On a warm day 50 years ago (1929), a meeting was called to discuss the design and manufacture of a new receiver. The company head called in members of his staff as well as several consultants. The set would be a kit and available for either AC or battery operation. They would take advantage of the newest AC tubes and circuitry. It must have "class" and still be within a reasonable price range.

The boss, Isidor Goldberg, is in the center. At left is Bob Hertzberg (his assistant) and John Geloso (Chief engineer). Right of Goldberg are Alfred Ghirardi, Zeh Bouck and Robert S. Kruse (Acting consultants). Recognize the names? Bob (K4JBI) is still active and living in Florida and we believe Alfred Ghirardi is retired in Mexico. What is the name of the company and the receiver they created?

Turn to last page for answer.

LATE NEWS RELEASE: Marion Armstrong, wife of the late Major Armstrong, passed away on August 8th at the age of 81.
Change In Address?
Mail information to the Treasurer who handles current mailing list.
(NOT the Secretary)
L. A. CUNDAILL, W2LC
69 BOULEVARD PKWY
ROCHESTER, N. Y. 14612

AWA NETS
PHONE (SSB)--3866 kc. Tuesday 8 PM
Mon. - Wed. - Fri. at 9:30 AM
Sunday -- 12 Noon (3866 kc.)
Tuesday-- 14270 kc. at 5:30 PM
CW -- 3584 kc. daily at 4 PM
First Wed. each month at 8 PM
IN THIS ISSUE

SPECIAL FEATURES

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3. In Memoriam
4. Coming Events
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21. Nipper the Dog
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29. "They'll Do It Every Time"
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What's Coming Next!
in the "Old Timer's Bulletin"

Standard Frequency Stat, 1XM
Collecting Hallicrafter Equip.
Collecting early Batteries
Testing Unusual Tubes
History of James Miller Co.
The CRL Receiver and Zenith
Armstrong's Super Regen, Set
History of Telegraph Code
G.M. Best's 45,000 cycle Super
A Capacitor Checker & Reformer
History of the Light Bulb
plus much, much more........

ON REVIEW

ON THE SHOULDERS OF GIANTS
1924 to 1941

This is the third in the series published by General Electric on the history of its founding and operation. It consists of 84 pages and more than 200 photographs.

Like the earlier volumes, it is available for $2.95. Make check or Money Order out to the ELFUN SOC- IEY and mail to:
Bernie Gorowitz
Hall of History Project
G.E. RD0 Center, K-1
Box 8, Schenectady, N.Y. 12301

COMING EVENTS

ANTIQUE WIRELESS ASSOCIATION

NATIONAL CONFERENCE Sept. 27-30
Canandaigua, N.Y.

FLORIDA A. R. R. L. Convention
Nov. 17-18 Clearwater, Fla.

ANNUAL BUSINESS MEETING Nov. 4
Canandaigua, N.Y.

ANNUAL WINTER PARTY
(Date and location to be announced)

SOUTH-EAST AWA CONFERENCE
Apr. 18, 1980 Charleston, S.C.

PARTICIPANTS AT CALIFORNIA MEET

l. to r.: Bill Orr, Bruce Kelley and Norm Berge. Orr and Kelley are over 6 feet but Berge towers over both of them. A tall man. See "Close-up" column for information on Meet.

In Memoriam

James Moore, W1CX
Steve Beck, W2CE
Walt Cobb, W2CO
Eddie Dunn, W2XT
Bruce Elle, W2VTR

20 METER PHONE

Now that summer is over, let's get back on 20 again. See you on 14,270 kHz every Tuesday at 5:30 PM EST (or EDT)...
[Suggestions for different time/frequency?]

Important

Notify AWA treasurer immediately of change in address. P. O. Dept. will NOT forward 3rd class mail. There will be a $1. charge per issue by AWA for forwarding 3rd Class mail.
FLORIDA

A. R. R. L., CONVENTION
SAND KEY SHERATON
Clearwater, Fla.
NOVEMBER 17-18

This promises to be another great get-together for AWA members living in Florida. The Association will have its usual fine exhibit plus a Meeting program. John Smith (WAACG) of St. Petersburg and committee will be there to welcome you. See you November 17!

NEW YORK

NATIONAL HISTORICAL RADIO CONFERENCE
SHERATON INN
Canandaigua, N.Y.
Sept. 27, 28, 29

See June OTB for general information and program or write: Dexter Deeley,
8 Briar Circle, Rochester, N. Y., 14618.

Note: At this writing (July 15) registration is running well in advance. Many members plan to fly to Rochester and rent a car (which is supplied with gas) for the 30 mile drive to Canandaigua and the Museum. So far, gas has not been a major problem in this area although there are restricted hours. Members traveling on the N.Y.S. Thruway will find service stations in operation.

A large amount of material (flea market and auctions) will exchange hands over the 3 day operation -- so come prepared!

The clipping reproduced below is from a WWI New York newspaper telling of Dr. J. Zenneck's arrest. Zenneck was a brilliant engineer and is known by radio historians for his famous [and rare] book titled: WIRELESS TELEGRAPHY [pub. in 1915] -- the bible for early German gear.

ARREST GERMAN RADIO EXPERT
AND TAKE HIM TO ELLIS ISLAND

Professor Zenneck Is to Be Interned During War By Order From Washington.

By the United Press.
Trenton, N. J., July 6.—Acting under special orders from the Department of Justice at Washington, United State Deputy Marshal Linford Denny, of this city, late last night placed Prof. Jonathan Zenneck, German radio expert, under arrest and took him to Ellis Island, where he will be interned for the duration of the war.

The Department of Justice is said to look upon Professor Zenneck as one of the most dangerous German subjects in this country. Germany looks upon him as one of her most skilled wireless telegraph experts, and he came to this country especially to direct German wireless activities. For a long time he was in charge of the German radio station at Sayville. Of late he has been living at Boonton, at which point he was arrested by Deputy Denny.

Before coming to America Professor Zenneck served in the German Army in an official capacity. He participated in the memorable German drive through Belgium and later by falsifying his passports gained admission to the United States.
MEETING OF THE MINDS

MYSTERY RECEIVER
Larry Babcock found this 'hybrid' receiver near Syracuse, N.Y. He has shown it to several knowledgeable collectors and none agree on its origin. Is it a RCA 2nd Harmonic super-het in a homebrew case? Is it a RCA prototype or lab model that never went into production? -- or is it a seldom-seen production model? There are no identification marks or tags other than the dial markings.

Rear view of Mystery Receiver

Do you have a receiver that you cannot identify. Write and tell us about it.

BACK ISSUES

Historical reference and good reading.....

The following OLD TIMERS BULLETINGS remain in stock. Make out check to A.W.A. and mail to:

DEXTER DEELEY
8 Briar Circle
Rochester, N.Y. 14618

15-1 16-4 18-3
16-2 17-2 18-4
16-3 17-3 19-4

$1. each ppd.

12-1 13-4 17-1
12-3 14-3 17-4
13-1 14-4 19-1 with Mono.
13-2 15-2 19-3 with Mono.
13-3 15-3 20-1 with Mono.

$2. each ppd.

2-3 10-4 18-1
7-4 11-3

$3. each ppd.

Vol.1 #2, Vol.1 #4 40¢ ea. ppd.
(Reprints for reference)

SWAN INVENTED LIGHT BULB

In all this hubbub about Edison's light bulb discovery (1879-1979) one may not have heard about a British contender: Joseph Swan, who supposedly perfected the carbon bulb several months BEFORE Edison, but neglected to take out proper patent papers.

Not to be out-done however, our British friends now are ALSO celebrating their hero with a "Electric Lamp Centenary". Mike Tuggle sent AWA a copy of "Science Magazine" which gives the British version. Most interesting.

On Review:

HALLICRAFTER "ULTRA-SKRYRIDER"

Collectors of classic receivers will find a description of this rare (and low production) set in the August 1979 issue of CQ magazine written by Bill Orr, W68AI. The receiver is a milestone in super-het design since the range extends up to 79 MHz (!) at a time when most VHF receivers were still super-regens.
The story of the Clapp-Eastham Company begins with Melville Eastham in Oregon, where his father was instrumental in setting up the first electric generating system. In 1905, at the age of twenty, he came East to work for the Ovington X-Ray Company, whose chief engineer was William O. Eddy, with J. Emory Clapp, a sales engineer.

In 1906 the three decided to go into business for themselves, manufacturing X-ray equipment; Clapp financed the venture, and they moved to his home at 100 Boylston Street. Eddy recognized that the time-honored method of rating induction coils solely by spark length was badly suited to X-ray and wireless work, where substantial current capacity was necessary, and his coils were particularly good for these classes of service.

