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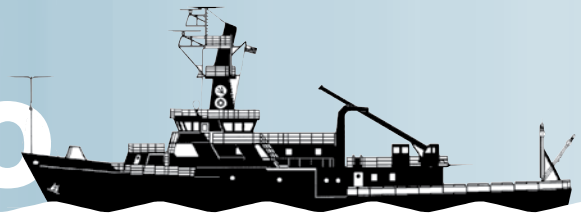
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ABOARD GSO



A Newsletter for Alumni and Friends of the University of Rhode Island's Graduate School of Oceanography

The Inner Space Center: A Hub for Ocean Exploration

*Dwight Coleman, M.S. 2001, Ph.D. 2003
Director, Inner Space Center*

As the cornerstone of the new Ocean Science and Exploration Center (OSEC) at the Graduate School of Oceanography (GSO), the Inner Space Center (ISC) represents an impressive, visually appealing, and technologically advanced facility that supports a variety of ocean exploration and education programs. Dr. Robert Ballard's (Ph.D. 1974) 30-year vision of incorporating shipboard and shore-based telepresence technologies into active field programs in ocean exploration has finally come to fruition at the Narragansett Bay Campus. The ISC was developed in conjunction with two ships of exploration, the NOAA ship *Okeanos Explorer* and the Ocean Exploration Trust's E/V (exploration vessel) *Nautilus*. Both ships and the ISC have just completed their inaugural field seasons. During 2010, the *Okeanos* completed a number of cruises in the Pacific, off the west coast of the US, off Hawaii and Guam, and off eastern Indonesia. The *Nautilus* completed a number of cruises in the Aegean and eastern Mediterranean Seas, off Turkey, Greece, Cyprus, and Israel. During these cruises, incredible discoveries were made and shared in real time with large audiences.

Both ships are equipped with seafloor mapping technology, advanced remotely operated vehicle (ROV) systems, and telepresence systems that provide high bandwidth ship-to-shore satellite links to Internet2. The ISC is the operational hub that

establishes the Internet2 links through which live high-definition video, voice communications, and data are streamed, recorded, and managed. The ISC facility includes a mission control space for scientists, students, and educators to work and connect live to the ships of exploration. Connected virtually to the ISC are a large and growing number of exploration command stations (ECSs) that are essentially offshoots of the ISC, where remote scientists, students, and educators around the world can also participate live in the seagoing exploration programs. This entire suite of technologies, from the ships to the ISC to the ECSs, and the protocols for their functional operation, were all developed during the last eight years at the Graduate School of Oceanography under the direction of Robert Ballard. GSO is the only institution of its kind leading this new paradigm for remote exploration of the world's oceans.

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The NOAA Ship *Okeanos Explorer* at sea in the Pacific Ocean.



The Exploration Vessel E/N *Nautilus* at sea in the Mediterranean Sea.

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The Inner Space Center is built on partnerships. These partners include the NOAA Office of Ocean Exploration and Research, the Institute for Exploration at Mystic Aquarium (divisions of Sea Research Foundation), the Ocean Exploration Trust, the URI Office of Marine Programs, the NOAA Office of National Marine Sanctuaries, and the National Geographic Society. Through collaboration with partners, the ISC supports programs centered on the scientific missions of the ships and educational outreach around these missions. The missions focus on mapping and exploration and the investigation of new discoveries on the seafloor that relate to the disciplines of deep-sea biology, geology, and archaeology. Through mission control and the ECSs, scientific partners at GSO and other oceanographic institutions and laboratories collaborated in real time to guide the ROV investigations and interpretation of the discoveries. These scientists were either on watch assisting in real time or on call to assist when needed with the live investigations. The outreach activities focus on translating the real-time technical and scientific operations and discoveries to vast audiences, including visitors to Mystic Aquarium and other informal science education facilities, classrooms in Rhode Island and elsewhere, and the public Internet through partner web sites. Through a pilot program supported by the Ocean Exploration Trust, a variety of educators from partner sites, including teachers from middle schools and education coordinators from Boys and Girls Clubs of America, participated in the exploration

onboard the E/V *Nautilus* and at the ISC and ECSs, and supported the live educational outreach efforts.

To accomplish the variety of programs mentioned here, the ISC employs a large number of undergraduate URI students. These students, who represent URI programs in Ocean Engineering, Marine Biology, Underwater Archaeology, and other disciplines stood watches in the ISC throughout the summer, recording the live video and data feeds, managing data, assisting with tours and hosting visitors to the facility, communicating with the shipboard scientific teams, and assisting the scientists and educators. This informal internship program promotes training and experiential learning opportunities for seagoing ocean science and exploration programs,

provides an opportunity for undergraduate students to process and interpret scientific data, and instills an appreciation for public and educational outreach. To improve on the success of our initial year of operation, the ISC team and our partners are working in the off-season to refine the protocols and establish new systems for supporting the scientific and educational missions. This will include the development of an online data portal for the Inner Space Center, a gateway to the live and recorded video, data, and scientific and educational resources. We are also producing informational and educational content for aquarium kiosks, a prototype of which is outside the ISC viewing gallery. Feel free to stop by and visit the ISC as we expand and improve our programs. ■



Guests from the community view the Mission Control console during a recent tour of GSO's Inner Space Center.

ABOARD GSO newsletter is funded by the GSO Alumni Association, Friends of Oceanography, and the Dean of GSO to keep friends, alumni, and the community informed of what is happening at GSO. For more information about the Alumni Association, contact Walter Berry, Chair (berry.walter@epamail.epa.gov). To learn more about Friends of Oceanography, contact Deb Coty (debim@gso.uri.edu).

ABOARD GSO is published twice a year in spring and fall by the University of Rhode Island's Graduate School of Oceanography.

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On The Job

Confessions of an Environmental Consultant

Jamie Maughan, Ph.D. 1986

Flash back to 1974. I had just gotten a Master’s Degree in Aquatic Ecology, I was on the top of the world, and I was asked if I wanted to be an environmental consultant. The answer was an immediate, loud, and relieved YES!!! I had been locked in a lab, broke, and hungry (or at least had to drink cheap beer) for 2+ years, and I wanted to be out conquering the world and, yes, rich. I was offered \$11,000 a year which looked like super rich.

I spent seven years conquering the world and having enough money to live on, but I was intrigued by a marine science question I encountered during consulting which had not been researched. How much organic carbon, primarily from municipal sanitary waste, was too much to deposit on the estuarine floor? The US EPA was spending billions of dollars upgrading sewage treatment facilities around the country and then just dumping the effluent, and sometimes the sludge, in the near shore environment. This was potentially leading to severely degraded sediment conditions and money spent with no overall improvement. So how to find a location and method of disposal that gave real benefit for dollars spent?

