

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB



July 2018

Volume 24 Issue 7





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. Be sure to include your full name.

Last month, your editor sent out a <u>one-page</u> version of the *Broadcaster* with the following explanation: "A combination of events have prevented the publication of the *Jersey Broadcaster* for June. We'll do some catching up next month." Surprisingly, I received a number of emails in the general format "Hey Marv...I only received <u>one page</u>!" However, I was quite pleased that this comment came from only about 5% of our total membership. It did my heart good to learn that the newsletter has such a wide, 95% readership!

Club webmaster Dave Sica will take the podium at our July meeting and, in order to peak your interest, here's a little insight that he offers into the topics that he will be covering:

1. I will reprise my presentation originally given at this year's Early Television Convention on "Estate Planning for Radio Collectors." (Cleverly re-titled from the original "Estate Planning for Television Collectors.") The concepts of making sure that your stuff is well taken care of after you are gone are simple, yet relatively few collectors prepare and as a result, things often go awry. Don't become one of the club's many "cleanout" stories! With a little thought and a little time, you can make sure that your job of being the caretaker of your stuff for the next generation goes well.

2. I will also review the club's online presence. We communicate to our mem-

MEETING NOTICE

The next NJARC meeting will take place on Friday, July 13th, at 7:30 PM at Princeton's Bowen Hall (70 Prospect Ave.). Directions may be found at the club's website (<u>http:www.njarc.org</u>). Meeting topics for this month include what our webmaster Dave Sica calls a "three-fer." 1. Estate Planning for Radio Collectors. 2. NJARC's Online Presence, and 3. Tales from the 2018 Early Television Convention. An expanded version of the content these topics may be found in the Meeting/Activity Notes to the left.

bership, and to the world, through our website, our Facebook page, our YouTube video channel and perhaps, most importantly, through our email reflector. Do you know how to get the maximum benefit from each of these venues? You <u>will</u> find out at the July meeting.

3. Finally, as a follow-up to my quick "teaser" report on the Early Television Convention at the May meeting, I will go into a little more detail regarding the activities that took place at the convention (including the auction), the state of the hobby and the Early Television Foundation, new displays at the museum and recent developments in the effort to establish a CRT rebuilding operation.

Dave would also like to remind us that most of our meetings are broadcast live on the web. Just pull up the home page of the club's website and click on the link for the "meeting video" at the top right of the page. The live webcast usually starts around 7:30 EST for the business meeting portion of the program. We then take a short break and the main program begins around 8:00 PM. Dave also notes that the UStream.TV service has been discontinued and we will be moving our webcast most likely to YouTube. Details for "tuning in" will be posted on the website.

Thanks to Dave, Phil Vourtsis and Matt Reynolds and all others who contribute to archiving the wonderful presentations and events that take place at our monthly meetings. Although I did not attend the June meeting, I was still able to view Alan Wolke's (W2AEW) comprehensive presentation on the "Basics of Capacitors." Capacitors are one of my interests and I still learned a lot including such specifications as selfresonant frequency, loss-tangent, and microphonics. His explanation of ceramic capacitor classes such as NPO, X7R, YSV and ZSU seemed to help clear up the strange markings that are noted on this particular type. I especially enjoyed the "lab" where Alan showed us how to use an oscilloscope to determine the ESR (Effective Series Resistance) and the value of an unknown capacitor.



If you missed it, Alan's talk is still available at:

https://youtu.be/389mlrJxoXE

Unfortunately, I also missed the meeting where "Alternate Collections" was the topic, but thanks again to Dave Sica and his magic lens, I was able to view the presentation online. I have to admit though that I originally had my doubts about the response we would receive to this topic, but after viewing the video, I was glad to be proved totally wrong. Thanks go out to Sal Brisindi for providing me with some great photos for the *Broadcaster*, but I wish there were more taken to cover all that was presented.

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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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Besides old cars, Sal Brisindi collects digital clocks. He still has his first example from Radio Shack that he purchased 44 years ago - unfortunately, it just recently "passed on." Sal noted that most are not kits and are hand-wired. He also said that a PC is needed to set the time but internal clocks do away with the need to reset them following a loss of power.



