

# The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

May 2018

Volume 24 Issue 5



## MEETING/ ACTIVITY NOTES

Reported by  
Marv Beeferman

### The ON-LINE Broadcaster

The *Jersey Broadcaster* is now on-line. Over 160 of your fellow NJARC members have already subscribed, saving the club a significant amount of money and your editor extra work. Interested? Send your e-mail address to [mbeeferman@verizon.net](mailto:mbeeferman@verizon.net). Be sure to include your full name.

It is with extreme sadness that I have to report the loss of another NJARC member. Charles Blanding was a true club asset with his extended knowledge of the history of New Jersey and New York broadcasting and transistor radios which he restored and collected. Charles also served as a docent at our Radio Technology Museum at InfoAge and was a helpful hand at our repair clinics. An obituary follows.

A number of items from the Vince Lobosco estate showed up at our April show & tell. The NJARC members that attended the sale were quite impressed by the size and diversity of items that Vince collected. President Richard Lee reports that the remains of Vince's collection were to be sold off by an estate agent on April 28-29.

One of the books that member Ray Chase obtained, "Hazeltime the Professor" by Harold A. Wheeler had the following hand-written inscription to Vince's dad Roscoe: "To my friend R.R. Lobosco from Harold Wheeler, 1981." To be associated with such a radio luminary as Wheeler (inventor of AVC and co-inventor of the Neutrodyne, among other things) was quite an honor.

Some research by member Al Klase finds that Roscoe Lobosco was a 1936 graduate of Brooklyn Polytechnic Institute with a degree in engineering. He had been an electrical engineer and project engineer for Union Carbide for 30 years



## MEETING NOTICE

### PLEASE NOTE DATE CHANGE!

The next NJARC meeting will take place on Friday, May 18th, at 7:30 PM at Princeton's Bowen Hall (70 Prospect Ave.). This date avoids a conflict with the Kutztown swapmeet. Directions may be found at the club's website (<http://www.njarc.org>). As a change of pace, this month's meeting theme is Alternate Collections. Bring in an example of one of your non-radio-related collectables (including vintage autos) that you think might interest the membership. If you collect snakes or spiders, a picture or two will do but we'll still be happy to hear about them.

and an IEEE member. His numerous patents related mostly to automated arc welding. But the questions still arises about his relationship to Wheeler (perhaps through the IEEE?) and how did Vince's collection and interests relate to those of his dad's? It is certainly worth a little more research.



**NJARC members Bob and Sharon Bennett thank Vince's niece Lisa Reinhardt and her husband for getting his radios "into the hands of those who will care for them."**

WA2XMN (Armstrong FM, 42.8 MHz) is located at the 425-foot high Armstrong tower in Alpine, New Jersey. The station occasionally transmits in wide-band FM using the same technical standards as modern FM broadcast stations. During our meeting on April 13th, the station was "on the air" and Technical Coordinator Al Klase set up a listening post to monitor the transmissions. Al noted that previous experience has documented solid coverage out to at least 50 miles, and it appears that reception was good at InfoAge. Perhaps we can get a follow-up and a summary of reception reports at the May meeting.



Member Dr. Alex Magoun of the IEEE History Center reports that deceased members Ike Blonder and Ben Tongue have been remembered as "Perhaps the most pivotal figures in television history that you've never heard of" in an article by Ernie Smith at the blog/website Tedium. The article includes a link to a website devoted to Ike's life, in which you can read his amusing recollections of progressing from DIY radio to the TV and cable industries. The link is quite lengthy so if you go to <http://tedium.co/> you'll find the article "It's not HBO, It's UHF."

Finally, member Jim Whartenby reports that if you're looking for a site for finding "readable" copies of schematics for tube and transistor radios, stereos or HiFi's, he suggests:

<https://www.vintageshifi.com/m800.php>

### Upcoming Events

June 8 - Monthly meeting at Princeton; talk by Alan Wolke (topic TBA).  
July 13 - Monthly meeting at Princeton; topic TBA  
July 21 - Summer Tailgate at InfoAge  
September 21-22 - Kutztown Antique Radio Meet

**THE JERSEY BROADCASTER** is the newsletter of the New Jersey Antique Radio Club (NJARC) which is dedicated to preserving the history and enhancing the knowledge of radio and related disciplines. Dues are \$25 per year and meetings are held the second Friday of each month at InfoAge or Princeton University. The Editor or NJARC is not liable for any other use of the contents of this publication other than information.

