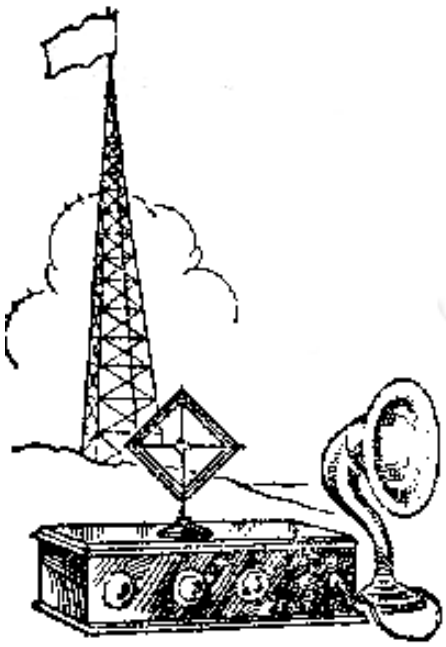
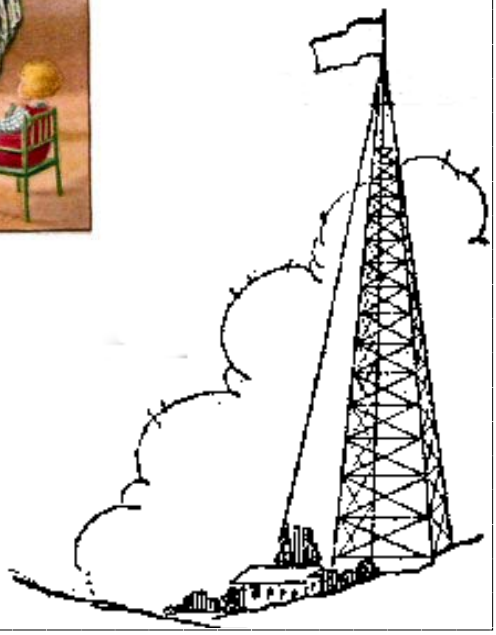


The Carolina Antenna

SPRING 2009
VOLUME #15
ISSUE #1

Carolinas Chapter
of the
Antique Wireless
Association



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Membership in the Carolinas Chapter of the Antique Wireless Association (CC-AWA) is open to anyone with an interest in old (antique) radios. The only requirement is that you must be a member of the "national" Antique Wireless Association.

By being a member of the CC-AWA you will receive our quarterly newsletter.

Membership dues for the CC-AWA are $10 per year.

If you are not already a member of the national AWA, your first year's dues will $25, this includes the $10 for CC-AWA dues and $15 for your first year's dues in the national AWA.

Mail your dues to membership chairman Clare Owens - address is listed above.

The Carolina Antenna

The newsletter of the Carolinas Chapter of the Antique Wireless Association

ISSUE # 15 SPRING 2009 VOLUME 1

THE PREZ SAYS ...

By Ron Lawrence, W4RON
CC-AWA President

This is a special issue of *the Carolina Antenna* before the upcoming Charlotte Conference. I'm looking forward to another great show, if the turn out at our Winter Swap meet at Mebane is any indication, I think we'll have a great show.

The Mebane meet was the first in the new location and it was packed with folks, all the available table space in the auction house was full of radios and radio related stuff. Many thanks to Kirk Cline and the folks at the Mebane Antique Auction Gallery for hosting the event -see pictures on page 3.

After the Mebane meet we had a club Board of Directors meeting. Kirk Cline was appointed to fill one of the open BoD seats. We still have one open seat on the Board, if you're interested in taking part in running the club, please let one of the current Board member know.

I'm very sad to report the passing of an old friend Lew Elias, W4DBT, died on Saturday Feb. 21st—see obit on pages 6-7. He was 96 years old. It was Lew who started hosting AWA meets in Winston-Salem in 1976, these meets are what lead to Charlotte meet and the founding of our club. Lew was our one and only Life Member, our Best of Show Award that's given at the Charlotte Conference is called "The Lew Elias Best of Show Award". It was after attending Lew's AWA meet in 1978 that we were asked if we would be interested in having a meet in Charlotte the next year. That was 1979, 30 years ago that we held the first Charlotte show.

I'm looking forward to seeing everyone at the Sheraton in a few weeks.