In February 1908, Eddy left, and the company became the Clapp-Eastham Company, with $10,000 capital. They added other wireless components to their line, and concentrated more and more in this area, to the exclusion of their X-ray business.

Clapp, whose primary interest was in X-rays, sold out in 1910 to O. Kerro Luscomb, but the company remained Clapp-Eastham, and they moved to Kendall Square in Cambridge.

By 1915 Melville Eastham was restless, too. Envisioning a large future market for radio measuring instruments, he and Luscomb formed the General Radio Company with three other investors. Starting with $9,000 in capital, and a payroll of two, General Radio a year later had thirty employees and was as substantial a concern as Clapp-Eastham. In 1917 Eastham and Luscomb went their own ways, exchanging their interests in the other's company. And the Clapp-Eastham Company employed neither Clapp nor Eastham!
This beautiful loose-coupler type receiver in the AWA Museum was made by Clapp-Eastham in 1913. Note the two crystal detectors.

and the Type D, the latter having many more switch taps, and a marble base. These rotary tuners were also built into complete receiving sets, the most elaborate of them selling for an incredible $550 in 1914.

**Type “A F” Receiving Set**

This receiver sold for $550 in 1914. The large rotary type tuner had 72 primary and 30 secondary contacts. It tuned from 200 to 7000 meters.

1920 brought a marked change to their product line, when they received the first post-war Armstrong regenerative license on April 28. (Adams-Morgan and A. H. Grebe had been making Armstrong sets pre-war, since 1915 and 1916 respectively).
For the period April through June their 5% royalty payments to Armstrong totalled $12.60, and for July through September $5.06.

They were among the lucky companies who were ready to cash in on the broadcast boom: their model HR receiver was reasonably priced at $35 (oak cabinet) and $40 (mahogany) and was actively pushed by distributors all over the country.

HZ 2-STAGE AMPLIFIER (1922)

The HR and its matching two-stage amplifier HZ were soon combined in one cabinet as the RZ, and from here on it is hard to keep track of their models, they changed so fast. For one month they advertised a horn, the Electro-Ampliphone, that used a specially-made Baldwin driver with two mica diaphragms; the second one was located between the driven diaphragm and the horn throat but was not connected to anything (don't ask me!).

Late in 1922 they began using the trade mark RADAR in addition to Clapp-Eastham. Incidentally, if I had a nickel from every old timer who says 'Clapp-EastMAN for Clapp-East HAM' I could buy a 1-KW Hytone spark transmitter!

Their last big seller was the one-tube R4 in late 1923; this was also sold under the name 'Unico Special' by the United Cigar Store chain. My best friend in high school found one in his grandmother's attic (it turned out to have been his father's) which we got working, and I have it now after having lost track of it for nearly twenty years.

The Clapp-Eastham broadcast sets work reasonably well, but their construction quality leaves a little to be desired. As an example, the name-plates on their later models are left over HR plates, with half of the plate...
reading 'Type HR175-825 meters' simply cut off! Probably this attention to quality combined with their favoring the regenerative circuit long after it was outdated, greased the skids for them.

Crosley made similar appearing models, with the same regenerative circuit (and the same quality) but he advertised heavily and somehow pulled it off. The Clapp-Eastham Company shrunk to practically nothing after mid-1924, and brought out only two new models. Their last model that I have seen was a threedial, five tube TRF with typically cheap construction: components riveted to a bakelite sub-panel. It had no model number, and I didn't have the foresight to photograph the set before I sold it, but it no doubt exists somewhere still. I don't miss it.
The notice printed below was from the May, 1926 issue of "Radio Dealer" telling of the company's move from Cambridge to Long Island City, N.Y.

This is hardly the way to end the history of a one-time well known company, but I'm afraid it just peters out, like the company I have been describing. Any information on C-E after it moved to New York would be appreciated.

CLAPP-EASTHAM MOVES
TO NEW YORK CITY

LONG ISLAND CITY, N.Y.—Clapp-Eastham Co., formerly of Cambridge, Mass., is moving its plant to Long Island City, New York, according to announcement of Verner A. Hendrickson, the president. This move marks the passing of the world's oldest exclusive radio manufacturer from New England. For over 20 years the Clapp-Eastham Co. has been located at 139 Main St., Cambridge. Its new quarters are in the Chicle Bldg., Thompson Ave., Long Island City. This new location was made necessary to obtain larger quarters, particularly for space, and to secure a national distributing point. The new factory is modern and up-to-date in every respect.

An entire new line will be brought out featuring two handsome models encased in unusually attractive mahogany cabinets trimmed with gold and provided with compartments for the batteries. One of the receivers is designed either for "A" or "B" eliminators. Both sets will utilize the time tested radio frequency circuit with the regenerative feature added, and will be designed to be free from squeals. The outstanding feature of this set is the single dial control which in this case is said to be absolute and positive. The company has been re-organized on a large scale and will go into volume production. It will continue under the direction of Mr. Hendrickson, a well known pioneer in the industry.

The ELECTRO-AMPLIPHONE horn speaker
[September, 1922]

The old C-E plant as it appears today at 139 Main Street, Cambridge, Mass.

[Photo taken by Dave Crocker]
MODEL RHM (late 1923)

INTERIOR of TYPE A-4

The Type A4 was sold at United Cigar Stores under the name of UNICO between 1923 and 1925. In addition to C-E, the stores sold Pacent, Supertran, and other well known products.

Make this a Radio Christmas
Santa Claus Starts From Here!

STORES UNITED CIGAR STORES

RADIO DEPARTMENT

“Make this a Radio Christmas Santa Claus Starts From Here!”

“The Perpetual Present”
The UNICO REGENERATIVE
“Ultra Modern Radio”

COMPLETE $37.25
READY TO OPERATE NO EXTRAS
SPECIAL (Use New Year’s关门 price includes an Extra Set of Headphones)
CLAPP-EASTHAM MOD. ZRF (Jim and Felice Kreuzer collection)

MODEL C00 (1925)
Dave Brodie collection

Model C3 Radak APRIL, 1929

1 stage radio frequency.
2 stages audio frequency combined with regenerative detector tube.
Vernier tuning controls.
Single knob vernier rheostat.
No binding posts on front.
Heavy bus wiring.
Back connected.

Price $125.00

DEALERS! We offer a proposition that will interest YOU!
You need not experiment with untried Radio Products unless you want to!
CLAPP-EASTHAM has led in the radio field for seventeen years.

Radak Model C23 JULY, 1923

Models R73 and A23 Radak MARCH, 1923
CLAPP-EASTHAM COMPANY

The dates with the photographs are those from the catalog (or ad) of the publication. Further research could extend the date in either direction. Dates for the 1920 models are for the first advertisement, for the most part.

References:
1. 'A History of General Radio Co.' (pub. in 1965)
3. 'Man of High Fidelity' page 132
4. 'Electrical World': Dec. 22, 1906; Feb 2, 1907 and Feb. 15, 1908

Approximate date for equipment:
- Blitzen tuner: 1912 - 1915
- Type "D" receiver: 1913 - 1915
- Blitzen receiver: 1913 - 1915
- Type AF receiver: 1914
- Radion loose-coupler: 1914 - 1919
- Radion receiver: 1914 - 1916
- Type D tuner: 1914 - 1922
- Lodge receiver: 1915
- Cambridge long-wave: 1915 - 1919
- Type X loose-coupler: 1916 - 1921
- Type S receiver: 1916
- Type ASA receiver: 1916
- Radion loose-coupler: 1920 - 1922
- ZRF receiver: 1920 - 1921
- ZRFD: 1920-1921
- ZRFDA: 1920 - 1921 (Det. & 2 audio)
- ZR Double: 1920 - 1921
- HRF: 1921 - 1922
- HR: Dec. 1921
- HZ: Feb. 1922
- RZ: Apr. 1922
- Electro-Ampliphone speaker: Sept. 1922
- R23 and A23 units: Mar. 1923
- C3: April, 1923
- C23: July, 1923
- R43: Aug. 1923
- RHM receiver: late 1923
- R4 (one tube set): Nov. 1923
- Unico Special: 1923 - 1924
- C64 (5 tube receiver): Nov. 1923
- Model DD receiver: Mar. 1925
FROM HEADQUARTERS

Close-Up

ARCA MEET/MUCHOW

I've talked to several who attended the ARCA meet at Elgin this past June. A good time was had by all with the highlight being Ralph Muchow's radio museum. Ralph has the world's largest collection of old time radio receivers neatly displayed in a private building. How about a couple pixs of the Museum for a future OTB, Ralph? -- for those who didn't make it to Elgin.

