DRAMATIC LIGHTING IN THE HAMMOND MUSEUM

The first impression a visitor receives of the Hammond Museum is a spectacular exhibit of lighted transmitting tubes displayed the length of the main room. Nearly 100 tubes give off a warm glow, powered by low-voltage filament transformers under each socket.

(See page 32 for information on this unique museum.)
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WHO TO WRITE TO: (Write legibly. Enclose S.A.S.E. for prompt reply.)
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All official business, Conference and meeting activities (Tel. 716-244-9519)
Lauren Peckham (Vice-President) Ormiston Rd., Bressport, NY 14816
Material for Vacuum tube column. Conference activities (Tel. 607-739-5443)
Richard Ransley (Secretary) 9 Beklen Ave., Sodus, NY 14551
Meeting notices, business reports, membership applications and Old Time Ad
Lincoln Cundall (Treasurer) 68 Boulevard Parkway, Rochester, NY 14612
All dues, address changes, membership applications (Tel. 716-863-0856)
Bruce Kelley, Main Street, Holcomb, NY 14469 (Tel. 716-657-7489)
All material for AWA Bulletin. Museum activity.
Dexter Deeleey, 8 Briar Circle, Rochester, NY 14618
Bulletin mailing and back issues. Financial reports.
Bruce Roloson, Old Bath Road, Penn Yan, NY 14527
Electrical equipment and light bulb development. Museum Planning Chairman.
Robert Morris, Sunset Lake Road, RFD #1, Sparta, NY 07871
Houch Award Chairman and associated activities.
Kenneth Gardner, 42 Oakdale Ave. So., New Hartford, NY 13413
All business relative to amateur radio activities. Not Lists and Contests

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OLD TIMERS BULLETIN
Printed: D. Ray, WA2PKS
Mail: L. Cundall, W2LC
Computer: H. Smith, K2HC
Contributing Editors:
Kerry/Telegram: L. Moreau, W3WRE
Landloper Column: F. Paul, W6THU
Amateur Activity: K. Gardner, W2BGN
The Tube Collector: L. Peckham
Old Timers Ad: R. Ransley, WA2TLR
What's Coming Next!

History of Magnavox Company
Deforest DY-01 Tubes
History of Baxley Crystal Co.
Armstrong's Super-Regen set
History of Silver-Marshall Co.
The Old HPO receiver
Identifying Horn Speakers
Regeneration in SW receivers
Collecting batteries
The Radio Products Co.
Wm. Housekeeper-Pioneer
Collecting Radio Stamps
Repairing RCA cathodes
Transistorizing battery sets
History of the Trimmers Co.
Arthur Wehnelt's Cathode 505/600 - Help Wanted...
The Acstatic Condenser Mike

Other events to be announced in future Bulletins.

SHERATON INN

By this time most rooms at the Sheraton have been booked for the Conference. As in the past, last minute cancellations are sometimes available. They now require a $25. deposit. Something new: 12 new suites have been added to the building and will be available. Starting at $65., they offer a large 2 room combination which will sleep several people, has refrigerator, wet bar and other facilities. Write or phone for information. (Note: In addition to the Sheraton, there are 12 other motels in the area.)
ANNUAL MEETING REPORT

At the Annual Meeting of A.W.A. November 8, 1981, the officers and directors whose terms expired were reelected. Two new directors were elected to the Board. Joyce Peckham of Bresport, New York, has been an active participant in A.W.A. affairs for many years. She has a good knowledge of radio history and artifacts. She has a background of business procedures and standards with much business experience in working with her husband, Lauren, in the organ repair and service business. She is an excellent addition to our Board.

William Shaw, W2HYN, of Holcomb, New York, has been very active in amateur radio, especially in the restoration, building and operation of early type equipment. He was the recipient in 1980 of the Matlack Award for the old time transmitter he built and operated in the OT Contest. Bill is knowledgeable of A.W.A. affairs, having worked at the Museum and participated in many activities. He brings a friendly and positive approach to affairs of the Board.

Honorary Members reelected for a three-year term were:
Lloyd Espenschied
Dr. Leonard Fuller
George Grammer
Harry Houck
R. H. G. Mathews
Grote Reber
Elliot Sivowitch
Clarence Tuska

Also elected an Honorary Member was A. H. (Bud) Waite, W2ZK, in recognition of his outstanding contributions to radio history in the Antarctic.

The Treasurer and Comptroller reported another financially successful year. Income was good from high interest bank accounts for both the Association and the Museum. Committee reports to the Board of Directors were all favorable.

The 1982 Annual Conference was approved for September 30, October 1 & 2 at Canandaigua.

The Board approved a 1981 Workers' Dinner in recognition of the volunteer services rendered A.W.A. throughout the year.

C. Breilsford
President

AWA ADVERTISING POLICY

First, all material in the Old Tyme Ham Ad section must be for a personal transaction. Ads received with other than the member's name (as noted on membership application) will not be printed.

A.W.A. will, on occasion, tell about material available to enable members restoring early equipment. Usually, it is information on components made by fellow members.

The exception to this rule, of course, is a book review. Here, all information is given including price and publisher's name. Books are a source of information to the radio historian and usually available only from a publishing house.

And lastly, A.W.A. does not accept paid advertising of any type.

Marconi Honored

In honor of the 80th anniversary of Guglielmo Marconi's first transatlantic wireless signal (12 December, 1901), the Marconi International Fellowship sponsored an exhibition on Marconi's life and work at Columbia University this past December. Special emphasis was given to the first signal and messages as well as to the significance of Marconi's work in perspective of subsequent developments.

An exhibit was held at the Rotunda of the Low Memorial Library at Columbia University from Dec. 9, 1981 thru Jan. 5, 1982. A commemorative lecture was given by Prof. Francesco Carassa of Milan Polytechnic, a top scientist in the satellite field and responsible for the Italian SIRO Satellite. His remarks were followed by other leading figures in the communication field and by Gioia Marconi Braga, the inventor's daughter and founder and Chairperson of the Marconi International Fellowship.

Elliot Sivowitch (from Smithsonian) reports the exhibit consisted of rare pictures and papers plus choice pieces of Marconi equipment from Ed Raser's (W2ZI) famous collection.

HOUCK AWARD

NOMINATIONS

The time has come again for members to select nominees for the HOUCK AWARDS. There are two Awards: One for Historical Documentation and the other for Historical Preservation. Give serious consideration as to your selection and send names to the Awards Committee:

Robert Morris, Chairman
Sunset Lake Road, RFD #1
Sparta, New Jersey 07871
ASSOCIATION NEWS

From the President

CONTRIBUTIONS TO A.W.A.

Contributions are given to the AWA each year. These come from friends, members and interested public. They may be in the form of money, radio equipment or services. These gifts, along with regular dues from members, keep AWA in a favorable solvent position. We have an outstanding collection of historical artifacts, operate a fine museum, have put up a storage building, publish the Old Timer's Bulletin, and prepare and circulate slide-tape shows about radio history.

Each quarter in the Bulletin the Curator lists the names or call letters of contributors of radio sets, components, books, magazines, etc. This past year monetary gifts to the general and museum funds of A.W.A. were received from the following:

T. Arakawa J. F. Kreese
George Batterson J. Mueller
Dave Bechtold Joseph Pavlek
C. Brelsford* Lauren Peckham*
Dave Brodie Sidney Prior
J. C. Chenoweth Mrs. W. Schormann*
Ken Conrad Telephone Pioneers
L. A. Cundall* of America*
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Fred Hammond L. Wades
Mrs. R. Kaufman W. S. Willenborg
B. L. Kelley* Jack Williamson**
H. Kohn Elizabeth Zandonini

* Tyne Memorial
** Memory of Harry Mc Conaghy

Those of you who are new members and want to participate in the Museum Fund and have not done so may send a tax-exempt gift marked "Museum Fund" to the Treasurer.

DE-ACCESSIONING AWA ARTIFACTS

Yes, sometimes the Museum does sell from its artifact collection, but only under the following conditions:

1. Selling the item must have the approval of the Museum Committee.
2. The item must have a release from the original owner.
3. The item must be either a duplicate of no historical value or in need of extensive repair for display.
4. The item must be offered at auction to the highest bidder or sold at highest going price.
5. And, of course, all sale receipts go to the Museum Maintenance Fund

HISTORICAL REVIEWS

New and corrected addresses for radio organization (See page 24 of Dec. '81 OTR):

Southern California Antique Radio Society
6368 Charing St., San Diego, CA. 92117

Indiana Historical Radio Society
245 N. Oakland Ave., Indianapolis, Ind. 46201

Morse Telegraph Club
520 W. Schwartz St., Salem, Ill. 62881

THE CANADIAN FORCES COMMUNICATIONS MUSEUM

Vacationing in Ontario, Canada this year? Plan to visit the Canadian Forces Electronic Museum at Kingston. Found in 1961, the one-story museum houses 12 rooms with communication equipment from the turn of the century to present. Much of the material, of course, is of military nature.

The building is located east of Kingston on Highway 2 at Vimy Gate. Open Monday to Friday, 1 to 4 PM, closed weekends and holidays. Additional information by telephoning 613-545-5395.

WRITING AWA? Send SASE for prompt reply.

SILENT KEYS

Stanley Wagg, W2JBF
George Haymans, WA4NED
Harland Hogeboom, K2RZ1
Vic Miller, W2CET
Ed Handy, W1BD1
Though the name of Cutting & Washington is familiar to radio collectors, details of their activities and products are sadly lacking. The following story is less complete than I would like, but if we waited for all mysteries to be cleared up before publishing, very little would ever see print.

Fulton Cutting, born in New York City December 27, 1886, seems to have come from a wealthy family descended from Robert Fulton of steamboat fame. From their New York address of 32 Nassau Street, I presume his family were financiers. Cutting received his AB from Harvard in 1910, followed by an MA, MEE, and PhD in short order. In April 1916 he had already contributed an article to the *IRE Proceedings*, a highly-technical and thorough treatment of power transformer design for spark transmitters. He served as vice-president of the IRE in 1921 and president in 1922.

Bowden Washington was born on July 7, 1892 at Bar Harbor, Maine, and attended the Browning School, NY and spent two years studying electrical engineering at Columbia. He built his first transmitter and receiver in 1903, was listed in the Modern Electrics *Blue Book* in 1908 as “BW,” and twice had photographs of his station published in Modern Electrics in 1909. He was assistant engineer at Clapp-Eastham in 1913-14, then became a radio engineer at Harvard in 1915 where he assisted G. W. Pierce in equipping Cruft Laboratory, and where he met Fulton Cutting.