I hope the crappy economy doesn't keep too many from attending, let's

hope that everyone can find a way to be with us and celebrate the great hobby of radio collecting. I was at the Sheraton a couple of weeks ago and they were finishing up an major remodeling of the hotel, the lobby and the sleeping rooms are being redone. They assured me that everything would be finished in time for our show.

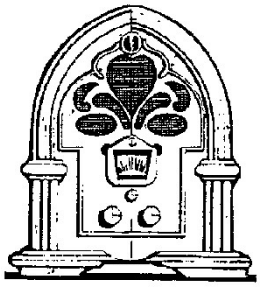
Best Regards,
Ron Lawrence W4RON

RADIO TRIVIA

Question: How many radio stations are there in the United States?

Answer: According to the Federal Communications Commission (FCC), there are 13,486 radio stations in the USA. In 2004, the FCC announced the following totals for broadcast stations licensed as of June 30, 2004:

AM stations - 4771
FM commercial— 6218
FM educational - 2497



Question: How many radio stations are there in the world?

Answer: According to the CIA World Factbook, there are about 44,000 Radio stations worldwide.

The rain date for all Saturday swap meets is the following Saturday. These events always end by 12 noon. Check the club's website for the most current information.

SPRING SWAP MEET

May 30, 2009
Spencer NC

The Spring Meet is held at the NC Transportation Museum in Spencer NC. The "Spencer Shops" is located just a short distance north of Salisbury NC, and just off I-85 at exit 79. Look for the large brown signs directing you to the North Carolina Transportation Museum "Spencer Shops".

SUMMER SWAP MEET

August 8, 2009
Valdese, SC

The meet will be in the parking lot of Burke Audio/Video on Main Street in Valdese.

FALL SWAP MEET

November ??, 2009
Greensboro, NC

The information on this meet is unconfirmed as of this printing.

Pictures from the 2009 Winter Indoor Meet held in Mebane NC on January 31, 2009.

Thank you to Mebane Antique Auction Gallery for hosting the meet!

CONFERNCE FORUM SESSIONS

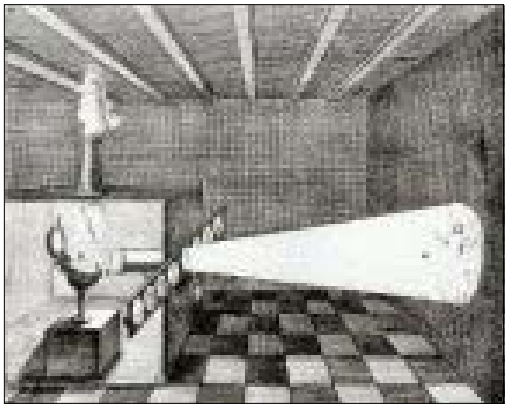
The following is a short synopsis of the forum sessions that will be presented by the various speakers at the upcoming Charlotte Annual Conference on Thursday, March 26th. Hope to see you there!

Vintage Radio Advertising Lantern Slides

By Geoffrey Bourne

Time: 2:00 pm

Program: Geoff's seminar will be a presentation of lantern slides. The slides include many RCA advertising items, The RCA Tube production photos from the Boyer estate, Atwater Kent slides, Grebe, Fada, Ozarka, King, Crosley, and a slide presentation from GE on the development of the variable reluctance phono cartridge.



He will doing it the old fashioned way using an original lantern projector.

Italian "Antique Radio" Magazines

By Robert Lozier

Time: 3:00 pm

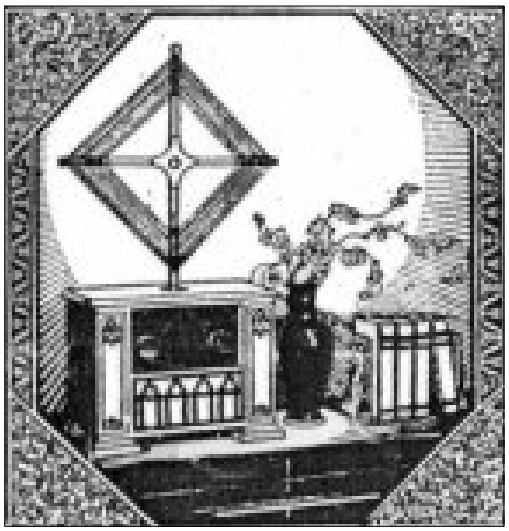
Program: For almost 15 years now an Italian publishing house has produced Antique Radio Magazine. Each issue contains about 40 pages of articles and reprints with 14 to 20 pages in full color. The photography is amazing. Many, many items shown have never been seen here in America.

