THE INFOAGE
MARCONIGRAPH

Volume 7, Number 3 www.infoage.org September-December 2013

Armstrong Day At InfoAge

Al Klase
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Radio Technology Museum guru Al Klase (above) explains the fine point of Armstrong's invention. Visitors (below) mastering the operation of a basic regenerative receiver.

The New Jersey Antique Radio Club's Radio Technology Museum held their first Armstrong Days observance on July 27th and 28th at the Marconi Hotel at InfoAge Science History Learning Center in Wall Township. This event honored the 101st anniversary of Edwin Howard Armstrong's introduction of the regenerative radio receiver. Armstrong was arguably radio's most important inventor, and this development brought the industry forward from the early "wireless" era, dominated by buzzing spark-gap Morse code transmitters and nearly deaf crystal receivers, into the vacuum-tube-based electronic age, enabling the long distance communications and voice broadcasting that we enjoy today.

InfoAge enjoys an important connection with the Armstrong story. It was here, in January 1914, at the then-under-construction Marconi Belmar station, that Armstrong demonstrated his device to Marconi Wireless Telegraph Company of America's Chief Inspector David Sarnoff. Sarnoff would go on to become President of the Radio Corporation of America (RCA), and Armstrong to pioneer and develop FM broadcasting and two-way mobile communications.

In keeping with the Museum's principle that antique radios need to be heard as well as seen, a number of vintage regenerative receivers, spanning the years from 1912 forward, were in operation for auditioning by visitors. These included a recreation of Armstrong's original experimental receiver tuned to a simulated spark signal from the Marconi station on Cape Cod, a 1918 maritime receiver listening to continuous-wave Morse code, and several early broadcast and short-wave sets.

InfoAge, including the Radio Technology Museum, is open to visitors every Wednesday, Saturday, and Sunday from 1 PM to 5 PM. See www.infoage.org for more information.

Volunteering At InfoAge

Dan Lieb
New Jersey Historical Divers Association, Inc./InfoAge Trustee • 732-776-6261 • Aqualieb@aol.com

Jewelery created by a crafter.

Craft Show Team Now Forming

Do you know someone that likes craft shows? InfoAge Science Center's Development Committee is forming a group to handle craft shows. If radios, tanks and computers are your thing, but your friend or spouse might be more interested in craft shows, ask them if they'd like to join us and help out. We'd be interested in making this into an annual event if this craft show goes well.

The committee would like to run a craft show next spring and needs to assemble of group of volunteers that can spend a few hours planning and working through this fall and winter. It would involve attending a craft show or two, handing out some literature, and helping pull together a list of crafters who would be interested in taking a space or two at our craft show this spring. If you like craft shows, this is your opportunity to get involved and help out InfoAge.

Interested? Contact Dan Lieb (Development Chairman) by e-mail at aqualieb@aol.com or by calling 732-776-6261.

Reunion At InfoAge!

WHAT: 2nd Annual Fort Monmouth Reunion
WHEN: 9/15/2013 Noon - 5 PM
WHO: All FT Monmouth / Camp Evans Alumni, families and potential volunteers
WHERE: InfoAge at historic Camp Evans
2201 Marconi road, Wall NJ
FOOD: BBQ, Burgers, hot dogs, soft drinks, etc.
BYOB: Bring your own wine or beer, no cash bar
HOW MUCH: $25.00 per person
RSVP: by 9/8/2013
MUSIC: provided by: DJ
WHAT TO BRING: lawn chairs, FT Monmouth / Camp Evans memorabilia.
PAY IN ADVANCE: Send checks to
Mike Ruane at 22 Homestead Ave
West Long Branch, NJ 07764