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## CHARLES BLANDING PASSES

By  
 Marv Beeferman

The NJARC regrettably reports the passing of member Charles Blanding. Our sympathies go out to his wife Joyce, daughter Ashley and the rest of his family. He died on April 20th after suffering a medical emergency at the club's Radio Technology Museum at InfoAge where he was serving as a docent.

Charles graduated from Cranford High School in 1965 and received an Associates Degree in Electrical, Electronics and Communications Engineering from RCA Institute in 1970. Charles was the Chief Engineer for News 12 New Jersey from 2007 until his retirement several years ago. Prior to that, he served as Chief Engineer at Lunar video and Engineer at USA Network. He also worked in engineering and as a disc jockey at various stations including WJDM and WPAT.

In his retirement, as most NJARC members are aware, Charles was an enthusiastic collector and restorer of vintage electronics, specializing in early transistor radios. He also curated a large collection of radio station airchecks dating back to the early 1960s and the dawn of the golden age of FM radio in the New York area. Examples such as airchecks from WOR-FM's second day as a stereo station and the station's jingles from July 1966 may be found at the "NY Radio Archive - WOR FM." A talk on the subject presented to the NJARC may be found at the following site:

<https://youtu.be/CsEMO0QkD6g>

Courtesy of member Bob Bennett, you can also hear some airchecks that feature Charles back in his radio DJ days at WJDM (1530 Gold). Check out the following site:

<https://youtu.be/hw58WUMxEDU?t=50s>

Comments on Charles's loss were posted by many members of the radio community:

**Rich Phoenix:** This man was a walking NY/NJ Radio History book and a great all-around radio renaissance man.

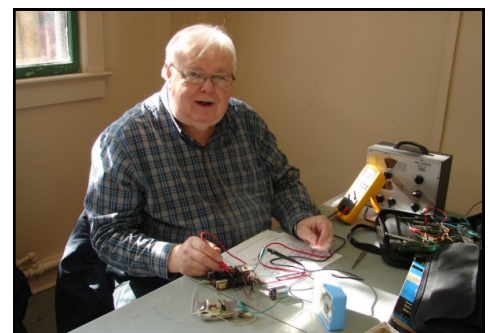
**Richard Kent:** Back in the day, he had a Sony reel-to-reel in the trunk of his convertible. He'd record a WABC aircheck in the winter, then we'd go riding around in the summer with the top down, 90 degrees, and Chuck Leonard forecasting "Cloudy and cold with a chance of flur-

ries, highs in the 20s!" The looks we got in the McDonald's parking lots! I did radio for 26 years, and I can think of no one else who influenced me as Charles did.

Our friendship spanned over 50 years, beginning in the late 60s when I discovered an AM radio station that wasn't supposed to be there. It was "Big Bad Charlie B" rockin' and rollin' on WAR. I got on my bike and, using a transistor radio as a direction finder, tracked him down right to the house. Months later, the FCC moved in and shut it down. But they didn't confiscate the equipment. So we moved it to my house! My station lasted about 9 months.

Many years later, I started a mobile DJ service here in Virginia, specializing in oldies. At least 80% of my library was contributed by Charles, and I never had to ask - he just did it. To say that "The Professor" as he was known will be sorely missed doesn't even begin to describe it. Whenever I had the privilege of visiting with him, I got used to being prepared to just listen, and learn...

**Allan Sniffen:** Charles was also the source of most of the WOR-FM airchecks we feature every year over Labor Day Weekend on Rewound Radio ("WOR-FM Rewound"). Not knowing [and not giving him credit] that he was the original source...he was very modest and not at all frustrated that I had left his name out...Consider that between 1968 and 1971, he recorded about 20 hours of WOR-FM on a reel-to-reel tape deck and then preserved those tapes for 40 years! What a radio guy.



## RADIO RESEARCH AND "THE PROGRESS OF SCIENCE"

By  
Al Klase

I've always been something of a radio-research junkie, spending way too much time in the 621.384 section of the library when I should have been studying (thank you Melvil Dewey). Technology > Engineering > Mechanical Engineering and Machinery > Electric Engineering > Electronics, Communications > Radar, Radio were my favorites. Here in the 21st Century, I'm in Hog Heaven. All this stuff is on the web!

