

Historical Electronics Museum

Reflections

Vol. 15, Issue 1

Winter 2005



WELCOME HEM'S NEW STAFF



Director Mike Simons joined the HEM staff in January 2005. Mike comes from the National Museum of Health and Medicine where he worked as Registrar. Mike has a BA from Kent State University and a MA from Southern Illinois University. He trained as an archeologist, doing fieldwork and research in India, Micronesia, the Greater Antilles, and the Eastern U.S. Mike is married and lives in Frederick with his wife and two pets.

Tiffany Davis, the new Assistant Director, joined the HEM staff in August 2004. Previously she was the part-time Collection Manager for the City of Bowie Museums, part-time Collection Manager for the College Park Aviation Museum, Grant Administrator for the Small Museum Association, and Administrator of the Maryland Association of History Museums.

Tiffany has a bachelors degree in History and is working on her masters in Museum Studies, both from Baylor University in Waco, TX. In graduate school, she worked as a costumed interpreter for school tours at the Governor Bill and Vara Daniel Historic Village, and as the graduate assistant for the Ollie Mae Moen Discovery Center.



Tiffany will be responsible for collections management, exhibit research and development, exhibit upgrades, archive management, and volunteer coordination.

Letter from the President

The Mission of the Historical Electronics Museum

Our mission is to educate, inspire, and excite the interest of students and the general public. We carry it out by presenting to them our electronics heritage through the collection, preservation, and display of significant artifacts and literature and the commemoration of the creativity and dedication of pioneers and all workers in the field of electronics. We focus on electronics developed for the defense of our country, the technologies that made them possible, and the commercial products derived from them.

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Happy New Year! (Although we are trying to break into Spring by the time you read this.) A number of things have happened at the Museum since our last issue.

I am pleased to announce that we have hired a new Director, Mike Simons. Mike is quickly learning the ropes and brings expertise in collections management, volunteer development, and enhanced publicity, among other things. He comes to us from the National Museum of Health and Medicine at Walter Reed Army Medical Center. His resume is printed elsewhere in this issue.

We also welcome several new Board members. Dorothy Brown, Constance Finney, and Walter Sutcliff were elected at the December board meeting. Dorothy Brown is with the Anne Arundel County school system. Connie Finney is with the Johns Hopkins Applied Physics Lab. Walt Sutcliff is an attorney recently retired from the Northrop Grumman Corporation. Your new Board Officers are President - Steve Stitzer, Vice President - Bill Gretsich, Vice President Finance & Treasurer - Bob McFarland, Vice President Counsel - Walt Sutcliff, Secretary - Ralph Strong. I thank outgoing Board members Noel Longuemare, Jim Redifer, Al Spencer, John Stuelpnagel, and Warren von Uffel for their efforts over the past few years. I am glad to say that several of these folks will be continuing to work as volunteers on various projects in the Museum.

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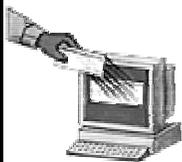


HEM'S HIGH SCHOOL INTERN



Doug Morgan, a senior at Atholton High School in Columbia, MD, is HEM's most recent intern. Doug's primary assignment will be redesigning our YESS (Young Engineers & Scientists Seminars) website. He actively participates in Atholton's music program (Symphonic, Marching, and Jazz bands), and is one of the leaders of the Information Technology Academy located there. Doug has strong math, science, and computer science skills. He previously interned at ViPS Inc., in Towson, MD, during the summer of 2003. Doug will be with HEM until mid-May.

HEM Has a New Email Address



The Historical Electronics Museum is changing its email address. Please contact us at:

hemuseum@verizon.net

HEM Spotlight on... Eleanor Thompson

Eleanor Thompson along with her husband, Bill, became a HEM volunteer in 2002. Eleanor quickly became the manager of the library database and can be seen every Monday entering new books into the collection. This involves assigning numbers, data entry into the computer, attaching labels to show the shelf location of each book, and many other details. In addition every week there is a pile of new magazines on her desk that need to be placed on the magazine shelf.