I wanted to address this issue, but research and academia were pulling hard at me again. MERL and GSO were just the answer, so I gave up my job, my wife gave up hers at Harvard School of Public Health, and we had our first child. Within one month, we went from two good incomes as a couple to no income as a family of three. A disaster? Not at all. I spent four glorious years doing research, getting smart, and having the time of my life at GSO. The only problem was that when I finished, top

academic and research institutions were not beating down my door to hire me. But a consulting firm was--to work on a project in Alaska which sounded exciting and a real change from once again being locked in a lab (however a very nice one) at MERL for four years. So I took the job with visions of getting back on my feet financially, having some different kind of fun, and then getting that coveted academic position in a couple of years.

To make a long story short, I spent the next 23 years in environmental consulting. It has been tremendously exciting and at times very rewarding. One of my first projects was managing the Environmental Impact Statement for the Boston Harbor Clean-up. A key question was where/how to dispose of the wastewater effluent originating from the Metropolitan Boston Wastewater Treatment Facility at Deer Island (400 million gallons a day). And guess what? The research we did at MERL was the key to finding an affordable and environmentally sound effluent disposal approach. Over those 23 years I have worked in forty states and ten countries, including the Greenland Ice Cap, the Suez Canal, and the Peruvian Andes. I have fallen short in peer reviewed research. But I have had fun at professional society meetings and I had to spend a



On The Job —continued from p. 3

couple of days snorkeling/SCUBA diving around Midway Island looking for an appropriate reference site, all gladly paid for by taxpayers. I also had to kayak around Juneau, Alaska, identifying seabird and marine mammal congregating areas as part of an assessment for disposal of gold mine tailings.

I was able to partially satisfy my academic longings by teaching a graduate course at Tufts University in Environmental Impact Assessment Methodology for the last ten years. It has been



rewarding and challenging, plus was a respite from the day-to-day consulting treadmill. I was also able to partially address my academic shortcomings by writing one of the first text/reference books on Ecological Risk Assessment in 1993.

Only once in 23 years was I asked to compromise my scientific interpretation of data. But consultants are frequently asked to present the best or worst case for an action based on sound science, and I have honestly enjoyed the challenge. I once had an environmental attorney, whom I respect very much, tell me “don’t hold anything back; give me the worst as well as the best news and let me deal with it.” My work has had its odd moments. I once had the local biology teacher at a public hearing in Connecticut ask me who did I think I was to be able to honestly evaluate impacts to a salt marsh. I started to reply that I was a biologist trained in marine science, but before I could complete the sentence, he interrupted saying, “You are not a biologist; you are a son-of-a-bitch!”

I started to close down my conventional consulting career last year by taking a one-year assignment in Abu Dhabi to support the government in totally revamping its wastewater collection, treatment and reuse system from the original one created in the 1970s. The work was exciting and the multiple cultures in the Emirate were amazing. Every day was a learning experience, and for an old consultant who was getting bored and stale with the same issues year after year, it was reinvigorating.

As I write this, I am completing the close-down of my consulting career and transitioning into a leadership role with a non-profit advocacy organization (Global Village Engineers: www.gvengineers.org). The organization is dedicated to helping villagers in developing nations meet their sanitation and infrastructure needs while considering the implications to their critical environmental resources. This is similar to what I did as an environmental consultant, but it is more rewarding and a good way to make a contribution using what I have learned in 35 years of consulting. ■

A Hot and Spicy Time at the GSO Chili Cookoff

Veronica M. Berounsky, Ph.D. 1990

GSO’s Chowder and Marching Society sponsored the first annual Chili Cookoff in May. Emceed by GSO student Leanne Heffner, the cookoff featured ten entrants resulting in an assortment of very tasty chili dishes (and for the tasters, that was a LOT of chili in one sitting!).

The winners were:

Best Overall: **Song Sparrow Chili by Walter Berry**

Most Likely to Set your Tongue on Fire: **Aqua Regia con Chili by Warren Boothman**

Most Likely to End Up as Canned Baby Food (Most Tame): **The No-Name Chili by Rebecca Williams**

Most Likely to be Served in a Cafeteria: **Scott Tenorman Surprise by Jason Krumholz (it was really good chili like all the rest!)**

Most Cleverly Named Chili: **Chuck Norris’s Baby Food by Anna Malek**

Best Looking Chili: **The No-Name Chili by Rebecca Williams**

Most Creative Chili: **Chuck Norris’s Baby Food by Anna Malek**

Congratulations to our winners and we look forward to next year’s cookoff! ■

GSO launches interactive hurricane website, *Hurricanes: Science and Society*

The Graduate School of Oceanography has launched a comprehensive interactive website, *Hurricanes: Science and Society* (www.hurricanescience.org), in concert with the opening of the Louisiana State Museum exhibition, *Living with Hurricanes: Katrina and Beyond*.

The website and its associated educational resources provide information on the science of hurricanes, methods of observing hurricanes, modeling and forecasting of hurricanes, how hurricanes impact society, and how people and communities can prepare for and mitigate the impacts of hurricanes. In addition to in-depth science content, the website includes educational resources, case studies, and an interactive timeline of historical storms. All content has undergone rigorous peer review by a panel of hurricane experts.

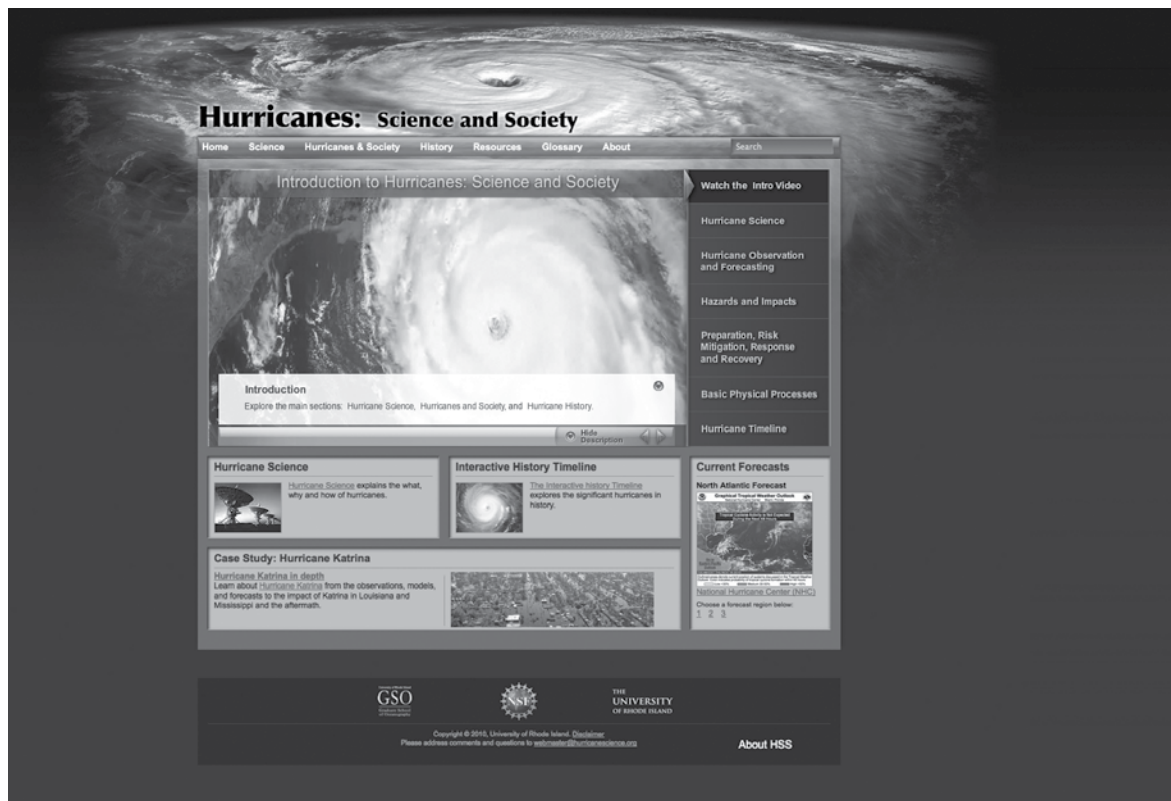
The launch of the website took place during the Hurricane Science and Education Symposium at the Tulane/University Xavier Center for Bioenvironmental Research in New Orleans in October. This event brought together the nation's leading hurricane researchers and forecasters, preparation and mitigation experts, as well as formal and informal educators from across the United States, to discuss the vital need