A New Radar Display For InfoAge

Ray Chase
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Through the good graces of several individuals at CERDEC Aberdeen, MD and Tobyhanna Army Depot, PA InfoAge has acquired a very recent model of the AN/TPQ-48 Lightweight Counter Mortar Radar (LCMR) for permanent display. The TPQ-48 was jointly developed by the Army at Fort Monmouth and Syracuse Research Corporation (SRC) for use by Airborne Forces. This type of radar represents a significant new development in providing rapid protection for ground forces from enemy mortar attacks. It is lightweight at 120 pounds, can be set up by a crew of two in minutes and operates from any available power source including batteries. This radar is completely solid state and is software controlled making it adaptable for a variety of combat situations. The radar display is in the form of a ruggedized field laptop computer that provides a three dimensional picture of incoming threats. The laptop type display can be remotely operated some distance from the radar itself for crew protection.

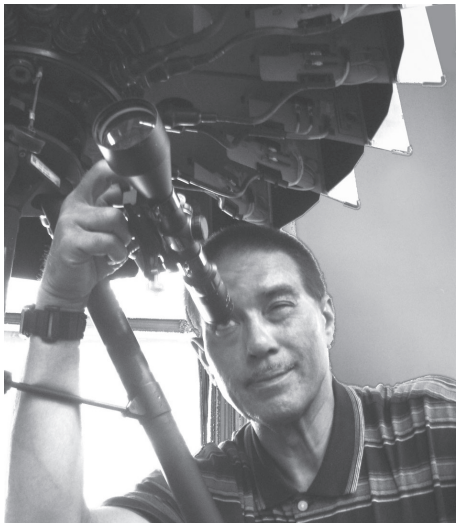
Counter mortar radars have a long history at Camp Evans starting in mid WWII when General MacArthur in the Pacific theatre requested help in dealing with mortar attacks from Japanese troops. Dr. John Marchetti and his staff initiated a crash development program to modify an existing lightweight TPS-3 UHF radar that had been recently developed by Dr. Zahl. The challenge was to rapidly adapt it for tracking mortar fire. The modified radar that the team came up with in less than 30 days was designated the AN/TPQ-3; the worlds

The AN/TPQ-48 on display in the Hotel Lounge. The Power Supply for it is on the floor under the Tripod. Its Transit Cases are behind the unit. In practice, the carousel would be protected by a canvas shroud.

first active counter mortar detection radar. After successfully proving its capability with test firings on Long Beach Island a modification program was set up at Camp Evans and newly completed TPQ-3's were rushed to the Pacific theatre where they saved many lives.

Counter mortar radars operate by tracking a portion of the trajectory of an incoming mortar round and by use of the data developed, compute the location of its point of origin as well as its predicted point of impact. Obviously, modern computing power provides much quicker and more accurate predictions. Current enemy threats now include mobile truck mounted mortars. This requires the ability to rapidly move and deploy radar of this type to detect the location of the threat and initiate counter fire to eliminate it. Range detection of this LCMR is in excess of 10 kilometers with electronically adjustable elevation coverage. The TPQ-48 is digitally connected to fire support teams for instantaneous communications of counter fire coordinates.

Personnel instrumental to this acquisition were: Project Manager Radar at Aberdeen, Major Wilson; Barry Young retired Engineer; James Tweedie at Aberdeen; and Constantine Georgiades at Tobyhanna. While a large part of our mission at InfoAge is to preserve the history of the development of radar and display radar equipment from the early days of WWII to as close to the present as we can, having examples of the latest in solid state computer controlled equipment allows us to show young people how the latest technologies are being exploited in the defense of our country.



Volunteer Bruce Williams utilizes the siting scope of the AN/TPQ-48.

Drones and Unmanned Aerial Vehicles - Part 1

John Cervini
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There have been many articles in the news lately about drones or unmanned aircraft. They have been used extensively by the military in Afghanistan and Iraq, and also by the Border Patrol in the Southern and Northern parts of the United States. Many people do not realize that these air vehicles have actually been around for quite a while; or that Camp Evans and Fort Monmouth had a hand in the development of key technologies for them.