BARGAINS AT MUSEUM STORE

Visiting the AWA Museum? Be sure to drop in at the Museum Store maintained by the local Historical Society. There are lots of good buys for the historian/collector: new and used books and catalogs at discount prices, Hammond's replacement AFTs for the Radiola/Crosley sets ($4.), xtal detectors, etc.

N.C./S.C. MEETS

The Lew Elias/Bob Lozier team seems to have worked out well from all reports filtering back from members who attended the Charlotte, N.C. Meeting. In fact, the meet was so successful that they have been asked to have the 1980 affair at the WCSC Broadcast Museum located in Charleston, South Carolina. Time: the weekend of April 18. The fellows will be working with Patsy Hicken, a member of the Museum Staff. I am told they have excellent air service in and out of Charleston...so start planning now.

F.C.C.

John Bruning (Cincinnati) sent me a copy of the F.C.C. Docket No. 21135 covering licensing structure for clubs, repeater and museum stations. If this reply to the amateur community is an indicator of what is to come out of Washington, we're in real trouble. I have never read such a high-handed, arrogant and capricious report. The FCC author took the attitude he was right on all scores and refused to consider recommendations from an outside source. I may be a bit negative about all this, but see what the present FCC hierarchy already has done: nothing about the CB chaos...and the newly issued station call letters (mass confusion -- W2's operating permanently in W6, crazy prefixes, etc....)

HAMFESTS

Our former President, George Batterson captured top honors at the Dayton-hamvention by being named "Amateur of the Year"...Congrats George. The local Rochester affair attracted around 6000 under adverse conditions. Lauren Peekhan, Dick Ransley, Ken Conrad and Chuck Breisford maintained the AWA booth which drew the usual large crowd. While wandering through the huge flea market, I ran into Jim and Felice Kruizer who had been there since early morning. It was worth it -- Jim proudly showed me a de Forest spherical audion (with one open filament) and a small stack of pre-WWI (yes, pre-WWI!) QSTs in excellent condition purchased for only $200. It pays to shop early at amateur flea markets. Jim was concerned about a slight dark cloud effect on the audion's inner glass surface. It appeared other-wise. Any suggestions?

STORING/FILING BACK ISSUES

15 years ago the AWA Board reviewed the OTB format -- size and contents. It was agreed to leave the publication at its present size since most members keep back issues and have set aside a special filing space. A change in size would necessitate two filing systems. An example of this was when QST and other amateur publications went to the current large format.

Several AWA members are also binding 8 to 12 issues of OTBs (and other collector publications) into book form with hard covers. They tell me, however, they are running into a problem.

[Continued on next page]
with some collector publications who
for some reason are using stiff (card-
board ?) covers on 30 page issues which
makes it difficult for the amateur book-
binder to piece together. Another criti-
cism I’ve heard is the super-size for-
mat...newspaper style. Publications
of this size are very difficult to bind in
book form or store for ready reference.
If not thrown away, they usually end up
in a folded pile in the basement or attic.
Yes, the OTB has its limitations too --
so start throwing darts!

INDIANA
The Indiana IHR5/AWA Meet was an-
other success with large attendance
from neighboring states. Steve Hofer
gave a well-document talk on tele-
vision pioneer Philo Farnsworth. There
appears to be increasing interest in
this field. I have been reading the ex-
cellent television series by Ken Mc
Intosh (Antique Radio Topics) and feel
that in time there will be a large group
of television collectors.

CALIFORNIA
I returned from the Foothill College
Meet well before the June OTB went to
press, but didn’t have time to write a
report. Gasoline problems plus a rainy
day (which dampened the large flea mar-
ket) didn’t prevent the CHRS group from
having another outstanding meet. The
school’s lecture room is an excellent
place to present historical talks and
film shows. On this occasion we had a
surprise speaker, and one of the best,
Bill Orr, W6SAI of Eimac. An out-
standing historian and prolific writer, the
speaker reviewed his current article on
Bill Halligan and the Hallicrafter Com-
pany. Another pleasant surprise came
when Joe Horyath was given the Herrald
Award for his historical work. Nice
going Joe!

Again I found myself admiring the fine
Foothill Electronic Museum with its
thousands of early radio artifacts only
to be told that California’s Proposition
13 had cut deeply into the Museum’s op-
erating budget. It was even rumored
there was a possibility the school may
have to close the museum. This con-
cerned me very much and on my return
I suggested to the AWA Board that we
document (photograph) all the artifacts
in the building. The Board has since

---NOTICE---
Net Changes Starting Time
Effective immediately... the Sunday
AWA SSB Net will change back to
the 12 NOON time slot. Also, due to
heavy QRM around 3900, the fre-
quency is also being changed to the
regular 3866 kHz channel.

Time: SUNDAY, 12 NOON
Frequency: 3866 kHz.

ALL other times and frequencies
will remain the same.

W2BGN/W2LV

AS WE SEE IT

GREAT SHIPS OF THE PAST
Are you interested in great ships
of the past such as the Titanic,
Lusitania and Britannia? If so,
you may be interested in joining
the Titanic Historical Society. The
organization published a fine
journal profusely illustrated with
pictures and sket-
ches. The most re-
cent issue feat-
ured the huge HMT
BRITANNIA which
was sunk off the
cost of Greece
during WWII. The
story of this ship was seen re-
cently on nationwide TV. Write to
Editor Ed Kamuda, Box 53, Indian
Orchard, Mass. 01151

Long story short, the Titanic Historical
Society has approved the cost of film, and Paul
Giganti, W6GIV, has consented to
take the pictures. We are indeed for-
tunate to have Paul do this since he
is a top photographer as well as a
knowledgeable historian. To complete
the project, Thorn Mayes volunteered
to help identify and record the pieces.
This promises to be another fine slide/ tape show.

On the subject of CHRS, I would like
to commend Allan Brynt for his work
on the CHRS Journal -- an excellent
publication. I particularly enjoyed a
recent article on horn speaker de-
velopment by Floyd Paul.

(Continued on page 23)
The first transmission of speech without wires should perhaps be credited to Alexander Graham Bell prior to his other developments and even before the important work of Hertz on electromagnetic waves (1885). Bell in 1880 had transmitted speech over a beam of light, and was granted a patent for the device, which he called the 'photophone'.

For many years public telephone development and operation was confined to land areas. Ocean distances, which for years had been spanned for telegraphic purposes by submarine cables, were insurmountable barriers when it came to be transmission of speech.

Just when 'wireless telephony' as such had its beginning may be debatable. Efforts to produce a system date back at least to the early 1880's when Dolbear, Professor of physics at Tufts College, carried out experiments with induction coils and grounded wires for which a patent was awarded. A number of systems were developed and tested during this era. In 1902 Pickard is said to have achieved 'some degree' of speech transmission using a diaphragm to mechanically vary the size of a spark gap. Dubilier and Collins both experimented with modulated sparks in 1912. In the same year McCarty and Elwell experimented with a spark gap so narrow it probably operated as a 'quasi-arc'. It was soon realized, however, that the basic requirement for satisfactory speech transmission was a source of 'continuous waves' at frequencies high enough to be effectively modulated by speech frequencies to produce acceptable audio quality. Tesla, Fessenden, and Alexander promoted the rotary 'alternator', and Poulsen advocated the electric arc he invented. Both could produce continuous radio waves of sufficient power quite suitable for telegraphy purposes, but the problems of modulating them efficiently for speech transmission precluded them from successful commercial operation for telephony.

The three-element vacuum tube invented by de Forest in 1907 was the beginning of the breakthrough for successful commercial wireless telephony, which incidentally developed into three main avenues: (1) 'broadcasting' of speech and music to the public; (2) voice communication with and between aircraft, vessels, and vehicles in motion - generally for the protection of life and property (fire, police, etc) and for the military; and (3) overseas public telephone service. This paper deals only with the latter.

The Bell Telephone System began experimenting in 1914 with one-way radio transmissions using frequencies in the 50 to 100 kHz range employing vacuum tubes, from Montauk, Long Island, to points 200 to 400 miles distant. Results were promising enough to encourage a radio-telephone test across the Atlantic Ocean. In 1915 the U. S. Navy cooperated with the Bell System in the use of a large antenna at its Arlington, Virginia, station for tests utilizing a 3 kw multiple tube transmitter built by Bell operating on a frequency around 50 kHz. Successful reception of the Arlington speech transmissions was carried out in Paris, Panama, and Hawaii. Shortly thereafter war developments resulted in postponement of further tests.