to advance hurricane safety through science and education.

The director of the National Hurricane Center, Bill Read, offered opening remarks. "I am very impressed by the scope of scientific content in the Hurricane web site," said Read. "I believe it will become a nationwide classroom tool for anyone interested in teaching or learning hurricane science."

Hurricanes: Science and Society will play a critical role in the effort to educate both students and adults about the science and impacts of hurricanes and the importance of pre-hurricane planning and mitigation. The website will give educators the tools around which curricula and public education materials about the importance of hurricane pre-disaster planning can be developed. It will contain information tailored for specific audiences, including middle school through undergraduate educators and students, the general public, and the media.

The development of the website was led by GSO's **Gail Scowcroft** and **Isaac Ginis** and designed in coordination with Raytheon Web Solutions. Both the website and key elements of the museum exhibition have been made possible by a grant from the National Science Foundation. ■



AFRAM 1963

Donald C. Gordon, Jr., M.S. 1964

I started my master's degree program in September 1962 at the University of Rhode Island. It was a perfect time to arrive. The Graduate School of Oceanography had been recently established, and John Knauss had just arrived from Scripps as the new dean. In November, the RV *Trident* arrived from San Diego as the new university research vessel. She was a 180-foot, one-thousand ton, ex-military supply and maintenance vessel (floating machine shop). The university bought her for \$500 and had her converted for oceanographic work in San Diego. She sailed to the east coast with a skeleton crew through the Panama Canal. It was quite an event when she arrived, a coming of age for the university.

My basic course work was over at the end of the first semester. I had already planned to return to the Marine Biological Laboratory (MBL) in Woods Hole for the summer as assistant to the Marine Ecology Course and also on my master's research at that time. I could have taken some elective courses in the spring semester but then learned that there was a call for volunteers to join AFRAM, the first major cruise of the *Trident* from March to early June which was headed to West Africa (AF from Africa and RAM from the university mascot). I thought that this would be a wonderful opportunity to gain sea-going experience and visit a new and exciting part of the world. So I volunteered and was accepted. In late February I moved on board. Three other new students also joined me in this adventure, Don Corrigan, Jim Robb and Bob Howe. Before we left, I ordered a VW bug from Speedcraft Motors in Wakefield to be picked up when we returned in early June. My parents came to tour the ship and afterward, we drove over to Newport for dinner where I had whale steak for the first time.

Due to a labor dispute with the engineers, the sailing was delayed for three weeks. I lived on board and did lots of reading and studying of oceanographic and ecological text books. Since we were going to be doing grab sampling on the continental shelf off West Africa, I read a monograph of the benthic communities in that region written by Alan Longhurst. Little did I know that in 15 years he would become my director and colleague at Bedford Institute of Oceanography (BIO).

We sailed at last on March 21. Scientific staff on the first leg included John Knauss, Charlie Fish, Paul Perkins (acoustic

tech) and Jim Frey (ship's tech). The captain was Barney Collinson, chief mate was Bob Hempstead and bosun, an older fellow called Victor. The weather was good as we steamed down the Bay, out past Block Island and across the shelf. We did not stop to do any work until we were in the Sargasso Sea. Charlie Fish was studying the deep scattering layer which involved acoustic work and zooplankton sampling with a Scripps-Narragansett sampler. We also set up hydro-stations, and this was the first time I saw BTs, Nansen bottles and reversing thermometers in action. One clear evening after supper, I was talking on deck with John Knauss watching the sun go down. He asked me if I had ever seen a green flash. I said no. He explained it to me and a few minutes later we saw one just as the sun sank below the horizon. They are relatively common in California, and he had seen quite a few off Scripps.

Our first port of call after a week at sea, was Bermuda where we stayed for three days. John Knauss, Charlie Fish and Paul Perkins left the ship at this point, but Pete Wangersky (chemist from Yale), Dale Krause (geophysicist from URI) and Bob McMaster (geologist from URI) joined us. We had lots of time to explore the islands. It did not take us long to find our way up to Dowlings where we rented mopeds. After a week at sea, it was sheer joy to ride around Bermuda and take in the sights which included Flatt's Inlet with its zoo and aquarium, Hamilton, the south shore, St. David's Head, and Fort St. Catherine's. We also enjoyed beers at the White Horse Tavern, right on the docks in St. George, and the Gunpowder Cavern up on the hill behind town.

After leaving Bermuda, we steamed to the southeast toward West Africa. The first part of this leg took us through the center of the Sargasso Sea. We enjoyed sailing through the extensive mats of Sargasso weed. On the bow of the *Trident* were several bollards on which we could sit and lean over the railing to observe the water and various creatures. I spent many free hours there throughout the cruise. It was exciting to see flying fish and to find them on the deck in the morning.

Dale Krause set a watch to man the precision depth recorder (PDR) in the main lab. Each member of the scientific staff stood a four-hour watch on a rotating basis to make sure the equipment was working. The staff often visited during the day, but at night the person on watch was alone.

Right. Charlie Fish and Paul Perkin.



Far right. Peter Wangersky, Bob Howe, Bob McMaster, and Jim Robb.



