

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

July 2009

Volume 15 Issue 7



**MEETING/
ACTIVITY
NOTES**

Reported by Marv Beeferman

THE ON-LINE BROADCASTER

The New Jersey Broadcaster is now on-line. To date, 97 of your fellow NJARC members have subscribed, saving the club over \$1900 a year. Interested? Send your e-mail address to:

mbeeferman@cs.com

Be sure to include your **full name**.

Last month, the club checked out its new meeting location at Princeton's Bowen Hall. Except for a few minor glitches, all went well and it received the membership's seal of approval. A surprise accommodation was an automatic beverage maker with a large selection of coffees and teas at 50 cents a cup. The auditorium seating was found to be quite comfortable and closed doors allowed anyone not interested in the program to socialize outside without disturbing the presentation. Access to the building was also relatively easy.



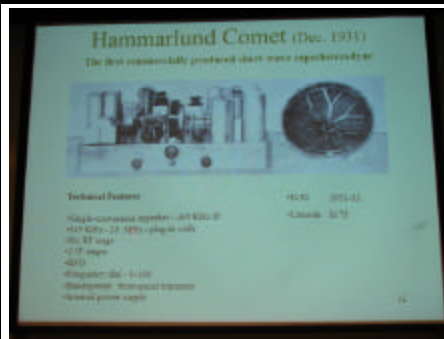
Technical Coordinator Al Klase's presentation on the development of short-wave communication receivers was a real crowd pleaser and the audio-visual support offered by the auditorium's facilities was up to the standards that were available at the David Sarnoff Library.



MEETING NOTICE

NEW MEETING LOCATION!

The July meeting will take place at Princeton's Bowen Hall (70 Prospect Avenue) on Friday, July 10th, at 7:30 PM. Directions to Bowen Hall are included in the June *Broadcaster* or may be found at the club's website (<http://www.njarc.org>). This month's meeting topic may include a look at Dr. Michael Littman's exhibit of 1920s loudspeakers and 1930s cathedral radios in the Friends Center (a short walk from Bowen Hall). We may also briefly discuss LC resonators.



Typical of Al's attention to detail is one of the many slides that supported his presentation. This one describes the 1931 Hammarlund Comet.

Described by one member as an "outdoor tailgater in the cool shade of the leafy trees of the InfoAge campus," get ready to spend a very relaxing day at our July 25th outdoor swapmeet. All the details are in this month's Broadcaster. As an added feature, Al Klase has expanded the event into a "Ham radio play weekend" emphasizing 2-meter AM military field radios and general vintage operation. This will be an opportunity to get some of you "new guys" on the air. For those who are interested, sleeping accommodations are available in Cottage #1 (bring a sleeping bag or fold-up cot) and some steaks can be burned for Saturday dinner. The Military Radio Collectors Association will repeat their display at the museum on Sunday afternoon. Please let us know your level of interest; your suggestions for enhancing the event are most wel-

come. Contact Al Klase at <http://www.skywaves.ar88net/>

I recently received some very nice comments from member James O'Neal, a retired broadcast engineer, on the June article "The Evolution of a New Jersey Radio Station." He questioned the two columns in WAAT's broadcast log which were suggested as being antenna currents. James makes a good case in disproving this assumption, but with space at a premium for this issue, we'll have to wait until next month to get the whole story. Until then, take a look at the article; if you have any thoughts about what the numbers really represent, please contact me so we can get some other points of view.



Dave Sica's artist conception of a "harrowing experience." Read about it on page 8 of this month's *Broadcaster*.

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 \$20 per year and meetings are held the second Friday of each month.

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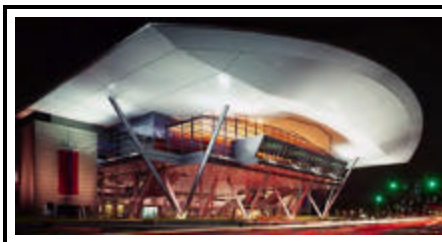
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INFOAGE AT THE IMS

By Ray Chase

IMS is the International Microwave Symposium, organized annually by the Microwave Theory and Techniques Section of the IEEE. This year, it was held at the Boston Convention and Exposition Center from June 9th to the 12th.

