A.R.R.L. MUSEUM - with the new building nearing completion plans are being made to setup the League's Historical Collection which heretofore was spread out in several places.

A very qualified historian has been assigned the job - Roland Bourne, W1ANA. Roland is well known as an amateur but not many know he was associated with the old American Marconi Co., RCA, the C.D. Tuskas Co. and other organizations as well as Engineer or operator at MJZ, WSE, KKH, KKD, KYH, WIM WOC, etc.!

NEW AMATEUR MUSEUM can be found at the QTH of Bob and Nancy Merriam, W1NTE. They have converted a nearby barn to house their gear with the main interest centered around the 'library'. Speaking of books - one of their choice is the 1903 "Instructions for the use of Wireless Telegraph Apparatus" by Lt. J.M. Hudgins. This book is the predecessor of Robison's "Manual of Wireless Telegraphy" which first came out several years later!

As a group, these three original pieces of historical wireless equipment may represent the ultimate in the collector's field. It is a complete authentic Marconi Wireless installation in working condition circa 1910.

At the left we see the Magnetic Detector ("maggie") with glass cover removed. The famous Multiple Tuner is in the center. This model is one of the earliest and was made in 1907. A full description of it may be found in Vol. 2, No. 2 of the OTB. As far as we know, it is the oldest and possibly the only one in the United States.

At the right is the popular Marconi 10" spark coil transmitter. This huge coil works on a 14 to 24 volt battery source with inputs as high as 500 watts. The basic design remained the same on this coil from 1900 thru the first war.

This particular wireless "plant" was typical of the early Marconi era and may be seen at the club's Museum. 
(Lincoln Gundall, W2QY)
OLD TYME ADS

SWAP - large collection of tubes. Want socket or holder for Neir's tube. Will pay cash. Vern Thompson, W9JWW, 1403 So. 4th St., Effingham, Illinois


SWAP - or sell Riders Vol. 5, 6, 8, and 9. Want "Popular Radio" for June and July, 1922. Russ Worthy, 861 Western Ave., West Lynn, Mass.

SWAP - highly desirable antique wireless items for "Robison's Naval Radio Manual" - prefer 1913 or earlier. W6IM, Box 308, Wrightwood, Calif.

WANT - Marconi Type "E" tuner with loose coupler on top, carborundum detector and variable condenser. Will pay any reasonable sum. Frank Riley, W8IG, 12234 Trikett Rd., Cleveland 11, Ohio.

FOR SALE - huge collection of historical domestic and foreign tubes. All must go. You name it - we have it. Send your 'most wanted' list to: P.O. Box 185, Princeton Junction, N.J.

EXCHANGE SWAP LISTS - have parts, tubes and books. Kennedy XV receiver, W4I Aircraft receivers, Baldie type 'C' phones, Jewell wavemeter, etc. Need oscillation transformer for 1 kw spk transmitter. Warren Green, W3JY, 7202 N. Mercer Way, Mercer Island, Wash.

SWAP - have stacks of QSTs and CQ magazines plus all kinds of gear. Want old call books of the 1920s and a BJ-4 detector. Erv Rasnussen, Box 612, Redwood City, Calif.


SWAP very early wireless magazines for copies of 'Practical Electrics' or 'The Experimenter' (not Elec. Experimenter). Vance Phillips, WSGH, 1010 Monte Drive, Santa Barbara, Calif.


QST SWAP MEMBERSHIP APPLICATION

This interesting exhibit attracted a great deal of attention at the recent A.R.R.L. NATIONAL Convention, Portland, Oregon. It is part of Warren Green's historical collection which also made a big hit with an earlier I.R.E. Meet. We plan to have more on W3JY' work along with W7GE and the Seattle Museum.

WANT - E.I. galena detector unit in good condition with crystal and cat's whisker. Earlie Young, 450 Magee St., Rochester 13, N.Y.

SWAP - old gear for early crystal detectors. What do you need? Gene Kerns, 235 W. Galena St., Milwaukee 1, Wis.

WANT - old catalogs such as Electro-Importing, Mardock, Meaco, or Duck, also want "Modern Electrics", State price and condition. Ell Cummings, 65 Colonial Ave., Cranston 10, R.I.

WANT - C.R.L. Paragon with amplifigon or matching tube panel, quench sections for gap (SHEL01), old government call books and 'Handy's Handy Handbook'. Frank Smith, W5VA, P.O. Box 840, Corpus Christi, Texas.

WANT - info on when the IP-175 (#112) Wireless Speciality Apparatus Co. detector was first made and what pair of crystals were used. Tate Thetreau, W8FX, 27209 W. Six Mile Rd., Detroit (40), Michigan.

WANTED - one good Arcturus type AG-26 tube (detector) for my Browning-Drake 6-B. Also want Federal Orthosonic Type 'C' receiver. F.P. Pagano, 1835 West 7th St., Brooklyn 23, N.Y.