Phil Vourtsis collects radios, phonographs (especially 45's), vintage cars and model cars. He still holds a fascination for his first car from his teenage years - a Pontiac Tempest. The car had some unique features and all the problems that went along with them - a high performance, 4-cylinder engine with four-venture carburation, fourwheel independent suspension, a four speed stick shift on the dashboard, a rear transaxle (checked fluid in the trunk) and a flexible, one-piece drive shaft. It seems that Phil learned his lesson - he now owns a Tempest V-8 convertible.



Pete Olin bought a 1937 Buick in 1961 as a teenager for \$60. Working on virtually everything in that car taught him an "awful lot about cars." In order to re-live his childhood, two years ago, Pete found a "new" '37 Buick from a post in Hemming's classified. It has only 69,000 miles, plenty of power and just enough speed (60-65 mph). It's not restored but rather a "driver" with all the flaws gained over the last 81 years!

Pete also raises bees and has 5 hives. He harvests about 70-120 lbs. of honey a year, giving away some and selling some.



Mike Stein collects motion picture, TV and rock & roll memorabilia. His collection includes the original black and white, 1947 test pattern broadcast prior to the Howdy Doody show. (continued next page) Mike also owns the first color image ever broadcast (1953) - a Howdy Doody color test pattern.

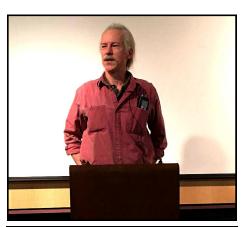
Mike also is the proud owner of the original "courage" medal that the Cowardly Lion wore in the Wizard of Oz. It started off as a "get well" present to the curator of the MGM prop department and somehow wound up in an Ella Fitzgerald memorabilia auction. \$30,000 might seem like a significant purchase, but it is now valued at about \$300,000 or higher. No wonder Mike keeps it in an environmentally controlled vault. But to put this in perspective, Mike's friend auctioned the Cowardly Lion's costume for 3 million!



John Ruccolo has been collecting "vinyl" since 1977. He showed off his WIBC "30 Big Goldens" album that included the station's iconic "Daisy" decals and an original "Worst of the Jefferson Airplane" album that reproduced typical RCA record images from the early '20's.



Corbert Klein cultivates Irises and has around 100 examples. His favorite color is blue but unfortunately the flower blooms only once a year in the Spring and for a very short period. He prefers the dwarf variety since taller versions need to be staked to prevent wind damage. Types include the German bearded, Siberian and Japanese. Corbert was nice enough to offer the irises shown above to the membership.



Tim Walker collects mechanical puzzles that include types such as the dexterity, pattern, sequential movement, opening and tavern. He awakened some nostalgic memories from our membership which brought back such challenges of sliding around numbered tiles to get them in sequence. Tim said that the attraction of a mechanical puzzle is the ability to use both your mind and your hands at the same time.

CAMERA SHY

As member Ray Chase noted with a good-natured comment, from a collecting standpoint, Dave Sica "has problems." A Triumph TR3 awaits restoration in his garage - homage to his dad's Jaguar which Dave adored as a kid ("they look about the same"). But Dave links almost all the rest of his collection inventory, including that of radios and TV's, to his grandfather who had an amusement game/jukebox route in the 50's and 60's. Dave said he started working on pinball machines when he was six years old. Later in life, he set up a pinball "Speakeasy" in his college dormitory. This evolved into an arcade when Montreal legalized pinball machines, with eyes on making a fortune (that did not quite materialize).

Dave's collection includes a 1947 Seeburg "Trashcan" jukebox. He also owns a Gottlieb 1963 "Slick Chick," a 1950 "Knockout" and a 1931 Gottlieb "Babble Ball" pinball machine (the first commercially successful machine of its kind using no electricity or flippers).

Out of college, Dave worked for ABC sports which initiated a collection of 1976 Olympic trivia and memorabilia. As part of his amusement business, Dave's grandfather accumulated a lot of coins which started a coin collection that Dave eventually inherited and still keeps up. Dave also has a nice assortment of tape recorders, 16 mm films, BlonderTongue equipment and opera laser discs. On top of everything else, Dave has to contend with making room for his wife's nativity set collection!