Robert Lozier will show you many interesting things and help you to understand the differences and similarities of collectors and collecting in that part of the world.

DeForest Model D-12 Radiophone

By Barker Edwards

Time: ???

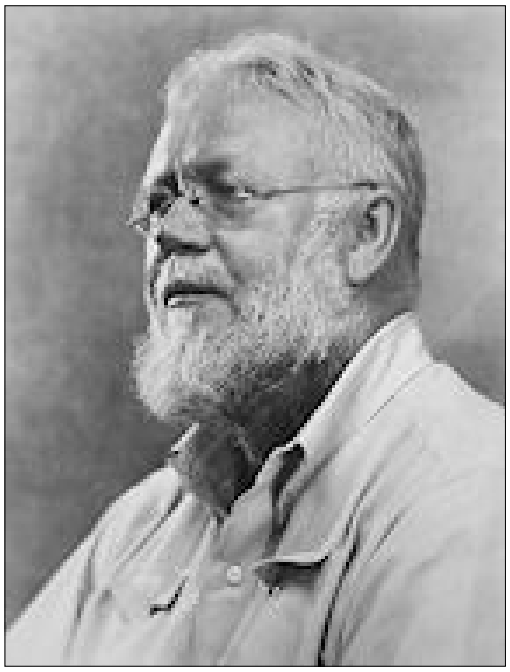


Program: Barker Edwards will present a seminar on the DeForest model D-12 Radiophone. He will talk about the three versions of this set and the modification that were made to it during the short time that it was manufactured. He will discuss the history of the DeForest Company during the early part of the early twenties and how the Model D-12 almost caused a major financial problem for the company.

The D-12 radio utilized the reflex circuit which the DeForest Company had a license for the use from Walter Priess who did not have a patent for this circuit. The reflex circuit was used in five of the DeForest models which proved to be very lucrative financially for William Priess.

Reginald Aubrey Fessenden

By James O'Neal



Reginald Fessenden
1866—1932

Time: 8:00 pm

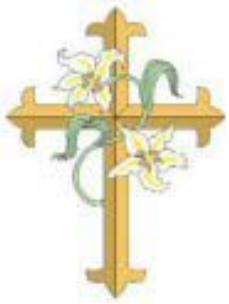
Program: Reginald A. Fessenden was a person very much ahead of his time and someone who should be given credit for many of the inventions that today we take for granted. One of those was the construction of the first true AM radio transmitter and the transmission of speech and music on December 21, 1906.

Sometime later, a story circulated that Fessenden had also performed a Christmas broadcast that same year. This account was bolstered by a Fessenden biography published in 1940, and has since been accepted as an historical fact. Two years ago, in preparing a commemorative article for Radio World magazine on the 100th anniversary of the event, Television Technology magazine technology editor James O'Neal noticed some inconsistencies in the account and a found contemporary documentation of the event to be totally lacking. Others (Donna Halper and Chris Sterling) researching the Christmas Eve event also observed the same lack of evidence and published their own account in the AWA Review. O'Neal has since been invited to speak about his findings at several radio history-related events, and appeared with Ms. Hapler in a Fessenden presentation at the 2007 AWA Conference in Rochester.

Editor's Note: *The Antenna* ran Mr. O'Neal's article titled *A Radio History Buff Finds That Evidence for the Famous Brant Rock Broadcast Is Lacking* in the Winter 2009 issue. The article was found on the web page of Radio World and was reprinted with permission. Thank you Radio World for letting us reprint the story.

Mr. O'Neal has written a follow-up article to this original article *Fessenden: The Next Chapter*. To read this installment please visit the web page of Radio World at—

www.rwonline.com/.



In Memoriam

Lewis Weimar Elias, Jr.

Lewis Weimar Elias, Jr., age 96, of 2945 Reynolda Rd., Winston-Salem, North Carolina, died at Forsyth Memorial Hospital on Saturday, February 21, 2009, in Winston-Salem, North Carolina.

Born on November 16, 1912 in Biltmore, NC, he was the son of the late Dr. Lewis Weimar Elias and Frances Rawls Carter Elias of Asheville, North Carolina. He was educated at Fishburn Military Academy in Waynesboro, Virginia and Biltmore College (now the University of North Carolina at Asheville) in Asheville, NC.