The first use of radiotelephony for commercial public telephone service appears to have been in 1920 between Catalina Island, 30 miles off the California coast, and the mainland, by the Bell System. (A submarine cable would have been the natural choice for this service but conditions growing out of the war were such
that cable was not available at the time). Double sideband radiotelephone transmitters and receivers were set up on Catalina and at Long Beach on the mainland using two frequencies, 638 and 750 kHz. A hybrid balance was used at the junction with the two-wire landline network, and a telegraph channel was multiplexed with the telephone channel and was used independently for telegraph service with the Island.

The system provided good service, but the radio frequencies employed were in the middle of the broadcast band. Anyone in possession of a broadcast receiver could listen to the conversations - and nearly everyone did - including the writer. A "speech inversion" privacy system was eventually installed to foil the eavesdroppers, which it did very effectively. But by late 1923 two submarine cables were installed from Long Island to Point, Long Island. This was the alternator station of RCA, and Bell rented one of the large antennas and building space for its transmitter. A receiving station was established by Bell at Houlton, Maine. The British terminal was operated by the General Post Office with a transmitter at Rugby, and a receiver at Cupar, Scotland.

The longwave New York/London circuit employed single sideband type of emission but utilized only one of the sidebands, enabling a more effective signal to be transmitted than would be possible with the use of double sideband. The circuit operated in both directions on 60 kHz (5,000 meters). The transmitters utilized final amplifiers with thirty 10 kW vacuum tubes operating in parallel. These fed a multiple tuned type of antenna. The longwave rec-

Portion of A.T.&T. equipment at Houlton, Maine, March 1928. Left to right: Day 1: 26 9: receivers, Day 4: Battery dist., Day 5, 6, 7: Telephone system

and the radio facilities were shut down, much to the satisfaction of broadcasters who wanted the frequencies for their use.

Transcontinental telephony in the U.S. became a reality in 1915, but at the same time "wireless" transmission of speech across the oceans had been demonstrated. The next goal was to expand service to overseas points, despite the unknown matter of economics, and more tests continued. It was not, however, until January 7, 1929, before such service became a reality when overseas public telephone operation was opened between New York and London. The U.S. terminal was operated by the Bell System (AT&T) using a vacuum tube transmitter of its own design located at Rocky

ceivers at Houlton and Cupar were of the double-modulation type, now known as super-heterodyne, utilizing Beverage "wave" type antennas. These were in effect a series of parallel open-wire telephone lines several miles in length, so oriented to enjoy maximum signal strength from the distant transmitting station.

Additional longwave facilities were planned for 1929 but the results of the stock market crash of that year raised serious questions as to the future of transatlantic telephony. "Long-wave" operations, although quite reliable, suffered two limitations--the annoying interference from atmospheric static, and the fact that spectrum space was quite limited because of
extensive use by telegraphic stations already established.

These limitations accelerated efforts to find alternative systems. The answer lay in the "shortwave" or high-frequency part of the spectrum. Testing of such facilities by the Bell

System began shortly after the opening of the longwave New York/London circuit, between stations in New Jersey and England. New problems in applying the new medium to public telephony were soon recognized. Two of them were signal "fading" and the need for flexible facilities capable of changing frequencies to meet the variable conditions of propagation. The latter was easy to deal with through the availability of multiple facilities employing an assortment of frequencies. Efforts to overcome the former resulted in the development of a number of automatic gain control devices and noise reduction systems. The company apparently elected to devote little or no effort to the possible development of space-diversity reception techniques which so dramatically improved the radio-telegraph and overseas shortwave broadcasting quality in the middle 1930's. Instead it developed the elaborate MUSA (multiple-unit-steerable-antenna) and the LINCOMPEX (linked-compressor-expander) systems. While each provided important improvement, the effect of fading - especially "selective" fading - still adversely affected the speech quality of circuits and was probably an important deterrent to the rapid rise in use of overseas service by the public.

Beverage antenna (right) at Houlton.

View of one section of the thirty water-cooled 10 Kw. tubes in final amplifier at the Rocky Point Transmitter. Note tube connections.
The improvements mentioned were suddenly almost completely overshadowed by the huge success of the first submarine coaxial cables laid in 1966 between New York and London, and in 1957 between San Francisco and Honolulu. Each of these provided 128 voice-frequency channels for public telephone service of normal landline system quality. Shortly after this the new breakthrough of geo-stationary satellites in space made hundreds of additional overseas high quality channels available for overseas telephone service. With the vastly improved quality, the demand of the public for more channels to reduce "waiting time" on calls created a skyrocketing growth of both new coaxial submarine cables and satellites. Following closely, direct dialing facilities between a number of countries and the U.S. became available as quickly as the differences in dialing techniques and operation could be solved.

Incidentally, it is interesting to note that in 1962 the Bell System, prior to the formation of
COMSAT, launched its own satellite TELSTAR and introduced the first transatlantic wideband television facilities. At the time Bell was inclined to advocate "low altitude" satellites, only a few thousand miles above the earth. These were "non-synchronous" with the earth's rotation and required them to be "tracked". The geo-stationary type of satellite, some 22,000 miles above the earth remains revolving at the same speed as the earth. Bell's concern was that the high-altitude satellite system would introduce a time "round-trip" delay of .6 seconds between terminals. It felt that this might be a severe obstacle to public acceptance of the service. Oversimplified, a time interval of .6 seconds would be encountered by a speaker asking a question before he could receive a reply. However, exhaustive tests showed this time delay acceptable to the majority of telephone users. Today there are several thousand international public telephone circuits operating through satellites and through new high capacity coaxial submarine cables around the world.

In 1927, when the first longwave overseas telephone circuit was opened between New York and London, the rate was $75 for a three minute conversation. Today the rate is less than a tenth of the original charge.

The writer wishes to thank James E. Dingman, George Schindler, and Dana Elsee of the Bell System for their cooperation and assistance.

Because of its low radiation and loss resistance, it had a bandwidth of only 1150 Hz at the kHz center frequency."

(Photos through the courtesy of Bell Labs).

Further reference:
About the author, Don de Neuf- See December 1978 OTB, page 3.
The closing of Rocky Point installation- same issue on page 22.
As a dog, not much; but as a symbol: immortal!

But that's the way it is in the fickle world of showbusiness. Some still say that, as a performer, Nipper was . . . well, to put it bluntly, strictly a dog. But he looked good, even if his act lacked style.

Nipper's story goes back almost a hundred years. He was born in or near Bristol, England in 1884. He made his first public appearance on the stage of the Princess Theatre in Bristol at a tender age. His master, a scenic artist by the name of Barraud, used to take curtain calls, and Nipper trundled along at his heels, to the delight of the audience.

When artist Barraud died, Nipper was adopted by photographer Francis Barraud, a brother. In the early 1890's Francis gave up photography and moved to London to pursue painting. One day he noticed Nipper apparently entranced by a recording on an Edison cylinder phonograph, possibly mistaking the recorded voice for that of his dead master.

Grabbing pencil and paper, the artist did a quick sketch of Nipper with his head in the horn; later he did an oil painting which he named "His Master's Voice". The painting didn't sell.

Then in September 1899, as he was passing the Gramophone & Typewriter Company, Barraud noticed a phonograph in the window with a shiny brass horn. Suddenly he realized that the trouble with his old "Master's Voice" painting may have been the dull black horn of the Edison phonograph. Barraud walked in and found the company's general manager, William Owen. He explained to Owen his problem and asked to borrow the shiny new horn for a while. Nipper had died four years earlier, so Barraud merely painted the new horn over the Edison.

Then Owen, who thought the painting had merit, bought it and hung it on his office wall. Next year, Emile Berliner, and American who had patented the flat type of phonograph record, was on a visit to London, saw the painting of Nipper and asked Owen for the North American rights. In July 1900 he received the U.S. copyright.

During the first half of this century there was a close working relationship between the British-owned Gramophone Company and Johnson's firm which became the Victor Talking Machine Company.

WITH THE COLLECTORS

DIALS, AK FRONTS, ETC.

While checking through the file I found some samples from Keith Parry: all kinds of odd-dials, plates, etc. (both plastic and metal) that he makes as a hobby. The workmanship is excellent and the prices appeared reasonable.

A followup letter indicated he plans to retire in the near future and have more time making hard-to-find reproductions for the collector restoring early receivers.

His latest is the hard to replace Zenith pointer used on the 1R, 3R and 4R receivers. I will list all available items in the December OTB, but in the meantime, send him a SASE if you're looking for a hard-to-find knob. He may have it!