One of my favorite websites is Mike Katzdorn's Edwin H. Armstrong pages. ([www.users.erols.com/oldradio/](http://www.users.erols.com/oldradio/)) This is the definitive collection of Armstrong material on the web. Many of the documents are scans of carbon copies of type-written material.

While perusing Mike's site one day, I happened upon a list of Armstrong's publications compiled by T.J. Styles, for the Armstrong Memorial Research Foundation (Columbia U.) in April of 1960. The document is addressed to a number of Armstrong associates including Harry Houck, and Styles, himself, who was a long-time Radio Club of America notable. Half way down the second page, it says: "Nikola Tesla - An Appreciation" "Reprint: Scientific Monthly - April 1943." I've always maintained that if you wanted to understand something, you should have the Major explain it to you. Game on!

A Google search for "The Scientific Monthly Archive" turned up the wanted .pdf document on jstor.org. Now, this is a strange publication, and it didn't seem to have a table of contents or index, so I found myself scrolling past bizarre articles including "Snow Perils of Avalanches" and "The Family Life of Central American Woodpeckers." I finally found "The progress of Science - Nikola Tesla, 1857 - 1943," a thoughtful eulogy to Tesla penned by our hero.

I used Adobe Acrobat to extract the desired pages, and performed optical character recognition on them, hoping I could cut and paste the text. However, the original scan was pretty fuzzy and I had to do a lot of work patching it up. I should have

printed it out, and handed it to wife Peggy, a 100 wpm typist.

I shudder to think how much time and travel would have been required to unearth this interesting document in the old days. I hope you enjoy it.

### THE PROGRESS OF SCIENCE NIKOLA TESLA, 1857-1943

(*The Scientific Monthly*, April 1943, p379)



With the death of Nikola Tesla in New York City on January 7th, 1943, there passed a man whose inventions in the field of alternating current power transmission exerted a profound effect upon the development of the electrical industry,

whose investigations in the field of high-frequency currents brought him to the threshold of the discovery of wireless signaling, and whose prophecy of the advent of radio broadcasting nearly forty years ago, with all its social implications, has been fulfilled with an accuracy which is almost uncanny.

He was born of the Serbian race in 1857 at Smiljan, Lika on the border of Austria-Hungary. After attending the local schools, he finished his studies at the Polytechnic School of Graz, Austria, and at the University of Prague, specializing in physics and mathematics. It appears that at the Polytechnic School he became acquainted with the rotating electrical machinery of that day, and was much impressed with the mechanical weaknesses and general undesirability of commutators and brushes, an observation which was later to lead to his most important invention. After spending a few years obtaining practical experience in the electrical art at the centers of activity on the continent, in 1884 he came to the United States, and secured employment at one of the Edison companies, which were then engaged in the development of the direct current lighting system.

In the succeeding years, the idea of eliminating brushes and commutators by means of a rotating magnetic field began to take form in his mind, and resulted in the invention of the induction motor and the polyphase transmission system. In 1887, the Tesla Electric Company was formed to develop these ideas and shortly thereafter the Westinghouse organization, appreciating the possibilities of the sys-

tem, took it up as a major project. The tremendous potentialities of the alternating current system were explored and extended, and as its advantages became more clearly apparent, other organizations bent their efforts in the same direction. On this part of Tesla's career much will probably be written by men whose actual contact with the work qualifies them better than the writer to speak.

The work of practical design and exploitation, having passed into hands more capable to carry it on, Tesla began a series of painstaking investigations of the effects of high-frequency, high-voltage currents, which were to bring him to the brink of the discovery of radio signaling. It is not clear from his lectures what the motivating force was which initiated these investigations. He appears to have started by utilizing the ordinary spark induction coil, but energized it by specially designed alternators giving frequencies of the order of 10,000 cycles. Apparently he observed and understood the effects of resonance and distributed capacity in the equipment, for we find him, in order to produce currents of still higher frequencies, proceeding to the invention of the oscillation transformer with its primary excited by currents from the discharges of a condenser across a spark gap: the now well known "Tesla Coil." With this mechanism he produced brush discharges at extraordinarily high voltages, and demonstrated many new and striking effects.