Two of the major library projects that Eleanor completed were organizing the area for current magazines and the transfer of the entire video collection to new shelves. Her first achievement was making the transfer of all of the library records from one computer language to another, Protégé to Access. Now as we work toward listing subjects with our books she is confronted with changing from Access to PastPerfect.

In 2004 Eleanor's hard work was recognized when she was named Volunteer of the Year. All of us should thank her for maintaining the library collection in such an orderly manner.

NEW AQUISITIONS

The last quarter of 2004 brought many new and exciting additions to the Historical Collection. Many thanks to the donors of these objects, and to the members of the Collection Committee who work so hard to build the collection into what it is today.

- ❖ Solar Array Test Panel (flown and tested on ATS-6) – courtesy of Mr. Bill King
- ❖ Type 256-A Oscilloscope – courtesy of Mr. John T. Zimmer
- ❖ SPG-55B Radar Consoles – courtesy of the Johns Hopkins University Applied Physics Lab
- ❖ SCR-720 Radar Antenna – donation of a previous loan courtesy of Mr. Allan Weiner
- ❖ A Microphone and a Traveling Wave Tube Amplifier for ATS – courtesy of Mr. Les Jamison
- ❖ APQ-148 Radar – courtesy of Northrop Grumman Norden Systems

Letter from the President, continued from page 2.

We learned in late November that Hilton is going to build a new hotel in the lot previously occupied by the structural steel plant across from the far end of our building. The small road that runs in front of the Museum off West Nursery is going to become a main thoroughfare. It will become an extension of Elm Rd., the road that leads to the airport at the intersection of Camp Meade Rd. This will necessitate major changes in our front yard and the exhibits that are displayed there now. Those of you who visit regularly probably are well aware of the shortage of parking at certain times, and this is not likely to improve. Our front parking spaces will have to be enclosed to prevent cars from backing directly out onto the new wider road. We have been discussing possible changes to the layout with Northrop Grumman and our landlord. The road may not change until the new hotel is nearly complete, sometime late in 2006. We plan to make some changes to the layout of Pioneer Hall at the same time, aimed at smoothing the flow of attendees for large events. We will keep you posted. You can view preliminary plans at the Museum during normal visiting hours (see Mike). Speaking of parking, if you are coming to the Museum, please do not park in the neighboring hotel lots – they are threatening to tow unauthorized vehicles.

We have plans to increase our attendance by improving our publicity. And since our YESS program was so successful, we expect our school tours to increase. We expect this will mean we need more tour guides. If you are interested in serving as a tour guide, or in any other role as a volunteer, please contact Mike or Tiffany.

We are beginning to move forward with several projects to modernize our library and artifact databases. These projects are being led by Tiffany Davis and Tom Ballard. We are also getting a wireless network with high speed internet access up and running.

My thanks to Warren von Uffel for his activities as Acting Director since last August. And my thanks to Anne Mech, who has provided much-needed continuity during this transition phase. With a full staff again in place, I am looking forward to a smoother running second year as President.

I thank you for your continuing support of the Museum.

Steve Stitzer
President



We would like to welcome the following new members of the Historical Electronics Museum, as well as those who have renewed their memberships:

Supporting

Manny Baker
Barbara Everitt Bryant
Frank M. Butler, Jr.
Michael A. Cross
R. James Fritsch*
Mr. & Mrs. James Hendry
Arthur T. Henshall
Rosemary Shearer &
John Heasley
Joseph C. Ryan

Family

Mr. & Mrs. George C. Ashman
C. A. Fowler
Mr. & Mrs. Charles Francis
Mr. & Mrs. Donald C. Friedmann
William Kisse
Mr. & Mrs. Robert L. Wells
Marvin White

Individual

Charles L. Blair
Stephen F. Bonk
Weston G. Bruner
Craig Close

Individual (cont.)