One must go back to the years just prior to WWII, when the first important use of robotic aircraft was as targets for anti-aircraft gunnery training. Target "drones" were introduced into wide-scale service for this application during World War II, forming a basis for their widespread use after the war. The US Navy began experimenting with radio-controlled aircraft during the 1930s, resulting in the Curtiss "N2C-2" drone in 1937. By the outbreak of World War II, obsolescent aircraft were being put into service as target drones.

OQ-2 Target Drone

During the war the US Army Air Forces (USAAF) would acquire hundreds of Culver "PQ-8" target drones, which were radio-controlled versions of the Culver Cadet two-seat civil sport plane; and thousands of the improved Culver "PQ-14" derivative of the PQ-8, with such refinements such as retractable landing gear.

Target drones were a very useful training aid when coupled with the SCR-584 Air Defense Radar, developed and refined at Camp Evans, and the super-secret proximity fuze. Late in WWII, thousands of German V1 “Buzz Bombs” were shot down over England using the 584 and the fuze. The US also used RC aircraft, including modified B-17 and B-24 bombers, in combat on a small scale during World War II as aerial torpedoes, though with no great success.

The first large-scale production, purpose-built drone was a prototype target drone, the "RP-1", demonstrated to the US Army in 1937. This led to demonstration of an "RP-2" in 1938, with flights of the "RP-3" and "RP-4" in 1939. The Army placed an order for 53 RP-4s, designating them the "OQ-1", the "OQ" meaning a "subscale target". This small order led to a much bigger 1941 order from the US Army for the company's similar "RP-5", which became the US Army "OQ-2".

The Radio Control unit for the aircraft was built by Bendix in New Jeresey. The US Navy also bought the drone. Thousands were built, manufactured in a plant at the Van Nuys Airport in the Los Angeles metropolitan area.

In 1957 the Signal Corps established the U.S. Army Combat Surveillance Agency to carry out its missions of combat surveillance and target acquisition. The agency also coordinated the Signal Corps' efforts with those of the other armed services, government agencies, and industry. The Signal Corps' work in this field included the development of such devices as drone aircraft, ground and airborne radar, and infrared sensors.

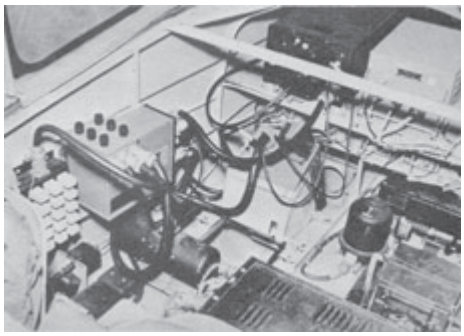
It became clear to military planners that drones could be used as platforms for carrying cameras for reconnaissance and surveillance of the battle field; thereby creating a new field of Intelligence known as “Photint”. After the war, the Signal Corps developed a small, radio controlled, camera carrying drone, officially designated the RP-1. It could operate in all kinds of weather and take still and motion pictures anywhere from 700 feet to 4 miles above the earth. One big advantage of this drone is that it required no airfields from which to operate, since it was launched from a portable catapult. (This technique is still used today with the Army’s “Shadow” Tactical UAV.) A control

Signals from ground station to 42-lb auto-pilot brain regulated stability, altitude and airspeed. Today, the same functions are performed by equipment that weighs much less.

operator on the ground guided the aircraft to its destination and back. Then the engine was stopped and the drone came down by parachute. With it, tactical commanders received aerial photos in less than an hour; a big advance back then.

Signal Corps RP-1 Drone and Trailer

During the development of the first reconnaissance drone, engineers experimented with camera payloads on modified commercial planes. A L-17B four-seat liaison craft built in 1948 was modified into a QL-17 drone by Temco for Army's Signal Corps Engineering Labs at Ft. Monmouth. The QL-17 operated on "auto" pilot by means of on-off type radio signal and a ground-control station that could be transported in a jeep. For "sight unseen flight," the plane's operation was coupled with an unidentified Signal Corps radar. Babcock equipment (shown in cockpit below) was also used in the transmitter.