Like many of our members with the same interest, **Aaron Hunter** cares for a 1948 Dodge and '65 Galaxy convertible. He also collects vintage record players and demonstrated two examples that resemble camera boxes when folded up, small compact units that you could take on a picnic or to the beach. His collection includes a Swiss Thorens model that is very similar to some Russian copies that were found at the Vince Lobosco estate sale.

Matt Reynolds enjoys collecting movie pop culture items and autographs. He owns a replica hoverboard from "Back to the Future" autographed by Bob Gale, the writer of all three films in the series. And not to be outdone, Matt's DeLorean has Christopher Lloyd's autograph on the glovebox. Matt autographs' include those of Muhammad Ali, Robert Englund (Freddy Krueger), Kirk Douglas and many others.



Matt Reynolds and his DeLorean (taken at an earlier date).

Leo Assur likes to collect construction machinery but of course he couldn't display any at the Princeton meeting. He also enjoys re-purposing items and he demonstrated one of his creations. By assembling a telephone generator, capacitor, an incandescent and LED lamp, Leo was able to compare the difference between the effort required to maintain the illumination provided by each lamp. At 50 turns, the generator produced about 100 volts.

On the outside of the meeting room, president **Richard Lee** showed off his collection of 1939 World's Fair items and **Ray Chase** displayed examples of his very extensive postcard collection.

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Upcoming Events

July 21 - Summer Tailgate/Hamfest at InfoAge

August 4 - Summer Repair Clinic at InfoAge

August 10 - Monthly meeting at Princeton; topic TBA

September 14 - Monthly meeting at InfoAge; John Ruccolo talk on communication receivers & transmitters

September 21-22 - Kutztown Antique Radio Meet

October 12 - Monthly meeting at Princeton; Mike Molnar talk on Jack Poppele and Radio Broadcasting in NJ

November 3 - Fall NJARC swapmeet/ hamfest at Parsippany PAL

November 9 - Monthly meeting at InfoAge; Show & Tell and Hints & Kinks November 17 - Fall Repair Clinic at InfoAge

December 15 - Holiday Party at West Lake Golf & Country Club, Jackson NJ

SCR-268 RADAR DISPLAY A BIG HIT AT IMS PHILADELPHIA

By Ray Chase

The Institute of Electrical & Electronic Engineers (IEEE) organizes an annual International Microwave Symposium (IMS) in June. This year's event was held at the Pennsylvania Convention Center in Philadelphia from June 9th to June 16th. The program includes an Historical Exhibit that is coordinated by The National Electronics Museum (NEM) in MD. In 2009, I helped InfoAge provide a modest historic display at IMS when it was held in Boston. Last year, we were offered the opportunity to exhibit at Philadelphia, but I was not able to commit the time to it.

I maintain a regular relationship with NEM and this January, I was at NEM attending a radio meet and discussed their anticipated IMS program with the coordinator, Steve Stitzer. Steve wanted to highlight the 80th anniversary of the first military demonstration of the SCR-268, the Army's first radar, but he said NEM only had two pieces, a receiver and an indicator, and they were not in very presentable condition. I offered to send Steve a list of what we have available at InfoAge plus what I have personally in my collection. Turns out, we have eight of the eleven unique units of this system with multiple examples of several. This is probably the largest collection of SCR- 268 artifacts anywhere.

Included from my own collection is the unique 16 tube Ring Oscillator Transmitter which to my knowledge is the only one in existence. I have been intermittently working on its restoration for several years after finding it about ten years ago in an abandoned warehouse in Boonton, NJ. Steve and I concluded that the only way to make the display possible would be to use most of the pieces from InfoAge.

To meet the June date, a schedule had to be set up to complete the restoration of the transmitter unit, clean up and prepare the other units and then get them ready for shipment. We also agreed that I would also supply a VT-158 Zahl tube, TPS-3 radar display and a PPS-4 Ground Surveillance Radar. Steve would supply large poster board interpretive displays and I would supply individual artifact signage.

The radar units weigh quite a bit and would need heavy duty supports. Fortunately, I had salvaged two aluminum HVAC support structures from the 9010A section at InfoAge when the new HVAC systems were installed. The intent was to repurpose them as display tables for a future radar museum. These needed to be cleaned up and modified with table tops.

