and also for oxide-coated emitters. In 1904-1906 he suggested use of oxide emitters in diode rectifier tubes. For this he obtained German patent DRP 157,845. That patent had a convention date of 15 January 1904.

The first known practical use of an oxide cathode was by Robert von Lieben in his gaseous amplifier tube, patented in 1906. That tube could not have functioned without slow speed electrons, which could be readily controlled in their beam.

Extensive use of the oxide cathode occurred in 1912 when Telefunken placed von Lieben's LRS tube in production. Then H. D. Arnold employed a similar emitter in his high vacuum version of the Audion which was placed in production by Western Electric Company starting in 1913. Arnold has since stated that half a million oxide-coated filamentary emitter tubes had been produced by the end of World War I.

What happened to the Wehnelt patent and his suggested use for it in a rectifier tube? That, in turn, forms another interesting saga. The patent was acquired by ACCUMULATOREN FABRIK AG of Berlin-Hagen. That firm established a tube laboratory. Probably this was the first one in the world! The rectifier use was followed to a successful product. It contained the oxide cathode and low pressure mercury vapor. A second patent in Wehnelt's name was issued in 1906.

Reference has been made in the literature that Siemens asked the battery company to undertake a study project concerning the effects of temperature and pressure of mercury vapor as they might affect the Lieben tube. It was confirmed that indeed it would be almost impossible to achieve a stable and low-noise tube with the mercury filling. But why did Siemens seek out the aid of a battery manufacturer?

About 1890 Thomas A. Edison had become interested in battery-powered electric automobiles. He hated the smelly gasoline cars then just becoming available. Moreover he had developed a successful alkaline storage battery. A handicap towards its use was lack of an efficient and economical means for recharging the battery.

An early associate of Edison had been Sigmund Bergmann, a young German immigrant. His rise to ownership of a prosperous machine shop is another story. About 1900 he returned to Germany as president of German Edison Accumulator Fabrik AG. Difficulty in producing the Edison alkaline battery caused its withdrawal from that market, and concentration upon the standard lead-acid battery. The "German Edison" was dropped from the name, but Bergmann remained as president. He later became a power in the German electrical industry.

The need for a means for recharging batteries was of paramount importance. It was quite logical for the company to acquire the Wehnelt patent and to continue engineering development activities.

Siemens had long been associated financially with the US General Electric Company, as well as with the several Edison companies in Germany. It was quite natural for Siemens to turn to Bergmann's company to aid in the mercury vapor investigations, and thus to seek to control the Lieben tube in 1912.

Wehnelt's work provided a practical electron emitter. Yet the real mechanism of electron emission continued to require worldwide research until the 1960s. Electron tubes used a cathode for which theory was not well understood until almost the end of the major production volume.

How fortunate for the world that Professor Wehnelt was a keen observer, a patient researcher, and yet was able to vision practical applications for his work!

Close-Up

"the response at 6,000 Hertz per second... etc.." How about that!

OUR COVER

Several members asked the location of the NBC remote broadcast on the cover of the June OTB. The picture was taken at the 1932 America's Cup Race, Newport, Rhode Island.

PRICES . . . .

They tell me that collector/dealers who wish to double, if not triple their investment, should make an overseas connection for selling radio equipment. There are several pseudo-collectors in U.S.A., who buy and sell overseas at a handsome profit. Lauren Peckham, returning from a trip to Switzerland, tells of the demand for early radio equipment. Agents from several European countries as well as Japan are seeking all kinds of artifacts.

Early radio items are scarce abroad for several reasons: low production plus possible one-time government restrictions. In addition, receivers were confiscated in many occupied countries during the wars and never returned.

---73, BK
RAYTHEON 4-PILLAR TUBES
by Alan Douglas

Every tube maker had his gimmick or sales pitch — Arcturus had blue tubes, Majestic had spray-shielded ones, and so on — but inside, most of them looked pretty much the same. Except Raytheon.

Raytheon’s “four pillar” design must have been more expensive to build, and it was doubtful that it was any more rugged than ordinary construction, but they made tubes that way for perhaps ten years. They turn up often enough now to make it a challenging, but not impossible, endeavor to make a display of the various types.

Raytheon first adopted the four-pillar style when they began making tubes other than BH rectifiers, under RCA license, about November 1928. In June 1929 Raytheon formed a partnership with National Carbon Company, marketing their tubes under the name “Eveready Raytheon.”

This lasted until early 1933, when National Carbon gave up any hope of making money from radio, and Raytheon went back to tubemaking under their own name. For a detailed history of Raytheon, see “The Creative Ordeal” by Otto J. Scott, 1974. Copies of this book (in paperback) were mailed to every Raytheon stockholder in 1975, and should be available in used-book stores by now.

Tube cartons: l. to r. 1928, 1929, 1933 and 1934. Misc. samples in foreground.

21
THE LODGE-MUIRHEAD COHERER

In England, during 1902 and 1903, Lodge, Muirhead, and Robinson designed a coherer consisting of a slowly revolving steel disc 'A', rotating extremely close to a column of mercury 'B', but separated from it by so thin a film of oil that the insulation is broken down by about three quarters of a volt.

It is connected across a potentiometer and battery so as to have a third of a volt across its terminals. An increased difference of potential due to a wireless signal causes a complete breakdown of resistance, but immediately the signal ceases this again becomes infinite as the wheel revolves.

