THE INFOAGE
MARCONIGRAPH

Volume 2, Number 1 www.infoage.org January 9, 2008

A YEAR OF PROGRESS

This year has been one of excellent progress. This is due to dedication and hard work of InfoAge members and volunteers. Let's review some of this year's educational, commemorative, and fun events and note our accomplishments.

We started the year with Ocean/Monmouth Amateur Radio Club leading the Project Diana celebration. In February we setup an exhibit for the third year of Camp Evans Heroes at the Neptune Black History Day.

During a busy spring OMARC had a tailgate swap meet, we hosted the Boys Scouts Pinewood Derby, we celebrated International Marconi Day, the New Jersey Historical Divers Association, Inc. ran its second NJ Shipwreck Symposium, InfoAge honored four radar and electronic warfare pioneers at the InfoAge Board of Trustees Wall of Honor Dinner, Mid-Atlantic Retro Computing Hobbyists held its second Vintage Computer Festival, and the Military Technology Museum of New Jersey sponsored its first InfoAge Antique and Classic Car show.

The summer was just two days old when the New Jersey Antique Radio Club held a crystal set seminar as OMARC held Amateur Radio Field Day. In July the Landmark Volunteers visit brought many improvements to our site as the InfoAge member groups sponsored educational events and dinners for the student volunteers and NJARC held an antique radio swap meet.

The early fall saw three exciting fundraisers return for their second years: the USO dance, National Broadcasters Hall of Fame induction, and the community favorite, our Haunted Hotel. In November we held a member spaghetti dinner, NJARC set up an exhibit at the Fort Monmouth 90th Anniversary celebration, and we hosted the IEEE Cell Tower Danger Seminar. In December we hosted the Allenwood Woman's Club Holiday Tea and the Garden State Central hosted our second Holiday Train Display.

While all this was going on we had our exhibits open every Sunday and on many specially scheduled days. We expanded our website to more than 1,200 pages of information. We helped three boys scouts earn their Eagle badge. We installed new heat and air conditioning in the TIROS building. We put new roofs on five major buildings, we repainted thousands of feet of fence, our library of historic wireless, radio and radar historic technology is set up, we restored building 9032A to its WWII look, we improved the NBHF exhibit and the NJHDA began conserving parts of the twin sunken locomotives in the hotel basement.

We have only a few rooms left to complete the restoration of the Marconi hotel, our fallout shelter theater is nearly ready, and we began working on buildings 9032 B – C. We are proud of how well we keep our grounds mowed, raked and maintained.

We enjoy the support of the Wall Kiwanis Club, the New Outlook Pioneers, AFCEA, NJNG, Verizon, CACI, Wall Township Public Works, and the Monmouth County Historical Commission. The Wall Township Committee, the Monmouth County Freeholders, NJ Assemblyman Sean Kean and Congressman Chris Smith continue to support our progress.

Member donations and grants have us positioned for a new year with more and new equipment, more tools, and most important, more volunteers. We are building capacity and know-how as we create our traditions. We built a community of dedicated volunteers who fix, patch, paint, build, conserve, record, give tours, greet visitors, present at conferences, create exhibits, and do real work.

We enjoy a sense of pride and the satisfaction of doing good work that will benefit current and future generations as we honor the past. 2007 was our best year, yet. We kept to our mission and we are prepared, positioned, and ready for 2008.

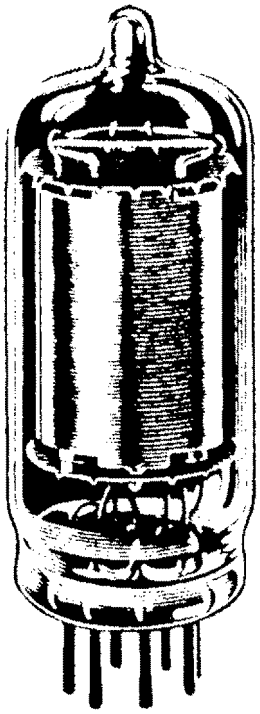
Our one sadness of the year is we lost Larry Wilkins (see page 7), but we have not lost his drive and dedication to InfoAge. It continues in many of us. We miss Larry and I know Larry is proud of us and our work.