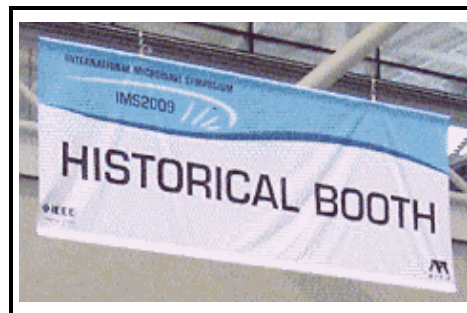


What might you ask does an International Microwave Symposium have to do with InfoAge? Well, think about it... the development and mass production of radar just prior to and during World War II was the beginning of today's huge and far-flung microwave industry.

Camp Evans played a pivotal roll in the creation of this industry and so IEEE invited InfoAge to be a participant. This annual convention and trade show always has a historical exhibit area that fits perfectly with our mission so I offered to make it happen.

A local Boston IEEE volunteer, Paul Martynuik, coordinated the planning for this effort. He sent me preliminary sketches of the area and stands that we could use, and arranged for my VIP credentials. All this was at no cost to InfoAge at a trade show where booth space goes for up to a hundred dollars a square foot.

The historic exhibit area was 50' x 50' on the main floor and InfoAge ended up with a full corner, taking up about one-fifth of the total space. I brought artifacts, displays and posters that would best show our Marconi heritage as well as the Army's history of radar at Camp Evans. I should have brought even more since extra space was available. However, we ended up with twice the space that Paul originally indicated that we could occupy.

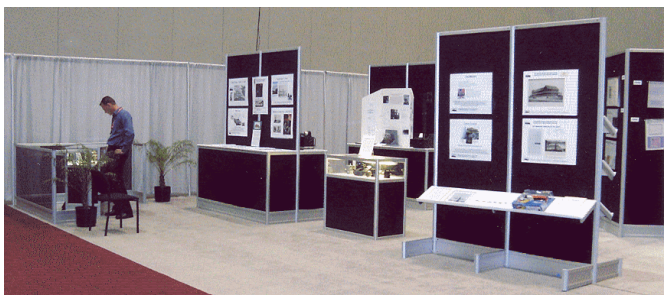


Other displays in the historical area came from NEM (National Electronics Museum in Linthicum, MD) where the IEEE stores some of their permanent historical displays, the Museum of Wireless and Steam in East Greenwich, RI who had a small display of Fessenden artifacts, and the Raytheon Co. that provided some very early magnetrons and displayed several of the first Radar Ranges.

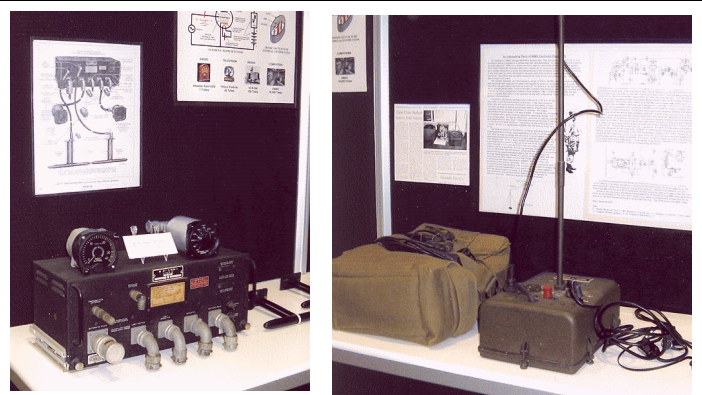
Initially, I had no idea how much interest these historical displays would create, yet all through the three-day exposition there was continuous traffic through the area. Most visitors took the time to examine the displays and posters and read the descriptive material. Who would have thought that this generation would be that interested in the history of microwave?

