



September-
October 1986

NEWSLETTER

WOODS HOLE OCEANOGRAPHIC INSTITUTION

DR. JOHN ALLEN TO PRESENT KETCHUM LECTURE

Dr. John Allen, a specialist in physical oceanography from Oregon State University, will receive the third Bostwick H. Ketchum Award on October 1 at Redfield Auditorium at 4:00 pm. In conjunction with the presentation, Dr. Allen will give a talk, entitled "Large Scale Dynamics of the Coastal Ocean."

The Bostwick H. Ketchum Award is an endowed lectureship which brings an internationally-recognized scientist to Woods Hole for an annual lecture or supports a longer visit by a younger researcher on alternate years. Last year's winner was Dr. Michael N. Moore from the Institute for Marine Environmental Research in Plymouth, England. In 1984, Dr. Edward D. Goldberg of Scripps spoke on the "Informational Needs for Ocean Waste Disposal."

The award was established in 1983 as a tribute to the late Bostwick "Buck" Ketchum who passed away in 1982 at age 70. Buck Ketchum was a strong force in the development of biological oceanography in Woods Hole and a respected scientist at the international level. He was associated with WHOI for more than 40 years, retiring in 1977 as Associate Director.

1987 WALL CALENDARS NOW AVAILABLE

The 1987 WHOI wall calendar featuring full color pictures of gelatinous zooplankton is now available in the Stockroom for \$3.60 plus tax. Quantity is limited, so think now of holiday presents. Photographs in the calendar are the work of Associate Scientist Larry Madin and Research Associate Ron Gilmer of Rich Harbison's lab. The calendars are also available to the public in the Exhibit Center and the Public Information Office for \$6.95 plus tax.

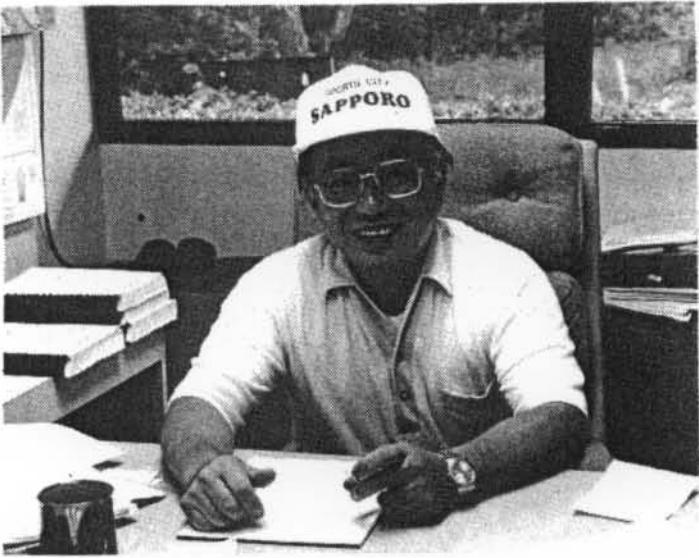


Linda Benway's granddaughter Cadence baked and decorated a WHOI picnic cake for her family and friends. More summer picnic photos on pages 8-9.

WOMEN'S COMMITTEE ADDS THREE NEW MEMBERS

Susan Kadar, Ellyn Montgomery and Laurie Murphy are the newly-elected members of the WHOI Women's Committee. They join present members Judy Kleindinst, Anne Rabushka and Margaret Sulanowska, who have completed one year in their two-year terms. Departing members are Cathy Cetta, Marge Stern and Millie Teal.

Monday, OCTOBER 13, is Columbus Day!
Enjoy the long weekend.



Sus Honjo

SUS HONJO TRAVELS HOME TO RECEIVE SCIENTIFIC AWARD

Sus Honjo, senior scientist in G&G, recently travelled to Hokkaido, Japan, to receive a special Advanced Scientific Contribution Award in the category of Space and Oceans. It was a homecoming for Sus; he grew up in Sapporo and received his doctorate from the University there. The trip was also a chance to be reunited with his family and old friends as well as meet the other honorees. Sus was in fine company -- the Humanitarian and Adventure Planning award went to Sir Edmund Hillary and the Engineering and Space award went to NASA astronaut Dr. Anna Fisher.

The awards were presented by the Government of Hokkaido and the Junior Chamber of Commerce. As part of the occasion, the honorees gave talks before an assembled audience of over 1,700 persons.

"There is a tremendous respect for oceanography in Japan," said Sus, who explained the Institution's research and education program as well as his own worldwide deep ocean research, which includes sampling in both the Arctic and Antarctic waters and the oceans in-between.

Sus reported that he followed two very impressive shows -- Sir Hillary's beautiful mountain pictures and Dr. Fisher's NASA production. Sir Hillary and Dr. Fisher spoke in English with simultaneous

Japanese translation (the auditorium was equipped with headphones at every seat), Sus decided to use his native tongue. "I used to be a smooth talker," notes Sus, "but an ex-student of mine kept a record of my mistakes -- and there were several. You have to be very careful with the Japanese language because of the many forms of speech and levels of respect. Now, I have problems with both English and Japanese," he added.

The three-day August trip included an official visit to the Governor's mansion in Hokkaido.

AGUIAR WINS RAFFLE FOR AMERICA'S CUP TRIP

Jim Aguiar, ALVIN pilot, is the winner of an all-expense paid trip to Australia to view the America's Cup Races with the WHOI Associates in January 1987.

Traditionally, WHOI Associates have been invited to view the America's Cup races from WHOI research vessels or special charter boats. But these arrangements were offered when the races were relatively "next door" in Newport, R.I.

The loss of the Cup to Australia in 1983 produced a change in venue, and the WHOI fleet was obviously unable to make this extended trip. The Associates Program, wishing to maintain the longtime tradition, arranged with a travel agency to prepare an itinerary that will take participants to the 1987 races off the coast of Freemantle, Australia.