The wheel is driven by a clockwork which also drives a syphon recorder. A felt pad 'C' keeps the wheel clean, and connections are made to binding posts 'D'. The column of mercury is adjustable up and down by a knob at the top of the coherer.

Though not so simple as Marconi's magnetic detector, it was quite reliable and, unlike the filings, or tripod, type of coherer, did not have to be tapped to restore its high resistance.

In later years, about 1912, it was used by John Hammond, Jr., on one of his radio-controlled boats.

Linc Cundall

References:
C. C. F. Monkton - "Radio Telegraphy" 1908
B. F. Mieresner - "Wireless Control of Torpedoes" 1916

FIRST REGENERATIVE DETECTOR

Pictured is a replica of a regenerative detector made by Major Armstrong in 1913. It is believed the replica was made in the 1920's for use in one of Armstrong's numerous patent litigations concerning the feedback circuit. This rare artifact was donated to the AWA Museum by Stewart Davis, W2ZH.

(Photograph by W2BWK)

75th Anniversary
1907 - 1982
De Forest Audion
Canadian Broadcasting Corporation
Société Radio-Canada

5 August, 1982
Maison de Radio-Canada,
1400 Dorchester East,
17th floor,
Montréal, Canada,
H3C 3A8

Mr. Bruce Kelly,
Main Street,
Holcombe New York 14469,
U.S.A.

Dear Bruce,

I would like to thank you most sincerely for all the time and effort you put forth to make possible our filming at the Radio and Communications Museum. The day we spent at East Bloomfield was one of the most useful in all our filming of the story of Guglielmo Marconi, and we were extremely impressed with the collection that you and the other members of the Antique Wireless Association have so carefully assembled during the years. To see so many examples of early radios in a working state was truly remarkable.

Our one-hour film on Marconi will be seen on the CBC English network Thursday evening, December 9. It will be seen on the Italian TV network December 15, and at a date to be decided on our French network here in Canada. I am sure you will want to see it, so we must somehow arrange for you to see a cassette of the program, unless you are able to receive CBC from Toronto. In any case, we can at some later time discuss the use of the program, if you want it, for your convention next year.

We will be sending along a small but more concrete expression of our thanks shortly, but in the meantime, once again our sincere thanks to you and to the Antique Wireless Association.

Yours sincerely,

Richard C. Bocking,
Producer TV

AWA ASSISTS IN MAKING MARCONI FILM FOR CANADIAN BROADCASTING COMPANY

The above letter was received from the Canadian Broadcasting Corporation. Members may see the television program at the times noted. This is one of the three films made at the AWA Museum during 1982.

AWA is pleased it could assist in making the one hour documentary on Marconi’s life. Why was our small museum selected for part of the film? Very simple. It appears that AWA is the only place which has a large quantity of early Marconi apparatus in operation.

Filmed were closeups of Marconi coherer receivers, magnetic detectors and spark transmitters -- all in operation! In fact, code signals were simulated of the famed letter "S" and the Titanic distress signals.

The AWA Museum has over 20 pieces of early Marconi gear, ranging from a 10" spark coil to a 1000 watt quench gap spark transmitter. In addition, there is a large collection of early Fleming valves including the 1905 specimen, a gift from the British Marconi Company. Many of these items are NOT on display, but for security reasons, are housed separately.
A section of the Biraud Museum in Fontenay-Le-Comte, France. A collection of over 300 sets makes it the largest private museum in France. At far right is the 8CT station display. Guy and his daughter Catherine attended the recent AWA Conference at Canandaigua.

In 1928, Charles Atwater, 2JN, worked French station EF-8CT for the first 10 meter trans-Atlantic contact. A picture of 2JN appeared on the cover of the September '81 OTB.

This prompted AWA member Guy Biraud (Fontenay-Le-Comte, France) to write telling that he had 8CT's original transmitter in his museum! A second letter enclosed two pictures: one of 8CT operating the transmitter in 1928 and another of Guy's museum. History documented and preserved!

EF-8CT at his 10-meter transmitter in 1928.

OT TRANSMITTING CONTEST
Wednesday, Jan. 12
Thursday, Jan. 13
---
DON'T FORGET!
Saturday, Jan. 15
Sunday, Jan. 16
**KEY and TELEGRAPH**

Editor: Lou Moreau, W3WRE
305 N. Llanwellyn Avenue, Glenolden, PA 19036
All correspondence requires SASE for reply

**QUE:** How did European wireless keys differ from ours in construction and size?

**ANS:** Short of the straight lever that is indicative of keys of most of the world (other than North America) the Europeans utilized, and still do, an open circuit system. Thus we find the contacts located at the rear of the lever. In most cases, the keys did not differ in size from those in this country.

**QUE:** Did each country require that their keys be used by their operators?

**ANS:** Not always. Remember that ever since the earliest days of the telegraph industry, the operator was permitted to work with the key of his preference. We find, for example, that a German Slaby-Arco key was used in 1906 (Fig. 1) on board the USS Chicago to relay railroad train orders after the San Francisco earthquake. These so-called "door-knob" keys were excellent instruments with a very smooth action despite their clumsy appearance.

Most English wireless operators, particularly those on ships with Marconi equipment, worked with Marconi Company keys (Fig. 2). These signaling keys with their heavy hardwood bases used the heavy "skirted knob" as an additional protection as was the location of the large shorting switch at the left. This wireless key is identical to the one used to key the Marconi auxiliary spark transmitter on the ill-fated Titanic in 1912. (Both keys from the W2ZI collection now on display at the AWA Museum. Photos: W2BWK.)