He married his late wife, Gena Howell Hix Elias in 1942 at College Station, Texas and in 1956, they moved their family to Winston-Salem, NC. Mr. Elias began his career in communications as Station Engineer at Radio Station WWNC in Asheville, NC.

As a Veteran of World War II, he served in the U.S. Navy from 1942-1945. After completing, what were then top secret courses in RADAR, (Radio Direction and Ranging) at the Naval Air Station at Corpus Christi, Texas, he served as a Radar Technician. He then became an Instructor at the Navy Airborne Technical Training Center or Radar School on Ward Island and Corpus Christi, Texas.

After being stationed at Inyokern and the Salton Sea Test Ranges in the Mohave Dessert in California, he returned to his former position at WWNC. In 1947, he became Chief Engineer for Radio Station WESC in Greenville, SC. He was later employed as a Field Engineer for RCA, the Radio Corporation of America. He was contracted to The Department of Defense, serving at the Naval Communications Facility in Yokosuka, Japan, and at Testing and Tracking Stations in the Bahama Islands of Eleuthera, San Salvador, Barksdale Air Force Base, Bossier City, LA and the U.S. Navy in Charleston, South Carolina. He served as Chief of Communications at Patrick Air Force Base and Cape Canaveral Air Force Station in Florida from 1951-1953. In 1956, he was employed by Western Electric in Winston-Salem, NC, where for 20 years, he worked in the Technical Publications Department and briefly on the Kwajalein Atoll in the Republic of the Marshall Islands.

He retired from Western Electric in 1976 and later taught Basic Electronics Classes for the Continuing Education Department at Forsyth Technical Community College.

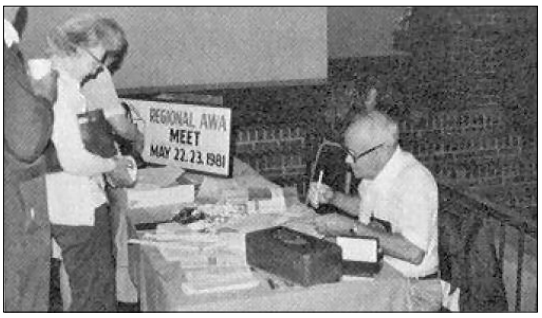
As an avid Amateur Radio Operator for almost 70 years, he was first licensed as a Radio, Telephone and Telegraph Operator by the Federal Communications Commission in 1934. His call letters when broadcasting over the air

waves were "W4DBT".

He was a member of the Forsyth Amateur Radio Club, the American Radio Relay League and The Antique Wireless Association. In 1965, he organized the formation of the Carolina Chapter of The Antique Wireless Association, (The CC-AWA) and was awarded a Life-time Membership.

He was a member of St. Paul' s Episcopal Church for over 40 years where he had taught Sunday School. He was a devoted husband and a loving father. He had a zest for scientific knowledge and a wonderfully keen sense of humor which he shared with his family and friends.

He was preceded in death by Gena Howell Hix Elias, his wife of 60 years. He is survived by three daughters, Elizabeth Tim Elias Gish and her husband, Dr. Larry Morgan Gish of Salisbury, NC; Cassandra Hix Elias Callison and husband, Michael Guy Callison of Winston-Salem, NC, Frances Carter Elias Binder, and her husband, Dr. Steve Binder of Cornelius, NC and one son, Lewis Weimar Elias III and his wife, Renee Elias of Clemmons, NC; five grandchildren, Teresa Anne Gish Perry and her husband, Charles Kent Perry of San Carlos, California, Ellen Elizabeth Gish Dutton and her husband, David Glenn Dutton of Pleasant Hill, California, James Brian Hawley of Greenville, NC and Liane Elizabeth Elias of Greensboro, NC, and Adam Carter Elias of Pilot Mountain, NC



Lew at the '82 South-East AWA Conference in Winston-Salem, NC

and four great-grandchildren, Madeline Elise Perry and Benjamin Morgan Perry of San Carlos, California and Emily Grace Dutton and Elizabeth Morgan Dutton of Pleasant Hill, California, and one great-great-grandchild, Addison Elias, of Pilot Mountain, NC. Also grandchildren, Brandon Sexton, Charlie Sexton, Ranita Abedelfi and husband, Kaled Abedelfi and their children, Ibrahm Abedelfi and Yussef Abedelfi and one neice, Susannah Carter Bacon of Asheville, NC, and three nephews; Lewis Carter Wright, Joe Kordich, and Thomas Wright of San Pedro, California.