Early Drone Cockpit Signal Corps Installation

At altitudes of 5000 ft., the 50-lb, TV camera transmitted pictures of the terrain up to 40 miles away. As a combat vehicle, the craft would serve as an airborne TV "eye" permitting pilotless surveillance of difficult-to-reach enemy installations. A photo recorder at the receiving station could take still pictures or movies of the continuous terrain picture linked back for "future reference."

Signals from ground station to 42-lb auto-pilot brain regulated stability, altitude and airspeed. Today, the same functions are performed by equipment that weighs much less. Special control provisions prevent stalls, over speeding, excessive loss of altitude, and other hazardous conditions. When the mission was completed, ground controller flicked the "approach" switch which automatically positioned landing gear, flaps, prop pitch and power in proper sequence for landing.

The above configuration was remotely flown from the Fort Monmouth area, over New York City (something that is absolutely forbidden today), and snapped the picture below of the United Nations building.

Aerial View of NYC taken from Experimental Drone

Extensive testing and further development of Drones was done in conjunction with the testing center at Fort Huachuca, Arizona. Many air vehicles were then sent to theater for reconnaissance and surveillance operations.

Men of the Drone Section USA Surveillance Unit - Grafenwoehr, Germany

In the next article, I will highlight additional drone programs and the struggle for the systems to live up to the expectations of many military strategists.

Camp Evans

BASE OF TERROR!

Every Friday and Saturday in October

Looking for a night full of screams and heart racing terror??
We invite you to come to an abandoned military base that has been in the hands of creative and sick individuals who love bringing your inner child to tears. You will experaience all new levels of panic while trying to keep a sane mind. After your heart returns to your chest, go behind the scenes with Behind the Wall Paranormal to witness previous residents of the 100 year old camp!