Keith Parry
17557 Horrace St.
Granada Hills, Calif. 91344

WLW in Cincinnati's
Sale Price: $17 Million

CINCINNATI—WLW Radio will be sold for $17 million, according to the station's current owner, Queen City Communication. The price includes the company's FM outlet, WLWS in Hamilton. The buyer is Cincinnati-based Mariner Communications. Completion of sale subject to FCC approval. No mention was made of the SW station.

WHD
(Again!)

The New York Times radio telegraph station WHD (and 2UO) is described in "CQ" magazine in an article by Bob Cobaugh, W2AY. Good reading. (Note: Rex Matlack, W3CFC plans a illustrated talk on the station.)

AWA Net change:
The SSB net has new time and frequency:
12 NOON
3866 kHz.
every SUNDAY
Building an Old Time Receiver
DOUGHNUT FIVE

Rear view of the Doughnut "S". Other than for the toroid rf coils at right, all components are relatively easy to find.

Comments on building a
DOUGHNUT FIVE
TRF receiver
by Floyd Lyons

Toroidal coils were chosen for reduced interstage coupling and less tendency toward regeneration as well as for appearance. Much experimental work was carried out; many try-out modifications were made, some discarded, others retained. It is hoped that we have incorporated good engineering practices and have a fairly good representation of the "State of the Art" if the mid-1920s.

Tubes: 01As were used throughout at first. Then we switched to a 200-A in the detector stage. Besides using

(Cont. next page)
the 01-A in the output stage, 112-A and W.E. 101F were tried. The W.E. 101F proved to be the best of the three -- it gave a 'cleaner' output. (A word of caution here: the 101F has a filament voltage rating of 4 - 4.15 volts).

On the first trial twenty stations were logged without any difficulty. It might be in order to point out that I am still using a 22 foot piece of wire hanging out the 11th floor window.

My thanks to Maurice Stahl and Bill Condon for their advice and contributions to this project.

PARTS LIST

(1) Toroidal ant. coupler coil
(2) Toroidal inter-stage coupling coils
   (Same as on Magnavox TRF-50)
(3) General Radio V/C #247 .00044 mfd.
(4) Kurz-Kasch vernier dials
(5) 01-A sockets
(2) G. R. Aft’s No. 285-D (2.7;1, 1st stage)
   No. 285 (6;1, 2nd stage)
(1) Grid-leak (3 to 5 meg.) and mtg.
(1) Grid condenser - .00025 mfd.
(2) By-pass cond. - .0001 and .002 mfd.
(3) Rheostats (2 @ 6 ohm) (1 @ 4 ohms)
(3) Pointer knobs
(1) Fixed resistor - 4 ohms
(1) Filament switch
(12) Binding posts

Close-Up

ALEXANDER POPOV

While attending a recent IEEE Meeting, I ran into Jacob Schanker (W2STM) who showed me six color slides he had taken on a recent engineering trip to Moscow. He and other members of the delegation had visited the Popov Society Museum where they were warmly welcomed. The pictures showed original wireless instruments on display which had been used by the Russian pioneer in the 1890's. I hope to have more information about this unusual radio museum in a future Bulletin.

RADIONOMOBILE

Was just reading Tudor Rees "Antique Wireless Newsheet" (Bristol, England) and note that our enterprising friend had just acquired a large supply of British car radio supplies from a dealer in Eastern U.S.A. ! The inventory includes several huge packing cases of rare and useful parts for "Radiomobile" car radios (1946-60) plus hard to find Marconi valves. Apparently the American dealer was stuck with British components -- until Tudor came along.

GENERAL AUCTIONS

I read with interest (HVR News) of auction activities in the Houston, Texas area. Frank Cooper has published a list of six local auction houses, their location, telephone number and hours. The fellows call the auction house and determine if there are any old radios to be sold. Apparently it pays off since several members have acquired a few sets as a result. Good idea....

NEW ZEALAND

Linc gave me an interesting letter from George Askey, ZL3WN (Christ Church, New Zealand) who tells of his latest "finds": a rare Loewe receiver, Philips eliminator, BTH horn speaker and a huge Scott 1937 Scott Philharmonic receiver...how in the world did this set find its way to N. Z.?

SCHENECTADY

Jack Nelson (W2FW) reports the Albany and Schenectady group is meeting regularly with average attendance near 40. Several members went over to the Dalton, Mass. flea market/auction and picked up a few old sets including several AKs for only $1 and $3 due to mice nests inside. If you are storing old battery sets in a barn -- be sure to plug all the small holes (usually battery cable openings) in the rear of the cabinets... mice love to crawl in and make the cabinet their home...

AUSTRALIA - ENGLAND

Fin Stewart writes that he now has 1200 different types of vacuum tubes and his electric bulb collection has grown to 3500 different lamps! He has been working for sometime on the history of the Philips Company. The book, when published, will be a must for the radio historian and collector. More later.

I also received a letter from Tony Constable (British Vintage Wireless) saying he wasn’t planning to visit the States this year. Too bad. I was hoping he could attend one of the several AWA meets...
QUE: As the author, what prompted you to write the book "SAGA OF THE VACUUM TUBE"?

ANS: In 1942, Oliver Read (then Editor of Radio News magazine) and I worked up a friendship because of our mutual interest in collecting tubes. I invited Ollie to dinner (Nov. 18, 1942) to talk about our hobby.

When he saw what I had in the way of tubes, identification, records, etc., he suggested I write a series of articles on the history and development of the vacuum tube.

I said, "Not until the war is over, I did not have the time." This was about 8 P.M.

A friendly discussion followed for the next several hours with Ollie occasionally mentioning the need to have written material on the subject. He was very persuasive. I remember the occasion well. At 12:50 I succumbed. At 1 A.M., we shook hands and agreed on the terms one of which I was to have clearance from Bell Labs. Thus was born a lengthy series of articles in RN which ultimately was up-dated and placed in book form.

QUE: Is Oliver Read still collecting vacuum tubes?

ANS: Not to my knowledge. His interest changed to collecting phonographs. He and Walter Welch published the well known book titled "FROM TIN-FOIL TO STE REO".

QUE: What happened to his tube collection?

ANS: I have no idea.

QUE: I notice that McMurdo Silver wrote an article for the Radio News "Tube Collection" column (July, 1943). Was he a regular contributor?

ANS: No. The Editor was trying to arouse interest in tube collecting and would have well-known people in the radio field write an occasional article to stimulate interest.

McMurdo's article in RN. His tube collection is now on display in the Ford Museum, Dearborn, Michigan.

RADIO NEWS July, 1943

"These thoughts are based upon the experience gained in many years spent in antique collecting in two (2) different fields, in both of which have arisen the questions which your correspondent propounds.

"The first field was the collection of Colt revolvers which so closely parallels the field of collecting old vacuum tubes and radio equipment that a few words seem appropriate. In the period from 1836 to 1870, it is doubtful if Sam Colt produced over twelve or thirteen (12 or 13) different basic types of revolvers. Nevertheless, for any single model or type, it is possible to find anywhere up to twenty or more different variations thereof due to the fact that minor improvements or changes seem to have been incorporated by Colt in almost every new run of arms of the same model put into production in the Colt plant. Thus the Colt collector can be content with a small number of arms, which will be representative of every basic type produced, or he can go "whole hog" and go in for the decorated and engraved variations of the basic types. If he chooses to be academic, he can expand the possible field..."
of his collecting tremendously by seek-
ing out for and including in his collec-
tion every possible mechanical varia-
tion upon the basic type.

"For example, the first Colt military
revolver was actually made in the
plant of Eli Whitney in Whitneyville, Conn., under contract for Colt. It is
today variously known as the Model
1847 Army revolver, the Walker Colt,
The Whitneyville Colt, or the First
Model Dragoon. It is of an outstand-
ing or distinctive type paralleled by no
earlier or later Colt production. Only
one thousand (1,000) of these arms
were made for the U. S. Army during
the Mexican War and the collector who
today possesses one is the envy of his
fellows. Yet the writer, being of an
academic turning of mind, had been
able in his own collection to acquire
four (4) examples of this arm, each
different in significant but minor de-
tails of manufacture. He is familiar
with a fifth and sixth variation where-
in apparently left over parts from the
original run were used up in combina-
tion with parts of a later model with
the result today that they represent
extraordinarily rare 'bastard' pieces.

"Turning to the field of vacuum
tubes, the basic types UX-199, UV-200,
and UV-201-A, were made by a mul-
tiplicity of manufacturers. The less-
ambitious tube collector might there-
fore satisfy himself in a basic simple
collection with but one 201-A type, for
example. The more ambitious collec-
tor might add a few of the variations
upon this type in terms of the essen-
tially equivalent tubes produced by
RCA and Cunningham. The still more
ambitious collector might seek as
many possible variations of the same
basic type such as were produced by a
multiplicity of different manufac-
turers.