His lectures, delivered in the years 1892 and 1893 in the United States and Europe, disclosed a long series of experiments relating to the application of these currents for the production of light in various ways from evacuated, filament-less, tubes.

There is in the lecture delivered before The Franklin Institute in 1893 a proposal of a method of signaling "without the use of wires," which, had it been followed up experimentally, might well have led to the discoveries which were later to be made by Marconi. It seems to have been some kind of intuition that led Tesla to propose nearly all the means by which radio signaling was originally practiced. He proposes to disturb "the charges of the earth" by setting up alternating or oscillating currents in an elevated conductor connected to an alternating current machine, or to one of his oscillators whose other terminal is connected to the earth. As a receiving means he proposes to set up an elevated conductor, resonated to earth, to respond to the transmitter. All that he failed to describe from an apparatus standpoint was some suitably sensitive device to indicate or detect the received signals.

There is a very reasonable possibility that, had Tesla proceeded experimentally along these lines, he would have met with success. It would not have been the first time that an important discovery was made by following an erroneous theory.

For many years, Tesla conducted experiments in a laboratory erected in Colorado, and later at a plant located at Wardenclyffe, Long Island, to follow out his theory, now extended to include also the transmission of power by "wobbling the charges of the earth." No technical account of these experiments has ever appeared.

Yet in his last publication on the subject there appears what might almost be termed a vision of the destiny of radio, so clearly did he forecast its all important field of utility and service: broadcasting. A part of it is quoted herewith from the Appendix of his book, published in 1904, entitled "Experiments with Alternate Currents of High Potential and High Frequency." Referring to his plans for the utilization of his own system he states:

"I have no doubt that it will prove very efficient in enlightening the masses, particularly in still uncivilized countries and less accessible regions, and that it will add materially to general safety, comfort, convenience, and maintenance of peaceful relations. It involves the employment of a number of plants, all of which are capable of transmitting individualized signals to the uttermost confines of the earth. Each of them will be preferably located near some important center of civilization, and the news it receives through any channel will be flashed to all points of the globe. A cheap and simple device, which might be carried in one's pocket, may then be set up somewhere on sea or land, and it will record the world's news or such special messages as may be intended for it."

Of course the instrumentalities for providing broadcasting were not then in existence. Tesla was classed as a visionary, and his prophecy was forgotten. What harsher terms might, with justice, be applied to many of us who helped produce the instrumentalities with which broadcasting was eventually accomplished! We applied them to point-to-point communication, failing completely to realize the significance of Tesla's words.

**EDWIN H. ARMSTRONG**

Recovered from oblivion by Al Klase, 6 April 2018.

## MUSEUM MUSINGS

By  
**Ray Chase &  
Marv Beeferman**



The National Capitol Radio and Television Museum in Bowie, MD, similar to the RTM, receives more donations than they can display or store. When they decide to de-access some of these items, they defer to a policy that they will first offer them free to other "like" museums before opting to sell them off. We have taken advantage of this policy several times and have either picked their offerings up during one of my trips to a Mid-Atlantic Antique Radio Club (MAARC) meeting or MAARC Director Brian Bellanger was good enough to drop them off in one of his trips north.

Late last year, one of their offering lists included four display cases that were of the type that we could utilize, but it was stipulated that one must pay for the shipping or arrange to pick them up in MD. Renting a truck to pick them up was obviously not an option so no action was taken on them. But member Jules Bellisio has a good friend in Mountain Lakes, NJ who has an extended bed pick-up truck with a cap who offered to help do the job. Virginia Stetter (Trudy) has previously helped us when we were able to pick up some donated shelving that was available locally. We requested the exact case dimensions from Brian to see if they would fit in her truck and determined that we could only take three of the cases. One case was hexagonal and Brian said it had all glass panels, so we decided that it probably was too heavy for us.

The trip was scheduled with Brian so on April 17th Trudy, Jules and myself met at InfoAge at 7:30 AM and off we went. Fortunately, the weather was good, and traffic was light. The cases were located at Brian's storage location a few miles from their museum and we hoped that we would have time to stop at the National Electronics Museum (NEM) in Linthicum, MD on the way home.

