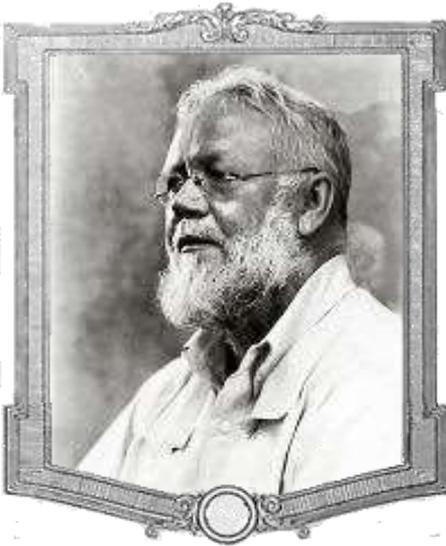
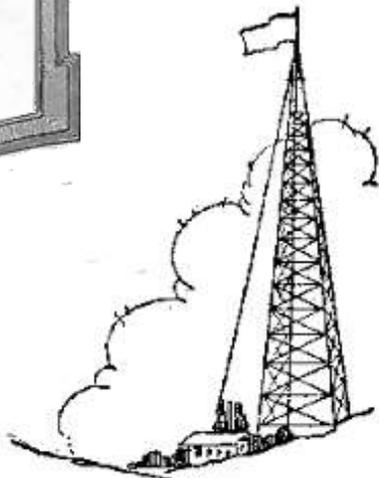


The Carolina Antenna



Spring 2008
Volume #14
Issue #1

Carolinas Chapter
of the
Antique Wireless
Association



CAROLINAS CHAPTER OF THE AWA

<http://www.cc-awa.org/>

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The next elections will need to be held in 2009, nominations due in September. Election letter mailed in November. CC-AWA Elections are held every two years.

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 Robert Lozier - address is listed above.

Cover illustration: Reginald Aubrey Fessenden



ISSUE # 14

SPRING 2008

VOLUME 1

THE PREZ SAYS ...



By Ron Lawrence,
KC4YOY
CC-AWA President

Happy 2008, it's been a while since we had a newsletter so there's a lot to talk about.

Our Summer Swap meet in Valdese was another great success, Richard Owens the meet host and our club VP did another great job of setting up a nice event. This year we were at a new location in Valdese, right downtown and in the middle of the annual Waldensian Festival, which attracts visitors from the Carolinas and several, surrounding states. Richard's business is located right downtown and we were on the corner right next to his business and

right in the middle of the festival. One of the other local businesses donated several tents & tables for us to use. I think we had about 15 vendors and a good number of shoppers and lots of the folks that were there for the event stopped by to look and ask questions. Along with everything else we also got a chance to visit Richard's Zenith museum located inside his business, he has a really impressive collection.

About a month after the Summer Swap a lot of us attended the annual Shelby Hamfest, I've been going to Shelby since I was in high school and like a lot of other events it had been declining in size in the past few years, but the 2007 fest was about a big as I remember them ever being. I saw a bunch of club members and other old friends; this is what I really enjoy about attending these events. I did manage to sell a good bit of "stuff" that was just sitting around, enough to buy an Icom IC706 HF rig to add to the ham shack.

In late October we headed to Greensboro for the Fall Swap meet, Brad Jones did another great job hosting this event. I counted about 25 vendors and a bunch of shoppers.

Robert Lozier and I rode up with my buddy Ralph Bartlett W4ZO. Ralph made the purchase of the day in a Madison Moore Super-Het; it's a beauty.

In the fall of odd numbered years we have elections of club Board of Directors. There are seven BoD seats specified by our by-laws, two of these seats had been open for over a year due to resignations, Ted Bryan indicated that he did not intend to seek another term as a BoD member, I'd like to thank him for his many years of strong support of the club and the Charlotte Conference.

Stephen Brown offered to handle the BoD election process for the club, Stephen is a non-voting member of the BoD since he is a past club president. When we mailed out nomination forms the only new nomination other than the incumbents was Richard Owens, who is club VP so he can't sit on the BoD too. There were no other nominations so it was decided there isn't any point to continue the election process since there were no contested seats. We now have 3 open seats on the BoD, if you would like to have a say in how YOUR club is ran, you are invited to contact one of the offices or BoD members and volunteer. Appointments can be made by the Executive Committee for new members until the next bi-annual election.