"This latter collector could go on al-
most indefinitely, for it is believed that
there is today no clean-cut record of
the number of manufacturers produc-
ting tubes of the basic 201-A type. Only
the other day, the writer came across,
to him, an utterly new and unknown
201-A.

"This almost infinite variety of sin-
gle types of vacuum tubes is one of the
attractive aspects of vacuum tube col-
collecting to the serious collector. He
may go on indefinitely without the fear
of losing interest probable in other
fields of collecting, since there is al-
most the certainty that no matter how
far he may progress, there will still be
types of vacuum tubes which he may
look forward to obtaining in order to
render his collection more complete.

"To answer the question 'What Do
you Call a Type?' seems simple. A
tube type is exactly that—a round
Audion is one type; a round Ultra-
Audion (double grid, double plate) is
another type; deForest 50 watt Oscil-
lion is still another. Carrying this
thought on to simpler types, it would
seem safe to say that any vacuum tube
carrying a commercial number is a
type. Developing the thought further,
there will be upon certain types, such
as cited 201-A, a multiplicity of vari-
ations. Thus 201-A, as produced by dif-
ferent manufacturers, are still 201-A's
—one basic type, the different tubes
produced under this same type number
by the different manufacturers repre-
senting variations.

"It is believed that the thoughts ex-
pressed above indicate that the tube
collector may most easily think of
vacuum tubes, in terms of basic types
as one group, and variations upon
these types as another. If he confines
his collection to basic types, he will
still have a very sizable task in get-
ting one example of every known vac-
uum tube together. If he expands his
thinking to the point of seeking vari-
a tions upon the basic types, he will find
that his field of collecting has ex-
panded simply tremendously. Rather
than making his task more difficult,
this very expansion makes it more in-
teresting—particularly so as the col-
clector can frequently solace himself by
picking up economically a variation
upon some less rare commercial type,
while he is still hopefully seeking an
example of the basic type such as a
round Audion, a Fleming Valve, an
Oscillion, an early deForest Singer
Transmitting Tube.

"Lest the 'Tube Collector' feel that
the writer is too presumptuous in ad-
vancing the above thoughts, it is re-
spectfully stated that his collecting
experience goes back over a period of
some thirty years.

Cordially yours,

McMurdo Silver,
OLD TYME HAM ADS

WANTED

Western Electric 830 microphone, known as "Eighthall." James Steele, 176 East 80th St. (#22B), New York, N.Y. 10021
---complete "Deluxe Inter-Mix record changer" for Puleco 41-616. It has light-beam pickup arm, roller for remote control operation. Base for floor mod. Rola cono spkr. Bob Goodman, 7423 Ponce Ave., Canoga Park, Calif. 91304
---any info or set, Ware Radio Corp. (Shomor-Workrite) AD2-DA2-LT. Also have U21325 ex. cond to sell/trade. Russ Webster, 6520 Minnetonka Blvd., St. Louis Park, Minn. 55426
---Ariola 895 Amp, Radiola III Amplifier. Reduced and Gresley 50. Have sets to trade, sell a list of your wants or asking price. David Shanker, 115 Baldwin St., Bloomfield, N.J. 07003
---working grandfather clock, such as Puleco, G.E., Majestic, etc. Will swap early radios or purchase outright. W.H. Scott, 811 Tally Ave., Dallas, Texas 75243
---Tuske Hotel 228 Superdyne. Will buy outright or will make a trade. Harry Carver 205 Mission Ridge Rd., Roseville, Georgia 30271
---Narrowband Contest. Pre wanted for restoration. Have for sale or trade a Fred-Eisenman 323-6 with tubes, in excellent cond. WATXX, 6621 Duffield, Dallas, Texas 75243
---I.C. A. Conqueror all wave receiver. It came in kit form and has a plug-in control panel. Can or trade. L.P. Rayner, 5512 N. 71st Place, Scottsdale, Arizona 85253
---Ultradyne mod. L-2 superhet construction details. Xerox OK or I'll Xerox & return promptly. Also need junk Clarion horn spkr. R.E. Lovitz, 318 E Houston St., Monroe, N.C. 28110
---any info such as tube type, battery voltages, model, etc. for an old Pilot 4-tube battery radio. Ken Forsyth, P.O. Box 75, White- suh, Sask., Canada S0A4N0
---chassis for Kennedy XV & Federal 81 any condition. Also bell & gongeck for Magnavox R2 spkr. Craig Husebce, 2706 Nelson Rd., Marshalltown, Iowa 50159
---antenna coil shield box located at left side of dial for 23 tube Scott. Or will buy/trade for junker complete. Also need spkr & power supply for AM/FM Phantom Deluxe. Will be at Canandaigua, Don Johnston, R.1, Box 21B-A, Windfall, Ind. 46076
---adapters for Radiola W11 to OIA. Also schem. for freed Eisineman 8E-5. John Wimsick, RF1 Box 379, Greenwich, New York 12834
---hand keys and keys, old or unusual as vertical bug Boston type on marble base, sidetrip, or any McBryor or foreign types. Carl Elkins, 1414 17th Ave. Westwood St. Nashville, Tenn. 37206
---FOA customer Instruction books or sales literature for cv. mod. TF-3, TKB-3, TKR-9, TF-51, 52, 61715, 61078, C-170-3. Carleton Server, 256 West 8th St., New York, N.Y. 10024
---tuning knob and posts for Gresley 51, Nature Master base and driver, RADAM xfer, AR 84 grill,11, Magnavox R3 horn, AK 58, Merrill W. Bancroft, 169 So. Rov Rd., Townsend, Mass. 01469
---Crosley collector needs Model VI, VIII, X, XII, XV, Caro. Senior, crystal rcr, detector unit, qf amp, audio amp & other early Crosley stones. Larry Babcock, 8095 Centre Ln., E. Amherst, N.Y. 14015 Phone (716) 741-3062
---S-3 tube neuotodyne type 6 (for sentimental reasons- Dad's first set). G.P. Farr- rison, 3321 Airline St., Charlotte, N.C. 28205
---unit for black and white spkr. Senior model. Gordon Eklund, 6516 Gunpowder Lane, Prospect, Kentucky 40059

OLD TYME HAM ADS

WANTED

---Radio Broadcast, RadioNews, Popular Radio, etc. magazines circa 1920-1920. Single copies or collections. Lists to: John Sheridan, Plag/8 Orange Grove, Balaiaca, Melbourne, Australia 3180
---three main plates for Radiola 20. Also info on Kodel P-21 camera and Pries Straight 8. Russell James, 3 Radana St., Oak Park, Victoria 3046 Australia
---Fieron items, #2, 3, 4 ground clamps, #22 aerial connector, #34 outlet, #16 window lead-in strip, #20 arrestor, #28 socket aerial. Paragon DA-2. Carl Weidah, 302 Belvidere, Washington, N.J. 07862
---any Philco early AC sets, also small AC cathedrals & early brass blade table fans. Richard Cine, 3959 W. 21st St., Sunrise, Fla. 33322
CROSLEY TRI DYN

The Crosley engineers felt they had a "winner" with this 3-tube set since it had three features: stage of RF, regeneration and reflex anode tuning.

Collectors think so too since it is in the same category as the "Pup". Hard to find.

