

THE INFO AGE MARCONIGRAPH

NEWSLETTER OF THE INFORMATION AGE SCIENCE HISTORY CENTER AND MUSEUMS

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January – March 2018

A Dynamic Duo Attacks a Local Problem By Ray Chase – New Jersey Antique Radio Club

The vestibule between 9032C and D (the Radio Museum and the next corridor) is one of the heaviest trafficked spots and for a long time was one of the scrungiest looking. The walls were wrinkled with chipping paint and the doors needed work.



Original State of the Walls

Two of our volunteers, Bruce Ingraham and Bruce Williams decided to take this on as a project since so many of our visitors were exposed to this scruffy area. In spite of the advice of others that the wall board would have to be torn out and replaced the Bruce & Bruce duo elected to save the walls, clean and sand them down then apply new paint. Over this summer they worked on it every week and restored it to its original condition and then some.



Bruce Ingraham Applying Paint

Brass kick plates and other hardware was removed, cleaned and then re-lacquered before installation.



*Bruce Williams Re-attaching
Door Brass Plates*

Missing hardware was replaced and even the brass fire hose attachment was shined and polished. One small section could not be completed before cold weather set in and hopefully that will be addressed in 2018. Meanwhile kudos to the Bruce & Bruce for tackling a tough job and improving the InfoAge perception to our visiting guests



Painting Finished - Door Work Complete

Goodbye to Paper and Hello to **Green!**

Beginning with the April issue of our Newsletter, InfoAge will be "Going green."

Our Newsletter will only be available in electronic format. To continue to receive a copy please send your name and email address to us at admsupport@infoage.org

Thank You for understanding our commitment to the environment.

There will be a limited number of print copies available in the museum for pick-up.

InfoAge would like to thank the
Members of the New Jersey
Antique Radio Club for their
time and dedication on this
project and for all they do for us
Great Job Boys!



A New Radio Listening Room By Ray Chase – NJARC

Visitors to the RTM often enjoy listening to some of the program material that we continually broadcast over our internal radio network through vintage radios in the museum. But, wouldn't it be better to be able to sit down and select exactly what you would like to hear from Radio Yesteryear? Now you can do it; at least from 1941 to 1945.

RTM volunteer Harry Klancer created such a set up using a single board raspberry pi computer, a touch screen display and an actual 1940 model Philco console radio. The computer and touch screen display allow selection and playing of selected short radio segments without having to manipulate any radio controls even as the program sound emanates from the actual Philco radio. Visitors can screen pick the year desired; 1941, 1942, 1943, 1944 or 1945. They then can choose the type of program desired: Music; WWII News Broadcasts; Speeches; "Time Was" segments; Popular Programs such as Jack Benny, The Shadow, Suspense, The Lone Ranger and Fibber Magee & Mollie; even Period Commercials. Segments are usually 3 to 10 minutes and can be cancelled and reselected at any time. The volume is also controlled from the touch screen. If you would like to re-visit a radio listening experience from several of the most significant years of the 20th century stop by and try it. The Listening Room is located off the corridor of 9032C across from the EW Display room and up the hall from WWII Miniatures. The décor of the room is late 1930 with two comfortable easy chairs and is open during normal museum hours.

Harry used many of his accumulated talents to create this display and install the programming. Who knows what it will lead to in the future for other interactive displays in our museums.



The Listening Room Setup, Touch Screen in the Center, Philco Console Radio to the Right

Tanks for the Ride - By Gloria Kudrick

I have been a volunteer at InfoAge for many years and employed in what I call my "Dream Job" there for the past 4 years. I get to work where "History Happened", and where some fine folks roam the halls day in and day out. In the course of my time here I have been able to be a part of many exciting events such as meeting a Tuskegee Airman, an Honor Chair Ceremony, meeting Princess Marconi and more. One thing I never expected and will always remember is the day I was offered a ride in a Stewart Tank! Thanks to the Military Technology Museum's Dan J and James (who cheered me on) I got to take the ride of my life.

Mind you I am 5 foot even and that tank is fairly large....I thought...never in a million years could I get up on it. Well, that was solved by a ladder. Hoisting myself into it was another story.



Me, saying hhhmmm.....



The Hoist.....

Success!

As you can see, I managed to get in, and with room to spare. After peeking inside at the close quarters I decided to stand on the seat and ride in the open air. Off I went around the campus with James protecting me from the low hanging branches. What a ride!

