



## Establishment of the Dr. Waldo “Mac” Libbey Professorship



L-R: Mohamad Musavi, Chair, ECE Dept., Mac Libbey, Dana Humphrey, Dean of the College of Engineering

Dr. Mac Libbey who served the Department for over 46 years as a faculty member has established in his estate plans the Dr. Waldo “Mac” Libbey Professorship in Electrical and Computer Engineering with a bequest to the University of Maine Foundation. More on Dr. Libbey’s outstanding career and service to the University will be published in our December newsletter. The celebration will take place at Homecoming Weekend on Friday, October 24 at the Senior Alumni luncheon. The program honoring Mac will begin at 1:00 p.m. in the MacIntire Room in the Buchanan Alumni House.

We are cordially inviting you to attend this celebration in honor of Dr. Mac Libbey. RSVP by October 15, 2008 to Susan Niles at: [susan@eece.maine.edu](mailto:susan@eece.maine.edu) or 207-581-2224.

## Portland Software Company Provides ECE Department With Scholarships



The Electrical and Computer Engineering Department will offer three new scholarships beginning this fall, thanks to the generosity of a Portland software development company. Keware Technologies founder, president and chief executive officer Corson Ellis (left) says he wants to proactively help keep Maine young people in-state. He is providing the Department with three annual scholarships of \$7,500 each for the foreseeable future.

Kepware (<http://www.kepware.com/>) designs and builds drivers and other software that allows automated manufacturing equipment to communicate. The company employs 45 people, several of which are UMaine engineering graduates. In the last two months, Kepware has hired two permanent employees and two co-ops from UMaine. Its vice president and chief technology officer, Tony Paine, is a graduate of the electrical engineering program at UMaine.

Ellis is concerned about what he views as “a crisis in education in the United States.” “There isn’t enough support for engineering education. If we don’t create more support, we’re going to lose more jobs overseas. The most important thing is that somebody’s got to step up to the plate and help American engineering students. We want to make it affordable. There are a lot of kids who cannot afford to go to engineering schools.”

“These are among the top scholarships at the University,” he says. “It is important for people to understand that while low-paying traditional jobs are being lost, new well-paying engineering jobs are being created in Maine by Kepware and other high technology companies.”

### **Distinguished Alumni Inducted Into the Francis Crowe Society**



Allen Bingham (shown here with Dean Dana Humphrey) received his B.S. degree in Electrical Engineering in 1954. From 1954 to 1955 he was an engineer for General Electric in a one year Engineering Program where he worked in transformer designs in Pittsfield, MA, induction motor tests in Schenectady, NY, protective relay development lab in Philadelphia, PA and Plant Engineering in Lynn, MA. He was in the US Army in rocket development at Redstone Arsenal in Huntsville, Alabama from 1955-1957. In 1956 he married Joanne Owen ('56). They have two

daughters, one graduated from UMaine in 1981 and the other graduated from Tufts University in 1981 and Cornell Law in 1984. They also have a son who is with Special Ed in Connecticut.

From 1957 until his retirement in 1984, Mr. Bingham worked at various engineering companies including General Electric in Schenectady, New York and Middle West Service Company in Chicago. He has held several positions in engineering and management including a Senior Consulting Engineer with Middle West Service Company in Chicago, Field Application Engineer and District Engineering Manager with General Electric in Connecticut and New York. He was a licensed professional engineer in Connecticut in 1974 and in Maine in 1990.

Al has been in the US Coast Guard Auxiliary since 1993 and is an Operations Officer in Boothbay Harbor and Casco Bay involved in search and rescue, boating safety, radio communications and as a crewmember on the USCG Cutter Shackle. He became a US Coast Guard licensed Master US Merchant Marine in 1998.

Al now lives in Scarborough, Maine with his wife of 52 years. He has three grandchildren in Connecticut and three in Houston, Texas. He is Building Manager of the Woodfords Congregational Church.

## **UMaine holds Maine Learning Technology Initiative (MLTI) Conference**

With the support of the ECE Department, more than 600 of Maine's middle school students were at the University of Maine on Friday, May 30 for a day of pushing the boundaries of their laptop computer skills.