John W. Coltman
Michael Conlon
John Cross
Ted Foster*
Harold Goldberg
B. J. Goldfarb
Ronald L. Goodman
Robert Huskey
H. C. Jones
Wayne B. Lloyd
James McGuinness*
John G. McKinely
Gordon M. Melby
Thomas A. Panfil
Michael Pobat
Joseph E. Pratt
Jason A. Riggs
Bill Semenuk
Simmona E. Simmons– Hodo*
John J. Slattery
Eugene Stanton
David C. Williams

*New Members



Tiffany Davis successfully obtained a \$1000 Consultant/Services Grant from the Maryland Association of History Museums. Grant money will be used to purchase dataloggers to monitor temperature and relative humidity throughout the museum, as well as other curatorial supplies.

YESS FALL PROGRAM

The 2004 Young Engineers and Scientists Seminar (YESS) program for high school students, funded by a grant from Northrop Grumman, was a project-based program to help students understand the engineering method - the way engineers perform their jobs. In seven sessions from September through December, students learned how to go from theory to modeling, designing, building, and testing. The program was led by Dr. Taryn Bayles, Professor of Practice at UMBC, and was a miniature version of her "Introduction to Engineering" course. (Visit <http://umbc.edu/window/bayles.html>) There were five hands-on projects during the seven-week series, all of which were part of an overall project which involved modeling, designing, building and testing a hot air balloon with specific performance and cost objectives. The five projects were



Dr. Taryn Bayles

Tallest Water-Carrying Device

The first project involved building the tallest water-carrying device that will survive being carried along a circuitous path. The project was designed to teach teamwork and the importance of maximizing your score using the formula for bragging rights. The winning team's device was determined by maximizing the product of several factors: (1) the cube of the height (H) of the water, (2) the square of the volume (V) of water, the amount of water still in the device after carrying it through a circuitous path, and how quickly the student could cover the path:

$$H^3 \times V^2 \times (V_{\text{final}} / V_{\text{initial}}) \times 1/\text{time}$$



Racing with water-carrying device

Tallest tower of Tinker Toys

The object of the second project was to build the tallest tower in 90 seconds using a set of tinker toys. The teams had 20 minutes to plan but could not assemble any pieces in advance. The project was designed to teach students to work in teams and to develop a plan for quick execution.



Students Building Their Towers

Floating Marbles

The third project involved using a single sheet of aluminum foil to float the maximum number of

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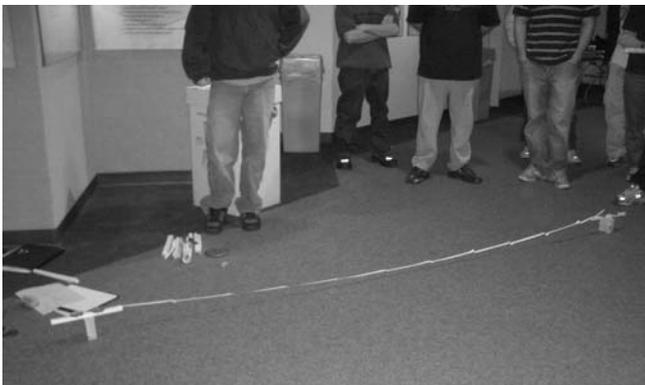
marbles. This project was designed to teach the concept of buoyancy, which was needed to design the hot air balloon that would be built later. The winning team floated 233 marbles!



Floating Marbles in an aluminum boat

Longest paper bridge carrying Maximum Weight

The fourth project involved building the longest paper bridge carrying the maximum weight. This project was designed to teach students to optimize a design based on a formula.



The winning team's design emphasized extreme length

Keeping fluids cool

The fifth project involved keeping a half cup of water as cool as possible using a given set of materials to minimize the rate of heat transfer and minimize weight. This project was designed to teach concepts of heat transfer for use in the balloon design.