As I'm writing this our Winter Swap meet is the day after tomorrow in Columbia SC. I sitting in the waiting room while my wife has oral sur-

gery, lots of fun. I guess I'll have to fend for myself for supper tonight, I doubt she'll be much in the mood to eat after having 6 teeth pulled.

The Charlotte Conference is just around the corner, the brochure is at the printer and should be in the mail next weekend, I hope. Other than the programs on Thursday afternoon there's really nothing changed from last year. All the registration fees are the same; of course the location at the Sheraton is the same too.

Our programs on Thursday afternoon and evening are great this year, Mark Oppat from Detroit will be talking about repairing speaker cones, Fred Crews will be telling us about the Museum of Radio and Technology in Huntington WV. Robert Lozier has gone into his photo archives and will be giving a digital slide show of photos of Carolina radio collecting going back into the 70s, and Thursday evening, John Allen W4GQT will be telling us all about the history, development and servicing of the Super-Heterodyne circuit.

For more than 15 years now we have made a concerted effort to control the start time of flea market at our conference. Our "Le-Mans Start" is a big part of this. If we didn't do anything to control the start time we would have folks in out before dawn with flashlights, and the market would be going on Thursday. Some ask "why not?" Our answer is that the earlier the flea market starts, the earlier it ends. Most of folks understand and do a

good job of abiding by the rule. The “Le-Mans Start” works good on Friday morning, the one problem we still have with some vendors is keeping them from setting up their for sale items before 8AM. The #1 Rule is “No Buying, Selling, Trading, or DISPLAYING of merchandise before 8AM on Friday”. When challenged folks will say they’re just getting stuff out of their car, but they won’t sell anything. Well anyone that thinks about it will understand why this won’t work. Let’s say you’re being good and just standing by the back of you car in the flea market waiting for things to get started. You’ve got your tables set out but all of your sell items are still locked in the trunk. You neighbor starts setting out radios and all of a sudden there’s the one set that you’ve been looking for forever, and it has a \$20 price tag on it. You look at you watch and its only 7:30, a long time until the 8:00 start time. You know that if you don’t jump on it now, someone else will. What do you do, you go over and hand the guy a 20 quickly, I know I would, anybody would, and that’s why the stuff must stay in the cars until 8:00AM. No one could resist making that buy.

We’re trying to make sure that everyone involved with the flea market understands the rule. It’s going to be printed on just about everything we hand out, the brochure, Pre-Registration forms, web pages, the vendor passes themselves and PA announcements will be made early morning. Violators will get one warning, if they refuse to abide by the rule, all their registration/

vendor fees will be refunded and they will be asked to leave the event. We would hate to have to go this far, but there’s no point in having a rule that’s not going to be enforced.

We have this rule to help make this an enjoyable event for everyone; we hope you feel the same way.

I look forward to seeing everyone in March.



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.

32ND ANNUAL
CHARLOTTE
CONFERENCE
Charlotte NC
March 20-22

SPRING SWAP MEET
Spencer NC
May 17 (unconfirmed)

SUMMER SWAP MEET
Valdese NC
August 19 (unconfirmed)

FALL SWAP MEET
Greensboro, NC
October 17 (unconfirmed)

Call for 2008 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!

2008 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: _____

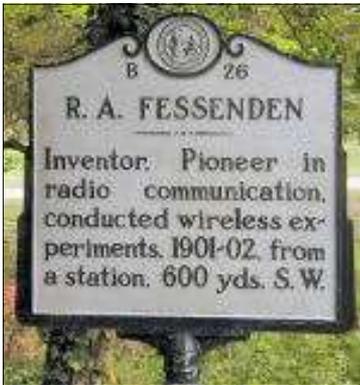
City, State, Zip: _____

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), P.O.Box 108, Stafford, NY 14143