Upon arrival at the storage location and looking at the cases more closely, we

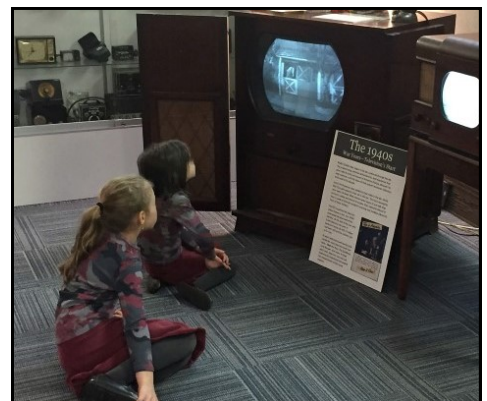
considered that we might be able to fit all four of the cases in the truck. The hexagonal case had only one glass panel while the rest were plastic, so the case was lighter than anticipated. There followed a judicious attempt to solve a three-dimensional puzzle of how to fit the four cases in the truck. After much trial and error, it was determined that only three and a half cases would fit. One case was a large plexiglass box on a metal stand so we took the plexiglass top and left the metal stand. Brian suggested that on a future planned trip to New York City he might be able to deliver the metal stand in his van and drop it off at our museum on the way. It is nice to have such good friends in the radio collecting fraternity.

The return trip was uneventful, and we were able to stop and spend some time at NEM. I was hoping to see one of their principles who I am working with on a radar display at Philadelphia in June, but he could not get away from a meeting at his day job. Anyway, Jules and Trudy got a chance to visit the NEM, something I advise every radio collector to have on their "bucket list" as it is a premier museum on electronics history albeit with a somewhat military emphasis.

We returned to InfoAge around 6:30 PM with no damage to our contents and unloaded in a matter of minutes. Trudy handled all the 400 plus miles of driving and did more than her share of assistance in maneuvering all the cargo safely into her truck. It is indeed good to have friends in the radio collecting fraternity. The cases will require a small amount of repair but the price was right.

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One of things that appear to be of major interest to younger visitors to the RTM are the black-and-white TV's showing vintage programs. On Tuesday, April 3rd, a group of visitors included two youngsters who appeared to be "glued to the set."



**Kids tuned in to a more gentle time.**

Perhaps this is an indication that the museum should place a greater emphasis on the social aspects and history of radio and TV and electronic entertainment rather than their technical aspects.

Ray mentioned that he was working on a radar display in Philadelphia which will become part of a permanent display at InfoAge. It includes a one-of-a-kind artifact which Ray promises to cover in a future Broadcaster, but for now, it is being restored in our Vintage Radio Repair Shop.



Part of a rocket engine? A vintage cappuccino machine? A unique radar artifact awaits restoration in our Vintage Radio Repair Shop.



Bruce Williams and Max Theis, under the direction of Ray Chase, work on bringing a rare piece of radar history back to life.

### SHOWING OFF MEMBER FINDS

By **Marv Beeferman**

Some interesting finds made their debut at the April meeting's show & tell. Many were from the estate of Vince Lobosco who recently passed. In a way, it was a tribute to Vince that some of his collection will remain in the hands of fellow collectors who will have them to preserve and display in the future. You can see a full presentation of the event, courtesy of Dave Sica, at the following site:

[https://youtu.be/fNSfIXUL\\_uA](https://youtu.be/fNSfIXUL_uA)



Ray Chase showed this rather unique project that he obtained from the Lobosco estate. It consists of a 1931 Philco 70 enclosed in a wooded box with remote controls going to the radio's on-off/volume/tone controls and to the tuning dial. Drilled holes stencil the words "GMM" and "BUILT NOV 1939" on each side. Ray found a store receipt from Lafayette Radio in Plainfield and the name GM Mitchell inside. Some members suggested that this might have been a magazine project.



Ray also talked about this Walkie-Recordall, a portable audio recorder that recorded to a plastic type belt called a Sonoband. A needle etched the sound onto the Sonoband. It was developed as a dictation machine where salesman and

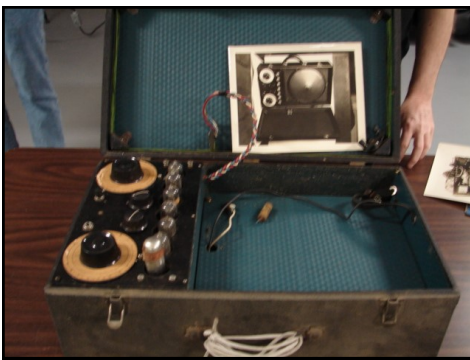
business people could carry the thing around and dictate memos, but it didn't go over very well. However, because of its portability and recording power (one to several hours), it was quickly adapted as a covert audio recorder by law enforcement and private investigators in the 1930s and 1940s. It retailed for about \$450.