The drawing was held on Friday, September 5. During the preceding week employees had been depositing entry forms at the Development Office, and ships' crews had been contacted via telemail (all shipboard personnel interested in entering the contest had their cards filled out by the Port Office). From the more than 280 entries, WHOI Director John Steele drew Jim Aguiar's card first. Then, runners-up were picked in the event that Jim is unable to make the trip (rules for the raffle stated that the prize is non-transferrable and not redeemable). First runner-up is Julie Allen, research assistant in G&G, and second runner up is A. D. Colburn III, third mate on A-II.



Mr. John Steele picks the winner of the America's Cup trip raffle. Paul Dudley Hart looks on. Photo by Shelley Lauzon.

Jim reports that it took a little while for it to sink in that he had won. "Captain Baker had a stack of radio messages in his hand -- I thought it was a joke and that all of the notes would say the same thing." He noted that there had only been about a 24-hour turnaround from when he had submitted his name to his hearing of the win. "I had just come out of the submarine -- about 15 minutes after perfect day's dive," he added. "The news was the perfect ending to a perfect day."

Ralph Hollis, chief pilot, has informed Jim that there will be no problem with his getting the days off, and Jim will be able to rejoin A-II and ALVIN in San Diego for the continuation of the 1987 voyage into the Pacific after the Australia trip. "You can't believe how excited I am," says Jim. "I've never been to that part of the world before. My thanks to the Associates Program for this opportunity."

The 17-day trip includes first class hotel accommodations in Bora Bora, Papeete, Sydney and Perth, meals in Tahiti, round-trip air fare from Boston to Perth and all transfers, and spectator boat tickets for four America's Cup races. Optional packages include tours of the Great Barrier Reef and New Zealand.

Congratulations, Jim! Enjoy your trip to the "land down under."

IN MEMORIAM

The Institution notes with sorrow the death of Dr. G. Thanikaimoni of the Institut Francais de Pondicherry, India, from injuries sustained during the attempted airplane hijacking in Karachi, Pakistan. Dr. Thanikaimoni was on his way to Woods Hole to attend the second International Conference on Paleoceanography, held during the week of September 7. His research projects had included studies of the ecology of mangrove swamps.

PALEOCEANOGRAPHY CONFERENCE HELD HERE

The second International Paleoceanography conference was held in Woods Hole from September 6 through 13 and attracted over 325 scientists from some 24 countries. Nations represented included West Germany, England, France, Norway, Japan, Canada, China, Switzerland, Italy, Sweden, the Netherlands, Austria, Israel, Venezuela, India, Saudi Arabia, Colombia, Hungary, Belgium, Brazil, Australia, Denmark, Indonesia and South Africa.

Workshops, symposiums and informal discussion allowed participants to catch up on work in progress and meet with their colleagues on a personal basis. Paleoceanography, a relatively young field, looks at the history of the oceans over the past several hundreds of millions of years.

The conference was sponsored by the International Union of Geological Sciences, the Commission for Marine Geology, the International Commission for the Lithosphere, the Scientific Committee for Oceanic Research and UNESCO's Division of Marine Science. The organizing committee for this year's meeting consisted of Bill Berggren (President), Sus Honjo (Vice President), Emily Evans (Secretary-Treasurer) and Anne Edwards (Coordinator). Other WHOI personnel serving on the committee were Marie Aubry-Berggren, William Curry, Glenn Jones, Lloyd Keigwin, David Lazarus, Dorinda Ostermann, Kozo Takahashi and Brian Tucholke.

NEWSLETTER NOTICES - Send items of interest to the oceanographic community to Anne Rabushka, editor, Co-op, ext. 2271.

Calendar of Events

CPR/LIFE SUPPORT CLASS IN OCTOBER

Anyone interested in attending the CPR/Life Support Class, October 7, 9 and 14, should contact the WHOI Safety Office, ext. 2242. The afternoon-long classes meet in Redfield Auditorium at 1:00 pm.

COASTWEEK FILMS AT W.H. LIBRARY

As part of the state-wide celebration of Coastweek, the Woods Hole Library will show three short films on Wednesday, October 1, starting at 7:15 pm. They are Between the Tides (22 minutes, color, 1958), a look at life in British coastal waters -- Winner at the Venice and Cork film festivals; Secrets of the Underwater World (16 minutes, color, 1961), a Disney film which describes unusual creatures in the tidal fringe; and Sea Sorcery (15 minutes, color, 1970), scuba diving impressions.

WHOI GOLF CLASSIC SCHEDULED FOR OCT. 18

The biannual WHOI Golf Classic Tournament will be held at the Otis Golf Course on Saturday, October 18, at 12:30 pm. Golfers of all abilities are welcome to participate.

The Hollywood Scramble tournament format will again be used. This type of tournament gives everyone a chance to contribute to his or her team. Scramble rules require that entrants be assigned to a four-person team as one of four categories of player (A, B, C or D) depending on handicap ("A" players having the lowest handicap). Each player hits from the tee; the best shot is selected and all players hit again from that spot and so on until the ball is in the hole. Prizes will be awarded to the top three teams, the worst team, closest to the pin and the longest drive on two holes.

The entry fee is \$15 (\$6 for club members) and includes refreshments and snacks. Participation will be limited to the first 40 paid entrants. For more information and registration forms, contact Dave Kulis, ext. 2566, or Mary Ann Lucas, ext. 2506.

WHOI WIVES' COFFEE SOCIALS SET

The first of the season's WHOI wives' coffee/doughnut socials will meet on Tuesday, October 14, from 10:00 to 11:30 am in the Fanno House livingroom. All wives, guests, friends and children are welcome to attend. This is a great way to meet new friends and find out what people are doing in the community.

Meetings will be held on the second Tuesday of each month through May (except November -- a Wednesday meeting will be held because of the holiday). The dates are: Oct. 14, Nov. 12, Dec. 9, Jan. 13, Feb. 10, Mar. 10, April 14 and May 12.

For more information, contact: Marge Frisk, 563-5308; Bev Chapman, 548-3438; or Karen Dacey, 540-7419.