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Fig. 1 German Slaby-Arco

Fig. 2 Marconi wireless key circa 1911-12.
OLD TYME HAM ADS

OLD TYME ADS are FREE to members interested in collecting and restoring early radio equipment for personal use.

RULES FOR ADS:
1. Only ONE ad per issue per member. Send SASE for acknowledgement.
2. Material must be over 25 years old and related to electronic communication.
3. Give full name, address and zip (and call).
4. AWA will not print repetitious ads or ones indicating regular sale or profit.
5. The Association is not responsible for ANY transaction.
6. AWA retains the right to reduce size of ad if over SIX (6) lines.
7. Only ONE ad per issue (no doubles).
8. Deadline for ads: March issue--JAN. 10 Sept. issue--JULY 10 June issue--APR. 10 Dec. issue--OCT. 10 Ads received AFTER the above dates will be discarded. Mail ALL ads to: (Not Headquarts.)

RICHARD HANSLY
17 SHERIDAN ST., AUBURN, NY 13021

WANTED

--Marconi tube socket as used in Canadian Marconi Type "C" receiver (V.R. page 117). Thin rectangular base with nickel plated brass shell. Doug Brightman, Box 158, Hanover, Ontario, Canada N4N 3C4

--Hammarslund Comet Pro receivers. Am building a collection of each model of Comet Pro manufactured. Howard Hill, KE6AZ, 4117 Lyner Drive, San Diego, CA 92116, (714) 281-8732

--technical info on Melsser signal shifter Model 9-1090. John Uschinskow, RR#1, Box 379, Greenwich, NY 12834

--Riley Radio power unit manufactured in Attica, Ind. In 1926. James Fred, Cutler, IN 46920

--old "EEKO" stamps and cards used by early US-Canada-Mexico BC stations circa 1920-30 to verify DX reports from listeners. Donald deHoff, WA1PMS, 602-8 Heritage Village, Southbury, CT 06488

--75TH tubes and pre-1950 Collins radio equipment wanted. Paul Kluwe, PO Box 84, Manchester, Mich. 48158

--Philo advertising material prior to 1930. Also pre 1928 Philadelphia Storage Battery Co. radios. Thomas Estes, 7723 Willowmint, Houston, TX 77085 Telephone (713) 440 1218 7-9 CST

--Vibroplex Vertical bug and Bunnell Gold Bug. Have spare Vibroplex Dual Lever for trade. Ask need Cootie key. Neal McEwen, 1128 Midway, Richardson, TX 75081 Tel. (214) 234 1653

--operating manuals for tube testers. Jackson 103 and/or Hickok 6000A. Copies OK. Bill Emick, 353 Ann St., Chadron, NE 69337 Tel. (308) 432 5725

--parts for a Hammarslund HQ-140X. Ed Best, 2004 University Drive, Durham, NC 27707 Tel. (919) 489 2164

--Philo cathedral 1931 model 70B or 90B escutcheon plate and set of control knobs or entire radio and cabinet of same year and model. Jim Huske, 2705 Rincon Drive, Grand Junction, CO 81503 Tel (303) 245-1975

--1938 Zenith with Bakelite chassis having all parts molded into it ie: resistors, condensers, tube sockets etc. Need any info from anyone who has such a set or who is familiar with it. Alan Douglas, Box 225, Pocasset, MA 02559

--Masterpiece III power resistor values. Also sales/owners manuals for Stewart Warner Model 301-A & 102-A...Xerox OK. R.佐tier, 600 Green St., Monroe, NC 28110

--Howard "Progressive Series Plan" parts including IF xfmr,xtal, schematic, etc. to convert Howard 435A Recvr to 437A. Also need Collins 3 or 6 kc mechanical filter for 51U-4 (500kc IF).L.B. Zimmerman, 8448 No. Harding Ave., Skokie, IL 60076
-plug-in coils for Hammarlund SWK-5, Meissner 18-3500 series. Also need "Hammarlund Shortwave Manual", Post WWII Knight & Meissner regrn. sets in any condition. David Burns, WA3WHR, 4109 Queen Navy Rd., Olney MD 20832

- Aerola Jr detector, Amrad detector assy., Radiola IV doors, CR 5, Crosley 50A panel & box, mint Trilodyne special cabinet. Will sell or swap QST's, magazines, OIA's. Merrill Bancroft, 169 S. Row Rd., Twomsond, MA 01469

-operating manual and tube chart supplement for Precision #10-12 tube tester. Copies OK. Luther Schubert, 1845 S.W. 29th St., Allentown PA. 18103

-information on "The Radio Shop" in Sunnyvale, CA in the 1920's. Will Jensby, 1460 Lewiston Drive, Sunnyvale, CA 94087 Tel. (408) 738-3595 (Note new address)

-Crosley model 706 tuning drive gear. Lawrence Moser, 2570 S. Valley Hwy. Ser. Rd., Denver, CO 80222

-Deforest sets & parts, early AC sets using Kellogg tubes (parts especially Rogers, Martin, Pathé, suitcase type pre-1930 portable and pre-WWII TV's). Cash or trade. M. Rosenthal, 507 S. Maryland Ave., Wilmington, DE 19804