Thank you,
Fred Carl, InfoAge Director
732 299-0894 • fred-carl@infoage.org

INVEST IN VICTORY
The InfoAge SIGNALEER
SIGNAL CORPS ENGINEERING LABORATORIES
INVEST IN INFOAGE

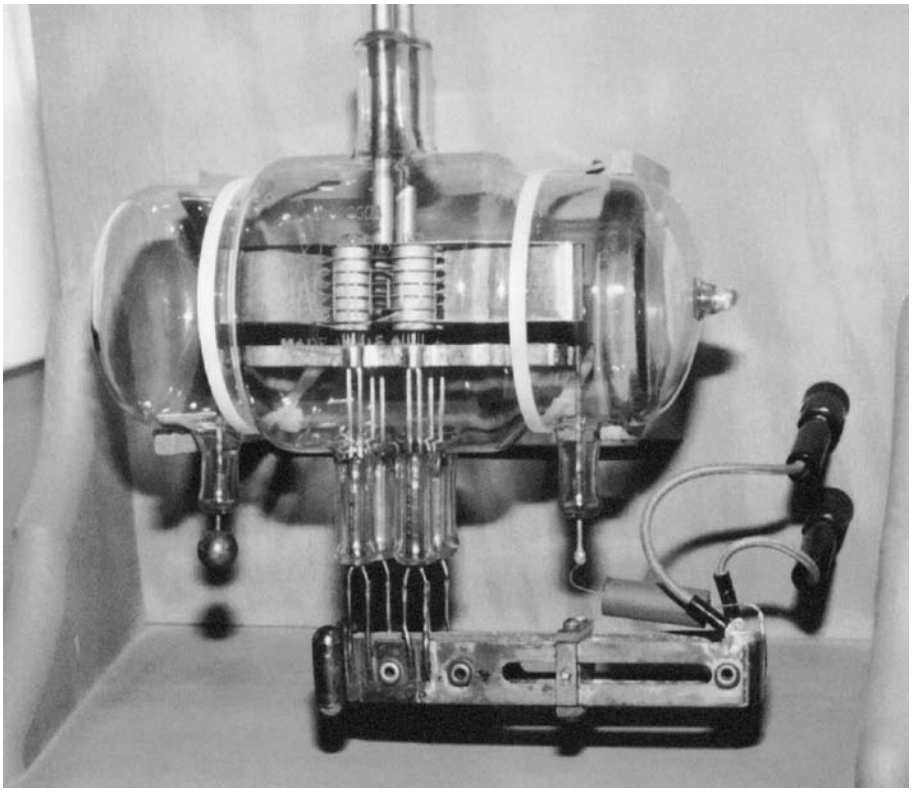
REMEMBERING VACUUM TUBES
or
ALL HAIL THE MIGHTY VACUUM TUBE

by Ray Chase
New Jersey Antique Radio Club
908-757-9741 • enrpnr@erols.com



Who among you remembers what vacuum tubes are and what they were used for? I dare say that not one teenager in 20 if asked today what a vacuum tube is would be able to answer. Yet for more than 60 years vacuum tubes were the king of all forms of electronics. From the days of Lee de Forest, the final inventor in 1906 to the birth of the transistor in 1947 and the eventual demise in the use of vacuum tubes in the 1970s no other component has been so instrumental to the growth of the electronics industry and the impact that it had on everyday life and our well being. The British call it a valve, which is a more accurate term since the device is principally a regulator of the flow of electrons, i.e.; electricity. However, we in this country named it a tube from its original tubular glass shape and the name stuck. Thomas Edison almost invented it while pursuing his development of the light bulb but he could not explain why some of his light bulbs were darkened in a peculiar manner and considered the effect a nuisance even though it led to be called the "Edison Effect." Englishman J. A. Fleming took it a little further and made it operate as a diode or simple radio detector but the final clue was added by Dr. Lee de Forest who in 1906 added a third element, the grid, and now it could amplify and oscillate to generate radio waves.

