



NEWSLETTER

Volume 15

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★ ★ ★ OCEANOGRAPHIC SHIP NOTES ★ ★ ★

CHAIN is continuing her Southlant cruise currently working off of South Africa, and KNORR and ATLANTIS II will both be heading back to sea at the end of January following their month in home port for standard maintenance.

KNORR is scheduled for a January 25 departure for studies of circulation through the Windward Passage into the Caribbean, a survey of water types in the Windward Passage, and a hydrographic section from Puerto Rico to Venezuela as part of a continuing water survey program. Large volume



On ATLANTIS II Voyage 78, Leg III, last November, Captain Herbert Babbitt offers assistance to the Hegira, which had run into heavy weather and mechanical trouble. The rescue mission consisted of providing a battery so the Hegira could continue on her journey from Key West to San Juan.

water samples for chemical analysis will also be taken on the six-week cruise.

ATLANTIS II is scheduled for a February 1 departure for a week's work in the northwest Atlantic to determine the distribution of polychlorobiphenyls in the shelf and deep waters. Gravity cores, water sample profiles, bottom trawling, plankton catching, STD deployments, and water collection are all scheduled for the cruise.

COOPERATIVE PROGRAM BEGINS WITH HARBOR BRANCH FOUNDATION

Several cooperative programs are being initiated this winter between the Oceanographic, the Smithsonian Institution, and the Harbor Branch Foundation at Linkport near Ft. Pierce, Florida. The warm winter location of the Harbor Branch Foundation laboratory offers expansion possibilities for some scientific work through longer periods of each year.

The research includes investigations in marine and littoral pollution using submersibles and the engineering design and development of submersible and semi-submersible systems. John Teal is the scientific leader for the Woods Hole work. Funding is in part from the Atlantic Foundation.

As part of the cooperative program, the GOSNOLD is spending a year in Florida on assignment to the Foundation, and she has been on several cruises for Smithsonian Institution-sponsored work.

LULU and ALVIN are also working out of Linkport this winter. Current emphasis includes establishment of a bottom station similar to the one located south of Woods Hole so that comparison can be made of the biology and geology in different areas of the North Atlantic and work can continue throughout the year. It is hoped eventually to establish additional bottom stations at 300 meters and perhaps 3,000 meters.

A pilot plant aquaculture experiment of about the same scope as that in operation on the Woods Hole dock last summer is being

set up at the Harbor Branch Foundation laboratory. One object is to see if milder winters will permit year-round operation without heating water. There will also be experimentation with some new kinds of food chains which may prove more successful in Florida.

NEW STAFF COMMITTEE MEMBERS ELECTED

New Staff Committee members elected for 1974 are Betty Bunce, Gary Metcalf, Tom Sanford, and Freddie Valois.

Those continuing their two-year terms through 1974 are Vaughan Bowen, Jim Gifford, Charlie Hollister, and Red Wright. Retiring members are Tom Aldrich, Barrie Dale, Bob Heinmiller, and Bill Simmons.

A total of 253 - of a possible 400 - members of the electorate cast ballots, for a 63.3 voting percentage. (Last year, 242 votes were cast by a slightly smaller electorate for a voting percentage of 61.3.)

Names of all those eligible to serve on the Staff Committee (members of the scientific and technical staffs) are listed on the ballots, and each voter is asked to vote for four people. Of the 192 candidates eligible this year, 163 individuals received at least one vote, and 33 received 10 or more. There were 24 votes for the leading candidate.

SAYLES PROMOTED TO ASSOCIATE SCIENTIST; OTHER STAFF CHANGES ANNOUNCED

Fred Sayles of the Chemistry Department has been promoted to associate scientist. With a B.S. from Amherst, an M.S. from the University of California, Berkeley, and a Ph.D. from the University of Manchester, England, Fred joined the Institution staff as assistant scientist in 1969. His work has centered around questions of seawater-sediment interactions and their influence upon the composition of the oceans. Of late, his research has been devoted largely to the determination of fluxes of the major ions of seawater across the bottom interface of the ocean and the relative importance of these fluxes in geochemical mass balance equations for the oceans.