During 1915 Washington and Cutting worked at Cruft to develop wireless telegraph equipment which they could manufacture with Cutting family backing. Losing no opportunities for free publicity, Washington wrote a descriptive article for the *IRE Proceedings* in February 1916 (published in August). On July 4, 1916 E. Leon Chaffee (also with Cruft Labs) received perhaps his most important patent, on a form of quenched spark gap, and promptly assigned it to Fulton Cutting. About this time, the partnership of Cutting & Washington was formed, under which a very limited amount of radio equipment was manufactured.

In April 1917 the firm of Cutting & Wash-
1/4 Kw. panel set. Note Chaffe spark gap. (1916)

Boston, Incorporated in New York with a capital of $200,000; the three incorporators all being Cuttings. They developed a production model (4A) of their “impact excitation” transmitter and sold the government 1000 of them at $750 apiece. They also made a number of lightweight airplane transmitters, also using the Chaffe gap. Some of this gear was described by Washington in another *IRE Proceedings* article in December 1918.

In June of 1919 C&W moved to 6/8 West 48th Street, New York City, re-incorporating as the Cutting & Washington Radio Corporation, capital $36,750. They advertised commercial radio gear regularly in the *IRE Proceedings*, and maintained their own coastal radio station WSA in Easthampton for commercial traffic.

C&W received their Armstrong license on July 7, 1920. In addition to the usual provisions to sell to radio amateurs, experimenters and scientific schools, their license had a third clause: “to purchasers in the US for use in their own non-commercial land radio stations” which pretty well implies broadcast reception by the public. As far as I know, however, their first broadcast receiver was the model 11 introduced in early 1922. At least, if it dates before that, it was a well-kept secret and was never advertised.

The model 11, for all its mystique among modern collectors, is a rather unsophisticated radio. Controls were simplified to the point of including fixed antenna coupling rather than variable, for instance, and its construction quality can’t compare to that of Grebe or Kennedy.

C&W never had a manufacturing plant, but

C&W Mod. 4A transmitter with variant of Nesco CN-113 receiver. A similar WW1 (1918) set may be seen in the AWA Museum.
subcontracted this work to others. They were said to have had poor relations with their New York manufacturer, whoever he was, and this trouble, together with an insatiable demand for their receiver in the boom of early 1922, must have prompted them to look for a larger manufacturer who wanted to get into radio but needed their Armstrong license. They found it in the Minneapolis Heat Regulator Company (later Minneapolis Honeywell) and about September 1922 they moved to Minneapolis. One of their first actions was to take over station WLAG which had begun operating on September 4, 1922.

Unfortunately C&W’s arrival coincided with the “radio bust” and they had problems with their new bedfellow too. Luckily there was a second manufacturer in Minneapolis to turn to, well-equipped to make precision radio gear, but having no interest in that market themselves: Automatic Electric Company, makers of telephone equipment. But it took six months to get production going.

In June 1923 their new model 11A was finally ready... too late. Summer was always the slow season for radio. But they persevered. In October and November came the 11B, 12A, 15, and a console model. The 11B was a dry-cell version of the 11A, using 99 tubes; the 12A was a two-tube portable; while the 15 was their low-priced one-tuber. Things were at last beginning to look up; they had a good model line-up, a healthy advertising budget, and they were in time for the Christmas season for once.

Then Westinghouse, the Armstrong patent owner, stepped in. In one of their periodic lawsuits against their licensees who were running away with “their” radio business, Westinghouse won a decision in the Second Circuit Court of Appeals on December 10, 1923. Failing to have subcontracting outlawed, they did nearly as much damage by convincing the court to outlaw sales through jobbers, distributors or dealers, forcing C&W to sell directly to customers. One circuit judge dissented from this curious opinion, but so far as I know, it was not appealed further. It must have put quite a damper on C&W activities.
In April 1924 C&W announced their entry in the dyne-a-month sweepstakes ("March of Dynes") with the "Teledyne." It looked just like the 11A and 11B but had four 99 tubes instead of three, the fourth one being used as an RF amplifier tube to prevent regenerative radiation. All very well, but, again, at the wrong time. By August 16, 1924, Cutting & Washington was in receivership. WLAG closed down, but was soon reopened with the backing of Washburn-Crosby Company, makers of Gold Medal flour; they asked only that the station identify itself as the "Gold Medal station" and change its call letters to WCCO.

Messrs. Cutting and Washington moved to Long Island and formed a new company before the year was out: Colonial Radio. By this time, TRF radios had superseded regeneratives, and an Armstrong license was no longer a necessity for survival. Colonial absorbed Valley Appliance in March 1930, and in September consolidated its manufacturing plants at Rochester, leaving only a sales office in Long Island City. They are said to have absorbed King of Buffalo in 1931. Cutting remained with Colonial until it was taken over by Sylvania in 1944.

Reference (in addition to listings in text):
1. Electrical World, April 21, 1917, p. 780; June 14, 1919, p. 1305 (incorporation notices)
2. RADIO, November 1921, p. 149 (WSA, Easthampton)
3. Who's Who in Engineering, 1922-23 (Washington biography)
Teledyne using 4 '99s (John Drake collection)

C&W Uni-control receiver Type No. 8-A made in 1918.

A wide frequency range was possible with only one dial which controlled both switches with chain drive
**NORTH CAROLINA**

ANNUAL SOUTH-EASTERN AWA CONFERENCE, CHARLOTTE, N.C.

April 9-10, Headquarters: The Executive Inn, North Tryon & 10th Streets
Registration starts Friday afternoon.
Hospitality room & get-together in PM.
Saturday: Flea market and contests.
Programs on circuitry, Crosley and Magnavox. Grand Banquet and entertainment in evening.

**INDIANA**

INDIANA HISTORICAL RADIO SOCIETY and ANTIQUE WIRELESS ASSOCIATION
Regional Spring Meet, Saturday, APR, 16-17, at Auburn Indiana
Headquarters: Fame AUBURN-CORD-DUSENBERG Museum
Friday PM: Oldtime movie & Museum show. Registration.
Saturday: Swap meet and sale at 10 AM
Auction 1 PM, Banquet & program 7 PM

**CALIFORNIA**

ANNUAL SPRING CONFERENCE CALIFORNIA HISTORICAL RADIO SOCIETY
and THE ANTIQUE WIRELESS ASSN.

SUNDAY, MAY 1
Foothill College Electronics Museum
El Monte Rd., Los Altos, Calif.
Activities from 8 AM to 5 PM. Flea market, contests, programs, etc.

**NEW YORK**

LOCAL AWA SPRING MEET, SATURDAY, MAY 1
American Legion Hall (1 mile east of Museum, East Bloomfield on Rte. 5&20)
Flea Market 9 to 12 noon
Register for auction - 11 AM
Buffet lunch: all you can eat for $5.25
Entertaining program at 1 PM
Large vacuum tube auction at 2 PM

**MINNESOTA**

1982 AWA UPPER MID-WEST REGIONAL CONFERENCE
MAY 21-22, Regency Plaza Motel, 41 North 10th St., Minneapolis, Minn. 55408
Friday: Open House at Pavek Museum
2-5 PM, 7-9 PM, 2632 Nicolett Avenue
Saturday: Activities 8:30 AM to 5 PM.
Flea market, programming & contest. Banquet, prizes and a good time!

Programs will be mailed to all members in 7-state area in April. For additional info, write: Joe Pavek, 2632 Nicolett Ave., Minneapolis, Minn. 55408
Collectors and historians welcomed.
COLLECTING EARLY WIRE AND TAPE RECORDERS
by Gaylord Ewing

About six years ago, I became interested in collecting early sound recording equipment along with antique radios. More specifically, early magnetic wire and tape recorders from the 1940's and early 1950's. In reading the books Magnetic Recording by S. J. Begun and History of Recording by Robert Angus, the interest grew further.

The earliest form of magnetic wire recorder was invented by Baldmar Poulsen about 1900. His machine, called the "Telegraphophone" worked without an electronic amplifier and used D-C bias (Figure 1). It was used as a dictation machine and could record telephone conversations.

During and just before World War II, the Germans were doing a lot of development work on magnetic tape recorders and tape. Their machine, called the "Magnetophone", recorded on 1/4 inch magnetic tape; and the tape speed of the recorder was 30 inches per second. The machine was a full-track recorder. The German tape recorder would be a very good item for the collector; however, they are rather rare.

Another magnetic recorder that is a collector's item is the steel tape recorder made by Brush Development Company and others during and just before World War II. It recorded on a steel magnetic tape for one minute. Figure 2 shows an early steel tape recorder.

Also during World War II, the United States Armed Forces needed a portable sound recorder; and the magnetic wire recorder proved to be the answer. Several thousands of wire recorders were made by Brush Development Company and other manufacturers.

After the war, the tape recorder from Germany was brought over to the United States and other countries for study and manufacturing. Some of the first United States firms to manufacture a tape recorder were Ampex, Magnecord, and Brush Development Company.

Fig. 1 Telegraphophone in AWA Museum

Fig. 2 WW2 steel tape recorder

Magnecord's first recorder was the PT-6. Its tape speed was 15 inches and 7 1/2 inches per second and was a full-track recorder. Both the Ampex and Magnecord recorders were used in radio stations and recording studios in the late 1940's.

In the home, one of the most popular magnetic recorders was the Webster-Chicago Model 80 wire recorder. It used a wire speed of two feet per second. The recorder is shown in Figure 3.

One of many difficulties experienced with the wire recorders was wire breakage. Plus for music, the frequency response and the speed just were not steady enough. However, this recorder is a collector's item.

One of the first home tape recorders was the Brush Sound-mirror BK-401. This was a full-track recorder and used paperbase magnetic tape. This recorder was made in the late 1940's.