On a side note...after that amazing ride I realized I had to get out of it. Oh No!!!! Over half my body was in that tank. It was time to try and, you guessed it, I couldn't do it. Not that I couldn't hoist myself out, I was determined to do that no matter what, but, there I was, stuck. Ugh! After a moment of sheer panic with a touch of embarrassment on the side, I realized my shirt was caught on a fixture and with a slight tug I was free to climb out....and I made it!

Thank you guys for the ride of a lifetime!

The Marconigraph is the Newsletter of the Information Age Science History Learning Center and Museum which is a 501 C (3) Non-Profit Corporation dedicated to preservation of Camp Evans. Membership is \$25 per year for an individual and \$45 per family.

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For more information about InfoAge and our Museums or to become a member or volunteer your time call 732-280-3000.



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The editor of InfoAge is not liable for any other use of the contents of this publication

InfoAge Members Display at Army Cyber Conference

John Cervini - Vice Chairman InfoAge Board of Trustees

InfoAge members Bob Perricelli and John Cervini attended the Third Annual Cyber Electromagnetic Activity (CEMA) conference at Aberdeen Proving Ground (APG), Maryland on October 16 and 17, 2017. The CEMA event was part of the year-long centennial celebration of the founding of APG. It should be noted that it is also the centennial of the establishment of Fort Monmouth, NJ as Camp Little Silver, and then Camp Vail.

The AOC Susquehanna Chapter asked the Garden State Chapter, which sponsors the InfoAge Science and Engineering Learning Center at the historic Camp Evans, NJ, if InfoAge could put together a display honoring 100 years of Electronic Warfare for the conference. Bob and John gathered WWI NJ Antique Radio Club (NJARC) artifacts. Al Klase of the NJARC constructed posters for the event for displaying at the Banquet, and in the building where the briefings were given. In addition, they put together a comprehensive presentation that articulated the important role of Electronic Warfare during those early days of telephone and wireless communications.

One display contained a WWI era trench "Buzzer" phone which was vulnerable to "hacking" by enemy soldiers who were "listening in" at every opportunity. On the same table was the countermeasure - an American version of the British "Fuller" phone, which made interception much more difficult.

Also displayed were original ground and airborne WWI radio transmitter and receiver developed at Camp Vail for artillery spotting in conjunction with functions at Aberdeen Proving Ground during the war.



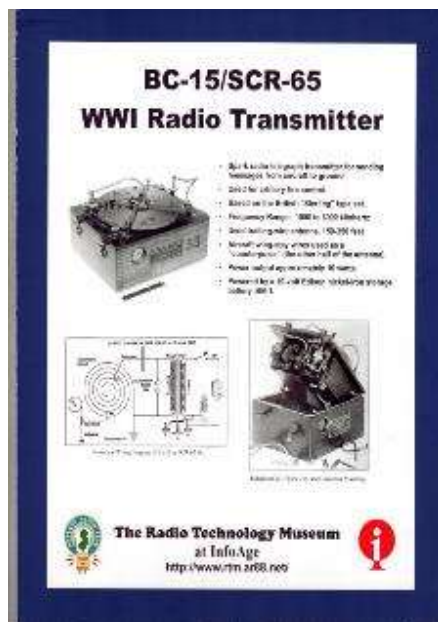
WWI Trench Communication Equipment



John Cervini and Megan Sage at Top of the Bay



WWI Fuller Phone



Vintage WWI Transmitting Radio for Target Acquisition



Vintage WWI Receiving Radio for Target Acquisition



Dr. D. Guha (Left) and G. Bertoli (Center) with Bob Perricelli

There were also posters that described the contributions made by the U.S. Army Signal Corp's Division of Research and Inspection at their headquarters laboratory in Paris, especially the Radio Intercept Group. Major Edwin Armstrong's on site invention of the heterodyne technique was a key development in the move to voice communications.

The conference was a resounding success, catering to a larger audience of professionals than previous years. The AOC GSC EW display drew a lot of interest from the participants, including contractor, Government and military personnel. AOC Susquehanna and Garden State members agreed to coordinate and bring more historical artifacts and displays to future EW events. The Susquehanna Chapter also donated \$2500 to InfoAge as a token of its appreciation.