Testing designs for keeping fluids cold



Dr. Tim Topoleski, Mechanical Engineering Professor at UMBC, lectures on the properties of materials



Dr. Taryn Bayles logs in the scores of the teams

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Hot Air Balloon Project

The object of the hot air balloon project was to design a hot air balloon that would lift a specified weight and stay aloft the longest time, to accurately predict time aloft and to minimize cost. The time aloft was based on balloon buoyancy and rate of cooling. Teams calculated buoyancy of different balloon shapes and measured heat transfer properties of balloon materials. Each team's score was based on the time aloft multiplied by the ratio of predicted and actual time. The ability to predict time was critical to score. The cost of materials was also a major factor in the contest. The winning team's cost was far lower than that of the other teams.



Dr. Anne Spence, Assistant Professor of Mechanical Engineering at UMBC, tests one of the balloons



The winning balloon hovers near the HEM ceiling



The winning team with their award checks

The three winning teams shared \$1800 in prize money.

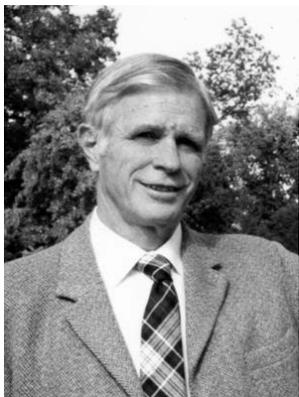
In addition to the projects, there were lectures to reinforce the concepts of the engineering method. Dr. Roland Anders, Chief Scientist of Space Systems at Northrop Grumman ES, lectured on the Engineering Method. Mr. Dean Sheridan, a physics teacher at Glenelg High School and coordinator of the YESS program, lectured on Computer Modeling. Dr. Tim Topoleski, Professor of Mechanical Engineering at UMBC, lectured on the properties of materials.

Attendance was very good this year. A total of 139 students attended at least one of the sessions. The average attendance was 63 students plus about 10 to 15 visitors each session.

We plan to offer the YESS program again in the fall of 2005, with a new set of projects. HEM members are encouraged to come and enjoy the fun. Keep in touch via our web site: <http://www.yesshem.com/>.

Louis Brown

(1929-2004)



It is with great sadness that we report the death of former HEM Board Member, Louis Brown. Louis passed away on September 25, 2004.

Louis Brown was a physicist by profession who in later years became interested in the history of radar. In researching the subject he collaborated with John Bryant, a HEM board member, and this led to a close association with our museum. As a result of his investigation, Louis published a book in 1999, "A Radar History of World War II", which has been recognized as an outstanding reference book. While writing the book he assembled a large collection of pictures of early radar sets in many countries and later arranged them for display in the HEM Radar Gallery. Another project of note was his sorting and organizing all of the notes and publications on radar that came to HEM from John Bryant's estate. Louis served on the HEM board for six years. He will always be remembered as a true gentleman and a scholar with great insight in many fields of science.

Book Review



The Secret in Building 26 by Jim DeBrosse and Colin Burke

In Dayton, Ohio there is a bronze plaque attached to a granite boulder that records the significance of a nearby National Cash Register Company Building 26. Why the IEEE installed the plaque and the importance of the secret work that was conducted in Building 26 during World War II are brought to light in this book.

As is well known that the British at Bletchley Park were successful at breaking the German Enigma code early in World War II. However, in 1942 when a fourth rotor was added to the naval Enigma machine the problem of breaking the code greatly increased in complexity. The U S Navy called upon the expertise of the National Cash Register Company in Dayton, Ohio to design a high speed electromechanical machine to solve the four rotor problem.

This book tells the story of this effort which has been held in secrecy for most of the last sixty years. There are no schematics or technical details in the book. Instead there is a human story that includes an example of technical leadership, a costly mistake in refusing assistance when offered, an intrigue when one of the workers was thought to be a spy, and the story of six hundred U.S. Navy WAVES who did much of the wiring. Success in breaking the naval Enigma code was the end result with more than one hundred NCR machines, "Bombes", being built. Their use helped tip the scales in favor of the allies in the Battle of the Atlantic.