FOR SALE and/or TRADE

--sell Radio Pilot, Jr. 4-tube TRF DF set, RE-68, others. SASE for list please. Albert Pratt, WAUDEE, 114 Laketown, Milwaukee, Wisc. 53217

--sell 20's parts: dials, knobs, yar. & fixed cond., knobs, etc., Brach fixed xtal (3/8x2" cart.),fone jax & plug(Weatston, Carter, BMS), jax sws., dpl. tap sws., trimm cond., 6Q car mks. R. Green, 115 Olga Dr., Burlington, Ontario, Canada L7E 1L7

--shelf 1500 new & used tubes 1920s thru 1950s for $400 or swap for old receivers, Free:pix tubes for old 12" round to 21" tubes. Pickup at 9530 Oslo Ave., San Ramon, Calif. 94583

--sell swap: Crosley Tridyn w/tubes (works), Crosley Super Tri-dyn Reg. w/tubes (works), both good conds. Sell/swap for RCA gear, thermos, WD/12, etc., Brian Harrison, 9227 Suybury, Charlotte, N.C. 28205 (Tel 704-556-0410)

--large collection, 20's to 40's, receivers & ham gear, old components & modern integrated ckt parts. Send your interest & SASE for list. Henry Wemple, 5766 Norton Road, Vernon Center, N.Y. 14307

--novelty AK Meares window display screen (Spanish Galleon), 3 sections 20"x3 ft wide, a beauty for $250. 1914 Army Sig. set/mike, buzzer, phone & key (leather case) w/16R manual $100. UPS extra. Ray Harland, 2022 Mary Lane, Escopetoe, Calif. 92025

FOR SALE and/or TRADE

--trade mint PFX w/cock. Want ham xmtt from the 30's. Will consider other trades. Joel Levine, 622 Rohn, 1122 N. 22nd St., Brooklyn, N.Y. 11229

--sell/trade 8 Eiders 69-16, 66 ea. plus shipping. Trade new 204A's for UV-195's. Send SASE for list of old meters, tubes & bcontr. Send small art pen, route Randall, 290 No. 5th, Fonca, Okla. 74601

--hundreds of tubes, 1940's to present. 50$ ea. SASE for list. Also Freshman Polydane Mod. 3 not working $25. Westinghouse RABA, poor cond., heat offer, B. Earle, 1316-38th St., Sioux City, la 51104

--sell deForest tubular abdson w/one good (1A), Hallicrafter, WW2 Mod. HT-18 CW/AM phone 50 wts. Make offers. W3AV, 4065 Evans St., Philadelphia, Penna. 19115

--G.R. test equipment 1920 vintage, mint condition: capacitor analyzer bridge, AC wave meter, M. Gasser, K26H, 50 Colgate Dr., Plainville, N.Y. 1083

--sell swap Radiola III & IIIA, Crosley SI tube, Crosley 5-38, Halil, S-38 & SX25 Super Defiant, Howard 537, etc., plus a few dups. SASE for 300 radio items. Chet Senk, W7VR, 104 Main Street, Dalton, Mass. 02228

--sell 2 Skyfiret Defiants plus Rider manuals #1 thru 12 & #1 thru 14. Excellent. Joe Szabat, W3LI, 228 Pumier, Oil City, Penna. 19301 (Tel 814-646-6351)

--radio parts and literature for sale or trade. Send large SASE for list 79-1 David McKenzies, 170 West 53rd St., Baliseh, Fla. 33012


--early TV collection including: scanning disc, 1939 Heissner, 1939 GE plus others. Will sell as a collection only, buyer picks up. SASE for list and details. F. Krante, 100 Osage Ave., Somersdale, N.J. 08083


--LOV LOSS, five tube TRF w/valve cabinet, $15. Crossley Tri-dyn 383, nice cond., $45. Pana, neutrodyne, gd parts & nice cab., $75. Code practice set w/1 tape for $50. All sets lose tubes, shipping extra. Joe Horvath, 522 Third St., San Rafael, Ca. 94901


--reproduction of high quality reproductions of early 30's Philco radios. $5.50 for a set of 6. Send an original button so it may match the length. T. Kramer, 2427 Durand #4, Berkeley, Calif. 94704

--trade AK 2-stage amp unit, want AK det, one stage amp unit. Want: Leitz Navy C-10 any cond., Fed. Tel & Tel literature, Fed. 55, 56 & Jr. amp., empty cabinet 6 1/4 to 7 1/8", Dick Schamburk, 150 Crescent Ave., Biaudio, N.Y. 18214

--send SASE for list of items. Radio items to be mailed early November. Want radio items made in Cleveland, Ohio. Gary Schneider, 9848 Commonwealth Blvd., Parma Hts., Ohio 44130
I saw the above cartoon sometime ago but neglected to save it. Later it was reprinted in the Spark Gap Times. Just before this issue of the OTB went to press R. Allen sent this copy to me. A quick letter to Miss Mary Kelly of King Features, New York City, gave AWA a copyright release to reprint (July 3, 1979). (B.K.)

ADVANCE CONFERENCE INFORMATION

Advance registration indicates the '79 Conference may be the largest yet exceeding the 600 of last year. The Auction will again be one of the highlights. AK breadboards, rare Crosley and others are scheduled for the auction block... and word is there will be De Forest Audions and other "goodies" at the tube event. Every effort will be made to make this a smooth operation. As noted on the program, auction participants will have reserve seats in front of the room ($2 charge which will be refunded on sales purchase).

Making It Perfectly Clear

AWA Headquarters still receives requests for membership lists. As stated before, such a listing is not available due to lack of voluntary manpower and high cost plus many members do not wish to have their name and address made public. On this subject, if you wish to confirm an AWA membership when buying/selling an item, send SASE to Treasurer for confirmation. A recent request revealed two names NOT AWA members. One keeps changing his name and location (Forest Hills and Rego Park, N.Y.)—but always the same Zip code of: 11374.

29
CAPACITOR CHECKER AND RE-FORMER

By Henry Davis, 1209 N. Market St., Dayton, Tenn. 37331

Collectors are advised to check electrolytic condensers in old AC sets before use. In addition, new capacitors that have been on the shelf for several years tend to deteriorate. This device will allow one to check a condenser and then apply a low voltage through a series resistance to re-form the capacitor.

With the high cost of components, not to mention their unavailability in small towns, a device which can save or restore old filter capacitors will be very useful in restoring old receivers of the 30's and later.

The instrument shown in Fig. 1 was initially built to "re-form" old electrolytics and has been used to restore various types including an old wet electrolytic of the late 20's that had not gone dry.

The device has also demonstrated its usefulness in checking old meters to determine if their face calibration is true and whether external series or shunt resistors are required. Hundreds of old diodes have been checked to determine if they are good, their polarity, and, in the case of zeners, their limiting voltage.

In the case of fixed capacitors (old) ohmmeter checks have little relation to their actual condition. A fixed condenser showing any detectable leakage, at or near its rated voltage, should not be used unless checked at its rated voltage or at voltage to be used.

CONSTRUCTION

The circuit used is shown in Fig. 2 and may be modified to suit available parts. I used a 300 volt transformer since most of the capacitors I use are in this range or less. There was some question as to the effect of full rectifier output directly across potentiometer R-2. So far, this has not been a problem. The capacitor terminals should be well insulated if a wooden fiber panel is used. In my case the binding post holes were saturated with melted paraffin.

Fig. 1 Front view

Resistor R-1 is not required but was used to reduce brightness of the pilot light and increase bulb life. R-4 should be 1000 ohms of the highest accuracy. The accuracy of this resistor and the VTVM used with it determines the accuracy of the measurements made.

The value chosen was to provide an indication of one volt per milliampere. Higher values could be used if more precision is required.

APPLICATION --

Capacitor Re-forming: The capacitor should be connected with the voltage
control R-2 set to minimum and the current limiter R-3 to maximum limiting.

Set SW-1 to position #2 and note leakage as the voltage is increased. Watching the current leakage and keeping it within 10 ma., increase the voltage to the capacitor voltage rating.

As the leakage current drops, the limiting can be reduced. If the leakage is low but appears not to reduce with time, increase the voltage above rating if necessary to produce several ma. leakage - the leakage current may again begin reducing.

Continue the procedure until the current at rated voltage cannot be measured on the VTVM. When operating above rated voltage, watch that sudden breakdowns do not occur with a sudden increase in leakage. This will usually not occur at currents of 2 ma. or less.

Low "re-forming" current is not recommended unless continuous monitoring is maintained. At currents above 5 ma. and possibly lower, plateaus will be found where forming process stops - apparently due to internal heating. It may resume again after a cooling off period. This does not occur at low currents.

In the case of capacitors too dry to respond, they will reach a leakage initially that does not reduce, or perhaps show an initial infinite resistance but no capacitance. This condition is detected by the push-button extending through the top of the cabinet.

With the switch in position #3 to observe the voltage across the capacitor, push the button for reading. Note: A good capacitor of several microfarads will show a very slow drop in voltage due to the internal leakage in the VTVM. A dry capacitor will show an immediate voltage drop to zero.

In the case of capacitors too dry to respond to "re-forming", a shot of water injected with a hypodermic needle through the end seal may permit re-forming if allowed to sit for a day or two. Not all capacitors respond to this treatment however. After re-forming, the hole may be plugged with a high temperature wax.

I hope the above procedure will help you restore (salvage) your old filter condensers. Warning: do not check an old capacitor by shorting to see how hot the SPARK is! Such a procedure may burn out the internal connecting tabs or cause breakdown between the plates not correctable by "re-forming".

OTHER USES

By connecting across the capacitor binding posts, one may check meter calibration, diodes, leakage between windings in transformers, etc. I have found it a handy device to have around.