QCWA HISTORICAL BOOTH

This interesting exhibit attracted a great deal of attention at the recent A.R.R.L. NATIONAL Convention, Portland, Oregon. It is part of Warren Green's historical collection which also made a big hit with an earlier I.R.E. Meet. We plan to have more on W3JY's work along with W7GE and the Seattle Museum.

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FIRST RADIO SCHOOL noted in last QST appears correct (1902 in England); however, we received several letters questioning the first in U.S. — all very well justified.

It would appear that the 1911 date was correct for the American Marconi school; however, Tom Appleby, W3AX, states he received a letter last year from Elmer Bucher stating that "United Wireless" had a 'half-baked' school for training their men at old 42 Broadway in 1908. It was sort of a meeting place ("NY") for the operators with very little instruction. At the same time, Tom, was doing the same thing down in Philadelphia (1908) at the Bellevue Stratford station "BS".

On April 1, 1911, Dave Heilig and Tom opened the Philadelphia School of Wireless Telegraphy "FW" in Philadelphia. Shortly after, Elmer Bucher, at United Wireless, asked Tom for info on their training course. Under the circumstances, it would appear that Appleby's "FW" was the first "all wireless" school.

El Cummings, ex-W4P, checked into the matter further and comes up with this info: The American Wireless Institute at Detroit, Michigan, had an ad in the November, 1910 issue of "Modern Electrics" and points out that in a book titled "Operator's Wireless Telegraph & Telephone Handbook" written by Victor H. Laughter, printed in 1909, the author states he was the Technical Director of the American Wireless Institute.

In addition, El points out that the "Massachusetts Radio and Telegraph School" establishes their date as 1903 and that the "Fort Arthur College" was founded in 1909. The last two school have had 'ads' in QST and other magazines for years and usually carry these dates.

We may be "sticking our neck out" in coming to any kind of a conclusion but it would appear that the other "schools" were either a temporary training base for operators, a school for landline operators specializing in code or a combination of the two.

We note that the Wireless Press, Ltd., published in London, 1912 states:
"Thomas Appleby opened the first wireless school in America."...cuf sed !

The well known historian Howard Fyle, W7OE, thoroughly covers the story of old "FW" in the current issue of the COTC "SPARK GAP TIMES". In addition, Howard dug up some fb photographs to go with his article.

And lastly, we plan to print sometime in the near future an article by Walt Weber, W2EE, covering a school he founded.

OLD TIME RECEIVING CONTEST
Open to all A.W.A. Members. Unusual Certificate Award.

CLASS I Homemade gear (loose couplers and associated equipment.)
CLASS II Commercial gear such as the IP-500, etc.

RULES:
1. ALL equipment must be over 40 years old.
2. Receiver cannot use tubes.
3. DX reception of ANY station except the two high power VLF stations NAA and NFG.
4. You cannot substitute a germanium diode for the crystal detector nor a pair of hi impedance phones for your 'Baldies' or Branded !

All results must be in by Dec. 31
Judges: Thorn Mayes, W9AX
Dick Kaufman, KE2NR

Include- approximate distance received, type of receiver, antenna used, time and nature of transmission.

SE-95A and NAVY CW-296 Wireless Telephone are the latest historical acquisitions at W2ZT. The latter is complete and was one of the first phone sets ever made — a real collector's item! It preceded DeForest's well known type "O" wireless telephone.

The Navy SE-95-A longwave receiver may be even more rare. It belonged to Ken Warner who used it at the old Marconi Belmar station during WWI to copy PCE and CUI. Later, Warner used it to copy MUU when they gave Godley's receiving results of the 1921 Transatlantica I (El note: if anyone can find real historical gear - El haser can — and this proves it !)

SOUTHERN CALIFORNIA QCCA MEET April 23. Program tentatively booked is A.W.A. show "PIONEERS OF WIRELESS" with W5CH officiating.

WWI DE FOREST crystal receiver (1918) has been added to W4AGU's collection. Jim sees he hooked his 160 meter antenna to it and has picked up good DXI

ODD HOBSEY Col. Glodell (ex-2AVY, GUX, GCP8, CPT9R, etc.) is one of the world's foremost CASTANET makers! An authority on Latin America, we find Roy as interesting and diversified personality we have encountered for a long time. An ardent radio historian, he is now associated with Worcester Tech after a long and colorful government career......
HOW DID DE FOREST INVENT THE GRID AUDION...
by Lloyd Espenschied

The insertion in the electronic diode of the third element in the form of an intervening grid, as a control electrode, proved to be such a revolutionary contribution that many have wondered how Dr. Lee de Forest managed to do it - in the Winter of 1906-7.