With the introduction of tape recorders in the home, the wire recorder disappeared. The tape

(Continued on next page)
who are (or were) with electronic communication or industry:

Mathew Rule, Chief Engineer WTKO
Dave Riley (AA1A, KG4BL, KC4USX) Stat. KDKA, WBZ, WOWO, WPLM, WPN7, WITS, etc.
Edward Greeley, Communication Project Manager
Richard Howard (K7DVK, WR7ABE) Mgr. County Radio Maintenance
Dan Szablewski, Union Carbide Corp.
John O'Connell (W3DAL) Continental Electronics
Bob Erksine (W2NVZ) Stat. WOKR-TV
Vincent Beanzir, Technicare Corp.
Dave Kennedy (N4SU, W9DL, W8BRA) A. T. & T.
Allen Kuykendall, U.S. Signal Corps
Clifford Bull, Westinghouse Corp., Colonial Radio Corp.
Robert Campbell, G. T. E.
Taizo Arakawa (JA3AER, N2ATT, HS1TA 9V1PQ, 9M2BL) Sharp Electronics
Robert Remmers (WB2CCK) V. P. and Chief Eng. G. S. C. Inc.
T. A. Drogoski, Bettis Atomic Lab.
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Dennis Smith (KN8H) Electronic Tech.
James Liebman (W7AOG) Chairman of Board, Sonar Radio Corp.
WCSC/WXTC Broadcast Museum
Ralph Guild, Stats. KFAC, WNDR
Karl Krivane1, Stat. WMUS
Albert Wise (N2AL, WB2LIN) Commun. Officer, U.S. M. C. R.
Fulton Deeds (WA9PRS) Aircraft and Electronics Inspector
Rodger Nye (WB3AIR, WA2ESA) Engineer, F. C. C. Laboratory
Richard Force (WB1ASL, KP4DKF) Stats. WMTR, WSCV

Writing AWA Headquarters? Please enclose SASE for prompt reply.....
TYPE "D" TUNER

A.W.A. doesn't have a Type "D" tuner -- the old standby used by United Wireless (before 1913) and later by Marconi operators in ship and shore installations. See page 15, March, 1971 OTB.

Linc Cundall, W2LC, corrected the situation by making one as seen in the photograph. This beautiful replica was on exhibit at the Conference. Basically, it is a 2-coil tuner with crystal detector. It was offered at one time surplus for only $6.75. It is described in the reproduction copy (right) from a Marconi used surplus catalog.

The same surplus catalog offered Type "E" tuner for $40.00 and 10-inch spark coils for $65.00. One wonders why the Type "D" sold for only $6.75?

MARCONI USED APPARATUS

Type D Tuner No. 224

This tuner is designed to operate on looped aerials, but may be used as a direct coupled receiver on the ordinary antenna. When so used, the best results are obtained by slight alteration in the connections.

The tuner is fitted complete with crystal holder and mounted carbordum crystal detector. When used in conjunction with an ordinary antenna having a natural period of 400 meters or more, and with one of the coils of the tuner used as a loading coil, the range of wave lengths runs to about 4,000 meters. Used with a looped antenna of about the same size the range of wave length is about 3,000 meters.

This type of tuner has been in general use for some years in the American merchant marine, and with proper handling will give good results. While the Type E tuner, illustrated on pages 8 and 15, is greatly to be preferred and is specially recommended for use with the 1 K.W. and 2 K.W. sets, this instrument may be substituted where a cheaper instrument is essential.

Special Sale Price $6.75
Report on first meeting:
The first meeting of the Junior Wireless Club (at the Fall Conference) gave evidence of the great interest engendered by Alan Douglas's article on early detectors (Apr. '81 IEEE Spectrum). Members brought a variety of pre-1912 detectors. My notes show the following pieces on display:

1. a coherer
2. carbon needle (imperfect type)
3. a Fessenden Perikon detector
4. a de Forest responder
5. and a Lodge-Muirhead detector

The latter is an unique device consisting of a steel wheel rotating in a pool of mercury covered with a film of oil.

Of the five detectors, only one, the coherer was in operation. Linc Cundall demonstrated its action by showing the great drop in resistance from about 250,000 to 200 ohms when excited by a nearby spark coil.

Early receivers seen were a 1910-12 Type D (as pictured) and a beautiful commercial-made 1912 loose-coupler crystal set displayed by Rex Matlack. This receiver was one-of-a-kind.

Art Goodnow commented on the effectiveness of a properly designed spark transmitter, and Bob Morris reported on his work with zincite as a detector. Alan Douglas provided the group copies of early crystal detector data. There appears to be much interest in early oscillating crystal detectors.

Although none were displayed at this meeting, I would like to make note of an adjustable (sync) rotary spark gap seen in the flea market. An excellent example of craftsmanship, it was a recent project of Floyd Engels.

Considering the gathering was an impromptu affair, it was judged by those present as most successful. Similar gatherings will be scheduled in the future. Have you built or experimented with equipment of pre-1912 origin?
If so, write and tell us about it:
Junior Wireless Club Editor
c/o A.W.A., Main St.
Holcomb, N.Y. 14469

EARLY DETECTOR
An early detector used in the early 1900's was the carbon-needle type. It is a simple device and can be made by almost any experimenter. As seen in the picture, it is a sewing needle placed on top of two carbon blocks filed to sharp points. Its action is self-restoring.

It was used by Massie (of Massie Wireless Co. fame) who christened it the "Oscillaphone". Let me describe its action as written in Victor Laughton's 1909 "Operator's Wireless Tele. & Tele. Handbook" on page 71.

"By connecting the telephone receiver and battery in the circuit with aerial and ground, the set is ready to use. A roaring noise will be heard and when the incoming wave flows across the high resistance contacts offered by the needle laid across the carbon blocks, the needle will adhere more closely to the blocks lowering the resistance.
This lowers the resistance thereby allowing more current from the local cell to flow giving an increasing sound in the receiver.
In case the needle is too light, the roaring sound will be so great that an incoming signal will be drowned out. This can be overcome by attaching a small weight to the center of the needle."

In the original Massie Oscillaphone, varying degrees of sensitiveness were had by placing a small horseshoe mag-

(Continued on next page)
TALKING OVER LIGHT BEAMS
A brief up-date on communication
by WA1SPM Don deNeuf

History records man's use of light sources to transmit information in various forms. Fires, smoke, the sun (heliograph), blinkers, searchlights, etc. But these all used prearranged signal codes of some type. Alexander Graham Bell in 1880 transmitted speech over a beam of light before his other developments and even before the important work of Hertz on electromagnetic waves in 1885. Bell was granted a patent for the device which he named "Photophone". (Now on exhibit at the Smithsonian Institution.)

Transatlantic telephone service was introduced in 1927 between the US and England in 1927 using longwave radio facilities (VLF). Then, by 1930 "shortwaves" became practical for expansion of the service on a global basis. This was followed by the use of coaxial type submarine cables, which after only a few years was supplemented by use of geostationary satellites in space. All these developments vastly increased the number of international telephone circuits and their speech quality.

Now Bell Labs has developed "fiber optics" to a point where tiny glass rods—hairlike in size—can be used in conjunction with light amplifiers (repeaters) in the form of voice circuits for submarine cables. The first such international telephone cable of this kind (called "SL") will be operating across the Atlantic by 1988. It will basically provide for some 12,000 telephone grade circuits. But operationally this will be increased to some 36,000 through a device called "TAST" (Time Assignment Speech Interpolation) which takes advantage of the natural pauses in a conversation to sandwich in pieces of others. Users of the system are never aware that they are in effect sharing a circuit.

Today the Bell System uses more than 5,000 submarine coaxial cables and nearly 9,400 satellite circuits to provide overseas telephone service. In 1983 another transatlantic coaxial cable will carry an additional 4,200 circuits. When the "SL" facilities are added in 1988 this will provide a total capacity of some 54,000 telephone circuits between the US and overseas countries. A far cry from the single longwave circuit in 1927! And, the telephone rate on that single circuit at that time was $75 for a three minute call. Today's international telephone rates run less than one tenth of that.

net directly under the needle, and by raising and lowering the magnet, the pull on the needle was decreased or increased.

Using the detector (in the picture), I have successfully picked up broadcast station WHAM about 12 miles distance. The signal was extremely weak as compared to a conventional crystal detector. I used high impedance phones and did not use the pot and battery.

----Linc Cundall, W2LC

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 3½" or 6½" 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.
QUE: Where can I find reference material that will help identify and date early telegraph keys?

ANS: There are no formal publicized lists or references that can be used to classify telegraph keys. The easiest and fastest method is checking the exhibits in large public museums such as Smithsonian, or Henry Ford etc. Possibly the best method, although very time consuming, is a search of the U.S. Patent Indices from 1844 to the present. Otherwise, the only way is by reading the very old, now out of print histories. These are available by the local library securing them through the Inter-library Loan.

QUE: Is it possible to date a key from the design or style?

ANS: This may be done only in a skeletal form or outline. For example: Straight Lever 1844 - 1860; Camelback 1848 - 1875; Steel Lever 1881 to present; Radio (Spark) 1900 to 1923; Semi-automatics 1903 to present. It is necessary to remember, however, that the periods overlap and the changes in construction vary the dates.

QUE: Does the age of a key make it more valuable?

ANS: In most cases, yes. However an historic key, that is one that was used by a famous person, or for some historical event, would be far more valuable providing there is documentation to authenticate the historic use.

QUE: You say an historic key has greater value. Would you give an example?

ANS: The value of an historic key lies in the fact that it was used to transmit a message or information that became a part of history. An example, the wrecked remains of this Vibroplex (see picture) looks more like junk than a "Collector's Item". The key, one of the more valued exhibits in Ed Raser, W2ZI's Collection, was presented to Ed by a member of the Board of Fire Underwriters who "liberated" it from the radio room of the Morro Castle during his official inspection of the smoldering vessel. Some time later, the radio operator, George Rogers, who had evidently inquired about the condition of the radio room, wrote to Ed saying "Glad you have my key".