-Kodel microphone type speaker, advertising signs, microphone. Buy or trade. A.R. Nolf, 620 Auburn Cr., Burlington, Ont., Canada, L7L 5B2

-need info on The Radio Shop METEOR 3 tube regen. cabinet. Have set but no cabinet. Art Harrison, 1021 Falcon Dr., Columbia, MO 65201

-chassis for Freshman Masterpiece Cathedral and Philco 60. Also Music Master horn bell and Rider's Vol. I. Have many radios and speakers for sale. SASE for list. Gary Hill, 1507 Ridge Ave. New Castle, PA 16101

-help. I bought a no-name paper cone speaker from someone at Canandaigua meet and forgot to pick it up. Please write Dallas Swindal, 1112 San Jose Lane, Hanahan, SC 29406

-Camfield Duo-formers (ant & RF) for Infradynie work. Will take Thorola Doughnut coils as a second choice. Rodney Schrock, 402 Lincoln St., Somerset, PA 15501

-160 meter bandspread coils for FB7, original tuning knob for FB7. SW3 coils and power supply. Ted Gillette, 1480 Broadmoor St., Van Nuys, CA 91402

-Miehser products, especially "signal drifter" exciter. Also looking for Morse cw items as keys, bugs, switching equip. and documentation, catalogs etc. Bill Bradford, 3891 Seagull Drive, Salt Lake City, UT 84120

-Information on Meepon crystal set. When and who manufactured it. Expenses refunded. David Smith 92 Roston Drive, Hinckley, Leicestershire, England Postcode LE10 1XP

-Collins 51D4, must be complete with all parts but need operate. James Reid, W5HGL, 556 East Madison, Houston, TX 77005

-complete Vol. II Rider's radio manual, numerous a.c. sets parts such as knobs, IF and audio xfmrs, speakers and tubes. Carl Elkins, A1AP, 1701 Woodland St., Nashville, TN 37206 Tel. (615) 227 7972

-schematic for a Thomas Edison cathedral radio using 1-80, 2-47, 1-55, 3-24A tubes. Need power xfmr and someone who rewinds audio transformers. C. Golodich, 23 Benson St., West Haven, CT 06519

-"The Transistor Radio Handbook" by Donald Stoner and Earnshaw 1963. Published by Editors and Engineers Ltd. J. Cirillo, 6330 Solomon Circles., Ft.Worth, TX 76117

-early AC radios with metal cabinets. Also any supplementary tube charts for Superior Inst. model #1240 tube tester. Copies OK. Have good OIA's and AK53 metal floor set to trade for Philco 37-84, Brian Rhodes, 2413 Grier Ave., Linden, OH 43036

-Tuning condenser assembly for Bommer-Tuly A. Counterphase, Federal and Freed-Eisenmann APT's, voltmeter & Pyrex UV sockets for Garod V. Federal A-10 cabinet, AK Model E spkr coil. H. Faulkner, 6130 10th Ave., S.W., Naples, FL 33999

-amateur station callbooks 1935 thru 1941 and any Collins radio printed material 1933 thru 1937 for xtrns. C.E. Filley, WW7E, 1109 S. 2nd St., Hamilton, MT 59840

-Zenith sales brochures 1934 to 1938. Also want manuals for capacitor checkers C-D Model RF-60 and McMurdo-Silver Model 900. Xerox OK. Don Knotts, WHJS, 3156 N.E. Azalea, Hillsboro, OR 97123

-Old horn speakers and drivers in working condition, Edison cylinder phones w/ horns, working or not, any cathedrals. Randall Twedt, 122 Ridge Dr., Apt. 6, Mt. Horeb, WI 53572, Tel. (608) 437-3425

-Federal 141 cabinet, Harko Sr and Two Stage Amp. panels, Ampion Dragon AR-19 driver. Richard Jehlik, 8320 North 28th Ave., Omaha, NE 68112 (402) 393-7124 after 7.

-Calibration procedure for Hickock model 20BA VTM made in the late 1940's. Howard Adams, 209 West Shadywood Drive, Midwest City, OK 73110

-PCA Victrola, Credenza & Edison Opera models, David Yo, PO Box 832, Monterey Pk., CA 91754 (213) 577 2642

-manuals & info on Dumont 154-E scope and Spaco Signal Tracer Amplifier Xerox is OK. Also 1936 & 1937 Super Pro Manual. Bill Taylor, Box 132, Unionville, PA 19375 Tel (215) 347-2381

-VK45S looking for spark gear, horn speakers, high impedance headphones, 2 to 4 inch bakelite 0-100 dials, 201's old terminals, bussbar wire, Telegraph keys. Alan Shawsmith, 35 Wynot St., West End, Brisbane, 04101, Australia

NOTE: Ads mailed to Holcomb will NOT be printed. See Rules on page 26.
WARNING!

Members are advised NOT to buy Marconi, DeForest and other rare equipment without first checking the dealer's credentials. Fake pieces have been sold recently, mostly to overseas collectors. Before any sale, may we suggest you check dealer's AWA membership by writing to Treasurer: Lincoln Cundall, 69 Boulevard Parkway, Rochester, N.Y. 14612. And a repeat: AWA does NOT have a member on Alderton, Forest Hills, N.Y. See page 27, Sept. '81, "Bulletin".