As part of the 5th annual MLTI Student Technology Conference, students from more than 45 schools learned about new laptop computer software, new applications and new ways to make the best use of laptops for research, classroom activities and 21st Century educational exploration. Students broke up for nearly 40 sessions on new software, educational games and dozens of the latest new media applications. The conference sessions taught students skills ranging from starting their own student tech teams at their schools to file sharing, blogs and podcasts, making iMovies about their communities and learning about math and science in innovative, imaginative ways.

“This moves beyond classrooms and more into sophisticated and creative uses for the laptop,” says Bruce Segee, the Henry R. and Grace V. Butler Professor of Electrical and Computer Engineering, who assisted with the event. “The laptop really enables a whole different way of thinking about problems, a whole different approach to education. It’s about the state’s laptop people, the state’s middle school students and teachers, and the university getting together to learn about using the laptop in creative ways.”

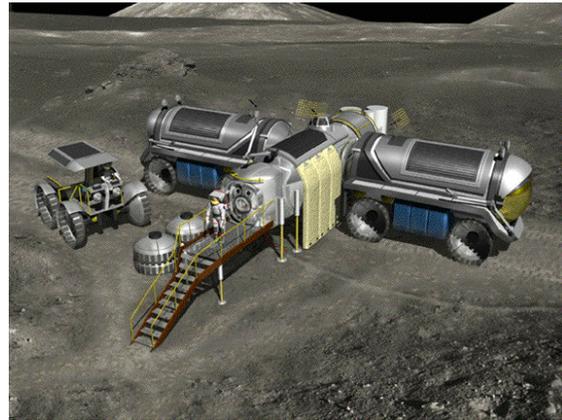
Scholarships of \$1,000 were awarded as door prizes for ten students (5 boys and 5 girls) who committed to enrolling in the UMaine Department of Electrical and Computer Engineering when the time comes for college. The scholarships are expected to encourage Maine middle school students to start thinking about college sooner. The department will stay in touch with the winning students through the remainder of their middle school years and through high school, protecting their potential investment by showing interest in the academic progress of the winners and providing support and encouragement, according to Mohamad Musavi, Chair of the Electrical and Computer Engineering Department and Jim Moulton of the Maine Learning Technology Initiative.

“By offering these scholarships, we believe we will be making a clear statement to these students and their families that the time to think about the future is now, and that a career in engineering can be a reality,” says Dr. Musavi.

## **UMaine Engineers Take Sensor Research to New Heights**

The long-envisioned idea of establishing a colony on the moon might actually become a reality in the near future. The idea is to return to the moon by 2020 and create a self-sustaining research outpost somewhere on its surface. Of all the many challenges NASA faces in this ambitious endeavor, one of the most critical is providing habitats that will allow humans to live and work safely in the moon’s or other space harsh environments. Not only will the structures have to be comfortable enough for long stays, they will have to shield their inhabitants from cosmic rays and radiation while withstanding micrometeorites, moonquakes and surface temperatures that fluctuate day to night from about 224 degrees to minus 243 degrees Fahrenheit.

Designing such deployable space structures will require engineers to rethink what constitutes a structure, and the methods and materials necessary to build them. That’s where UMaine researchers are hoping to play an important role. Supported by a \$1.5 million grant from NASA, EPSCoR and UMaine, electrical and computer engineering professors Ali Abedi and Mauricio Pereira da Cunha have teamed up with other UMaine professors Vince Caccese and Mohsen Shahinpoor (Mechanical Engineering) and Univ. of Southern Maine engineering professor Mariusz Jankowski (Computer Engineering) to develop a first-of-its-kind wireless sensor network system to monitor the structural integrity of inflatable space structures after they’ve been deployed in space by inflation or other means.



Easy-to-assemble inflatable structures are considered to be one of the most promising of the habitation concepts now on NASA’s drawing board. It was Drs. Abedi and Pereira da Cunha’s work on wireless sensing as well as past experience with smart structures from other engineers that convinced NASA to make the UMaine project one of 13 in a nationwide competition to receive funding.