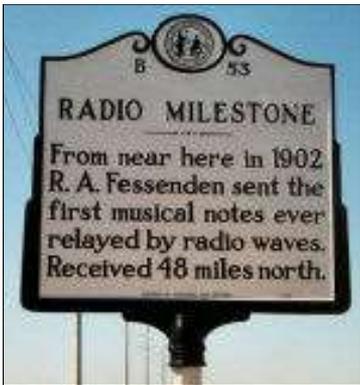
FESSENDEN NC HIGHWAY MARKERS



Marker B26

Located: US 64 Bypass south of Manteo in Dare County

Original Cast Date: 1949



Marker B53

Located: NC 12 at Buxton in Dare County

Original Cast Date: 1988

Excerpts from for both Essay: Fessenden's primary contribution was his scrapping of Marconi's operating principles and his

advocacy of the "continuous wave" theory of broadcasting. It was this theory that the former Edison assistant demonstrated successfully at Cobb Island, Maryland (first transmission of intelligible speech, 1900); on the Outer Banks (first transmission of varying musical notes, 1902); and at Brant Rock, Massachusetts (first actual broadcast of a radio program, 1906). The 1902 North Carolina transmissions were "very loud and plain, i.e., as loud as in an ordinary telephone." Relayed from Buxton, the broadcasts were received forty-eight miles north on Roanoke Island.

R. A. Fessenden's work on the Outer Banks was contemporaneous with the first flight of the Wright Brothers at Kitty Hawk. Although not nearly so well-known, his radio experiments have drawn attention from time to time. In 1940 his widow Helen published a biography defending her husband's accomplishments against those she believed would rob him of the credit. A United States Navy destroyer in World War II was named in his honor. In the mid-1940s and again in the late 1970s there were attempts to create a "Fessenden Memorial Park" on Roanoke Island. The experiment station at Buxton no longer stands but the foundations for a tower used by Fessenden do remain. The station appears on period U.S. Coast and Geodetic Survey maps and has been confirmed by David Stick and residents with knowledge of the area.

BUILDER OF TOMMORROWS

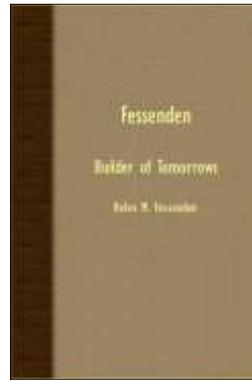
Helen M. Fessenden wrote the book *Builder of Tomorrows* in 1940.



Helen Fessenden

Based on her husband's unfinished autobiography and her own letters, Helen Fessenden wrote what remains the definitive biography of one of America's most eminent radio pioneers, responsible for the two-way radio, the wireless telephone, the sonic depth finder and the submarine telephone. Using heavy documentation, she traces Fessenden's life as a series of confrontations and crises interspersed with several important achievements: the alternator principle, the first broadcast station (1906) and heterodyne theory.

When it was published in 1940, The New York Times called "Fessenden: Builder of Tomorrows", "a valuable and entertaining biography." Books stated that this biography "should be read by all who realize that creative ideas are the only hope of the nation and the race" (LC 74-4681` Coward McCann, New York, 1940).



While original copies of her book can be found on Ebay, second book stores, and out-of-print book stores, they often sell in the \$225–\$300 range. This book was reprinted in 2007 and is available on Amazon books (www.amazon.com). It is paperback and sells for \$30.95.

REGINALD FESSENDEN ARTICLE

In 2005, Judy and I made a trip to the Outer Banks while on a tour with the antique car club. One of the stops we made was to Fort Raleigh. Since this isn't too far from where Reginald Fessenden did his experiments on Cape Hatteras for the US Weather Bureau, I struck up a conversation with Park Ranger Rob Bolling who informed me that the Park Service was working on a paper about Fessenden which would be made available at the Visitor's Center. He promised me that he would send me a copy of the presentation when it was finished. I recently received the following article from him. It was prepared by Park Ranger Donald S Rowe and is reprinted on pages 7-15 with permission of the Park Service.

REGINALD AUBREY FESSENDEN: CANADIAN RADIO PIONEER OF ROANOKE ISLAND

I AM YESTERDAY AND I KNOW
TOMORROW



Reginald Aubrey Fessenden
1866-1932

For many, Roanoke Island's cultural history denotes England's first settlements and attempts to establish a permanent colony in the New World. Several also know of the colony of escaped slaves who began new life as freed men after the civil war battle of Roanoke Island. But few associate Roanoke Island with developing scientific principles and technological innovations that transformed modern communications. Yet this is also a legacy of the island.

From 1901 to 1902 on Roanoke Island, a prolific Canadian inventor and scientific genius laid the foundation for developing modern broadcast radio: Reginald Aubrey Fessenden. How ironic so little is

known about him or his contributions, especially when contrasted with his contemporaries Wilbur and Orville Wright, conducting research and experiments in the principles of flight a few miles away across the Roanoke Sound.