Memorial Service for family and friends will be held on Tuesday, February 24, 2009 at 2:30 p.m. at St. Pauls' Episcopal Church, 520 Summitt Street, Winston-Salem, NC with the Reverend John E. Shields officiating. Interment in Dalton Memorial Gardens at St. Paul' s Episcopal Service will follow. Memorials may be made In Remembrance of Mr. Elias to Hospice and Palliative Care, 1100 South Stratford Road, Winston-Salem, North Carolina, 27103.

-Winston-Salem Journal

100TH ANNIVERSARY OF THE VACCUUM TUBE

by James E. O'Neal

The following article appeared in the Winter 2006 issue of IEEE newsletter *Broadcast Technology Society Newsletter*. The article was written by James O'Neal.

Note: The 100th anniversary of the vacuum tube was in 2006.

The device that heralded the beginning of the 20th century electronics industry first saw the light of day in late 1906. This was the triode electron tube, or audion, as its inventor called it.

To those of us who lived and worked with vacuum tubes at least some time during our careers, Lee de Forest's invention seems both simple and obvious: a glowing metal filament (cathode) provides a source of electrons that are attracted to a positively charged plate or anode (de Forest initially called it a "wing"). Interposed between the cathode and anode structures is a "less than solid" grid. (The grid in the original tube was simply a piece of wire bent back and forth in a zigzag manner. It later evolved into a more efficient helix of wire surrounding the filament or cathode.)

By varying the voltage on the grid, the stream of electrons being drawn to the anode is modulated. A small grid voltage can effect an appreciable change in a plate circuit load resistor and the voltage developed across it. It amplifies!

Simple!

However, it took a patent lawsuit to force its invention, five to six additional years to turn it into a practical device, the work of another fabled engineer to explain its workings, an several legal skirmishes to clear the path for its commercial use.

The concept of the electron tube goes back quite a bit before de Forest. Geissler tubes, Crookes tubes, Lenard tubes, x-ray tubes, early cathode ray tubes, and others all involved sealing metal electrodes into a glass envelope or tube and removing a certain amount of air from the space inside.

It Began with Edison

Thomas Edison must be given credit for the creation of the "hot cathode" tube—he sealed a metal plate inside one of his electric lamps and noted a unidirectional flow of current when the lamp's filament incandesced. He received a patent on this "Edison effect," but did not try to commercialize it, or spend much time in trying to understand what was happening.

Later, a British scientist, John

Ambrose Fleming decided to try it out as a detector of radio frequency energy and learned that it worked very well for that purpose. He dubbed it the "oscillation valve" and received a patent on his discovery. (Electron tubes have always been known as valves in England.)

An early de Forest audion (from the O'Neal collection)

Enter Lee de Forest

After graduating from Yale's Sheffield Scientific School in 1899, de Forest had hoped to work in Nikola Tesla's laboratory, but received no offer. Instead, he moved through a series of low paying introductory positions in the field of telephony and wireless before meeting a less-than-honest stock promoter, Abraham White. In a very short time, White had incorporated the de Forest Wireless Telegraph Company in New Jersey, with himself as president and with young de Forest serving as vice president and scientific director.

In truth, White was much more interested in making money than furthering the state of the art of wireless communications, but had to have something to show potential investors, so a number of wireless telegraph stations were constructed in the Eastern United States. The company set up a particularly impressive display of wireless at the 1904 St. Louis World's Fair.

Reginald Fessenden

Many problems beset the operation of the de Forest Wireless Telegraph Company. Among these was legal action taken by Reginald Fessenden over de Forest's unauthorized use of Fessenden's electrolytic detector. In 1906, after three years in the courts, Fessenden was awarded a judgment and effectively put the de Forest company out of business. White was quick to reorganize under another name and transfer assets, so as to deny Fessenden the monetary penalty the court assessed. There was no place for de Forest in this new venture; he was terminated with a very small amount of severance pay and a solitary invention he'd been working on that White believed to be worthless. This was a detector of radio waves that did not infringe on Fessenden's device.

Exactly how de Forest arrived at his idea for a detector is a matter of conjecture. As mentioned, Edison had discovered that a negative charge could move through the empty space in his specially constructed electric lamp.