I had met Pete Wangersky the summer before in Woods Hole. He was conducting research on non-living particulate organic matter in seawater. Up until this time, my budding research interests were more focused on benthic ecology, but I found his work most intriguing. It was agreed that that I would work as his assistant. He had brought along some new water sampling bottles (30 L) that had been made by Shale Niskin, a friend of his from Miami. We broke them out and ran a trial station. We immediately ran into troubles with the standard Nansen bottle messengers which were too light. We solved the problem by making our own heavier messengers. We melted down diver's weights and poured the molten lead into tomato juice cans. After it set, we drilled holes down the center and cut slots using a hacksaw. We then made brass pins which were held in place with elastic bands. These homemade messengers worked quite well, but we had to be gentle firing the surface bottle to avoid breaking the tripping rod. We also set up a series of carboys tied to the rail near the hydroplatform into which we could quickly transfer water samples for filtering. Once all the procedures were worked out, we started to make deep stations each morning. These continued until we came up onto the shelf. We also collected daily surface samples while underway with a bucket at the end of a rope. All samples were filtered and analyzed later ashore by Pete for carbonate, organic carbon and manganese.

After crossing the Atlantic, we reached the African coast at Senegal, just above Dakar. Here we turned south and started a geological sampling program on the West African shelf headed by Bob McMaster. Principal tools were a Smith-McIntyre grab and Edgerton bottom camera. It was fun working with new equipment and seeing what was on the seafloor. Due to upwelling, this is a very productive part of the ocean, teeming with phytoplankton, zooplankton, flying fish and dolphins. The bioluminescence at night was particularly striking. It was neat to go below and flush a head in the dark to watch the bowl glow. The sunsets were quite striking due to the dust in the air from the Sahara. We frequently encountered solitary fishermen in dugout canoes far out at sea, even at night.

Our first port of call in Africa was Monrovia, the capital of Liberia. After tying up and clearing customs, we had several days to explore. But first we enjoyed reading our mail from

home, delivered by the ship's agent, and catching up on news (this was back in the days when communications in international waters were limited to telegrams sent by Morse code). At that time, Monrovia was a safe city to explore, and we enjoyed exploring the streets, looking at the buildings and vegetation, drinking cold beer in pubs, and visiting craft markets. Bob McMaster left us in Monrovia, but we were joined by Dave Schink and his technicians.

The next leg of the cruise was devoted to collecting large volumes of seawater for silicate studies. Dave Schink had brought along a very large and complicated bag sampler that looked like a hot air balloon. It was quite dangerous to work with on deck and required divers to deploy and retrieve it. Because of my small boat experience, I was asked to help operate the ship's Boston Whaler that served as the diving tender. One day there were a lot of sharks around, so the divers wanted to stop working. We got them back on board safely, but when we were hauling in the Boston Whaler, the falls slipped and the Whaler tipped over. Fortunately, it tipped away from the ship, but I landed in the water. Since the ship was slowly underway, it took almost half an hour to get the Whaler safely on board and circle around to pick me up. The water was warm and I was wearing a life jacket, so I pulled in my limbs and tried not to move, knowing that I was in sight of several sharks. I was much relieved when I was finally picked up. A favorite pastime for the crew during the entire cruise was fishing for sharks. There was always great excitement when one was caught and pulled up on deck.

After a few weeks, we headed into Freetown, Sierra Leone, for supplies and another staff change. Once fuelled and provisioned, we sailed for home. This was the longest leg of our voyage. Once we got into deep water, Pete and I began the daily hydrocasts with Niskin bottles for the particulate organic matter studies. We also continued the PDR watches. These were particularly exciting when passing over rugged bottom such as the mid-Atlantic Ridge. Good weather followed us all the way home. About the latitude of Bermuda, we were buzzed by several US Air Force planes. This was just after the Cuban Missile Crisis, and we wondered if they were concerned with the large zooplankton samplers lashed on deck that looked like small missiles. As we approached the



Far left. Bob McMaster and Don Corrigan.

Left. Bob Howe (back to camera) and Bob McMaster.

coast, everyone came down with channel fever. It was striking to see the change in the color of the water as we came up on the shelf. When it came time to disassemble our gear, we threw our garbage overboard (wood, plastic, glass). This was at a time before marine pollution became an issue, and we never thought through our actions.

We arrived back at the university in early June. Our first landfall was Beavertail Point at the south end of Jamestown Island early in the morning. Soon after, we tied up at the university pier. This being the Trident's return from her first major cruise, there was quite a welcoming party, including my parents and grandmother. At the suggestion of the captain, I did not declare my case of beer but put it in his head where he said customs would not look. An hour after we had been cleared, I carried off the case of beer on my shoulder. At the base of the gangway I realized that Dale Krause was being interviewed on TV and I had walked right behind him. I hoped that the customs people were not watching. After this marvelous experience, I was determined to become a blue water oceanographer and conduct my Ph.D. research on organic matter in seawater.

Despite all the wonderful adventures, it was nice to be back ashore. After resting at home for a few days, I returned to Rhode Island and picked up my new car from the VW dealership. This was my very first car, and I was thrilled. I then drove to Woods Hole where I spent the summer as assistant to the Marine Ecology course. I was also able to collect most of the data I needed for my master's thesis. But that is another story.

Pete and I did keep in touch. Since Yale was on the way between Rhode Island and New York, I tried to stop by for a visit while going home for holidays. On one visit, he showed me a manuscript he had written on the data collected on AFRAM. I was overwhelmed when he asked me to be a co-author. The paper, the first on which my name appeared, was subsequently published in 1965 in *Limnology and Oceanography*. Pete also urged me to consider transferring to Yale after I finished my masters' degree to do my Ph.D. under Gordon Riley. I tried this the next year (1964), but Yale did not accept me. However, in 1965, my wish came true. Gordon and Pete moved to Dalhousie University in Halifax, Nova Scotia, and I was accepted as a graduate student in oceanography. ■



Trident at dock in Monrovia, Liberia



Peter Wangersky.



Freetown, Sierra Leone.

Right. Monrovia Liberia.

Far right. Returning to URI, Dale Kruse and Roy Palmer.



Full Circle

Don Gordon, M.S. 1964

I was born in Cornwall, New York, on the Hudson River about 60 miles north of New York City, just north of the scenic Hudson Highlands. I spent the first six years of my life living on property that had been in my family for more than 200 years and which had been both farmed and quarried for sand and gravel. The property was later sold and in 1950 was incorporated into the Storm King Art Center. This Center has developed over the years into a major museum that celebrates the relation between sculpture and nature. Five hundred acres of landscaped lawns, hills, fields and woodlands provide the site for more than 100 sculptures by internationally renowned artists. The grounds are surrounded by the undulating profiles of the Hudson Highlands.