W2ZI's "Morro Castle" key

Although to the casual layman, others are far more attractive, but to the historian, the fifty year old history of this charred piece of metal is a reminder of the whole story: The stormy night, the speed that the fire engulfed the ship, the sudden death of the captain and the high casualty list, the delayed SOS and the beached burned hulk at Asbury Park, New Jersey in September 1934. This key made history.
OLD EQUIPMENT AWARDS
NATIONAL HISTORICAL RADIO CONFERENCE

EQUIPMENT
CLASS I CRYSTAL RECEIVERS
1. Quaker Oats set & exhibit  ... Floyd Engels
2. Thompson Delaphone  ... John Caperton
3. United Wireless Type D  ... Linc Cundall

CLASS II REGENERATIVE RECEIVERS
1. De Forest RS-501  ... Ralph Muchow
2. Paramount Radio Shop  ... William Findley
3. Sleeper 3-tube  ... John Caperton

CLASS III TUNED RADIO FREQUENCY
1. DeForest portable  ... Les Rayner
2. Ozarka Senior  ... Gary Schneider
3. Trego 2-tube reflex  ... Janice Furney

CLASS IV SUPER-HETERODYNE
1. Scott Shield Grid-0  ... Tex Sloan
2. Smith Radio Recepton  ... John Caperton
3. Northern Electric R-4  ... Bob McIntyre

CLASS V ALL OTHER TYPES
1. Crosetey XV  ... John Caperton
2. Entertain-A Phone  ... Burt Noyes
3. Pilot Super Waap  ... John Wiesner

CLASS VI AC/DC MIDGETS
1. Kadette Jr.  ... Gordon Eklund
2. Emerson Universal  ... Bob Lozier
3. Montgomery-Ward  ... Rodney Schrock

CLASS VII SPARK TRANSMITTERS
1. 4-OK Transceiver  ... Don Patterson
2. W.I. -193A  ... Will Jensby
3. 1/4 KW spark set  ... Bill Holly

CLASS VIII TUBE TRANSMITTERS
1. SCR-79A Army transmmitter/Receiver  ... Ralph Muchow
   (**Best of Show**)  
2. 6L6/807 Amateur set  ... Linc Cundall
3. Flex-tall Exciter  ... Bill Shaw

CLASS IX PRE-WWII CATALOGS/DOWNLOADS
1. Marconi documents  ... Ed Taylor
2. Pickard Crystal History  ... Alan Douglas
3. Duck & Adams Morgan catalogs  ... Will Jensby

CLASS X MAGNOVOX EQUIPMENT (Any type)
1. AC-2 Amplifier & Speaker  ... Ralph Muchow
2. TRF-50 Receiver  ... Bob Lozier
3. AC-3 Amp., Telephraphone  ... Peter DeAngelo
   RALPH WILLIAMS, Contest Chairman

EARLY TUBES
CLASS I ARCTURUS BLUE TUBES
1. 30 TUBES w/111a, lighted  ... Ross Smith
2. EXHIBIT of 30 TUBES  ... Tex Sloan
3. WUNDERLICH DISPLAY  ... Alan Douglas

CLASS II RECTIFIERS
1. Group of 14 EARLY RECTIFIER  ... Bob Millard
2. Group of 5 RECTIFIERS  ... Barney Wooters
3. COOPER-HEWITT Mercury  ... Peter D'Angelo

CLASS III SPECIAL PURPOSE (Non-radio)
1. RCA IMAGE Tube  ... Ken McIntosh
2. PHOTO-LYTIC TUBE  ... John Caperton
3. RAYTHEON KINOLAMP  ... Paul Corette

CLASS IV RCA SERIES
1. 14 early GE & Westinghouse  ... Bob Millard
2. /3. No entries

CLASS V WWI PERIOD
1. CG-1144A, CG-890, etc.  ... Jack Kingman
2. SE-1444, Spherical, Moorhead, Barney Wooters
3. SE-1444, TB-1  ... Will Jensby

CLASS VI EUROPEAN TUBES
1. 21 BRITISH VALVES  ... Wilson Norwood
2. Marconi R, Q valves, etc.  ... Barney Wooters
3. Marconi S-625/document  ... Alan Douglas

Special Award: TYPE D-865 Japanese  ... John Anderson

LAUREN PECKHAM, Contest Chairman

SHOW and TELL AWARDS
1st Place: Bill Laverty  2nd Place: Larry Wright
            3rd Place: Lewis Birklin
MEL COMER, Show & Tell Chairman

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1982 CONFERENCE

The various committees are already making plans for the 1982 Conference. The best news, of course, is the date has been set for the end of September. With the increased interest, and since many members have been arriving on Tuesday, there is thought has been given to start programming on Thursday.

One or two changes may be made in the Auction. Several members were disappointed their sets were not placed on the auction block due to lack of time. One is to speed up the overall session by giving members check in equipment the night before which would give prospective buyers a greater opportunity to examine items and allow the auction to start earlier. Another idea is to limit equipment entered through pre-mail registration.

Serious consideration is also being given to bringing back the popular tub auction either as a separate event or as a pre-determined time span during the general auction.

Several new speakers have volunteered to present interesting and diversified programs. The Sheraton management plans to enlarge facilities. We won't know how that will affect our schedule. More details and program in the June OTB.

One minor complaint: Committees wish more of the die-hard flea marketeers would come into the Sheraton and participate in Conference activities. These members register and never go into the building. They miss contests and displays, programs and dinners. They attend the Conference for only ONE reason: Buy and sell. Come on in fellows and be part of us.

Conference Committee: Lauren Peckham (Chair.) Chuck Brelstaff, Linc Cundall, Bruce Robson, Ken Gardner, Dick Deesley, Ralph Williams and Dick Ransley.

MEL COMER, Show & Tell Chairman
RECEIVER CONTEST

OATMEAL BOX CRYSTAL SET
wins FIRST PLACE

The Quaker Brand started operation in Ravenna, Ohio in 1877. The company has survived through the years under many associations, chiefly because of the ideas of Henry Parsons Crowell. Crowell was a clever businessman with a talent that set a pace for modern advertising.

The company used many promotional ideas and offered tempting premiums. In 1919, the crystal set receiver became one when the ban was lifted on radio. The Quaker Oatmeal box was an ideal coil form for this simple receiver and the company made the most of it.

Several experimental stations were broadcasting music which just amazed the listener. KDKA started commercial broadcasting in the latter part of 1920 and by 1921 the company had sold 250,000 boxes (with oatmeal, of course) which were used in their crystal set promotional campaign.

In 1977, on their 100th Anniversary, another premium was offered to Quaker employees, a small transistor radio a replica in appearance to their first set. The Quaker Oats story is told in the book "Brands, Trademarks and Goodwill" by Arthur F. Marquette, published by McGraw-Hill, 1967.

The above picture shows my Quaker Oats crystal set exhibit at the 1981 AWA Conference where it won First Place in the Crystal Receiver Class.

---Floyd Engels, Colden, N.Y.

Quick reference to:

RECENT ORIGINAL ARTICLES
of interest to radio historians

Collecting Miniature Radios (replicas less than 2" in size). BVWS Vol. 6 #2
The French Ducelet Superhet
BVWS Vol. 6 #2
Evolution of W.E. 216A Tube
SCARS, Vol. 6 #4
History of Amrad Radio Corp.
"Radio Age" (A series)
Opto Electronic Pioneers
IEEE Spectrum, Oct. '81, p.14
British "Radio Valves"
Marconi/Osram KLI (first Brit. AC tube)
Biography of H.J. Round
BVWS Vol. 6 No.3
Que: Has anyone checked the specs of an early horn speaker in recent years?
Ans: Yes, I made such a study on the Magnavox Model R3-D hornspeaker.
Que: If so, where can I find the results?
Ans: I published my findings in the SCARS Journal (April 1981). Here is the information as I wrote it with a few update changes:

The R3-D was the last R3 model produced as was the R2-C which was the last of the R2 models. R3-B, C & D had 14" diameter horns while R2-B & C had 18" diameter horns. The design characteristic that both R3-D and R2-C have in common is a field rheostat of zero to 40 ohms which is electrically in series with a field coil limiting the current from 670 ma. to 130 ma. when 6 volts is applied. This current limiting rheostat is in effect a volume control and while it adjusts the volume it also conserves the power consumption.

With 6V applied to the field the rheostat was moved from the left to the right to increase volume. The small brass control knob is located directly above the Magnavox logo, see picture.

A test was performed to measure the sound output of the horn while varying the volume control. A Hewlett Packard 200 CD osc. was used as the frequency source to the input terminals of the R3-D. 1 Khz was used as an input signal at 2.5 vac. 6 volts dc was applied to the field terminals. A General Radio 759B Sound Level Meter was placed 18 inches in front of the bell and db levels were read while the rheostat was varied from off, to max. resistance then on toward minimum resistance. See figure 1 for a plot of the results.

In order to note the effectiveness of the volume control at various frequencies a frequency sweep was performed. A second purpose of the test was to see what the frequency characteristics of the Magnavox horn were like. The test setup shown in figure 2 was used.

The 200 CD oscillator was set at 3 vac and a frequency sweep of from 300 to 5,000 hz was performed. In each small frequency sweep
section of every 100 hz, the volume control was turned from minimum to maximum and the output in db value was noted. Figure 3 shows sound output of the horn in db at frequencies from 400 to 3,000 hz. Between the discrete points on the graph a line is drawn indicating the general level of output. This line represents an average level since sound output was continually variable, however the db level was generally within 3 db of this line.

**AVAILABLE: RADIO HISTORY ON VIDEOTAPE**

If you have a videotape playback you may be interested in a professional movie produced by Harris Corporation at the AWA Electronic-Communication Museum.

The viewer has a half-hour tour of the museum, with commentary, showing radio development from early Marconi days to mechanical scanning television.

Moving at a brisk pace, the tour is climaxed with the operation of high power spark transmitters. It may well be the only sound movie of its kind.

Two different types of videotapes are available:

1/2" BETA and 1/2" VHS at $30.00 each plus $3.50 shipping.

Send order to: PCI Recording Studio
703 Atlantic Avenue
Rochester, NY 14609
(Telephone: 716-288-5620)

Ask for:
"A TOUR OF THE ANTIQUE WIRELESS MUSEUM"
The TUBE COLLECTOR
Editor: Lauren Peckham
Ormiston Road, Breesport, NY 14816
All correspondence requires SASE for reply

QUE: I would like to start a tube collection. What types should be included and where do I find them?

ANS: Start with those tubes used in early broadcast receivers of the battery type and then move on to later types used in ac sets. Most receiver collectors have a box full of tubes accumulated along with other early radio parts. Sort these out and make a list of type numbers. You should find several RCA samples such as UX-201A, UX-199, UX-120, UX-112, etc. Earlier versions with brass bases and tips at the top of the bulb are harder to find.

QUE: What about scarce tubes like the WD-11, WD-12 and De Forest samples?

ANS: You should have good luck locating unusual tubes at most any ANA meet. Ask for samples with open filaments as they cost a lot less. Later you can upgrade your collection with better samples much the same as coin and stamp collectors do.

QUE: Is there some sort of guide available with a list of tubes I should be looking for?

ANS: Early RCA tube manuals are the best source along with Tyne's "SAGA OF THE VACUUM TUBE".

QUE: Why is the WD-11 such a scarce tube?

ANS: The main reason is the fact that there were few receivers using this tube. Also, RCA seemed to favor the UX-199 and phased out the WD-11 soon after the Introduction of the 199 series.

ODES and TRONS

Vacuum tube technology hit its peak around 1960 with a glossary of odes and trons. Historians may wish to know the function of some of these tubes.

Printed below is a fairly good list. Many, of course, have since died a natural death with solid-state development.

Additron—Name given to a special type of computer tube made in Canada.
Alphatron—A particular form of ionization tube used for measuring the degree of vacuum.
Anatron—A cold-cathode glow discharge vacuum-tube rectifier having a large cathode of sodium or other material and a copper anode.
Anti-cyclotron—One form of travelling wave tube.
Arditron—Name for a British photographic flash lamp.
Argostron—Name for a British stroboscopic discharge tube.
Agetron—A term sometimes applied to electron-multiplier tubes employing several secondary-emission stages.
Axitron—a thermonic diode in which the anode current is controlled by the magnetic field produced by the filament current.