MIT/WHOI SHUTTLE SCHEDULE ANNOUNCED

A regular shuttle will run between WHOI and MIT this semester, terminating on the last day of classes (December 11) and resuming again on February 3, 1987. On Monday, Wednesday and Friday the shuttle will leave Woods Hole (Smith Building) at 7:00 am and return (from MIT East Garage) as determined by the student riders. On Tuesday and Thursday a student-driven WHOI station wagon will leave Smith Lab at 7:00 am. David Delonga and Hagen Schempf are coordinating this effort. Also on Tuesday and Thursday, a commercial bus will leave the MIT East Garage at 8:30 am, arriving in Woods Hole at about 10:30. It will leave Redfield Lab at 4:15 and Clark Lab at 4:30 pm.

MIT/WHOI Joint Program students have priority on the shuttles; however, if space is available, other WHOI personnel may use the vehicles. Shuttle drivers will pick up and deliver packages of reasonable weight and size to the MIT campus and surrounding area. If you need this service, leave your package at the Smith Lobby (labeled "MIT SHUTTLE DRIVER," with delivery instructions clearly written on the outside of the package). If you would like something picked up in the Boston area, call the Education Office and they will make arrangements with the driver.

1985/1986 MIT/WHOI JOINT PROGRAM GRADUATES

PETER J. STEIN, Oceanographic Engineering
"Acoustic monopole in a floating ice plate."

June 1986

MIT/WHOI DOCTOR OF PHILOSOPHY

PATRICIA M. BIESIOT, Biological Ocean.

"Changes in midgut gland morphology and digestive enzyme activities associated with development in early stages of the American lobster Homarus americanus."

BRUCE J. BROWNAWELL, Chemical Oceanography

"The role of colloidal organic matter in the marine geochemistry of PCBs."

JOSHUA K. HOYT, Oceanographic Engineering

"The Flying Fish, an untethered oceanographic sensor platform with acoustic homing capability."

MIT/WHOI DOCTOR OF SCIENCE

YEHUDA AGNON, Oceanographic Engineering

"Nonlinear diffraction of ocean gravity waves."

MICHAEL S. BRUNO, Oceanographic Engineering

"A coupled hydrodynamic and ice floe movement model."

JOHN J. POLCARI, Oceanographic Engineering

"Acoustic mode coherence in the Arctic Ocean."

STEPHEN A. SWIFT, Marine Geology

"Cenozoic geology of the continental slope and rise off western Nova Scotia."

MIT/WHOI DOCTOR OF SCIENCE

MICHAEL S. WENGROVITZ, Ocean. Engineering

"The Hilbert-Hankel Transform and its application to shallow water."

September 1985

MIT/WHOI DOCTOR OF PHILOSOPHY

JEREMY S. COLLIE, Biological Oceanography

"Feeding habits of the yellowtail flounder and production of its invertebrate prey on Georges Bank."

MIT/WHOI DOCTOR OF SCIENCE

CHING-SANG CHIU, Oceanographic Engineering

"Estimation of planetary wave parameters from the data of the 1981 Ocean Acoustic Tomography Experiment."

DEGREE STATISTICS through June 1986

WHOI	Ph.D.	3
MIT/WHOI	Ph.D.	149
MIT/WHOI	Sc.D.	19
MIT/WHOI	Engineer	21
TOTAL:		192

February 1986

MIT/WHOI DOCTOR OF PHILOSOPHY

VERNON L. ASPER, Marine Geology

"Accelerated settling of particulate matter by 'marine snow' aggregates."

BRIAN J. BINDER, Biological Oceanography

"The physiology of dormancy and germination in cysts of the marine dinoflagellate Scrippsiella trochoidea."

BORIS MORO, Physical Oceanography

"Analysis of certain inviscid flows on the beta-plane."

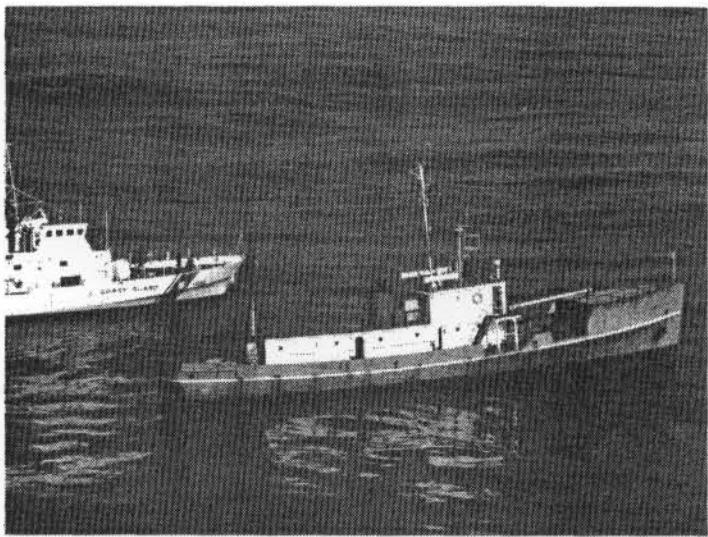
ARTHUR J. SPIVACK, Chemical Oceanography

"Boron isotope geochemistry."

LATEX TYPESETTING CLASS SET FOR OCT. 20

WHOI will host a week-long class on LaTeX typesetting software during the week of October 20 in Fenno House. In order to provide hands-on training, terminals or microcomputers are needed for each participant. At this time, 12 people are enrolled in the class, and the number could grow to 20.

IPCL can provide some of the machines, but not all. If you have a machine you would be willing to loan to the class (IBM-PC/AT, IBM-PC/XT or compatible with 512K and at least 1 megabyte of disk storage), please call Chris Lynch at ext. 2417. Your assistance will be greatly appreciated.



COAST GUARD BOARDS FORMER RESEARCH VESSEL

During routine patrol of waters northeast of Miami this summer, a Coast Guard cutter stopped the 125-foot SUN BIRD.

Upon boarding, the Coast Guard crew found a slight etching of the name CRAWFORD (C A ORD) on the transom, signs of the name on the life rings, and a plaque about CRAWFORD's origin on one of its bulkheads. They also found 40,000 pounds of marijuana worth \$17.6 million. The 14 crew members were arrested.

CRAWFORD served the Coast Guard from 1927 to 1947 on the Great Lakes and in the tropics during World War II. She was transferred to WHOI in 1956 and converted for research, making 2,600 hydrographic stations and 17,000 bathymetric observations on 175 cruises. She carried a crew of 17 and 9 scientists. R/V CRAWFORD was laid up in 1968 and purchased by the University of Puerto Rico in 1970.