No one can know for sure how many vacuum tubes were produced since Dr. de Forest created the first one but it surely is in the tens of billions. Manufactured in all sizes and shapes to do a myriad of electronic tasks; at least a thousand differing types have been devised; such as diodes, triodes, tetrodes, pentodes, heptodes, hextodes, orthicons, CRTs, klystrons, magnetrons, thyratrons, carcinotrons and so on. There never seemed to be a task that they could not be called upon to accomplish. Originally manufactured like light bulbs with glass envelopes, they were considered fragile and delicate. As technology advanced they could be made to be very rugged, many with metal bodies. Home receiving tubes were originally the size of 100-watt light bulbs but again, advances in manufacturing techniques continually reduced their size, even to thumb nail versions that could be used in shirt pocket hearing aids. Prices plummeted along with increased production and more efficiency. Originally costing the home user about $5 a piece in 1925, by the mid-40s they could be purchased for less than a dollar.



A special radar tube (Zahl Tube) developed at Camp Evans during World War II, on display at InfoAge.

World War II, the first technology-driven armed conflict, exploded the use of electronics and therefore the development of many new vacuum tube devices. In all fields of military application, whether it be radio communications, sonar, navigation, radar, or a myriad of previously unthought of applications, the vacuum tube was instrumental in winning the war. It has been said that the development of radar was the second most significant technological advancement during WWII and it would not have been possible without the extensive use of vacuum tubes of many types, most of which were new developments for specific radar functions.

And who could forget the postwar expansion of television and the trials and tribulations of keeping that 25-28 tube TV set functioning? Drugstores sported do-it-yourself tube testers where one could resort to trying to fix one's own TV set by pulling all the tubes out and running down to the corner store to test them. This adventure usually created more problems than it solved but there were lots of tubes in those early TVs so if the set did not function it must be the fault of one of them. Eventually the number of tubes per set was reduced, the sets became more reliable, and the TV repairman went the way of the "Maytag serviceman."

Yet today vacuum tubes are largely forgotten or unknown to a large segment of the general population. Of course the advent of the transistor, then integrated circuits, and then on to large scale integrated devices, some no bigger than a pin head, blessed us with unparalleled new appliances and devices with opportunities to improve our lives that vacuum tubes could never do and with far less power consumption.

Are vacuum tubes still around? Yes, there are still some applications where vacuum tubes can still do a job where no better alternative exists. These are mostly in high power transmitters, radars, and the like where solid state replacements are not yet able to replace them. But these applications are gradually going away. One of the

major remaining vacuum tube strongholds, television and computer monitor cathode ray tube (CRT) is rapidly losing out to the flat panel plasma or LCD displays so it is only a matter of time before there may be no further use for the venerated vacuum tube. Still many high-fidelity enthusiasts and musicians swear by the better music reproduction capabilities of vacuum tube amplifiers and this keeps a cottage industry alive supplying their special needs. The high-end segment of audio reproduction is still powered by vacuum tubes and those devotees in this niche compete to buy certain tubes as if they were treasured works of art. Many musicians who play electrified guitars use tube amplifiers and overdrive them to distortion in order to produce unique sounds that they say can only be obtained with vacuum tubes.

As in any other field of endeavor, there is a growing cadre of vacuum tube collectors, some of whom have extensive museums.

As in any other field of endeavor with a history, there is a growing cadre of vacuum tube collectors, some of whom have extensive museums. They have their own association, the Tube Collectors Association, that publishes a bi-monthly journal and holds an annual meeting. Membership is worldwide and there is nary a question on the history of tubes or the details of a rare type that they cannot address. Left on their own, vacuum tubes age well and do not seem to decay over time as do many other collectibles do. The main reason for scarcity is that many were long ago deemed obsolete and discarded in the trash as having no further use. Nonetheless, they still show up in odd attics and dark corners to the delight of this unusual collecting fraternity.