Later, Fleming adapted this

principle to demodulate RF energy and published his findings in 1905. With Fessenden's lawsuit looming, it is to be imagined that de Forest quickly began searching for other technology to replace that crucial (and borrowed) part of the radio system he was using.

By his accounting, de Forest had first tried detecting radio signals by placing electrodes in an open gas flame. While this worked, the detector was only as stable as the air currents around it and could not be transformed into a commercial device.

It could be assumed that de Forest made the crucial "jump" in his road to invention by replacing the gas flame with an electrical one, sealed within a glass shell.

Enter Henry McCandless

It is reported that in the fall of 1906, Henry McCandless, a New York City manufacturer of small electric lamp bulbs, was approached by an assistant of de Forest's and asked to fabricate what amounted to a Fleming valve.

In a matter of weeks, de Forest unveiled his latest development at a

meeting of the American Institute of Electrical Engineers (AIEE) in New York City. The date was October 26, 1906. De Forest used the word "audion" to describe this new detector.

At this point in time, it appears that de Forest had merely reverse engineered yet another invention.

However, within the month, he enhanced the oscillation valve or audion into something unique and patentable.

How de Forest came upon the idea that jumpstarted the electronics industry will probably never be known with certainty. Why he did it may be clear in light of the audion's closeness to Fleming's valve.

De Forest had experimented with using multiple electrodes in his flame detector experiments. Perhaps this was the genesis of his invention. Perhaps not.

He had also been experimenting with the use of a battery, or batteries, in connection with the Fleming diode. Perhaps he was curious about what would happen if he used multiple electrodes as he had done in the flame detector. Perhaps he just wanted to make it appear to be something other than a direct knock-off of Fleming's device. His exact reasons will never be known.

During that November, in an attempt to either replicate his work with the flame detector, or possibly to make his device different from Fleming's, de Forest sought a patent on a device that consisted of a filament, an anode, and a control electrode of sorts (not a grid). Such a tube could not have provided de Forest with any useful gain. (However, years later, this principle of "gridless control" was successfully adopted by Heintz &

Kaufman Ltd. and was the basis for their "Gammatron" tubes.)

De Forest kept up his experimentation and on November 25, 1906, he had McCandless incorporate a grid structure into the experimental lamp devices he'd been ordering.

Stroke of Genius?

Was it a stroke of genius, or just a plodding attempt to avoid infringement on Fleming's detector?

It doesn't really matter. This was that bit of tinkering, experimentation, innovating, developmental engineering, or just plain luck that put de Forest over the top.

This was that one small step that immortalized de Forest and placed him among the top inventors of the 20th century.

Instead of merely detecting, the addition of the third element allowed the audion to amplify. If it could amplify, then it could oscillate. The possibilities for the new device appeared to be nearly limitless.

However, all of this was to come somewhat later. At the end of 1906, the audion was far from perfect and de Forest was woefully ignorant as to how it worked. This is so stated in his patent application.

He assumed that ionized gas was somehow involved in moving charges through space, hence the name audion. In fact, he rationalized that if too great a vacuum were to be created in processing the audion, the tube could not work.

This resulted in the audions produced by McCandless being quite gassy and of limited use. (The chief customers were radio amateurs, and the early tubes sold for $5.00) If more than a few tens of volts were applied to the wing (plate), then the residual gas would ionize and render the tube useless until the potential was removed.

Also, carbon and/or pure tungsten are not the most copious electron emitters and early adopters of de Forest's triode would frequently burn out the filament in their efforts to squeeze more performance from the little amplifier, resulting in product returns to McCandless.

For this and other reasons, McCandless was not that excited about manufacturing audions for de Forest, but continued to do so for some time. He was in part responsible for several changes and improvements to the audion over the next several years.

It took Edwin H. Armstrong to fully

analyze the operation of the de Forest audion and put forth the correct theory of its operation.

De Forest eventually sold rights to his invention. Engineers and scientists at both Western Electric and General Electric "took it from there" and shaped the primitive little device into the workhorse that

drove the radio, recording, television, computing and numerous other industries until the invention of the transistor began to eclipse it more than 50 years later.