EARLY LIFE

Son of an Episcopal rector, Reginald Fessenden was born in Quebec, Canada on October 6, 1866. He received his early education at a private school near Niagara Falls, New York. By 1877, young Fessenden attended Trinity College School at Port Hope, Ontario, Canada. His early genius in mathematics led to mastership in the field at his father's alma mater, Bishop's College School. While there, he pursued his studies while being an instructor of mathematics and languages. At aged nineteen, he became principal and only teacher of a private school in Bermuda.

His interest in electricity and its practical applications led to a path that prepared him for the multiple roles of scientist, engineer and inventor. In 1887 Fessenden arrived in New York City and obtained work with Thomas A. Edison and Edison Machine Works. Beginning as an assistant tester, he scraped insulation off conductors so the tester could check for ground faults. Before his section of the project was

completed, Fessenden was promoted to tester, then chief tester, and finally, inspecting engineer.

After his project was completed, Fessenden chose to work as one of Edison's assistants at the new Llewellyn Park laboratory in West Orange, New Jersey. He stayed with Edison for over three years, working on new insulating materials for cables and new lacquers for dynamo wiring. While at Llewellyn Park, Fessenden not only got the chance to observe Edison's methods firsthand, but he also had access to the laboratory's library.

During this time, Fessenden developed an interest in electrical waves, especially high frequency alternating current. This interest in the field led to his future developments in radio technology. Reginald Fessenden rose to chief tester and head chemist at Edison before leaving the company. He then designed electrical power devices for a subsidiary of Westinghouse Electric and Manufacturing Company.

These forays into engineering were followed by a return to academia when he accepted a faculty position at Purdue University in 1892. A year later Fessenden joined Western University of Pennsylvania (now the University of Pittsburgh) as a Professor of Electrical Engineering through a grant provided by George Westinghouse. Dr. Fessenden was about to begin a lifetime of inventive genius.

While at Western University,

Fessenden continued to study the phenomena of "Hertz" or the fluctuation of electromagnetic waves. By 1897, Fessenden concluded that to transmit the entire range of audible sounds and human voice, electromagnetic waves must radiate in an unbroken fashion, as in how a rock thrown in a pond creates continuous waves. Fessenden's early focus on producing electromagnetic continuous waves and their potential to transmit audible sounds separated him from other inventors such as Guglielmo Marconi, the widely recognized inventor of radio transmission. The Morse Code, dot-and-dash of Marconi's wireless communication technology was unsuitable for transmitting human voices.

US WEATHER BUREAU

By 1900, Professor Fessenden accepted a contract offering \$3,000 per year by the United States Weather Bureau to develop a method of wireless communication for improving the transmission of weather data along the East Coast. Under the agreement, Fessenden retained ownership of all patents he would develop. The Weather Bureau retained the right to use all patents or devices Fessenden developed during his employment. Though the bureau's interest was improving the reliability of wireless telegraphy, Fessenden interest was far more visionary - the possibility of transmitting the human voice.

As contractor with the Weather Bureau, Professor Fessenden began his work on Cobb Island, Maryland in the Potomac River. He devoted

his wireless transmission efforts in two directions of study. One effort involved experiments to better receive electromagnetic waves by recording and measuring the conductivity of two antennas constructed approximately a mile apart.

The other effort was to improve the electrical equipment used for receiving and transmitting wireless signals. On the receiving side, Fessenden focused on replacing a slow and insensitive receiving device in use at the time, called the "coherer." Instead of a coherer, Fessenden sought a device capable of accepting electromagnetic signals both quantitatively and continuously - the elements essential to receive transmitted voice signals.

This led Fessenden to develop a receiving apparatus he named the "hot-wire barretter." Unlike the coherer, which was an "off-on" device, the barretter operated continuously. When an electromagnetic signal passed through the device, the resistance in the wire caused it to heat, changing the wire's electrical resistance. This change in resistance could be measured and transformed into an output signal. Since a change in temperature and resistance is directly related to the strength of the signal received, Fessenden's device could measure quantities of changes in signal strength on a continuous basis.