How about us antique radio and TV collectors as well as other enthusiasts who cherish early ham radio equipment or any other form of early electronics, including use in early computers; how will we keep the radios and devices in our collections functioning? The good news is that supplies are still available, and it turns out that most vacuum tubes are more reliable and long lasting than is generally believed and keeping old radios functioning is more a problem of replacing other parts such as capacitors and resistors. While specialty audio and high power tubes are still made, chiefly in China and some Eastern European countries, the production of receiving type vacuum tubes ceased quite a few years ago anywhere in the world. But huge stocks of spare tubes of the most commonly used types were stocked by radio repair shops and some distributors and are still being regularly found and rescued by radio clubs and other interested individuals. Vacuum tubes are surprisingly resistant to long-term storage degradation, after all, they are “vacuum packed”! Collector clubs such the New Jersey Antique Radio Club (NJARC) maintains a supply stock and provides this as a cost effective service to our members. Still, some of the earlier more fragile or rare tubes are difficult to find and consequently are quite expensive. This will eventually lead to another cottage industry in fabricating replicas as is the case today in the U.K.

The first half of the 20th century was a period of incredible growth in technology that significantly affected and improved our daily life. It would be hard to imagine a single invented component part that in this period of time that had a more pronounced affect on us than the vacuum tube.

The Radio Technology museum at InfoAge has several displays of vacuum tubes all the way from one of Lee de Forest’s first vacuum tubes, the Audion, through early home radio tubes, high power transmitting tubes, and a display of WWII radar tubes.

Incidentally, we play old radio programs through several of our vintage tube radios for your enjoyment during museum visiting hours. Visit InfoAge and our museum on Sunday afternoons from 1:00 PM to 4:00 PM.

The History of Computers Comes Alive at InfoAge

by Evan Koblentz
Mid-Atlantic Retro Computing Hobbyists
646-546-9999 • evank@midatlanticretro.org

To most people, the InfoAge Science / History Center is known for its impressive past as a top-secret military electronics laboratory, and especially for its relevance to the Allied mastery of RADAR in World War II. But there is something here for the computer-heads in your family, too – MARCH, the Mid-Atlantic Retro Computing Hobbyists.

MARCH is a non-profit user group founded by central New Jersey residents myself and Andy Meyer early in 2005. The group joined the InfoAge fraternity that spring, and currently has dozens of members spread out from Hartford, Conn., to Pittsburgh, Penn., to Washington, D.C., and everywhere between. MARCH's objectives are to collect, restore, and exhibit computers from the 1940s to 1980s, with a special focus on companies based in or related to the local region.

Visiting our exhibit is like going to an old car show and having the owners let you take test drives.

Currently MARCH operates a one-room "Best of the Collection" exhibit in InfoAge's main hotel building, immediately to the right when entering through the front lobby. Highlights in this exhibit include a piece of core memory, which is the 1950s-1960s predecessor to modern RAM; an Altair 8800, the most legendary of the mid-1970s "homebrew" kit computers; a copy of Microsoft co-founder Bill Gates' "Open Letter to Hobbyists" from 1976; an ASR-33 teletype machine; the original model of the Apple Macintosh from 1984; a Kaypro "luggable" computer from 1981; photos of ENIAC (the first large-scale, general-purpose, digital, programmable computer) from the mid-1940s; a board of vacuum tubes from a UNIVAC (a 1950s-1960s commercial version of ENIAC); an Atari 2600 videogame console (come visit and we'll let you play any game that you like!); a Commodore 64 (the best-selling computer of the 1980s), and several others.

Of the two dozen computer museums in America, almost all of them have a strict look-but-don't-touch policy … not so for MARCH! In our exhibit, we strongly encourage visitors to touch, with our supervision of course. Nothing pleases us more than seeing a 55-year-old revisiting his memories of using punched cards, paper tape, terminals, and "blinkenlights"; a 35-year-old recalling her days of happy hacking in LOGO and BASIC, or best of all, a 15-year-old discovering a non-Windows computer for the first time. Visiting our exhibit is like going to an old car show and having the owners let you take test drives.