This past April my sister was sitting in a Starbucks in North Carolina and happened to pick up a discarded copy of the *New York Times*. In it she read that the Storm King Art Center was about to open a new exhibit entitled the Storm King Wavefield created by Maya Lin. She sent me the article and I immediately became intrigued. My wife Jo and I were already planning a holiday trip to New York state in July to see friends and family, so we added a stop at the Center to our agenda so that we could see the new sculpture first hand. It was most impressive. The sculpture depicts large ocean swells, 10-16 feet high, covering an area of 11 acres. Made from sand and gravel, they are blanketed with local grasses and wildflowers. It was amazing to see how an abandoned sand and gravel quarry could be converted into a work of art. It was also a very moving experience for me to return to my roots after pursuing a career in oceanography and see the property where I used to play as a toddler now covered with ocean waves. I felt as if I had come full circle.

For more details and photos of the sculpture, you can Google the Storm King Art Center and follow the links to Maya Lin and the Storm King Wavefield. It is certainly worth a visit if you are passing through the area.



Don Gordon at the Storm King Wavefield.

The State of Our Oceans

2011 Vetlesen Lectures will be in celebration of the 50th Anniversary of the University of Rhode Island Graduate School of Oceanography.

The world's oceans, which once seemed far too large to be affected by human activities, have proven to be a canary in the coal mine regarding global change. This lecture series will explore recent advances in our knowledge about oceanic environments and the critical topic of how effective communication is needed to build public understanding of the state of our oceans. Join us. The public is invited to attend this series of free events.

February 8

Will Coral Reefs Disappear? Biology of Ocean Acidification
—Anne Cohen, Brad Seibel, and Andrew Dickson

February 15

Should We Engineer the Climate?
—Margaret Leinen

March 1

Oceans and Human Health: The Urgent Need for Sustainable Resource Management
—Ed Laws

March 8

Communicating Science: Lessons Learned from an Environmental Crisis
—Christopher Reddy

March 29

The Last Great Frontier
—Robert Ballard

April 5

Exploring the World's Notable and Threatened Underwater Habitats
—Norbert Wu

April 12

Bringing the Internet Into the Oceans
—Deborah Kelley

April 26

Steering a Course Toward National Ocean Policy
—Senator Sheldon Whitehouse

Events take place on Tuesday evenings at 7:30 p.m. in Edwards Auditorium on URI's main campus in Kingston. Handicap accessibility is available on the side of Edwards Auditorium on the east corner. If you have a disability and need an accommodation, call 401.874.2303 at least three business days in advance. For TTY assistance, call the R.I. Relay Service at 800.745.5555.

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Alumni News

Barbara Bergen (M.S. 1991, Ph.D. 1999) says that the kids are out of the house! Bob is working at Amgen, and he earned his M.S. in Biotechnology.

Peter and Susan Betzer (Ph.D. 1972) report that Peter is President of the St. Petersburg Downtown Partnership, and Susan is still in solo family medicine/geriatrics in downtown St. Pete and very involved as a Florida Orchestra trustee.

Emily Burns (Ph.D. 2007) is an assistant professor at Community College of Rhode Island. She is teaching several geology and oceanography courses.

Douglas Lee Cone (M.S. 1974) is currently reconstructing a 10-million-year-old fossil baleen whale found at the PCS mine in Aurora, North Carolina, and is an avid scuba diver for South Carolina Fossils.

Bill Dillon (Ph.D. 1969) relates the following: “I went to work at Narragansett Marine Lab in 1961BK (before Knauss), became a grad student in ‘64 and got my Ph.D. in ‘69. I now have an emeritus position with the US Geological Survey, from which I retired in 2002 after 31 years. I just came back from California where we went to visit the latest grandchild. Cindy and I are now up to 6 grandkids, ranging from 1 month to almost 12 years. I was sailing with the second oldest a few weeks ago, and she told me that she wanted to be just like me—a scientist with lots of sailboats. Sounds like a noble ambition.

Adria Elskus (M.S. 1985) writes that not much is new, life goes on, money for funding gets tougher, but Larry is now in four music bands (bluegrass to eclectic). Adria is into running, zumba, and pilates. Their kitties don’t see them nearly enough!

Nancy Friday (Ph.D. 1997) had her second daughter in January. Congratulations!

Scott Graves (M.S. 1989) has been tenured and promoted to Associate Professor at Southern Connecticut State University in the Science Education and Environmental Studies Department.

Eddie Hughes (M.S. 2000) is working with the marine environmental consulting firm CSA International on opening its Tampa, Florida, office.

Kim Hyde (Ph.D. 2006) and her husband recently bought a house in Saundertown, RI.

Thierry Jacques (Ph.D. 1978), alias Terry the Benyon, reports that on September 1 he retired from office at the Royal Belgian Institute of Natural Sciences, Management Unit of the North Sea Mathematical Models (MUMM:www.mumm.ac.be). He had been with MUMM since he left GSO in 1978! Initially specializing in the effects of accidental marine pollution and in oil pollution response, he represented Belgium at relevant international meetings for many years and advised national and local authorities on contingency planning and incident management. In 1990, he was placed in charge of a program of airborne surveillance of the North Sea and became involved in legislation, the legal prosecution of polluters, and general coastal management, including marine protected areas. This opened many opportunities for overseas counseling and international co-operation. From 2002 onwards he headed the Marine Ecosystem Management Section at the Institute. The section advises the government on permits for offshore activities such as wind energy park construction and exploitation. It conducts environmental monitoring of those activities and evaluates ecological impacts. With a staff of 15 scientists, the section operates from two locations in Belgium: Brussels and Ostend. Thierry is the father of three (two were born in Rhode Island) and a grandfather

of four. He lives in Brussels with his wife Anne-Marie with whom he has happily shared his adventures since 1970. “My nickname is a perversion of ‘Thierry the Belgian’ of which **Bill Macy** could tell much in recalling our common memories, but that is literature, not science” says Thierry.

Cynthia Jones (M.S. 1974, Ph.D. 1984) has been elected a Fellow of the American Association for the Advancement of Science.

Richard Kerr (Ph.D. 1977) is still at the same job at *Science* after 33 years and is still married to Julie for 31 years and has two boys, ages 20 and 25.

Michelle Kominz (M.S. 1978) sailed on the Integrated Ocean Drilling Program, Leg 317, the Canterbury Basin Sea Level, from November 2009 to January 2010.

Deborah French McCay (Ph.D. 1984) has been heavily involved in the assessment of impacts of the Deepwater Horizon Oil Spill working for NOAA. She has spent the last 26 years working on oil spill assessments.

Bill McCluskey (M.S. 1980) reports the following: I’ve left my position within the Office of the Secretary of Defense a year ago August and have taken up residence in the City of Light. I’m working as the lead US fellow in the agency with the responsibility of coordinating NATO cooperative research conducted across a broad domain of defense research and technology. Living abroad has been a great experience for the family and hopefully will help strengthen the college application of my son Michael this year and my daughter Anna in 2012. My wife hasn’t stopped smiling since we arrived, and the kids get endless enjoyment from ridiculing their father’s poor grip on the language. I commute almost exclusively by bike, through the Bois de Boulogne (which is a whole other story) and tour the city

on weekends that way, too. I've gotten a few surf trips in to the French coast, Ireland and, next week, Spain. Conditions here offer more swell, more choice, but more wind, too. Fall surf is nowhere near as cold as I remember, PJ. Say hi to all, and I'll try to stop by next summer.