This question has been raised again in The Old Timers Bulletin for the Fall, 1962, Vol.3, No.3, in an intriguing story by George Applegate on "An Adventure in Book Collecting." In foraging for old radio books George found an original edition, 1906, of J. A. Fleming's famous book, "The Principles of Electric Wave Telegraphy," a copy that had been owned by de Forest's old assistant C. D. Babcock. Bab, as Lee had called him, had made in it many interesting notations, one of which, on page 398, was a reminder to "look up" the Zehnder Trigger Tube there described.

George Applegate recognizes the Zehnder Tube as having been "the first device to use internal electrodes, positioned between the cathode and the anode, for the purpose of triggering an external source of power by means of received signals." (Incidentally this at once disposes of Lee de Forest's claim of having invented the "B" or anode battery.)

The question is raised as to whether Bab did look up for Lee the original Zehnder paper, which had been published in Wiedemann's Annalen der Physik in 1892. He would not have had to look far, for it appeared in English that same year, in "The Electrician," of London, Dec. 30, 1892, p.253. It is well known that de Forest followed closely the German technical literature and this is quite in line. Turning to the Zehnder paper one finds he used a cold-cathode Geissler tube, which was a relay kind of detector rather than an amplifier, and that he observed a vital point: he placed his third electrode (a minute glow-discharge gap in itself) "near the cathode since it is known that in the neighborhood of this lies the greatest resistance of the air path" - meaning the gas path.

The present writer had known Lee de Forest since the Spring of 1907 and exchanged many communications with him, but never was it possible to obtain from him a description of how he managed to come upon the grid control element. His assistant in early 1907, the late John V. L. Hogan, told the writer that Lee de Forest was experimenting with a Fleming Valve, trying all manner of ways of influencing it by means of radio signals starting with outside electrodes, and gradually felt his way to the intervening "hairpin." The Figures in de Forest's patents support this viewpoint. Already, in his AIEE paper on "The Audion" of October, 1906, describing the two-element tube, there is clear indication of his seeking to employ an additional electrode for control, as yet outside.

Now we come to another bit of evidence, which ties up with the Babcock notations in the Fleming book of 1906: The late Robert H., Marriott wrote a remarkable history of early wireless in the USA, entitled "Radio Ancestors," the only known copy of which was presented to the IEEE by his widow Mrs. Blanche B. Marriott in 1952.

Chapter XIII is entitled: Doc Asked Bab to Stick in the Third Electrode

This paragraph comprises some twelve pages, of which the present writer has made the following abstracts:

p.1 "When I reached N.Y. in late 1907, C. D. Babcock was in charge of the United Wireless factory; Cloyd Marshall, Secretary of United at 42 Broadway, went to the factory daily for a conference with Babcock. (Factory was in Jersey City; de Forest was then out of United.)"

p.4 In the Jersey City factory was "a Sprengle Vacuum Pump."

p.5 According to Babcock, Dr. de Forest had had the Fleming
Valve copied.

p.6 Bab quoted de Forest as having said, in effect: "Bab, if two electrodes in a bulb make a detector, maybe more electrodes will make a better one," and asked Bab "to make up some vacuum tubes with three or four electrodes...."

De Forest always maintained that he came upon the Audion from having experimented with gaseous conduction in flames, following early science work in Germany, and evidently did so experiment, as early as about 1900. He never would admit having built upon Fleming's (or the somewhat earlier Wehnelt) thermionic tube, and he and Fleming had verbal arguments about the matter. Having taken that stand to get out from under the Fleming patent (the US version of which was later annulled due to the priority of Wehnelt), de Forest was at a loss to explain how he did invent the triode. That he did so by the time-honored cut-and-try method, by literally feeling around for a sensitive control, was nothing of which to be ashamed at the time. The textbooks on electronics just didn't teach how to do it. The truth of the matter is that there was a large gap between the scientists, who were interested in discovering and measuring the electron and its properties, and the inventors who, knowing little of the science side, had to feel their way along. They must have been guided by the cathode-ray oscilloscope in the form of an electromagnet, or electrostatic plates, for deflecting the cathode-ray beam, and this we see in the German attempts at the electron amplifier that ran along contemporary with de Forest's Audion experiments and that also came to use an intermediate electrode form of control.

Difficult it is to account for how an invention took place; but it is very much more difficult to look forward and anticipate an invention - facing the curtain of ignorance that always lies ahead! But cheer up - there is always opportunity on this sun-satellite of ours.
NEW BOOK REVIEW

"ELECTRIC WAVES" by Heinrich Hertz, English translation with preface by Lord Kelvin. Written in 1893 with direct copy in 1962. (300 pages)

Amazing deductions as presented by Hertz himself. Easy reading - and be sure not to skip the introduction. This book was recently released and we consider it a 'must' for the serious historian's bookshelf. Can be obtained from your local bookstore or send $1.75 plus 10¢ postage to Dover Publications, 150 Varick St., New York 14, N.Y. (It is a heavy paperback.) A good tip from Vance Phillips, W6GF.