Capacitron—one form of pool cathode tube.
Capiconotron—one backward wave oscillator tube.
Cathatron—a grid-controlled mercury-vapour rectifier with the control electrode external to the tube.
Charactron—a version of the cathode ray tube in which the luminous display takes the form of letters or numbers.
Dekatron—a cold cathode gas-discharge counter tube.
Diole—an electron tube having two electrodes only.
Donutron—a form of magnetron in which the frequency of the output can be controlled.
Duo-diole—or double diode. Two diodes mounted in a single envelope.
Duo-dynatron—a form of dynatron on which an additional grid oscillating circuit produces a second series of oscillations of different frequency from that of the main oscillations.
Duo-triode—or double triode. Two triodes mounted in a single envelope.
Dyotron—a microwave three-electrode tube having a single cavity oscillator.
Emitron—one form of television camera tube.
Exeltron—an electron tube with mercury-pool cathode.
Genotron—Name for high-voltage rectifier tubes.
Heptode—A thermionic tube having seven electrodes.
Hexode—A thermionic tube having six electrodes.
Iconotron—Another name for the image iconoscope, one form of television camera tube.
Ignitron—One form of electron tube with a mercury pool cathode.
Kenenoploktro—A high-vacuum thermionic multiple valve combining a diode and a triode in such a way that the anode of the diode forms the cathode of the triode.
Kenocon—A name formerly applied to high-vacuum diode.
Klystron—A form of velocity-modulated thermionic tube for microwave operation.
Magnetron—A velocity-modulated micro-wave tube in which the electrons emitted from a thermionic cathode are given two motions: radial, due to the positive potential applied to the anode, and circumferential due to an axial magnetic field.
Megatron—Another name for disc-seal thermionic tubes for very high frequency applications.
Octode—A thermionic tube having eight electrodes.
Orthicon—A camera tube in which a low-velocity electron beam scans a photo-active mosaic that has electric storage capacity.
Pentatron—Term sometimes applied to duo-triodes in which the two electrode systems share a common cathode.
Pentode—Thermionic tube having five electrodes.
Permatron—A thermionic gas-filled tube in which the moment at which the tube becomes conductive is controlled by an external magnetic field.
Phenatron—A generic name applied to gas-filled thermionic rectifiers.
Photo-augitron—A name applied to photomultiplier tubes.
Plasmotron—A thermionic gas-filled tube in which continuous control is exercised over the anode current.
Pilotron—A generic name once applied to high-vacuum thermionic tubes having one or more grids.
Protatron—A particular form of velocity modulation tube.
Quadratron—A name sometimes applied to a high-vacuum thermionic tetrode.
Quadrode—See Tetrode.
Remtron—a form of cold cathode tube used in counting and computing circuits.
Resonatron—A four-electrode cavity resonator tube of large output, characterized by its very high efficiency.
Skiatron—A form of cathode ray tube used for projecting television images.
Strobotron—A caesium-activated cathode gas discharge tube particularly adopted for stroboscopic purposes.
Super-Emitron—A modification of the Emitron in which greater sensitivity is obtained by separating the functions of photo-emission and charge storage.
Tacitron—A form of thyatron having a grid of special design so that the tube current can be interrupted by grid action.
Tetrode—A thermionic tube having four electrodes.
Thyatron—A gas-filled thermionic triode or tetrode in which the instant at which the tube conducts is controlled by a potential applied to one of the grids.
Triode—An electron tube having three electrodes.
Tronatron—A high-vacuum tube with multiple electrodes used in counting circuits.
Tropotron—A form of magnetron.
Visatron—Name for a projection-type of cathode-ray tube.

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**WBZ CELEBRATES 60th ANNIVERSARY**

Pioneer station WBZ celebrated its 60th Anniversary this past fall. WBZ is unique in that the Department of Commerce issued the station a permanent license when other stations were receiving temporary permits.

The station is credited with one of the first remote pickups (September, 1921) and the first World Series broadcast (Yankees vs. N. Y. Giants, 1923). WBZ likes to remind listeners they broadcast a Boston Pops orchestra concert in 1927.

— Harry Cap

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**AFT REPLACEMENT AVAILABLE**

The popular Hammond high-grade audio frequency transformers (sold at the Conference) will be available at the Historical Society's Museum Store (next to AWA Museum) when it re-opens in April.

These transformers are of premium quality and designed specifically for replacement in early battery sets such as Radiola III/IIIA, Crosley, etc. Available new in original box with and without center tap. Price $5.60 + sales tax or $6. Profit from sales go into Museum Maintenance Fund.

(Note: Quantity limited per sale. Absolutely no mail orders at this time.)
LONGWAVE ACTIVITY

Are you interested in receiving stations below 550 kHz? Equipment used? Station lists? If so, suggest you write the Longwave Club of America for information. They publish a paper titled: The Lowdown. Write: L. W. C. A., Box 33188, Granada Hills, California 91344. Send legal size (#10) self-addressed, stamped envelope (SASE) for reply.

(- Harold Layer)

S't des Établissements DUCRETET
75, Rue Claude-Bernard,
75, PARIS (5°)

The radio historian who desires all available material will find two recent French publications of interest. They are reproductions of E. Ducretet's 1901 and 1902 wireless catalogs showing coherers, etc.

DUCRETET was the largest firm supplying very early wireless apparatus, pre-dating any American firm by several years. They participated in many famous experiments including those of Branly and Popoff.

The catalogs are thoroughly illustrated with sharp sketches showing in detail apparatus and its use. Although printed in French, the catalogs will be of immense value to the radio buff. Ducretet equipment circa 1904-07 can be seen at the AWA Museum in the showcase at the top of the main staircase. The catalogs are also available for inspection.

Both catalogs are only $7. Send $7.00 (American dollars CASH) to:
Imprimerie Commerciale
I, Rue De La Fontaine
85200 Fontenay-Le-Comte, France

OPTO ELECTRONIC PIONEERS

Alan Douglas' story of the crystal detector (Apr. '81 IEEE Spectrum) brought an interesting letter in the Spectrum's October Forum Column. The writer tells of an article in a 1907 issue of 'Electrical World' by H. J. Round about experiments with carbonum.

"...By placing a DC voltage of 10 volts across the crystal, a bright glow would appear at the negative pole. Higher voltages would give additional optical effects...

Could this have been a forerunner of LED's ?

THE DUCRETET SUPERHET

I bet you never heard of this set? Neither did I. It was made in France in 1926 and reviewed by Ian Higganbottom in B. V. W. S. Journal, Vol. 6, #2.

The set has several interesting features which may be of interest to American historians/collectors. First, it used a French bi-grid Type R43 valve.

As the name indicates, the tube has two grids and was used as a first detector and oscillator which was revolutionary for the time. This of course eliminated the need for a separate oscillator tube which was then common in all early superhets. The bi-grid tube has a 5-pin base with the anode pin in dead center!

The set used only 5 tubes with an intermediate frequency of 70 kc, which caused many I.F. harmonics. The author states he could receive a certain local (Continued on next page)
On Review

station "seven different points on the oscillator tuning dial."
He further states,"Tuning is confusing and rather an unpredictable exercise."
Another interesting feature is an adjustable feedback circuit from the second detector back to the first IF stage!

BURNODY LIBRARY
Electra Sq., Norwalk, Conn. 06856
A special exhibit covering the work of Ferdinand Braun, inventor of the cathode-ray tube, will be held at the Burnundy Library/Museum, starting with a reception Tuesday, Apr. 20 and ending May 21. The public is invited weekdays from 8:30 AM to 4:30 PM.
The library is located on Electra Square just east of Rte. 1 near Exit 13 on 1-95 (near the Holiday Inn). A fascinating place.

ELECTRICAL AND ELECTRONICS TECHNOLOGIES
A Chronology of Events and Invention to 1900
by Henry R. O. Davis

For nearly 30 years, the author read numerous publications and made copious notes which he filed in chronological order. Other than for reference in an occasional magazine article, the information has remained on file until recently. It is now available in book form and will prove a treasure to both the research person and the arm-chair historian.

The author covers most known electrical developments from 640 B.C. (!) to the turn of the century in a terse chronological manner. Each chapter is summarized, as an example:

THE TENTH DECADE, 1890 - 1899
The last decade of the 19th century was one of tremendous advances in all branches of the electrical sciences. It was during this period that electrical standards were proposed and adopted, thus permitting the electrical sciences to be put on a mathematical foundation.

In the field of power, long distance transmission of power was accomplished at very high voltages. Electrical motors became practical and electric cars were put on the market. Incandescent lights were established as practicable sources of lighting.

Long distance telephony became a reality when a line was constructed between New York and Chicago. Dial telephones came into use in some cities. Wireless communication advanced from the discovery of the coherer to the invention of the Fleming valve. The first commercial radiogram was transmitted.

Each item is numbered with reference:
336. Harrison Gray Dyar. Harrison Gray Dyar of Boston and later of New York constructed a telegraph using the spark to effect chemical decomposition. It was the first recording telegraph. (1826)
841. Laurens Hammond. Laurens Hammond, the inventor of the Hammond organ, was born January 11, 1895, in Evanston, Illinois. In 1916 he graduated from Cornell University, and in 1928 organized the Hammond Clock Company. Hammond obtained a patent on the electric organ in 1934.

It is a hardcover book with 213 pages. Available from publisher at $17.50 or from the author, who has set aside a limited number for AWA members at $15.00 ppd. Send check to
H. B. Davis
1209 N. Market Street
Dayton, Tenn. 37321

Old Book Review
MALLORY-YAXLEY Radio Service Encyclopedia

This large red hard-cover book can easily be overlooked when building up your radio library. It is an excellent reference manual. The 2nd Edition (April, 1938) has 335 pages listing most all receivers made between 1928 - 1938. Each model number makes reference to a basic circuit, specs on control replacements, condenser information, vibrator number for car radios, tube lineup and type transformers.

In addition, there are 150 pages of servicing information. Don’t pass up this book if you see one in a pile of used books. It is a treasure. It’s one step below of having a set of Riders.