The show was an eye opener for me as well. There were over 500 manufacturers, technical institutions and agencies displaying on the main floor. I have been essentially out of touch with current microwave technology for the last 20 years and it did not take long for me to realize how many advances have been made since then. Today, everything is super tiny and in the GHz range. Only the test equipment has gotten larger and horribly more expensive. Automotive avoidance radars are being produced at 75 GHz and some equipment was showing up to 385 GHz...microwaves have now turned into nanowaves.

The symposium turned into a very rewarding experience for me while Camp Evans/InfoAge received a lot of publicity. An interesting side note: as a displayer, I received an invitation to the Chairman's dinner on Monday evening at the Harvard Club; needless to say a first class affair at a very historic venue. Then, on my return, I was at the NJARC club meeting at Princeton. Not bad - Monday at Harvard, and Friday at Princeton; what a way to bookend a week.



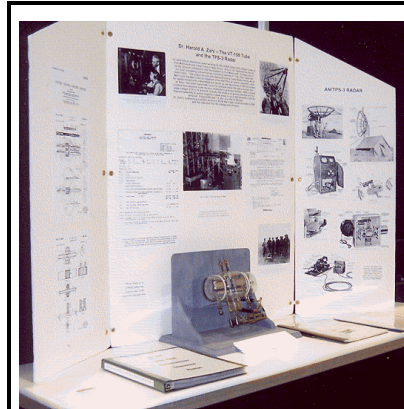
The InfoAge display area.



Some "high frequency" military electronics.



Historic Camp Evans



The Zahl tube and X-band beacon display.

A FINAL FAREWELL FROM THE DAVID SARNOFF LIBRARY

Our June meeting at Princeton's Bowen Hall was well-received by the NJARC membership. Some photos of the evening follow this article, but they are tempered by the fact that some 10 minutes away, a very nostalgic era of our club's history was coming to a close. Let's wish our friend and fellow club member Alex Magoun the best of success in all future endeavors, especially his efforts to pass on the David Sarnoff legacy and history to caretakers as worthy as he has been...Ed.

Dear Friends of the Library,

The Sunday Times of Trenton will run a story on the closing of the David Sarnoff Library by the end of the year.

The Library's success in attracting field trips and tour groups has outgrown our host Sarnoff Corporation's ability to ac-

commodate the attendant security and access issues, especially given its expanding business in government security technologies. When I started working here in 1998, the Library received perhaps 100 visitors in a year; in the last year, that number has multiplied to 1,400 through our field trips, programs, and tours. That still small number, magnified by the hundreds of thousands of visitors to our website, promised only to increase as we continued to promote the Library's offerings to tour companies and regional school districts.

My board and I are meeting with a variety of institutions. We are focusing on and meeting with representatives of those that will enable greater access to the remarkable and inspiring stories told by David Sarnoff and the people of RCA in research, invention, and innovation, the mainstays of American economic success. We are exploring opportunities in-state and out, and while it is too early to discuss these options, we look forward to making an announcement in the next month.

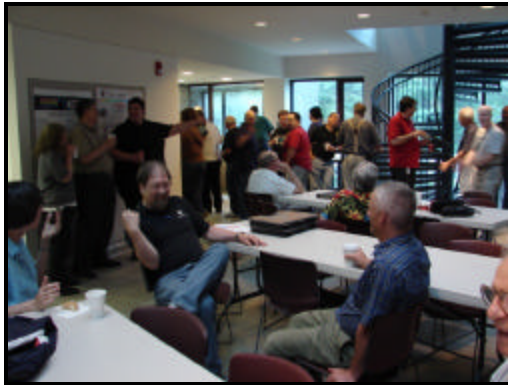
For now, we are eternally grateful to

Sarnoff Corporation's executives and staff who, over the past nine years have done so much to help make the Library a destination for educational, professional, and scholarly audiences. I am also especially grateful to our board members who, in that nine years, have guided the Library's growth; to the New Jersey Historical Commission and the Secretary of State for their operating support grants; to many other grantors and donors for their financial support; to the allied organizations who share an interest in promoting science and technology; to the teachers and principals who brought their classes to our new field trip programs; to the contractors and dozens of volunteers who helped rebuild the museum, organize and preserve the archives, and stage our amazing variety of educational programs; and of course to you, the many friends of the Library, from all these areas and more. Thank you all!