FOR SALE/TRADE

--AK breadboard (1922-23) with coupled ckt. tuner, variometer, Det., 2 stage amp., Model H AK horn speaker, Bert Picard, 62 Hortense St., Rochester, NY 14611 Tel. (716) 235-4045
--Musio AC-5, in good condition, $75 plus shipping; Western Electric 2-A photoelectric cell in original container, Arbophon 45 in very good cond. $60. Bill Hurley, W3HT, 329 Evergreen Dr., North Wales, PA 19454
--1928 Majestic 70 high vg cond., with orig. paper; pre-1935's RCA 7K1 floor model & Westinghouse H-103 table model. Want pre-1935 battery or AC sets. Need knobs, pointer, vol. control for AK47. Christopher Bacon, 193-04 53rd Ave., Flushing, NY 11355
--Navy 2Z-2 direction finder recvr. $75, WWII Navy BN IFF Transceiver $25. Altec Salt shaker microphone $50. plus shipping charges on all above. Wayne Chapman, Apt 6-218, 1130 North Lake Parker Ave., Lakeland, FL 33805
--Crosley 50, AK 84, Federal Jr., RCA superhet, list of QST's and manuals. Also tubes. SASE for list. Merrill Bancroft, 169 S. Row Road, Townsend, MA 01669
--Antique radio and instrument collection of about 70 pieces from 1918 to 1935. Also numerous tubes and parts. SASE for list. Will sell only as a complete collection. E. Joe Antoine, RR#2, Box 7, Hope, British Columbia, Canada V0X 1L0
--Sam's Photofacts sets 1-1703 all in fair to excellent condition. Best offer over $2500. Glen Buel, Box 21 R.R. #1, Crown Point, NY 12928
--Trade very early QST's. Want RME-9(D). Bob May, K45E, Box 453, Jonesboro, TN 37659
--Cloth covered AC line cord in gold or brown, 256'/ft. or $22/100 ft. Brown Radiola Loop Antenna wire, 126'/ft. or $30 for 500 ft. $9. Shipping is $2 per order. SASE for free wire samples. Bob Goodman, 7943 Ponce, Canoga Park, CA 91304
--Older tubes—all new in original boxes. Some are very scarce with some foreign. $3 each. Must take all. James Notaris, 1100 Welsh Road, Ambler, PA 19002 Tel. (215) 646 3631 evenings after 8

--Radio News, Shortwave, Craft, Radio World, Popular Radio plus many more from 20's to 1940. Reasonable. SASE for list. Want AK 3902 detector tube unit. Winny Shea, 6 Rocky Ridge Road, Easton, CT 06612
--Antique tube collection, old recvr., misc. equipment. SASE for list. Want Marvel crystal receiver, mint AK breadboard. Don Whittenmore, W2CUZ, 36 Masterond Road, Bronxville, NY 10708
--Atwater Kent Model 9 type 4445, 4052, 3955, 4340, 4700, one tube three circuit, one tube with various variocapacitor. SASE for list. Joe Horvath, 522 Third St., San Rafael, CA 94901
--Trade Japanese WWII transmitter, recvr., headphones, throat mike & key for WWII Navy key or detector. Joel Kosooff, 2421 Shamrock Rd., Skaneateles, NY 13152
--Majestic Model 90/91 receiver, original and working with spare parts. Is floor console. Asking $150. Dave Beck, Box 421, Millerton, NY 12546 (518) 769 3809
--Federal 110, $390; Crosley S-3B, $65; Magnavox horn R3-B, $85; DeForest F-5, $275; trade/Sell Lord Calvert 4 tube novelty, Amp. On Bell & driver, Falck radio shown in V.R., Brightsons. Floyd Paul, 1545 Raymond, Glendale, CA 91201
--Radiola III and IIA with or without tubes in like new condition. Also transistorized WD-11's and OIA's for small sets to run on one 3 to 9 v batt. Want 239-A W.E. tubes. Bud Hedker, 60 Cloverside Ct., West Seneca, NY 14224
--ARRL Handbooks 1927 & '33, Rider's Vol 1 plus many technical & construction books of 20's & 30's, variometers, Fred Eisman WRS, loosecoupler & many parts. Richard Cohen, 13913 Hayward Place, Tampa, FL 33624
--Battery & AC radios, horns, speakers, projection tv, AK 10-B, Riders Manuals. SASE for list. Al Mackenzie, 2109 Whitman NE, Renton, WA 98055
--Rider's TV manuals—Vol. 2 $5, Vol 3 $10, Vols 4, 5, 6 $7 ea., radio Vol 19 $15. All plus shipping. A. Smith, Stonechidge, Lincoln, MA 01773 Tel. (508) 259-9351
--Trade Grebe CR-8 (nice original) or AK Model 10 breadboard for National NC-5 or equivalent Lafayette chassis model converter. Charles Byrnes, 1201 Sycamore Terrace—102, Sunnyvale, CA 94086
--Early AK radio tubes from 1927 to early 1930's. SASE for list. Want to buy or trade for a AK type M speaker base. Also base for UZ 1320 or 1325. Herman Fothe, 10 Jackson St., Slatsbury, NY 10974
--Philco 20, Radiola 20, AK 40 and spkr. Riders Chanalyst, Radiola 60, Kennedy XV, Radiola loop for AG 814, Collins 75A1 with matching spkr. SASE for complete list. Bill 82-1, David Mckeinzie, 170 West 53rd St., Hialeah, FL 33012

FOR SALE/TRADE
EARLY DAYS OF WHEELER & HAZELTINE CORP.
by Dr. Harold A. Wheeler

The Hazeltine Corporation was founded in 1924 to manage the Hazeltine patents. The first important patent was, of course, Louis Hazeltine's neutralization circuit. This invention, however, lost its effectiveness in the TRF receiver with the introduction of the screen-grid tube in 1928.