Once the new sensors are developed, the challenge will be to find a way to embed them into a multilayer fabric that a leading aerospace contractor in Delaware will use to build a prototype inflatable structure for UMaine researchers. By sensing the coordinate positions of an array of key points on the inflatable’s surface, the wireless system will allow the researchers to visualize the shape of the structure after it is deployed. The final shape data, when compared with computer modeling data, can be used to assess how successfully the structure was inflated and eventually to help in correcting any troubling deformations.

The researchers plan to involve 15 undergraduate and four graduate students in the three-year project. They will be trained in campus laboratories, as well as at NASA's Johnson Space Center in Houston, Texas, and Glenn Research Center, Cleveland, Ohio. The UMaine team also intends to create new course materials pertaining to the research and to hold seminars for the public at high schools in the state.

### **Ten Undergraduates Complete Summer 2008 NSF-REU SuperMe Program**



Front Row: Yifeng Zhu, Bruce Segee, Jessica David, Jennifer Brown (Univ. of Evansville), Kara West, Emily Albee, Jason Withee. Back Row: Timothy Russell (Eastern Illinois Univ.), Donald Lewis, Andrew Pellett, Nathan Bourgoin, Wen Luo (Univ. of Nebraska), Omar Padron (Kean Univ.), Craig Harrison, Daniel Dorman (LeTourneau Univ.)

Ten undergraduates have successfully completed the Supercomputing Undergraduate Program in Maine (SuperMe) held this past Summer in the ECE Department. The program, led by Drs. Yifeng Zhu and Bruce Segee, is a three-year project sponsored by the Undergraduate Research Experiences (REU) of the National Science Foundation (NSF) in collaboration with the Department of Defense through the Awards to Stimulate and Support Undergraduate Research Experiences (ASSURE). The program focuses on collaborative research in scientific computing, including supercomputing, data analysis and visualization.

The 2008 REU class included ten undergraduates selected from a large pool of applications from all over the country based on their outstanding academic records, letters of recommendation, interest in the scientific computing, and their potential for making significant contributions to science and technology in the future. The REU participants worked on a wide range of interesting research topics, such as high-resolution display wall, energy-efficient data storage systems, visualization of oceanic simulation data in Google Earth, harmful algal Bloom dynamics in the Gulf of Maine, Monte Carlo simulation on spin glass, and modeling of water

molecules. They gained valuable research experience under the direct supervision of faculty advisors and their graduate fellows.

Each student received a \$5700 award, including stipend, housing and food, for ten weeks of work from May 27 through August 1, 2008. In addition, out-of-town students also received \$500 for travel support.

One of the major goals of this program is to motivate the REU undergraduates to pursue graduate education after receiving their bachelor degrees. The existing survey shows that 90% of our participants plan to enter a graduate program in STEM-related disciplines after graduation.

### **ECE Alumni Reunion**

The University of Maine Reunion weekend was held, May 30, 2008.



ECE Faculty and some of the participants at the Alumni Reunion

### **Incoming Students**

Fall 2008 has a total of 61 incoming students from which 32 are in Electrical Engineering and 27 in Computer Engineering. There are also two General Engineering students who are planning to join ECE.



## **ECE Department Helps Disadvantaged Students**

During Spring Break in March of 2008 and in August of 2008 the Maine Junior Engineering Technical Society (MJETS), under the direction of Eva Szillery, had three, one week long day camps at Camp CaPella in Lucerne, Maine for students diagnosed with high functioning autism (HFA) or Asperger's syndrome (AS). The programs were offered by the MJETS with the cooperation of graduate students and student workers from the ECE Department. According to Dr. Szillery the idea of the camp comes from our observation with "usual" MJETS programs; HFA/AS students often excel in mathematics, engineering, logical thinking, science and computer technology. What this population needs badly as children is a way to funnel their unique thinking patterns into ways that can be used for future employment and life skills. The MJETS program is dedicated to doing this. Rick Eason, Professor of ECE and life-long puzzle designer and collector, has been an academic advisor of the Junior Engineering Programs. Through Lego Robotics, Origami and critical thinking puzzles and games, the MJETS summer and spring program helps these students realize their potential and sparks interest in tangible socially acceptable fields. The other part of the program is that it introduces these students to other students with similar ways of thinking and promotes socialization and friendship, working on activities that enhance their strengths, with special emphasis on teamwork, executive function skills (planning, organizing, goal setting, time management, etc) and social connectedness, all of which are important for educational and employment success. For most of these social connectedness skills we were fortunate to use the picturesque waterfront of Phillips Lake for swimming, kayaking, beachcombing and all the like.