Donation of Historic Vacuum Tubes

By Ray Chase – NJARC

Jim Whartenby, a former president of the New Jersey Antique Radio club moved to Arkansas some years ago but always makes an annual trip north to select items from his personal collection to donate to InfoAge. Jim has collected a wide variety of electronics equipment over the years and some of it fits nicely with InfoAge displays of Military Radar, EW and Communications. This year Jim and his wife Ruth visited us at our November club meeting and delivered some very important vacuum tubes for future display. Jim had told me several months in advance of what he was saving for us and I was literally salivating waiting for him to show up. When he unpacked his vehicle I was thrilled with what he brought. The batch includes four early radar magnetrons with an unknown separate magnet, three radar CRT's, two early large Western Electric transmitting tubes, two Westinghouse early radar high power tubes, an historic RCA patent sample of the second laboratory made pentagrid converter tube, and the "front End" receiver assembly from a SCR-520, our first airborne radar intercept radar set. Jim knowing of Camp Evans history in radar development and my interest in radar history tailors his donations to support our preservation of that history. But, let us explore some of the pieces in more detail.



The Items Jim Brought

1. The most amazing piece to me is the Type 3C magnetron from Research Enterprises Ltd. Canada and produced by Northern Electric in Canada. This Jim obtained at a New Jersey HAM flea many years ago for \$10.00. It is "new old stock" (NOS) and is a production piece made shortly after the Tizard Mission arrived in North America in 1940. This magnetron was made from drawings and samples originated by Randall and Boot in Birmingham England, the inventors of the multi cavity magnetron that revolutionized radar and changed the course of WWII. Coincidentally with Jim's visit, I spotted another magnetron of the same type being offered on E-Bay from New Zealand and I was able to procure it for \$17.00. It is a CV 56B made under the same circumstances as the one Jim brought us. It is damaged with a broken vacuum seal but is only intended for display. Both magnetrons operated in the S band region (3000 Mhz) and were used for airborne intercept and Naval search radar applications early in WWII. They are extremely important historic artifacts for our future microwave tube displays.



Canadian and New Zealand Magnetrons

2. Two NOS Westinghouse WL-530 tubes that were specifically designed in 1938 for use as the transmitter pair in the SCR-270/271 radar; the Army's first long range search radar and the one that was in operation at Pearl Harbor on December 7th, 1941. These tubes are water cooled, and are about 8 inches tall and 6.6 inches in diameter. In use, the pair produce a peak power of 100 Kilowatts at 110 Mhz. InfoAge already had one of these tubes on display in the radar room at the hotel but it has a broken filament. The two new tubes will greatly enhance our displays that tell the story of the SCR-270 series of radars.



SCR-270 Transmitting Tubes

3. The two Western Electric transmitting tubes are a 219D power rectifier and a 241B triode transmitter; the same types of tubes used at the ATT Lawrenceville, NJ transatlantic radio telephone station in the 1929. These tubes are 13 to 14 inches tall and came with test data indicating that there are fully functional. They provide more additions to our future displays that will tell the long and important history of the 75-year reign of the vacuum tube in electronics.



Western Electric Transmitting Tubes

4. The RCA development of the pentagrid converter tube helped reduce the cost of superhet home radios in the early 1930's further expanding the availability of radio broadcasting reception to the public. Jim managed to rescue the # 1 and #2 patent samples when he worked at RCA. He kept the #1 sample and we are overjoyed at now having the #2 sample of this important radio artifact.

5. The non-descript electronic assembly pictured is the heart of the radar receiver for the SCR-520 airborne intercept radar. This set, designed by Western Electric in 1942 was used on the P-61 Black Widow and P-70 Nighthawk, our first fighter aircraft designed to be able to intercept and attack enemy aircraft at night and under all weather conditions. This module uses three unique Western Electric vacuum tubes and very few samples of this receiver exist today.

Recent Donors to InfoAge

List Courtesy of Ray Chase - NJARC

Howard Andrews of Rumson New Jersey has made numerous donations in the past, notably the many Dr. Zahl photographs that adorn our walls in the hotel and that were rescued from destruction. Howard recently donated some radios, radio parts, many vacuum tubes, and a massive collection of Bell Labs documentation.

Robert E. Maddox of Marlborough New Jersey also has made numerous prior donations to the Radio Museum. He recently brought us electronic items, some test equipment and a rare early Western Electric Public Address amplifier.

Jim Whartenby is another prior serial donor and a former president of NJARC, who now lives in Arkansas. Jim makes an annual trip north to bring us important artifacts. This year he brought the Radio Museum a load of very interesting and important vacuum tubes. These are being described in a separate article in this issue.