Help was provided mostly by the Wednesday RTM work crew who pitched in. The transmitter unit was brought to the RTM repair shop from my garage to complete its restoration. Member Bruce Williams was a big contributor by cleaning up and restoring the 160 amp filament transformer that I discovered in member Joe Cro's garage a few years ago and which he then immediately donated to the project. Bruce also helped me cleanup the HVAC frames, painted the table tops and cleaned up two of the receiver units. Meanwhile, some missing parts of the transmitter were fabricated in my basement workshop. A missing modulator pulse network, part of the filament transformer assembly, was reproduced from vintage parts that I had or managed to scrounge up. Members Marv Beeferman and Len Newman did a great job of cleaning and shining up a test affectionately called modulator а "Tweeter". Member Max Theis spent several days fabricating and soldering 35 riveted braids needed for attachment to the brass balls that connected to 32 pins of the 16 transmitter tubes. Problems popped up along the way, but they were dealt with and by mid-May, we were on schedule.

A shipping crate was needed to pro-

tect the transmitter which member Harry Klancer fabricated in a few days. He also arranged with his Plexiglas supplier to make a transmission line support that I needed.

When member Don Irish returned from Florida, he jumped in and helped with many tasks. A crate was needed for the Zahl tube display signage which I made at home along with shipping cartons for the smaller items. The heavier units, being ruggedized for military field use, were deemed strong enough to be shipped without crating or boxing. I completed my share of the signage in the first week of June.

NEM coordinated the shipping with a professional show management company and my twenty items arrived at the convention center on Saturday, June 9th. The total weight of the shipment was a bit over 1200 lbs.

I did most of the set-up on Saturday and returned on Sunday to complete attaching the signage. I shared one glass show case with NEM where I displayed two very early magnetrons that I recently acquired along with some of my SCR-268 Tech Manuals. NEM had created about eight 2 x 3 foot poster boards relating to the history of the SCR-268 and SCR-270 radars. These were set up on two large display boards to "bookend" our four tables of displays in the center of the room. Steve works for Northrop Grumman just down the road from NEM so has access to a professional graphic arts department. He is going to send me digital copies of the posters, so we can produce duplicates for InfoAge.

The Historical Display section was in a public area just off the main corridor between registration /meeting rooms and the Industry Exhibit main floor. Seminars and workshop sessions were scheduled from Saturday the 9th straight thru to Friday the 15th so there was traffic through the historical exhibit for seven days. The main floor of 600 plus Industrial Exhibitors was open from Tuesday to Thursday and those days saw the heaviest traffic. Plenty of InfoAge and NJARC brochures along with RTM and InfoAge business cards were provided for visitors.

The historical display was by design unattended and could be accessed by anyone. It was on the second floor and security was always present. In all, I made five trips to Philadelphia to cover the setup, tear down and spend some time touring the industrial exhibits. Whenever I was in the Historical Display area, I noted that the InfoAge exhibits garnered the most interest, especially the transmitter unit. Occasionally I spoke with some of the guests to add insight to what they were viewing.

In addition to our displays, the Sarnoff Collection from Ewing, NJ had a smaller display with David Sarnoff artifacts and some 1920's RCA radios. NEM brought their standard cases of early microwave tubes and devices that are brought to all IMS events.

This project did not involve any cost to InfoAge and provided great exposure and prestige for all of us. We have now established a very positive working relationship with NEM that puts us in league with the premier electronics museum in the country. Finally, upon return, the show items will have been already finished so that they will be ready to install into the InfoAge radar museum when space is available. I am pleased that this endeavor went so well and could not have completed it without help from many NJARC members and Pat Flanagan of InfoAge

Next year, IMS returns to its Boston venue, so who knows...?