Sincerely,

Alex

WELCOME TO BOWEN HALL



Of course, when some of us get our hands on a new toy, it's imperative that we figure out, as my dad used to say, "where the feet grow."

INFOAGE WALL OF HONOR 2009

By Marv Beeferman

At a time when pop stars monopolize the news headlines, it's a breath of fresh air to meet and learn about a few local individuals whose talents and contributions also made a difference. Although their names and accomplishments have faded from consciousness some years ago, it is a credit to InfoAge to bring these individuals and their families back into the spotlight, even if it is just for an evening.

On Saturday, June 6th, a group of NJARC members attended the annual Wall of Honor reception in the Marconi Hotel dining room. The Wall of Honor permanently recognizes the efforts of those pioneers whose major contributions to electronic research were performed at Camp Evans, the site of the present-day InfoAge Science and Learning Center and the NJARC Museum of Radio Technol-

ogy. The 2009 inductees were William Kenneally, Michael R. Mirarchi and David Noyes.

Although their biographies make for interesting reading, the night's entertainment was really provided by a first-hand recollection of the true flavor of the frustrations, intrigues and personal "war stories" experienced by these individuals. Although they are too extensive to relate here, one in particular, where an experimental surveillance balloon escaped from its tether and traveled over North Korea, really caught my attention.



Michael R. Mirarchi: Recognized for laser rangefinders and designators.



As with all previous Wall of Honor installations, NJARC member Dave Sica was there to videotape the event. (Nice threads, Dave.)

Michael Mirarch's 40 year career with the U.S. Army began at the Evans Area. During the early part of his career, he conducted theoretical and exploratory investigations into the design and fabrication of experimental laser systems. The Army was just discovering the potential application of the use of lasers to provide long range information for targeting and to designate targets for laser seeking munitions. He was instrumental in the design of important laser subsystems, such as a ruby laser resonator, an optically pumped laser cavity and the optics used on a laser trans-

mitters and receivers.

As a laser expert, Michael Mirarchi was instrumental in the research and development of laser/electro-optical equipment and equipment such as laser target designators, rangefinders, laser search and track sets, laser radars and laser countermeasures. He transformed laboratory demonstrations of laser range finders and designators into smaller and more compact systems that could be carried by the warfighter or installed in munition systems.



David Noyes as a Korean linguist with Company A (321st USASA) in 1962. Mr. Noyes served at one of the North Korean communications "intercept" sites from which "A" Company operated



Mrs. Noyes accepting for her husband.

David Noyes: Recognized for significant accomplishments in the area of signal intelligence.

David Noyes is a recognized expert in the area of Signals Intelligence with military service in the US Army Security Agency (ASA) and over 40 years of service in the Electronic Warfare Laboratory, the Electronic Warfare Reconnaissance and Surveillance Directorate and its successor organization, the Intelligence and Information Warfare Directorate.

Mr. Noyes served his military duty

with the Army Security Agency which was responsible for signals intelligence and electronic countermeasures operations. The ASA was composed primarily of soldiers with the highest scores on Army intelligence tests and was tasked with monitoring and interpreting military communications of our adversaries, including North Korea.

With his military experience as a background, Mr. Noyes joined the Electronic Warfare Laboratory in 1979 where he was instrumental in the design, test and operation of radio propagation measuring equipment for investigating artificially generated ionized clouds for use in ionospheric radio propagation.

Mr. Noyes was heavily involved in solving critical technical problems for the use of high frequency direction finding equipment on both airborne and ground-based systems in Vietnam. He was also instrumental in the development and fielding of systems so important to the Cold War.

After his retirement, Mr. Noyes' fundamental understanding of signal intelligence resulted in his selection as an instructor to teach new employees of the Intelligence and Information Warfare Directorate about this important technology. His legacy lives through the many people he taught.