Thomas Block son of L.W. Block of Lakewood who passed away is administering his father's estate has donated a batch of HAM equipment including a unique set of telegraph keys.

As 2018 begins we wish to say a big THANK YOU and recognize some of our dedicated volunteers who went above and beyond to make 2017 a terrific year:

Ray Brown, Dan Jacobs, Jim Kudrick and Fred Briard. These guys worked in extreme heat and in the brutal cold to get the job done, keep us open and make InfoAge look great!

The planners, builders, actors and all those who helped make Camp Evans Base of Terror 2017 a success. It was a great team effort and a great time.

All of our faithful docents who gave their time to meet and greet our museum guests.

To all of you and the many that were not mentioned but give of their time, you have our thanks and our gratitude.

Fred Carl, COO

Our Donors Make a Difference!!

Through our press releases, thank you letters, handshakes or addressing you in a public meeting, we try to acknowledge the generosity of our donors. Whether they are among the hundreds of individual supporters who have contributed amounts between \$10-\$10,000 to InfoAge, or the many foundations, businesses and corporations who have donated from \$5,000-\$100,000 and above, we are grateful to all.

However, we cannot always give each donor the public thanks and recognition their support deserves. This is a growing concern to us so we intend to select at random some of those whose generosity would normally go unheralded and mention them in our year end newsletter. Here are some we would like to recognize this year:

Thomas Gibson - \$360
Patricia Thecker/Duncan Thecker Foundation - \$25,000 (over \$75,000 to date)
Victoria Ciccone - \$600
BPOE #2151, Brick, NJ - \$500
NJ Antique Radio Club - \$468 (over \$30,000 to date)
Martin Flynn - \$103 (plus hundreds of dollars of electronic equipment)
Dan Marlow - \$380
Howard Leach, Jr. - \$1,000
Harris Corporation - \$10,000 (over \$25,000 to date)
Ethel V. Kennedy - \$250
Robert Palazzo - \$250
IBM Matching Grant - \$500
Dave Sica - \$100 (plus doing countless hours of video recording for IALC)
Scott Thompson/Novartis - \$330
Optomen Productions, LLC - \$200
Association of Old Crows - \$7,400 (over \$30,000 to date)
The Cleveland H. Dodge Foundation - \$500
New Jersey Natural Gas - \$5,000 (over \$70,000 to date)
Harris Corporation - \$10,000 (over \$25,000 to date)
Kevin Schuerman - \$2,800 (over \$5,000 to date)
Jules Bellisio - \$500
Tom Sedergran - \$1,500
Gayle D'Luhy - \$500
Nicholas Lordi - \$18,000
The Lewis Family - \$1000.00

The following individuals gave \$100:
Joanne Brandon, Aspen Consulting, Mary Chabala, Arthur Coakley, Barbara Denegar, Rich Finnerty, Roger Harding, Bob and Maureen Hopkins, Michael F. King, Robert Lowry, Carol and Bernard Reilly, Michael Smith

Project Diana – January 10, 1946

By Fred Carl



Project Diana SCR-271-D

This was the 1946 beginning of space communications and the birth of the field of Radar Astronomy!!! Accomplished at Camp Evans, the former Marconi Belmar High-powered Wireless Station... A KEY link in the world's first wireless network... Where Edwin Armstrong demonstrated his regenerative circuit to David Sarnoff in 1913, proving world-wide wireless reception was possible... Where radio era greats like Ernst Alexanderson, A. Hoyt Taylor, George Clark, Roy Weagant, Dr. Harold Beverage, Dr. H. O. Peterson and many others worked to improve communications technology... and the Diana team used equipment supplied by Edwin Armstrong!



WWII Radar Development Site with SCR-271-D

Diana RADAR is the bed-spring like device to the right of center Camp Evans. Camp Evans Opened the Space Age in January 1946 with Project Diana.



Project Diana Collage 1

In late 1945, in the lull that followed the Japanese surrender, a number of scientists at Fort Monmouth's Camp Evans began working on a way to pierce the earth's ionosphere with radio waves, a feat that had been tried just before the war without success and which many thought impossible. Project Diana, named for the goddess of the moon, was designed to prove that it could be done. Begun on an almost unofficial level by Evans radar scientists awaiting their Army discharge, the project was headed by Lt. Col. John DeWitt. Operating with only a handful of full-time researched, the project scientists greatly modified a SCR-271 bed-spring radar antenna, set it up in the northeast corner of Camp Evans, jacked up the power, and aimed it at the rising moon on the morning of January 10, 1946. A series of radar signals were broadcast, and in each case, the echo was picked up in exactly 2.5 seconds, the time it takes light to travel to the moon and back.