MAGAZINE REVIEWS:

NIKOLA TESLA biography can be found in April ('63) issue of RADIO ELECTRONICS. We were pleasantly surprised when we glanced at the author's name and found our friend Dexter Bartlett out in Portland, Oregon. Although the writeup was relatively short, the life of this pioneer was well covered including an appendix giving the writer's source of information. We wish more authors would follow Dexter's example in this matter.

Hiram B. Maxim - father of Hiram P. (co-founder of A.R.R.L.) was in many ways more active than his son. An article covering this pioneer inventor, may be found in February ('63) issue of TRUE magazine. Most interesting of his achievements was the invention of the machine gun!

KANSAS HISTORIAN is A.W. Magrave, W6XGB. "Misty" feels there is a need to record and document local radio history before it is too late. A recent article of his titled "A Legend-the Old Timer" is excellently written and should be read by all radio men in the mid-west.

BOOK SALE - on books listed in last Bulletin went like 'hot-cakes'. To make the sale fair to all (15 different requests!) the names were dropped in a hat and 'teen age daughter drew the winners...The "Nymph and the Lamp" is a book that Ed Roser tipped us off on several years ago. It is a novel concerning the adventures of a Marconi Wireless Operator on remote Sable Island. It is exceptionally well written and can frequently be found on the shelves of used book stores. We also understand that it was in 'paper back' form for awhile. (W6ICE)

HISTORICAL STATION AT DETROIT

Yes, this old time marine installation actually exists. The next time you are in Detroit, drop over to the Marine Museum and take a look at it.

It is a replica of the transmitter and receiver used on the SS Western States, call "WICA". Needless to say, the fellow behind this restoration is historian "Tate" Therreau, W8FX.

FEDERAL TELEGRAPH and LEE DE FOREST....

A reprint of DeForest's lecture given on Nov. 6, 1912 can be found in the March, 1963 "IEEE (IRE) PROCEEDINGS". The article covers DeForest's work while with Federal and concentrates somewhat on early arc work on the west coast. The IEEE plans to print other early articles of historical interest - we'll keep you posted....

GOVERNMENT RELEASE

No. 2 "The Telegraph and Telephone" (U.S. National Museum Bulletin 225, Paper #29, covering the Development of Electrical Technology in the 19th Century.)

Although this booklet (60 pages, 9 x 11½" glossy paper) does not refer directly to radio, it may be of interest to the serious amateur radio historian since it covers various forms of early landline communication. It is well documented with over 40 sharp photographs. Written by James King, former Electrical Curator of the Smithsonian, it is well worth 70¢ (Order #53AA with the above information) Government Printing Office, Washington 25, D.C.
The only identification of the tube type number was by means of an orange sticker on the glass bulb and by the marking on the container. Tubes in the "DV--" series had short pins whereas the "DL--" series had long pins.

It is believed that the following is a complete list of all tubes made in these series. Does anyone know of any others?

- DV-1
- DV-2
- DV-3
- DV-3a
- DV-4
- DV-5
- DV-9
- DV-9R (rectifier)

(The DV-9 is a power tube)

WIRELESS INSTALLATION of 1910 complete with 10" coil and "maggie" is W1TU's objective. Old Marconi veterans are helping Charlie assemble this old station. A good start is a nice big desk from the U.S. Navy!

OPEN HOUSE
A.W.A. Barn Museum
Holcomb, N.Y.
Saturday, May 11, 1963 10 to 11:45 AM

OLD TIMER'S LUNCHEON
12 noon

Guest Speaker:
Ed Redington, W4ZM
Arlington, Virginia

Guest of Honor:
George Grammer, W3DF
A.R.R.L., West Hartford, Conn.

Everyone Welcome...see you May 11
73,
Geo. Batterson, W2GR
How did it sound?

Philip E. Hatfield, W9GFS

After I have shown my antique gear, my old publications, and my old QSL cards to one of the newer hams, the question often arises, "How did it sound on the air in those old days?" It is hard to put into words the weird and wonderful sounds that passed for signals in the early thirties, and my efforts to do so fail miserably. Since I am not familiar with the spark days, I can only imagine how things sounded then.

Although I can't claim to have made an extensive search, I have never heard of any authentic recordings of antique signals that are still around. Of course, there are recordings of signals from restored gear, and in recent correspondence with Ted Duvall I learned of some recordings that once existed. This seems rather strange to me since the invention of practical methods of sound recording preceded that of wireless by a number of years.