William J. Kenneally: Recognized for surveillance radar systems.

Mr. Kenneally has a long and diverse career of service:

1962-64: Served as a Lieutenant in the Army Signal Corps stationed at the Signal Corps Research and Development Laboratory at Camp Evans. He was responsible for the development of an automatic terrain following flight control system for Army helicopters.

1964-74: Chief of the Advanced Avionics Systems Division of the Army Avionics R&D Laboratory at Fort Monmouth. Mr. Kenneally was responsible for the translation of operational requirements into avionic systems design including issues of helicopter low-level, nighttime flight operations.

1974-77: AMC Project Officer for the Stand-Off Target Acquisition Radar (SOTAS) which was an airborne radar integrated with a ground-base computer processing system.

1977-82: SOTAS Deputy Project Manager.

1982-85: Army Technical Director for integration of Army operational requirements with those of the Air Force.

1985-88: Deputy for RSTA in CECOM at Camp Evans.

1988-93: Managed Fort Monmouth Office of the Systems Planning Corporation.

From 1993 until his retirement in 2005, Mr. Kenneally worked as the Technical Manager for Intelligence and Electronics Warfare at the MITRE Corporation in Easton, NJ. He was the technical lead for a number of system engineering studies for advanced IEW systems and he authored several studies on combat identification and large scale IEW simulations and field tests.

THE 2009 EARLY TELEVISION CONVENTION

By
Dave Sica

This article has also appeared in the July 2009 "AWA Journal"...Ed

The long-standing NTSC television standard in the United States, first implemented in black-and white in 1941, supposedly died with the "analog shutoff" of June 2009. Our first color system, CBS's spinning color wheel "field sequential" design supposedly died in 1953 when RCA's all-electronic color system was adopted as the *second* NTSC standard. The truth is that neither of these well-known "deaths" is *completely* true. Although the "analog shutoff" has been the subject of much public discussion, it was only at this year's Early Television Con-

vention that many of us were reminded of the details behind the little-known "second wave" of CBS field sequential color as used in the Apollo space program of the 1960s and 1970s.

I clearly remember sitting spellbound in front of our old black-and-white set watching those fuzzy live television images of man's first steps onto the moon live - forty years ago! How appropriate that not one, but two of the presentations at this year's Early Television Convention offered a unique "behind the scenes" perspective on television technology of the Apollo space program.

The Early Television Foundation hosted the seventh annual Early Television Convention this past May at its Museum in Hilliard, Ohio. The weekend event kicked off with an auction of over a hundred vintage televisions. While many of the sets were, to put it kindly, of less than museum quality, when coupled with the weak economy, they presented a rare opportunity for collectors to stock up on fixer-upper items at prices unseen for many years.

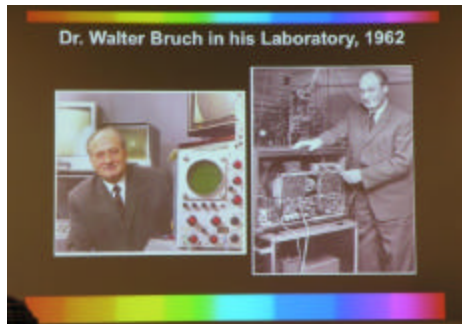


However, several less common items, especially those in fine condition, commanded impressive prices. Interest was high, especially from buyers outside the United States. This was also the second year the Convention was broadcast live on the Internet and bidders were able to obtain several nice examples of collectible American sets. A nice RCA 621 went for nearly two thousand dollars.

The auction was followed by a full afternoon of seminars. The Early Television Convention is the only place you'll find seminars focused on this particular narrow niche of the history of technology. The presentations this year continued the fine tradition of high quality we've come to expect at this event.

Walter Bruch was the developer of the PAL color system. We were pleased to

welcome his son, Dr. Reinhard Bruch, who discussed his father's many accomplishments. Dr. Bruch provided a unique



perspective on the accomplishments of this television pioneer. For example, most of us have seen the famous photos of television cameras being used at the 1936 Olympics; Dr. Bruch described to us how his father had built them. It was another rare opportunity to hear a chapter of the story of television directly from an eyewitness to history.