Neil Brown and Doug Webb of Ocean Engineering have both been promoted to senior research specialist. Neil's degree in electrical engineering is from Sydney Technical College. He worked briefly for the

Institution in 1960-61 and then returned in 1969 as a research specialist. Doug's B.S. is from Queens University and his M.S. from Manchester University. He worked for eight years in England and Italy before joining the Institution staff as research assistant in 1962. He became a research associate in 1963 and a research specialist in 1967.

Henri Berteaux, who has been with the Institution as research associate and research specialist since 1966, has been appointed to the newly-created position of Institution staff engineer. His assignment is the review of the engineering design of Institution equipment - existing, new, and intended - for suitability of purpose, safety, and compatibility with existing equipment and to supervise the Institution safety program.

Cy Fennelly has been appointed Institution safety coordinator. In 32 years with the Coast Guard, Cy had extensive experience with safety programs and chaired several safety boards. With the cooperation of a Providence dairy, he circulated safe boating messages in 1970 and 1971 on 37 million milk containers!

CONTRACT LET FOR R/V OCEANUS

Peterson Builders, Inc., of Sturgeon Bay, Wisconsin, have contracted to build the Institution's long-awaited new Research Vessel OCEANUS.

The decision to proceed with the construction was made after a second solicitation from some 10 ship builders. The first solicitation had resulted in estimated costs in excess of the funds available. The design was then simplified somewhat and a further saving was possible when the National Science Foundation asked the Institution to procure two ships of identical design. The second ship is to be assigned to an as yet undesignated laboratory.

The contract price for the two ships is \$6,186,448. Title to both ships will be retained by the government.

Scheduled delivery dates are July 1975 for the first ship and October 1975 for the second. There will be some finishing work remaining to be done at the Woods Hole piers before the Institution vessel can sail on her maiden research voyage.

Designed as large enough for major oceanographic research tasks yet small

enough for economic operation, these vessels will be 177 feet long and 33 feet in the beam. (ATLANTIS II is 210 feet, KNORR 245).

The ships will carry a crew of 13 and a scientific party of 12. They will include 1,350 square feet of laboratory space and have a range of 8,000 miles. Displacing 962 tons, the vessels will have variable pitch

propellers and bow thrusters for control and maneuverability needed for oceanographic research tasks.

Conditions in the North Atlantic were specially considered in the ships' design, with basic seakeeping characteristics developed from large North Atlantic fishing trawlers.

FOUR RECEIVE RETIREMENT ALBUMS

Retirement albums were presented to three men by Dr. Fye at a December Peanut Butter Club gathering. They are Elmer Barstow, Stan Fisher, and Ralph Quigley. A fourth, Brooks Coughlin, received his album by mail.

Brooks Coughlin joined the Institution as messman on the A-Boat in 1954, and he was at sea for W.H.O.I. until disability forced him home in 1967, when he was working as steward on the ATLANTIS II.

Elmer Barstow, still known as one of our best small boat captains, was honored with a 30-year pin at the Day of Science this fall. In addition to small boat skippering, Elmer was a skilled electronics technician both ashore and at sea.

Ralph Quigley joined the guard staff in 1964, and he has been guard supervisor since 1969. He'll continue to work from time to time, particularly when there are special meetings being held at W.H.O.I.

Stan Fisher came in to help out with some mechanical work for three weeks 28 years ago - and he retired January 4 of this year, going out, he noted, with the first snowfall of 1974. His first job was building a Diesel engine for the RELIANCE; she needed the engine, and there weren't any to be had, so the Navy sent along enough spare parts to make one up. Stan grew up with boats - his father was a Waquoit boat-builder - and he was a great asset in the shops when the fleet consisted of the ATLANTIS and several small boats that demanded individual attention and lots of tender, loving care.

For one year while he was port engineer, Stan was also acting port captain. Co-workers gave him a double-billed cap bearing both titles, and he told them everything was all right if the bills were fore and aft, but if they were athwartships, watch out!

For the past 10 years, Stan has worked in purchasing in charge of ordering marine and mechanical supplies in an office lined with such books as *The Encyclopedia of Plastic Piping Systems* and *Specifiers Guide to*

Wire and Cable to supplement all the practical knowledge he carries in his head.

Stan said to "wish everybody well, say there were darn few I met at the Institution I didn't like, and you couldn't find a better place to work."



If you didn't go to a certain Peanut Butter Club gathering in December, you missed the comedy act pictured above. It took place when Dr. Fye presented Stan Fisher (at left above), Elmer Barstow, and Ralph Quigley (left and right below) with their retirement albums.