Project Diana Collage 2

The importance of Project Diana cannot be overestimated. The discovery that the ionosphere could be pierced, and that communication was possible between earth and the universe beyond, opened the possibility of space exploration that previously had been only a dream in adventure films and comic books. Just as Hiroshima opened the nuclear age in 1945, Project Diana opened the space age in January of 1946. It would take another decade before the first satellites were launched into space, soon followed by manned rockets, but Diana paved the way for all those achievements. It even initiated the tradition of naming such projects after ancient Greek and Roman gods, like Mercury and Apollo. For Fort Monmouth Project Diana was a pivotal event that built on World War II expertise, but pointed the way to the future.

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InfoAge Happenings



Sunday, January 28, 2018

2:00 – 4:00 pm

InfoAge Space Exploration Center (ISEC), 2300
Marconi Road, Wall Twp., NJ

Fifteen years ago, the loss of the Columbia was a shock to NASA and the world. Damaged during launch and breaking up on its return home, seven astronauts lost their lives. Decisions and events that caused the accident and the results of the investigation will be presented. Finally, the critical question will be answered, could the crew have been saved?

\$10.00 donation includes entrance to all InfoAge museums.

InfoAge Space Exploration Center (ISEC), 2300
Marconi Road, Wall Twp., NJ

Visit: <https://isec.space> or call 732-322-4832 for more information.

InfoAge Wish List

2 Golf Carts

Gator Carry All

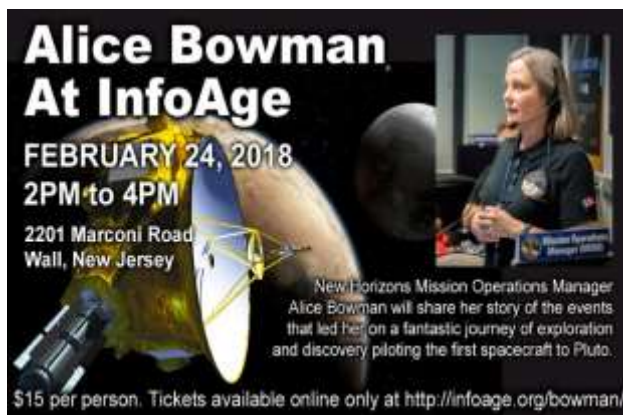
Power Auger

Pallet Jack

Forklift

Lawn Mowers – Push & Riding

Snow Blowers



Remember to go online to
www.infoage.org/bowman/ and get your tickets for
this informative and exciting afternoon with Alice
Bowman.



Commissioning a full-color tile is a great way to say thank you to a veteran or family member. The hall of Honor is located in the central hallway of the historic WW2 H-building complex, on the Camp Evans National Historic Landmark, the InfoAge Hall of Honor is an excellent place to display your custom tile. You supply the photos and text, and we'll create your unique custom tile. Take it home, or allow us to display it in our Hall of Honor. The cost to commission a tile is \$250, and additional copies can be made for \$100 each. You will have the opportunity auto approve your tile's design.

Call 732-280-3000 today to reserve your tile or use this [Link for the Tile order form](#)



InfoAge

Science/History Center
at Camp Evans, Wall NJ

InfoAge Science History Learning Center and Museum

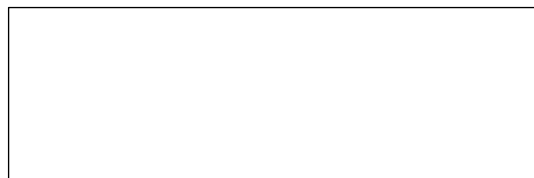
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The Newsletter of InfoAge

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Save the Dates

Spaceflight Lecture Series

Last Sunday of Each Month
2300 Marconi Road
Wall, NJ 07719

Alice Bowman Event

Saturday, February 24th
2:00PM – 4:00PM
2201 Marconi Road
Wall, NJ 07719

Pulsars, Satellite Images and the Sun

January 20th & 27th
1:00PM to 5:00PM
2300 Marconi Road
Wall NJ 07719

*For more information about these events, such as admission costs and times,
call 732-280-3000 or visit us online at www.infoage.org*

The Information Age Learning Center (InfoAge) received a General Operating Support Grant from the New Jersey Historical Commission, a division of the State Department