Phil Meyers (Ph.D. 1972) has much more time for science since his 2007 retirement from formal teaching and committee responsibilities in the Department of Geology at the University of Michigan. He continues many of the organic geochemical studies of marine and freshwater sediments that he has long pursued, and he has expanded his horizons to include more parts of the world and geologic time. Along the way, he has been able to indulge in his long-standing penchant for seeing interesting places. He started in 2005 to investigate histories of the Holocene evolution of the Asian monsoon system as recorded by peat sequences in China. This line of research now includes collaborations with scientists in Xi'an, Wuhan, and Nanjing, and it has expanded into new collaborations with investigators in Taiwan and Japan. Phil typically crosses the Pacific once a year to visit the field areas and to work with local investigators. At about the same time, he started to collaborate with a group in the environmental geochemistry group at Universidade Federal Fluminense in Niteroi, Brazil. This interaction has developed into a formal agreement to be a scientific advisor for a multi-year study of the organic matter production and sedimentation associated with the Cabo Frio upwelling system, which is just east of Rio de Janeiro. Phil now visits Brazil several times a year. In deeper time, he is presently working to describe and interpret some of the icehouse-greenhouse impacts on the marine nitrogen cycle as recorded in black shale sequenc-

es and associated rocks throughout the Phanerozoic. Phil loves his life as an Emeritus Professor!

Eric Morgan (M.S. 2007) is working for a fellow GSO Alumni, **Wally Fulweiler (M.S. 2003, Ph.D. 2007)** as a technician and applying for Ph.D. programs this fall.

George Offutt (Ph.D. 1970) is nearing completion of a book he's writing on hearing. More to come.

Neil Savage (Ph.D. 1975) is semi-retired and working part-time and seasonal with Aquatic Research Organisms (ARO). He and 180 people pitched in for the International Coastal Cleanup site in Rye, NH. Worldwide, more than half-a-million people from 100 countries removed millions of pounds of animal-choking refuse.

Bruce Thunberg (M.S. 1969) sent in the following: Keeping in touch with old friends and making new ones is always a pleasant way to spend one's time. I especially enjoy the semi-annual meetings of the GSO Alumni Awards Committee as I have since its creation many years ago. The generosity of the GSO Alumni is heartwarming. You all should know that we spend a serious amount of time on each request to be sure we are getting the best use of the funds, in the spirit of your donations. My wife and I own and operate a natural beef ranch in Matunuck, RI, where we use cutting horses to conduct the day's business. For the past ten years I have served on the National Cutting Horse Association (NCHA) on the Board of Directors and enjoy traveling around the country as a judge for NCHA shows. As a realtor licensed in both RI and CT, I specialize in agriculture properties and large re-use development projects. Please stop by and say hello.

Ken Sherman Receives 2010 Groteborg Award for Sustainable Development

Ken Sherman (M.S. 1959) is one of two recipients of the 2010 Göteborg Award for Sustainable Development. The award is given annually to scientists who have contributed to finding solutions for a sustainable relationship with our oceans. This year's recipients will share the prize of one million Swedish crowns (\$145,600 in US dollars)

Sherman is the director of the Narragansett Laboratory and the Office of Marine Ecosystems Studies in NOAA's Northeast Fisheries Science Center (NEFSC), and an adjunct professor of oceanography at the Graduate School of Oceanography. The other recipient of this year's prize is Randall Arauz, chairman of the environmental organization PRETOMA in Costa Rica.

The Göteborg Award is the city's international prize that recognizes and supports work to achieve sustainable development in the Göteborg region and from a global perspective. The award, which was given out on November 17, is administrated and funded by a coalition of the city of Göteborg and twelve companies.

Kia Ora!

Edward S. Taub, M.S. 1977, photos, Sherri Taub



We've returned from our adventure of a lifetime Down Under. Both Sheri and I have fallen in love with Australia and New Zealand as well as their people. The final leg of our trip in New Zealand was especially noteworthy.

Queenstown, New Zealand, is a remarkable place. In fact, the mountains surrounding it are called the Remarkable Mountains (but that's because they run North-South, a characteristic shared only by the Rocky Mountain range). The town is beautiful, located

on the shore of Lake Wakatipu. The weather was beautiful the day we arrived, and we took a gondola ride up to the top of a local peak and were treated to gorgeous views of the area (as well as a closeup view of "crazy" people bungee jumping).

A highlight during our stay in Queenstown was taking an excursion on Lake Wakatipu on a coal-fired steamer called the TSS *Earnslaw* to Walter Peak, which originally was settled as a sheep station. The original farm buildings are beautiful, and we enjoyed a delicious dinner there overlook-

Right. Aerial view of Queensland and Lake Wakatipu.



Far right. Fiordland National Park waterfalls.

water is not absorbed, and the mountains come alive with hundreds of temporary, but spectacular waterfalls. As luck would have it, there had been rain the morning before we arrived at the park, so we had a chance to see the waterfalls.

There are many natural wonders on the road through Fiordland National Park, including Mirror Lakes, deep mountain pools (tarns) that, as the name suggests, reflect the beautiful scenery around them perfectly.

When we reached Milford Sound, we boarded a lovely ship called the *Milford Mariner* on which we were to spend the night. Despite its name, Milford Sound is actually a fjord (Kiwis spell it "fiord") which is a sunken glacial canyon whose mouth is at the Tasman Sea. Spectacular does not begin to describe the beauty of Milford Sound. Its mountain walls are covered with waterfalls (permanent as well as the temporary ones just described). The water is very cold, causing a kind of inversion in which the sediment floats on the surface and makes the water color dark and reflective instead of blue.

The *Milford Mariner* anchored in a special place in the sound called Anita Bay. This is the location of the "greenstone" (nephrite jade) that is the "pounamou" which is most sacred to the Maoris. The *Mariner* carries kayaks and tenders (small motor boats) to allow visitors to explore the sound from the water. Sheri had been planning to kayak but

ing Victorian gardens and the lake. After dinner, we toured the station and saw a Border Collie working sheep and were treated to a sheep-shearing demonstration.