Dave Sica also displayed some finds from the Lobosco estate. Shown is a wire recorder with the tag "Israeli National Museum of Science." The recorder came with one reel that would be of interest to see what, if anything, was on it. Dave said it would be first required to find out what voltage the recorder ran on.



Dave also described this phonograph with what appeared to be Russian markings. He was able to use Google Translate to read the labels. The large one with the brand name in the banner translates to "Friendship." The smaller one translates to "Leningrad Phonograph Factory."



Finally, Dave told us how a much younger NJARC member, Matt Reynolds, was able to slide between Vince's metal lathe and furnace and come up with this beauty. This portable is a Pressley-Sangamo "Airplane Type Receiver." It was designed and sold by Rossiter, Tyler & McDonnell of New York City and was based on the very popular 1925 "Pressley" 7-tube superhet. The radio included a construction manual, blueprints and photographs of the completed radio. A follow-up article is included in this month's *Broadcaster*.



Darren Hoffman acquired his 1958-9 retractable "rabbit ears" at a garage sale for 50 cents. It served as an antenna for a 13" black and white TV for a number of years and now makes a great FM antenna.



Phil Vourtsis discussed his restoration of two radios he obtained from the Vince Lobosco estate sale. His 1936 American Bosch only required recapping. Interestingly enough, all the dogbone resistors measured within specification. The Westinghouse was another story suffering from silver-mica disease. The first IF can was easy to deal with since it only contained two capacitors. The second was much more difficult with more capacitors and connection points. Phil decided to carefully scrape off the capacitor oxide layers and this seemed to do the trick.



Dave Snelman's Grundig "Transistor 6000" was initially announced as the "Satellit 208" depending on where it was sold. It was the first radio in its class to offer double conversion technology. Its "duplex drive mechanism" allows tuning in an FM-station without altering the tuning of the AM wave bands and vice versa. It has a total of 17 bands covering 5-30 MHz.

Dave's 6000 also features a single sideband adapter, external speaker connections and tape recorder and phonograph connections. Antenna connections included sockets for an FM dipole antenna, AM long-wire antenna and car antennas. Dave said that \$156 was a great price for a radio (including SSB adapter) with that "good Grundig sound."



Corbett Klein found what he thought to be a standard 1920 Cornell Dublier capacitor at a Chesterfield auction. Corbett explained that the company's roots can be traced back to 1909 when William Dublier first used mica to help form a "condenser". Today, mica capacitors (also known as silver mica capacitors) that offer high stability are generally used at high frequencies and in situations where low losses and low capacitor change over time are required.

Al Klase explained that Corbett's find was really intended to be plugged into a socket to make house wiring an antenna. Use of the live or neutral wire of house wiring isolated by a capacitor was somewhat common not just in the early years of radio but the concept is still in use today.



Bob Forte described the above kit as a "teaching tool for regen sets." It's a two-band shortwave receiver using only three NPN transistors. It employs a reflexed regenerative detector to maximize gain followed by a two-transistor audio amplifier.





Your editor showed two items obtained from Vince's estate sale. The first is a Weston (Newark, NJ) portable galvanometer (No. 521) with a patent date range of 1888 to 1898. Its resistance is 2.84 ohms. A few screws are missing but the needle centers, moves smoothly and it will restore nicely.

Galvanometers were the first instruments used to determine the presence, direction and strength of an electric current in a conductor. The example is of the d'Arsonval type where a small coil is attached to the meter needle, both located inside the field of a permanent magnet.

The second item is a Russian copy (made by MGN) of the Thorens "Excelda" phonograph. Member Aaron Hunter notes that he has the Excelda and it was made in Switzerland. Aaron sent me a photo and, except for a few minor differences, they look exactly the same.

## THE PRESSLEY SUPERHET

### PART I

By  
**Marv Beeferman**

At the April show & tell, member Dave Sica described an early portable battery set that he obtained at the Vince Lobosco estate sale (see page 6 of the *Broadcaster*). The kit radio is described as a Pressley-Sangamo Airplane Type Receiver. Member Ray Chase is somewhat of a superheterodyne aficionado and he was quite intrigued by what he saw. With Dave's permission, I decided to write an article about his find but, once I pulled the string, it unraveled into something quite more interesting than just a simple radio article.