Our groundbreaking year was a definite success, the MJETS have been invited to the UCP National Conference of 2009 to present the findings of the past and ongoing work in this project.



## Alumni Updates

We are devoting this space for our alumni. We would love to hear from you. If you would like to share new things that are happening in your life such as a promotion, getting married, the birth of a child, etc., please send them to [susan@ece.maine.edu](mailto:susan@ece.maine.edu) with a short paragraph and include pictures if available.

## Our Readers Respond ([June 2008 Newsletter](#))

Tim Osborne, HW Development and Verification Manager, Microsoft writes:

“What a pleasure to see Dr. Ward’s award. Dr. Ward probably won’t remember, but he donated his old ham radio gear through a local Radio Shack when I was 13 years old (I’m 48 or so today). That single act of kindness started me on the path to engineering and as a result I’m now managing EE development and test engineers at Microsoft. I’ve had great fun working on radar displays, semiconductor processing equipment, telerobotics and haptics, and finally Xbox and Zune at Microsoft. Sometimes the smallest things can really change someone’s life.”

## Gifts/Donations

Abed Mougharbel, \$500, April 10  
Al and Joanne Bingham \$1,000, April 11  
Analog Devices, Inc., \$27,500, May 5  
John and Leah Vetelino, \$4,200, May 23  
Willis and Bonnie Tompkins, \$500, June 12  
Kepware \$5,500, June 23  
John and Mary Thomas, \$1,000, June 30

Medtronic, Inc., \$500, July 14  
Flir Systems, Inc. \$1,000, July 28  
Leonard Bowles, \$500, August 4  
Harvey Wood, \$500, August 7  
Fairchild Semiconductor, \$5,000, August 7  
Douglas J. DeAngelis, \$1,500, August 28  
GE Matching Gift Center, \$1,000 September 12  
Kepware \$5,500, September 16  
Various other donors \$5,361.44

**If you are willing to help by sponsoring any of the department activities and scholarships, please contact Susan Niles at 207-581-2224 or [susan@ece.maine.edu](mailto:susan@ece.maine.edu).**

## **Grants Received**

N. Emanetoglu, "Instrumentation for RF Photonics Laboratory at the University of Maine," US Dept. of Defense, \$125,715, July 1.

R. Smith (40%), L. Connell (60%), "MERHAB 2005: Rapid HAB Detection Instrument Development and Deployment," Year 4, US Dept. of Commerce, \$32,978, July 1.

J Vetelino (70%) and D. Neivandt (30%), "EXP-SA: A Lateral Field Excited Acoustic Wave Sensor for Peroxide-Based Explosives," \$6,000, NSF, July 11.

J. Vetelino (80%) and C. Holden (20%), "Track II GK 12: Sensors! Year 4," NSF, \$295,299, July 30.

A. Abedi (PI, 50%), M. da Cunha (20%), V. Cassese (15%), M. Shahinpour (15%), "Real-time Wireless Shape Monitoring of Deployable Space Structures, \$1,523,310, NASA EPSCoR, Sept. 1.

## **Publications**

Peer Reviewed Journals

E. Dudzik, A. Abedi, D. Hummels, M. P. da Cunha, "Wireless Multiple Access Surface Acoustic Wave Coded Sensor System," Electronics Letters, Vol. 44, No. 12, June 2008.

## **Other**

Since June the faculty have submitted five proposals for a total of about \$1,600,000.