RESTORATION/SHIPPING













THE DISPLAY



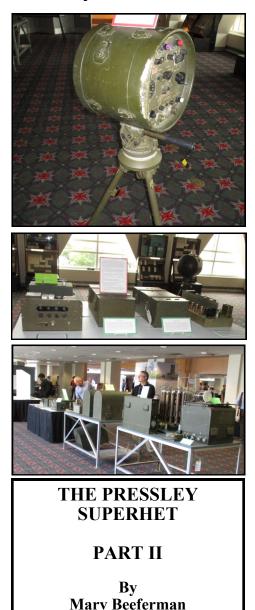








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This month, we continue with our investigation into the Pressley superhet which was fortunately recovered by Dave Sica from the Lobosco estate sale. In Part I, we traced Pressley's early years and his work with Major Edwin Armstrong at the Signal Corps laboratory in Paris as the superhet concept was being developed. Following the war, Pressley eventually joined the radio laboratories at Camp Alfred Vail (ultimately Fort Monmouth) and became its Chief Engineer. In investigating methods for adapting the superheterodyne for aircraft use, the "Pressley Superhet" was born. Part I of this article may be found in the May Broadcaster.

One Tube Replaces Two

To understand the two major design differences that distinguish the Pressley

superhet from its "standard" cousin, let's start with some basics. A superhet is a type of radio receiver that uses frequency mixing to convert a received signal to a fixed intermediate frequency (IF) which can be more conveniently processed than the original carrier frequency. A tuned RF stage (with optional RF amplifier) provides some initial selectivity. A local oscillator provides the mixing frequency; it is usually a variable frequency oscillator which is used to tune the receiver to different stations. The frequency mixer does the actual heterodyning that gives the superheterodyne its name; it changes the incoming radio frequency signal to a lower fixed, intermediate frequency (IF). The IF amplifier supplies most of the gain. The demodulator extracts the audio or other modulation from the IF radio frequency; the extracted signal is then amplified by the audio amplifier.

There are two salient features of the Pressley superhet - a bridge-balanced, single tube oscillating detector circuit which prevents radiation from a loop antenna and the unique design of its IF transformers.

Possibly the most important defect of early superhets was their tendency to radiate due to high frequency currents in the local oscillator getting into the antenna. To eliminate this problem, Pressley incorporated a Wheatstone Bridge arrangement where one tube functioned both as an oscillator and first detector. The bridge was used to couple the input circuit to the oscillator without the danger of causing the set to radiate. Pressley's superhet was sometimes referred to as a "super-autodyne."

Earlier, the difficulty that prevented combining the detector and oscillator into one tube was that of isolating the antenna loop circuit from the local oscillator circuit. It was impossible to couple a tuned antenna circuit to a tuned oscillator when the two were operating 50 to 60 KHz apart throughout the broadcast band without having the tuning of one section interfere with that of the other. Armstrong and Houck developed the expedient of the second harmonic system, whereby the oscillator working at double the desired frequency, did not react greatly upon the loop circuit. Then, a harmonic of the oscillator was used for heterodyning. This meant two waves were being produced by the oscillator of sufficient power to cause radiation, which necessitated the use of a muffler tube ahead of the detector-oscillator to prevent radiation.

The operation of Pressley's bridge circuit can be described in relatively sim-

ple terms. Consider the simple tuned circuit shown in Figure 1. With current induced, the potential at points 1 and 3 will be of opposite polarity and rise and fall in value in phase with the induced oscillations. But at middle point 2, there will be practically no change in potential in relation to ground. This led to the evolution of circuits in which the input currents were fed into a center tap of the oscillator grid winding. But it was found that these currents from the oscillator would feed back into the tuning system and cause a set to radiate.

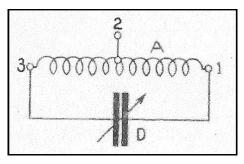


FIGURE 1

When the circuit is arranged in the form of a Wheatstone Bridge, the effect is shown in Figure 2. Two small capacitors are provided to balance the bridge and it is possible to create potentials at points 1 and 3 without causing a difference of potential between points 2 and R.

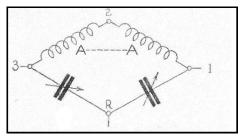


FIGURE 2

Employment by Pressley of the bridge circuit of Figure 2 is shown in Figure 3. Coil A is the grid coil of the oscillating tube, with its plate circuit being coupled by coil B, causing continuous oscillation. The two small bridge capacitors shown in Figure 2 above are replaced by a small, split stator capacitor E that permits simultaneous variation of both capacities to balance the circuit. The tuning circuit, consisting of loop L tuned by variable capacitor C, is connected to points 2 and R.