Our story begins with an article in the November 8, 1924 "Radio World" titled "New Super-Het Invented." It is a little lengthy but I decided to quote it in full to give you some background into the history of Dave's radio:

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Jackson H. Pressley, Chief Engineer of the Signal Corps Radio Laboratories, has invented a radically new circuit for the superheterodyne which is, according to prominent radio engineers, "the most remarkable superheterodyne that has ever been developed." The essential features of the new circuit are its remarkable economy and simplicity of operation and the radical, though simple features embodied in the tuning circuit. The new

circuit utilizes the principle of capacity bridge in such a manner as to provide a positive non-radiating circuit which employs an oscillating detector. The same tube which acts as the detector provides the beat frequency oscillations, thus eliminating the use of one tube and without the complications of the second harmonic principle. This arrangement permits the use of a very small loop antenna, requires but two tuning dials and is so compact that the entire circuit may be set up in a standard cabinet. Without tubes and batteries, it is understood the set may be built for less than \$75.00.

Asked if he proposed to dedicate his invention to the public...Mr. Pressley said: "I would like to have every one of the twenty million radio enthusiasts in this country who may be interested in this new super-heterodyne tuning circuit build and operate it. It will be possible for anyone having a slight mechanical knowledge to construct an experimental set. I have applied for patents which will assure to the Government the full rights for their use, and have reserved for myself only the privileges of collecting royalties from the specific commercial use of my rights."

Mr. Pressley is one of the youngest and highest-salaried radio engineers in the Government service. He is twenty-six.

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### WHO WAS JACKSON H. PRESSLEY?



Before we get into the details of his "remarkable superheterodyne," let's first investigate who Jackson H. Pressley exactly was. There is probably some fine research out there on the ac-

complishments of this radio engineer but, with the limitations of a one month *Broadcaster* deadline, it was difficult to find a comprehensive story all in one place. Therefore, I had to depend on bits and pieces from the internet to get a useful, albeit sketchy, story of his life and work. Perhaps, upon further investigation, more details will come to light.

Jackson H. Pressley was listed as an "undergraduate" at the University of California in "The California Alumni Fortnightly" for 1917. Whether he was born and grew up in California is still to be determined. In the "California Monthly" (University of California alumni mag-

azine) for 1919 (Volume 12), it was noted that: "Jackson H. Pressley, who went to France May 1917 with the American Field Service Ambulance Unit from the University, and who is known as a master signal electrician S.C., has been assigned by the government to Kings College, University of London, England. He hopes to return home in time to enter U.C. in the fall of 1919." The inspiration for Pressley's transition from the ambulance service to a Signal Corp master signal electrician is also a blank page at this time but the fact that he worked at Kings College during WW I becomes a critical key to how Pressley first got his feet wet in the "world of the superhet."

The original superheterodyne was conceived and built in the Signal Corps laboratory in Paris (Division of Research and Inspection) during the summer of 1918 by Major Edwin H. Armstrong. As Armstrong later explained, his conception was the result of three chance occurrences. First, he knew all about heterodyne circuitry. Second, a London meeting with H.J. Round had set him to thinking about the reception of weak, high-frequency spark signals. Third, while watching a night bombing raid, Armstrong thought about improving the methods of locating the position of an airplane by using the very short waves sent out from them by the motor ignition system. Armstrong noted: "The unique nature of the problem, involving the amplification of waves shorter than any ever even contemplated and quite insoluble by any conventional means of reception, demanded a radical solution."

In an article titled "Who Invented the Superheterodyne?" by Alan Douglas (Proceedings of the Radio Club of America, Nov. 1990, Vol. 64, No. 3), Douglas describes how it all came together:

"The signals were too weak to be detected directly, and had to be amplified. The heterodyne would amplify them, but would lose the natural spark tones. Armstrong already possessed a tuned amplifier and detector for long waves. His flash of insight was to use the heterodyne to bring the short-wave signals down to the range of his long-wave amplifier. This heterodyning, it turned out, did not alter the modulation content of the original spark signals, but preserved all the original sidebands and therefore the characteristic tone that allowed each spark transmitter to be distinguished aurally from others. The final detection could now be done by rectification, in the normal manner because there was a large amplified signal available."