Other designs/circuits such as Harold Wheeler's automatic-volume-control (AVC) placed the company in a dominant position second only to RCA. The collector/historian will find the book intriguing since it clarifies the many problems (including patent litigation) of early radio manufacturing.

Published by Hazeltine Corporation, Commack, NY 11725 – 1982, 432 pages, hard cover. $30.00.
(Reviewed by Bob Allen)

N. V. PHILIPS

I recently reviewed three books covering the history of the N. V. Philips Company of Eindhoven, Holland. Philips is the world's largest electronic organization with manufacturing facilities or offices in over 70 countries. They own several companies in the USA including Sylvania, Amperex, Magnavox and Centralab.

Growth of an Enterprise,
The Life of Anton Philips
published by Macmillan

45 Years with Philips,
The Life of Anton's son, Frederick
published by Blandford Press (Poole, Dorset, U.K.)

50 Years of Electronic Components:
1921-1971
published by N. V. Philips, Eindhoven, Holland

Fascinating reading for the advanced radio historian and researcher.
—Jack Chauvency

Who's Who
Due to lack of space, there will not be a listing of new members in this issue. Nearly 200 names have been added to the AWA roster!!

CONFIDENTIAL FREQUENCY LIST

After much labor, Gilfer Associates has published another book listing frequencies and identification of thousands of shortwave stations. The listing is mind-boggling! The stations are listed in order of frequency as well as by call sign. Here are some examples:

FSB69 7832.0 kHz. Paris, France
(Interpool) 3.0 kw.

JTD27 10,185.0 kHz. Ulan Bator, Mongolia
10 kw.

WCM 17,291.8 kHz. Pittsburgh, Pa.
(Inland waterway service)

If you own a shortwave receiver and like to tune across the bands, the book will prove invaluable. Cost is $9.95 plus postage. Gilfer Associates, Box 239, 52 Park Avenue, Park Ridge, NJ 07656

—B.K.
Early magazines are increasing in value, particularly those with covers. If possible, the collector should salvage those that are marginal. This is an example.

There are plenty of wrong ways to mend magazines, and most of them have to do with adhesive tape. Whether Scotch tape, “Magic Transparent” tape, masking tape, or (yes, I’ve seen it) black electrical tape, they’re all the same. Forget them! No adhesive tape ever made, or likely to be made in the future, is permanent. Don’t let the collectors of 100 years from now curse you, as they try to remove the sticky residue of adhesive tape from your “restorations.”

Library paste or white PVA (polyvinyl acetate) glue is just fine for mending torn paper, and if the paper needs reinforcing, a bit of mending tissue pasted over the area is nearly invisible. Elmers glue is ok, but if the repair is at a hinge where the paper must flex, you should use a softer glue, such as the Jade 403 shown in the photo ($3.25 a pint from Talas, 130 5th Avenue, New York, NY 10011. Add 25% postage. Cannot be shipped in cold weather, below 40°F.).

I’m not suggesting that this issue of QST pictured here, was worth the time to do all these repairs, but I wanted to show what could be done.

Incidentally, for removing sticky tape, if it’s not too old, try soaking the paper from the reserve side with toluene or xylene. Acetone will dissolve the backing of “magic” tape, allowing the adhesive layer to be rubbed away with a rag dampened in xylene. Colored inks will run in any of these solvents, however, as will some modern black inks.
Ever wonder about various methods to control regeneration in early shortwave receivers? Shown are nine feedback circuits starting with the variable capacitor control (A). Not shown are early broadcast detector circuits using a rotating tickler coil or a variometer arrangement, neither of which were used for shortwave.

Fig. A and B were popular with early shortwave receivers such as the Pilot Wasp. The circuit is quite critical and calls for correct coil design. The main disadvantage is detuning when controlling oscillation. C is an improvement but is noisy with the pot adjustment since plate current flows through the resistor contact. It also causes some detuning on high frequencies. 1-D also suffers from the same effects.

The real break through came with the screen-grid tube where one could design circuits varying the screen grid voltage (1-E through I). F has the advantage of being able to roughly set the feedback with the capacitor and controlling the oscillation with the 50,000 ohm pot. The other arrangements have certain advantages with the different feedback coil positions but I find 'T' the most satisfactory.
WITH THE COLLECTORS

PROBLEM SOLVERS

DON'T OVERDO IT!
Nothing is so distressing as a nice old battery set in a wooden cabinet that has been stripped and refinshed to look like new. It reminds me of an elderly lady with makeup and dress trying to look 50 years younger! Let me quote from Tony Constable's book Early Wireless, page 68:

"There is a great temptation among new collectors to spend a lot of time and effort 'renovating' old wireless sets as they come into their possession. Unfortunately a lot of so-called renovation can only be described as 'destruction'. Whatever the place of the early wireless set may be at present, it will certainly become of great antique value in the future.

Those sets which have been lovingly stripped and re-varnished will be comparatively valueless in the future when seen alongside the more fortunate, though perhaps dirtier, examples that have escaped the vandalism of the amateur bodger. The serious collector already avoids anything but the untouched originals."