We are all familiar with the work of Charles Apgar in recording the signals from the German station at Sayville during the first World War, but surely he was not the only one to try off-the-air recording. Perhaps the general use of wax cylinders that could be shaved and reused accounts for the apparent failure of any old recordings to survive. However, old-record collectors are familiar with the story of the cylinder recordings made by Lionel Mapleson, who was associated with the Metropolitan Opera Company, near the turn of the century, and these recordings survived somehow.

Even if no amateur signals were recorded in the early days, it seems unlikely that the phonograph record manufacturers would have completely ignored their arch-rival, broadcasting; surely someone must have made a few off-the-air recordings just to keep a record of what the broadcasters were up to.

Lacking any authentic recordings, it is still possible to give a visitor some idea of what early broadcasting sounded like. When you prowl around the junk shops, looking for some old piece of gear that somehow has been overlooked by other collectors, shuffle through the piles of old phonograph records. Look for some of the performers of the early twenties: Harry Snodgrass, the Happiness Boys, etc. If you can acquire any of these, rig up a phono oscillator and play them through an old Radiola IIIA with a horn loud speaker. Now you are mighty close to the way it sounded way back then.

Radio Museum of W9GFS is now real sharp with an extra balcony (!), additional shelves and a new paint job. If in the Minneapolis/St. Paul area - stop in and see Joe's collection.

I.R.E. Anniversary Issue - hate to keep bringing it up but Dexter Bartlett out in Portland has finally straightened us out...this fb historical volume (and I mean volume!) can now be purchased direct from the I.R.E. For $5 at 1 East 79 St., New York 21, N.Y.

First Police Radio was in 1916 when the New York City Police used spark transmitters to communicate with their boats in the harbor. .

Top Receivers 30 to 35 years ago for AM use, according to Russ Worthy, were National, Stromberg-Carlson, Hammarlund-Roberts and others. These A.C. receivers were the ultimate and are treasured by the collector of 'classics'. Russ is well informed on their 'specs' and is now trying to locate one of the Hammarlund Roberts Hi Q series.
Dr. L. S. Baird, ex-9HO, Nov. 30, 1962, well known amateur historian, a prolific reader and a gentleman well informed on many subjects. He was one of the founders of the Milwaukee Radio Amateur's Club (1917) and devoted a lifetime to radio. (W6BH)

Dr. Edwin Stewart Pridham, 81, Jan., 1963, an inventor and cofounder of the Magnavox Company. One of the first experiments of the company after its founding in 1911 produced the sensitive moving coil that became the basis of a loudspeaker which made the company famous. (W3KOU)

Milton B. Sleeper passed away recently after several months illness. Although always active in the radio field, he was best known to the old timer for his articles written in the 1920's. (Tx to Russ Worthy)

Power Supply for Battery Radios - have you ever wanted to 'fire up' one of your old receivers and found you lacked the power? Instead of building a B & C supply and looking for a storage battery-you can now obtain the whole business of latest design. Write Paul Fuge, 455 Bayberry Rd., Somerville, New Jersey for more info.

August 17 - - August 17

First big 'round-up' and 'meeting' of Amateur historians and collectors...

Keep this date open...more dope in June Bulletin...

Kennedy Inspector was once a position held by George Greene (Clayton, Mo.) when the old Collin B. Kennedy Co. used to be located in St. Louis back in the early 20's. George is the owner of a nice collection of early receivers and of course several Kennedys. He is also a steam 'buff' and fancy a Stanley Steamer!

Tube Historian - a new member to join the ranks is W2JW, Verm has over 1000 tubes beautifully mounted.

Police Radio - licensed amateurs in the Cleveland Police and Fire departments have an active organization headed by "OT" W2LY! If you live outside Ohio and work 3 members, you are entitled to their award certificate. Write Mike for more info.

Fred Schnell, W6CF, delivers main speech at last year's OLD TIMERS' NITE at Ford Dearborn Science Museum. Seated left to right facing audience: W6QJ, W6JW, W6MRM, W6CPU, W6YK, W6EE, W6XG and Minor Thomas (Chief Curator). Information on this year's meet (May 4) can be found on the enclosed "Flyer". Frank Davis, curator, is going all out to make this another great occasion for the 'ole timer. See you May 4!

Old Time CW Net..... the suggestion has come up several times so it is about time we placed it in print. How many members have parts to assemble an old time station? It is suggested that we form a 30 meter CW net and meet once a month. All equipment must be over 30 years old. A likely transmitter would be a 4X10 amp. or 250 es 251 rectifiers. The rx could be a det. es 1 step audio using any of the early A.C. tubes - or better yet, if you have an SW-3 - you’re in business! If interested, drop us a line and a suggested time and frequency will be set.

New Gear on Loan at A.W.A. Dearborn Museum


Rare Meters: W2OVE, W6QJ, W2JY, W7MCC
Misc. gear: W2STB, W2STY, W2BEN


Leyden Jars: W2YK and H.V.R. Voorhis.