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

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

---WANTED---


-early ham and wireless equip such as IP-500/501, Superwasp. Also crystal sets. Must be original and clean. Ralph Ernein, W6SPO, 18934 Celtic St., Northridge, CA 91324

-Morse register in excellent cond.; issues of "R/G" magazine; second edition of ARRL Handbook. Neil Friedman, N3DF, 6616 River Trail Court, Bethesda, MD 20817 (301) 229-6616

-V.C. knob used on F87 & SW3 receivers, 913 Cathode Ray tube. Paul Gregg, 725 College Way, Carmel, IN 46032

-audio xfrms for Tuska 225, cabinet for Radiola X, cabinet for Federal 59, Kellog 401 tube for display, pwr. supply for SW3. Pat Stewart, W7VGC, 1404 Ruth St., Walla Walla, WA 99362

-cabinet for Federal 110. Carl Knipfel, Rte. 3, Morton, IL 61550

-pre 1940 microphones. Also mic related items. Have early radio equip. to trade. Bob Paquette, 107 E. National, Milwaukee, WI 53204

-Radiola VII cabinet, front panel, nameplate. Also audio xfrms for Zenith 37A (1928 three stage audio model). Dave Cleland, Box 183, Reinholds, PA 17569

-AK55, 50 or 70 chassis & speaker for floor model cabinet; two 116 tubes for Transoceanic. David Taylor, 108 Bass St., Tallahassee, FL 32301

-came back key. Richard Randall, 1263 Lakehurst Rd., Livermore, CA 94550

-AK model 20, Radiola III, Clapp Eastham single tube receiver and horn spkr of any make in reasonable condition. Jim Lieben, 5757 E 14th St., Tucson, AZ 85711

-operators manuals/instruction booklets (not tech data or schematics) for Deforest Type F-5 (1925). Freshman Masterpiece Master Unit (1926). Garod RAF (1923), RCA Regenflex (1924) RCA Superhet, Radiola 28, Thermoodyne TF6. Lark Daniel, 50 Calhoun Rd., Pueblo, CO 81001 (303) 542-1238

---WANTED---

-Romler Superhet schematic or any info on this homebrew set. Uses eight 193s, has 2 main tuning condensors & 4 fill, rheostats & panel voltmeter. Also need base for RCA UZ1320 spkr. Bill Jelinek, 128 N. Stevens St., Rhinelander, WI 54501

-books "International Vacuum Tube Encyclopedia" by Bernard, Babani (1926). Worlds Radio Tubes by Vade Mecum 1950 to 1960 editions, 1926 issues of Radio News mag. Donald Rathke, P.O. Box 832, East St. Louis, IL 62203

-amateur UHF equipment from 1930s as National HFC, SRR, TRM, TRW, NHU, NC-510, 1-10; Hallicrafters Skyrider "ultra"; RMC HF-10; Meissner 5/10 meter converter; Guthman 5/10 meter converter. Nagle, K4KJ, 12330 Lawyer Rd., Herndon, VA 22071 (703) 620-3066

-DeForest four tube shortwave recvr. Will trade rare Radiola Special one tube. See Vint. Radio page 107. Lester Rayner, 5512 N. 71st Place, Scottsdale, AZ 85253

-Vibroplex and McElroy speed keys. Need Martin Vibroplex. Also buy junkers for spare parts. B.N. McEwen, 1128 Midway, Richmond, TX 75081 Tel. (214) 235-8636

-Radio Broadcast magazine July 1926 (two copies). Also need early Kennedy, Grebe, Western Electric receivers. Larry Babcock, 8095 Centre Lane, E. Amherst, NY 14051 (716) 741-3082

-table model cabinets for Philco 16B, 630. Need knobs for Philco 90, 91, 116B, 118B, 15, 87-84, 158 & 65. HF Schnur, 8227 Rolling Stone Lane, Owletaw, IA 50043

-juvenile radio fiction, especially Chapman's Radio Boys to the Rescue & any of Verrill's Radio Detectives. Jim Maxwell, W6CF, PO Box 473, Redwood Estates, CA 95044

-Edison stock ticker, looking for early model with curved keyboard on base. Martin Roenigk, 26 Darton Hill, East Hampton, CT 06424 (203) 267-8682

-Morris colt winder, complete. Dom Knotts, 3138 N.E. Azalea, Hillsboro, OR 97123

-Jones multi-plug type 8M 8 pin male for Zenith R3 & R4 receiver. Also complete front panel & dial for Zenith R60 Transoceanic. Lee Kemp, RDF 10, Box 15, Frederick, MD 21701 (301) 662-3482 collect

-RCA No. 44 ribbon mike, Fisher 90X receiver. West. El. 18, 7A and 47A microphones. Steve Rayner, 190 E. Esland Ave. Minneapolis, MN 55401 612-378-1057
WANTED

Drum dial escutcheon for Sorber cathedral. Cabinets or parts sets for Radiochron, Meteor, Sterling "Little Symphony", Bellnap, Jesse French Jr., GM "Little General" and Philco 20 cathedral radios. Have much to trade. Frank Heathcote, 1235 N. 3rd St., Logansport, IN 46947 (219) 722-3612

--early transistors. Duds OK. EIA numbers before 2N300 or manufacturers numbers before 1960. Will buy or have tubes to trade. Walt Lehner, 5209 Minnehaha Blvd., Edina, MN 55424

--information on Aristocrat Dial-O-Matic radio/phone set. Also Radio News and Electrical Experimenter mags 1920-1922. Tudor Rees, 64 Broad St., Bristol, BS16 6NL, England

--HI-6 or similar preraw factory or homebuilt transmitter. CW only OK. Will purchase or trade a SK-1B, FB-X or RME-69. Will consider offers on Hallcrafters DD-1. Joel Levine, 133 Linden Ave., Ithaca, NY 14850


--AK varimeters. Type 11 tuner parts and AK tube socket unit with binding posts. Have to trade a mint AK TA det. amp, mint AK unmounted varicoupler and AK type L AF xfrr. Jerald Hueber, 6316 Wennebago Ct., Ft. Wayne, IN 46815


--Radiola III or IIIA, UX102 tube, xfrr for Tuska 305 receiver and specific info (wiring, etc.) on Tuska 305. Rich Force, W19SL, Box 78, Greenfield, WI 53047

--Federal 59, 102 portable, two #19 Fed. rheostats, horn for Dictogrand spkr. Would like to trade for Paragon Type 3 receiver at Canandaigua. Rick Weibezahl, 305 Belvidere Ave., Washington, NJ 07882

--Front panel, sub-panel, shield cans, and cabinet for Pilot Super Wasp. Aaron D. Solomon, VE10C, B Chilton Park Rd., Dartmouth, Nova Scotia, Canada B3A 2N8 (902) 466-5186

--Allied radio catalogs before 1930. Also Sears, Wards & Hallcrafters. SASE for list of catalogs available for swapping. Nicholas Yangoff, 21369 Audette, Dearborn, MI 48124

--Philco Predicta tvs, early microphones and early ceiling or table fans. Will buy or trade. Richard Cane, 8391 NW 21st St., Sunrise, FL 33322

--schematic for RCA Radiola Special. Harold Hanson, 4330 Mackey Ave., Edina, MN 55424

--800 series tubes, must have good filaments. Types 806, 830, 841, 842, 844, 852. William F. Lightfoot, W1PEG, RD2, Groton, VT 05046

--Morse and CW items such as keys etc. Also old schematics from National, Collins or Miesner gear. What have you? William Braden, 121 Seagrill Dr., Salt Lake City, UT 84120

--National NC-101X, FB7 and SW3 coils. Den Ramsey, 2726 Roosevelt Lane, Antioch, CA 94509 Tel. (415) 757-8148

--Emerson Mickey Mouse radio. Trade or buy. A.R. Nolte, 620 Auburn Ctr., Burlington, Ontario, Canada L7L 5B2

--four DeForest DV-35 for restoration of a recvr. Sam P. Punter, 157 Pines Bridge Road, Ossining, NY 10562 Tel. (914) 941-1806

--Scott radio in Napier (open top with tuner chassis in open) console. Scott FM tuner and converter units. Any original Scott literature. Zenith 25 tube Stratosphere. Steve Chapman, 419 Bird Lane, Wazahachie, TX 75165. Tel. (214) 937-2726

--odd, old telephones/parts such as Blake, Edison, Berlin & Bell transmitters. Also early wood, rubber or Bakelite outside terminal receivers. Center crank phones. Walt Aydelotte, R Sugarbush Lane, Pittsford, NY 14534

--pre-1950 tv sets (working or not), tv set manuals, and old TV Guide magazines. Jeff Kedad, W3CHR, Box 90, Rockville, MD 20850 (301) 654-1876

--R 215 A "peanut" tubes. Bob Murray, 3216 Assiniboine Ave., Winnipeg, Manitoba R3K 0B1 Canada

--copies of operator manuals for WWII Army radio sets SCR-300, SCR-284 and SCR-694. Bill Wilmot, K4TF, 1630 Venus St., Merritt Island, FL 32952

FOR SALE/TRADE

--trade Kennedy 281, DeForest D-17, Radiola or others for Lionel Standard gauge electric locomotive 318, 380, 402 or similar equal value trade. Ross Smith, 1133 Strong Ave., Elkhart, IN 46514

--Army TG-35 code machine w/11 tapes. $55. RME69 noise silencer less tubes, $12. Hallicrafters S12, $140. AK92 cath. in fair cond. $80. AK84 good $70. 1923 QSTs in binder, best offer. All plus shipping. W. Ernst, 1619 Campbell Rd., Comins, MI 48619

--Riders manuals vol 6 thru 15, $6 ea. All plus postage in lots of three or more. A. Smith, Stonehedge, Lincoln, MA 01773 (617) 289-3435

--radio, from 20s thru 30s including table models, consoles, battery, electric. Also parts sets. State wants. No list. SASE for reply. F. McKalicourt, 420 Bow Rd., Hinsdale, NH 03451 Tel. (603) 256-6208
--Haricrafters xmt in HT73 w/ D104 mike and Hammarlund HQ110 recvr w/matching speaker. $180. Will sell separately. Pick up only. J. Wasiewicz, 229 Sarles Lane, Pleasantville, NY 10570

--Radiola III $75, IRIA $110. Crosley Model 51 $75, all in excellent condition. Transistorized WD-11 & 01A tubes for above sets $10 ea. Will work on one 3v-9v battery. Bud Becker, 66 Clevely St., West Seneca, NY 14224


--Important notice to everyone who bought my $2. Tist. Prices are in Canadian funds. Save 20% by sending money order in Canadian funds. Rod Goodwin, Box 1854, Ponoka, Alberta, Canada TOC-2H0

--Stewart Warner 400 horn spkr, Lord Calvert novelty ac radio, Echophone 3 tube set, Peerless cone spkr, Neutro- wound (blue/orange) set, AK4700 breadboard, Welsh tube, Am. Elac Burns tortoise shell horn, misc. magazines. Send SASE to F.A. Paul, 1545 Raymond, Blendale, CA 91201