New Retirement Plan Instituted

The Executive Committee at its meeting on December 6, 1973, adopted an amendment to the Institution's retirement plan for employees. With some exceptions, the changes that result from the amendment are retroactive to January 1, 1973.

The amendment changes the plan to one of the "defined benefits" type. The prior plan was of the "defined contributions" type. Under the new plan the amounts of the benefits are calculated by a formula which takes into account the years of employment and the salary of the employee. Under the prior plan a percentage of the salary was invested on behalf of the employee, and the benefits that were paid depended upon the investment performance of the trust fund, the market value of stocks and bonds on the day of retirement, and on the prevailing annuity rates.

All regular employees under age 65 are eligible for participation on the first day of the month following employment. All participants in the prior plan automatically become participants in the amended plan. The plan is non-contributory, the Institution paying the entire cost.

Normal retirement date is the first of the month upon a participant's attaining age 65 except for participants under the prior plan whose retirement date was December 31, 1973, or whose retirement age was established at 66 years or over.

When an employee reaches retirement age with 25 years or more of service, the yearly amount of pension benefit, in addition to Social Security, will be 50 percent of annual salary based on an average of the five highest consecutive years of earnings. For each year of service less than 25, the benefit is reduced by two percent of that salary pro-rated to the nearest month.

In addition to the basic pension benefit after retirement there is a provision for cost of living adjustments related to cost of living index.

There are optional provisions for continuing life annuity benefits for a spouse and continuation of pension benefits for a death beneficiary for a fixed period.

There are provisions for early retire-

ment from age 55 with reduced benefits on an actuarial basis.

Employees have vested rights to retirement benefits after five years of employment. Those vested employees who leave the employment of the Institution before attaining retirement age will receive retirement benefits upon attaining age 65, and the amount of the benefits will be based upon the ratio that their employment at the Institution has to the years of employment that they would have had if they had continued employment to age 65. (For example: employment begins at age 35 and terminates at age 45 - 10 years of employment over 30 years of possible employment, or one-third of the normal retirement benefits.)

In the event of death of a member while in the employ of the Institution prior to retirement date and with five years of completed service, there are benefits for a surviving spouse or for dependent children if there is no spouse. There are similar death benefits for a spouse or dependent children of a terminated employee with 20 years of service if death occurs after age 55 but before retirement age. Death benefits after retirement will depend upon the optional form of annuity elected at retirement. Beneficiaries of employees under the prior plan are not deprived of the benefits from the accumulations in a deceased employee's account whether or not in the employ of the Institution at date of death.

While it is highly unlikely, if the benefits credited for past service under the new plan as of the date of amendment are less than that which would have been provided by the accumulation in the member's account under the prior plan, then the past service benefits will be increased accordingly.

The Employees' Retirement Committee will continue to have responsibility for administering the new plan.

A pamphlet explaining the new plan in detail will be available within a few weeks.

The Trustees sought advice and counsel from a number of experts in the retirement field and were convinced that the new plan provides superior benefits as well as greater protection in periods of inflation.

FUNDS AVAILABLE FOR ACQUISITIONS TO LIBRARIES OF LARGE SHIPS

Suggestions for additions to the libraries of the three large ships are welcomed by Ships' Library Committee members, Cecelia Fuglister, Dean Bumpus, and Bill Dunkle.

Funds for purchase of ships' books are accumulated from book royalties donated by Egon Degens and Dave Ross, the editors of *Hot Brines and Recent Heavy Metal Deposits in the Red Sea*, a 1969 publication.

The substantial libraries on the ships originated when the A-II was being constructed. Martin Pollak, an early staff member and well-known physical oceanographer, died at that time. His widow donated his personal library to the new ship, many of his friends also contributed either cash or books, and thus the Pollak Memorial library was started. (Dean Bumpus, who contacted many of the contributors, says it turned out to contain one of the best mountain climbing libraries afloat!)

Institution funds have supplemented the royalty funds and gifts from friends.

Purchases in large part are for scientific books needed on board, but some are for recreational reading. Many gifts have been received from interested friends for the recreational collections.

FORTRAN, CONTROL CARDS CLASSES OFFERED

Anyone interested in learning FORTRAN computer language may join a class which will meet in the Smith Conference room from 9:00 to 12:00 Monday through Friday, January 28 to February 1.