OCEANOGRAPHIC SHIP NOTES: A-II/ALVIN LEAVE FOR EXTENDED PACIFIC TOUR

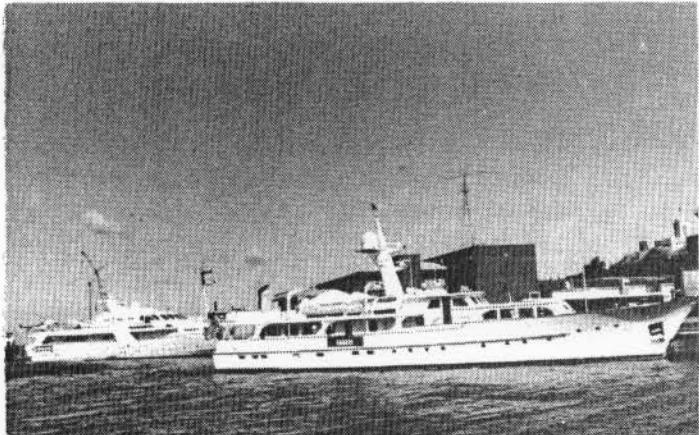
ATLANTIS II and ALVIN departed Woods Hole on September 20 for the start of extended Voyage #118. If the present schedule is followed, the ship and sub will probably not be seen in Woods Hole for two to two-and-a-half years.

Over the course of the next year, A-II and ALVIN will be travelling across the Pacific to Hawaii and continuing on

into the western Pacific. On their way to the Pacific, the vessels will be working along the eastern seaboard and in the Gulf of Mexico. This first 19-day leg will take A-II and ALVIN to Charleston, South Carolina. During the course of this leg, 14 ALVIN dives will be made in the Wilmington Canyon to study the geological dynamics of a canyon system. The vessels are due to arrive in Charleston on October 7.

OCEANUS returned from Voyage #179 on September 22 after a one-week cruise to the Gulf of Maine for the Harbor Branch Oceanographic Institution. Studies were done on the composition and distribution of particulate matter in the water column and near the ocean floor. OCEANUS is not scheduled to return to sea duty until the December 29 three-day geophysics cruise.

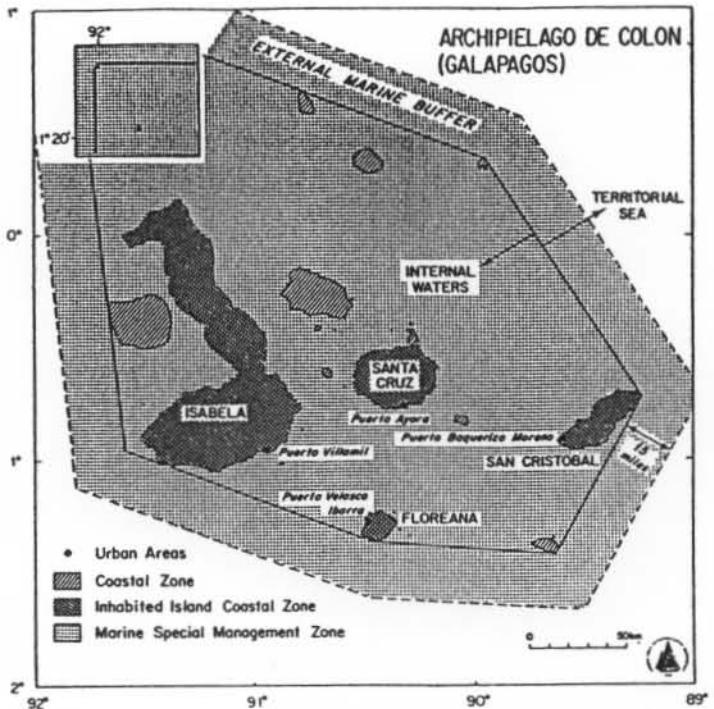
KNORR returned to Woods Hole on September 18 and returned to sea on September 25 for three days. Both voyages were for the High Energy Benthic Boundary Layer Experiment (HEBBLE) Sea Duct tests. KNORR will remain in Woods Hole through the end of the year.



WHOI's new research fleet? During the summer, WHOI's dock hosted several luxury yachts too large for other Falmouth facilities. Here, the EMPRESS SUBARU with helicopter, automobile (Subaru, of course) and power boat on board competes with the CASSAIR (owned by the Mellon family) for the attention of local sightseers.

CAPE COD MARATHON TO BE HELD NOV. 16

The annual Cape Cod Marathon will be held this year on November 16. Anyone interested in running or assisting with the day's events should contact Nan Weiss at ext. 2392. Volunteers are needed at the water stations and finish line.



MARINE POLICY EFFORTS SPEED ESTABLISHMENT OF GALAPAGOS MARINE RESERVE

Due in part to the efforts of WHOI's Marine Policy Center, a 15-nautical-mile area around the Galapagos Archipelago has been designated a protected marine resource reserve. The legislation was signed into law recently by the President of Ecuador. The Presidential Act adds an additional 50,000 square kilometers (19,000 square miles) to the 8,000 square kilometers of land (3,000 square miles) already protected by National Park status.

WHOI's Marine Policy Center has been actively studying the potential effects of development on the ecological and economic well-being of the island chain. Among those projects was a study of tourism and diving programs undertaken by Center Director Jim Broadus, Diving Safety Officer Terry Rioux and Library Staff Assistant and experienced diver Margaret Rioux..

"Diving in the Galapagos requires advanced diving skills," says Terry, indicating dangers from strong surges, the vertical topography, and large forms of marine life (moray eels and sharks are common). A full wet suit is needed, and most diving is done from boats in off-shore areas.

"At this time, diving is still rather infrequent. But as more tour groups

are established and more tourists explore the marine reserve, diving safety facilities will have to be improved," he said. He noted that only a few oxygen units are available on boats and that evacuation to a decompression chamber requires at least 24 hours. "To date, no tourists have died, although several local lobster divers have suffered accidents."