On the transmission side, Fessenden believed that in order to transmit audible or voice signals, the existing method of signal power

generation had to change. By 1901, signals were still generated by a source of direct current electricity, an "interrupter," telegraph key, induction coil, and a "spark gap." The limitations of the spark gap technology was that it produced an interrupted signal, and the "noise" of this signal drowned out signals in the audible range. Guglielmo Marconi and other scientists believed the spark gap was the only way to generate electrical power to transmit a wireless signal. Knowing it was essential to somehow generate a sustained, continual pulse of electromagnetic waves to transmit audible sounds, Fessenden turned his mind to finding a way to produce continuous waves.

Though the desired equipment would be available after his early experiments on Cobb Island, Fessenden's use of an induction coil with a high frequency interrupter unit was still able to generate a spark at a frequency that did not completely drown out audible signals. Using this equipment, he successfully transmitted an electromagnetic wave voice message over a mile to his assistant Mr. Thiessen in December of 1900. He also demonstrated to the Weather Service a wireless voice transmission of over 50 miles from Cobb Island to Alexandria, Virginia.

Pleased with the early results of his work, the Weather Bureau had Fessenden expand and relocate the project to Roanoke Island, North Carolina. A primary operating station was established on the northwest side of the island. Field

stations were established at Cape Hatteras to the south and at Cape Henry to the north in Virginia. These sites, separated by distance and water, provided Fessenden a perfect environment to develop his experiments on a large scale for the Weather Service. Professor Fessenden brought his wife Helen with son Reginald and resided in Manteo during the assignment, "a town of two hotels and several stores."

For twenty months on Roanoke Island, Fessenden and his staff worked to perfect his barretter and were virtually alone in conducting experiments on using continuous waves for transmitting audible sounds. The effort involved a daily trek from Manteo by sandy road along mosquito infested marshes to his antenna site. Fessenden also constantly traveled between his primary station and field stations, double-checking connections and troubleshooting equipment.

In her 1940 memoir, Helen writes:

"..directly after breakfast the men would start off in a rickety conveyance for the wireless station on the west side of the island... they took sandwiches with them and brewed coffee at lunch time. Home again about six, and after supper, two or three hours of office work, correspondence, patent applications, official Weather Bureau returns and accounts."

Dr. Fessenden submitted numerous separate patents during this time, thirteen of which was granted in

August 1902. Several more patents were later granted based on work done at Roanoke Island. Among these later patents was one for the receiving apparatus Fessenden began developing on Cobb Island and had perfected on Roanoke Island, his hot-wire barretter.

By April 1902, Fessenden wrote his attorney:

"I have more good news for you... You may remember I telephoned (transmitted a wireless voice message) about a mile in 1900, but thought it would take too much power to telephone across the Atlantic. Well, I can now telephone as far as I can telegraph, which is across the Pacific Ocean if desired. I have sent musical notes from (Cape) Hatteras and received them here with but three watts of energy, and they were very loud and plain... as loud as in an ordinary telephone. The new receiver is a wonder!"

The experiments on Roanoke Island enabled Fessenden to demonstrate that his hot-wire barretter represented a quantum improvement in sensitivity over Marconi's coherer. Most importantly, his apparatus continuously received and generated signals that were essential for achieving voice transmission. The limitations of Marconi's spark gap technology for signal generation became apparent. More than a decade passed before more sensitive instruments were developed to replace the barretter.

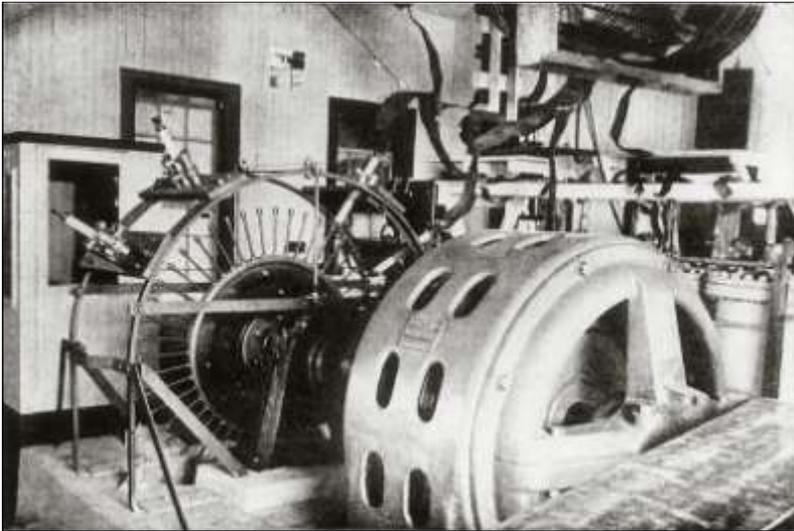
Now able to send crude voice messages with his barretter,

Fessenden then confronted the challenge of how to break the barrier of generating continuous waves. Fessenden's solution was to invent the "synchronous rotary-spark-gap" transmitter, using a high-speed (high frequency) electrical alternator. Fessenden had ordered such an alternator from Westinghouse while on Cobb Island, but when one could not be developed to meet his specifications, he developed and perfected one himself while at Roanoke Island.