Books: W6AX, W3JA and Fred Penard Commercial Insulators: W6MCC, ex-1CPW

Transmitters: ex-3DW/W3MW/ex-3JJ

Historical souvenirs: ex-3QO

Official Historian - W6IK announces that he is again the historian for the National Organization of Associated Public Safety Communication Officers....He is very interested in history of early police and fire radio. W6IK is a Director of A.W.A. and Chief of Radio in the Rochester area.
<table>
<thead>
<tr>
<th>Name of Station</th>
<th>Call Letter</th>
<th>Power</th>
<th>System</th>
<th>Wave Length Meters</th>
<th>Masts and Aerial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Elizabeth, Me.</td>
<td>PA</td>
<td>5 Kw.</td>
<td>Telefunken</td>
<td></td>
<td>130 ft. high</td>
</tr>
<tr>
<td>Portsmouth, N. H.</td>
<td>PC</td>
<td>3 Kw.</td>
<td>Stone</td>
<td>380-510-900</td>
<td>200 ft. long</td>
</tr>
<tr>
<td>Boston, Mass.</td>
<td>PG</td>
<td>3 Kw.</td>
<td>do.</td>
<td>560-670</td>
<td>190 ft. long</td>
</tr>
<tr>
<td>Cape Cod, Mass.</td>
<td>PH</td>
<td>5 Kw.</td>
<td>Telefunken</td>
<td>do.</td>
<td>190 ft. long</td>
</tr>
<tr>
<td>Nantucket Shoal Lightship No. 66</td>
<td>PI</td>
<td>5 Kw.</td>
<td>do.</td>
<td>425</td>
<td>60 ft. long</td>
</tr>
<tr>
<td>Nantucket Shoal Lightship No. 75</td>
<td>PI</td>
<td>5 Kw.</td>
<td>do.</td>
<td>470</td>
<td>73 ft. long</td>
</tr>
<tr>
<td>Newport, R. I.</td>
<td>PK</td>
<td>5 Kw.</td>
<td>do.</td>
<td></td>
<td>180 ft. high</td>
</tr>
<tr>
<td>Fire Island, N. Y.</td>
<td>PR</td>
<td>5 Kw.</td>
<td>do.</td>
<td>425-600-960</td>
<td>200 ft. long</td>
</tr>
<tr>
<td>Navy Yard, New York.</td>
<td>PT</td>
<td>15 Kw.</td>
<td>Stone</td>
<td></td>
<td>180 ft. high</td>
</tr>
<tr>
<td>Cape Henlopen, Lewes, Del.</td>
<td>PX</td>
<td>3 Kw.</td>
<td>Massie</td>
<td>475-690-625</td>
<td>150 ft. long</td>
</tr>
<tr>
<td>Annapolis, Md.</td>
<td>OG</td>
<td>24 Kw.</td>
<td>Telefunken</td>
<td>337-625</td>
<td>275 ft. long</td>
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<tr>
<td>Washington, D. C.</td>
<td>OI</td>
<td>15 Kw.</td>
<td>Massie</td>
<td>540-1125</td>
<td>300 ft. long</td>
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<tr>
<td>Norfolk, Va.</td>
<td>OL</td>
<td>3 Kw.</td>
<td>Telefunken</td>
<td>350</td>
<td>170 ft. long</td>
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<td>Cape Henry, Va.</td>
<td>ON</td>
<td>3 Kw.</td>
<td>De Forest</td>
<td></td>
<td>180 ft. long</td>
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<td>Diamond Shoal Lightship No. 71</td>
<td>OP</td>
<td>1 Kw.</td>
<td>Fessenden</td>
<td>425-320-630</td>
<td>75 ft. long</td>
</tr>
<tr>
<td>Diamond Shoal Lightship No. 72</td>
<td>OP</td>
<td>1 Kw.</td>
<td>Fessenden</td>
<td>do.</td>
<td></td>
</tr>
<tr>
<td>Yerba Buena Island, Cal.</td>
<td>QU</td>
<td>5 Kw.</td>
<td>do.</td>
<td></td>
<td>185 ft. high</td>
</tr>
<tr>
<td>St. Augustine, Fla.</td>
<td>QU</td>
<td>5 Kw.</td>
<td>Shoemaker</td>
<td></td>
<td>62 ft. high</td>
</tr>
<tr>
<td>Jupiter Inlet, Fla.</td>
<td>RA</td>
<td>3 Kw.</td>
<td>do.</td>
<td></td>
<td>220 ft. long</td>
</tr>
<tr>
<td>Key West, Fla.</td>
<td>RD</td>
<td>35 Kw.</td>
<td>De Forest</td>
<td>1200-1050-1375</td>
<td>300 ft. long</td>
</tr>
<tr>
<td>Dry Tortugas, Fla.</td>
<td>RF</td>
<td>3 Kw.</td>
<td>Telefunken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pensacola, Fla.</td>
<td>RK</td>
<td>10 Kw.</td>
<td>De Forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Orleans, La.</td>
<td>RO</td>
<td>5 Kw.</td>
<td>Telefunken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Juan, P. R.</td>
<td>SA</td>
<td>35 Kw.</td>
<td>De Forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuba, W. I.</td>
<td>SQ</td>
<td>13 Kw.</td>
<td>Telefunken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guantanamo, Cuba.</td>
<td>SI</td>
<td>35 Kw.</td>
<td>De Forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colon, Canal Zone.</td>
<td>SL</td>
<td>35 Kw.</td>
<td>do.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navy Yard, Puget Sound.</td>
<td>SP</td>
<td>3 Kw.</td>
<td>Telefunken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tatoosh Island.</td>
<td>SV</td>
<td>15 Kw.</td>
<td>Massie</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Head</td>
<td>SX</td>
<td>5 Kw.</td>
<td>Telefunken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape Blanco</td>
<td>TA</td>
<td>5 Kw.</td>
<td>Massie</td>
<td>415-465</td>
<td>205 ft. long</td>
</tr>
<tr>
<td>Table Bluff</td>
<td>TD</td>
<td>5 Kw.</td>
<td>do.</td>
<td>240-318</td>
<td>160 ft. high</td>
</tr>
<tr>
<td>Mare Island, Cal.</td>
<td>TG</td>
<td>24 Kw.</td>
<td>Telefunken</td>
<td>240-318</td>
<td>180 ft. high</td>
</tr>
<tr>
<td>Farallon Island, Cal.</td>
<td>TH</td>
<td>10 Kw.</td>
<td>do.</td>
<td>450-650</td>
<td>120 ft. high</td>
</tr>
<tr>
<td>Yerba Buena Island, Cal.</td>
<td>TI</td>
<td>2 Kw.</td>
<td>do.</td>
<td>520-640</td>
<td>175 ft. long</td>
</tr>
<tr>
<td>Point Arguello, Cal</td>
<td>TK</td>
<td>3 Kw.</td>
<td>Shoemaker</td>
<td>520-640</td>
<td>225 ft. long</td>
</tr>
<tr>
<td>Point Loma, Cal.</td>
<td>TM</td>
<td>10 Kw.</td>
<td>Massie</td>
<td>485-670</td>
<td></td>
</tr>
<tr>
<td>Island of Oahu, Hawaii.</td>
<td>UC</td>
<td>2 Kw.</td>
<td>Telefunken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Island of Guam</td>
<td>UK</td>
<td>3 Kw.</td>
<td>do.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carville, P. J.</td>
<td>UT</td>
<td>5 Kw.</td>
<td>do.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sitka, Alaska.</td>
<td>SO</td>
<td>20 Kw.</td>
<td>Pierce</td>
<td>300-1600</td>
<td>180 ft. high</td>
</tr>
</tbody>
</table>