Even with inherent problems, diving in the Galapagos offers great attraction to the sport diver, according to Terry. The picture-perfect geological settings and unique biological species are the lures for an ever-growing industry.

Not only do the Galapagos Islands host unique land species (i.e., giant tortoises, northernmost-living penguins, iguanas), but the marine environment shows a similar trend in species evolution. A large number of the marine algae, bivalves, gastropods and fish are endemic. In addition to the "native" species, the waters around the islands host species from the eastern and western tropical Pacific along with species from the icy waters of the southern Pacific.

The results of the tourism study, with a section on diving programs and safety aspects, will be released in a WHOI blue cover report soon.



The WHOI Easter Seals Softball Marathon team not only won its game against Christmas Tree Shops (final score 16-4), but raised the most money of any team in the contest (\$860.55). Members of the team were: (first row, left to right) Laurie Murphy (team captain), Cheryl Daniels, Tom Robertson, Anson Moore, Debbie Mareenna, Chucky Pacheco; (second row, left to right) David Fish III, David Fish, Jr., Debbie Dean, Dave Daniels, Pam Vidal, Rick Murphy and Bruce Lancaster.



Dionne Willis and Tom Ellis of WNEV-TV (Channel 7) in Boston gave their six and eleven o'clock broadcasts from the roof of the Iselin Building during their July 18-20 stay in Woods Hole. A tent helped to shelter them from the elements.

Jeff Latham from TV-10 in Providence interviewed Dave Aubrey for a multi-part series on oceanography in July.

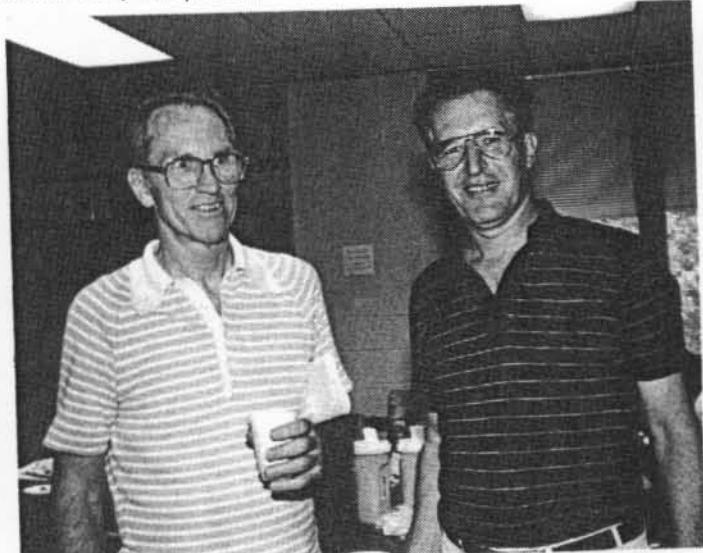


SCENES FROM THE SUMMER OF '86
photos by Anne Rabushka



Bobby Weeks and Holger Jannasch dressed up for a reception hosted by Channel 7 at Clark. The television station sponsored the cocktail party to thank individuals who helped with their "Celebrate New England" series. Holger was one of the "celebrities" interviewed and Bobby helped with logistics.

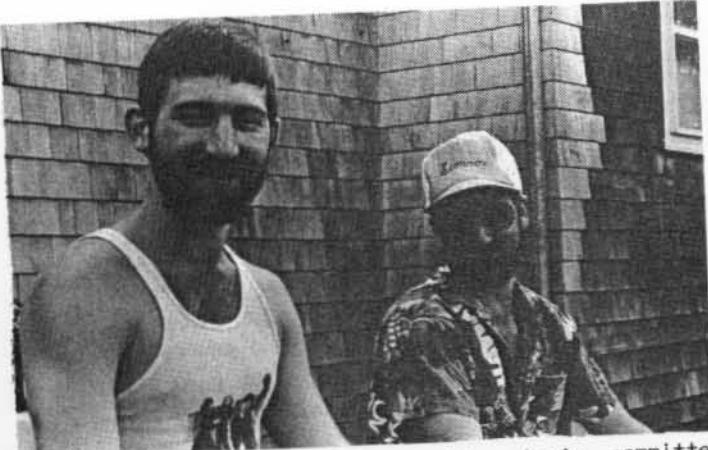
Jim Heirtzler and Dave Ross at Jim's going away party on August 22. Jim is now working for the geophysics branch of NASA's Goddard Space Flight Center in Greenbelt, Maryland.



Dr. Robert Ballard receives a painting of the TITANIC from Titanic Historical Society secretary and co-founder Ed Kamuda at a ceremony in Woods Hole July 28.



Kozo Takahashi's daughter Sarah joined the horse crowd near Clark and went for a pony ride at the Employee Picnic August 24.



Erik Zettler and Arthur Newhall, picnic committee members, poured the beer for the thirsty crowd.

The Chemistry Table -- Bob and Susan Gagosian with son Alex meet with Peter Brewer.



A chip off the old block...Steve Boyd and daughter Rachel.



WHOI's clown for all seasons, Victor Fontana, entertained young and old alike.



THE FASINEX FIELD PROGRAM

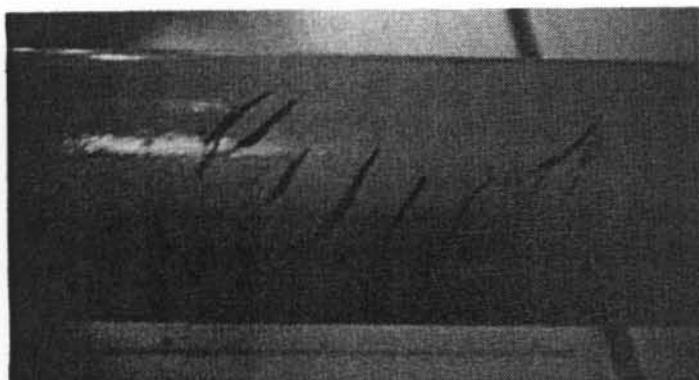
by Nancy Pennington, P.O.