--Radios. From early 30s thru 50s. Send SASE for list of needs. Am interested in buying a working cathedral set. Perfer Philco 60-70 or 90. Craig Larson, 4452 Benjamin St., Minneapolis, MN 55421

--J.H. Bunnett sounder $20 on wood base, $25. AK Model 30 w/tubes & in good cond. $80. UPS, an original Telechron 30C44, $95. Catalina radio w/concave panel no.1, WU letterhead, & with envelope. Both in excellent condition. $125. Ernest Mintel, 303 East Gibson St., Canandaigua, NY 14424

--Antique radio collection of 100 sets including 7 AK breadboards. Sell as a unit only. Send 3 loose 20¢ stamps for list and price. R.A. Woller, 1113 Poixon Ave., Lansing, MI 48910

--Zenith, Philco and Majestic console radios. AK20C, 3R3 regular, King Liberty, Shamrock, Browning Drake & others. SASE for list. Want Stromberg Carlson batt. sets, Philco 908 or 708, RCA Regenoflex or other pre 1926 Radiolas. Will pay cash or trade. Mark DeFrancisco, 241 Great Rd., Maple Shade, NJ 08052 (609) 778-8048

--Radio magazines, catalogs and literature on new list available in April. Send $1 to cover cost. G.B. Schneider 6848 Commonwealth Blvd., Parma Hts., OH 44130

--Trade AK10, Aerola Sr., Radiola IIIA, Detroit xtal set & others. Want Halicrafters models S-1 to S-15. Will exchange photos or buy. Clyde LaPearl, 5561 Hwy 12, Tipton MI 49287

--AK20 w/o tubeS, $45, Philco 60 Cath. with perfect cabinet & works $65. Kolster 60 w/o tubes $65. Philco 89 Cath. fine cond. & works $70 plus many more. SASE for list. Gary H111, 1507 Ridge Ave., New Castle, PA 16101 (412) 654-9335

--Classic wireless/radio Library-Buch-er, Sleeper, Germsbach, Troubleshooters Manual Vol.1, many sets & parts, short- coupler, spark coils, neutralydes etc. Priced to sell. SASE for list. Richard D. Cohen, 13913 Hayward Pl., Tampa, FL 33624


--RARE PARAGON DX-1, dual crystal detectors. Crosley w/brass WD12; Crosley 51 w/2 brass WD12s; 51-A amplifier; RADA w/tubes; Radiola 26 w/tubes & manual. Al Hanning, 6 Camelias, DeBary, FL 32713 (305) 668-8437


--QSTs Oct 1916; May, July, August 1917; covers fair, pages good condition. $30 each or $110 for all four. William Grenfell, 7216 Valley Crest Blvd., Annandale, VA 22003

--720 used metal and glass tubes from late 30s and 40s. $150. 620 used miniature radio & tv tubes from 40s thru 50s. $50. Large SASE for details. Herman Frothe, 10 Jackson St., Sloatsburg, NY 10974


--1936-37 Motorola unique chairside radio. Has odd tuning device. Lights up but no sound. $20 plus shipping or trade. Need panel for Crosley X & Xv, Portable nets, cabinets w/pull-down fronts, also porcelain sockets. Dave Crocker, Tavern Path, Plymouth, MA 02360

--Trade Radio News, Crosley grandfather radio, glass radio, medical kits, British Art Decco AC and crystal sets, cathedrals, Kellog set, AK10 for AKS, Grebe CR3 or CR6, Federal 59/61, Pup. A.R. Noll, 620 Auburn Cr., Burlington, Ontario, Canada L7L-5B2

--WW2 (1918) military spark transmitter, airborne. Would trade for similar set or nipkow disk set or for numerous other parts and vintage sets. Guy Biraud, 1 Place Du Puy Lavaux 92200, Fontenay, France (Continued on next page)
OLD TYME HAM ADS FOR SALE/TRADE

--misc. radio items for sale/trade. Send Sase for list. Peter Yancer, 835 Bricken Place, St. Louis, MO. 63122
--schematics available for almost any radio/tv, etc. from 1919-62. $3.50/copy. Money refunded if can't provide. Alton Bowman, RD#2, Canandaigua, NY 14424
--trade Par. RA-10, Kennedy 220 & 525 amp., Fed. 61, AK breadboard 4550, Rada, panel/cabinet & knob for Crl Paragon, Wint John Firth items, Firoc, Vocaphone, Vocatone, Zenith IR, Sase for list. Larry Wright, 131 Hilltop Dr., Lake in-the-Woods, Ill., 60002 (312) 658-5933
--WE CW-1031 xmt/rct. (Navy version of SCR68) w/tubes/headphone/mic. assy, $395. BC-9A $185., West. RC $110., Riders 1-16 less Vol.9 $145, 17 & 21" picture tubes for Predicta tv, both new $30. plus shipping. Allen Jochem, 2047 College, Quincy, ILL. 62301
--old radios, spkrs, tubes, Riders, RCA service data, test equip, etc. Send Sase for list. F. Krantz, 100 Osage Ave., Somerdale, N. J. 08083
--sell Kennedy 110 w/amp plus other early sets. Sase for list. Fred Schagenhaft, 84-52 247th St., Bellerose, N.Y. 11426

A Review: WYXIE WONDERLAND by Dick Osgood
530 pages, 75 photos, indexed
The author made his radio debut in 1928 and has been active ever since. The book covers all the "ups and downs" of broadcast programming from early soap opera to rigged TV quiz shows...top brass personalities to the "battle of ratings".
Paper cover: $12.95 Cloth: $29.95
Popular Press, Bowling Green Univ. Bowling Green, Ohio 43403 (Tel. 372-2981)

WOR HAS ANNIVERSARY

Another station celebrating an anniversary is WOR. Like WBZ, it has retained the same call letters for 60 years. The station had a weekend celebration telling of its history and playing back early programs. One of the programs was WOR's participation in Howard Hughes' Around-the-World-Flight in the '30s. AWA provided the magnetic tape for the broadcast through Don deNeuf.

10TH ANNUAL ARCA MEET
June 4 and 5th
Lake Placid Hilton, Lake Placid, N. Y.
---Top programming
---Contests
---Flea Market
Good food and a good time!
(Special Motel rates)
Non-ARCA members are welcomed.
Write for information: John Drake
23 East Wharf Rd., Box 942
Madison, Conn. 06443

Vacuum Tubes vs. Coherers in 1898

A Righi appears at last to have invented a vacuum tube which is capable of seriously rivaling the coherer as an electric wave indicator. The details of its construction are not given, the reason being that they are "too complex," but the tube has the peculiarity of showing a continuous streak of light between the two electrodes, which breaks up under the influence of electric waves into the accentuated succession of positive strata, dark space, and cathode light. The cathode is a wire, and the anode a disc, and under ordinary circumstances a cone of light extends from one to the other. This condition is resumed after the electric radiation has ceased.

The curious thing is that the effect is produced also when the radiation impinges upon some portion of the circuit of the vacuum tube not too far away from the tube. Hence it is probable that the influence of the radiation does not affect the gas in the tube, but only the electrodes. But besides the optical phenomenon, which is in itself a valuable indicator of the presence of electric waves, there is a change of resistance, as in the coherer, which is indicated by a galvanometer. Often, the current is increased to three times its original strength when the tube lights up, and that effect might, of course, be multiplied indefinitely by suitable relays.

The advantage of not requiring a special mechanism for restoring the original resistance is obvious, but, on the other hand, Righi does not seem to have experimented with transmissions longer than seven yards. — Righi, Nuova Cimento, July, 1898.
(Report from "The Electrical Engineer" December 29, 1898)
TRANFORMER SUBSTITUTE

One of the major problems in restoring older radios using audio transformers is obtaining replacements for defective transformers. The circuit can be modified to use resistance coupling but this results in reduced gain. A separate transistor amplifier can also be used but this has the disadvantage of requiring a separate power supply or a voltage divider in the B+ circuit.

The circuit shown here is a transistor amplifier which does not require any modification to the receiver or power supply. It is a four terminal network that is directly interchangeable with the transformer. The completely assembled circuit can be made small enough so that it can be mounted in the transformer housing after the defective windings have been removed.

Referring to the schematic diagram, the D C voltage developed across the plate load resistor, R1, supplies the transistor amplifier with its operating voltage through the R C filter, R2 C2. This filter removes the audio signal from the D C voltage. R2 should be equal to or greater than the value of R1 to minimize loading effects on R1.

The zener diode maintains the transistor supply voltage at a constant value for changes in tube plate current due to filament voltage adjustments. The audio signal is applied from the plate of the tube to the base of the transistor through capacitor C1.

The transistor amplifier itself is very conventional. A type 2N3905 was used but any one of several different types would be suitable with minor changes in bias resistors. It should be noted that a PNP type transistor is used because of the direction of current flow. The amplified audio signal is applied to the grid of the following vacuum tube through capacitor C3. Resistor R7 provides the D C return from the grid to either C− or ground.

The component values given with the schematic are about optimum for the 2N3905 transistor for maximum output and minimum distortion using 90 volts B+. Higher or lower B+ voltages would require changes in some component values, mainly to change the transistor bias. The circuit as shown, with a type 01A tube, has the same overall gain as the tube and a high quality 1:3 step-up ratio audio transformer.

George A. Capen
Auburn, Indiana

C1, 5 Mfd. 30 volt Tant.
C2, 20 Mfd. 30 volt Tant.
C3, .01 Mfd. 100 volt
D1, 12 volt zener diode
Q1, 2N3905 Transistor
R1, R2, 22K ohm ¼ watt
R3, 150K ohm ¼ watt
R4, 15K ohm ¼ watt
R5, 18K ohm ¼ watt
R6, 1500 ohm ¼ watt
R7, 220K ohm ¼ watt
RADIOLA III

Bud Bedker gave the Museum two WD-11's that he had transistorized and I volunteered to get a Radiola III in operation for demonstration. Naturally, the AFT had an open winding and after disconnecting and knocking out the wax, I inserted one of Fred Hammond's custom-made replacements. The other part that nearly always needs replacement is the rubber tube socket cushion. I cut the proper size from an old heavy inner tire tube. Works nicely.

I have restored several III's and find they vary slightly. This one had a coil spring connection for the two rotors—others don't. I inserted the WD-11's (with FET's), connected the (2) B+plus leads to +3 volts and all the other wires to minus.