Mark Gray of Spacecraft Films discussed Apollo video in general and touched on the process whereby the proprietary slow-scan video from the moon camera was converted for broadcast on earth.

Another highlight of the Convention was hearing Stanley Lebar describe his work on the cameras used in the moon landings. Stan was the Apollo 11 camera systems program manager at Westinghouse. He described the crude (by today's standards) technology and the incredible constraints on bandwidth, size, and weight his engineers had to work with to create the camera that brought us those iconic live images from the moon. They were working with no design precedents; even the handle of the camera had to be specially engineered to meet never-before-considered challenges. Stan also discussed color camera systems used on later Apollo missions. These were based on the same field-sequential principle as the "obsolete" CBS color system!

Cliff Benham set up a demonstration of modern circuits displaying the original NTSC color system and CBS Field Sequential Color. Originally requiring a spinning color wheel in front of a black-and-white television screen, the CBS system was displayed on a tri-color kinescope, with no wheel, and fed by Cliff's custom-designed processing circuits.

It was a charming and unexpected

pleasure to witness a conversation between Cliff and Stan Lebar as they discussed field sequential color systems. All the color cameras sent to the moon used color wheels.

Daryl Hock presented a wonderful, detailed documentation of his painstaking restoration of a 1931 RCA field trial receiver.

James O'Neal offered his painstakingly documented journey to find the truth about Reginald Fessenden's legendary December 24, 1906 broadcast, commonly cited as the first radio entertainment programs broadcast to a general audience. After much investigation, O'Neal has reluctantly come to the conclusion that Fessenden's famous broadcast probably never happened.

Lloyd McIntyre described the Museum of Radio and Technology in Huntington, West Virginia and Don Saltzman offered personal memories from 1951 regarding the famous CBS/RCA color war that resulted in the omission of color wheels from our televisions over the past five decades (except, of course, at NASA).

Chuck Pharis made a valiant attempt to resurrect the camera system in the 1948 RCA TV remote truck. At one point, the entire museum was filled with smoke as a power supply failed dramatically. Despite the uncooperative electronics, Chuck feels that success is within reach and we hope to see the truck systems in operation next year.

So, although the field sequential color system officially died in 1953, it actually lived on until the seventies at NASA. And although NTSC officially passed away this year, it and CBS color live on at the Early Television Museum.

The museum is open on weekends and by appointment. It is located at 5396 Franklin Street, Hilliard Ohio 43026. Its website is www.earlytelevision.org. The museum may be contacted at 614-771-0510 or at info@earlytelevision.org.



Dave Sica and friends.



New Jersey Antique Radio Club's Summer SWAP MEET

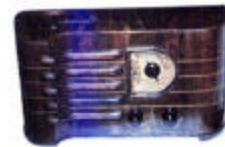


at NJARC's Radio Technology Museum

InfoAge

2201 Marconi Road

Wall, NJ 07719



Saturday, July 25, 2009

**Walk around auction
starts at 11:30 am.
Bring in your attic
treasures for free
appraisal!**



**Expert Antique Radio
Repair Evaluations
Refreshments Available**

Open to the Public
(8:00 am to 1:00 pm)

**Tailgate spaces
\$20.00 for members
\$25.00 for non-members**

Vendor Set-Up at 7:00 am

**\$5.00 ENTRANCE FEE
CLUB DONATION**

**FOR DIRECTIONS
VISIT OUR WEBSITE: WWW.NJARC.ORG**

Vendors Make Your Reservations Now!

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CONNECTIONS

Free exposure for buyers and sellers! Unless requested otherwise, each ad will run for two months in both the *Jersey Broadcaster* and the *Delaware Valley Oscillator*. All buying and selling transactions are the responsibility of the parties involved.

Are you aware that NJARC now has a resistor program which includes many commonly needed replacements? Contact Walt Heskes at any club meeting for details.