**SHORE STATIONS CONTROLLED BY THE CANADIAN GOVERNMENT**

<table>
<thead>
<tr>
<th>Name of Station</th>
<th>Call Letter</th>
<th>System</th>
<th>Wave Length Meters</th>
<th>Masts and Aerial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point Amour, Labrador</td>
<td>PR</td>
<td>Marconi</td>
<td>100-430</td>
<td></td>
</tr>
<tr>
<td>Whittle Rocks, Labrador</td>
<td>WR</td>
<td>do.</td>
<td>100-450</td>
<td></td>
</tr>
<tr>
<td>Battle Harbor, Labrador</td>
<td>SH</td>
<td>do.</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Belle Isle, Quebec</td>
<td>BI</td>
<td>do.</td>
<td>100-220</td>
<td></td>
</tr>
<tr>
<td>Falm Point, Quebec.</td>
<td>FP</td>
<td>do.</td>
<td>100-220</td>
<td></td>
</tr>
<tr>
<td>Cape Race, Newfoundland</td>
<td>CE</td>
<td>do.</td>
<td>100-220</td>
<td></td>
</tr>
<tr>
<td>Cape Ray, Newfoundland</td>
<td>CR</td>
<td>do.</td>
<td>120-220</td>
<td></td>
</tr>
<tr>
<td>Venison Island, Labrador</td>
<td>VI</td>
<td>do.</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Dominic, Labrador</td>
<td>CA</td>
<td>do.</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Cape Sable, Nova Scotia</td>
<td>SD</td>
<td>do.</td>
<td>100-220</td>
<td></td>
</tr>
<tr>
<td>Sable Island</td>
<td>SB</td>
<td>do.</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Heath Point</td>
<td>HP</td>
<td>do.</td>
<td>Ultra-Potent</td>
<td></td>
</tr>
<tr>
<td>Cape Breton</td>
<td></td>
<td>do.</td>
<td>400 ft. long</td>
<td></td>
</tr>
</tbody>
</table>

This is 2nd in a series of pioneer wireless station listings contributed by Bill Gould, K22NP. The first list appeared in Vol. 3, No. 3 of the "Old Timer's Bulletin".
Charles Roland Leutz was born at Jamaica Plain, Boston, Mass., December 18, 1898. During the summer of 1910, while summer vacationing at Lexington, Mass., he became fascinated by the elaborate wireless station owned by Marsten Harding, the master of "Ponyweld". This experience so fired his enthusiasm and ambition that while in grammar school he started building wireless receivers in accordance with plans that appeared in Sunday newspapers.