The recently completed field work of the Frontal Air-Sea Interaction Experiment (FASINEX) was a cooperative effort planned and carried out by oceanographers and meteorologists to study the associated two-way interaction between the ocean and the atmosphere in the vicinity of an oceanic frontal feature. By better understanding this interaction, scientists may eventually be able to develop more accurate long-range weather forecasts.

The scope of the project is vast, with measurements made from buoys, ships, aircraft and spacecraft. The spatial scales selected for study have never before been examined in such detail.

Bob Weller, associate scientist in P.O., was the overall project coordinator as well as oceanographic coordinator. Steve Stage from Florida State University coordinated the meteorological program and Carl Friehe of the University of California at Irvine handled coordination of the six aircraft.

FASINEX began in January 1986 and ended in June 1986. During the six-month experiment, 11 moorings were on station southwest of Bermuda in the Subtropical Convergence Zone where sea surface temperature fronts are common. Five surface moorings instrumented with meteorological recorders and current meters and four Profiling Current Meter (PCM) moorings made up the central array at 27°N, 70°W. Two subsurface moorings, north and south outliers, were set by Ken Brink to gather data for a two-year period concluding with the FASINEX time period.



Shark teeth marks decorate this current meter set out during the FASINEX project. Photo by Nancy Pennington.



Bob Weller discussed his recently completed field work on the FASINEX project for the TV-10 science report.

KNORR Voyage #119, the first FASINEX cruise, located a strong frontal feature, mapped the front with an extensive XBT survey and then set the central array moorings during the first month of the experiment. Peter Cornillon of URI used the ATS system and NEARSS (New England Area Regional Satellite System) computer to acquire and process AVHRR (Advanced Very High Resolution Radiometer) satellite imagery of the sea surface temperature on board KNORR. A strong frontal feature was located, and throughout the cruise, images were used to monitor the front. Additional measurements were made with the Real Time Profiler (RTP), Vertical Current Meters (VCMs), XBTs and CTDs.

Phase Two began with the transfer of the KNORR science party to OCEANUS in early February in Bermuda. Along with URI's ENDEAVOR, OCEANUS returned to the FASINEX area to spend the next month working in the region of the front with meteorologists and oceanographers on board both ships. Charlie Eriksen of MIT coordinated the joint ship and aircraft work from an office at the Bermuda Biological Station. Communications were maintained through the ATS system and aided by Paul Eden at the ATS station in Florida. Frequent communication allowed the ships and aircraft to position themselves for meteorological or oceanographic surveys and review daily results.

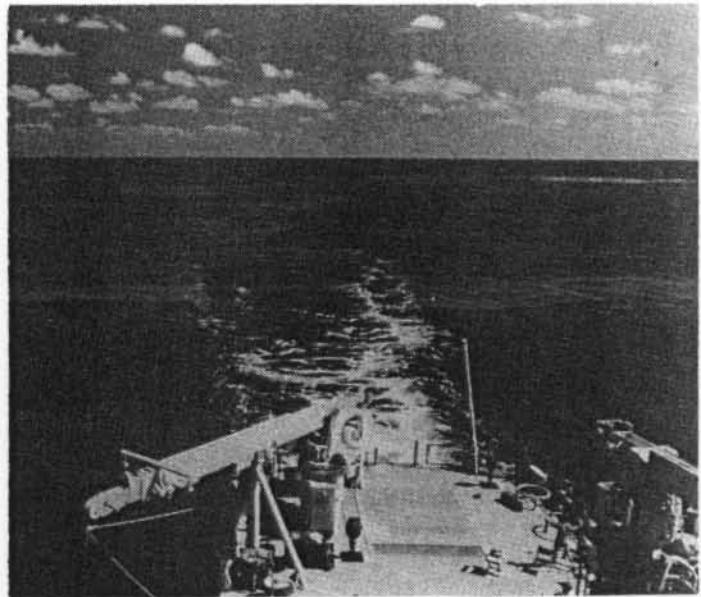
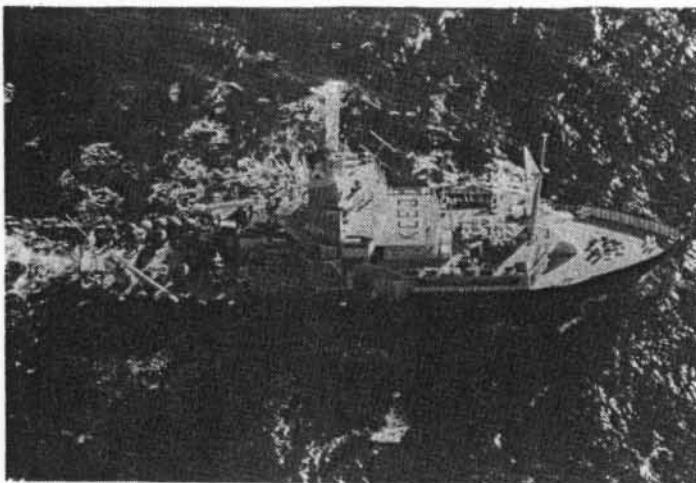
Eight scientists were on OCEANUS and ENDEAVOR. The oceanographers were R.

Pollard (IOS), L. Regier (SIO), R. Weller, R. Schmitt and J. Toole (WHOI) and N. Oakey (BIO). The meteorologists were W. Large (NCAR) and K. Davidson (NPGS). The two ships met three times during the month-long cruise, twice to transfer gear from one ship to the other, and once to allow for a scientific meeting to discuss the completed work and to plan experiments in the remaining ship time.

The six aircraft that flew during the intensive scientific period (Phase Two - mid-February to mid-March) were the NRL P3, NASA C130, NCAR Electra, NASA P3, NOAA P3 and NASA Electra. The aircraft flew a total of 41 missions covering 17 different days. The most complicated patterns consisted of five aircraft flying a stacked pattern boxing in the frontal area. Summaries received from the flight scientists report successful missions with data gathered under many different meteorological conditions.

KNORR Voyage #123, the final cruise of the project, returned to the FASINEX area in June to recover the moorings and do final survey work. The cruise began with a southwest run to locate and pick up one of the surface buoys that broke free and traveled 215 miles to the southwest in 27 days. (The five surface buoys were equipped with ARGOS transmitters; position and data were telemetered to monitor the meteorological conditions at the site. This system made it possible to track the buoy after it broke free.) The remainder

Meteorological and oceanographic equipment crowds KNORR's stern as she heads to the study site.