Armstrong realized that a great deal of experimentation was needed to prove the workability of his invention which he proposed to his superior in June, 1918. As Armstrong relates:

"Preliminary experiments which showed the practicability of the method were made at this time, but on account of the large amount of more pressing work, they were discontinued until about August 1. At this time Sergt. Pressley was assigned to work on the reception of undamped waves by this method. In the course of a few days, apparatus was set up, and exceedingly good results were obtained. More pressing work, however, in tank radio, for which Sergt. Pressley was required, prevented continuation of this problem."

So, Sergeant Jackson H. Pressley got his first exposure to the superheterodyne under the tutelage of Edwin Armstrong. A sample of Pressley's work, As shown in Figure 1, can be found as an attachment to the original superheterodyne disclosure by the Signal Corps - "A Method of Receiving Short Continuous Waves" (June 3, 1918).

The armistice ended the labors of the American radio engineers in France. The period between Pressley's work on "tank radio" during the war and his return to the U.S. is again presently a blank. Perhaps he finished his studies at the University of California. However, we do know that Pressley eventually joined the radio laboratories at Camp Alfred Vail, New Jersey, and by 1924 became Chief Engineer.

When the War Department reduced the Signal Corps' communication duties in 1920, it gave the Air Service the responsibility for installing, maintaining, and operating radio apparatus for its units and stations. However, the Signal Corps

retained control over aviation-related radio development. Much of this work was conducted at the Aircraft Radio Laboratory in Ohio and at Camp Vail, New Jersey. Sets were designed for each type of aircraft: observation, pursuit, and bombardment. No doubt, the majority of Pressley's efforts related to adapting the superheterodyne for aircraft use.

Many technical problems had to be solved in developing these radios, including interference caused by the plane's ignition system. With the installation of proper shielding, this difficulty could be overcome to some degree. But despite advances in aerial radio, pilots as late as the 1930s still relied to some extent on hand signals to direct their squadrons.

Signal Corps Captain Paul S. Edwards, in a November, 1924 "Popular Radio" article "The New Type of Superheterodyne," probably understated aerial radio capabilities when he said:

"The big Barling bomber cruised all over the middle west and enjoyed excellent reception from a small, portable, ground transmitter of fifty watts output through the noise and interference of her six roaring engines which had one hundred and forty-four spark plugs creating a veritable barrage of static."

In his attempts to deal with these noise problems and other issues with the superheterodyne, Jackson Pressley came up with two major solutions that, though not obvious at first, would create a "Pressley superheterodyne craze" in the civilian radio market. Although short lived, Dave Sica's Pressley-Sangamo portable was one of the results. Stayed tuned for Part II where we will continue Pressley's life story and achievements and examine what the Pressley superheterodyne craze was all about.

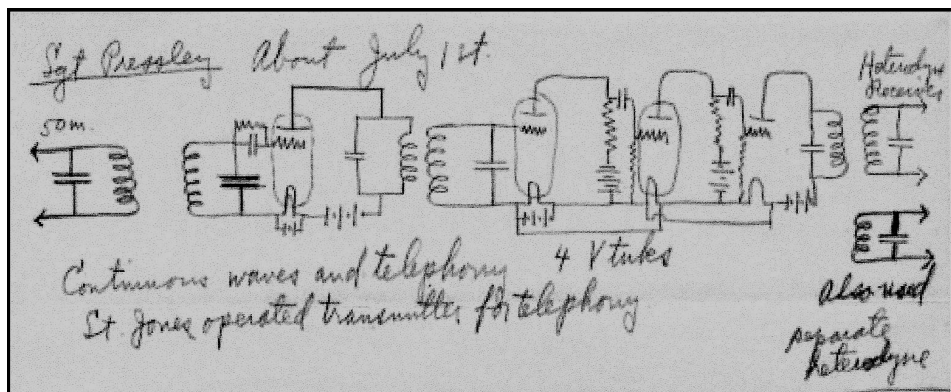


Figure 1: "Sergeant Pressley's" notes with regard to superhet testing he performed for Armstrong that was attached to the Signal Corps disclosure. Note the date of "about July 1st," - testing in Paris was discontinued about August 1st.