And there you have it. When I see a set that looks like new, I immediately suspect it has been a 'basket case' and start looking for replica parts, etc.

-- Ed Culver, W2JIA

DON'T GIVE UP ON THE WD-11
Sam Sargent writes he has found that applying a soldering gun to the filament prongs of a couple defunct WD-11's brought back life to open filaments. Apparently the leads inside the prongs had somehow worked free.

ED. G. RASER, W2ZI EXHIBIT
The famed Ed. G. Raser, W2ZI key collection is now on display in the Museum. A permanent exhibit, it is housed in a special showcase with each key properly identified with brief description. Members unable to visit the Museum, may read about them in Lou Moreau's "Key Column".

Batcher Award
Congratulations to Lou Moreau, W3WRE, the recipient of the 1982 Batcher Award. This prestigious award is given each year by the Radio Club of America for outstanding contributions in the field of communication. To date, 5 of the 6 recipients have been AWA members.

A.W.A. SLIDE/TAPE SHOWS
The Association plans to give priority this coming winter to making two slide/tape shows for club meetings. Scheduled are: "The Radio/Telegram Key -- History and Identification" using keys from the W2ZI/W3WRE Collections. The other is: "The Vacuum Tube -- Early Use and Identification" with tubes from W2GK/W2ICE collections. Both shows will be available to the ARRL and AWA "meets".

The TUBE COLLECTOR
Need tubes? Try these two sources. Prices are reasonable and occasionally they have early battery types:

"Old Radio Place"
616 Nelson St., Rockville, Md. 20850
(Send 20¢ stamp)

Rick Weibezahl
305 Belvidere St., Washington, NJ 07882
(Send S.A.S.E.)
HOW TO MAKE BASKET WEAVE COILS
by Joe Horvath, W6GPB

These coils are highly efficient, very easy to make, and look good in almost any radio receiver, especially if made of green or other colored wire.

Follow these easy instructions: first, get a good piece of hardwood about six inches square and about two inches thick. Next, locate the center in the block of wood, make a good mark, take a pair of dividers and make two circles, one 2⅛ inches and the other 3⅛ inches in diameter. Next, divide each circle into eleven equally spaced markings. Using a 17/64" bit, drill all of the holes in the two outer circles. Make sure to drill them straight. A ¼ inch wooden dowel should slide up and down freely, but not be loose and wobbly.

You will need a bolt about 5 inches long (with lots of threads on it), two flat washers, one spacer about two inches long, and two nuts. The bolt can be most any size in diameter. Drill the center hole according to the size bolt that you will be using.

Now you are ready to start winding your coil. Wrap a full turn of wire around a wooden dowel. Leaving about four inches for a coil terminal, you weave the wire first inside and then outside of the wooden dowels. Keep pushing the wire down only where the strands cross one another. You will now see why the wooden dowels have to be able to slide up as you wind the coil. If you have the wooden dowels up too high to start with it is very difficult to get the wire down into place.

When you have all of the desired turns on, again wrap a full turn of wire around the dowel. Generally, the wire ends should terminate on the same wooden dowel.

After all the wire is on take some thin nylon fishing line and tie together at about six places where the wire cross each other. After the nylon line is tied good and tight the coil can be removed by pulling out the wooden dowels. Put some Duco Cement right on top of the nylon line. After drying for 24 hours the coil is ready to use.

One of the features of this type of coil is that it is easy to prune down if you have too many turns.

It is best to use heavy wire for these coils, but one can use almost any size wire after a little practice. Different sized wires make different sized coils. Colors can be used if desired.

DID YOU KNOW-----?

The GM name "Deleo" was derived from a company named Dayton Engineering Laboratories which made starter motors for Cadillacs before WW1.

MATERIAL FOR OTB

Members submitting copy for the OTB are asked to follow these rules:
1. For lengthy articles, write Editor with description, number of words, pictures, etc. BEFORE submitting.
2. Double space all typing. Try to keep length of lines less than 5½".
3. Schematics and diagrams MUST be in final form and ink drawn to either approximate 3¼" or 6⅛" width.
4. Pictures must be sharp, and preferably black & white. (Use of color only on rare occasions). No negatives. Small photographs (3x4 or 5x7) are OK.
RESTORING A RARE PORTABLE
by Phil Goodman

At a yard sale, I acquired what I believed to be an old home-brew portable set with six brass-base UV-199's. The seller had gotten it from a retired radio mechanic.

However, my friend Dave McKenzie, K6SVJ, identified it as a Zenith super-portable and produced the June, 1977, issue of the OTB where the set is pictured on page 8.

Leo Gibbs, W8BHT, and especially Fred Cassens, WB7SOT, provided some historical background. Fred worked at Zenith when it was still Chicago Radio Labs on South Kedzie Avenue. He recollects that 1,000 portables were built, with at least 600 being returned because of high battery power consumption and heavy weight. These were stored at the South Kedzie Avenue building. Their disposition is unknown.

I am aware of the rumor about the public destruction of these sets by fire in Grant Park as a publicity move to restore public confidence in Zenith. However, I have consulted the New York Times Index, the Chicago Public Library, the Chicago Sun-Times, The Chicago Historical Society and Zenith, and have not been able to get confirmation of the rumor.