A class teaching the job control language for the Sigma 7 will be held in the Smith Conference room Wednesday and Thursday, January 30 and 31 from 1:30 to 3:30 p.m. It is suggested that anyone taking the FORTRAN class should also take the control cards class, which is also open to those who have written programs for a computer other than the Sigma 7 and who wish to learn how to make up control cards for the Sigma 7.

To sign up for either of these classes, call Emily Evans, ext. 439.



HOLIDAY PARTY IN WOODS HOLE

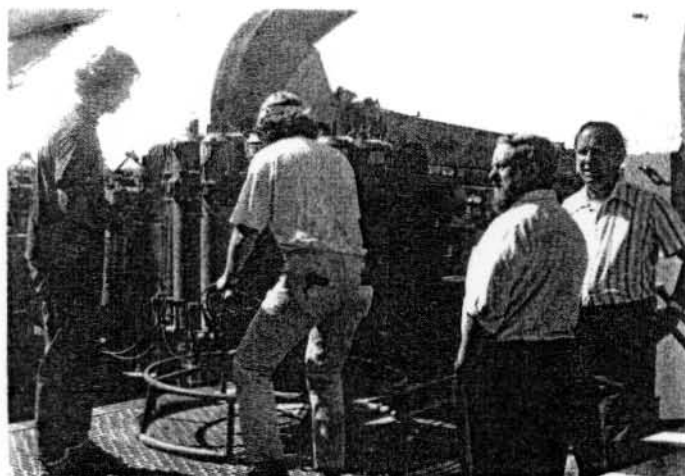
Photos show several scenes from the annual Oceanographic Christmas party held on December 21 in the M.B.L. Dining Hall. More than 500 attended the event this year. Many people helped to make the party a success, and many thanks are due each of them, to the Institution for sponsoring the event, and to Bob Frazel (white shirt, photo at left), who coordinated the party.

Recently returned from a month aboard Scripps' MELVILLE for the Pacific phase of the GEOSECS program, Derek Spencer reports that the work continues to go well with the major plague being the question of whether there will be enough fuel available at the next port of call. (The U.S. Navy came to the aid of the National Science Foundation-funded project in Honolulu when Scripps' regular supplier couldn't help.)

A member of the GEOSECS (Geochemical Ocean Sections Study) executive committee, Derek was chief scientist for the fourth leg of the Pacific work from Tokyo to Honolulu. The cruise left Scripps in August for the nine-month, nine-leg voyage.

ples. The scientists are trying to determine what quantities of chemicals are dissolved and how much remains in the suspended matter, as chemicals taken up by marine organisms in the surface settle with dead organisms into the deep ocean.

Measurements of two radioisotopes have been added to the program. The first, lead 210, a daughter of radium 226, is of considerable interest because it has been found in only half the expected quantity in deep water. The question is what is removing it from the water. The second is beryllium 7, an isotope formed in the atmosphere by the interaction of cosmic rays in the upper atmosphere. As it is insoluble and has a



SPENCER RETURNS FROM GEOSECS LEG ABOARD MELVILLE

In photo, Arnold Bainbridge, right, GEOSECS technical coordinator, and Derek Spencer observe as Bruce Waldorf, left, and Bob Yates prepare a rosette. The rosette is the primary 30-liter water sampler for the program. Two rosettes go down the wire at a time, the upper 10-bottle rosette carrying conductivity, temperature, depth, and oxygen probes as well as a light scattering meter, and the lower carrying 12 sample bottles.

Analysis of samples taken during the Atlantic phase of GEOSECS, a nine-month cruise of the KNORR ending last April, has indicated a few new directions to the scientists. The basic thrust of the work, however --- to obtain a North-South survey of the two major oceans for collection of extensive baseline data on ocean mixing and the paths and ultimate fate of chemicals in seawater --- has not changed.

One unexpected finding on GEOSECS Pacific has been indication that the Pacific is not as homogeneous as scientists have thought it to be. Evidence of mass water movement not seen before has been found in the deep northwestern Pacific, and the major deep passages at Wake Island and the Horizon Passage show evidence of strong bottom water flow from south to north.