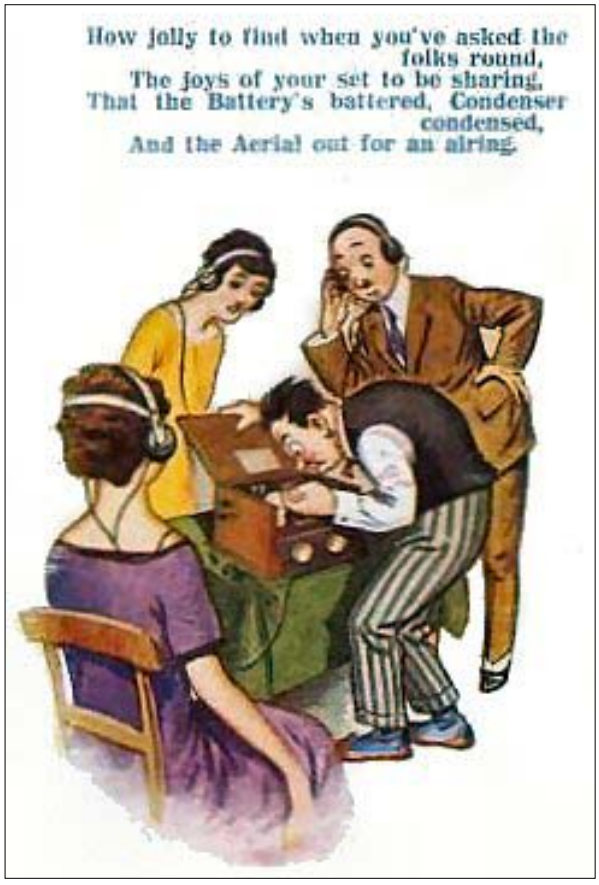
De Forest was honored in 1922 with the Institute of Radio Engineer's Medal of Honor in recognition of his invention and other work in the field of radio.

Later in his life, de Forest served a term as president of the IRE (1930) and in 1946 received the AIEE's Edison Medal for his development of the vacuum tube.

Although de Forest died at the age of 87 in 1961, his invention lives on to this day. Even though the vacuum tube is officially 100 years old now, it has not been completely forgotten and pushed out of the way. Several companies throughout the world still manufacture tubes and many audiophiles claim that tube technology is the only way with which to reproduce high quality audio.

Happy 100th birthday!

FROM THE MAILBOX



1930s Comic Postcard

How jolly to find when you've asked the folks around,
The joys of your set to be sharing,
That the Battery's battered, Condenser condensed,
And the Aerial out for an airing.

Call for 2009 membership renewal!

Carolinas Chapter of the Antique Wireless Association, Inc.

Time marches on… Time for all of us to look forward to another year of learning about, collecting, preserving and restoring vintage communications equipment. Time to look forward to more opportunities to gather with fellow enthusiasts.

Before this year ends members of the CCAWA will host meets in Greensboro, Valdese, Columbia, Spencer and the big 32th Annual "Spring Meet in the Carolinas" at Charlotte. These events just don't happen, it takes volunteers and a source of revenue to provide the necessary infrastructure. None of these events would be possible without the support of enthusiasts just like you. Please show your continuing support of these activities by renewing your membership today!

2009 dues are $10.00. Make your check payable to: "CC-AWA" and mail to:

CC-AWA
c/o Clare Owens
101 Grassy Ridge Ct
Apex, NC 27502

Help us keep our membership records up-to-date.

Name: _____

Amateur Call: _____

Mailing Address: _____

City, State, Zip: _____

Home Phone: _____ Work Phone: _____

E-mail Address: _____ Fax: _____

If you have not renewed your membership in the Antique Wireless Association, take the time to do it today! A strong national organization for vintage communications enthusiasts is essential! AWA membership is $20 per year. Make checks payable to: "AWA" and mail to: Pat Muehlbauer (Secretary), PO Box 108, Stafford, NY 14143

A REMINDER

By Barker Edwards

I received the following email about a Majestic radio that had been stored for many years. The owner had thought the radio was safely tucked away but soon discovered otherwise. This is a good reminder for us all to check the radios and parts we are storing for a raining day!

Some 10 or 20 years ago I wound up with a really nice Majestic chassis (circa 1929) and speaker. I could not figure out what to do with it so I put it in a storage box out on a shelf in my carport. I thought it was safe there… WRONG! Here is what I found yesterday morning….

Not a pretty sight!

This was on the bottom of a steel four shelf unit out in the carport. I presume that occasional blowing rain found its way down to the box although other items on the shelf were OK. I think that the poly stock box just prevented evaporation…. It was probably there for 10 years….

Maybe a word to the wise to not store items in completely waterproof containers (with hidden leak paths) if they are not going to be stored in a guaranteed dry location.