"The Secret in Building 26" was donated to the HEM library by Steve Stitzer and can be found in location 11.3.46.

HEMARC NEWS

From the Museum's Amateur Radio Station Club

2005 Officers

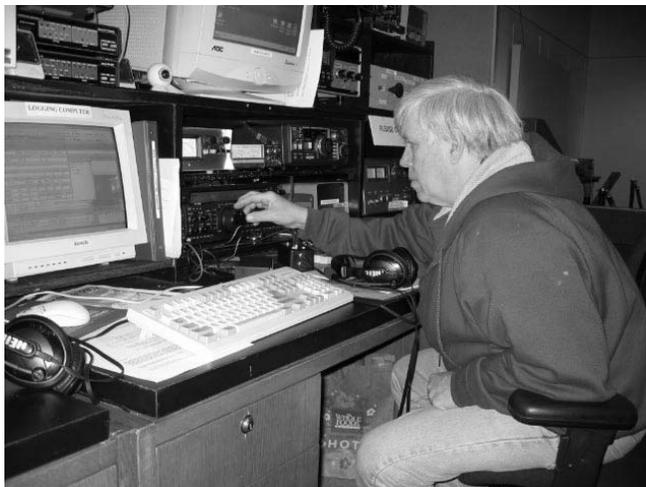
HEMARC has elected the following officers for 2005: Jim Nowotarski N3GOO - President, Norman Smith WA6ABD - Vice President, Fred Heath AI3Z - Treasurer, and Chip Weems W4PBG - Secretary. Vice Presidents appointed thus far are: Training: Rol Anders K3RA and Operations: Les Jamison WR3X.

W2W Pearl Harbor Memorial Special Event

On December 4, 5 and 7 the club station W3HEM became W2W to commemorate the role of electronics in the invasion of Pearl Harbor on December 7, 1941. (One of the museums featured exhibits is an SCR-270 Radar like those deployed in Hawaii on the ill-fated day.) This annual event enjoyed good propagation conditions and drew incredible pile ups of US and DX stations.

Operations were conducted primarily on 40 and 20 SSB with a few QSO's on 80Meters via a BC-611 WW2 Handy Talkie. A total of 1,398 QSO's were logged by K3NY, K3RA, N3GOO, NG3O, AI3Z, DF2IR, W4PBG, AA3WI, WA3ZWC and W1TRT. This is a big improvement over the 429 QSO's for the 2003 event! The only state not worked was RI - oh well, wait until next year. Contacts were made with amateur radio stations aboard the: Alabama, Hornet, Silverfish and Lexington.

NG3O digs into a pile up on 20M during the W2W Special Event at W3HEM.



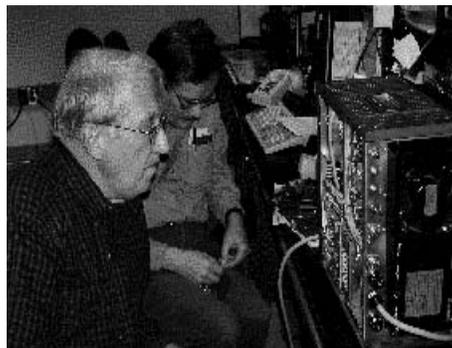
The W3HEM Station

Both Computers are now enhanced and integrated with the transceiver and the PK232 TNC to provide a wider range of Digital modes. The station also includes ATV, SSTV, RTTY and more. The new logging program recognizes the spotting network output. When a desired spotted call is clicked on the transceiver goes to the correct band and frequency while the antenna points in the right direction.

Not Without Problems

The fine Kenwood Linear Amplifier has a band switch problem and repairing it is not a simple matter. Since a new switch from Kenwood or sending it back to its maker are treasury busters, repairing the bad switch segment is the remedy of choice. Our experts are working on it.

Rol K3RA and Steve WA3ZWC ponder the how of removing a deeply buried band switch segment in the W3HEM linear.