The Pacific work is putting more emphasis on particulate material (suspended solids), so there is more filtering of sam-

short half-life of 53 days (that is, it takes 53 days for half of its radioactive atoms to disintegrate), it is quite likely to be found in particulate form and should give important information about near-surface mixing problems. It is difficult and time-consuming to sample, however --- 20 tons of seawater must be filtered through a bed of absorptive aluminum oxide to obtain measurements of the isotope.

Water samples taken in the Atlantic are beginning to yield information on the diffusion process in the upper 1,000 meters by tracking tritium, a radioactive form of hydrogen and one of the bomb fall-out products. Tritium has a 12-year half-life, and as there has been little atomic testing over the past decade and more, tritium can be traced as it decays to helium 3, both isotopes can be measured, and the age of water masses containing them thereby can be measured. Thus, theories about water mass

movement that have previously been recognized and accepted but not actually time-tabled can now be verified.

Another finding from analysis of the Atlantic samples has shown that helium 3 is leaking from the spreading mid-ocean ridges along with other elements such as iron and chromium. Scientists do not expect to find this a continuing process but rather one that may only occur associated with sporadic volcanic activity.

The Pacific phase of GEOSECS is scheduled to continue through April (assuming the MELVILLE can be adequately fueled at remaining port calls in New Zealand and Tahiti). Nearly 8,000 samples from the 121 stations in the Atlantic are already stored in the water library in the GEOSECS building on the Quissett Campus, and about the same number will eventually be shipped from the Pacific work. These samples form a continuing source for developing the baseline data on the state of the oceans that the GEOSECS program set out to provide.

The GEOSECS scientists are working toward organization of a similar water sampling program for the Indian Ocean, perhaps to take place beginning in late 1975. Russian scientists have indicated strong interest in participating and have tendered possible use of Russian ships for the project in the south Pacific late next year as a start.

TOWN DRINKING WATER CHECKED BY OCEANOGRAPHIC LABORATORY

Ed Carpenter's biology lab helped the town of Falmouth ensure us all sweet, fresh drinking water last summer. Samples from the town water supply were brought to Woods Hole twice weekly through the warm season to be checked for increasing levels of blue-green algae, so that preventive and corrective measures, such as addition of copper sulfate, could be taken.

In past summers, Falmouth's Long Pond has experienced blooms of *Anabaena* which resulted in a taste and odor to our drinking water. *Standard Methods*, the bible of sanitary engineers, officially describes the taste of *Anabaena* as that of a "pigpen". As it was, Long Pond's phytoplankton was dominated this summer by *Asterionella*, a diatom which imparts a flowery "geranium" taste. Algal concentrations were low, and this species never became a major problem, however.

As luck would have it, nothing showed up until after the usual season for algal

blooms was past and the testing had ceased for the season. If you detected an unusual taste and odor in your glass of water early in November, it was due to an unusually late bloom of *Anabaena* in Long Pond.

Later testing may be warranted in '74!

NOTICES

Inquiries concerning possible car pools to the Oceanographic have come from Monument Beach, Pocasset, North Falmouth, Waquoit, and Oyster Harbors. Anyone interested in car pooling from these or other areas should call Carolyn Miller, ext. 389.

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Some 70 members of the Naval Undersea Warfare Research Development Council met in Redfield Auditorium January 8 to 11. Directors of most of the Navy labs were here, and included among the speakers was the newly appointed Assistant Secretary of the Navy (Research and Development), Dr. David S. Potter.

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Meteorologist Joanne Simpson, a former W.H.O.I. scientific staff member, has been nominated in the "Science and Research" category of the *Ladies Home Journal* Women of the Year awards. The winners in each of eight categories are selected partially by reader balloting on a form printed in the January issue of the magazine. Ballots must be in the mail by January 21, and the awards will be announced on a television special April 8.

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Dave Ross has been appointed to the executive board of the Law of the Sea Institute at the University of Rhode Island.

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December energy bills for the Institution showed a substantial decrease in energy use in December as compared with November - proving that careful attention to the power we draw can produce savings. Keep up the good work!