The importance of Fessenden's work on Roanoke Island on high frequency alternators was not immediately appreciated in 1902, but it would become so a few years later. Eventually, Fessenden developed synchronous alternators that generated up to two kilowatts at 80 kilocycles. General Electric

Company later produced a machine generating up to 200 kilowatts, but it is clear that Fessenden's alternator was the prototype.

As important as these inventions Reginald Fessenden contributed to broadcast radio, perhaps none was more original than in the area of signal selectivity or "tuning." Many of his Roanoke Island experiments also involved preventing interference from unwanted signals, resulting in his discovery of the principle he called "heterodyning." Fessenden learned that mixing two different frequencies produced a "beat" frequency equal to the sum and difference of these frequencies. By tuning instruments to respond only to this "beat" frequency, unwanted signals could be eliminated. Some of the patents Fessenden submitted in 1902 dealt with this area and still have



Steam engine driven AC generator and 500 CPS Synchronous Rotary Gap transmitter at Brant Rock, Ma. Ca: 1906. The drive belt is in the foreground, the inductors are near the roof, and the high pressure capacity.

applications today.

The reason this principle would not be quickly appreciated was that it was ahead of its time. Building on Fessenden's success another radio pioneer, Major Edwin H. Armstrong, developed a completely new and superior type of receiving circuit, the "superheterodyne." Except for method improvement, Armstrong's superheterodyne circuit remains the basis for virtually every standard radio receiver today. But it is clear that Armstrong's superheterodyne receiver is based on the heterodyne principle, and the widespread application of the "superheterodyne circuit" masks the discoverer of its basic concept, Reginald Aubrey Fessenden.

Despite his successes, Fessenden's experiments on Roanoke Island came to an abrupt end in 1902 due to disagreements that arose with the Weather Service. Fessenden believed that the Chief of Weather Services was attempting to obtain inappropriate access to the professor's patents for his own use. This led to deep, irresolvable disagreements and poisoned the atmosphere between Fessenden and the Weather Bureau. After charges and countercharges between them, Fessenden resigned and departed Roanoke Island by September 1, 1902.

Fessenden's departure represented a loss on several levels. Within a few months, the Weather Bureau ceased all experiments on Roanoke Island and the equipment was sold. Moreover, the US Navy and Weather

Service discounted Fessenden's achievements for many years, despite the demonstrated breakthrough nature of his technology.



Circa. 1910 penny postcard of Reginald Fessenden's Brant Rock, Massachusetts radio tower.

NATIONAL ELECTRIC SIGNALING COMPANY (NESCO)

Professor Fessenden then entered private enterprise to finance his ongoing research. Two enterprising businessmen from Pittsburgh and Fessenden formed the National Electric Signaling Company (NESCO). This company erected a transmitting antenna at Brant Rock in Massachusetts and at Machrihanish, Scotland.

On January 10, 1906, Fessenden's

company conducted the first two way transatlantic voice radio-telegraphy transmissions. Fessenden used his synchronous rotary-spark transmitters employing a high frequency alternator of his own design at both stations, and tuned the receivers with his barretter detector. The signals were superior to other signals used at the time, which by comparison were rough and ragged.

Later that year on Christmas Eve, wireless station listeners were stunned to hear Christmas carols singing through the static of Morse Code. From the Brant Rock transmitter, Reginald Fessenden and his colleagues were publicly broadcasting the first transmission of human voices by continuous electromagnetic (radio) waves. In addition to carols, Fessenden played Handel's Largo on the violin - the first songs ever broadcast by radio - and delivered a goodwill message.

The broadcast was heard by radio operators throughout New England and the South and North Atlantic Oceans aboard US Navy and United Fruit Company ships, equipped with Fessenden's wireless receivers. The wireless broadcast was repeated on Ne.5

w Year's Eve. For the broadcasts, Fessenden used a high frequency alternator he constructed capable of generating 70 to 80 kilocycles with 500 watts of power.