![Diagram of Capacitor Checker & Re-former](image)


**Fig. 2** CAPACITOR CHECKER & RE-FORMER
On Review

BROADCAST ENGINEERING
Magazine
20th Anniversary Issue
MAY, 1979

This is a publication which I seldom see. In fact, I wouldn't have read their Anniversary Issue if Bill Orr hadn't sent me his copy. It is worth commenting on -- for it is full of original material for the historian. Articles which I particularly liked were: '20 Years With The FCC', 'NAB Story', 'Communication Satellites', 'Video Recording Progress', Magnetic Tape Development' plus several interesting chronological charts. Good copy.

THE STORY OF PYE WIRELESS
by G. Bussey

This is a brief history of a pioneer English radio manufacturing company. It is well illustrated and should be of value to the radio historian -- particularly one interested in British equipment. It is free. Send request to:

Pye Limited
Public Relations Department
137, Ditton Walk
Cambridge,
ENGLAND

THE W7GAQ KEY COLLECTION
May, 1979 "73" magazine

This unusual 250-odd collection of radio and landline keys has been mentioned before, but little reference was given to pictures and key information. Members can now read about John's collection in "73" magazine...one of the finest in the country. W7GAQ's Qth is Phoenix, Ariz.

the world in my ears

Is the amazing story of a blind radio listener who has become a world authority in his hobby which eventually became a full-time occupation while representing six largest shortwave stations in the world. It covers 45 years of DX listening -- 2300 medium wave and 4500 shortwave stations logged. The author has written for several publications and has been technical representative for BBC, CBC and VOA. A top-grade book with over 100 photographs. Fascinating. Special price to USA members: $13.95 Write to:

Arthur Cushing, 212 Earn Street
Enwood, Invercargill, New Zealand

Back before the war there used to be a potent signal on the 75 meter AM band from Clearfield, Pa. The man behind the mike was Otto Epper, a genial cuss if there ever was one -- and a master cartoonist. Otto drew numerous sketches depicting the trials and tribulations of the radio ham -- and it wasn't uncommon to get in the mail a beautiful hand-drawn qsl verifying a qso. Otto became a Silent Key many years ago, but his cartoons still grace many a shack.

--C. Z.

HOW IT FEELS TO BE A HAM.... BY W8EA

Oh, my gosh -- there goes that man who spoils everything on our radio each night.

Hey-co, call-in a general co-co, co.

How great it must be to be like him.

They ought to put a stop to his sQUARKIN at night anyway.

Did this ever happen to you?
NEW MEMBERS

Listed below are new members who are (or were) associated with electronic communication:

DICK HOLBERT, WA2OXJ, Engineer-In-Charge, F.C.C.
CLARENCE GOVE, W1AMT, Sonar design engineering
WALTER BICKMEYER, K4NL, ex-2NB
A. H. Grebe, RCA, Apollo Lunar prog.
DONALD MEAD, K4DF, Western Elec.
GUS GIRONDA, W2JE, Commercial operation plus commun. US Navy
ANDREW HASLEY, G.E. Engineering
JOHN ALLEN, W4GQT, Stat. WSPA
THOMAS WINN, W8MGG, Antenna engineering (N.W. Airlines)
STEVE HADLEY (Seattle, Wash.) Electronics teacher
RICHARD ROSENBERG (St. Ann, Mo.) TV/Radio Technician service
KENNETH HANSON (Clearwater, Fla.) Director WCSC Broadcast Museum
BRIAN BELANGER (Rockville, Md.) Chief Officer of Measurement Service U.S. National Bureau of Standards
WILLIAM NOAH, K2WN, Radio Eng.
TOM WARREN (Amarillo, Texas) Owner of Warren Electronics
LAURENCE KELBLEY (Tiffany, Ohio) Electronics Instructor
FRANK WHITF, WB9JSU, King Radio
HARVEY WILLIAMS, W2FFU NDO/RID of F.C.C.
KENNETH CHIARO (Canon City, Colo.) Digital Electronics
VICTOR RUEBHAUSEN, W6WNK Standard Coil Products
KARL KLEIN, W6DOW, Commercial: Naval and merchant marine
ROD GOODWIN (Ponoka, Alberta) R.C.A.F. Communication
LYLE FARMER (WB8BRZ) L. & G. Electronics
ADAM CHOWANIEC (Ottawa, Ont.) Research, Northern Bell Tele.
BROCKWAY McMILLAN, W0EAY Bell Laboratories
IVAN COGGESHALL, KA1AVG Western Union Tele. Co., NYC
DAVID TAYLOR (Tallahassee, Fla.) Radio Stat. WFSU
RESTORING OLD EQUIPMENT

How did you SOLVE a problem when re-storing a receiver? Drop us a note telling how you did it.

REMOVING OLD PILOT BULBS

Bayonet pilot lamps recessed in deep fixtures frequently resist removal and break or twist out of the bases. To avoid this problem I use a piece of firm rubber tubing of about the same diameter as the lamp to wobble the lamp loose. Press inward on the lamp (if corroded and tight, a drop of lubricant will help loosen it) and then apply a counter clockwise torque while wobbling it in a clockwise orbit. This will walk the lamp out of the bayonet lock and enable it to be lifted out.

(Copy from QST by Charles Littell)

OPEN AUDIO TRANSFORMER?

Not necessarily so. Carefully check connections to binding posts. Age and corrosion frequently leaves a bad connection.

NEW CLUB

A new active historical group is the Houston Vintage Radio Association. Although activities are of regional character, outside members are invited to join. They publish a paper: "The Houston Vintage Radio News". Interested? Write:

Frank Cooper, W5UID
4215 Ravine St.
Friendwood, Texas 77546

HELP!

Several members have written asking for information on an easy way to solder (?) litz and headphone wire...

Any ideas? Write AWA, Holcomb, New York 14469

DATEING METERS

Collectors of test equipment will find it more difficult to accurately date meters (particularly industrial types) than other pieces of equipment. Unlike receivers, tubes, etc., which can be pinned down within a year or two by design, etc., meters changed little through the years. Thumbing through early Weston catalogs showed some meters with identical specs over a 15 to 20 year span.

POT METAL

I just read in the "Reproducer" (published by the Vintage Radio & Phonograph Society, Box 5345, Irving, Tex. 75062) where a member successfully repaired radio parts with a product called E-POX-E Ribbon made by Duro. My son used some last year when trying to fix an old trail bike (motorcycle). It was fascinating stuff -- but I never gave thought in its use to radio. The material comes in a flat strip -- two different sections. You mix the two together, form the shape you want and let it harden. He bought it at an auto supply shop but according to the VRPS article it can be found in hardware and discount stores. C. Z.
SURPRISING ATTENDANCE

Upstate New York, like elsewhere, has been plagued to some degree with a gas shortage— but not enough to keep visitors away from the AWA Museum. Almost any Sunday afternoon one could see a row of empty cars in front of the building with their occupants inside being showed around by volunteer AWA guides. The log indicates 10 different groups toured the Museum including a Girl Scout Brownie troop and a group of Civil Air Patrol members!

1907 STATION

The most recent acquisition at AWA is a complete 1907 amateur station—a gift from Dick Willenborg and his brother. Bro. Patrick Dowd (W2GK) volunteered to pick up the equipment and deliver it to AWA—and what a gift!

The station was assembled by Dick's father between 1907 and 10. Most of the pieces are of commercial make which increases the historical value. Someone is being made to re-construct the 70 year old station in the AWA Museum. Pictures and more information in a future OTB.

New Equipment

in A.W.A. Museum

W10X/W4ZM, W2EHI, WB2HWD, WB3LHB, K4NI, K2GQ, WA4NEO, Gordon Brown, Richard Cane, Gary Schneider and Richard Willenborg

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) 657-7469
Free Admission

Museum Telephone:
(716) 657-6260

THE TEXAS BROADCAST MUSEUM
2001 Plymouth Rock
Richardson, Texas

AWA members visiting the Dallas area will find a new radio museum to visit. Admission is free. Hours open are unavailable at this time. Suggest you Telephone (214)690-3636. The building houses early inventions of sound and visual transmitting devices, histories, pictures and tapes of pioneers in the broadcast industry as well as broadcast equipment.

There will be a lending library with taped interviews and programs plus a viewing room. The Museum is a non-profit corporation. More information in a future Bulletin.

COVER STORY . . .

The company is, of course, the Pilot Radio & Tube Corporation and the receiver the famous "Pilot Super-Wasp" . . .

See OTB 11-3-16 for History of Pilot Corporation.