KNORR passes through a slick associated with a frontal zone. Photo by Nancy Pennington.

of the cruise consisted of the recovery of 9 of the 10 remaining moorings, RTP, CTD, VCM and XBT surveys.

One PCM recovery added some excitement to the cruise when the guide wire which supported the instrument parted and the PCM dropped free back into the water. Since the PCM is neutrally buoyant for only one hour out of four, it was feared that the instrument and all of its internally recorded data would be lost. Luckily, crew member Larry Costello spotted it sitting just below the sea's surface more than 500 meters from the ship. Bosun Jerry Cotter quickly launched the Zodiac with Scott Worrillow and Roger Hunt, and, as in most tension-filled chase scenes, the outboard motor started acting up. Nevertheless, they reached the PCM and secured it. The zodiac returned to the ship and the PCM was lifted back on board in a cargo net within 19 minutes of the initial sighting.

Another PCM mooring could not be located by acoustic interrogation. Because of the heavy ship traffic in the area, including long-line fishing boats, the assumption was drawn that PCM-4 might have been dragged from its anchor position by a long-liner. It was given up as lost.

KNORR returned to port on June 25, concluding the highly successful field work for FASINEX.

TELEPHONE TIPS

This article is the last in a three-part series outlining the special features of the Dimension Telephone System. Part I, in the May 1986 issue of the Newsletter, explained "Call Transfer," "Threeway Conversation" and "Conference Calls." Part II, in the June issue, covered "Call Forwarding -- All Calls" and "Call Forwarding -- Busy/Don't Answer."

The Dimension System also provides "Call Hold," "Call Pick Up" and "Call Waiting Signal" features.

Call Hold

This feature allows you to place a call on hold without using a red "Hold" button. This feature comes in handy when you wish to consult privately with a third party, alternate between two parties on hold, or if you have a call on the line and you wish to activate another feature without disconnecting the call.

1. Depress the switchhook and listen for the recall dial tone.

2. Dial the "Call Hold" code *4. You will hear the dial tone for a short time, followed by silence.

If you wish to activate another feature or dial a third party, dial the number as soon as you hear the dial tone. If you wish to look up records or consult with someone physically present, just lay the handset down. DO NOT hang up.

To return to your held call:

1. Hang up.
2. Wait for your phone to ring.
3. Answer and resume conversation.

To use "Call Hold" to alternate between two calls:

1. Depress the switchhook. Listen for recall dial tone.

2. Dial code *4. Listen for dial tone. Party A is held.

3. Dial party B.

Now, if you wish to hold Party B and return to Party A:

1. Depress the switchhook.

2. Dial *4. Party B is held and Party A is back on the line.

You may continue to alternate between the two parties in this manner

indefinitely but you can only have one party on hold at a time. If you wish to terminate with either party at any time and resume conversation with the remaining party:

1. Hang up.
2. Your phone will ring.
3. Answer and resume conversation.

You cannot hang up to "Transfer" a call or depress the switchhook to form a "Threeway Conversation" after you have used "Call Hold." You must return to your held call first and then follow the procedures for "Transfer" or "Threeway Conversation."

Call Pick Up

This feature allows you to answer a ringing phone whether or not you are presently using your phone. The ringing phone must be in your "Call Pick Up Group."

To use "Call Pick Up" when your phone is idle:

1. Lift your handset and dial the "Call Pick Up" code *7. The call is immediately directed to your phone.

Begin conversation.

To first hold a call and then use "Call Pick Up:"

1. Depress the switchhook.
2. Dial the "Call Hold" code *4.
3. Dial the "Call Pick Up" code *7.
4. Begin conversation.

5. Hang up and return to held call.

If you hear a siren tone or fast busy tone at Step 3, hang up to return to your held call. The siren means you cannot pick up calls to that phone, the caller has hung up or the call has already been answered. The fast busy tone means another feature has been activated on that phone which temporarily prohibits your picking up the call.

Once you pick up a call, you can handle it like any other call to your phone, and you can use the feature even if you have "Call Forwarding" in effect.

It is not absolutely necessary that you dial the "Call Hold" code to hold a call when using "Call Pick Up." You can eliminate this step and just dial the "Call Pick Up" code after depressing the switch-

hook. This is a shortcut method that will automatically put your first call on hold. However, in this case you must be careful in getting back to your held call. If you do not actually reach the call you are trying to pick up, you must depress the switchhook to return to your held call. If the call is successfully picked up, however, then you can hang up as usual to return to your held call.

Call Waiting Signal (To Answer)

This feature gives you a signal any time someone calls you when you are talking on the phone. The type of call that is waiting is indicated by the kind of "Call Waiting" signal you receive:

One soft beep ----- Internal Call

Two soft beeps ---- Outside Call

Three soft beeps -- Priority Call

(A Priority Call indicates to the busy party being called that an important message is waiting to come through. If the line you are calling is busy, try again, but this time dial *1, listen for the dial tone, then dial the extension you wish to reach.)

To end your present call and answer the waiting call:

1. Hang up.

2. Your telephone will ring.

3. Answer and begin conversation with waiting caller.

To hold your present call and answer the waiting call:

1. Depress the switchhook. Listen for recall dial tone.

2. Dial the "Call Hold" code *4. Listen for dial tone.

3. Dial the "Answer Call Waiting" code *9.

4. Begin conversation with waiting caller.

5. Hang up and return to held call.

6. Answer and resume conversation.

(A siren tone at Step 3 means the waiting caller has hung up. Hang up and return to your held call.)

A shortcut method eliminates step 2. Depress switchhook. Dial code *9. Begin conversation. If you do not reach the waiting call, however, you must now depress the switchhook to return to your held call. If the call connects, all you have to do is hang up to return to the held call.

After you have answered the waiting call, you may hold the waiting call and return to your held call:

1. Depress the switchhook.

2. Dial *4.

3. Resume conversation.

(You can alternate back and forth between the two parties by repeating steps 1-3.)