From Queenstown, we embarked on a once-in-a-lifetime adventure to Milford Sound in Fiordland National Park, located on the southwest coast of New Zealand's South Island, one of the last truly wild and remote places on earth. Although Milford Sound is only 40 km from Queenstown as the crow flies, there is only one road through Fiordland National Park, and it is about a five-hour journey by car to get there. The park is alpine, with extremely tall and steep peaks created by upwelling after the Australian and Pacific tectonic plates collided. The peaks are formed from very dense rock through which very little can penetrate. After a rain, the



changed her mind at the last minute and went with me on a tender. This was a great decision it turned out because we were able to get up-close-and-personal with New Zealand fur seals as well as sight two very rare Fiordland crested



penguins which nest in Milford Sound. As we motored from the Tasman Sea into the mouth of the sound, we were joined by a large pod of Pacific bottle-nosed dolphins for a truly magical experience. I worked with these dolphins for my dissertation, but this experience was extremely rare and different from usual field sightings. They were larger than any I had seen before (our nature guide said that the dolphins here were among the largest because of the cold water). This pod did not act like any either the guide or I had seen before. They were spread out in small groups throughout the



sound and were playful but relaxed. They stayed close to the surface and approached the tender with curiosity and then would breach and play around the boat. We saw several young calves swimming with their mothers and aunts. The young calves breached and played just like the adults. Our guide said that it was very unusual to experience a “trifecta” (porpoises, fur seals, and penguins) in the same journey.

On the way back to Queenstown from Milford Sound, we once again passed through the Homer Tunnel. This tunnel is very narrow, and a signal is used to enable each direction to use the tunnel for 15 minutes at a time. On one side of the tunnel, keas (a kea is the only alpine parrot) perform for the traffic waiting at the signal. They are known to be very smart and mischievous; some members of a family unit will entertain drivers and passengers while others slip behind and dismantle the car (or anything else) and steal the pieces.

After a wonderful time in Queenstown, we flew to New Zealand’s North Island to a city called Rotorua, which means “second lake” in Maori. Rotorua has the largest proportion of Maoris of any place in New Zealand, so it is the place to go to learn about Maori culture. Also, it sits on a very active geothermal site and hosts many natural wonders. In the center of town are the Government Gardens, where we felt as if we’d been transported to Polynesia of the genteel 1920s. The Rotorua Museum in the Government Gardens is a restored turn-of-the-century bath house where once people came to “take the waters” of the underground mineral springs. We were able to “take the waters” one day by enjoying a renewing, wonderful set of massages and treatments in the Polynesian Spa located over an active mineral spring. If we lived in Rotorua, we’d be doing this on a regular basis.

Our first night in Rotorua, we enjoyed a Maori cultural experience at a center called Te Puia. We participated in a traditional Maori welcoming ceremony in which the chief of the visiting tribe is challenged by spear-wielding warriors of the host tribe to determine if the visitors are friendly. I was chosen to be the chief of our group and had to face the warriors. We were entertained with Maori songs and dances and learned some of the traditional dances. Sheri learned a Maori dance using poi balls and found it to be a challenging, but enjoyable, experience.

We took a full-day geothermal eco-tour led by a full-blooded Maori named Huru. It was amazing. We saw mud pots, geysers, and various other geothermal wonders. It was really special to be guided by Huru; it was a personal tour and he taught us the Maori history and legends associated with many locations in and around Rotorua. He has a marvelous singing voice and performed beautiful Maori chants for us (Maori was not a written language, and the history of the people has been passed down through chants and songs).

Our last stop in New Zealand was Auckland, a three-hour drive from Rotorua. On the way, we toured the Waitomo Glowworm Caves. Imagine being in a dark cave in a boat on an underground river, and looking up at the cave ceiling to see it bathed in a beautiful blue glowing light so bright it looked like it was a skylight. That light actually came from thousands of glowworms.

Left. The “Mirror Lake” sign is written upside down so its perfect reflection shows it reading right side up.

Below. A kea atop a car.



Left. Milford Sound.

Left. Milford Mariner.

Right.
Rotorua Museum.



Far right.
Ed faces the spear-
weilding warriors.



Far right.
Sheri performs a tradi-
tional Maori dance using
poi balls.

When we entered Auckland after weeks in the remote countryside, we were reminded that we were re-entering “civilization” when we hit a traffic jam on the way into the city. Auckland is called the “city of sails” because it sits adjacent to a beautiful harbor that boasts ideal sailing conditions. The Auckland waterfront (called “Viaduct Quay”) is stunning and features many superb open-air restaurants and bars.



Auckland Harbor opens to a set of small barrier islands. One day, we took a ferry ride to Waiheke Island, known for its beautiful bays, beaches, scenery, and wineries. We visited one of the famous wineries, Mudbrick Winery, and had lunch in its restaurant overlooking the vineyards and out to a view of the Auckland skyline in the distance.

Far right.
Auckland Harbor.

Our last full day in New Zealand was incredibly special because we sailed for a full day on a gorgeous keelboat, *Pride of Auckland*. We had a very small group (Sheri and I, a German couple, and a French Canadian scientist), and all of us were experienced sailors. Our skipper took us sailing all around the barrier islands at the mouth of Auckland Harbor, and we even sailed in the area used for the America’s Cup races. It was a perfect day for sailing, as well—the wind was strong and steady and our high-performance boat performed like a dream. We ended the day and our journey Down Under by sailing under the Auckland Harbor Bridge. ■



The annual **GSO phonathon** was held in early November 2010, and the response as been excellent as usual. Thank you all for you continued support. We are almost at our \$30,000 goal and thank you all very much for your generous dona-tions. We would also like to thank this year’s volunteers, Doug Cullen, Walter Berry, Bob Sand, Deb Coty, Leanna Heffner, Lindsey Fields, Jason Krumholz, Veronica Berounsky, Leslie Smith, Matt Horn, Anna Malek, Lauren Killea, Leslie Smith, Jen Bailey, Kay Ho, and Kiersten Curti.

In Memoriam

Gordon T. Wallace, Jr. (Ph.D. 1976) died suddenly Saturday, August 7, 2010. He was the husband of Deborah J. (Boone) Wallace, to whom he was married for 40 years. Born in Chicago, he was the son of the late Gordon T. and Edith (Watte) Wallace. In 1976 Gordon earned a Ph.D. in Oceanography from the Graduate School of Oceanography, University of Rhode Island. In 1982 he became the founding member of the Environmental Science Program at UMASS/Boston and established the Trace Element Analytical Facility. He retired in December 2009 with Professor Emeritus status. Through his research he made a significant contribution to the scientific understanding of the fate and effect of trace metals in the marine environment. His work provided tools for the scientifically sound management of aquatic resources. During his tenure he taught a number of graduate courses including Chemistry of Natural Waters and Isotope Geochemistry. He was proudest of his mentorship of his graduate students' research and took great pride in their success after earning their UMB degree. Gordon was honored for his many service accomplishments by a UMASS Presidential Award for Service. He served as Chairperson of the Hopkinton Board of Health and in that capacity enjoyed helping with several Boston Marathons. Besides his wife, he leaves his daughters Kimberly Allen and her husband Peter, and Jennifer Thompson and her husband Sean, all of Hopkinton, as well as his granddaughter Sophia Marie Thompson of Hopkinton.