Unfortunately, Fessenden was far more successful at science and invention than in business. Follow-

ing disagreements with his investors, Fessenden was forced out of the company by 1911. His former partners eventually sold licenses to many of his patents to the Marconi Company. NESCO later became known as the Radio Corporation of America (RCA).

Professor Fessenden could derive some satisfaction from Marconi's purchases as validating his own theories. It would also be an acknowledgement that his quality of research surpassed the efforts of his competitor. However, to Fessenden his former company's sale and purchase of the patents was a confiscation of his intellectual properties. Moreover, the Canadian inventor would receive no compensation from these sales by the very company he helped to found.

There was no other recourse for Fessenden to stop the sales but engage in a series of arduous and debilitating lawsuits against NESCO. After fifteen years in the courts, Fessenden finally won recognition for his work and compensation for his claims. Fessenden was awarded \$500,000 but received \$300,000 after legal fees.

However measurable the sum of money was in terms of real dollars, it was a small reward for his significant contributions to the development of wireless technology. The most important loss to Fessenden may not have even been financial wealth, but of appropriate respect for his contributions and discoveries. After the lengthy legal disputes over patents and property

infringements, it was unclear to many where credit should be attributed.

Mr. Fessenden was therefore deprived of much public recognition as arguably the most prolific inventor in radio history. Following the lawsuit, Fessenden retired to Bermuda with his wife and son, turning his intellectual interests to other areas. His health failing, he resided there until his death in 1932.

During his life, Fessenden developed and held over 500 patents in fields relating to radio, communications and submarine signaling. Fessenden held nine patents with respect to incandescent lamps by 1901. Based on this work and his interest in photography, he developed and patented a system of microphotography, used by banks and businesses for the mini-recording of documents into the 1980s. By World War I, he created the first depth ranging systems and for detection of underwater vessels. Of all areas that Reginald Fessenden's innovative mind touched, none proved more revolutionary than in wireless communications.

During the International Conference on 100 Years of Radio, Dr. John S. Belrose noted if Marconi was the "father of wireless" then Fessenden was "the inventor of radio as we know it today." In a 1994 article Dr. Belrose encapsulated the breadth of Reginald Fessenden's genius, pointing out that in addition to his inventions in

wireless,

"Fessenden gave us the radio pager (he called his device a beeper); he gave us sonar, which he demonstrated could detect icebergs, and his fathometer to measure the depth of water beneath the keel of a ship. He gave us turbo-electric drive to power ships; the first gyrocompass, the loop antenna; radio direction finding; his pheroscope for submarines; a first TV receiver; ultrasonic methods for cleaning; electrical conduit; carbon tetrachloride; and tracer bullets."

Perhaps Fessenden's son Reginald expressed a most fitting tribute to this great radio pioneer:

"By his genius, distant lands converse and men sail unafraid upon the deep."

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Pictures taken at Brant Rock circa 1906

Below: *Fessenden is sitting in the chair and his son standing behind him on the left*



TINKERIN' TIPS

By Fred Crews

FILLING WHITE ENGRAVINGS ON PANELS AND KNOBS

The old large usually black bakelite knobs that went from 0 to 100 (for example) actually had engraved markings. With years of use the white material used to put into the engravings wears away. Some people use a permanent type of white paste in a tube to renew the white filling. This material has the name of "Mean Streak" and is a product used to mark tires as they are being balanced at a garage. It can be purchased at most automotive stores.

A material that I like better is white paste shoe polish. It is not permanent paint, but lasts O. K. You have to look for it in shoe stores and it comes in a tin just like the black or brown paste shoe polish. Fill the engraving with the shoe polish and rub it with a paper towel and just paper to level the filled area.

The same thing applies to front panels of pieces of electronics say early test equipment. ... putting the polish on knob itself or the front panel and rubbing it a bit will give a polish to the rest of the surrounding area. This polish will not be white. Just rub it a bit to make the knob shine.