FOR SALE

Check out NJARC's capacitor program for those most commonly needed replacements. Contact John Ruccolo at any club meeting or call him at home (609)-426-4568 to find out what's available. All proceeds go to the club.

WWII AN/PRT-1 jammer. Basically a spark transmitter with a timer made in the last months of WWII, complete with a copy of the manual. Asking \$150 + shipping, or pickup. Contact Gary Berg, 24 Pat Road, Newburgh, NY 12550. bergg@hvc.rr.com

WANTED

Rare or unusual wire recorders such as Soviet Type MH-61, WWII Signal Corps RD-15/ANQ-1, GE model 20N. Also wanted is an un-modified BC-652A with dynamotor. Contact Gary Berg, 24 Pat Road, Newburgh, NY 12550 bergg@hvc.rr.com

**YOUR
WANT
AD
HERE!**

WANTED: Radio repairmen and restorers. Run out of your own radios to work on? The club and InfoAge have received a quantity of radio donations, some of which would look good in our museum. Others will be set aside for traveling displays, trading or resale as fundraisers. Many of these radios only need a good cleaning and polishing and a minor electrical checkout. Take one or two home with you and practice your skills...even if you just want to clean them up. Contact Ray Chase at our next meeting, at 908-757-9741 or at enrpnr@erols.com.

**THE GREAT
HIGH ALTITUDE
SCOPE RESCUE
CAPER**

**By
Dave Sica**

Most of us have a few of those "against all odds" survival stories of vintage equipment that was headed for the dumpster or was otherwise destined for some similar ignoble fate. Some of these survivors wind up in member's collections, but the noblest of them all are the ones that find their rest at the club's museum for all of us to appreciate. Dave, being a modest individual, was somewhat reluctant to share this story, but I'm glad I was able to pry it out of him...Ed.

A collector wished to donate an old radar oscilloscope to InfoAge. I lived nearby and offered to pick it up. When I got there, I found out that the 'scope weighed well over fifty pounds and was located in a crawl space over a garage! Lowering it on a rope was a somewhat harrowing experience, but fortunately both the 'scope and I survived with nary a scratch. It's now part of Ray Chase's radar display in the Marconi Hotel.

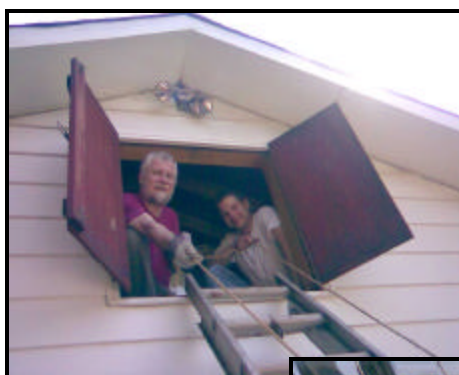
The Army Signal Corps BC-412-B oscilloscope is easily recognized by its large steel cover and its excessive weight. It was originally used with the first, mass-produced Army radar set, the SCR-268. This set determined the azimuth, angular elevation and altitude of the target and transmitted this information to a searchlight or a gun director.



Note that the scope's tag indicates that the unit was "designed at Signal Corps radar laboratory, Camp Evans, Belmar, N.J.

An interesting use of surplus BC-412's was published in the August 1947 edition of *Radio News*. The article, "Build Your Own Television Receiver" used the BC-412 as the basis for the receiver since, by this time, it was a cheap, war surplus item and normally expensive components used in the power supply were already included in the complete oscilloscope unit.

It was noted in the article that the BC-412 scope selected for conversion must be equipped with a type 5BP4 (white phosphor) cathode-ray tube (originally used in RCA's TRK-5 TV). It appeared that some of the available surplus scopes of the time had a tube with a greenish-tinted screen (green phosphor) that was not satisfactory for video reproduction.



Dave, with help of the donor's son, wake a BC-412-B oscilloscope from its long, dark sleep and expose it once more to the light of day. Like a reluctant vampire, this relic would not be easily moved.