* * *

The Woods Hole Community Association, in cooperation with the Cape Cod Museum of Natural History, will present "The Natural History Film Series" Sunday afternoons at 3:00 in Community Hall. Admission is 50¢ for adults and 25¢ for children for the following schedule of showings:

January 20 - "Journey to the High Arctic"

February 3 - "Say Goodbye"

February 10 - "Galapagos: Islands for Evolutionary Discovery"

"Galapagos: New Species from Old"

February 17 - "The World of Jacques Cousteau"

February 24 - "In Search of the Lost World"

March 3 - "Amazon"

March 17 - "The Last Vikings"

March 24 - "Golden Eagle - No Natural Enemy"

"Portugal - Men of the Sea"

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The Community Hall Board sends a great big "thanks" to all Oceanographic folk who helped with the recent clean-up of the hall!

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Ralph Quigley would like to say thanks to the Institution and to staff members for kindnesses and good wishes he received on his year-end retirement.

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The United States became a full member of the International Council for the Exploration of the Sea in 1973 resuming an association that was permitted to lapse in 1920. The Council is concerned with all aspects of marine research, particularly those that bear on the fisheries, in the eastern Atlantic Ocean from Spitzbergen to Gibraltar, and has the responsibility for investigating the condition of the fish stocks in the area and recommending protective measures for regulation to the Northeast Atlantic Fisheries Commission. The U.S. delegation to the 61st annual meeting of the organization in Lisbon, Portugal, early in October included Buck Ketchum and Red Wright from the Oceanographic and R.O. Edwards, J.A. Posgay, K.A. Smith, and R.L. Wigley of the National Marine Fisheries Service, Woods Hole.

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Institution associates of Barbara Banay, part-time secretary in Administration for several years, were sorry to learn of her death on January 7 in Falmouth.

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Note from the Mailroom: Canadian mail is foreign mail - books and printed matter being sent from the Institution should be in unsealed containers.

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Anyone wishing to claim Core A-II 76-1908 should phone Jean Driscoll, ext. 347.

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The switchboard operators have asked us to remind you that outgoing Teletype messages must be handed to them on the "outgoing message" forms which are available in departmental offices, in the Facilities Office, and from the Smith Reception Desk. (And please type or print legibly!) Messages are accepted for same-day transmission only between 0800 and 1600. Those presented after 1600 will be transmitted the following day. Please help the operators to help you by observing these rules!

Notes, notices, and any items of interest to the Oceanographic community are welcomed by the Newsletter. See Editor Vicky Briscoe, office in the Coop Building, or phone 252.

The idea of this sheet is to give everybody a chance to share ideas, efficient practices, and general information. If you have a bit of information that makes your life easier and that you think others might find useful (or if there's something you'd like us to find out about), call the Newsletter, extension 252, and let us know about it.

Mailroom

Newsletter,
January 16, 1974

Mail pick-up and delivery is provided four times daily to the following:

Bigelow Building - Basement, 1st,
2nd, and 3rd floors
Smith Building - Reception desk,
1st, 2nd, and 3rd floors, Trailers,
Stockroom (includes Buoy Lab and
Carpenter Shop), Garage (includes
C. Wing, the High Bay, and D. Owen),
Port Office (includes Instrument
Shop and Acoustics Lab)

Redfield Building - 1st, 2nd,
and 3rd floors
Swift House
38 Water Street
Challenger House
Blake and Blake Trailers
Fisher House
Walsh Cottage
Coop

Twice daily pick-up and delivery at:

Student Center
Crowell House
DESC Building
Chemotaxis
GEOSECS Building
Environmental Systems Lab (ESL)

One delivery per day to:

M.B.L.
Loeb 24

Those using interoffice mail are asked to be sure to cross out the last name on the delivery list of interoffice envelopes and to complete one column before starting on the next one. Mark the carrier envelopes legibly with addressee's name (initial is adequate for first name) and location (chosen from the above list) - Mailroom personnel can't be expected to remember the locations of nearly 800 people! Note that there is no interoffice service to M.I.T. or the Fisheries in Woods Hole and that library books do not classify as mail and should be returned to the library by the borrower.

The volume of mail handled through the Institution Mailroom has nearly doubled over the past two and a half years for various reasons, so those using its services are requested to complete preparation of items to be mailed as far as possible - use zip codes and give office or individual name in return address on all envelopes. Consult with Shipping and Receiving concerning mailing of packages. Don't use the W.H.O.I. Mailroom for receipt of personal mail or packages, and don't tape money for postage to the envelope - put a stamp on it!

A listing of new postal rates going into effect this month will be provided at a later date.