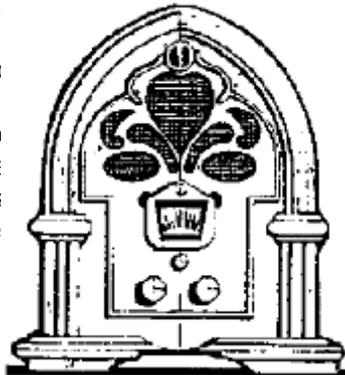
PROTECTING DECALS PROTECTING DECALS

When refinishing a radio cabinet there are often decals or even little notices that are irreplaceable that we wish to save. An excellent way to do that is to buy a product that can be brushed over the decal or whatever. This product can usually be found near the cosmetics section of a large store. I have 2 small containers in front of me, one of which is labeled AMBROID EZ MASK. It says "brush on area to be masked off- let dry". The other is straight from the cosmetic counter and is called a peel off mask. Apply, let dry and peel off. It says quote "relax away facial stress lines and wrinkles".

Now, in our case, with a fine artist brush, put a rather heavy coat of this material over what you are trying to protect. Let dry, then just put your finish right over it- spray or whatever. If you make a mistake, you will need to remove what you have applied and start over. Then when the radio finish is completed, pick away at the mask remove it. It is advertised to work with any solvent or water.

I have used this a number of times with excellent results.

Do this carefully using a fine a brush



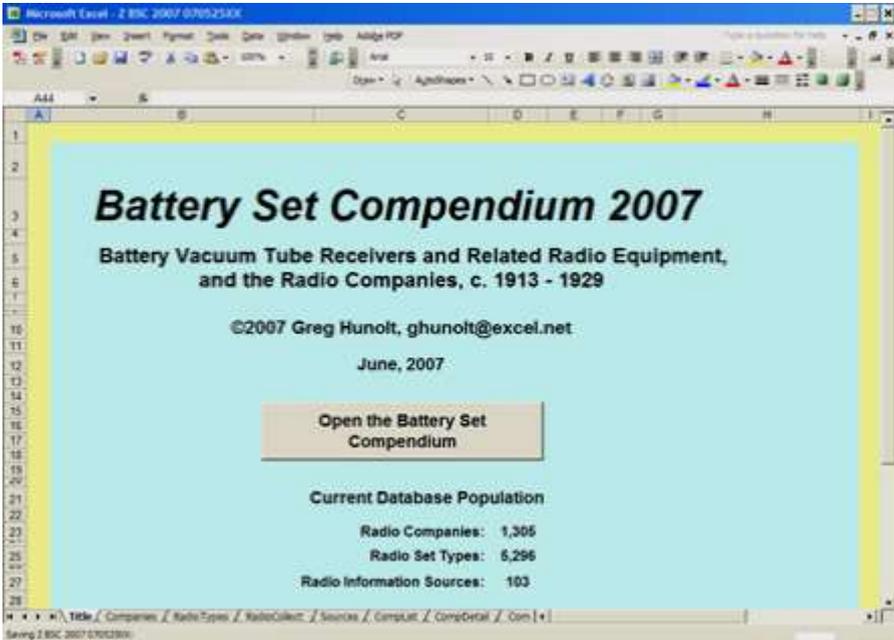
2007 BATTERY SET COMPENDIUM

Greg Hunolt finished the latest revision to his Battery Set Compendium (BSC) the middle part of last summer and it is available if you send him an e-mail at ghunolt@excel.net. If you like the early battery sets, his 2007 BSC is well worth getting a copy of. All he requests is that you let him know of any sets that are not in the BSC so they can be added. There are over 1,300 companies and over 5,200 radio sets listed in this BSC. There is a copy of the title page shown below which will show you the quality of the work he has done on the BSC.

You can search the BSC by year, company name, trade name, model or ID, and circuit type. There is also a lot of other information in the BSC. You can tell he has spent many hours working on the BSC because it is very well done as is very evident when you open the file up.

When he sends you the BSC he will attach a copy of the 2007 BSC package in a zip file with four items, the BSC Excel workbook, the users' guide in Word and PDF, and a one page text read-me.

Greg said he would appreciate any information on North / South Carolina companies and radios that he is missing in the BSC; he said that would be great if he could get this information.



THE EVOLUTION OF RADIO

By Barker Edwards

The Clayton NC Historical Association recently asked me to make a presentation on the 'Evolution of the Radio and It's Social Impact on Our Society' to the group. On February 23rd, I took about twenty of my radios along with some batteries and 2 horns and presented a 12 hour Power Point slide show in which I covered the major highlights in the development of the radio from 1888 until 1941. As part of the display I played vintage 1920s through the horns.



Some of the display at my radio presentation!