Joanne Carol Bintz (Ph.D. 2001). We lost our beloved friend Joanne to a three-year battle with breast cancer on the evening of June 28. She was 46.

Born in Schenectady, NY, to parents Lynda Colangelo and the late Arthur Bintz, Joanne was a graduate of Galway High School. She worked as a chef to put herself through college, attending both Schenectady Community College and Fulton-Montgomery Community College. Her love of the ocean led her first to the Florida Institute of Technology where she completed a bachelor of science degree in oceanography, and then to Rhode Island in 1995 where she obtained her Ph.D. in Oceanography in 2001 in the lab of Dr. Scott Nixon at the University of Rhode Island's Graduate School of Oceanography (GSO). While at GSO, Joanne became the center of an incredibly close group of friends self-labeled "The Family," who remain like sisters and brothers to this day. She had a deep love for the environment and spent the majority of her short life working to protect the fragile coastal ecosystems she was intimately connected to throughout her years as a graduate student in Rhode Island.



Joanne began her ocean science career in Washington, DC, working for the National Academy of Sciences Ocean Studies Board (OSB) from 2001-2004. OSB Director, Dr. Susan Roberts, said that "in addition to being an excellent program officer, Joanne brought a cheerfulness and good humor to her work that was greatly appreciated by her colleagues."

Joanne went on to become Program Manager for the Southeastern Universities Research Association Coastal Ocean Observing and Prediction Program for several years and most recently began a new job as the Science and Environmental Compliance Coordinator for the Ocean Observatories Initiative at the Consortium for Ocean Leadership, also in Washington, DC.

She is survived by her husband of less than a year, Thomas McCombe; her mother Lynda Colangelo and stepfather John; her brother David Bintz and his partner Barbara Burt; her grandmother Mary Jane McChesney; many aunts, uncles and cousins; an enormous group of friends; and a bluetick coonhound named Annabelle.

She was a devoted friend, sister, daughter, and wife, and had an incredible sense of humor that prevailed literally to the end. In some of Joanne's last coherent moments with us, she sat up, raised her arm and declared, "Everyone stand up and move towards the chocolate!"

Throughout Joanne's life and all through her battle with cancer, she demonstrated absolute determination, the strength and courage of a warrior, and the grace of a goddess. She taught us all what it truly means to live. Wherever she is now, we trust that she can breathe deeply and run like the wind. She feels no pain and will never know another moment of anxiety or stress. She is forever young and beautiful. She is laughing out loud and is sporting mismatched dangly earrings as she moves towards the chocolate as often as she chooses.

There are no words for how deeply she was loved, how much joy she brought to all our lives, or how much she will be missed. A celebration of her life was held at the URI GSO Mosby Center on September 11. It is with deep gratitude that we thank the URI GSO community for support of this lovely, poignant event.

CHANGE SERVICE REQUESTED

Dean David Farmer Announces Retirement

Graduate School of Oceanography Dean David Farmer has announced that he will retire as of June 30, 2011. Farmer has been dean of GSO since 2001.

Farmer received his Master's Degree from McGill University and his Ph.D. from the University of British Columbia. Subsequently, he led the coastal oceanography group at Pacific Environment Institute in Vancouver, British Columbia, and then worked as a senior scientist at the Institute of Ocean Sciences in Sidney, British Columbia, for twenty-six years until his appointment at GSO as dean.

Farmer's scientific focus has been on underwater sound and its application to ocean science (physical and biological). He also

specializes in upper ocean physics, including air-sea interaction, surface and internal waves, air-entrainment, turbulence, the interaction of stratified flow with topography, exchange through sea straits, seismic behavior of sea ice, fjord dynamics, acoustical oceanography, and the impact of sound on marine mammals.

He has published dozens of scientific papers, has served as a board member for numerous scientific organizations, and has received a number of prestigious awards.

"These have been a good ten years," said Farmer, "and I have learned much and enjoyed my time here as Dean of URI's Graduate School of Oceanography."

Upcoming Events

GSO Celebrates its 50th Anniversary in 2011



GSO Alumni and Friends of Oceanography are invited to join us June 24–26 for a special GSO 50th Anniversary Weekend.

Details for the year-long list of GSO 50th Anniversary activities at...

gso.uri.edu/gso_50

Office of Marine Programs



July 30, 2011, 1:00 p.m.

August 13, 2011, 1:00 p.m.

Free Family Beachcombing Program

Join University of Rhode Island Marine Outreach Scientists on a summer day at low tide for a two-hour beach walk. Explore Fort Getty, one of Rhode Island's unique coastal beaches. This program gives young people a special chance to have their questions answered about the plants, animals, and minerals found on the beach. These beachcombing events are free and open to the public. Pre-registration is required. To register, call the Office of Marine Programs at 401-874-6211. Groups meet at the Fort Getty beach pavilion. All children must be accompanied by an adult. <http://omp.gso.uri.edu>

July 20, 2011, 12:30 p.m.

August 3, 2011, 12:30 p.m.

Historic South Ferry Walking Tours

Relive the history of the once-thriving village of South Ferry. The tours will start from the Coastal Institute Large Conference Room on the URI Narragansett Bay Campus. The 90-minute interpretive walk, led by volunteers Wayne and Bernice Durfee of Narragansett, will include the old ferry landing, the WWI military bunkers, and the campus of the URI Graduate School of Oceanography. There will be an option at the conclusion of the walking tours to view the South Ferry Church. In addition, participants can visit the Coastal Institute Bookstore, which will remain open until 2 p.m. the day of the walk. The tour is open to the public. Pre-registration is not required. For information or directions call the Office of Marine Programs at 401-874-6211.

<http://omp.gso.uri.edu>

Friends of Oceanography

Since it was founded 25 years ago in anticipation of GSO's 25th anniversary, the Friends of Oceanography have contributed more than \$330,000 in gifts to the School's benefit. This year, with the celebration of GSO's 50th birthday under way, the Friends, rechristened the "GSO Friends of Oceanography" is off to a good start in an effort to recapture the energy and enthusiasm that marked the group's beginnings. As of the end of December, nearly 140 individuals (including couples) had made their gifts to join the Friends.

Many of these were made on the occasion of an evening kick-off event held at GSO's new Center for Ocean Science and Exploration last August, when Professor Bob Ballard and other notable GSO faculty spoke to gathered guests about their work. Other memberships in the Friends resulted when GSO Dean David Farmer issued a matching participation challenge to the GSO community.

During the course of the current academic year members of the GSO Friends of Oceanography will be invited to lectures and other events involving GSO, its faculty and its students as well as other, outside speakers. Other events are being staged with the aim of attracting new members to the group. Of special note, of course, is the formal celebration of GSO's 50th to be held on June 25th. Members of the Friends will be invited to participate in a number of activities scheduled on Friday and Saturday of that special weekend.