I restored the radio, rewinding the RF transformers and it now is operating! The radio has a tuned loop antenna, three stages of transformer-coupled RF amplification, a standard grid-leak detector, and two stages of audio into a driver, which outputs into a right-angled cardboard trumpet to bring the sound outside the set.

It requires three 1.5 volt cells and four 22½ volt cells. The controls on the top surface (where the handle is) are: center - the tuning capacitor, right side - rheostat to control the three RF filaments, left side - bias control for the three RF tubes. Inside the set is another rheostat to control the current of the remaining three filaments.

The set is fairly selective, considering it has only one tuned circuit and is quite directional due to the loop antenna. Audio power output is low - possibly a more sensitive driver is needed. The set is built into a sturdy, black suitcase, with the loop in the lid, and weighs 22 pounds - a heavy portable.


Admiral Donald MacMillan of Zenith Radio Corp. with one of the first portable sets.
RESTORING WRINKLE FINISH

The following general refinishing procedure has been used to restore damaged wrinkle finish on pre-war National receivers, Meissner Signal Shifter cabinets, and similar vintage equipment.

Wrinkle-finish heat-resistant spray enamel may be purchased at automotive supply stores. This spray enamel is used to finish auto interiors, engine accessories, etc. Spray enamel is commonly available in black and, in some stores, in other colors (grey, green, and red).

Wrinkle finish can be applied to obtain either a fine or a coarse texture finish to match the original panel or cabinet surface texture. A heavy wrinkle finish is obtained by spraying the surface with several heavy coats applied approximately three minutes apart following directions given on pressurized can. Allow painted surface to air dry; use heat lamp or use bake oven, if desired, to change texture and decrease drying time.

New surface should be primed before spraying with wrinkle enamel. Old surfaces may be spotted by spraying damaged area with several light coats applied three minutes apart and then applying heat to area; a 60-watt bulb in an aluminum reflector will provide adequate heat.

If the final color of the wrinkle finish does not match the original finish, the entire panel or cabinet surface may be lightly sprayed with the desired color, using compatible spray enamel.

H. Paul Bohlander, W3VVS

[News clipping: Nov., 1928]

Freshman in Merger with Freed-Eisemann

The Charles Freshman Company and the Freed-Eisemann Radio Corporation, both receiver and speaker manufacturers, have merged.

The Freshman Company stock of 500,000 shares, no par, is to be increased to 200,000 shares, no par.

[News clipping: April, 1929]

Fessenden Consultant to Majestic Makers

Professor Reginald A. Fessenden, famous radio pioneer and inventor, has accepted the post of consulting engineer for the Grigsby-Grunow Company, of Chicago, manufacturers of Majestic receivers and accessories. His work with the company will be mainly devoted to the development of television apparatus, but because of his long experience in the manufacture of vacuum tubes and in the design of radio receivers he will be consulted as to these, too.

Professor Fessenden's most noteworthy contribution to radio was the discovery of the heterodyne principle and the invention of apparatus to make use of this principle in radio reception. He is also credited with the invention of the condenser microphone as well as many other radio devices.
NEW EQUIPMENT
in A.W.A. Museum
(setts, parts, magazines, books, etc.)
W1BPI, W2DQC, K2AH, W2QO, W2R1Z,
W2TON, W2UGB, W2ZL, WA2IKS, WA2-
JON, W3AHZ, W3FNU, W3KUH, W3TQQ,
W4KFC, W4PDZ, W6AX, W9OEP, W2LC,
R. Bramlet, J. Reddig, S. Ferrell, J. T.
Wilson, L. Peckham, D. Crothers,

MUSEUM ACTIVITY

NEW DISPLAYS IN SPRING .........
The Museum Committee is planning
two historical commercial stations for
permanent display in an area to be known
as the "Ed G. Raser, W2ZL Wireless
Room". One station will feature 1917-18
equipment and the other will be a replica
of a United Wireless 1909 station.

Through the generosity and assistance
of W2ZL, AWA will have what will prob-
ably be the only complete UWT exhibit.
Look for more on this later...

ATTENDANCE IN THOUSANDS

Our last report indicated fairly good Museum
attendance in the early summer months. A
final count shows an increase in July with
record crowds in August and early September.
The guest register has names from over 40
states including Alaska and Hawaii as well as
many overseas visitors.

In addition, the Museum was open to more
special groups than in previous years:

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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

Rochester Science Museum Field Trips, grade
and high school classes, plus several profes-
sional tours such as SMPTE, Civil Air Patrol,
etc.

The Museum was the scene for filming sev-
eral movies such as the Marconi documentary
(CBC) and one on Thomas Edison. The
Museum Staff also provided material for sev-
eral historical displays and opened the library
for members doing research.

As in the past, the Board thanks the 21
volunteer guides, who contributed their time,
and members who donated material for display.
1982 was another banner year for A.W.A.
Thank you!

POSTAGE STAMPS

The AWA Museum will soon have on
display a complete set of Amateur Rad-
io stamps as described on page 10 of
the June '82 OTB. The stamps are taste-
fully mounted with description in a large
glass frame.

This fine gift was made possible by
ARRL President Vic Clark, W4KFC.
The presentation was part of the Con-
ference banquet program and delivered
by Bill Grenfell, W4GF, retired Chief
of F. C. C. Amateur Division. Hopefully,
it will encourage members (and museum
visitors) to collect this type of stamp.