The circuit operates as follows: The tube oscillates at a frequency that is determined by variable capacitor D. Due to parasitic feedback or stray fields, antenna loop L will be set into oscillation when its

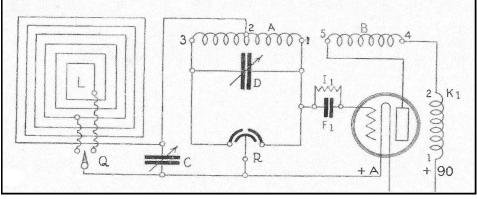


FIGURE 3

wavelength approaches the wavelength of the oscillator. However, by carefully adjusting balancing capacitor R, it is possible to balance out the circuit so that little or no energy is transferred to the loop circuit at any adjustment. Thus, signal energy is permitted to be picked up by the loop and transferred to the oscillator but it is impossible for any appreciable currents to get back into the loop. Thus, radiation is effectively prevented.

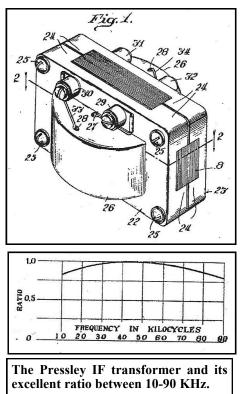
Heterodyning is then accomplished by one tube. The incoming signal current, in mixing with the oscillator current, gives rise to a beat current whose frequency is equal to the sum and differences in frequencies of the signal and oscillator frequency. This "beat" current is then passed on for further amplification.

Transformer Design

In October 1924, Jackson Pressley was granted a patent for a "long-wave or intermediate-frequency transformer." In his filing, Pressley noted the disadvantages of and the difficulty in building a transformer to operate at radio frequencies that lie in the wide band of frequency which must be effectively covered. He also noted that such a transformer must have such characteristics as to provide practically a constant ratio for all frequencies with negligible leakage between primary and secondary windings.

To this end, Pressley's design provided:

"...a transformer in which the transformer coils are wound in bifilar fashion. Two approximately equal lengths of insulated copper wire are wound upon a spool sideby-side and at the same time, the ends of the wires constituting the coils being attached to suitable terminals properly insulated. Such a transformer has approximately a one-to-one ratio, and corresponding turns of the primary and secondary are very closely adjacent to each other, being separated by only the insulation of the wire. By winding the coils in this manner, the magnetic leakage is reduced to its minimum."



In most early superheterodyne receivers, the efficiency of the IF amplifier depended upon the use of a certain amount of regeneration. This regeneration was ordinarily controlled by a potentiometer. Unless the operator was somewhat skilled, background noise in the speaker was extremely objectionable because of this regeneration.

With use of the Pressley IF transformer, amplification did not depend on regeneration. Therefore, no potentiometer or other control was necessary to adjust the amplifier for maximum efficiency. In the Pressley, the rheostat controlling the IF amplifier tubes was used solely as a volume control.

In the spring of 1924, the New York manager for Sangamo Electric, T.B. Rhodes, met with Pressley. At that time, many radio sets were still "experiments" being built by amateurs from sets of parts - tuning coils, transformers, condensers chokes, etc. Pressley planned to offer a set of his special transformers and fixed condensers to enable amateurs to employ in his new superhet circuit. In September 1924, a royalty arrangement was signed to manufacture and put the "Pressley kit" on the market. It met with instant favor and advertised as the "genuine Sangamo kit," a "must" for building the "non-radiating airplane set."

Unfortunately, the success of the Sangamo kit was short lived. In December, 1924, RCA notified Sangamo that the Pressley circuit infringed on some of their most important patents so the company discontinued manufacturing Pressley parts in January, 1925.



Well, that's about it for now. Next month, we'll continue with Part III of the Pressley superhet story where we'll look at the basic construction of Dave Sica's portable and some other variations of the "airplane type receiver." We'll also include where life took Pressley after his superhet was killed by RCA. Hopefully, by that time, I can uncover a little more information on the life of this radio personality or perhaps get some information "with a little help from my friends."