There are never enough antennas

With a plan for 6 meter capability and the need for different polarizations and capabilities on both 2M and 70Cm, the coax lines to the roof have all been used. The planning guide line was that we would install three extra lines at the time we installed the cable termination box on the roof. This proved to be two cables too few and new cable has been received and will be installed when reasonable weather and a team of workers appear on the same day.

Training

HEMARC congratulates the new Amateur Extra Class upgrades that have graduated from the course and passed their Laurel VEC tests: Daniel Boeringer KB3EKS, Bill Ferguson KB3JJS, Frances Hays AB3CL, Richard Hughes KA3CIZ, James Lane KB5NHM, Larry Leitel K3FIT, Mike Montrose KA2JAI, Thomas Saxmann KA3EZE and George Schrenker KB3IVE.

The Technician Class begins in January. The General Class Training is planned for the Spring and the Amateur Extra Class will be in the Fall. Please visit our web site for detailed dates and other information. www.hemarc.org or email w3hem@arrl.net.

One man DXpedition

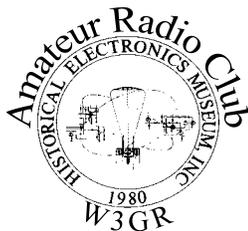
HEMARC's traveling ham, DF2IR, was on Easter Island for a vacation during the CQ DX contest. While operating at W3LPL, Rol K3RA appreciated the unique CEO QSO with Uwe very much.

Amateur TV Group Meeting

On December 5, 2004 approximately 35 members of the CAATN (Central Atlantic Amateur Television Network) met in the Museum's Pioneer Hall. Papers on the latest amateur television operations and activities in this region were presented. If you are interested in this activity please contact Bob Curry at kc3vo@aol.com

Suggestion For Your Club

The Museum has excellent facilities for small groups (up to 25) and larger groups (up to 300). To arrange a meeting room and a tour of the museum (before or after the meeting) contact us through the web page www.hemarc.org or by email at w3hem@arrl.net.



HEM Needs YOU! Volunteer Opportunities

Become A Saturday Volunteer!

If you can donate a few hours one Saturday a month/every other month, then become an HEM volunteer! All you need is a sincere interest in providing public service to our visitors and a desire to be part of the HEM team.



Become A Tour Guide!

If you want to share your knowledge of electronic history or just want to interact with people, then becoming a tour guide is perfect for you. We are looking for people who want to lead groups of students and adults, for our non-technical and technical audiences! You don't need to be knowledgeable in electronics, we'll help train you!

Become a Collections Volunteer!



There are lots of fun things to do to help out with our collections! We need help with the accessioning of new artifacts, photographs, slides, negatives, and 35mm films, as well as many other jobs! Come join the team!

Adopt-a-Program

Review our archives for available information. Fill in the information with your recollections, identify and label photographs, solicit and edit recollections of others and generally ensure that the historical record for various projects are accurate and complete.

*For more information
Please call 410-765-3803*



HISTORICAL ELECTRONICS MUSEUM

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BALTIMORE, MD 21203

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Web Site: http://www.hem-usa.org

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**ADMISSION IS FREE!
OPEN TO THE PUBLIC**

Our mailing address is:

Historical Electronics Museum
PO. Box 1693, MS 4015
Baltimore, MD 21203

The museum's location is:

**1745 W. Nursery Road
Linthicum, MD 21090
(Next to the Marriott Hotel)**

(This is not a mailing address)

The museum hours are:

*Monday through Friday
9 a.m. to 3 p.m.
Saturdays
10 a.m. to 2 p.m.
(and other hours by appointment)*

**Historical Electronics Museum
Membership Application**

Name _____
Address _____

City _____
State _____ Zip _____
Phone _____

Please check one:

- Student Membership \$15
- Individual Membership \$25
- Family Membership \$30
- Supporting Membership \$100
- Life Membership \$1000

Please make checks payable to Historical Electronics Museum, Inc.