In addition to our exhibit room, MARCH also hosts the annual Vintage Computer Festival ("VCF") East. This is a weekend event, usually in the spring or summer, open to the public. It is not a flea market, but rather a living exhibit hall, where collectors give demonstrations of every imaginable make and model of classic computers, from a Digital Equipment Corp. PDP-8 to an IBM System/36 to a Tandy TRS-80 Model 1. There are also prizes to win, special events to attend such as the classic computer film festival, and celebrity guest lectures. Our keynote speaker in the 2007 event was Chuck Peddle, who ran Commodore's computer division 30 years ago. Chuck saw so much importance in the VCF East that when business obligations prevented him from attending in person, he gave his 90-minute lecture

We have ideas for several other exhibits, but the initial four will keep us busy for a long time.

via videoconferencing using Skype all the way from Sri Lanka! But he wasn't alone in participating from far away. In person, the VCF East routinely gets visitors from places like Britain, Germany, and New Zealand, not to mention far-off Americans from California, Indiana, Kentucky, Massachusetts, Ohio, and Oregon.

Looking ahead to 2008, our club's focus is to expand our public exhibit from its current 120 square feet (our simple 10x12-foot room in the hotel building) to 800 square feet in InfoAge building #9032-C. We anticipate the big move into 9032-C this spring, located between the National Broadcasters Hall of Fame and the New Jersey Historic Divers Association Shipwreck Museum. In our new digs, we're already planning four exhibits. They are: "Computing of Camp Evans and the Military"; "Computing of the Local Region"; "Historic Microcomputers"; and a redesign of our "Best of the Collection" exhibit. We have ideas for several other exhibits, but the initial four will keep us busy for a long time.

MARCH's public exhibit is open most Sundays from 1-4pm, and private tours of our collection are available by appointment – the collection is far more vast and includes much more "Big Iron" than what's currently on display. MARCH also is extremely grateful for your fiscal and technology support! Membership in our group is free, however, we operate like PBS or shareware – by donations from people like you. We're also looking for rectangular utility tables, bookshelves, and any and all interesting artifacts of computer history. Please note: we usually do not accept drop-offs. So contact us before making any donations of funds or equipment.

To learn more about the Mid-Atlantic Retro Computing Hobbyists, our museum plans, and the Vintage Computer Festival East, or to arrange a private visit or donation, please contact president Evan Koblentz at evank@midatlanticretro.org or at (646) 546-9999.

DIANA DAY is January 10

Ron Olender/President • OMARC • 732-367-3179 • Wa2hzt@aol.com

On January 10, 1946 an important scientific event took place at Camp Evans. It was the culmination of months of work and called Project Diana. At that time, a radar signal emitted from the area now occupied by building 9116 aimed at the moon and two and one half seconds later a faint echo was returned. The importance of this feat cannot be overstated. It proved for the first time that Earth's ionosphere can be penetrated. This opened the way for space wave communications as we know it today. To commemorate this event the Ocean/Monmouth Amateur Radio Club will host a special radio event from its amateur radio station at the Diana site. We will give out radio contacts to other amateurs throughout the U.S. and will issue certificates of confirmation for their contact. Our event is scheduled to take place on Saturday, January 12 at 10 am at Building 9116 on Marconi Road. The site is marked by the large 60-foot radar dish that is visible from the road. The event is open to the public at no charge. Come learn more about Project Diana and see amateur radio in action. We will be happy to answer any questions you may have.

A FRIEND REMEMBERED –LAWRENCE WILKINS – KB2RIS (SK)

I have lost a wonderful friend. A friend who I wished could have been my brother in this life. Larry came into my life around 1998 when he became a member of the Ocean/Monmouth Amateur Radio Club (OMARC). We became very friendly and in 1999 he was elected to the club's Board of Directors. Larry was a very enthusiastic amateur radio operator, always ready to help wherever he could. Although he suffered from a number of ailments including diabetes, blindness in one eye, amputated lower leg and was in cancer remission, he never complained. I have never known a more courageous man.