Price
12.50 -Adult
10.00- Police, Fire , EMS

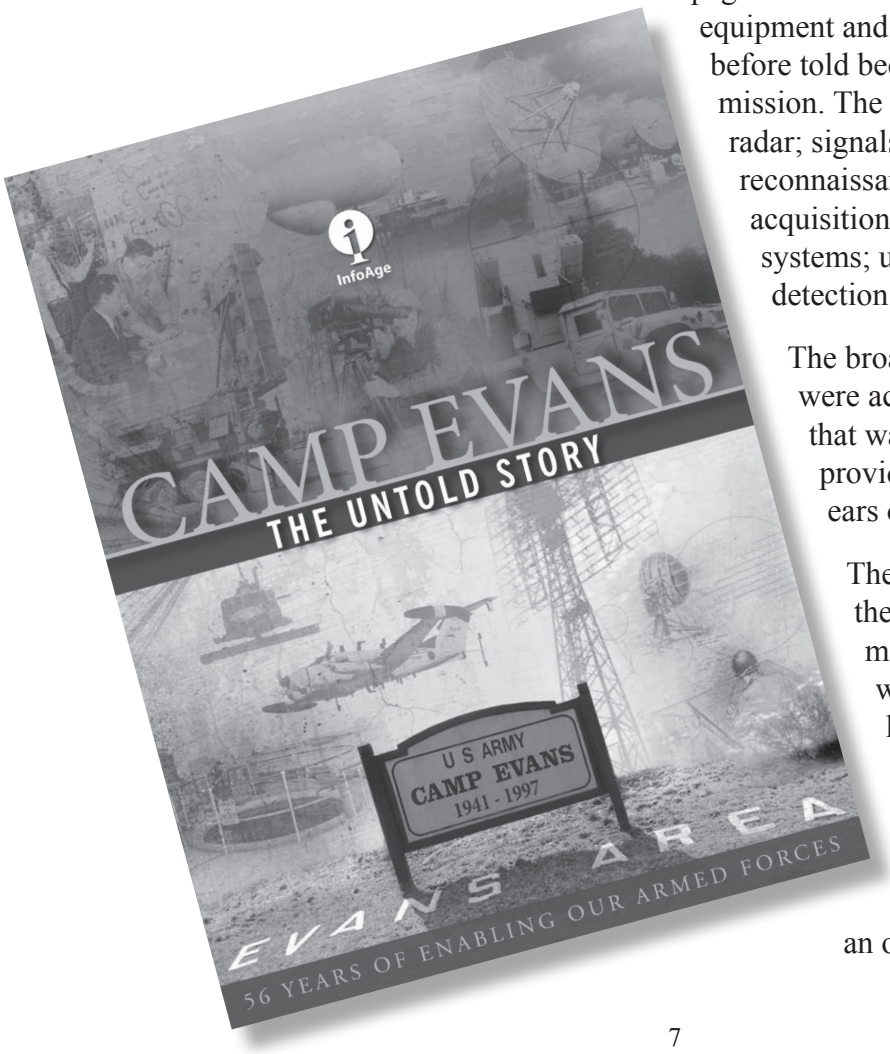
InfoAge

2201 Marconi Road ,Wall, NJ 07719

Camp Evans: The Untold Story

InfoAge is proud to sponsor the book, "Camp Evans: The Untold Story," in recognition of the significant contributions made by men and women, both military, civilian, and contractors who served at Camp Evans, Wall Township, New Jersey and who left a legacy of innovation that had enabled and continues to enable our Armed Forces.

The InfoAge Science History Learning Center and Museum at Camp Evans is a focal point for the preservation and interpretation of New Jersey's rich communications, computer, and electronics history, providing a specialized learning center for all visitors. The area is especially significant in history, serving as the site of the Marconi Wireless Telegraph Company of America. During World War I the Navy operated the station under the authority of the Radio Act of 1912. The message announcing that World War I had ended and the Armistice had been signed was received at the Marconi Station and retransmitted to Washington.



Camp Evans' U.S. Army Signal Corps provided America's first World War II radar systems. In 1946, Camp Evans under Project Diana opened the "space age" by reflecting radar signals off the moon. During the 1950s, innovative and far reaching technologies were developed at Camp Evans.

It is appropriate that InfoAge, as a science and technology learning center, has its start at such an historic location. The intent of InfoAge is to provide visitors a dynamic and evolving interactive atmosphere, rich in specialized history, technologies, and basic science, and similarly, to invoke an appreciation for the vital contributions of the many engineers and scientists who developed the technology.

We ask that you consider purchasing this important book which captures the tremendous heritage of technological innovation at this historic site.

"Camp Evans: The Untold Story" has over 200 pages and 100s of photographs showing the actual equipment and technology developed in a story never before told because of the classified nature of the mission. The breadth of the work described covers radar; signals intelligence; electronic warfare; reconnaissance and surveillance sensors; target acquisition systems; Identification Friend or Foe systems; unattended sensor systems; radiation detection systems; and meteorology systems.

The broad spectrum of accomplishments were achieved with an assembled workforce that was considered the best in the country, providing products that were the eyes and ears on the battlefield.

The legacy of Camp Evans will live on in the hearts and minds of those who helped make that history. Their contributions will hopefully be better appreciated by having been recounted in this book.

To order your copy of "Camp Evans: The Untold Story," contact InfoAge at 732-280-3000, or contact us via e-mail at rfginc@optonline.net and an order form will be forwarded.

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

InfoAge Science History Learning Center and Museum
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732-280-3000 • www.infoage.org

The Newsletter of InfoAge

Inside this issue...

2013 Calendar of Events

Fort Monmouth Reunion
Saturday, September 15, Noon-5pm

Camp Evans Base Of Terror
Fridays and Saturdays in October, 7-11pm

NJARC Radio Repair Clinic
Saturday, November 16, 10am-4pm

Holiday Extravaganza!
Check website for dates & times

*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 Department of State.