The set seemed to work except I could hear a kind of grid hum. Checking the circuit, I found, for some reason, there was no grid-leak. Checking the Rider's Manual shows a grid-leak but this set and the one I have does not. How come?

The hum cleared up when I placed a 1/2 meg. resistor across the grid condenser. Stations were plentiful—even with a short antenna. The rheostat appeared to have no effect on the volume. Hand capacity was quite noticeable.

A warning: under no circumstances reverse the 3-volt battery polarity. Transistors will pop as fast as WD11's when B+ is applied to the filaments.

--- Ed Culver, WA2JAA

Ed. note: Bud Becker will have an article in future OTB telling how to transistorize early battery sets. This will be a followup on the article written by Fred Rice, WA3KIO

AFT REPLACEMENT

On several occasions in the past we have printed in the OTB how to bridge around an open audio transformer when a replacement is not available. For the benefit of new members, the circuits are shown again. The values for the 0.1 mfd. capacitor and 100 K. and 1.0 meg. resistors are not critical. These methods result in a slight loss in volume.

![Audio transformer used for impedance coupling.](image)

RHEOSTATS

When substituting 20A's for the older 201's — remember the 201 has a 1.0 amp. filament while the 01A is rated at only .25 amp. This means the effectiveness of the rheostat will change. A 201 has a tungsten filament and is quite bright (known as a "bright emitter") whereas the later 20A has a thoriated filament and is known as a "dull emitter". --- C. Z.
This amateur museum is the largest and finest in Canada and compares favorably with any in the United States. The owner, Fred Hammond, VE3HC, was interested in historical radio before WWII. His collecting activity increased about 15 years ago and culminated in a museum which opened in 1981.

Visitors can see the usual receivers and tubes found in most large collections. The Museum does have, however, two attractions not found
in the States, a fine display of Canadian products and an extensive exhibit of classic amateur and commercial equipment including several working amateur stations and a huge 2-panel rack SSB diversity receiver.

Fred is to be congratulated for establishing this unusual museum and particularly commended on his foresight in perpetuating his efforts. The entire museum and collection will ultimately become the property of his son, who is also an amateur and member of his organization. We are always hearing about fine collections being broken up and sold indiscriminately. This will not happen here.

The Hammond Museum is open 8 - 5 p.m. weekdays. If in Ontario, it will be worthwhile to schedule a visit.
FROM HEADQUARTERS

RCA 630T TV RECEIVER

A visitor to the Museum last fall asked if the Association had a RCA 630T television set? The answer is, of course, yes. This particular model is historical since it is the first RCA receiver made in any quantity and set the pace for the new market after the war. It seems the visitor was a retired RCA engineer and appeared well informed. He told me the meaning of 630T:

6 -- 1946 (year was released)
30 -- 30 tubes in the set
T -- Table model

The receiver used a 10BP4 tube:
10 -- 10" round
P -- Phosphor coating
A -- RCA code for white screen

The above information is from memory. I have forgotten what the "B" stood for in the tube number.

VIDEO DISCS

I am sure most of you by now have seen or are aware of the several home video playback devices with one of the more popular models being RCA's CED (Capacitive Electronic Disc). This little gadget weighs 20 lbs. and has about 1 hour playing capacity.

What fascinated me was the video disc. The discs have 10,000 grooves per inch, 40 of these grooves can fit into ONE groove of a typical analog LP record! And mind you, the grooves store picture, color and audio information.

The disc is heavily loaded with carbon in order to make it conductive so as to act as a plate of a capacitor. The "V" shape stylus rides the grooves and acts as the other plate of the capacitor. As the surface rides and falls, so does the stylus, varying the capacity providing the necessary read-out information. The discs spin at 450 rpm! -- a far cry from the old 78 rpm disc (record) of the old days.....

MORE ON YANKEE

A letter from Bill Greig of East Walpole, Mass. verifies our previous assumption about Capt. Johnson and the Yankee. He tells us Johnson did sell the brigantine to the ship's doctor who planned to continue ocean voyages, but the ship was wrecked on his first cruise and ended in a tragedy. After the sale, Johnson designed a smaller and shallow draft vessel and cruised the waterways of Europe. He also sailed the Greek islands and up the Nile as far as the first cataracts. Bill believes he is retired and lives on the East coast. The Yankee's transmitter is in the AWA Museum.

DID YOU KNOW...

Acquiring early guns is one of the oldest collecting hobbies. A recent auction saw a pair of Dutch ivory-stocked pistols circa 1650 go for the sum of $125,000. and a 60 year old rare gold-inlaid Parker 28-gauge shotgun sell for $95,000.

Of more recent vintage was Col. Lindbergh's Colt "Detective Special" revolver which hit the auction block at $17,000. This is the gun Lindbergh carried during the Bruno Hauptmann trial.

And lastly, Ernest Hemingway's target pistol, which he bought from Abercrombie & Fitch in 1953, went for a high bid of $3,800.

See what a name will do? I wonder what Lee deForest's pocketwatch would be worth.......

QST ADS

W2HYN, like most licensed radio amateurs, reads QST magazine. QST Ham-ads have always been a good place to buy/sell ham radio gear and, in recent years, a source for early equipment.

(Continued on next page)
Reviewing the Dec. issue he found 20 ads relating to early items: 13 wanted to buy (65%) with 7 selling (35%). . . . about the same percentage as OTB ads. Of interest, however, he points out that 35% were non-amateurs... or at least they didn't use a call sign in their QTH. This same percentage did NOT hold true for modern gear ads... . . . Maybe there is a message here... . . .

DOTS and DASHES

is the official publication for the Morse Telegraph Club. Although subject matter is primarily related to landline telegraphy, there is an occasional article on early radio by Don de Neuf and others. I find the current series on the history of Postal Telegraph Co. (by Stu Davis), a company that gave mighty Western Union a run for its money, of historical interest. Throughout its many pages, the editor sprinkles little anecdotes that bring a chuckle. Here is an example:

A visitor to New York for the first time had too many drinks before going off to meet a friend at Times Square. By mistake, he stumbled down the stairs to the subway, and wandered around for some time before finding his way out.

Upon reaching street level, he met his friend. "Where have you been?" the visitor's friend asked.

"Somehow I ended up in someone's basement, and boy, does he have a set of trains!"... was the reply.

CHALLENGE

Henry Kuhn, W8ERG, tells of a receiver that would be a real problem to restore if it were necessary to replace the power transformer. The set is an early AC model in a metal box made by Freshman and sold under different brand names. Tube lineup:

UX-222 rf, UY-227 det., UX-226 1st aud., UX-71A output and a 280 rectifier. ALL five tubes use different filament voltages which would require a transformer with 5 filament windings!

EARLY BOOKS/MAGAZINES

Jack Allison sent me an article from a collector’s paper covering the value of early radio books and magazines. I immediately tore into it with the intent of pulling it apart, for the author had the unlikely name of Edison. But surprisingly, he did a good job. His quotes on pre-1900 were fairly reasonable and the same with later books. He tells that a copy of Gernsback’s “Wireless Telephone” circa 1910 is rare and a near mint copy could bring over $200. I won’t quarrel with this figure since I am not familiar with the book. All early books are going up in price. I did question, however, a statement that radio magazines from 1913 to 1935 sell from $3. to $5. No way are Pre-WWI magazines in the same price category as 1930 issues.

Champion typist makes words fly at 160 per minute

(Headlines from Boston paper)

Radio operators always admire a high speed code operator, and many still remember when Ted McElroy was setting records around 75 wpm. Speed champions always use a typewriter ("mill") and until recent years, the machine was manual. The ability to copy code is, however, usually not limited to typing speed.

A recent typing contest in Boston, with 20 women and 2 men, had participants flying as fast as 160 words per minute! Reportedly, the winner could do 80 wpm on a manual typewriter when a junior in high school and now at her office, she frequently moves along between 120 and 140 wpm. The report didn’t indicate the number of errors (if any) for the record speed or what constitutes a word.

With this little background, one can see there is roughly a 1 to 2 ratio between code and typing speed. I type with two fingers... what is my code speed? -------B.K.
NEW EQUIPMENT
in A.W.A. Museum

W2IIE, K2LP, W2IYC, W2PZH, WB2CLT, K3NAU (Harris RF), W3BNO, W3CDQ, W6SAI, K6SVJ, W8YM, HB9RS, WB4ZBK, Bud Bedker, Jim Grant, A. Sanders, Don Morey, Al Karz, Bob Stevens.

Several items were delivered to the Museum over the winter months. Of interest was a giant 1948 Capehart radio-phonograph combination. Capehart sets were considered top in the field and this particular model was no exception. An unique feature is the record changing mechanism which allows automatic playing both sides of the record!

Of entirely different character were 4 pieces of early telegraph equipment left by Bill Pulhamus, W2IYC consisting of a homemade siphon recorder, Wheatstone W-U tape transmitter, polar relay, and tape punch. Some of this equipment was used by Bill's father and a friend, Arthur Chandler in 1908. Anyone remember these early amateurs?

REPORT ON A.W.A. STORAGE BUILDING

The Directors at their meeting in November 1980 authorized the Executive Committee to obtain storage facilities at a cost not to exceed $30,000. This facility would provide a safekeeping place for early model radios, components and literature which is stored in different places. Many of these items are unique, such as the RCA diversity receiver from Riverhead, Long Island, and some will become museum display pieces in future years. Preservation of historical items is in accord with our Certificate of Incorporation which states we will provide for posterity a collection of gear and historical material used in the development of the Radio Art.

In April, 1981, a lease was signed with the East Bloomfield American Legion Post for 99-year use of one acre of land on their site east of town. Terms of the lease state that we, A.W.A., will allow them the use of 800 ft square in a building to be erected by us.

After reviewing bids from three building contractors, on July 31, a contract was signed with Morton Buildings, Inc. for the erection of a building 78' x 42' x 10' with a peaked roof. We took occupancy of this building in October. It is a frame structure with steel siding and roof. The A.W.A. section, 60' x 42', is insulated and has a ceiling at the ten foot level. The entire building has a cement floor. Both the Legion and A.W.A. sections have overhead and pass doors. We believe this is an excellent facility for our purposes. Bruce Kelley, Curator, has been busy obtaining and fixing up shelving and benches for the items which George Batterson has begun moving in.

A.W.A. is in the fortunate position of having operated with much volunteer help through the years so that there has been an accumulation of surplus money from the dues received. This surplus has now been used to pay for the new storage building. Hence, we have avoided the expense interest cost of a building loan and, furthermore, we do not need to launch a fund-raising campaign.

The building is open only to members by arrangement. It is not a public museum. The Museum in the Academy Building serves that purpose.

C. Brelsford
President