Larry was responsible for our club to be represented at InfoAge. Through his efforts, we were able to have a point of presence at the Diana site, building 9116. He was always planning on how we could improve our club. When our club lost its Volunteer Examiner Liaison (person in charge of testing prospective amateur radio operators), Larry stepped up to the challenge and did an outstanding job. When storm windows had to be made for building 9116, Larry provided the material and expertise to get the job done. When display cases and tables were needed, he was able to provide them. When storage space was needed it was Larry who made arrangements to have a couple of trailers brought on site for that purpose. When keys and lock sets were needed for InfoAge, it was Larry who took the task on. When Camp Evans drawings needed to be inventoried, it was Larry who volunteered for that job and when leaves had to be raked it was Larry who was first to pick up a rake and pitch in. Again, I never heard him complain. We recently lost one phase of our electricity at our site due to a blown fuse in our substation and it was Larry who relocated the out of service circuit breakers to another phase that was working. He could always be depended on to come through when something was needed.

Larry always chided me about worrying so much about club matters and humorously referred to me as "Grandma". It was a term that I took kind heartedly as a sign of endearment. If we ever had an argument, it would be over in a few minutes with both of us laughing. Many times when I took him home from a Board meeting at night, we would park by his house and talk about the future of OMARC. He wanted us to be the best radio club in the area and was always coming up with ideas on how we could achieve that goal. He would always call me on the phone at least once a week to discuss club matters and tell me where he would be if I needed him.

He loved doing things around his house and just recently installed a fish pond in his back yard of which he was very proud. Larry always talked about Scotland as that was where he had his roots and that is where he and his wife went on their honeymoon. On the day he was married, he and his new bride Donna stopped by to see our Field Day operation at Marucci Park in Wall. There he was in a top hat and tux looking like a million bucks. They didn't want to forget about our radio event and even brought us some wedding cake for our enjoyment. He and Donna (also an amateur) loved talking to foreign stations (dx) on his new radio. Donna has graciously donated his radio tower and antenna for our club to use. When I spoke with Donna at his viewing, she reminded me that "Larry never met a stranger." I can attest to that 100% as he was always the first person to greet someone at the door as if he had known them for a lifetime.

We at OMARC have to keep going forward with our club to honor him and all the work he did for us. He touched many people while he was here and I feel that I'm a better person to have known him. I'm sure that the good Lord has a special place for him where he could talk to dx stations and play with his radio all day long. God bless his soul, he will be sorely missed.

Ron Olender
OMARC President

InfoAge
Science/History Center
at Camp Evans, Wall, NJ

Information Age Science and History Center, Inc.
2201 Marconi Road • Wall • NJ • 07719

732-280-3000 • www.infoage.org

The Newsletter of the InfoAge Science/History Center

Inside this issue...

Shipwreck Museum Blueprint Walk-thru Tour

by Dan Lieb

New Jersey Historical Divers Association, Inc
732-776-6261 • njhda@aol.com

On March 2, 2008, the New Jersey Historical Divers Association, Inc. (NJHDA) invites the public to come in and see our New Jersey Shipwreck Museum Expansion Project in the works. In addition to some of our regularly displayed artifacts, we will feature some from our collection not currently on display in our museum. The display will include three cannons from areas shipwrecks and a model of the *RMS Titanic* as she lies on the bottom today. The public will also be able to review plans of the expansion and offer comments that may help us better serve the public, now and in the future.

The day-long event will run from 10AM to 4PM. Refreshments will be served. Donations to our project will be gladly accepted and are 100% tax-deductible. The museum is located at 2201 Marconi Road in Wall. Go to http://www.infoage.org/visit.html for directions. Call 732-776-6261 for more information.

Calendar of Events

January 12, 2008
Diana Day
- Free to the Public
- 10 AM Starting Time

March 2, 2008
Shipwreck Museum Walk-thru Tour
- Free to the Public
- Refreshments
- 50-50 Raffle

April 26, 2008
International Marconi Day
- Free to the Public
- 10 AM Starting Time

June 14, 2008
Wall of Honor Dinner
- 7-11 PM

June 21, 2008
Classic Car Show
- Rain Date June 21, 2008
- 10 AM to 4 PM

Call 732-280-3000 for reservations and more information.