He received his Amateur Operator's license on August 12, 1913, and amateur station license LNZ on Feb 2, 1914. The transmitter was a modest 1 inch spark coil but associated with an elaborate transmitting antenna, and a single wire receiving antenna nearly 1000 feet long. Through this station, and his membership in the Amateur Wireless Telegraph Association of New England, he soon met many friends.

While attending Mechanics Arts High School in Boston, Leutz used the school's facilities to build more advanced radio equipment and, with two associates, formed the Eastern Scientific Apparatus Company. This initial wireless venture was directed toward "Safety at Sea", exploiting a virgin market in supplying wireless telegraph transmitters and receivers to private yacht owners. The Marconi Wireless Telegraph Company of America looked with disfavor on anyone invading its sanctum businesswise and soon put a heavy hand on this enterprise.

Leutz, eager to "get into" radio, went directly from high school to work for Clapp-Eastham Company for about six months to "see how it was done". He then went to work for Bethlehem Steel Company's Fore River shipbuilding yard for about six months in order to examine commercial and military radio equipment installed in merchant ships and Navy surface ships and submarines. Previously, he obtained a Commercial First Class Operator's license on May 25, 1915.

The Universal Transoceanic in the W4AA collection (35 to 3600 meters) is serial numbered "X33". The original invoice, still with the set, shows its sale in February 1927 to a Fairbanks, Alaska, customer for $570.00 net. The set is in excellent condition. The six unit assembly consists of four HP stages, detector and output.
During the fall of 1917, Leutz left Boston for New York and went to work for Marconi Wireless Telegraph Company of America at their factory in Roselle Park, New Jersey. After three weeks in the test department, he was promoted to Assistant Engineer. Here, for the duration of War I, he had the good fortune of working with some older and very competent engineers. Most of this time was spent as assistant to Paul F. Godley. At that time, Godley was undoubtedly the most competent designer of military radio receivers in the United States.

During 1921, Leutz formed the Experimenters Information Service to produce and market blueprints covering instructions that amateurs could follow to build their own receivers and transmitters. At this time, there were no super-heterodynes on the market at all, kit form or complete. Leutz had reason to believe that the super-heterodyne would be the receiver of the future, so he developed a design and drew up the plans to be marketed. This was the 10 tube model "L", contained in two cabinets, each 8 inches high, 8 inches deep and 40 inches long. This design was an immediate success. The demand for the blueprints was followed by an immediate market for the necessary parts to build the receiver. The Model "L" was followed by more compact and efficient designs, the model "C", "C-7" and "C-10" that were sold internationally. By 1925, sales were running at the rate of $3,000,000 a year.

At that time, the competition offered by major manufacturers involved receivers having detectors and two stage audio amplifiers. Through a joint RCA and Westinghouse patent action, an injunction was obtained to prevent further marketing of super-heterodyne blueprints and kits. RCA and Westinghouse refused to issue a patent claiming that the super-heterodyne was too complicated for public use. Today, that same refusal might be claimed as an act of 'monopoly' or 'restraint of trade'.

With the super-heterodyne business blocked, Leutz turned his genius toward the development of sensitive and selective multiple-stage tuned radio frequency receivers. Initially, this was a difficult task, but with the advent of tubes with shielded grids in 1927 it was possible to build a special TRF broadcast receiver superior to the super-heterodyne of the day.

From 1917 thru 1940, Leutz wrote many practical articles on radio that were published in Wireless Age, Radio News, Electrical Experimenter, etc. He published "Super-heterodyne Receivers" in 1922, "Modern Radio Reception" in 1923 (first Edition) and "Short Waves" in 1930. "Short Waves" was internationally regarded as a very comprehensive state-of-the-art report.

Charles R. Leutz has three sons and daughters now located in different parts of the country. So far, fourteen grandchildren. He has not been connected with radio since 1940.

ABOUT OUR AUTHOR: Wayne Nelson, W4AA is one of the more active historians and collectors in our organization. The owner and engineer of several radio stations, active in radio for 50 years, we feel he is well qualified to handle any subject pertaining to radio. More dope re W4AA can be found in Vol.2, No. 1 "OTB".