Only one call at a time can wait on the line and the call waiting signals occur only once and are not repeated. When you receive a Call Waiting signal, the party you are talking to does not hear the beeps. The party who sends the Call Waiting signal does not hear a busy tone. Instead, they hear a form of ringing tone called Special Audible Ringing (a regular ringing tone but with a beep at the end of each ring).

A waiting call can only be answered at the phone that receives the Call Waiting Signal. However, it will not be heard if the calls "hunt" to another phone when your line is busy or you have Call Forwarding in effect or you have a call on hold.

For more information on the Dimension System or further clarification on any of these or other features, contact Linda Benway, ext. 2251.

ASSOCIATES AID PUBLIC INFORMATION OFFICE THROUGH BUSY SUMMER SEASON

A new volunteer program staffed by Associates has allowed the Public Information Office to keep the Exhibit Center and the special TITANIC display open seven days a week throughout the summer and into September. This greatly needed and appreciated service provided the Institution with high visibility during the busy summer tourist season.

This year, over 25,000 visitors stopped at Endeavour House to view the exhibits -- a jump from the 1985 figure of approximately 10,000.

Associates also lent a hand in the Public Information Office during the hectic TITANIC days -- spending many hours assembling press packages and answering a constant flow of phone calls.

Our thanks to all those reliable and industrious volunteers. We look forward to working with you again next year.

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J. Teal



Scott C. Doney
J. P. Student
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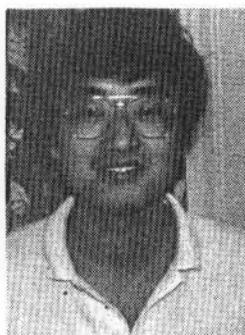
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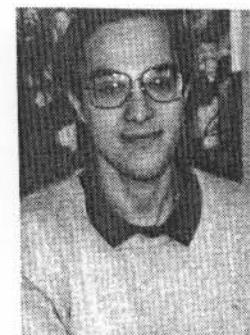
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HURRICANE GLORIA continued from page 16 of tropical air, but at about 1100 E.S.T. the temperature suddenly dropped about 4°F and rain began (but lasted less than an hour). At the same time, wind gusts increased to 40 mph at 5 feet above the ground under large trees in front of my home; gusts reportedly exceeded 80 and even 90 mph for an hour or less in more exposed areas of Woods Hole and Quissett.

The interpretation is that a cold front from the north intercepted and under-thrust the hurricane, lifting the tropical air so that the lowest pressures and the fastest winds were so far above ground level that damage was greatly reduced.

Water damage also was diminished by the fact that the storm surge from Vineyard Sound came at the time of predicted low tide. Because of the relatively low wind speed, the surge was only about 4 feet, just 2 feet above normal high tide. The surge was preceded at about 0600 E.S.T. by lower than predicted sea level, because the winds prior to the storm blew the water away from the shore before reversing to force water back again.

After the hurricane passed and winds calmed, a second surge at about 2200 E.S.T. occurred in the form of a seiche reflected from the south side of Vineyard Sound.

Perhaps the major legacy from Hurricane Gloria is that new residents of Cape Cod may underestimate future hurricanes, not realizing how fortuitous was this hurricane's interception by a cold front three hours before the eye arrived at the shore and that the arrival happened at low tide.

MBL NAMES NEW DIRECTOR

J. Richard Whittaker has been appointed to a ten-month term as director pro tem of the Marine Biological Laboratory effective November 1. He replaces Dr. Paul Gross who is moving to the University of Virginia as Vice President and Provost. Dr. Gross will continue to serve as President of the MBL Board of Trustees.

Dr. Whittaker, director of the Laboratory of Developmental Genetics, has been a member of the MBL Corporation since 1971 and Board of Trustees since 1978.



K. O. Emery

WHOI SCIENTIST LOOKS AT LOCAL HURRICANES

New England hurricanes of the past few seasons have generally fizzled -- reduced to wind and/or rain storms less active than the local media coverage. But these lucky circumstances may be lulling the population to the dangers of a major storm.

"You can't get complacent," says K.O. Emery, senior scientist and student of hurricanes. "The storms of 1938, '44 and '54 did quite a lot of damage to the Cape, but most people now in the area didn't experience them," he adds.

The September/October time period is the heart of the hurricane season which runs from late-June through November. K.O. reports that most early season hurricanes form at low latitudes (10° - 20° N) in the western Caribbean Sea and are usually weak and short-lived. Mid-season hurricanes form at higher latitudes (15° - 25° N), nearer Cape Verde than the Caribbean, and are intense, long-lived and have long paths. Late season hurricanes are similar to early season storms. Like ocean currents, hurricanes and tropical storms are concentrated on the western sides of oceans.

K.O.'s research into coastal ponds has shown that a geological record of hurricanes is produced when storm-driven sand is deposited in inland ponds. Radiocarbon dating can be done on organic silts embedded in these thin sand layers. Experiments in Oyster Pond have shown that the Cape has been periodically hit by major hurricanes over the ages.

K.O.'s hurricane experience includes a 1965 storm at sea and several typhoons in the Pacific. The following is a study he did of 1985's Hurricane Gloria.

HURRICANE GLORIA

by K. O. Emery

After many days of tracking by airplanes and satellites, Hurricane Gloria arrived off southern Massachusetts during the early afternoon of 27 September 1985. The large size and very high wind speeds reported en route gave rise to dire predictions about expected losses to life and property, but the actual relative mildness of the storm produced some belief that expected damage was overpredicted. As a matter of curiosity, the author measured barometric pressure, air temperature, rainfall, wind speed and wind direction using simple equipment at his home at the head of Oyster Pond in Quissett. Checks were made against pressures recorded at WHOI, whose recorded sea levels also were supplied by custodian Dorothy Rogers. Results are shown on the accompanying diagram.

Lowest air pressure, at about 1430 E.S.T., was only about 29.50 inches of mercury (999 millibars), far higher than expected and higher than pressures measured during previous days (to 27.7 inches) when the eye was at sea and farther south. Air temperatures increased to 72° F as the hurricane approached because it consisted

continued on page 15

